From Tool to Actor

- How a project came to orchestrate its own life and that of others

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Abstract

In our contemporary society, a substantial amount of value creation is organized as project work. Although projects are widespread, empirical phenomena of our work life, they are relatively scarcely investigated. In this dissertation, the evolving and embedded nature of a project is explored. More specifically, this thesis illuminates how project task and project team competence change over time. It looks into how relations evolve and, additionally, how influence is distributed as a composite effect of these emerging processes.

Traditionally, projects have been regarded as fairly isolated systems established to attain predefined goals and stipulated to start and end at given points in time. Furthermore, it is often assumed that, by focusing scope and managing resources, one might make project teams work rationally to fulfill their goals, working with linearly evolving and controllable processes. Underpinning these assumptions are the conjectures that projects are closed, predictable, and apolitical units regulated by project management systems. Gradually, projects have come to be understood more in terms of being socially constructed systems that are embedded in relations. The tenets of these systems are to create transitions. They do so by taking part in numerous patterns of interactions. Their processes and the products they create emerge in and are formed by the patterns of interactions in which projects take part.

The empirical study of this dissertation is informed by process theories. The collection of empirical material and the analysis of it have spun around the following concepts: connecting, heterogeneity, and contingency. The study is designed as a longitudinal, in-depth study following a single case. The object of the study is a technology development project that makes an emergency communication system for the railroad.

This dissertation closely follows a project journey. More specifically, it describes how the project task was regarded and presented differently in due course. Starting out, the task was framed in a managerial discourse. Although it was seen as demanding, control and simplicity were emphasized and detailed specifications for end results were laid out. Over time, the task scope was broadened and the task became highly relational and multifaceted. Although the PM team initially was put together to make a high performance team for solving the specified task, it needed to develop additional competences as the task evolved. It is described how both operational and relational competences were developed and how these enabled the project to position itself as a unique knowledge unit within the area where it worked.

Moreover, it is empirically illustrated how the project formed and worked on relations with its stakeholders. Although most project theories do not consider relational activities to be very central, the project here reported on dedicated extensive activity on forming and maintaining relations with its stakeholders. The project's available space for actions and the construction of the project's character came about as a composite effect of these evolving processes.

In sum, this dissertation describes empirical indications of how the project developed qualitatively, from being merely a task-oriented organization to being an influential actor. The project became influential in the sense that it was able to engage in strategic discourses and affect the outcome of a number of processes, including the actions and decisions of others. Over time, the project management team, that is here followed, managed to exceed the intentions of its initiators, and I suggest that it became more influential than normative, mainstream project literature proposes project teams to be.

The contribution of this dissertation is threefold. It lies in the subject examined, the methods applied, and the framework developed for this investigation. There is a need for research on projects in general and there is, more specifically, a need for qualitative, in-depth studies within the project management field of research. Through exploring and describing the activities of a project over time, this study points to discrepancies between project management theory and practice when it comes to central issues, such as how project task and competence are perceived, and how we think about the role of contingencies in determining project processes and the positioning of projects. The themes covered in this research are central in the project field, yet they tend to be treated quite normatively. The approach that is here applied and the framework that is developed appear functional in exploring and understanding the evolving and embedded nature of project practices in that the study leads to fruitful propositions for further research.

A number of people have helped me make this thesis come true.

I would like to thank the project participants of GSM-R and the management of Jernbaneverket for letting me take part in the daily work life of GSM-R over a long period of time. Especially I would like to thank the GSM-R project manager Harald Nikolaisen for showing positive interest and taking time to discuss.

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Anne Live
(April 2006).

Contents

Chapter 1
Introducing subject matter

In this chapter, I will present the research theme, the research questions, and the relevance of this thesis. I will also describe the enactment of the research idea and provide an outline of the thesis.

1.1 Introducing the theme and background for the thesis

In this thesis, I investigate the evolving and embedded nature of a project; the title of the thesis is:

From tool to actor; how a project came to orchestrate its own life and that of others.

This title was developed to summarize empirical indications of how a project developed qualitatively, from being merely a task-oriented organization to being an influential actor. The project became influential in the sense that it was able to engage in strategic discourses[1] and affect the outcome of a number of processes, including the actions and decisions of others. Over time, the project management team (hereafter PM team)[2] managed to exceed the intentions of its initiators, and I suggest that it became more influential than normative, mainstream project literature proposes project teams to be.

In this thesis, I illustrate empirically *how* different processes evolved and contributed to the project's exercise of influence. These processes related themselves to the project task, the PM team competence, and the relationship of the PM team with other actors. More specifically, I describe how the task was regarded and presented differently in due course. Starting out, the task was framed in a managerial discourse. Though it was seen as demanding, control and simplicity were emphasized and detailed specifications for end results were laid out. Over time, the task scope was broadened and the task became highly relational and appeared multifaceted. Although the PM team

[1] I see discourse as "a set of relations of heterogeneous materiality, that recursively produces objects, subjects, knowledges, powers and distributions of power. Discourse is productive. At the same time it sets limits to what is possible and knowledgeable" (Law 2004:159).

[2] When I refer to 'the PM team' or just 'the team', without any further specification, it is the GSM-R project management team I have in mind. I mostly followed the PM team. Still, when I refer to more overall matters or members of the GSM-R project that did not take part in the PM team I sometimes also talk about the project.

initially was put together to make a high performance team for solving the specified task, it needed to develop its competence as the task evolved. I describe how both operational and relational competences were developed, and how these enabled the project to position itself as a unique knowledge unit within the area it worked. Moreover, I illustrate empirically how the project formed and worked on relations with its stakeholders. Although most project theories do not consider relational activity to be very central, the project I report on dedicated extensive activity on forming and maintaining relations with its stakeholders. I also report on how available space for the project's actions and the construction of the project's character seemed to come about as a composite effect of these evolving processes. In summary, this thesis is about how a project came to orchestrate its own life. The term 'orchestrate' is referring to the ability of an actor to arrange for an outcome it perceives as attractive, by tuning in and enlisting other actors into its auto-creation (Pitt and Clarke 1999).

Three research questions have been developed to empirically explore and describe the nature of project development:

1 How do project task and project competence evolve over time?
2 How does the project form and work with relations?
3 How does the project's distributed influence evolve over time, and how can it be explained?

This thesis is developed in line with an alternative perspective on project management and work, providing a critique of the more traditional project management theories, which consider projects as tools and as instruments in the hands of organizational decision makers. From this point of view, projects are established to attain predefined goals and stipulated to start and end at given points in time. Furthermore, it is assumed that one might, by focusing scope and managing resources, make project teams work rationally to fulfill their goals, working with linearly evolving and controllable processes. Underpinning these assumptions are the conjectures that projects are quite closed, predictable, and apolitical units regulated by project management systems. Gradually, projects have come to be understood more in terms of being socially constructed systems that are embedded in relations. The tenets of these systems are to create transitions. My approach to project work is in line with the latter point of view.

My object of study has been a technology development project that develops an emergency communication system for the railroad, which is to be operated via the GSM-net. The name of the project is the GSM-R project, where 'R' indicates the rail specific functionalities. The project is thoroughly presented in Chapter 5.

1.2 The relevance of this thesis

I believe the relevance of the thesis is related to both the themes investigated and the way these themes are explored.

Projects are widespread empirical phenomena of the contemporary work life, but still relatively scarcely investigated. As Shenhar and Dvir (1996) have pointed to, the project management field of research appears to be theoretically young and undeveloped. A number of researchers, for example Engwall et al. (2003) and Söderlund (2004), have followed up on this critique of project management research. It has also been argued that the project management theories tend to be normative (Engwall et al. 2003). There seems to be a need for research on projects. As research on projects is often conducted through surveys or analyses of background material, investigating subject matters by different methodological approaches might in itself be valuable (Blomberg 2003). Qualitative in-depth studies are sparse within the project management field of research and I believe this type of studies may enable exploration of possible discrepancies between project management theory and practice. My study is designed as a longitudinal in-depth study following a single case.

This thesis follows closely a project's journey, looking at task development, competence development, and relational work. Additionally, it illuminates how a project can maneuver itself to become an influential actor. As this research works from the notion of instability, it empirically enlightens the actions undertaken to help sustain a project. The themes covered are central in the project field, yet they still tend to be treated quite normatively. I argue that they need to be explored further.

Additionally, I deem it valuable that the project manager and participants of the project find the insights of my thesis intriguing and thought provoking. As an added benefit, I have found that the research process has facilitated my personal growth.

The approach I applied to this project investigation departed from a process theoretical viewpoint and spun around the following concepts: connecting, heterogeneity and contingency. To my knowledge, projects are rarely investigated from such an approach, and it is my hope that this exploration may bring about useful insights regarding the evolving and embedded nature of projects. In keeping with application of a rarely used approach in project investigation, my aim has not been to provide answers to hypotheses. I have aimed at in-depth exploration of the phenomenon I have sensed and attempted to develop propositions for further research. It is my hope that the

research has brought about fruitful and fresh proposals for deeper investigations within the project field.

1.3 Enacting a research idea

My own PhD project has been more unstable and fragile than I would like to admit, and is still being worked on as I am about to submit my thesis. This section will provide a brief account of how the research idea has evolved and matured over years, as composite effects of personal experiences, unplanned incidents, and education. Thus, I allow myself to keep a personal and informal style in this little account.

My educational background is within psychology and educational sciences. When I completed my studies, I started working as competence manager within the construction business. Most of the time in this job, I found myself working on busy and often quite chaotic projects, mainly together with engineers. Holding quite a different frame of reference than the other project participants, I perceived these task solving processes more challenging than the rather pleasant hours I had spent at the university library. During the discussions I had numerous opportunities to fight for my way of thinking. Despite these endless exchanges of opinions, which, at times, were quite frustrating, or maybe because of them, I found this multi-disciplinary project work fascinating and enriching. When I was offered a scholarship I decided to work with this thesis.

The first year of my PhD, I spent most of the time reading up on project management theory and organizational science. Due to my personal experience with project work and the insights gained by my educational background, I found it hard to accept some of the major ideas of functionality and rationality, embedded in the project management theories. It is my general belief that both humans and their products are socially created and in ways that do not necessarily correspond to the initial intentions[3]. Pursuant to this belief, I engaged in numerous conversations with fellow colleagues and project practitioners to reflect upon the underpinning assumptions of the project management field. Through the conversations with project practitioners I learned about less rational and linear practices, where retrospective sense making followed actions. Thinking about these stories I read Weick's (1976, 1979, 1995) theory about how organizing connects to sense making. Applying this perspective to projects means regarding projects as non-linear, evolving processes.

[3] This is the nature of social purposes action, as pointed out long ago in a seminal article by Robert Merton (1936).

A review of project management research literature revealed that only a few contributions had been dedicated to investigating the nature of projects and project processes from a sense making perspective. Moreover, the review revealed discrepancies within the field with regard to the nature of projects and project processes; they were reasonably stable and given entities, or continuously evolving. I wanted to participate in this debate. The literature review also revealed discrepancies within the project management research regarding projects, showing them to be fairly embedded or somewhat isolated units. Based on these considerations, I decided to empirically investigate sense making and situated knowledge inquiry related to operational project task solving.

Since I wanted to explore what actually happened regarding sense making and knowledge construction, I found it appropriate and potentially fruitful to investigate one case in detail. I designed the research as an indepth single case study. Developing such a design means keeping an open mind regarding what is out there. Moreover, it implies that research questions, aims, and designs may evolve as a study is conducted. Following the case closely over time, conducting interviews and observations, I was struck by how the project's course and outcome emerged through actions undertaken by the PM team to influence other actors in its context. So, not only did the PM team, as Weick (1979) would maintain, seem to act and then make sense of its actions; it worked to affect the sense making and actions of other actors. The PM team appeared to define what it would like the processes and the outcome of the project work to be. Then, through discursive activity such as story telling, it helped other actors move in the direction it had sought to go. As these activities were not amongst those I had initially set out to study, I tried to define these observations out of my research project. However, they kept recurring and were simply too captivating to be neglected. Turning to project management literature, I found that the observed activities were rarely discussed, hence, I decided to explore empirically how a project can develop through its relational activity. This means that while doing my empirical work, I found myself in the delicate situation of making intriguing observations that I could not leave behind, yet I had no analytical framework to capture the essence of such observations. Thus, the theoretical framework, as well as the research questions, had to be reconstructed. To broaden my understanding as the study progressed, I looked into literature that discussed similar cases from other research fields, for example de Laet and Mol (2000), Latour (1988), and Latour (1996/2002b). Quite a number of these case studies applied process theoretical insights to describe the phenomenon of their study. Reading various texts working from a process point of view, I discovered that some of these insights could also enable the emergence of 'my' story.

The research theme of this thesis has truly matured as a result of a rather taxing exploration of the project field's theory and practice. This exploration, combined with eclectic reading about how social phenomena such as projects are changed and maintained, emerged into the three research questions of the thesis.

The presentation above reflects a research process that has not stayed within its initial bounds, as some theorists proclaim they do. It illuminates a research idea that was evolving as the study was conducted. The case and the research questions, as well as the theoretical framework, have been reconstructed more than once (Ragin 1992, Dubois and Gadde 2002). Thus, the contribution of the thesis is the development of the research questions and the exploration of these, raising propositions for further research on project work and development. I could not have developed these propositions without letting the practitioners show me what their work was all about. I believe the process I have described here is a good example of how project work may contain iterative and unpredictable processes leading to outcomes one would not have guessed.

1.4 A few concepts

Here, I will introduce a few recurring concepts in the thesis. These will be introduced briefly, as they will be discussed more thoroughly in other sections. I leave more space for the issue of competence since this term will not be treated separately elsewhere.

Project is here considered as a temporary organization that is demarcated by time, task, team, and transition (Lundin and Söderholm 1995). The nature of projects is elaborated on further in Chapter 2.

Task is here considered to be what the project is going to do; it is the 'raison d' être' of a project. It is what the project team's activity should be focused on (Lundin and Söderholm 1995). The nature of project tasks is discussed further in Chapter 2.

Relation is regarded as the connection between entities and actions that make up reality (Czarniawska 2004, Law 2004). Things connect and, thereby, relations are formed. When I talk about forming relations in the second research question, I mainly elaborate on the project team's activity of relating with its stakeholders. This will become clearer as connectivity and relating are discussed in Chapter 3.

Influence is here considered to be the ability to give directions to the actions of others (Latour 2004). Patterns of interactions, rather than design, are assumed to determine how influence is distributed in a project setting (Kreiner 1995).

Project competence is seen here as the project's ability to make things happen. It is regarded as situated knowledge, skills, and aptitudes of the project. This understanding is based on Nordhaug's (1993) suggestion of competence being a triadic concept, constituted by a fusion of knowledge, skills, and aptitudes. Moreover, this perception emerged with regard to arguments for how competence and knowing are situated practices. Competence emerges with respect to valued enterprises in a given context (Wenger 1998, von Krogh et al. 1992). In keeping with this, projects are arenas where different knowledge bases can be integrated (Söderlund 2005). They are possibilities for development of strategic competence (Söderlund 2005). I will suggest that there are no other equivalent substitutes for competences (von Krogh et al. 1992), but that competence is closely related to knowledge, learning, sense making, and meaning and that these concepts are highly related.

I suggest that *knowledge*[4] is a dynamic and social product of negotiation created through actions and *sense making* of actions (discussed in Chapter 3). I have also indicated that knowledge development constitutes *learning* (Vygotsky 1978) and that knowledge is both input and output in the learning process (Bruner 1997). Learning is to produce *meaning*, says Wenger (1998), which is "our ability to experience the world and our engagement with it as meaningful" (Wenger 1998:4). Along with this, I consider knowledge and meaning to be equivalents.

Saying that learning means changing by acquiring, processing, and storing experiences (Nyborg 1994), means an active actor that interacts with its context and thereby constructs meaning. As I will refer to learning by doing (Dewey 1938), learning by trial and error (Bandura 1977), and also learning as exploration and exploitation (March 1991), I have mainly taken an

[4] One of the oldest and most cited definitions of knowledge seems to be the one of Plato saying that knowledge is founded/justified true belief. Here I assume that what is true is subjective and circulating (Law 2004). Moreover, knowledge is commonly devided in tacit (Polyani 1966, Nonaka and Takeuchi 1995) and explicit knowledge. While explicit knowledge can be articulated in formal language, we are unable to express knoweldge when it is tacit (Nonaka and Takeuchi 1995). Along with (Koskinen 2001), I acknowledge the existence and importance of both tacit and explicit knoweldge in a project setting.

experienced based learning approach (March et al. 1991) in this thesis. Theorists working with individual learning (Vygotsky 1978), organizational learning (Argyris and Schön 1996), and sense making (Weick 1979) have pointed to the importance of mental concepts for acquiring experiences and how these concepts change through learning processes. When talking about learning I acknowledge the value of both behavior and cognition.

As noted above, I started investigating projects assuming them to be temporary organizations (Lundin and Söderholm 1995). Along with this, I apply definitions from the organizational learning field to understand projects' development of knowledge and competence and their learning processes. I will start with the following definition of organizational learning:

> "Generically an organization may be said to learn when it acquires information (knowledge, understanding, know-how, techniques, or practices) of any kind and by whatever means" (Argyris and Schön 1996:3).

Furthermore, I understand organizational learning as "a process of social construction of meaning within organization, where learning has occurred when individuals/groups of individuals have changed conception" (Müllern and Östergren 1995:83). Along with this, I assume learning to be highly related to work and innovation (Brown and Duguid 1991) and to be practice based and situated (Lave and Wenger 1990). As for knowledge, I presume learning to constitute competence and competence to constitute learning.

In the above reflections on learning, I have applied sources that elaborate both on individual learning (Dewey 1938, Bandura 1977, Vygotsky 1978, Bruner 1997, Wenger 1998) and sources that discuss organizational learning (Weick 1979 and March 1991). A salient presumption of this thesis is that project teams learn through their task work, both at the individual level and team level. As the separation of individual and team learning is not an important point in this thesis, I will not elaborate further on this distinction.

1.5 Outline of the thesis

I will briefly sketch this thesis.

In Chapter 2, I outline central aspects of the project management field. The aim of the chapter is to sketch briefly the research field and its underpinning logics. The idea is to disclose issues within the field that would be interesting to explore further and to position my own research contribution. I account for how I decided to explore aspects of projects as evolving and embedded phenomena. Chapter 2 ends with a suggestion of investigating projects from a process point of view.

In Chapter 3, I introduce my idea of what a process is, as well as essential assumptions and concepts of a process point of view. The aim is to identify concepts that would help my story emerge and enable illumination of the research questions and work with these. I develop a process based approach to investigating projects as evolving and embedded phenomena. This approach places emphasis on three concepts: connecting, heterogenity, and contingency. Chapter 3 ends with suggestions regarding the implications of taking a process approach to the study of projects.

In Chapter 4, I elaborate on epistemological and ontological questions related to my exploration of projects from a process approach. I draw on multiple methodological insights and techniques for data collection and analyses. I account for how these have been applied and also reflect on the value of the knowledge I have gained about the project I investigated. The aim of the chapter is to be reflexive with regard to the choices I have made and the knowledge I have developed.

In Chapter 5, I present the project I have studied, the GSM-R project. I focus on the background of the project, its task and frames of operation. Moreover, I present other central actors and stakeholders in the project setting. The aim of the chapter is to provide backcloth for making sense of the empirical material presented in Chapter 6, 7, 8 and 9.

In Chapter 6, I present a story about the project I have studied, showing how the project reality of GSM-R developed from my point of view.

In Chapter 7, I present data on the first research question: How do project task and competence evolve over time? I describe how they developed and how I make sense of these indications. Additionally, I reflect on the implications of my findings for the project task solving process. The aim of this chapter is to develop empirically based propositions for further research on how project task and competence evolve.

In Chapter 8, I present data on the second research question: How does the project form and work with relations? I describe how the project's relational work came about and changed over time. I also reflect on the dynamic and multifaceted nature of this relational work. The aim of this chapter is to develop empirically based propositions for further research on projects and relational activity.

In Chapter 9, I present data related to my third research question: How does the project's distributed influence evolve over time, and how can this be explained? I point to attempts of the project to influence, and to possible indications of obtained influence. I also reflect on how the project's exercise of influence could come about. The aim of this chapter is to develop empirically based propositions for further research on distribution of influence in project settings.

In Chapter 10, I draw central elements from the descriptions of Chapter 6 – 9 together into final reflections. I hope this little exercise will explain aspects of how the project I studied evolved, as well as the embedded character of processes. I relate the picture painted to a few reflections on changes in the project's character. Additionally, I revisit the approach I have taken and reflect on its value with regard to project investigation. At last, I elaborate on the contribution of this thesis and some implications for future research.

Chapter 2
Positioning the research in the project management field

This chapter outlines central aspects of the project management research field. The aim is to briefly sketch the field and its underpinning logics. I intend to disclose a few issues that need further elaboration and to position my own research.

Here I mainly draw on project management literature. In the next chapter I will elaborate on selected literature outside the project management field that enlightens my research. The outline provided is not meant to be a full review of literature and research within this field. The literature developed by practitioners at the base of their own project management practicing will not be given much attention. The same applies to educational books and handbooks within the field. Moreover, central issues of project management writings that are not closely linked to my research will not be touched upon. These are the varieties of practical models of planning and implementing project processes, risk management and analysis, the project organization structuring and various classifications of projects. Issues such as project manager qualities, project team processes, management by projects or portfolio management will also not be discussed here.

Projects are everywhere and they come in various shapes and sizes. The term 'project' is used in a multitude of ways. Still, it is commonly indicating a special way of working to solve a predefined task. The tasks can vary according to their contents, size, timeframe and complexity. To start off, I regard project, in accordance with Lundin and Söderholm (1995), as a temporary organization (ref. the definition in Chapter 1). I believe a project is mainly established to solve a task and facilitate transition in a more permanent organization, often the base organization of the project (Andersen 2005). The focus is placed on the actions of the project and the activities of organizing[5] (Lundin and Söderholm 1995) and therefore one could say this is an organizing approach to projects. As this is only one among other approaches to understand projects, we will see how different approaches have different conceptions of what a project is and how they also generate different insights into the nature of projects.

[5] Taking this point of view establishing projects means organizing actions. In accordance with the ideas of Weick (1976, 1979 and 1995) on organizing, I place emphasis on how projects evolve in patterns of interactions, rather than seeing projects as ready-made phenomena.

2.1 A historical sketch of the project management discourse

Project organizing is a noteworthy characteristic of modern organizational life (Ekstedt et al. 1999). Therefore the Western economy has been labeled 'a projectified society' (Lundin and Söderholm 1998), where one could talk about projectification of the firm (Midler 1995) and management by projects (Gareis 1989). To understand the contemporary view on projects, this section provides a brief overview of the project field and how it has developed. The logic underpinning central approaches to projects is also elaborated on.

The article of Gaddis (1959) is pointed out as the first article truly emphasizing the more general interest of project management as an organizational phenomenon (Söderlund 2004, Andersen 2005) and it managed to generate interests in expanding knowledge about single projects. The article is quite remarkably stating that a project is an 'organizational unit' (Andersen 2005). However, this organizing approach disappeared for many years from the field of project management. For a long time projects were characterized as tools or sets of planning techniques, and they still are to some extent. In the 1960s and 1970s research on projects were conducted from a within-firm perspective (Söderlund 2004). Gradually the focus was broadened to include elaboration on co-ordination and regulations between project actors, such as development of contracts. Söderlund (2004) illuminates how writings little by little came to embrace how project management is affected by the organizational context of the project and how project-based structures were adopted by companies. One such example is the Gobeli and Larson (1987) article assessing "the usage and relative effectiveness of different project structures as seen through the eyes of PMI members" (Gobeli and Larson 1987:1)[6]. Clark and Wheelwright's (1992) article also contributed to broaden the project management research by pointing at the project dimension when constructing organizational structures. Recently, project management research has also come to include elaboration on multi-projects and multi-firms (Söderlund 2004). This inclusion is based on an acknowledgement of how project research can increase the understanding of how industries and industrial networks evolve and change, as well as personal networks and interpersonal issues (Söderlund 2004).

As Söderlund (2004) puts it, research on projects has evolved in four phases. Starting the investigation of projects, they were regarded as tools and emphasis was placed on planning and control. Projects were treated as isolated units. Gradually, they were placed in relation to a broader

[6] PMI is the acronym of the Project Management Institute.

organizational context. Thereafter, inter-organizational issues and issues related to authority systems were included in the research. Then company-wide issues were included when analyzing projects. At last, industry wide issues, such as inter-firm cooperation were discussed by applying a process based network approach (Söderlund 2004). Thus, one can suggest that the project research has gradually evolved to understand projects in light of how they are affected by their context.

Even though projects have been around forever and are a highly widespread way to organize work, research within the project management field is scarce. The academic interest has been low (Morris 1994) and the theoretical basis is poor (Shenhar and Dvir 1996). Knowledge about projects and project work is highly practice based, often solely on the experiences of the writer himself (Engwall 1995). The body of knowledge on project management and work has emerged from practical problems. It is 'exogenous to the hemispheres of academic organizational research' (Engwall 2003:4b). Often, this knowledge is presented as handbooks or educational literature (Engwall 1995). Also, the research literature within the project management field is not sufficiently empirical (Packendorff 1995). To the extent empirical investigations are conducted, they tend to be large quantitative studies in order to develop universal laws (Engwall et al. 2003) or analyses of background material (Blomberg 2003).

I have pointed to some fallacies regarding insufficient theoretical and empirical foundation of the project management research. Lately it has also been argued that project management theories are too general, as they tend to treat projects as fundamentally similar (Packendorff 1995) even though projects vary on central characteristics (Andersen 2005). Empirical studies show that projects are managed systematically differently and different types of tasks require different kinds of organizing (Gobeli and Larsson 1987). Shenhar and Dvir (1996) and Shenhar (2001) have pointed to that projects are managed in dissimilar ways depending on their degree of technological uncertainty and system complexity. The answer to the question of how projects behave could also be expected to vary over time and thus one would need different answers for the same project depending on when in the life of the project the question is asked. Therefore we need to differentiate both the empirical and theoretical work on projects (Lundin 1995) and we need different types of theories for different types of projects (Andersen 2005[7]).

[7] This argument is the foundation of the phase models and life cycle models. The research of Gersick (1988 and 1989) has, however, provided valuable insights into the evolvement of projects that critique the character of project life cycle models. I do not find this discussion adequate here. The emphasis on phases and lifecycles

There are few serious attempts made within the field to build theories. Propositions for theory development are found in the work of Lundin and Söderholm (1995) and in the work of Andersen (2005) on renewal projects. Given the generally scanty theoretical and empirical basis for the contemporary project management field, it is, in my opinion, worth aiming for high-quality propositions for further research.

2.2 Project management perspectives

The project management field of today may be characterized as diverse, multifaceted and contradictory (Söderlund 2004). Still, the research contributions can mainly be placed within two streams (Blomberg 2003). One is closely related to the engineering science and applied mathematics. The other is closer to the social sciences and the approach to projects presented by Gaddis (1959). Here I label these streams: the traditional perspective and the alternative perspective[8]. They could as well be called the functionalistic and organic perspective, the American and Scandinavian perspective, or the mainstream and critical perspective. The main point is that the two streams are based on divergent epistemological roots and therefore treat the nature of projects differently and also generate deviating insights.

To make a point, I will make a fairly black-and-white description of the two perspectives. The metaphor of the traditional perspective is the machine. The metaphor of the alternative perspective is the organism. While the emphasis of the first perspective is the object, the latter focuses on the actor. Keywords of the traditional perspective are *planning* and *control*, and projects are seen as quite isolated and closed units. Keywords of the alternative perspective are *evolvement* and *participation*, and projects are considered as embedded social phenomenon.

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does not fit the process approach applied in my study. Therefore, when I use the term 'phase' I do not imply a phase model of project work.

[8] Eskerod (1997:44) separetes between the planning perspective, the mainstream perspective and the alternative perspective. When I refer to the traditional perspective I include both the planning perspective and the mainstream perspective. Moreover, I believe the lines between the traditional and alternative perspective is less clear-cut in research practice, than I present them here. Various ways of cathegorizing contributions within the project management field have been suggested, by for example Borum and Christiansen (1993), Söderlund (2002) and Turner and Müller (2003).

The traditional perspective has for the last three decades held a strong position; it still does. PMI is an important advocate of this perspective. The society has grown from 9000 members in 1995 (Engwall 1995) to more than 200 000 members in February 2006[9].

While I acknowledge the importance of both perspectives, my research is more closely connected with the alternative perspective to project management. There are two articles from 1995 that have been central to the forming of my pre-field understanding of projects. One is the contribution of Kreiner (1995) about understanding projects in light of co-present units in the network of the project. The other one is the article by Lundin and Söderholm (1995) demarcating the temporary organization as a temporal action unit. I will touch upon both of these later.

2.2.1 A traditional perspective on project management

Traditional perspective is based on systems thinking. Projects are regarded as quite closed, consensus-oriented systems that can be understood independently of their social and historical context and the people involved. The research within this approach tends to emphasize rationality, goal orientation, planning and execution. Furthermore, the theories developed have a tendency to presume projects to be fundamentally similar in their contents and fundamentally different from non-projects.

The traditional project theory tends to focus on project as a unit with specific goals to be accomplished within a specific time frame. Projects are, from this point of view, regarded as "a temporary endeavor undertaken to create a unique product, service, or result" (PMBO, PMI). This point of view is advocated by, among others, Cleland and King (1968), Turner (1999) and Meredith and Mantel (2000) and is mainly based on the basic assumptions of the Scientific Management tradition developed by Taylor (1911). His ideas are manifested in the use of work tools, such as the Gannt charts, which split complex processes into smaller activities to be planned in detail. The development of charts and methods to facilitate goal achievement has through out its history been the monument of project management (Söderlund 2004). The main tenet of the traditional perspective is that projects are means to ends. They are tools that can be controlled. The output is in focus, since it is the questions around how to reach a certain aimed for condition, described in the project goal, that legitimize the establishment of the project (Andersen et al. 2000). Project establishment is seen as especially beneficial when the goals to be accomplished are quite unique, compared to the daily activity of an organization. In accordance with this, the traditional

[9] This information is from PMI's website.

approach believes strongly that project organizing is an efficient way of maximizing rationality in action (Meredith and Mantel 2000). From this point of view, projects contain work processes that can be pre-planned and controlled and that progress linearly. This linear progress is assured by dividing the task to be solved in sub-tasks and place them within a linear time frame. Extensive effort has been dedicated to explaining project success and failure, at the cost of other interesting research issues, such as in-depth investigation of their behavior (Söderlund 2004).

The rationalistic belief is at the core of the traditional perspective. It implies knowing what one wants or what the problem is when establishing a project. This means assuming that one holds the information required and the capacity to process this information. Further more, one can make a decision about the project goal – which will lead to 'the right' goal. In addition, the involved parties have a shared understanding of what the goal is and this goal is presumed to remain stable over time, independent of contextual changes.

2.2.2 An alternative perspective on project management

I will here account for an alternative perspective on project management. It has emerged during the last fifteen years and is now about to manifest itself as an important premise provider of contemporary project research. I will argue that the research of the alternative perspective tends to be more theory based, more empirically based and to have a broader scope than mainstream project studies (Sahlin-Andersson and Söderholm 2002).

The alternative perspective clearly states that to enable understanding of project structures and behaviors and develop theory of same, it might be useful to relate projects to theories of the firm (Söderlund 2004). These organizational theories are multifaceted, and while some of them are competing other are complementary. This should be expected to be the same for project theories (Söderlund 2004). A well-known principle from theories of the firm is the idea of bounded rationality (Simon 1958, March and Olsen 1972). The idea of bounded rationality in projects is strongly emphasized in the writings of, among others, Kreiner (1995), Lundin and Söderholm (1995) and Packendorff (1995). Also the ideas of Cyert and March (1963) about how decisions can be made after actions are brought in (Lundin and Söderholm 1995). In addition to drawing on insights from organizational science, other social sciences such as psychology (for example Lundin and Söderholm 1995, Newell and Scarbourgh 2002) and sociology (for example Blomberg 2003) are taken into account. The insights of contingency writers such as Lawrence and Lorsch (1967) have also provided valuable inputs to the project management field (for example Engwall 2003b, Sahlin-

Andersson 2002). As shown, valuable examples of attempts to take the project management field further, by applying insights from other research programs, are emerging in contemporary research on projects.

Not only are the alternative research contributions more theory based than mainstream research; they tend to be more empirically based than the traditional contributions, often conducting explorative in-depth studies (Sahlin-Andersson and Söderholm 2002). More emphasis is placed on taking the multifaceted nature of projects seriously – also leaving space for acknowledging and investigating divergence (Engwall 2003). Therefore, qualitative studies aiming at inductions appear as a natural choice (Engwall et al. 2003), as is also the case of my research project. This is required to develop the field further.

> "The field lacks in-depth case studies, studies of processes, and studies in real time – studies that would be beneficial in building theories for understanding fundamental issues of projects and project organizations" (Söderlund 2004:10).

The alternative perspective is based on the traditional perspective, but includes extensive critique to the scope and methodology of the traditional perspective. Eskerod (1997) suggest that the alternative perspective represents a movement towards an actor perspective or what is also called the paradigm of interpretation. Investigating projects from an actor perspective implies seeing projects and their contexts as social constructions made by actors, situated in a specific historical and social context. Additionally, they are open for continuous reconstruction (Eskerod 1997). This means projects might be demarcated differently across contexts. The various actors within a shared context may also demarcate the project diversely as has been pointed to by amongst others Engwall (1992), Lundin and Söderholm (1995) and Blomquist and Packendorff (1998).

> "The demarcation line around a project is thus not given, but a social construct that might be determined differently by different observers. The distinction between "a project" and "a non-project" is obviously not so clear as it seems to be at first sight. The issue of which actors, activities, and events that should be considered as belonging to a project does not have a self evident answer" (Engwall 1992:29).

In other words, taking an actor approach to projects, projects become processes that are constructed and reconstructed through the patterns of interactions they take part in. They cannot be defined universally, but rather

the definition of a given project depends on how actors construct its form and contents.

The alternative perspective argues that a major short-coming of the scope of traditional research is that projects are seen as tools where the management of such are about techniques for planning and control to obtain the project goal (Christensen and Kreiner 1991, Packendorff 1995, Engwall 2003a). When it is uncertain how projects will behave and what they will become in the near future, the belief in fixed goals and plans becomes paradoxical. The belief in detailed pre-planned activities means neglecting the contextual conditions and unforeseen incidents and it has even been stated that early focus on activity planning is hazardous to project health (Andersen 1996). The theoretical assumptions, presuming a technocratic planning culture, do not fit in a context of continuous changes where it is difficult to know what will happen next. In such an environment, a more open-ended learning based approach is more appropriate than the system theoretic approach (Skjöldeberg 1992). In keeping with this, research has shown that also un-planned projects can be quite successful (Blomberg 2003) and that extremely well planned projects can be unsuccessful (Engwall 2003a).

The alternative perspective argues in favor of studying projects from a broader approach, seeing them as temporary organizations. While the idea of temporary systems (Goodman and Goodman 1976) is manifested in the traditional perspective to projects, the term *temporary organization* has obtained much attention within the alternative research on project management (Packendorff 1993, Lundin and Söderholm 1995, Lundin and Steinthòrsson 2003). The concept of temporary organization is based on an organizational approach to projects and calls attention to *project actions* (Lundin and Söderholm 1995:438). It is stated that projects can only be partly understood in the perspective of decision-making (Lundin and Söderholm 1995). The theoretical reasoning for this is based on the belief that decisions come after actions (March and Olsen 1972). The decisions are often constructed due to a felt need to legitimize actions already undertaken.

Temporary organizations are demarcated by the characteristics of temporality, task orientation, a defined team and transition (Lundin and Söderholm 1995). Transition, or change, has to be achieved before the temporary organization can be terminated. Transition can refer to two things;

> "to the actual transformation in terms of the distinctive change between 'before' and 'after', or it can refer to possible (or desirable) perceptions of the transformation or change amongst project participants (…)" (Lundin and Söderholm 1995: 443).

The demarcation criteria of teams, are meant to incorporate how teams can be made to function, but also how their actions can be legitimized in their interaction with their surroundings (Lundin and Söderholm 1995). The task definition has a built-in aspiration about transitions that influences how the task is defined. In light of how the task is described, team members may be selected (Lundin and Söderholm 1995). The team members can also influence the task definition if the team is composed at an early stage of the project (Lundin and Söderholm 1995:450). Lundin and Söderholm (1995) argue that project work is about establishing the boundaries of a temporal organization, its framing conditions and endow it with identity. Furthermore, they ague that "any project, regardless of the general conditions, is subject to negotiation and is perceived as being uncertain and equivocal" (Lundin and Söderholm 1995:452). Thus, the concept of temporary organization embraces an opening for the unforeseen and unmanageable development of projects. In my opinion, the alternative perspective sees projects as organizations in the making as they act and interact to solve their tasks (Lundin and Söderholm 1998, Sahlin-Andersson and Söderholm 2002).

Even though the alternative research on projects appears to be research questioning the 'traditional' assumptions of linearity and rationality of projects, it neither implies a rejection of such qualities being present in projects, nor a rejection of such qualities as valuable assets of project work. Moreover, it does not entail a rejection of project work as an efficient and quite rational way of organizing task solving activity.

2.3 Key issues of the alternative project management research

I will highlight what I presume to be two key issues of the alternative project management research.

2.3.1 Projects are evolving

I have accounted for how the focus on planning techniques and the emphasis on clear goals remains strong within the traditional perspective on project management. As the alternative perspective places emphasize on how projects are evolving phenomena, it is critical to the belief in planning techniques, rationality and linearity within the traditional approach. For example, Packendorff (1995) has suggested that projects are multi-problem units that consist of non-linear expectation-action-learning chains and Eskerod (1997:60, drawing on Morgan 1988) has proposed that projects become what they believe and what they say. This means that project planning is difficult because it presupposes relatively stable conditions with

low uncertainty concerning what would happen next. Numerous studies of project practice seem to indicate that this is not the case.

It is not my aim to develop an argument against planning and goal focus[10]. Still, I will present some of the critique against the traditional focus on planning and goals as it reveals aspects of projects as evolving phenomena. The critique I present departs from the idea that projects are vehicles for change and that they can make creative forces of an organization blossom (Kreiner 1992), but that is *only* if project management is *not* conducted in accordance with the main tools and advices of the traditional perspective.

The traditional planning techniques and other management tools inhibit processes of innovation and change, as they standardize what is unique in projects (Eskerod and Östergren 2000) and reduce the ability and necessity to reflect and to be creative (Engwall 2003, Blomberg 2003). The sequential principles on which these tools and processes are based, does not fit well with the nature of models for innovation and development processes (Kline and Rosenberg 1986). Engwall (2003a) suggests that the basic assumptions are thus (a) one holds all the information required, (b) the project goal is totally and exactly defined and (c) there is as little learning and development as possible (Engwall 2003a:37).

But what if it turns out that ones knowledge is wrong. As one is working with things the perception of what it is all about may change (Kreiner 1995). In addition, the knowledge about context can be increased or in other ways altered (Kreiner 1995). All these objections point to our lacking capacity in establishing fixed goals, that are adequate for the future, when we cannot know what the future is. The traditional models for planning and managing projects decrease the sensitivity to how contextual elements such as new ideas, solutions and requirements develop (Blomberg 1998). Following a detailed plan, the project may end up becoming and producing something that is not relevant to its context. This is because the environment drifts while the project continues to work on outdated presumptions about reality. In drifting environments, the relevance of the project can only be maintained if plans and goals are not fixed (Kreiner 1995). Therefore, what we need is planning that manages to incorporate the elements of drifting environments (Kreiner 1995:337) and gradual knowledge development during the execution of the project (Andersen 2006, forthcoming). We need some form of floating plans that can be continuously updated (Kreiner 1995).

[10] When talking about over-all planning, such as milestone planning, it is commonly thought that "planning is clearly an advantage to projects" (Dvir, Raz and Shenhar 2003).

> "(…) There must be fixed points for the performance in the form of continuously updated operational goals, specific tasks, action plans, etc.; there must also be social bonds with the environment providing the impetus for responding to changing relevance criteria" (Kreiner 1995:343).

In addition to the problems related to fixed plans that are mentioned above, research has shown that planning tools and management models can make project work more bureaucratic, more expensive and endure longer than without such models (Engwall 2003a referring to Adler 1999). Also, when the tenets of the models are compared to the project work practices there are mismatches between the two. Different studies have indicated that, in practice, project teams act creatively as problem-solvers in very uncertain contexts (Charue-Duboc and Midler 1995, Bragd 2002). Moreover, project participants reveal needs for experimenting as the project evolves (Lindkvist et al. 1998). Furthermore, they describe their own situation as complex and challenging, requiring a dynamic and creative approach (Pinto et al. 1995). "Consequently, projects are usually reformed through short periods of radical change, typically at deadlines and milestones" (Engwall et al. 2003:121). This means that:

> "instead of pre-project planning, these projects are characterized by a strong element of trial and error, interactive problem solving, and a frequent cross-functional interaction among the actors involved in different sub-systems – all resulting in a step by step strategy trough out the project life cycle, as manifested in frequent and subsequent loops of plan, do, check and action" (Engwall et al. 2003:121).

Along with the emphasis on detailed planning and management tools for control, the dream of a clear goal is characteristic of the traditional contributions to project management research. This dream is based on the same fundamental assumptions as the planning and model focus. It has, however, been noted that participants do not automatically share goals, develop shared opinions or perform according to plans (Blomberg 2003). This is because the participants did not necessarily start out with the same goal in the first place. The different members might have had differing and contradicting interests or they were not fully aware of what they actually wanted (Blomberg 2003). In regard to the acknowledgement of drifting environments, goals can become outdated or undesirable (Christensen and Kreiner 1991) and what the members want might also change over time (Blomberg 2003). Kræmmergaard (2000) illustrated these points in here investigation of an implementation project. While the aim seemed to be clearly defined and collectively understood when the project started, it appeared vague and undefined when looked at retrospectively. The learning

that emerged during the project contributed to changes in the interpretation of the aim – as well as what was created (Kræmmergaard 2000). The feedback from the processes where sub-goals were implemented, contributed to new sub-projects and changed the project contents. Problems in production required changes in the systems, and changes in the system required changes in the organization. The system was not implemented, but numerous other processes in the organization were started (Kræmmergaard 2000). These empirical findings seem to indicate that the project task solving is a loosely coupled process that is not characterized by obtaining clear goals (Weick 1995).

In keeping with the critique presented regarding planning and goals, I propose that a further exploration of project work and evolvement in practice is required. This suggestion is based on the problematic rejection of uncertainty and change that is embedded in the planning perspective. Looking into an assortment of literature, the claim of change is probably one of the most common among theorists, described with words such as post-modernity (Hargreavs 1996) and deconstruction (Derrida 1998). It has been stated that a continuously accelerating pace of change characterizes the reality of the present times (Castells 1999) and suggested that, rather than stability, turbulence is the permanent condition (Christensen and Kreiner 1991).

I have previously discussed how I started my investigation of projects assuming that projects are temporary organizations where the project task lays at heart of the project organizing. I have also indicated that the project team competence is important to project organizing (Söderlund 2005). If projects are seen as arenas for experimenting and learning it would be interesting to investigate the effect of new knowledge acquired on the temporary organization, in relation to its structures, the content of its task, the aim and motive and the problem solving interaction (Kræmmergaard 2000). The story reporting on my case illuminates these issues. In keeping with the considerations regarding project task and competence and how detailed planning is difficult if tasks and competences are evolving, I decided to follow how they evolved over time and thus the first research question was developed.

2.3.2 Projects are embedded

I will now look into the tendency to consider projects as fairly isolated units. Taken to extremes, the traditional project research sees projects as isolated units in time and space, and it is regarded as a dysfunction to be embedded (Blomquist and Packendorff 1998:38). Engwall (2003b) suggests that:

> "Contemporary thinking on project management is thus grounded in a lonely project perspective. Both textbooks and research literature primarily discuss individual projects. (…). The unit of analysis is one project at a time, the timeframe is, at the maximum, the lifecycle of one individual project, and the dominant level of analysis is the individual project and sometimes the individual PM. In this perspective, the players and actions of the environment do not appear in their own right, rather through their relationship with the project in question. The historical and organizational contexts of the project are taken for granted, or simply not included in the analysis" (Engwall 2003b:6).

Representatives of the alternative perspective have argued that projects are embedded phenomena, but what does it mean to be embedded? As I see it, project researchers talk of projects being embedded in a social context, at a micro and macro level, and in a historical context. Within the alternative perspective it is suggested to understand projects in light of the numerous relationships they embrace; within the core project team, the relations of the team to stakeholders as well as the relations of the broader societal context in which the project is situated (Pinto 1998). It has been put forward that the understanding of projects can be improved by looking into the effect of external contingencies, such as institutional trends and bodies of knowledge (Blomquist and Packendorff 1998, Engwall 2003b). Some work has been developed on how project boundaries are formed over time by the social context of the project (Sahlin-Andersson 2002). Renegotiation of the project's boundaries through its interaction with context (Lundin and Söderholm 1995, Sahlin-Andersson 2002) has also being investigated. Additionally, the impact, on project evolving, of more micro level relations between project owners and the projects (Kreiner 1995) and of social micro level networks has obtained more focus lately than before (Ayas and Zenuick 2001, Bragd 2002, Newell et al. 2002)[11]. It is my opinion that these areas need to be further explained.

It has also been pointed to how project development is not only affected by social contingencies but also the history of projects. The issue of historical embeddedness has been treated by Engwall (1995 and 2003b), who insists that we must go beyond project studies that focus only on what is in between the formal start up and termination of the project. We must consider how

[11] These three contributions discuss knowledge transfer by bringing key actors together (Newell et al. 2002), designing a network structure between projects to improve the organizational potential for learning by projects (Ayas 1996) or the facilitation of peer networks (Bragd 2002).

projects are embedded in a broader time frame as they import and export knowledge, procedures, values and more (Engwall 2003b:18).

I have presented a few examples of social and historical contingency factors' effect on how projects evolve. I started my empirical investigation of projects from the assumption of projects being highly embedded entities. I acknowledged creation of transition in the base organization as the reason d'être of establishing projects (Lundin and Söderholm 1995), and therefore I find interaction more likely than isolation. Recent exploration of project behavior substantiates the latter assumption (Bragd 2002, Engwall 2003 and Westenholtz 2003). Andersen (2005) points to interaction between projects and their base organizations as the main criteria for project work. This is because projects cannot create the aimed for transition if they do not tune their deliveries to the pace of the base organization. I will argue that only through such interaction can the two organizations affect and enlist the activities of one another (Andersen 2005). As we will see in Chapter 6 and 8 the project I studied was much about establishing and maintaining efficient relations with both the base organization and other stakeholders. The second research question, regarding how a project forms and works with relations, was developed to illuminate the embedded nature of the project. I have let it be an empirical question what kind of relations that would be important for how the project processes and outcomes evolved.

2.4 Who or what determines project action?

I have indicated that project task and competence evolve over time and that the relations in whom the project is embedded affect the project processes and outcomes. Having made these assumptions, I reflected on what or who determines the actions of the project? Re-phrased, who has the authority to give direction to the projects actions?

Project theories tend to stress that project owners are to lay the premises of projects' activities and also that they control the actions of projects. "At the outset the permanent organization defines the boundaries of the project, determining its authority and responsibility" (Andersen 2005:7). Within project theory this relation is authority-wise regarded as asymmetric, where the authority to make decisions lies in the hands of the project owners (Kreiner 1995). The base organization also controls progress and budgets throughout the project implementation. Therefore, projects are generally speaking seen as quite powerless actors. It is believed that project relations can be managed, and that they can be managed in such a way that conflict is avoided. It is an aim of the system to create harmony, thus conflicts are

viewed as disturbing elements to the system balance (Macherdis 2001). Therefore, variation is handled by adaptation, rather than investigation of potential conflicting interests. Reflecting on the asymmetric conditions I have sketched, I came to wonder what happens to the formal and informal position of project managers? Generally speaking, project managers are given authority to manage relations within the project, but are only granted authority to act within the frames laid out by base organizations. They are, in theory, deprived of formal decision authority (Gobeli and Larsson 1986). As I understand it, from project theories, this limited authority is characteristic of, not only project managers, but also project teams.

Although project managers and their teams are believed to have limited formal power, little has been said explicitly about their potential of enacting non-formal power. There are, however, some articles touching upon non-formal power without treating it explicitly. I will give a few examples of how project managers seem to be granted authority to affect the project-related perceptions held both by the owners and other stakeholders. It has been emphasized how project managers, both in order to solve the project task and to keep the project alive, must establish a view of the project as urgent (Blomquist and Packendorff 1998[12], Engwall 2003). Moreover, it has been indicated how projects with high prestige take on the image of being extraordinary and unique (Sahlin-Andersson 1989). This means that projects may try to affect the perceptions of others as 'something' specific or to hold certain characteristics outside. Engwall (2003b:20) has argued that it is important that the project can "construct an image of the project as technically interesting and strategically important to its parent organization". In keeping with this, I suggest that project teams may use self-presentation to influence decisions, of the parent organization or others, for example to maintain their own existence.

While strategic use of self-presentation is a quite subtle way of exercising influence, research has also illuminated more direct actions of project teams to affect others and facilitate the survival of the project. It has been shown how project teams can use communication strategically to position themselves (Bragd 2002) and how they participate in negotiations regarding resources allocation (Eskerod 1997). It has also been found that groups when making decisions make up stories related to the decision-making situation (Westenholtz 2003). That is to create engagement and excitement about the decision (Westenholtz 2003). Furthermore, research has shown that project managers can keep up the project legitimacy by choosing their battles

[12] Blomquist and Packendorff (1998) draw on Dutton and Duncan (1987) and Dutton (1993) to make their argument.

carefully. It is suggested that legitimacy is reduced when the project manager challenges the existing authority radically (Engwall 2003b).

> "An effective PM strikes a balance between what measures would instrumentally be the most rational for the individual project and what measures would be legitimate to undertake, given the interest of the key players of the environment of the project's historical and organizational context" (Engwall 2003b:20).

In the project that I have investigated it became apparent that extensive project activity was dedicated to self-presentation. The presentations were multifaceted and varied over time. The PM team I followed used communication and action strategically, presenting itself in various ways, to maintain legitimacy and to exercise influence.

The points made about projects' self-presentations, negotiations for resources and storytelling, to affect the perceptions of other actors, all indicate that project teams are embedded in relations, rather than isolated. Moreover these points indicate that the relations are two-ways. Not only do the actors and entities, to which the project teams are related, affect projects and their outcomes, but project teams' actions and productions also affect the other actors and entities. The potential implications of this, to various aspects of project theory, is rarely elaborated on. One exception is Kreiner's ten-year-old suggestion that the discussion of authority and responsibility for project actions should be reopened. It could lead to an increased focus on consequence legitimacy in project operation says Kreiner (1995). As I have noted, there is a tendency to place decision authority outside the project (Kreiner 1995). This means that projects, living in a context of uncertainty and high accelerating pace of change (Christensen and Kreiner 1991), and holding firsthand information regarding drifting environments, can rarely make decisions (Kreiner 1995:342).

If one, as the process theories suggest, emphasize that outcomes are contingent of temporal co-presence of things, rather than design, one could start investigating the 'uncertain and moving position' from which action choices can be justified (Kreiner 1995:342). This implies that one party cannot "dictate specific opinions and conclusions to the others" (Kreiner 1995:342). Moreover, it means that authority and responsibility becomes circuit phenomena, evolving as actors interact and communicate, and subsequently actors' strength depends on how they interact with other actors. Taking such an approach leaves projects both to stay tuned to its drifting environments and to demonstrate the relevance of the project activity to their stakeholders (Kreiner 1995). This recommendation of bringing hierarchical structures to an end when thinking of how projects relate themselves to other

actors of their context (Kreiner 1995), does not seem to be much elaborated on[13].

In Chapter 3 I will develop a process approach where power is treated as circuit. Along with this, I propose that, although projects are seen as deprived of power within project theories, they can in practice obtain more power than other actors of the context, for example the project owners. The third research question of mine was developed to illuminate how influence is distributed over time in the project setting.

2.5 A comment

Above, I have presented central issues of the traditional and alternative perspectives on project research. I have also argued that project practice needs to be further investigated in order to develop project theories.

I developed the first research question, on how project task and competence evolves, in accordance with the discussion in this chapter regarding theoretical assumptions about projects' linear and controllable behavior. I pointed to weaknesses of the assumptions of clearly defined tasks and goals and the pre-planned nature of projects. Furthermore, I questioned the possibility of knowing, at the start of a project, what competences that will be required for solving the project task and obtaining the goals. I also questioned the presumption of clearly defined competence that it is held constant over time. All these ideas are based on the assumptions of stability. In line with the alternative project researchers' arguing, I decided to explore this further. The second research question on how projects form and work with relations was developed to take up on the idea of projects being embedded in relations and what that means to project action and communication. The third research question on distribution of influence was developed to explore the suggestion that interaction and communication between actors determines the outcome also when it comes to distribution of influence.

Looking into these three issues I hope I will also be able to provide a few reflections on the more overall development of a project.

[13] It has been found that project management is a way of sneaking bureaucratic control back into a work life that is often characterised by diminishing bureaucratic structures (Hodgsen 2004).

Chapter 3
An approach to understanding projects

In this chapter I will present my background understanding of exploring projects as evolving and embedded phenomena. It emerged through the use of different sources that all concern themselves with how things turn out. I base my backcloth for empirical work on the salient assumption that reality is intrinsically unstable. I suggest it is a continuous process [14].

I start this chapter by briefly reflecting on what it means to work from the notion of instability.

I move on to presenting the approach I developed to explore my research questions. It emerged as a composite effect of early empirical observations and theoretical studies. In my early fieldwork I reflected on what concepts that could help me being sensitive to the kind of phenomena I thought I faced. I felt I needed concepts that helped me see without predicting (Giddens 1984:326). These concepts would have to be distinctive nonetheless they could not be mutually excluding. Reading and reflecting on process theoretical contributions I found that the concepts: connecting, heterogeneity and contingency could possibly enable my accounting. In my opinion, the importance of these concepts is an empirical question.

At the end of this chapter I will reflect on the backdrop I developed with regard to project nature.

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[14] This means that I build on process theory. I use the term process theory or process approach about contributions made within various fields, all starting from the notion of *reality as a fluid process made up of connections/relations.* The writings of Whitehead (1929/1978, 1933/1967, from Hernes forthcoming) have been important in paving the way for process thinking. Whitehead rejected the existence of inherent qualities and proclaimed all things to be constructed simultaneously through the linking of events. Similar ways of reasoning are found in the psychology of James (1909/1996), Vygotsky (1934/2000) and Dewey (1938), and in the philosophical reflections of Bergson (1998) and Felt (2002). Process theoretical assumptions are also embedded in organizational science in the work of Weick (1976, 1979 and 1995, and Weick and Roberts 1993) and March (1981). In the studies of science, technology and society (STS) the process way of thinking is highly evident in the writings of Latour (1988, 1987, 1993, 1996, 1998) and Latour and Callon (1981), Latour and Wolgar 1979/1986, as well as various contributions of Law (1994, 2000, 2004) and Law and Mol 1998, and, not least of all, Law and Urry (2004).

3.1 It is all process

While project researchers seem to give prevalence to the notion of stability, I will study projects from the notion of instability. Basically, this means that all things are in motion, and that they can only appear as stable when actions are undertaken to stabilize them.

From a process point of view it has been suggested that it is the rule in any organization to live with streams of ongoing events, rather than stability (Weick 1969 in Weick 1979). These streams are multiple and heterogeneous and they constitute an equivocal reality. To cope with this reality organizations engage in organizing activity. "To organize is to assemble interdependent ongoing actions into sensible sequences that generate sensible outcomes" (1979:3). This is the process of sense making and it means narrowing down the interpretations of equivocal action flows. The activity of assembling means temporarily placing portions of reality in a framework of time and space connections, although they occurred temporally and spatially dispersed (Weick 1979).

> "If change is too continuous, it becomes difficult to make sense of what is happening and to anticipate what will happen unless that person is able to freeze, break up, or recycle portions of this flow" (Weick 1979:117).

This approach has two implications; the first being that the 'substance' of processes is fluid, as the processes are constituted by actions that connect and get interlocked in interactions[15] (Weick 1979:89). The second means assuming there is nothing but connections (Latour 1998b[16]), and therefore all things only exist in networks of relations (Mol and Law 1994). Networks are several connected relations, or connections[17], which is the term I prefer to use.

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[15] Weick actually says that "processes contain individual behaviours that are interlocked among two or more people" Weick (1979:89).

[16] This is a web-article without page numbers. The references to this article will be marked with*, indicating that page numbers cannot be provided properly.

[17] I will mainly use the term 'connecting' (at times connections) as I presume it to be more general and also lies at the heart of the concepts of aligning or organizing. As far as what makes up the connections I will mainly work with entities, including non-human actors (ref. pt. 3.3). In more traditional sociological terms an actor is often defined as "discrete individual, corporate or collective social units" (Wasserman and Faust 1994:17). In ANT an actor is whatever acts or makes action shift (Latour 1992). It is an element that bends space around itself. It is an element "to which activity is granted by others" (Latour 1998:7). In line with this I use the

I will apply this notion of instability to the project field; assuming that projects "keep falling apart and that they require chronic rebuilding" (Weick 1979:44). To exemplify this ongoing rebuilding activity, Tsoukas and Chia (2002:257) use the example of a line dancer. The aim of the line dancer is to keep herself on the line appearing stable up there. To remain on the line, she has to continuously correct her imbalances. Hence, it is suggested that stability implies activity. If the line dancer was inactive, she would fall. Weick (1979:44) talks of a similar mechanism for organizations, and he calls it 'chronic rebuilding'.

What we achieve from the assumption of fluidity is the focus on processes of making, rather than trying to understand 'ready-made' entities. We shift from noun to verb, from organization to organizing in the terms of Weick (1979, 1995). This shift means acknowledging that organizations do not exist per se; consequently we can rarely understand organizations as units, but rather as something being made through the activities of organizing (Weick 1979), aligning heterogeneous interests as Callon and Latour (1981) would say, or as connecting actions (Czarniawska 2004). Looking at projects from this point of view indicates that projects are constituted by processes and considered always to be in their making (Tsoukas and Chia 2002:573).

3.2 It is about connecting

Inspired by the above, I will work with my research questions from an assumption of *connecting;* I will assume that all things, such as projects and the processes making them up, emerge, are maintained, and changed by connecting actions and entities. This suggests that patterns of interactions between entities make up our reality (Latour 1998a), and these patterns are what we need to study. As connecting indicates my assumption of the relational nature of all things, I have mainly used *relating or relational activity*, with regard to the GSM-R project's activity to handle, co-operate with, and act to influence the stakeholders and sub-contractors of the project.

3.2.1 Implication of connecting

When entities connect they affect one another, they make one another significant. This denotes that entities get their characteristics from their connections, or, as process theorists say, all entities draw their identities from their connections (Callon 1991). Moreover, things in the making start out as abstract and then gradually through negotiations the connections

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words entities and things, to include both human and non-human actors: organizations, technologies and persons.

between the thing and the various entities making up the thing become clearer (Callon 1991). In other words, rather than assuming a general content included in the notion of connection, each and every connection is locally specified through interaction[18] (Giddens 1991). Additionally, in the interactions connections can join other connections and perform sets of connections[19]. When connections get entwined, they feed into one another. They nurture one another's existence and they refine one another. These interdependencies among connections have been described as recursive relations, meaning that "(…) actions are offset against a different level of the social system which again enables new actions to occur" (Bakken and Hernes 2003:65). Since the principle of recursive relating implies an ongoing process, the connections and entities connected refine one another continuously. This means that also the thing in the making is altered. I find the reflections of Vygotsky on how connections among psychological functions and the system of consciousness affect one another to capture this doubleness well:

> "It was shown (…) that mental development does not coincide with the development of separate psychological functions, but rather depends on the changing relations between them. The development of each function, in turn depends upon the progress in the development the inter-functional system. Consciousness evolving, as a real whole, changes its inner structure with each step forward. The fate of each functional ingredient of consciousness thus depends upon the development of the entire system" (Vygotsky 1934/2000:167).

Vygotsky's quote shows that it is of limited value to single out of a system certain connections and entities and study these separately[20]. In accordance with the idea that things only develop through connections, it is difficult to understand how anything can be totally separate processes and exclusive units, as is often mentioned in the discussions of how projects evolve in sequential phases. This is because the entities will form a new unity as they connect. For example, a melody can illustrate how the total character of something is different from its constituting parts. A melody is not only a succession of different notes; it also forms a unity. The unity is made up of

[18] These local specifications of connections are mainly what one studies when taking process approaches to various phenomena.
[19] ANT writers talk of actor-networks when human and non-human actors are tied together and become something (Callon and Latour 1981). Czarniawska (2000) has proposed to talk of action-nets to keep focus on the coupling of actions, not actors.
[20] Latour (2002a) and Law (2004) advocate the same.

the past and present notes, as well as the anticipation of the notes that will be played in the near future (Felt 2002).

From this point of view, aiming to understand project development, one should rarely follow one or two predefined connections such as the handling of task[21], as is often done in project theory. Not even by including the project's competence development would a credible version of the development be created. As I have indicated, the project evolves as the different bits and pieces that make up the project connect, get entwined, and feed into one another[22]. Therefore one must also consider how a different unity is formed and the project 'as a whole' is altered through connecting. Along with this assumption, that all things have an impact on one another, one might speculate what happens to the character of a project if the processes making up the project are continuously evolving, temporarily connecting and entwining with other processes?

3.2.2 How actions and entities connect

I have suggested that series of connected interactions make up processes (Weick 1979), and that the interactions alter one another and form a different unity. I have not said how the connecting can happen. I will argue that it happens through translations.

Following a thing in it's making, all the entities connecting to make up the thing, can be seen as opinions regarding what the thing should become. These entities may display conflicting interests. Through the principle of translation conflicting interests can be reinterpreted, in order that they become acceptable to more entities (Callon 1991, Latour 1998). As interests become acceptable to other entities these can connect, and subsequently new direction for the development process is provided. The principle of translation is based on the basic assumption that one cannot talk of information, only transformation – or translation (Callon and Latour 1981:279). In other words, everything produced through interaction might be spread in time and space. In the hands of other actors the product might be modified, deflected, or betrayed. It might be appropriated and elements might be added (Latour 1986:267). In keeping with this, it may be inferred that translation is not subscribed only, meaning in the semiotic sense. As everything is translated, ideas, organizations, individuals, artifacts and so forth, for example scientific facts (Latour 2002a) and technical inventions (Latour 2002b) are circulating.

[21] The belief in task solving as *one* process is in itself questionable.

The principle of translation means that an actor can be assumed both to adopt an idea as it was intended, to translate it into something else than what was intended, or just to reject the idea. For the GSM-R project to materialize, it is required that, not only the project team, but also other stakeholders enact the GSM-R system and the processes whereby it can emerge. In order to enroll other actors, the PM team can translate its interests. If it succeeds, it may take on the voices of stakeholders and other actors.

Process theories work from the idea that influence is reliant of patterns of interaction (Weick 1979, Callon and Latour 1981). Or as I suggested in Chapter 2, it is circuit. This means that the project, through translations, can connect with others, align them and take on their voices. The principle of translation implies that some actors can, by assuming the authority to act and speak on behalf of others, become macro-actors. These are said to be actors who speak on behalf of many micro-actors. The macro-actors present the voices of others as one unit – one will (Callon and Latour 1981). Along with this, an entity that according to system design holds little formal power, such as a project, can through aligning others, evolve into a macro-actor.

The actors who are capable of getting authority in the translations of an institution stand the best chance of designating the interests of other actors (Czarniawska and Hernes 2005). This will be exemplified a number of times in my empirically based descriptions of GSM-R development.

3.3 Heterogeneity

Above, working from the notion of connecting, I have elaborated on how patterns of interactions lie at the heart of studying a project in terms of evolving processes. That is, to understand the GSM-R development I must look at how the bits and pieces of technology, knowledge, economy and, politics connect (Law 2004). Moreover, it implies recognizing how these entities alter one another and the whole character of the GSM-R development. I have not said it explicitly yet, but this means acknowledging that technologies are direction providers in development processes. The role of technology is not decided on in advance of the empirical investigation, but is rather reliant of the patterns of interactions among all the entities and actions involved in the development process. What is inferred is that development processes are open; there are no fixed points from which they depart. Therefore, studying the development of things, it is important to record:

> "the attribution of human, unhuman, nonhuman, inhuman, characteristics; the distribution of properties among these entities; the connections established between them; the circulation entailed by these attributions, distributions and connections; the transformation of those attributions, distributions and connections, of the many elements that circulate and of the few ways through which they are sent" (Latour 1989b*).

This emphasis on how also non-human entities can provide development processes with their directions does not mean undermining man or the relations among humans. It just implies that human relations are not initially given more status than relations between non-human entities. From this point of view, when investigating the GSM-R development, technology can be less, equally or more important to how the project evolves as a personal or political decision (Latour 2002b, Law 2004). What becomes important is left in the open.

3.4 Contingency

So far, I have indicated two things in regard to studying projects from an instability approach. First, connections of actions and entities are what make projects evolve. Second, the entities and actions connecting are heterogeneous in nature, which also makes the development process heterogeneous. At last I will suggest that the development process is a contingent process, in the sense that the project development is contingent of its own history. In Chapter 2 I presented how projects gradually has come to be discussed as contingent of both their social and historical conditions. As I have assumed that it is all about processes of interaction, my assumption of project development as contingent of its own history incorporates also social embeddednes.

Development processes, seen as patterns of interacts that do not depart from a fixed point, can hardly be understood without considering their own history. Along with this, the developments of all things become histories of contingencies. A contingent view implies that developments affect each other over time, in that choices influence which selections may or may not be made subsequently.

Contingency is seen as that which makes outcomes possible, without implying that the past determines the present (Hernes forthcoming, 2006). Since reality is heterogeneous and we only have the capacity to attend selected issues that we act on, things may turn out differently than expected

(Weick 1979, Hernes forthcoming, 2006). This means that limited capacity for focusing and acting provide the system with indeterminism. It means that in all systems some options are kept open whilst others are closed (Hernes, forthcoming 2006, discussing Luhmann 1995). I have presented the significance of the principle of recursive relations. Combining this principle with the principle of contingency implies acknowledging that organizations live partly in their past, yet different futures may be considered (Bakken and Hernes 2003:70). Hence, a project's future can only be understood in terms of how the project acts on its interpretation of the present external environment in light of its experiences from the past (Bakken and Hernes 2003). Moreover, projects develop through connections that drift to be transformed into other connections, but that can never be forgotten or reversed (Law and Urry 2004:9). In keeping with this,

> "it becomes impossible to view evolution as a series of "nows" where there is a clean break between past, present and future. Rather, a "now" is formed out of the meeting between a past and a future" (Bakken and Hernes 2003:70).

In accordance with the above, what is 'here and now' of the project is, in my study of the GSM-R project, also embedded in the history of the project as well as its possibilities for the future. The actions and resources that have connected up to a certain point provide the base for what may happen next, and thus also an explanation[23].

3.5 Process and the alternative perspective

I have developed backcloth for my empirical investigation of how the task, competence and relations of the GSM-R project developed, and how these evolving processes affected the overall nature of the project.

My approach is radically different from much of the research conducted on projects. As I have said that I work from an assumption of instability, I will make a few reflections on some of the implications this has for how we understand projects.

In my review of the project field (Chapter 2) I pointed to the tendency of traditional project theory to presume a project is fairly isolated and that it evolves in *linear* and *orderly* manners. It is also assumed that the project owners mostly orders the actions performed by the project and that these

[23] This issue of descriptions of contingent evolvement histories is elaborated on further in Chapter 4 (pt. 4.4.2).

orders are generally laid out prior to project conduct[24]. When alternative project theories discuss how projects evolve and that they are disordered, they allow for more ambiguity and change in project reality than what has been voiced by the traditional perspective. Within the alternative perspective changes are discussed in form of drifting environments (Kreiner 1995), changes in framing conditions such as resource allocation (Eskerod 1998), and the effect of political/economical changes (Sahlin-Andersson 2002) in the history and surrounding organizational context of the project (Engwall 2003b), to mention a few. Still, to my knowledge, project researchers tend to give prevalence to stability, rather than change.

It is my belief that two assumptions tend to underpin the discussions of change in project literature. First, it is assumed that projects change as contingent adaptations to environmental changes[25]; second, change is considered to be a property that the projects or their environments may have more or less of. Generally speaking, projects are still treated as somewhat ready-made phenomena living in environments that are quite stable. I will provide two examples to support my suggestion. The first example relates to the great space provided for stage models within project literature[26]. These stage models tend to have a normative character, presuming a 'best way of project conduct' for all projects. They maintain that certain sets of activities must be conducted before other sets of activities can be attended to[27]. This means that both sets of activities need to be undertaken and that their sequences of conduct are predefined. In accordance with this, it is limited place created for fluidity and unexpected events, as is the possibility for making iterations. In other words, development processes become processes of refinement, they resemble one another and they are 'special' processes that can be singled out from other processes.

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[24] In general, project theory maintains the importance of spatial structures, hierarchical ones, as determinants of project action. The authority to decide on project activity is assumed to reside in the hands of the project owner, since he is hierarchically speaking placed above the project team.

[25] Project evolvement is explained by the institutionalist logic of adaptation to changes in broader institutional structures. Using the logic of social-darwinism, the best in the class of adaptation survives.

[26] Andersen (2004) provides a good overview of various phases and stages, looking at various stage models implemented within the project management field. To mention a few: the Pert, Gray and Larson's (2003) stage model and the waterfall model that was put forward by Royce 1970 (Schach 1990:45) and has also been elaborated on by Jessen (2002).

[27] These models often draw on the freeze-defreeze-freeze thinking of Lewin (1947), starting from the stable state of balance, action to create imbalance, and then action to gain balance.

In my second example of how project theories tend to treat change, I draw upon the commonly shared idea within the alternative[28] project perspective that projects are established to create transitions (Lundin and Söderholm 1995). The transitions that are to be created may be of various types: a new building or bridge to be constructed, new software implemented in an organization, or a changed milieu at a work place. In my case, the transition to be achieved is implementation of a system for managing train traffic via the GSM-R radio frequency. Independently of the kind of transition that is to be achieved, the underpinning logic is the same. It starts from the notion of a stable condition that one wants to alter, and then, by establishing the project, a phase of changes is created. Subsequent to the change phase a rather stable condition, the altered one, can again be obtained. The whole idea behind this, that projects are created to change something, indicates that change is seen as an exceptional condition enforced by someone taking action. Tsoukas and Chia (2002:570) argue that when spoken of this way, change is seen as secondary to the organization. First comes the (project) organization, then the change.

The two examples indicate that change is often discussed in project literature as an extraordinary condition that mostly occurs due to actions undertaken to create changes. Moreover, there are two beliefs embedded in the discussions of projects as means to accomplish certain transitions that are worth noting. The first is the belief that the actual outcome of a project equals that which was aimed for when the project was initiated. Speaking in categorical terms, this belief implies that one can control developmental activity to lead to a specific predefined outcome. Secondly, it embodies the presumption that when a transition is created it will stay the same over time. These two beliefs indicate that development processes are controllable and predictable and that they produce an outcome that is solid, in that it will stay the same. There also seems to be a presumption of agency in the sense that some actors have the power to take action to create change and then interlock the changed condition to prevent further generation of (unintended) changes.

This thesis explores a technology development process that did not turn out as planned even though the PM tried to control it. The project I studied departed from an assumption of a highly technical and specified task to be solved. The PM team approached the task with a managerial point of view, but as the team started acting on the task, it enacted it, its nature changed and the PM team found itself in an ambiguous situation with few given directions for its activity.

[28] More traditional project theory works from the notion of obtaining goals, rather than creating transition.

In this chapter I have presented an approach to study projects as evolving and embedded phenomena. At last, what is the link between the research questions and the approach I have developed? In keeping with the approach here created, I explore how project task and competence evolve, how the project formed and worked with relations and how influence was distributed as the effect of patterns of interactions among social, technological, scientific, and economic entities. I say task, competence, relations and influence emerges as these processes connect, making the technology development a heterogeneous process where what can happen next is contingent of the process' own history. The setting I have created provides sensitivity regarding what entities connect, how the connecting happens in the first place, and how the connections are continuously re-accomplished.

Chapter 4
Enacting the evolving project – on methodology

This chapter reflects on epistemological and ontological questions related to my exploration of a project. It seems difficult to conduct research without reflecting on methodology. This means considering the question of why and how a study is conducted. I do have reflections on how my study evolved and why. I do not, however, have one method; rather, I draw on multiple methodological insights.

I have accounted for how I could not come to terms with the idea of projects being ready-made and given entities and wanted to study facets of projects as evovling and embedded phenomena. In Chapter 3 I presented how I approached projects from the assumption of reality being instable. As I was wondering about how task, competence and relations evolved and the effects of these evolving processes, the next question became how to study this presumed instability?

In this chapter, I will discuss the methodological implications for trying to come to grips with the kinds of research questions that I have posed. First, I will engage in a few more overall reflections on handling the study object if it is all instabile. I move on to accounting for my considerations and actions regarding research design, methods of enquiry, and analysis. Additionally, I will elaborate on the development of the thesis text, make a few ethical reflections, and, not least of all, reflect on the aspiration level of the study and how the worthiness of it might be judged.

This chapter is about how I have tried to develop knowledge. A salient assumption of this thesis is that all things are created through action and interaction and what is created also shapes action and inaction (Lincoln and Guba 1985). This means that knowledge is a dynamic and social product of negotiation (Bruner 1997) and that it helps produce realities (Law and Urry 2004). Next I will reflect on the implications, of this assumption, for knowledge production.

4.1 Grappling with fluidity

I have suggested that project researchers tend to treat projects as ready-made phenomena. I do not share this assumption. I have proposed that projects are relationally created in the sense that they become what they become by entities and actions connecting. This means that projects are not fixed but get

their characteristics through the patterns of the interactions they take part in. Thus, the creation and existence of projects may be illuminated through descriptions of how entities connect, how these connections are maintained, as well as the effects of the connections that are formed. To describe the formation of alliances that bring development processes further, it is recommended that one describes "the work, and the movement, and the flow, and the changes" (Latour 2004). If one acknowledges this advice, the next question becomes: how to follow and account for this instability? This has been an overall question bothering me in my work with research design, with data collection and analyses. Therefore, thoughts and actions regarding this challenge will be a reccurring theme through-out this chapter.

As process theorists struggle with the issues of how things develop into what they become, I found some of the process theoretical insights useful when elaborating on my three research questions. To handle instability, I assumed it necessary to start with a radically open mind, rather than working from a fixed point of reference (Weick (1979), Latour (2002a), Law and Urry 2004). However, lacking a fixed point of reference when studying projects the question becomes: where do I start the investigation? Weick (1979) suggests enabling investigations of phenomena in action by bracketing them off from continuous activity flows. I tried to perform an adequate bracketing by developing criteria for demarcating the unit of analysis and follow the criteria for doing so (presented in pt. 4.2.2.1). The bracketing is to facilitate observations close to actions, which is assumed to enable understanding of change (Weick 1995). However, as I started observing how the project continuously evolved, I still came to grapple with how this changing nature could be accounted for, as well as wondering how the problems related to stating 'the project is this and that' (assuming a substance). I thought, what is actually the project if it is changing all the time? Moreover, as I observed that actors the project interacted with shaped the project task and competences and were also changed by the project, I was unsure of where the boundaries of the project could be set and the plasticity of these boundaries. Were these other actors co-creators of the project processes or external entities affecting the project?

Acknowledging that the nature of a project is essentially fluid, but still assuming it is stable for a period of time one may deal with the type of questions that were bothering me. By making this paradoxical inference, one may evaluate certain characteristics at different points in time and then compare these evaluations. If the comparisons indicate differences in the characteristics, one may infer that change has happened. However, little is said about the character of the change. Hernes (2006, forthcoming) has pointed out that this way of coping with change actually is to force stepwise patterns on a reality that is fluid.

In my analytical work I did two things to cope with the fluidity of the project reality. One was exactly what was not recommended above, as I compared some processes, which emerged, in my descriptions at different points in time. As I started observing and describing the project, there seemed to be a number of actions and orders that were connected. These were the processes of task development, competence development, and development in relational activity. Additionally, my descriptions indicated that these processes were transformed over time.

While a great number of project writers consider task and competence essential for project work, the relational processes of projects are more scarcely described. Moreover, the transformations of these processes that I thought I observed are rarely elaborated on empirically within the project management field. I wanted to follow up on these processes systematically. Maintaining the belief in recursive relations, I also wanted to identify how these traces of change worked back to whatever changed them, as well as how other actors were affected by these changes. To 'control' my emerging assumptions of transformations, I bracketed the action flows into action-sequences to compare and identify the changes that transpired over months. I believed the bracketing could help me focus and enable identification of changes in the 'causing elements' that I, at the time, did not know. I assumed that if I could describe how central elements varied over time, it could facilitate my description of changes in the overall nature of the project.

In addition to comparing the brackets, I tried to follow a few of the interwoven patterns of interactions across the brackets I had made. I wanted to describe the events that made a difference to the direction the project was taking. I hoped to capture evolving phenomena as they transformed themselves and other phenomena. To enable these descriptions, I tried to make them thick (Latour 2004). When I say thick descriptions I mean those with high density of information in the sense that few pre-defined selections of what to describe and what not to describe have been made. I simply tried to describe as much as I could from what I observed (ref. pt. 4.5.2). My aim was to reduce the risk of leaving out activities that were important to how the project evolved. Refraining from the idea of a fixed starting point implies that as one describes a process it is difficult to know which activities the future evolvement process will be contingent upon. The importance of actions and entities can only be decided on in retrospect (Law and Urry 2004); hence descriptions that capture the bases of numerous possible developments are valuable.

If one accepts that development processes are flows of connections, separating activities and entities in categories seems backwards. In

understanding how a project becomes what it turns out to be, taking a connecting approach, it seems more important to study what is said about the interactions, interfaces, connections, and boundaries of phenomena; what they might be if they were isolated. Latour (2004) gives the following recommendation:

> ”When your informants mix up organization and hardware and psychology and politics in one sentence, don’t break it down first in neat little pots, try to follow the link they make among those elements that would have looked completely incommensurable if you had followed normal academic categories” Latour (2004*).

This means that rather than demarcating and reducing complexity for developing good accounts (Smith 1998), process theories emphasize acknowledging complexity, and questions whether depicting messy realities as being tidy, makes the descriptions better (Law and Urry 2004). From process theory point of view, relationships between variables are often non-linear as they take unexpected turns (Law and Urry 2004).

I certainly experienced the project I report on as complex and I have tried to follow the links between actions and entities rather than separating them. The rest of this chapter deals with the challenges I faced.

4.2 An emerging research design

Here, I will provide descriptions of how the empirical investigation was designed. “A research design is the logic that links data to be collected (and the conclusions to be drawn) to the initial questions of a study.” (Yin 1994:18). The research design is also a plan of conduct that may facilitate an internal logic between the questions posed and the story told (Eisenhardt 1989). I have accounted for how a salient assumption of this thesis is that representations are translations (Law 2003), where ideas circulate, relate to different things than they initially did and is altered. Inspired by noisy ANT-stories (Law 2003), I applied the principle of translation to my own research process and tried to combine unconventional ideas of empirical research to explore facets of project development. To develop the research design I chose to draw on sources embedded in different research traditions that hold more or less different basic assumptions. Some of these even hold divergent presumptions, for instance with regard to the idea of essentialism. For example, I found both insights developed by the more essentialist ethno-methodologists Hammersley and Atkinson (1997) and the anti-essentialist

based methodological assumptions of Law (2004) useful in designing my study.

It is quite common to group the number of possible research designs one can choose between in three categories: exploratory, descriptive, and hypotheses testing designs (Blau and Scott 1963). Deciding amongst these designs one might consider the condition of the knowledge one has about the phenomenon of interest and the nature of one's research question (Eisenhardt 1989).

My review of the project management field left me with the impression that knowledge of the processes I aimed to investigate was quite scarce, fragmented, and also tended to be normative (ref. Chapter 2). This notion indicated that the testing of hypotheses would be difficult. Moreover, I was inspired by the idea that grounded theories can emerge from data (Glaser and Strauss 1967), and I wanted to take a first step towards generating a theory by exploring a case to create fresh propositions for further research. In line with this wish, my research questions were developed to explore *how* things happen and therefore an explorative design seemed appropriate (Blau and Scott 1963). When I started to explore the case I also found it fruitful to develop descriptions. By conducting descriptive studies one may identify characteristics of a phenomenon and point to the way the phenomenon is placed amongst other phenomena (Blau and Scott 1963). As the emergence and relating of processes came to lie at the heart of my study, I found it useful to combine exploration and description.

Starting out, I did not see heads nor tails of this exploration; thus the design had to be emergent. Besides, it almost seemed like a paradox to have a fixed design when entering the empirical field for a two-year period of exploration. I expected that, along with this open approach to the field, both the research questions and the design could be changed. I believe that research questions, designs, and processes of data enactment and analysis are interdependent processes that evolve as one conducts the study (Dubois and Gadde 2002).

In Chapter 1 I described that which came to be lay at heart of my thesis was not initially included in research questions. As I could not leave these captivating observations behind, the research questions and design had to be altered. I believe my thesis development has been more like a dance than a design, where the choreography's nature has been improvising and eclectic. It needed to be this way for me to follow the circulation. The important thing for me has been to describe the case I report on in such a way that careful explanations could also be hinted at, and, not least of all, that fresh propositions for further research could be endorsed.

4.2.1 Longitudinal study inspired by ethnography

I started the research assuming that the theory of sense making (Weick 1976) would be important as an analytical framework. It therefore appeared natural to consider Weick's methodological recommendations for studying such a phenomenon. Weick (1976) stresses the issue of in-depth understanding of how social groupings are shaped in long-term perspectives. In accordance with these recommendations, I decided on a longitudinal study to capture the dynamics of the processes of interest and their evolvement over time. In addition, staying in the field over time is often argued to increase the credibility and trustworthiness of results (Czarniawska-Jorges 1992). I have followed the project I report on for more than two years.

Weick (1995) also stresses that activity must be studied in relation to its context. Therefore one must make observations close to actions where the participants define their environment (Weick 1995). I have let myself be inspired by ethno-methodological studies[29], as they are claimed to be suitable when researching context dependent, complex matters with multiple socio-historical relations. Such is the project I investigate. Ethnographic studies imply a qualitative data gathering (enactment), studying a few people (relations) in-depth, 'living amongst them'. I have not been 'living amongst them' in the project every day, and I did not participate in every activity of the project. For pragmatic reasons, I participated regularly in extensive PM team activities over quite some time and followed the team when it was facing other actors. I followed both the human and the non-human actors.

Conducting an in-depth study is a strange way to take part in the lives of others, as it means taking part in the daily work life of the participants for a long time. It means forming relations and developing shared knowledge and history. As I followed the project for two years and had frequent contact with the participants of the PM team for more than a year, I formed a relationship with the team. Amongst other things, I have come to know the project manager well. When doing the kind of research I have done, one cannot, I think, help but develop relations of some sort with the people participating in the study. One will develop sympathies or antipathies that might increase the bias of the research. I think, however, there are both positive and negative effects of developing such relations. On the one hand there is, of course, the potential pitfall of becoming too involved in the tasks

[29] The boundaries around ethnography are unclear, but it is commonly shared that ethno-methodology is about illumination of how individuals understand their own reality and how these understandings evolve (Hammersley and Atkinson 1997, Smith 1998). I apply the insights from ethno-methodology in a liberal way (in accordance with Hammersley and Atkinson 1997).

of the project or the project participants, losing sight of one's research questions and the proper ways to investigate these. On the other hand, I suppose that developing relations could also be valuable for the quality of a study. It might increase both the interviewees' trust in the researcher and their openness about beliefs and assumptions. Such openness might provide material one would not have access to in a distanced relationship. This made me struggle with the issue of being truly present without becoming too involved, in other words to keep an appropriate distance (Latour and Wolgar 1986). Further elaboration on this dilemma is found in my accounts of interviews (4.3.3) and observations (4.3.4).

I found it demanding to cope with the acknowledgements of the project participants, their interest in my PhD. project, their questions, and their feelings. They have asked me why I have been there and how I have perceived them and their work. I have tried to answer these questions with respect, being truthful but vague. I acted this way because my aim, on the one hand, was not to neglect their questions, but on the other hand I did not want to influence their activity more than necessary (Hammersley and Atkinson 1997). Even though all parties are affected by, and affect one another in research settings, I felt I needed to actively try not to be an actor in their reality. Looking back, I am not sure it would have mattered. The process perspective suggests that the actors studied know what happens and take the lead in the development (Latour 2004). Furthermore, I have only been one amongst numerous actors participating in the project's and PM team's evolvement. I expected that my presence would have some impact on the actions of the project participants, but only to a limited degree. These issues related to knowledge production will be elaborated on further when it comes to choice of inquiry methods and when reflecting on the merit of the study.

4.2.2 Single Case study

I have accounted for how considerations regarding the nature of my research questions and the knowledge of the phenomenon of interests, led me in the direction of explorative and descriptive research. A number of inquiry strategies are possible in accordance with this, and I will here account for why I chose to do a single case study.

In Chapter 2 and 3 I have elaborated on how I regard projects as complex, social phenomena embedded in numerous relations. In accordance with this view on projects, I found case study to be a suitable research strategy (Eisenhardt 1989, Yin 1994). This is because case studies allow for investigation of social phenomena where there are vague boundaries between the phenomenon investigated and it's setting (Yin 1994). Case

studies take into account a holistic investigation of real-life events, for example organizational processes (Yin 1994). Additionally, they are valuable when the investigator has little control over events. Furthermore, case studies are often preferred when 'how' and ‘why’ questions are being posed. All these characteristics were relevant for my research. I found that the case study design seemed to fit both the presumptions I had based my investigation on and the research questions I had developed. The value of case studies has been disputed among researchers, but lately case studies have been acknowledged as adequate methods for theory development (Yin 1994). Since my aim was less ambitious, ‘only’ to develop propositions, I believed I would be safe with a case study.

The number of cases investigated varies across case studies. The choice of number of cases depends on the research problems to be investigated (Dubois and Gadde 2002). Due to complexity, some research issues might be more appropriately illuminated through the in-depth study of one case than by several cases (Dubois and Gadde 2002) and therefore I decided to study one case. The density of information gets higher (Weick 1995), providing an opportunity to follow up more regularly and thoroughly (Dubois and Gadde 2002). Moreover, rich descriptions may be developed. It is also believed that single case studies are adequate to capture novel phenomena and to question assumptions that are commonly taken for granted. For these reasons, I selected a single-case study.

It has, however, been argued that using more cases increases the validity of a case study, because one can apply a comparative design (Eisenhardt 1989) or a replication design (Yin 1994). Simplistically stated, these designs presume the reality of substantive elements to be relatively stable over time. The core idea is theoretical sampling of cases, where theory may function as a template to compare the empirical findings of the case. The reason for doing this is to make analytical generalizations the basis for a well-developed theoretical framework (Yin 1994). However, I lacked the clarity of theoretical framework and research questions to apply a comparative design (Eisenhardt 1989) or a replication design (Yin 1994). Additionally, I found the logic of these designs to be divergent from the assumptions I based my research on. These designs are developed to increase validity, but, as I will elaborate on later, validity might not be the most essential criterion to judge my study by (pt. 4.6).

4.2.2.1 On the unit of analysis

I find the question regarding unit of analysis to be a difficult one. In single case studies the terms ‘the unit of analysis’ and ‘the case’ often refer to the same thing, and are said to be determined by how the research questions

have been defined (Yin 1994:22). My research questions are about project evolvement; hence the unit of analysis should be a project. Moreover, I wanted to study a contingently evolving project in a disorganized world and I wanted to do it in real time – not in retrospect. Obviously, I could only be in one place at a time and I needed to select some relations to focus on, which meant neglecting others. Not only was it difficult to know "where" the relations would be, but also which of the relations would turn out important to how the project turned out.

When starting the empirical investigation, I took Weick's (1995) advice of following the unit where most of the activity of interest was assumed to occur. In accordance with my review of the project field, I presumed this unit to be the project manager team. The participants of the project I report on were divided into sub-teams that performed parallel activities. There were seven sub-teams and the managers of each of these were grouped in the PM team. The aim of this team was to ensure efficient co-ordination of, and coherence in the project development. I presumed this team to be essential, therefore I started following their activities and interfaces. Looking back, I still think this was a good place to start for developing an interesting story.

In case studies it is often stressed that the case must be demarcated in advance of the empirical investigation. My research questions indicated that my unit of analysis should be a project and the demarcation criteria of Lundin and Söderholm (1995) helped me decide what kinds of phenomena count as *projects*. In addition, I had decided that my unit of analysis should be a typical, medium sized (my definition) and complex project. To me, the *typical* criterion had two implications. I wanted it to be a project that practitioners and researchers on project management could identify with. Besides, it should be formally organized in a 'typical' way. The idea of 'typicality' was not enacted because I aimed at a light sampling logic in order to generalize. Still, I must admit I wanted it to be 'typical' because I hoped my descriptions would bring insight to project people and have them find some familiarity with the descriptions. Observing the project I had selected and reading into project literature I found it increasingly difficult to determine what my case was typical of. I must admit that I selected the case by among others the criterion of typicality. As I followed the case I think, my case was not valuable because of typicality, but rather in that it facilitates exploration of development in a multi-organizational framework and technology processes as embedded in political environments. The medium-sized criterion was developed for pragmatic reasons. I believed that to be able to describe 'a project', it could not be huge like the offshore projects. Finally, there was the issue of complexity. I felt, in accordance with Weick's (1976/1995) theory, that I needed a project with a complex task to be

developed, because more (and more explicit) sense making could be expected to occur.

I selected the GSM-R project because I considered it to be a typical, medium sized project with a complex task. A number of projects could fit my selection criteria, however, but the project manager and the base organizations, Jernbaneverket, were willing to let me in. They were interested, positive, and friendly.

The GSM-R project that I followed is seen as a case of a more general phenomenon, an evolving and embedded project. What I actually followed were a few selected relations, out of all the possible ones that helped create the project. I started with the PM team, as I hoped the team's activities could guide me to further interesting observations. Along with more grounded theory approaches, the unit's demarcation of analysis went on throughout the investigation of my case. I neither found it feasible nor possible to fully delineate it advance of the empirical inquiry. It is my belief and observation that the case evolves over time through the connections that emerge. Hence, demarcating the case eventually could as well be both the aim and the process of the research (Dubois and Gadde 2002). This is in accordance with a process perspective and fits my objective: exploratory study aimed at propositions rather than conclusions. As we will see in Chapter 8, the question of where to place the boundary of the project became a central issue of this research project.

4.3 Data collection

Even though both qualitative and quantitative material could have been developed in my case study (Yin 1994), I thought the aim of the research and the nature of the research questions called for qualitative methods.

> "Qualitative methods can be used to uncover and understand what lies behind any phenomenon about which little is yet known. It can be used to gain novel and fresh slants on things about which quite a bit is already known. Also, qualitative methods can give intricate details on phenomena that are difficult to convey with quantitative methods" (Corbin and Strauss 1991:19).

As it has been recommended to stay close to action (Weick 1995, Latour 2002a) when investigating such issues as those I struggle with, the primary methods of data construction have been interviews and (participant) observation. There has also been some use of written texts, but mostly to

establish a pre-field understanding of the unit of analysis. Next, I will look into how the fieldwork was conducted in practice.

4.3.1 Overview of the fieldwork in practice

Pre-field work has been recommended in order to get a situated understanding of the phenomenon of interest and to turn foreshadowed problems into questions that can be illuminated (Hammersley and Atkinson 1997:31). I thought I had to do pre-field work before the actual data collection and felt the need to situate my research and get some information about where and how to start. I talked with different project practitioners to investigate whether my research issues concerned those living with projects. These talks, in combination with literature reviews, founded the basis for the initial framework I developed and the criteria for case selection.

As the GSM-R caught my interest, I read various documents and had numerous talks with the project manager. The aim was to acquire knowledge in order to select a case that seemed proper for enacting data. Reading the documents also provided useful knowledge about the historical setting of the project, thus helping me to situate my empirical data gathering. The last activity before going into the field was informal talks in which the aim of the research was vaguely described to the project manager, the project owner representative, and different project participants. The aims of these talks were threefold. One objective was to involve participants to facilitate a minimum understanding of my presence and my issue of investigation. I hoped that if they developed a minimum understanding of the research, their potentially uncomfortable feeling that I stunted their activity, might be reduced. Another aim was to facilitate my access to information at different places in the organization. A last objective was to have this activity help me decide where it seemed productive to start observing and interviewing. The pre-field work was conducted in autumn 2003.

The most intensive period of data collection lasted through-out the year 2004. My initial plan had been to withdraw from the fieldwork during the period 01.12.04. – 01.03.05. My idea was to distance myself a bit from the everyday life of the project in order to conduct a more focused pre-analysis. After this pre-analysis I had planned to go back to the field for ten more months. When returning to the field, I only stayed for two months. The observations and interviews I conducted at that time did not seem to add very much to my report. Throughout 2005 I followed the project from a distance. I had frequent conversations with the project manager and conducted a few follow-up interviews during this period and I did not do any participant observations.

Overview of the filed work:

- In 2002 pre-field work scanning the project management filed to identify interesting research themes.
- In autumn 2003, pre-filed work related to the GSM-R project.
- The main filed work was conducted through out 2004.
- In 2005 the project has been followed from a distance.

When conducting qualitative data and aiming at rich descriptions, there is always the question of when enough is enough. It is often stated that duration and extensive exposure to the phenomenon in studies are important to ensure quality (Yanow 2000), and therefore one must stay in the field over time (Czarniawska-Jorges 1992, Hammersley and Atkinson 1997, Weick 1995). As my understanding of the project grew, I learnt to recognize the rhythm of the project. After six months of field study I was able to ask questions that have since turned out useful. I was able to differentiate various central themes, also in multifaceted versions. Additionally, I had established an overview of the project processes and was beginning to grasp how they were evolving. However, my knowledge of how these processes were interrelated was limited and my descriptions were not fine-tuned. Gradually, my ability grew with regard to describing and distinguishing the different activities that gave the project development direction. Still, as long as an object exists, "its" connections can evolve infinitely and the question remains: when to stop. It has been suggested that analysis of how entities form relations must go on until one can paint a picture of the distribution of factors and mechanisms that may explain the development towards stability amongst these relations (Czarniawska and Hernes 2005). I hope that my descriptions of the activities and connections related to the GMS-R project form such a picture and that I stayed in the field long enough.

4.3.2 Selecting activities and actors to observe and interview

Here, I will account for how the people that I talked to and the situations and activities that were observed were selected.

Observation. I have proposed that my research has been inspired by grounded theory approach (Glaser and Strauss 1967). In keeping with this inspiration, I decided to start with the PM team and hoped that the activity of this team would provide inputs on what to study further. In the very beginning of the data enactment I only observed the weekly three-hour PM

team meetings. Gradually, I started to follow regular meetings between the team, or the project manager representing the team, and other actors. In addition to the weekly PM team meeting, I found it useful to follow three interfaces regularly. These were the project – project owner interface, the project – sub contractors interface, and the project – users interface. I also followed the project team's meetings with various user groups, extraordinary meetings with sub-contractors, and open meetings. Additionally, I participated in a wide specter of occasional activities, ranging from the monthly "salary beer" to the celebration of 150 years of train operation in Norway.

The most important arenas of observation have been the following:

- The weekly PM team meeting
- The monthly project manager – project owner meeting
- The monthly PM team – sub-contractors interface
- The quarterly project council meeting with project manager, project owner, the economy director of the base organization, and the central user representatives internally in the base organization, and externally

The PM team was engaged in several regular meetings in which I did not participate. These were, amongst others, meetings with the Railway Inspectorate, meetings with the top management of the main user, meetings with the top management of the main sub-contractor, meetings with head director of the base organization, and so forth and so on. These meetings would probably have been very interesting for me to participate in but I was not granted access. The project manager explained that 'the people on the other side of the table' would probably be uncomfortable with my presence as these meetings often were tense. Bringing in a stranger would make the dialogue more difficult (PM. GSM-R 01.03.04).

Interview. As already mentioned, I have also conducted interviews. My main interviewee was the project manager and I started out with him. Along with the meeting observations, his recommendations helped me select what other persons to interview. The participants of the core team, as well as the project owner were interviewed. I also had numerous more informal talks with the different user representatives and the sub-contractors. I have, however, not had access to conducting interviews with these people. Had such access been granted, the story might have been different and perhaps it would have been richer. One might speculate whether the story had been more accurate or complete if the opinion of the other actors in the GSM-R setting had been included. It would have been a triangulation of perspectives amongst the actors, whereby the story could be modified and validated (Hammersley and

Atkinson 1997). Due to lack of access, I had to settle for the story I have. Taking a process perspective, I hope that my observations managed to capture important actions and events in the GSM-R development.

4.3.3 Practicing interviews

I have explained how I decided on interviews as they are one of the most important sources of case study information (Yin 1994) and also seemed to be a proficient way to enact data in my case. When conducting the interviews, I was drawing upon the insights of Kvale (1996) and Hammersley and Atkinson (1997).

The process perspective regards data as enacted and the method as blameworthy of the results produced (Law and Urry 2004). Similar assumptions underpin socio-constructivist approaches to interviewing. I therefore found it adequate to bring in what appeared to be useful insights for conducting interviews developed by socio-constructionists. From a socio-constructivist point of view it may be claimed that interviews are value-laden tools where situation specific understandings are constructed. They are open and the interviewer and the participant are creating the text together (Kvale 1996, Hammersley and Atkinson 1997). I believe this approach is complementary to the basic assumptions of the process perspective of data being relationally created (Law and Urry 2004). For the interviews with the project manager only a very broad interview guide with open-ended questions was developed. I allowed myself to keep an open style. In line with the subject matter of my investigation and research approach I wanted the empirical world to reveal itself to me.

Interviews may take many forms. Most case study interviews are open (Yin 1994) and so were those I conducted. For mainly two reasons, my general interview style has been semi-structured (Kvale 1996). Such a style is appropriate when the aim is to construct data in dialogue with the participant, aiming at letting the world of the participant be presented (Kvale 1996). In the kind of research I have carried out, it has been recommended to ask open, non-directive questions. The structure of the interview should evolve during the interview. Still, to help me focus, it proved useful to develop a list of topics to be covered in advance of the interview (Hammersley and Atkinson 1997). Working with semi-structured, rather than structured, interviews reduces the need for preparation, and I found it challenging to follow up on questions and comments in these interviews that often took unexpected turns. I have, however, had the luxury of having an interviewee who committed to about twenty sessions. Therefore I could allow the interviews, both topic-wise and with regard to the degree of focus,

to evolve as the project progressed. I assumed this would help me stay familiar with how the project reality evolved.
Another reason for the interviews being open was my inability to ask the right questions as I lacked knowledge regarding this specific project and its reality. As I developed my picture of the case, I was able to ask more specified questions and regularly follow up on a few issues that emerged as important. This prevented me from drowning in data. When interviewing the other project participants, I found it necessary to be a bit more structured since I had only one shot with these actors. I did not want to risk having the conversation wander off, at least not too far.

The interviews with the project manager often started with me encouraging him in an unspecified way to talk about 'what's happening these days'. I often continued by asking him to tell me about what was going on with certain issues that I found interesting. So as not to put words in his mouth, I mostly used the term "please tell me about… ". Since these interviews were often conducted right after the weekly PM team meeting, I was able to follow up on issues, discussions, and comments from the meeting to learn more and to get clarifications. I found these interviews very useful and often used questions such as: "what happened in the meeting today? Did you make any decisions today? Can you give me examples of some of these decisions? In addition to these more immediate questions, I worked carefully with data to prepare for interviews. By this I mean that I have gone through my material a number of times during the period when interviews were conducted, to let reflections on the material emerge into questions. This work with the data provided the bases for further interviews. This is consistent with the data near way of working, as proposed by grounded theorists (Glaser and Strauss 1967). The length of the interviews with the project manager varied, but most of them lasted approximately 45 minutes. Also, a majority of the interviews were conducted at the project manager's office.

Yin (1994) stresses that key informants are important to the success of case studies. There is a pitfall, however, in becoming overly dependent on such. If my data collection had been based entirely on interviews, my dependence on the project manager's perspective might have been a problem. Having multiple sources of information, as I have, reduces such a problem (Yin 1994).

Through interviews one may develop insider reports, but their value are extensively debated. While some attach great value to insider reports, claiming that people know and tell their own story best, others warn about the biases of these reports. Along with Hammersley and Atkinson (1997), I believe that the insider accounts are valuable in two ways: for what they can

tell us about the phenomena they refer to, and for what they tell us about those who produced them. I presume that there is no reason to attach more or less value to insider reports than other accounts (Hammersley and Atkinson 1997). I never intended to use them to establish critiques (Derrida 1989, Alvesson and Skjöldberg 1994); only for what they could tell me directly.

There are several negative effects from interviews as verbal reports, such as biases, poor recall, and inaccurate articulation (Yin 1994). It must also be noted that the interview situation itself and the interviewer will always affect the answers and stories of the person being interviewed (Hammersley and Atkinson 1997 about the audience effect). By using multiple sources, these potential biases and pitfalls in the interview situations may be modified. Furthermore, as I have already mentioned, one can, by staying in the field over time and by developing rich descriptions, diminish unwanted inputs to the descriptions. I will come back to these issues when discussing the quality of my research.

The mediation of data has been through taping and writing. The project manager did not feel uneasy about being taped, therefore the interviews with him were recorded. I thought that recording the interviews with the persons I did not know well might cause an uneasy situation (Hammersley and Atkinson 1997). Therefore, during the one-time interviews, I made written notes.

3.4.3 Practicing observation

Inspired by ethnography I decided to combine the insider reports with direct observations. Since sources can enhance each other (Hammersley and Atkinson 1997), I presumed that combining these two sources of data collection would lead to rich descriptions. Observations lie at the heart of in-depth studies and are considered useful when investigating highly context-dependent phenomena and phenomena that are social, complex, and dynamic. Observations are important, especially when we know little of these phenomena. Additionally, observations enable ‘discoveries’ and rich descriptions (Hammersley and Atkinson 1997).

I chose to do direct participant observation but not to be an active participant. I had considered conducting full participant observations, as such observations allow for minor manipulation of conditions (Yin 1994) and may contribute to useful information. My aim was not, however, to test mechanisms of project evolvement, but rather to describe how a project evolves to generate propositions for further research. Accordingly, I decided to take the role of a participant observer (Hammersley and Atkinson 1997). I wanted to follow the PM team around to obtain information about the

development of the project. Yet, I did not want to interfere any more than just being a mere presence. The participant observer role seemed to take care of both of my wishes. My observations were mainly conducted at meetings. For hours I was quietly sitting at the back of the meeting room with my notebook and I tried not to interfere. Observations can be conducted both systematically and non-systematically, where the former is shaped more by the researcher's perspectives than the latter. I think my observations lay somewhere in the middle with regard to structure.

Reflecting on the structuring of the observations I also wondered about what to note and how to make the notes. It has been recommended to start out broadly, writing down 'everything' and then to narrow down what is recorded as one sees what becomes valuable to the story (Hammersley and Atkinson 1997). I chose this strategy. For about the first 6 months I wrote down almost every single word being shared in the meetings. As the direction of my research became clearer, I selected to follow some issues and leave others out. Still, for the purpose of thick descriptions and, going along with the process perspective's idea that one does not know what happens next, I chose to take extensive notes all along. Descriptions of emotions and artifacts are neither absent nor important in my field notes.

Hammersley and Atkinson (1997) propose that the important things to do when making field notes are to make them concrete and distinctive, by separating the participants' voices from the author's and account clearly for the actors involved, the time and the circumstances of the observations (Hammersley and Atkinson 1997). I have made an effort to develop field notes consistent with these principles. Also, I wondered about the question of when and how to develop field notes. It is recommended that one take notes during or quickly after observed action (Hammersley and Atkinson 1997). Since I had the role of participant observer and an open one, I had the opportunity to write notes while I was observing. From the observations of the meetings I have only handwritten notes. They were written in Norwegian and contain almost every word spoken as well as some descriptions of emotions that were displayed. I chose not to record the meetings, since the project manager assumed that the participants would be uncomfortable with being taped.

When doing observations, one must think about what is actually viewed and what may be inferred from these observations. I observed the actions of the PM team directly and noticed what they said about their actions in the past, present and future. During the meetings between the PM team and other actors the activities of the others were also observed. Through the dialogue between the participants of the team I obtained information about their perceptions of the actions of the team (and effects) and those of other actors.

The observations include a blend of the participants' sense making; of their statements regarding their actual and preferred actions and their perceptions of the actions of others.

In my investigation of the research questions posed I found the method of observation useful. It provided me with information that I would neither have dared nor thought to ask about. It also gave me the possibility of engaging in informal talks with persons that I would otherwise not have access to. Initially, the project manager of the GSM-R project and his base organization granted me access to the GSM-R project. The other involved parties in the GSM-R development were not at first approached. As I followed the project, it appeared difficult to conduct interviews with representatives of the other involved organizations for several reasons. One was practical limitation of my own capacity for enacting data. Another reason was more political, in that the actors who co-operated in the GSM-R project were, at the same time, competing and negotiating about GSM-R development and other issues. Finding myself in the role of a participant observer in forums where the different parties were present, enabled me to engage these actors in more informal conversations.

4.4 Working with data

In this section I will look into the issue of working with data. When I elaborated on how interviews and observations were conducted, I suggested that the data collected up to a certain point contributed to structure the further observations and interviews. This implies that some sort of analysis had been performed more or less consciously.

In line with the process perspective I have chosen not to regard data as if they could speak independently, being first collected (neutrally) and then decoded to deduce knowledge. I regard data collection more as selecting and fitting of data (Law and Urry 2004) and therefore suggest that data collection means enactment of data. What is indicated is that one needs to select some issues over others to produce an interesting and legitimate story (Law 2004). This means assuming that the processes of data collection and analysis are entwined, in the sense that they are ongoing simultaneously and that they feed into one another.

> "In ethnography the analysis of data is not a distinct stage of the research. (…) Formally, it starts to take shape in analytical notes and memoranda; informally, it is embodied in the ethnographer's ideas and hunches. And in these ways, to one degree or another, the

> analysis of data feeds into research design and data collection" (Hammersley and Atkinson 1997:205).

My data collection and analyses have not had the character of a stepwise and linear process where collection and analysis have been separated. It has been done continuously. When I started the data collection, I had developed an *open framework* for studying sense making. As I followed the project, the relational activities aimed at obtaining influence stood out as central. My research questions did not incorporate such issues and therefore I tried, at first, to overlook these activities. As time went by I was haunted by numerous questions associated with the relational work and I transformed my theoretical framework, research questions, and basic assumptions. By staying tuned to the empirical world and by reading up on various new theoretical perspectives, I changed my whole research project. At this point the writings of ANT intrigued me and these texts led me into the process theories that contributed to the development of my thesis.

Over and over, I have compared the knowledge produced through my analyses with real time observations and written material. Therefore, the process has been truly iterative in nature, moving back and forth between theory and data. This picture that was being painted was discussed with some of the project participants as it was taking form. A follow-up interview with the project manager was also conducted to discuss the story and its indications and to clarify central issues.

4.4.1 An attempt at focused sense making

After the most extensive data collection was completed, I tried to work more systematically with making sense of my data. I will provide a brief account of this work. Two fundamental sense-making activities are asking questions and making comparisons and I have only utilized various questioning techniques.

Different types of sensitizing questions have been used (Strauss and Corbin 1998). Such questions are useful when the aim is to gain oversight of a material. They can take the following forms: who are the actors here? What are the various actors doing? Why does a given activity seem to occur? At what time and to whom are actions directed? I worked my way back and forth in the material to identify the central themes to see if I could find patterns. When these seemed to emerge I tried to follow up on them but also kept my eyes open for unexpected turns since it is recommended that one lives with ambiguous analyses for some time (Hammersley and Atkinson 1997).

In the search for processes and variation in a material, theoretical questions are recommended (Strauss and Corbin 1998). Such questions were to some extent applied in the sense making. These are questions like how do actions and events change over time? What does actor A do to B? What does B do to A?

In the sense making I have used concepts and theoretical input to allow both selection of material to be enacted and to make sense of this material (Weick 1976, Hammersley and Atkinson 1997). As presented in Chapter 3, I chose to use three sensitizing concepts; connecting, heterogeneity and contingency, to form a backcloth for developing the story. The use of concepts always implies an implicit or explicit use of theory (Hall 2000). I have not forced a pre-defined overall framework on my data enactment and analysis. Still, I found different theoretical inputs useful to help me reflect. In the analytical work I have also tried to look for useful analytical concepts in the verbal expressions and actions of participants (Hammersley and Atkinson 1997).

Additionally, I found metaphors quite useful in the sense making of my material and I will provide one small example. When studying the project, I got the impression that, over time, it increased its authority in actions. The PM team seemed to exert authority to define direction of actions for organizations that one might presume to be more powerful than the team. I was puzzled by these observations and tried to work with them by applying the expression 'the tail wagging the dog'. Let us say, I thought, the project is a tail and the base organization is a dog. The dog and tail are attached and they can hardly be separated. The tail needs to be attached to the rest of the dog to have any effect. The function of the tail is as a signaling instrument that affects the actions of other actors. The project and the base organizations are attached, and the project is established to make transitions. The tail is inscribed with specific procedures of actions that others may act on. Angry dog: tail down, signalizing others to stay away. Happy dog: tail up signalizing to come close and cuddle the dog. When the dog is very happy or trying to achieve something, the tail moves from side to side. The tail is in itself a harmless part of the dog; it does, however, make others act in specific ways.

The GSM-R project was established to solve a certain task, and to do so it must signalize how various parties', such as sub-contractors', users', and base organizations' actions should be woven together for the system to be developed and implemented. The project is regarded, however, as a harmless task oriented unit without much formal power. Still, at times when the dog has not determined how the tail should act, it moves, and by moving, it engages others in actions. Through this moving and engaging others in acting, chains of actions can be generated. The tail just moves. The cat sees

the tail as something dangerous that it just has to catch and takes off from its blanket. The blanket lands on the floor and mum gets up from the sofa to pick it up in order to prevent the three year old from tripping. The project 'just' moves and the main user acts to secure its interests by proposing changes in functionality, leading the Technical Division to get involved in checking the propositions against formal regulations, and at the same time the sub-contractor gets involved to make sure it will receive more money if it is to alter the functional design. As I will indicate in Chapter 6-9, a number of such action chains appeared to evolve around the project and gradually lead the project to a position where it could act with extensive influence.

In the work to make sense of data, I have also tried to play with and combine words. One example is the concept of *narractivity*. Observing the project, I was amazed by its communicative activity where creation of narratives seemed essential. The narratives had different forms but some of them appeared to be consciously created to make others act in a certain ways. As I will describe in Chapter 6, I made several observations of how the project discussed what stories to tell the different actors to make them do this and that in different situations, and therefore I started playing with the concept of *narractivity.*

I have tried to describe some of the processes I have engaged in to reflect on the data I collected. My analytical work has not been ascribed to a specific method to understand the world 'out there', rather, the analytical work has been quite a messy process. I did not find computer programs for qualitative data treatment suitable for my material. I made attempts with discourse analysis (Potter and Wetherell 1992) and found it useful to identify the themes of the story, but I did not manage to develop a legitimate story through this activity. My most important analytical effort, I think, has been working through the empirical story over and over again, reading and reflecting and, not least of all, discussing it with colleagues, as well as with the project manager and a few of the other involved parties of the GSM-R development.

4.4.2 On aspiration – description or explanation

Following the GSM-R project, my aspiration has been to describe how the GSM-R technology took its form and was implemented as a composite effect of forces such as social, technical and political. I hope that by making this description I explain some of the factors that became important to the GSM-R development.

I have approached the project I studied from a process point of view. Process theorists tell stories of how things turn out in complex, social relations. They

illuminate how technologies and science participate in the social world, being shaped by it but also shapes this reality (Law 2004:13). Process theorists make thick descriptions of complex objects (Latour 2004, dialogue), not making stories or narratives. As I elaborated on in Chapter 3, thick descriptions are presumed to have explanatory power in the sense that they do not need explanations (Latour 2004*). The ideal is "to be attentive, to be concrete to states of affairs, to find the uniquely adequate account of a given situation" (Latour 2004*). This means that applying a process approach, one places more focus on studying X for what X is, rather than studying X as a mere case of Y.

How can explanations and descriptions be treated as the same? Process theorists work from the notion that we enact realities, and this principle goes for all actors and researchers. The GSM-R system becomes real because a number of resources enact one another to form the network of entities required to form the GSM-R system. It is assumed that once you are able to describe the connections that form the system, you have explained how the system comes into being (Latour 1989a). "No explanation is stronger or more powerful than providing connections among unrelated elements" (Latour 1989b*). The idea is that if networks extend themselves, they gradually increase the way they may be explained, as all networks are surrounded by their own frame of reference and way of referring. Through its growth, the network connects the explanatory resources around it and thus one could say that "actors are cleaning up their own mess" (Latour 1989b*). I have mostly aimed at descriptions, which in the terms of process theorists are also explanations.

4.4.3 The role of theory

Above, I have suggested that describing is also explaining and that this study is focused more on studying GSM-R at the bases of its own history than as a case of a specific theoretical principle (theoretical sampling). Along with this suggestion, I find it necessary to make a few comments on the role of theory in my study.

Theory has played a part in the enactment of data since presuppositions are required in empirical research (Felt 2002). In accordance with my inspiration from ethnography, a few theoretical outlines have been applied throughout the study in an open manner like Hammersley and Atkinson (1997) suggest. I have already accounted for how sensitizing concepts were found useful in the data collection. These concepts were related to the foreshadowed problems that emerged through my review of the project field. "Foreshadowed problems are the main endowment of a scientific thinker, and these problems are first revealed to the observer by his theoretical

studies" (Malinowski 1992:8-9, in Hammersley and Atkinson 1997). So, I started with some presuppositions but tried to be careful not to take the frames of reference away from the involved actors. I have tried to be open-minded and to investigate ambiguity to allow for unexpected patterns to emerge, rather than search for expected patterns deduced from theory (Hammersley and Atkinson 1997, Latour 2004). Looking for expected patterns would be a more theory driven research than what I have engaged in.

I think it is correct to say that empirical material has contributed most to the accounts I have developed, but that theories were also important. As it developed, the story guided the further data collection. What has been described as abduction (Alvesson and Skjöldberg 1994) resembles the process I engaged myself in. Abduction implies starting off from an empirical phenomenon of interest and then moving iteratively back and forth between application of theory to interpret the phenomenon, and the empirical world. The basis for abduction is interpreted empirical material – rather than un-interpreted material (if that exists). Inductions[30] developed from untouched material are not regarded as particularly meaningful (Whitehead 1929:4, in Alvesson and Skjöldberg 1994), because the potential of free fantasy controlled by coherence and logic is not included. The process of combining induction and deduction has to generate knowledge and has been said to resemble flying (Whitehead 1929:4, in Alvesson and Skjöldberg 1994). One starts on the ground, takes off into thin air of generalizations full of fantasy. Thereafter, one goes back to make new observations that are made sharp by rational interpretation. Thus, theory cannot be generated as mere distillation of empirical material. It must have a starting point: one of generalizations. Alvesson and Skjöldberg (1994) add that the flight of the research process is a long one and implies a number of landings in the empirical world.

I have accounted for the techniques I tried to use in making sense of my data, amongst others theoretically based reflections. As symbol systems, such as language, are important artifacts in knowledge construction (Hall

[30] Induction refers to the movement from observations to theory, making generalizations from one too many (Smith 1998). Despite the indications of induction in my research, I found the assumption that phenomena investigated under certain conditions will behave the same way difficult. To make such *inferences* one must presume a closed system and stability, which did not resemble the project reality I studied.

2000:16), the concepts I selected to use became influential on the reality I helped produce (Bruner 1997).

In short, I started this study reviewing research within the project management field. This reading was combined with numerous talks with project management practitioners. Through these activities, a pre-field understanding emerged and research themes were developed. When going into the field, I refined and altered the research themes. As the project management literature said little about what I thought I was observing, and I read up on other sources that seemed to bring insights to what I was studying. Through this reading the research questions of the thesis evolved. The combination of early empirical work on the three research questions and reading of process theoretical contributions, lead to the sensitizing concepts that I presented in Chapter 3. These three concepts appeared helpful when describing the phenomena of my field of interest. As patterns started to emerge in my descriptions, I did some eclectic reading to explore further the indicated phenomena. Along with this, I imply that I, throughout the thesis work, have been moving back and forth between theory and empery.

4.4.4 Text

All research is about production of text, in a broad sense. Throughout my thesis work I have produced various texts; from interviews and conversations to what became the written thesis. I will now reflect on three issues related to the latter text; the function of text, the question of authority in writing and reading of texts, and the issue of style.

I have been inspired by ethnography where texts are considered to be media, both for information about a phenomenon and for the perceptions and beliefs of the researcher (Hammersley and Atkinson 1997). There is a question of authority related to this; the question of whose voice is present in the text. Ethno-methodological texts vary from texts in which the researcher's voice is the only one present, to the post-modernistic texts where multiple voices are present. I have chosen to keep my voice present but also impart the voices of some of the actors in the form of extensive quotations. I believe citations make the voices of the actors transparent; that they enrich the text and make it more alive. Along with Kvale (1996) I believe we co-constructed the text.

The question of authority is not only about whose voices are included in the written text; it is also about the authority of the writer. The modernist line of thinking lays all authority with the authors. It is presumed that the reader of a text reads it in accordance with the intentions of the text's author. To a reader, the job is to find 'the real intention' of the author (Alvesson and

Skjöldberg 1994). With a more post-modernist reasoning, texts are open, social products of which the readers become co-producers. The sense made of text will change over time and space and according to the interpretive repertoire of the reader (Bruner 1997).

Texts can even be completely emancipated from their author. The intentions of the author are only placed amongst multiple intentions that are equally important. It has been stated that numerous forces lie within texts. Therefore, texts can take on new lives when divergent forces embedded in the text are revealed through deconstruction (Hargreaves 1996, Derrida 1989). Time and distance become unimportant and everything can flow together and be reconstructed (Castells 1999:370, about the hypertext reality). In accordance with the sense making approach applied here, texts are constructed the way they are read (Weick 1995:7). Any given translation emerges as a compound effect of the meeting between the text and actors and is translated through these meetings. In line with these reflections, texts are mediators that may generate unexpected actions[31]. Still, the text I have created is not totally free. When it was formed, choices were made. The future translations of the text are contingent upon these choices (Latour 2002).

Within process theory texts are like laboratories since they are created for experimentations (Latour 2002). To enable experimenting, the texts must be thick (Latour 2004). It is difficult to write thick descriptions in a way that makes them interesting to read. It is about describing complex matters in all their richness without losing the reader. Therefore, to make good descriptions, one needs to reflect on who the potential reader is. The contribution of my thesis is aimed at the project management field. The audience I had in mind when writing my thesis was fellow researchers within this field, but the audience might also include researchers of broader organizational sciences. I hope the language and level of complexity are appropriate for persons within these communities, for them to generate useful translations based on my story.

I have worked hard on writing and have tried to keep my language simple. I regard both the issues I investigate and the case that I have studied as complex. To handle all this complexity, I needed a simple style of writing and would not have managed such a multifaceted, messy, and fluid object, had I not stuck to straightforward questions and simple words. As I worked with the text, I tried to develop a few key sentences and paragraphs that

[31] 'It's a place for trials, experiments and simulations. Depending on what happens in it, there is or there is not an actor and there is or there is not a network being traced. And that depends entirely on the precise ways in which it is written – and every single new topic requires a new way to be handled by a text' (Latour 2004*).

would reveal the underlying logic of the story (Strauss and Corbin 1998), and I worked hard to be concrete. Over and over, I have been asking myself: ”What is my story again – what is the plot?” Then I have followed up with the question: What kind of data would I have if that is my plot? The next question has been: what data do I have? These questions helped me write the story. There is another reason for why the text of my thesis is kept simple: writing is about personal style, and I like simplicity and straightforwardness. As I worked with the thesis, the style gradually became more informal. I started out communicating in a rather formal and circumstantial manner. My impression is that the language of the GSM-R project and that of project literature in general, tend to be quite uncomplicated, and I might have been influenced by it.

4.4 Being good

Here, I will elaborate on two issues of being a good researcher, where the first has to do with the skills of the researcher, and the second with the behavior and intentions of the researcher.

4.5.1 Skills in research

Man tends to perceive that what he does is more demanding than when others do similar activities. So it seems to be for researchers working with case studies as well. As Yin (1994:55) puts it, “the demands of a case study on a person’s intellect, ego and emotions are far greater than those of any other research strategy”, due to the non-routine data collection. Yin (1994) goes on saying that a well-trained and experienced investigator is needed. I am not. The thesis work has provided an opportunity to develop some skills in and experience with such work. Yin (1994) emphasizes the importance of being good at asking questions, good at listening, as well as being adaptive and flexible. Moreover, the researcher should have a firm grasp of what is being studied and be unbiased by preconceived notions (Yin 1994). I have tried to improve my observations and interviews by reading various books on qualitative research (Denzin and Lincoln 2000 (the handbook qualitative research), Guba and Lincoln 1985, Glaser and Strauss 1967, Hammersley and Atkinson 1997, Kvale 1996, Strauss and Corbin 1998 and Yin 1994). I have tried to assimilate and accommodate insights of such contributions. Moreover, I have tried to be open and sensitive. Additionally, I have focused on being present in the setting when observing and interviewing and tried to reflect on how it is going.

4.5.2 Behavior and intentions in research

Doing longitudinal field research is a strange way of being involved with people and tasks. I have already accounted for how I tried to cope with form and degree of involvement as I worked with data inquiry (pt. 4.2.1). I will briefly reflect on a few issues related to ethics.

There are a few general rules of conduct related to ethical research behavior. It is, however, more than anything about being reflexive of ones own role and behavior in the meetings with others. One rule of thumb is about informed consent (Hammersley and Atkinson 1997). I started my study in JBV and the PM team. All other parties that came to be involved in this research were informed and asked to participate as they appeared on the scene. All actors studied were informed. Besides, they volunteered to participate. Hesitations about aspects of the research process, such as being taped, have, of course, been respected.

Another important issue considers not exploiting the actors studied (Hammersley and Atkinson 1997). I have made an effort to obtain information; yet, I found it important to respect that the participants of my study had a tight schedule. I believed it was essential not to spend more of their time than what was required to develop a thick description. When taking part in various settings, I have tried not to interfere (too) much.

When doing research, the issue of how data should be treated is a very important one. In my collection, presentation, and analysis of data I have made an effort to be polite, respectful, and truthful. I have tried to be conscious about what I have said when presenting my case in public, and tried not to give the actors away. I have also elaborated on the issue of anonymity. The case I have studied is quite special and public as far as contemporary Norwegian history and easy to trace. After thorough considerations, the project manager and I agreed on a description of the project in which the real names of the project and its base organization were displayed, but not those of the individuals involved. When citing members of the PM team I have used the letters (A-H). Moreover, we found it unnecessary to reveal the names of the other organizations, as these had not been asked directly to participate.

When I started this study, the project manager clarified my presence in the project with the various other involved parties and got an approval for this. Another reason for keeping their identities anonymous, was that the accounts did not seemed to be improved by displaying such information. Furthermore, before I started the inquiry I decided not to reveal sensitive information and had also determined to take caution not to hurt the involved parties by

publicly displaying more than required for telling the story. Possibly hurtful things have been left out.

The project manager and other participants of the PM team have read the whole story that came to be part of this thesis. I have tried to conduct my thesis work with general respect for actors and issues and with the best intentions.

4.6 Judging the quality of this study

In this chapter, I have tried to account for how my research process was conducted and why it was conducted this way. The character and quality of the propositions developed were conditional of how the research was conducted. I have already made several indications of how I tried to increase the quality of my study. Here I will follow up on these actions and reflections.

4.6.1 Production of realities

When quality of knowledge production is being discussed, the judgment of it often seems to be linked to the idea of objectivity. Objectivity is, at times, considered to be "a mark of authoritative knowledge" (Smith 1998:347). The term objectivity is then referring to "lack of bias or prejudice, that is independent of human evaluation" (Smith 1998:347). Considering objectivity this way implies maintaining that there is *one* objective reality out there. This reality can be mapped and controlled by separating facts from values. It is all a matter of cultivating the inquiry methods to avoid the epistemic fallacy of the interpretivist/constructivist approach. As I have worked on the sense making and knowledge construction, this understanding of objectivity is not productive for judging the research conducted here.

My point of departure is an acknowledgement of various methods leading to different and often divergent results. This fact can have several explanations. It could be that some methods are more proper or improved than others. A different explanation might be that methods are tools and different tools provide different results (i.e. the discussion of triangulation). Yet another explanation is that different perspectives provide different insights, because they place their emphasis on different parts of the picture. These explanations might not be wrong, but they do not incorporate an acknowledgement of methods that help make realities (Law and Urry 2004). The process perspective argues that it is not about holding different perspectives on the same, *the one*, reality. It is about how various multiple

and contested realities are produced (Law and Urry 2004). Amongst others, the social scientific activity produces the social reality. In this regard, the methods of social science cannot be seen as innocent. “They have effects, they make differences, they enact realities, and they can help into being what they also discover” (Law and Urry 2004:2). While this is acknowledged within social science, it is less accepted that “methods help to bring what it discovers into being” (Law and Urry 2004:3). Such a statement abolishes the notion that reality exists in itself. Reality is “produced and stabilized in interaction that is at the same time material and social” (Law and Urry 2004:5). This means that realities are continuously produced and social scientists are co-producers of realities (Law and Urry 2004).

4.6.2 Reliability and validity

Conducting research from the notion that we produce realities, the principles related to reliability and validity are difficult to apply, hence my main concerns have not been validity and reliability. I will, however, comment briefly on these issues.

The question of *reliability* is a difficult one. The positivist’s requirement that different researchers obtain equivalent results under the same conditions is not appropriate in my case. I look into what is specific for a certain case. The case evolves over time and so does my understanding of it. In the kind of research I conducted, reliability might have more to do with credibility than with repetition of research (Guba and Lincoln 1985). Collecting extensive data and accounting for reflections and choices that have been made during the research process may increase the credibility of a study (Guba and Lincoln 1985).

I have tried to reflect on the choices I have made. For a while I even tried to keep a diary of the happenings and choices but often found it hard to explain what the actors were actually displaying and my own interpretation of it. It seemed to be tangled together. Looking back, I truly believe, as is stated by process thinkers, that I enacted the social, but it was not always a conscious process. Additionally, as I said in relation to the ethical reflections, the story has been presented to participants of the GSM-R project. It has also been presented to fellow researchers and project practitioners and gives the impression of being credible and valuable. It seems to come together. Even the project manager has responded that it was an interesting and good description of important happenings and issues (PM. September 2005).

The question of *validity* deals with the extent to which an account is inherent to those things it is meant to account for (Maxwell 1996). Validity is not referring to application of a specific set of methods. Since I do not aim at

measuring concepts, identifying causal relations or make generalizations, parameters such as construct validity, internal and external validity becomes less relevant for judging the worthiness of research. Moreover, as validity in general, deals with the relation between an account and something outside the account (Maxwell 1996:41), it is problematic from a process approach. Process theorists presume that researchers cannot go outside an account, as making accounts is the same as enacting realities (Law and Urry 2004). The issues of validity and reliability are based in the belief that if things are true, they will hold, but from a process point of view, could it not be that settlements will cause representation (Latour 2002a)? If so, if my propositions hold they will start to prove true (Latour 2002a:12) by being enacted and appear in translated versions in the research of others.

There are several characteristics of my study that are often regarded to increase the quality of a study (often these refer to validity). Amongst other things, when inferences are developed at the bases of triangulations they are assumed to be more trustworthy than research without triangulation (Guba and Lincoln 1985). Both triangulating amongst sources in data enactment and triangulating the techniques for data construction and analysis are seen as valuable.

I have already touched upon the issue of multiple sources to verify the results one derives at (Yin 1994). To some extent, I have multiple sources of information. Various actors were involved in the meetings that were observed. Still, if the aim was increased validity, I should probably have interviewed more actors. Another argument favoring multiple sources is that it increases the probability of revealing aspects that would otherwise not been illuminated (Dubois and Gadde 2002). I believe this aspect is taken care of in my research through the interviews, but not at least of all through the observations. Additionally, I have accounted for how the techniques for data collection included document reading in the pre-field study, as well as interviews, observations and also informal talks. I have also explained how various techniques were applied in the analytical work with the data. I suggest my research process contains different triangulation processes that could contribute to increase the quality of the knowledge produced. The triangulating techniques and sources that I used were, however, more aimed at a rich description than validation of research.

As I hinted at when accounting for the choice of a longitudinal study, staying in the field over time, as I have done, has also been suggested to increase the validity of a study by among others Czarniawska-Jorges (1992) and Hammersley and Atkinson (1997). Additionally, I have tried to describe findings in terms of patterns (Weick 1995) and to test the implicit explanations in my descriptions against common sense and plausibility

(Weick 1995). Weick (1995) suggests that both these activities might increase the quality of an empirical investigation.

I think my study could be considered in regard to issues like: to what extent is it theoretically interesting to the project management field? To what extent are the selected aims fruitful and intriguing and to what extent were they fulfilled in appropriate manner? Is there an inherent logic between the questions asked, the study designed and the accounts made? Are the accounts enjoyable? Moreover, are the accounts trustworthy and read-worthy, and are they insightful?

4.6.3 Generalization

I will comment briefly on the issue of generalization. I have already accounted for how there are different forces embedded in a text that can take on new lives in new contexts and that everything can flow together and be reconstructed (Castells 1999). When regarding time as continuous, as the process perspective does, reality may develop in an infinite and random number of ways; this also applied to knowledge (Law 2004). This means that data have historicity and can live in the story that is told at a given point in time. This does not mean that the story might not be valuable across time and space, as anti-generalists would claim. It means that the story, once enacted, may travel in time and space and be enacted in translated versions elsewhere (Hernes 2006, forthcoming).

One issue is whether the fact that the story is translated over and over makes it less valuable. I think not. If it makes people act, it is a fact; it is just a different fact from what it was before (Hernes 2006, forthcoming). Leaving the idea of a possible stable reference point behind, the translated story is not less valuable. It is just a different version.

Generalization seems to be discussed with regard to developing and testing theory. My aim was never to test theory but to develop empirically based suggestions for further research within the project field. Additionally, I believe that the approach I have developed and the questions that emerged when following the project closely might be of more general character. The story told and the discussions of the research questions embrace empirical patterns that might be worth searching for in other investigations of projects.

4.6 A comment

In this chapter I have reflected on what it has meant to me to produce knowledge about projects as embedded and evolving phenomena.

My thesis work has been more like a dance than a design, working with improvising. I have tried to enable the creation of fresh insights. The process has been unpredictable and I was not able to define it clearly in advance. It has been filled with excitement and fright. The openness of the outcome makes it exiting. The anxiety of not ‘discovering’ anything, when having all eggs placed in one basket, has made it challenging.

To my knowledge, research departing from a process perspective is still rare within the project management research field. My research might seem quite unfamiliar or irrational to researchers within this field, as irrationality is a common accusation when a perspective has not yet gained many allies (Latour 2002a:259). Still, I hope the propositions I developed can trigger research within this field.

Chapter 5
Introducing the case, the GSM-R project

This section presents the GSM-R project that I have investigated empirically.

5.1 The GSM-R project

The project I have studied is related to Norwegian railroad system. The railroad is a well-established institution in Norway where 150 years of train operation was celebrated in 2004. The first railway line was built between Kristiania (Oslo) and Eidsvoll in 1854. Today the Norwegian railway network counts 4077 kilometers, 2807 bridges and 702 tunnels. The highest point is situated at Fagernut on the Bergen line, 1237 meters above sea level. At the beginning of this century the railroad experienced hard times, both due to enlarged road developments and liberalization of express bus operation, low fair airlines and a tragic train accident, related to the old signal system for train management. However, in 2003 and 2004 the railway has experienced increasing traffic. This development continued in 2005.

As I mentioned in Chapter 1, the study object of mine has been a project that develops an emergency communication system for the railroad and it is labeled the GSM-R project. GSM is the acronym of Global System of Mobil communication, which is used in 200 countries and it is the standard system in Europe. 'R' indicates the rail specific functionalities. Thirty-two countries, amongst them Norway, have signed an agreement on developing a GSM-R system within few years, and they all develop systems based on an EC defined platform for rail communication. Thus, the GSM-R project was established in accordance with requirements that were imposed on the railroad system for handling train management in general and more specifically, emergency communication. The project started in 2002 and it is still running.

5.1.1 The objective, task and process at broad

The *overall objective* of the GSM-R project is to facilitate safe and efficient communication for the Norwegian railroad. Aims are also to reduce the total number of communication systems, facilitate more efficient operation, as well as to provide new functions, services and digital technology for railway operation. The idea is that all the train traffic in Norway will be centrally managed from this operation unit. The users of the GSM-R system is and will be everybody involved in train operation in Norway, meaning different

firms operating trains and those involved in traffic management in the base organization of the project.

At broad, the *task* of the project is to establish the GSM-R, which implies developing a full coverage rail specific mobile net along most of Norway's railroad network. In the GSM-R radio signals are transferred through radio lines and fiber cables, via a base station, and thereby the trains and the operation management unit can communicate. To build up this GSM-R mobile net the project had to develop the technical units and the electronic device along the railway lines, in the trains, and at the train management operation centers. More specifically, the project establishes (develops and installs) the GSM-R system in tunnels and constructs radio base stations, in total approximately 480 base stations have been built. Each base station consists of a radio mast about 18-45 meters tall and an eight square meters large cabin for technical units. In total the project will build 700 installations, including installations for radio signal transmission in 600 tunnels. To develop the system the project also had to provide the required system for electricity transmission.

In order to build the GSM-R system, system design and radio planning have been required as well as design and development of hardware and software telecom solutions. Moreover, the project had to plan and conduct severe testing procedures for the system to be implemented. The project has also had to work with expropriation of property to build the base stations and it has conducted extensive construction work to develop these base stations. At last, it also came to be the task of the GSM-R project to establish the organizational unit to operate and supervise the GSM-R net, the OPM centre. This operative unit will remain a permanent unit owned by the base organization of the project after the project is terminated. Today the OPM centre employs more or less forty people. The GSM-R project has provided the infrastructure and the main procedures required for operation of this centre.

When starting off, the expected *transition* to be created by the project is likely to imply alteration of work routines and communication patterns for and between those who drive trains, those who supervise the train traffic and those who provide system service. All these parties had to acquire new competence in length of the project. In accordance with this, another important aspect of the project has been the training of various individuals that will be affected by the GSM-R implementation.

The GSM-R project is financed over the national state budget and its budget estimate is on more than 280.000.000 US Dollars or 1.7 billion NOK. Out of this money, 550 million NOK. were provided in the state budget of 2003-and

2004. The rest of the money was to be financed in the period 2005 – 2006/7. The first production phase of the project was running from summer 2003 through December 2004. The second phase has been started and will carry on through out 2006. The first phase consisted of developing the system and establishing it at the railway lines that did not previously have a radio communication system[32]. The second phase will establish the GSM-R system for the remaining 60% of the railway net and it includes a transition from the existing system to the GSM-R system. This transition is to take place without disturbing the train traffic and is regarded as a very demanding procedure.

On behalf of the Norwegian Government (more specifically the Ministry of Transportation and Communication) the Norwegian National Rail Administration (Jernbaneverket), hereafter JBV, manages this project. Whilst the core project is seated at the construction unit of JBV, reporting to the head of Infrastructure construction works, it is actually state owned. The project is one of many projects underlying this unit, running in parallel amongst others with another major construction project, the Sandvika-Asker project.

The core project[33] is organized as a matrix project and it consists of forty-seven people, where seven of these are in the PM team. Each of the PM team members are said to hold responsibility of one of the core tasks/functions of the project and most of them hold responsibility for an organizational sub-unit of the project, employing a few people. Most of the participants of the GSM-R project are temporary hired and their working hours should be delivered to the GSM-R project only.

The construction work of the project has been conducted in difficult terrain, in variable weather conditions and along railway lines in use also inside tunnels. In accordance with these conditions safety issues have been extensively highlighted through out the project. Another important aspect of the project has been the environmental issues related to the construction work and building relatively permanent constructions also in nature reserves.

[32] Before the GSM-R system is completed and implemented (2007), about 60% of the Norwegian railroad net is served by the old analogue train radio whereas public network has covered the remaining 40%. Only a few out of the total number of 600 tunnels along the railway net have radio coverage before GSM-R is implemented.

[33] The term 'the core project' is here referring to the PM team and the sub-teams of the project, employed by JBV. The sub-contractors and others involved in the GSM-R development are not included in this term.

5.1.2 Brief description of the project management system in GSM-R

The project management system of the GSM-R project appears to be quite traditional in form, including what is stated as important tools for controlling project processes. The project has a steering document that includes both project charter, objectives on time, cost and quality, and also matrixes for distribution of responsibility and authority. Moreover, different activities have been implemented to manage and control the project. Some of the important activities seem to be the weekly PM team meeting, the weekly meeting with the main contractor and the PM team, the monthly meeting between the PM team and the sub-contractors, the project council meeting each quarter of a year, and not at least the monthly report meetings between the project manager and the head of the JBV Infrastructure construction unit, representing the project owners.

According to the project manager, the project owner and the director of project steering the project management systems in JBV are both functional and efficient. In regard to the information provided it seems reasonable to believe that the GSM-R project is run in accordance with project management norms of JBV and in efficient manner as the project management systems lays out the premises for. In 2005 the project was object of an external revision that concluded that the project management systems and the deployment of these were in accordance with established best practices of the field.

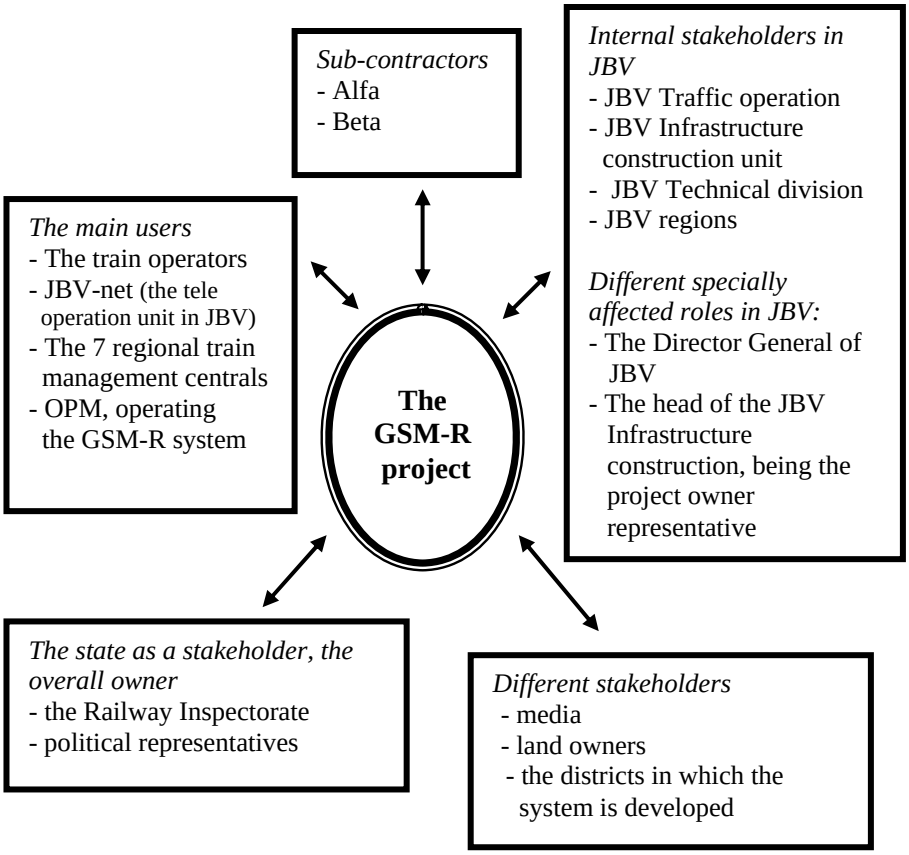
5.2 Different actors related to the GSM-R project

Here I will present the important units to which the project is related.

As will become more clear when presenting the data, (a) the political stakeholders, mainly represented by the Railway Inspectorate[34], (b) Alfa from the sub-contractor side, (c) Gamma representing the users and (d) the project owner side seem to be significant actors in the story here told.

[34] The Norwegian Railway Inspectorate is referred to in the following ways in the story; 'the Railway Inspectorate' or the Inspectorate.

Fig. 1. Presentation of the GSM-R project and some of the actors involved in the GSM-R development.



5.2.1 The Norwegian Railway Inspectorate, Jernbanetilsynet

The Norwegian Railway Inspectorate is an agency under the authority of the Ministry of Transport and Communications and it is financed over the national budget. The Railway Inspectorate is to be an independent state-owned body that practices control and supervisory authority for rail traffic. The main effort of this inspectorate is dedicated to ensuring rail traffic to be operated in a safe and appropriate manner and in the best interests of passengers, the rail company employees and the general public (from their home page, 2005). The Railway Inspectorate acts to make legislations and regulations, supervision of activity and by awarding licenses for rail activity. With regard to rail activity, this ministry governs the following companies: the Norwegian National Rail Administration, NSB AS, Flytoget AS, Malmtrafikk AS, CargoNet AS, Ofotbanen AS.

The role of the Railway Inspectorate, with regard to the GSM-R project, is to approve the system before it can be put into use. Since the communication systems in the railroads not were in accordance with regulatory demands, the Railway Inspectorate also set the time limits for when the GSM-R system should be internalized.

5.2.2 The Norwegian National Rail Administration, JBV

JBV is the national railway authority in Norway. It was formed in 1996, along with NSB BA, in length of splitting up the former NSB. Until 1999, JBV and NSB BA shared the same chief executive and board. JBV is on behalf of the Ministry of Transport and Communication, holding the responsibility of managing the national railway network. JBV claims responsibility for developing and operating a rail network that meets the requirements of society and the market. It is regulating the public rail network and planning of the rail sector. Moreover, it develops and maintains the railway stations and terminals, as well as works with timetabling and traffic management. These activities are based on public funding**,** determined annually by the Parliament, as part of the Norwegian Transport Plan.

As already mentioned, JBV possesses the owner role of the GSM-R project and it will be the owner of the GSM-R system. Moreover, JBV will own and operate the OPM centre that has been built by the project. The project owner relation is taken care of by the head of JBV Infrastructure construction unit. This unit is one amongst two main divisions of JBV[35], and it holds the responsibility of all project management processes in JBV, from planning to implementation. JBV have conducted construction projects for more than 150 years and also at the present they organize much of their work in projects. Last year the construction unit had budget for about 1,7 billon nok. and employed about 350 people. As I will describe in the following chapters, the project related itself to various actors within JBV, and amongst these the Traffic operation and the Technical division (that is part on the Infrastructure construction unit) appeared as central. This division is responsible for production of technical specifications and regulations in JBV. This unit should be responsible for providing the technical premises for GSM-R as well as approving the technical design in regard to technical regulations. There are strict rules related to the train operation itself and the infrastructure for train operation (construction and maintenance). In cases where the project needs clarifications of specifications or to evade the regulations, it is the task of the technical division to work out these specifications.

[35] The two divisions of JBV are the Infrastructure Construction unit, and the Traffic division.

The main responsibilities of the Traffic operation are train traffic management and timetabling. The GSM-R system wills their new system of communication in the train management, meaning that the employees need to learn how to use new equipment and also alter their existing routines of operation.

5.2.3 The sub-contractors, Alfa and Beta

The GSM-R project has two sub-contractors, where the main one is Alfa. Alfa is the business unit of the NN, which is part of a multi-national company consisting of more than 400 000 employees in more than 190 countries. In Norway NN is one of the major actors within electronics, and has 3400 employees and annual sales of about eight billion NOK. Alfa claims (on its website) that it is one of the world's leading suppliers of end-to-end solutions for voice, data, and mobile networks. Moreover, Alfa has gathered experiences concerning rail traction, signaling, and control for more than a century. They offer chipsets, terminals, and complete network infrastructures as well as software solutions for intelligent networks, for GSM mobile radio systems.

The GSM-R project also has a sub-contractor for the construction work, Beta. Beta is a construction company, owned by MM, a large, international entrepreneur in building and construction work. The core competence of Beta lies within project and logistics management within the construction of logistics for telecom and installations. In the GSM-R project Beta employs more than 200 people from more than ten different sub-contractors.

5.2.4 Different actors in the broader frame of the project

The users of the GSM-R system are, as I have mentioned, the various train operating companies in Norway. The train operating companies are NSB AB, the Cargonet, the Airport Express train and the trains that JBV itself operates in order to conduct maintenance tasks. The main one I have labeled Gamma.

In addition to the owners, sub-contractors and the users, the project is part of numerous long-term and short-term relations, both public and non-public and which varies in regard to formality. Amongst others, the project is related to both central and local politicians speaking in favor or disfavor of the system, as there have been discussions regarding the funding of the project, what the system should include of functionality and where the project should be allowed to place its installations. The project is also related to land owners of which the project acquires land or in other ways affect by

its construction work. In addition the project is related to environmentalists that engage themselves concerning construction work in national parks and other vulnerable areas. My data also shows how the project is related to media, as the project seems to inform and communicate strategically through media as well as to show awareness of the effect of positive and negative articles about the project in media. Here, I have chosen only to describe those relations I assume are significant in the date and the story here to be told.

5.3 The project history – main events in chronological order

I have indicated that the Norwegian railroad system, due to competition, experienced difficult times at the beginning of this century. The situation was compounded by a tragic accident that JBV was partly held responsible for. JBV was said to have neglected safety aspects and the Railway Inspectorate gave them a number of orderings, amongst these building a new communication system. The main events of the project are presented under, in chronological order.

- In 1995 a common European agreement about GSM-R was signed. Along with 31 other countries Norway assigned to develop GSM-R within the next few years. The head director of JBV signed a Memorandum of Understanding for GSM-R development in Europe.

- The Norwegian Railway Inspectorate established the dispensations for how long trains could be operated without a communication system or with only the old radio communication system in use. Parts of the railway lines did not have any communication system at while other parts had an inefficient radio communication system. In the same period the task to build, maintain and operate the GSM-R system was given to JBV, with the strategy to have Delta (the telecommunication unit of JBV) actually build it on behalf of JBV. A project group was established and the project was preparing for system development and construction work.

- The Ministry took Delta under control and the director had to leave, subsequently the project was put on hold. Discussions about whether to withdraw the license from Delta and give it others, or just terminate the GSM-R construction, were carried out. It was also

debated whether one needed both the emergency communication project Tetera and the GSM-R or not[36].

- In December 2002 it was decided to continue the GSM-R project. The license of the GSM-R frequency was placed in JBV, and the former project organization of Delta was transferred to JBV. 200 mill. NOK. were provided over the national state budget, and a new project manager was appointed.

- In summer 2003 contracts with Alfa and Beta were signed. Later the contract of Beta was transported to Alfa to handle.

- 31.12.03 the first milestone, the GSM-R development at Bodø-Rognan, was to be completed. However the milestone was reset to 01.04.03.

- The milestone of 01.04.04 was delayed until 15.05.04, and only JBV started using the system, while Gamma waited two more weeks before implementing the system.

- The milestone of 01.10.04 proved difficult to reach and the project was rescaled and the milestones were redefined.

- 01.12.04; 40 % of the railway lines had implemented GSM-R. These were the lines that did not have any emergency communication initially. According to the Railway Inspectorates these lines had to have GSM-R by 31.12.04. This milestone was celebrated as a large and very important achievement in the GSM-R development.

- During 2005 GSM-R was implemented on three railway lines; Flåmsbanen, Østre linje and Gjøvikbanen. Additionally, numerous system functionalities were completed and implemented.

- In 2006 the remaining parts of the GSM-R development in Norway are to be completed.

[36] This is further explained in Chapter 6.

Chapter 6
A Project story

When working with the data a story emerged and I was intrigued by it. I will present it here to introduce how the GSM-R project developed. This story is one amongst other stories that could have been enacted, but from the perspective I have taken, I believe it is an appropriate and relevant illustration of how this project evolved. The story is loose in form to capture the richness of the project's development. In accordance with my research questions some things are more important than others and therefore comments on events worth noticing have been added. These comments are presented in italics.

The total time perspective of the story is from 2002 to 2005, with emphasis on the period from December 2003 to autumn 2004. Emphasize was placed on this period of time as Weick (1995) argues to select occasions where extensive sense making is assumed to occur. Previous studies have pointed to how important restructurings of project processes happens as deliveries of the project are to be completed (Kræmmergaard 2000). Major deliveries were planned carried out during this period. As I expected extensive sense making activity in accordance with these, I assumed it to be a fruitful period to follow the project in order to understand how projects evolve.

Following the project I found that it engaged in a number of noteworthy activities, especially during early spring of 2004. This was a period when a variety of different forces played themselves out and made it hard for the project to stay alive. Moreover, it was an intense work period, both with regard to the actual production hours of the project and the development work conducted to create the technical solution. The first milestone was to be delivered during this period, and the further funding was also to be decided on in the governmental budgeting process this spring (2004). Failing the first milestone delivery would be quite devastating with regard to further funding of the project, and thus for its future existence. Additionally, one assumed that termination of the project would hurt the reputation and status of the base organization. As the milestone approached, the project had great problems making the delivery; the life of the project was at stake and it acted to keep itself afloat from day to day. In the long run, these actions seemed to contribute to positioning the project strategically as an influential actor, and therefore I allow more space to the description of spring 2004 than the rest of the period.

Introduction

In 1995, Norway signed a common European agreement about developing GSM-R. Shortly after that the Norwegian Railway Inspectorate established the dispensations for how long trains could be operated using only the old radio communication system. During the same period the task to build, maintain, and operate the GSM-R system was given to JBV[37], with the strategy to have Delta actually build it. Delta was the telecom unit of JBV, transformed to a joint-stock company to be capitalized in the telecom market and thereby contribute to the financing of the GSM-R. However, due to suspicion of economic violation it was placed under the supervision of the Ministry of Transportation and Communication in 2002. The project was put on hold for a while and heated discussions arose regarding the future life of the project, making the destiny of the system quite uncertain. Different interests were voiced, amongst others questioning the need for the system and its actual use. Some spoke in favor of establishing the planned emergency communications system, Tetra[38], for the emergency numbers, while others suggested combining the two systems. Because of this situation JBV invested extensive energy in explicating that while Tetra is an emergency communication system, GSM-R is a train management system as well as an emergency communication system. They explained how the emergency numbers require functionalities not found in GSM-R and how the GSM-R system required functionalities that the emergency numbers could not use. They insisted that the two systems could not be combined since their uses required different things. JBV pointed out that if one of the systems were to be prioritized at the expense of the other, down-prioritizing GSM-R would in, accordance with the EC agreement, imply a major flaw in expectations.

Above, it was indicated how the GSM-R project started out being highly contested. It was also revealed that the future base organization of the project applied strategic communication to take care of its own interests. It wanted this project, both in the sense that it wanted it to be realized and wanted the money and prestige connected with being in charge of constructing it. It did not want to risk that other organizations, which might not know and understand the railway, would build a system it could not live with. Moreover, it would not risk being undermined by interests of the Tetra users. Therefore, JBV translated the idea of the system into statements about what the system was and was not and used these to compare and contrast the

[37] As I described in Chapter 5, JBV or the Norwegian National Rail Administration is the project owner that also will be referred to as the base organization.

[38] Tetra is a project established to develop an emergency communication system for the emergency numbers. It was in the planning phase when the GSM-R project started up. These days it is in the process of evaluating tenders.

GSM-R system to other systems. To avoid that the two projects were merged it also pointed to what the emergency numbers needed that the GSM-R was not designed for and what the train managers needed that Tetra was not designed for. It was added that design had been completed, making it difficult to reverse the process to include the requested functionality of the Tetra users.

The heated discussions regarding the GSM-R system's destiny went on until Parliament decided that the project should be continued. The other emergency communication project was not granted money and has since then been alive only as a potential development in the future. When debating the destiny of GSM-R, it was also discussed what organizations should be in charge of it, were it decided to be continued. Parliament assigned JBV to take the role as project owner and to maintain the PM team established in Delta, transferring it to JBV January 2003. A month later, the project manager was appointed and more people were hired in. The PM team was roughly organized and started preparing for construction work and system design.

An early strategic move

At the restart of the project there were specific premises laid out for the technical task, while little was said about how the system should be run. As Delta was taken out of operation, the project was left without a unit to operate the system and had to work with both system development and establishment of the operation unit as parallel processes. According to the team members, it would have been more beneficial if the operation unit had been established first and then could have been involved in the emerging technical solution. The parallel structure emerged due to lack of time (PM. 19.02.04). The base organization seemed to take for granted that the best way to operate the system, given the current situation of Delta, would be to distribute the responsibility amongst the seven regions of JBV. The PM team found it difficult to implement the system with seven interfaces and therefore approached JBV's top-management to establish one centralized unit, the OPM.

As the idea of OPM was enacted by top-management there seemed to be a need to have an organizational unit that could own and control the OPM and thus the idea of JBV-net sprang to life. JBV-net was to be an organizational unit that would handle all telecom related matters. At this point, the PM team was proactive in the discussion between OPM and JBV-net. Over time, an idea emerged from these discussions on how the development of GSM-R was to be conducted by the project on behalf of JBV construction. When the system was implemented it should be handed over to OPM for operation. OPM was to be supervised and controlled by JBV-net. This GSM-R

development layout was done in spring 2003 and JBV-net has since then grown into a strong organizational unit. These days, it is also taking part in the tender of Alfa for the Tetra development. If this tender is accepted, JBV-net and OPM will be in charge of operating the communication system for the emergency institutions.

Once the decision to establish the OPM unit was made, a major discussion regarding its localization evolved. The project believed the best solution would be to place it in the capitol, and it would also ease the work with its supervision and keep the costs down, as the project was situated in the capitol. However, OPM was placed in a city in the North. The PM team members explained how the localization decision was connected with the centralization – decentralization debate in Parliament, hence the PM team stood no chance.

I find it worth noting how the description indicated, that despite the technical task being perceived as clear, the framing conditions, and future life of the system, were regarded as ambiguous. It was not specified who the future operators would be and how the various actors participating in development, implementation, and operation were related. It seemed that how the system should be implemented and operated was an emerging process of negotiation.

Aiming at reducing complexity of implementations the PM team initiated discussions about operation, which lead to major developments of the base organization, such as reorganizing existing entities as well as establishment of new organizational entities. These base organization developments had not been intended as the project started.

Although not central to this story, I find the possible consequences of JBV-net's participation in Alfa's tender noteworthy. One might, according to spokespersons for JBV, hypothesize that if JBV-net were to operate Tetra, it would be removed from JBV and re-established as a public organization, handling these matters on behalf of the Ministry of Transportation and Communication. I will refrain from speculating on what implications such a development might have for the other state owned telecom company, but note that organizational changes in JBV internally that were initiated by the GSM-R project, has a potential for generating influential actors in the Norwegian public organizing telecom matters.

We have seen how the PM team both initiated decision processes that lay outside its mandate and worked to influence such processes, and also the team seemed to have had a major influence on the development of OPM. However, as the discussion on OPM's localization became tied in with the

more general debate of centralization the position of the PM team was weakened.

What I find important, however, is how the decision of OPM opened up possibilities for further developments of the system and the project organization. It will be indicated later in the story that the establishment of OPM contributed to enlarging the action space for the project over time as it emerged into materializing the project's ideas and was inscribed with the project's intentions for future action patterns.

Evolving structure

When planned, the GSM-R development had been divided into two phases, but only funding for the first phase was granted at project start-up. Phase two of construction work was planned, but would only be financed if the developments of phase one proved successful. This grant was to be negotiated in the governmental budgeting process of spring 2004.

The project's time frame was structured according to when the various dispensations[39] were running out. These varied across the different lines; thus the project started with the lines which dispensations were the shortest. Time wise, this means that the project plans and structuring were made to match the point in time when the dispensations expired. Each milestone implied a situation where GSM-R was to be implemented at a certain railway line. In order to implement the system, it had to be tested and verified by the sub-contractors and the project itself. If results were satisfactory, the project could present the system verifications for the Railway Inspectorate and apply to get the system accepted as implemented. The Inspectorate held the authority to decide whether the system was sufficiently satisfying to be implemented. Their evaluation criteria were embedded in the system specifications, with the issues of reliability and safety being the overall concerns. The project knew that delayed delivery implied that both the owner of the railway, JBV, and the users of the railway, the train operating companies, would have to apply for operating train traffic without the GSM-R system.

The Minister of Transportation and Communication officially started off the project in May 2003. Extensive activity was during this period dedicated to the development of tenders for system design and construction, and also to negotiating contracts with Alfa and Beta. These contracts were signed in the summer 2003. System design, radio planning, and hardware and software development characterized this period. Members of the prior Delta project

[39] These were dispensations for train operation without GSM-R and the Railway Inspectorate were in charge of these.

group made up the PM team along with new people with specific competences. The team was put together to be a high performance team in the GSM-R construction and started consolidating itself.

Guided by a functional logic in general and by project management models more specifically, the team started to develop structures for task solving processes. The team participants worked with questions like: given the nature of the task 'what operations do we need to undertake and what kind of competence is required to do so?' The attitude expressed in the team was that it was "just to work according to spec." (PM. looking back 19.02.04). Technically speaking, the project appeared as quite well defined, being based on common European standards for such communication, but the limited time at hand for production was regarded as a major challenge. At the base of the team's own perceptions regarding its task and the logical way of solving it, the PM team worked with structuring itself to exploit its own knowledge. It organized itself in different sub-units where each of these were to take care of the presumed steps in the task solving.

Looking at structure, it has been indicated how the structure time-wise appeared to have been given quite early in the project construction, as the pace of the deliveries was connected with expiry of dispensations. In the early hours, an organizing model of the project emerged in accordance with the team's perceptions of the task's nature. It was rarely considered how the nature of the task might show itself to be different, or that it could change over time, nor that knowledge might develop and affect the task and task solving process. Task seemed clear and shared and both task and knowledge appeared as stable entities.

In the autumn of 2003 the production, both in construction works and system development, materialized and the atmosphere appeared positive and eager with regard to task solving. The PM team worked towards the first milestone set at 31.12.03. As the production proved to be a bit more problematic than first assumed, the team not only worked based on the logic of information – decision – action, but also on the idea of 'just act and see what happens'. The project manager explained that they sometimes acted too fast because of perceived time pressure.

> "We just start acting at the background of how things are and then they do not turn out the way they were assumed or the way we wanted them to. At times, we arrange meetings to talk and not at least to listen to their complaints. We listen to their anger and also discuss what to do next. So it goes on, hm…" (PM. 15.04.04, talking about first initial delivery).

It appears, from the above, that the perceived lack of time forced the project to act without having the sufficient experience to determine where these actions most likely would lead them. The project started out as an abstract entity, an idea vaguely embedded in a charter and some premises, but with few characteristics and experiences. As the PM team acted to see what would happen it laid the ground for being endowed with competences. Through this task solving activity of 'act – and make sense of it (see what happens)', a journey of an actor in the making was provoked. I pointed out that the project held little knowledge of operational and relational actions and limited ability to predict the outcome of its activity. Later I will describe how the PM team came to develop extensive competence in both these activities.

Bending space for coping with time pressure

When starting up the second time, there were two central perceptions of the project leading it to take action. First, the GSM-R project started out "way beyond schedule". The deadlines were initially perceived as tight. As discussions about its fate went on, time was stolen from the project's deadlines for implementation. Regarded as limited in the first place, these deadlines were now seen as extremely difficult to meet and the project feared a temporary stop in all train traffic on the various lines where the system was to be implemented. 'More than anything we did not have time' (A. 03.03.04). Second, the PM team felt that a number of actors were contesting the project's existence and that its future was uncertain. It anticipated the need to be proactive in creating good relations with various actors, 'to get things done' (PM. 15.03.04). Therefore the PM team started mapping what might be presumed to be influential actors with regard to its task and it took action to establish active relations with these actors.

It appeared to the PM team that the Railway Inspectorate was a very important actor and therefore it requested responsibility for the interaction with the Inspectorate. The PM team argued efficiency of being closest to the action and therefore having first-hand knowledge. Additionally, it emphasized how it would be timesaving. JBV's routines indicate that such matters belong at the top management level, and the GSM-R project is, so far, the only project that has handled such matters itself. In addition to claiming responsibility for the interaction with the Inspectorate, the PM team voiced that it would be happy to handle various deliberations and mapping tasks presumed required for making decisions related to the GSM-R development. The project owner and PM team seemed to reach an agreement on this being an efficient way to work. Therefore, the PM team was, from the beginning, positioned as the unit gathering and evaluating information when considering decisions of the GSM-R.

Here I have described the PM team's perceptions of various forces contesting its existence and activity, and how the PM team took action to obtain control. It identified central participants and started interacting with these. The argument favoring this activity was that it would save time. In my data, the most recurring statement was by far about lack of time, and the project seemed to be able to use this argument as a major force when negotiating the exercise of influence.

Through this activity where different PM team members approached actors and advocated that the team possessed skills invaluable for making good decisions, the team bent space around itself. As the story evolves, it will be revealed how this offer to do the deliberation work, previous to decision-making seemed to contribute to the enactment of conclusive decision authority over time.

Throughout 2003 the project manager and others from the PM team proactively showed up in different forums arguing for it's own participation in such. The team members engaged in relational activity to confirm the team's existence and to 'create an arm's length of space' as the project manager expressed it (PM. 19.02.04). Moreover, the project participants felt that the decision makers in charge of the necessary decisions did not act fast enough "to get things done" (PM 19.02.04, reflecting on what happened at the beginning of the project). To become part of decision processes, the PM team mainly advocated that since it was so special in JBV and ascribed with such unique competency, it should be involved when such decisions were made, to obtain the best decision.

The story will disclose how the positioning of the PM team in various deliberation and decision processes, paved the way for the project becoming a strong actor. As we will see, the team was not only expected to map the information required for decisions, but also make quite strong suggestions regarding its preferred decisions although these were vague at first.

In the autumn of 2003, the PM team spent much energy talking with different user groups, among others representatives of the seven JBV regions, to obtain required access to tracks during the construction period. They also attempted to cooperate in implementing the work, as the regions would be among the users of the system. It proved difficult to obtain the required goodwill and the PM team explained that this might be due to the GSM-R project's special position, in the sense that it had come sliding into JBV from the side and soon had acquired 770 million NOK. Since the economical frames of the base organization were not increased by much the

GSM-R development meant budget cuts elsewhere in the organization. 'The regions were jealous of us' (PM. 20.02.04).

People from the regions seemed to have little faith in all those coming in from the outside, who did not know the railway history and culture, and the project manager expressed that the PM team was 'regarded as different – and maybe a little strange' (PM. 08.03.04). He presumed this was due to the team's rare combination of railway language and telecom language, making it difficult for others in JBV to understand. Other actors seemed to lack understanding of their task and the methods they developed as they worked with the task. The project manager stated; "we are not doing it the JBV way" (PM. 20.02.04). As the PM team learnt through trial and error, it did not quite succeed in making other stakeholders understand their mission (A. 27.02.04). This lack of understanding and faith was, according to the project manager, created by the effort made to discover GSM-R project mistakes.

> 'The regions we are building in say that we are not asking for permission to operate on the railway in time, that we are moving too fast and also that we are not applying, soon enough, for making deviations from the regulations' (PM. 15.04.04).

In short, the regions complained that the project was moving too fast and cutting corners. The project manager acknowledged that this was actually true in many ways (15.04.04). To work with the divergent perspectives and rules of conduct between the region representatives and the PM team, the latter initiated a number of meetings.

> "We hold a number of meetings where they can explain how they see it and talk about their perspectives, and where we show understanding. We try to plan early in advance and together with the regions, but then it happens that we have to just follow our plan" (PM. 15.04.04).

The above indicates that when it came to system implementation, important actors had limited trust in the project's alternative way of doing things and that the project had to work with the relationship to help stabilize the technical solution. Additionally, it is worth noting how the project alternates between involving the regions and just going their own way, in parallel sessions.

On how to stay afloat

The first milestone (31.12.03) required a huge amount of work, and late in the autumn of 2003 the project activity was quite frenetic; the project worked day and night. As the deadline was getting closer several

unanticipated problems emerged and proved difficult to control. Being less defined and more troublesome, than initially assumed, the task was perceived as difficult to manage and quite ambiguous. This situation implied less production than had been planned initially. In the middle of this chaotic situation, the Minister of Transport and Communication came to survey the OPM centre and the general progress of construction (December 2003). Even though the project had not finished what should have been completed at this point in time, it presented the *almost finished* construction work for this delivery. It also showed how radio coverage had been established in most of the tunnels along the line. What was presented was true enough, but it did not highlight the extensive work still to be completed in order to make the scheduled delivery two weeks later. According to the project manager, it was "like a western movie with a stage set" (PM 08.03.04). Although the project was not on planned schedule for delivery, the PM team managed to maintain the Inspectorate's confidence by focusing on the completed parts.

As described, the PM team had acted to exert control over processes that it found important. It had positioned itself closer to important actors and decisions in order to save time and increase its influence. Still, as the task emerged infused with trouble, keeping up planned delivery proved to be difficult. The PM team's perception of being contested, combined with being evaluated on progress, made the team act to maintain faith by emphasising what had been accomplished but not what should have been accomplished.

The PM team maintained confidence for a while but delivery could not be completed as promised. As the PM team saw it, having to admit failed delivery meant risking further funding and it could also lead to stop in train traffic for JBV. What made the situation even worse was the picture painted of being almost completed when the Minister surveyed progress a few weeks earlier. The pressure on the PM team was increased as the Director General placed heavy emphasis on the importance of reaching deadlines. According to the head director's speeches, deliveries were tied to the governmental budgeting process where future funding was decided on and thus also the future existence of the team.

The PM team expressed great concern regarding the future funding of the project and discussed back and forth how it might affect the situation. One thing they decided on was to focus on all that had been completed, which was most of what had been promised. It was also decided to point out that the technical delivery was completed, but that the whole process of implementation and testing had been delayed. Furthermore, the PM team discussed which causes should be emphasized when explaining this unforeseen implementation and testing delay. The extremely difficult winter was also mentioned to have caused more hours on the construction work

than initially estimated, and the system specifications had been revealed to be less developed than one assumed at the start of the project. Gradually, a story emerged that the project, despite these unforeseen challenges, had completed the technical delivery, at the expense of system testing, but it was still quite an achievement. The PM team argued that since safety should be the number one priority one should, extend the dispensation, 'just in case', in order to get more time for testing of the system and for user interaction. Therefore the prolonged dispensation for train operation without GSM-R would be useful.

> "We focused on how the difficulties of testing the system in use had not been foreseen. We focused on how safety would be reduced and that safety had to be the number one priority. The Inspectorate bought into this and the dispensation was extended to 01.04.04. We wanted it to be 01.07.04, but we didn't get that" (PM 15.03.04).

It has been indicated that the PM team was aware of its fragile destiny, but also displayed confidence in being able to affect its fate and that some activities would be better than others regarding self-maintenance. Moreover, the PM team found a way to communicate to other actors how they perceived the situation, among others by framing the situation favorably. In addition to this favorable presentation, a tale appeared to be constructed to explain the project team's proficiency as it came this close to planned delivery, despite the extreme conditions and unforeseen events. To strengthen its explanation, the PM team also applied a discourse on safety. As we will see later, the PM team became most capable of communicating activities over time, as it had to work even harder to stay on top of things, and the translations proved useful in this work.

Contesting forces

Even though the PM team had managed to buy itself time, it was unable to keep up the planned production as different problems emerged that made it difficult to stabilize the system. Although the task at this point still seemed quite clear, it appeared most difficult to solve and gradually became more unmanageable and ambiguous. There were three fatal problems: One was the construction work. It seemed that not only had construction work been difficult, the foundations for the masts that were completed were deficient and there was a risk that these would fall down. The PM team and construction contractor (Beta) ended up in a dispute about this that became quite expensive, especially for Beta. Additionally, problems were also embedded in the technical system. The dispatcher for trains did not function when setting it in operation and the system went on and off. And third, the main user's extensive delay in equipment investment caused trouble for GSM-R's implementation.

As the PM team acknowledged that there were numerous obstacles to the planned production, the problem solving activity became even more hectic. The PM team assumed that failing the deadline would mean complete loss of face. After all, the project had, three months earlier, claimed that the delivery was (almost) completed. Furthermore, it had asked for extension once already and the fact that the budgeting process in Parliament was approaching complicated matters.

Here it was indicated that three unforeseen problems emerged and that these contested the stability of the emergency communication system. The future existence of the project was connected with the success of the system at this first delivery, and therefore these unforeseen troubles appeared to mean life or death of the project. This indicates that the task was not only a technical process, but also about social and political processes. It is also hinted at above that contingent of the PM team's previous choices when this first milestone initially was to be delivered, the team worked extra hard. The PM team had at that point emphasized how the promised deliveries were almost completed. At this point in time the PM team perceived a potential enlarged loss of face value. It seems that the previous choices of the project limited the action space of the project.

Taking action operationally

Over time severe problems were emerging and the PM team seemed to take actions in mainly two ways to cope with these: one was pushing the decision makers and stakeholders; the other was working intensely with problem solving. To solve the problems the PM team engaged in extensive dialogues, trying to turn every stone and look into every option to find solutions. An example of such problem oriented task solving was found at their PM team meeting 13.03.04 where various alternatives were tried out. The main one was how the routines for operation could be changed to at least partly compensate for the lacking system functionality. However, that would imply noise, difficulties, and probably frustration for the people involved. It was difficult to compensate sufficiently for the lacking functionality and therefore the PM team decided not to go for this alternative.

After thorough discussions about the situation, *A.* concluded that the system could not be implemented by 01.04.04, and he ended by questioning what to communicate to the Inspectorate. One of the PM team members followed up with "we need as little fuss as possible" (B. 13.03.04) and the project manager suggested: "turn it all upside down – to emphasize how much of the system that one could implement" (PM. 13.03.04). A proposal was made to buy time for the Inspectorate's treatment of the case by providing the information little by little, but this alternative was rejected. Another suggestion discussed was to implement GSM-R only as a back-up system.

"We can focus on how the speech communication system will be provided and not mention the emergency communication" (A.13.03.04). The PM team also rejected this solution arguing that it would be too much bother, both for them to organize it and for the users. It would be difficult with regard to logistics and to the training required. Moreover, "it might cause lack of faith in the system and in the project in general if it works out badly" (C. 13.03.03). The conclusion of the meeting was to start working with how to implement it as a GSM-net, not GSM-R net, and then implement the railway specific functionality little by little.

We see how the PM team members discussed the solutions it aimed for back and forth and what solutions were possible, by combining reflection with problem solving. It engaged in numerous discussions involving mental experimentations with possible problems – solutions – consequences, that resembled what is commonly described as interaction patterns that facilitate learning.

The story also indicates how the PM team was conscious about different actors related to their discussions, mentioning the Inspectorate and the user groups. The PM team showed awareness of how system delivery was entwined with training, logistics and faith. Still, as it was important to have something delivered, it decided to develop some parts of the planned delivery. The team also displaced awareness regarding how some ways of framing the situation could be better than others.

It was suggested that three forces created difficulties in stabilizing the system. The first problem, with the sub-contractor on construction work, was attempted solved through various activities. One action undertaken was hiring one person to supervise the construction work; another was to bring in a third-party to evaluate the processes of the constructor. Regarding the problems related to the technical solution, the PM team put heavier pressure, through incentives and punishments, on the sub-contractor to fix this. In addition, people from PM team were partly placed in the Alfa organization to help out with this case, a punch list of activities to be prioritized was developed, and other solutions such as hand held telephones, were worked with.

From the above, the once clear-cut technical task appeared infused with troubles that made it difficult to manage. As we will see next, the task solving seemed to evolve into being much about relational work; even more so as the technical parts seemed less controllable.

Taking action relationally

I have described some of the PM team's actions to solve the emerging operational problems. These actions were entwined with relational activity. The PM team's activities in early spring of 2004 were more than anything about relational work, mainly to get decisions made faster than was the practice. The recurring discussion amongst the team members incorporated the following questions: where are we? What do we need to do next to meet the deadlines? What decisions are required to get there and who can make them? The following observations from a PM team meeting (08.03.04) illustrate how the team seemed to work at this point. In this dialogue one of the team members reported on progress and on how important processes were delayed, in his opinion, due to the head office being too slow in making its decisions.

> PM.: "Who has this responsibility at head office?"
> C.: "N. and his people. And they will use at least a month".
> PM.: "Do we have a month to spare? If not we need to see whom we have with us over there".
> C. mentions different persons.
> PM.: "Do we have a plan for when this should be finished?"
> C.: "Well… .".
> PM: "Does it have any implications for Alfa?"
> C: "Not really".
> PM: "But they said on Friday – that they needed it yesterday".
> PM: "So, I will just have a little talk about this with Gamma this afternoon.

Later in the same meeting one of the team members informed the rest of the group of the testing situation and certain results where the project and the sub-contractor agreed, but where JBV's head office and external specialists disagreed with them. It was stated that in order to get acceptance for the system from the Inspectorate, the project needed the acceptance for this solution from the main office. This was described as 'most critical for making 01.04, and the following dialogue ensued:

> PM.: "Does the Inspectorate have an opinion about this?"
> A.: "Not really".
> PM.: "What strategy have we used to make sure that this decision is made the way we want it and on time? Who owns this process at head office? And to whom do they report?"
> A.: "The project (themselves) has asked head office to come up with X. So we actually play this part. We define the premises here – and kind of just inform them".
> PM.: "So we are in charge here – making the decisions?!"

A: ”Hm, good, this is about both cost and progress?”
PM.: ”Yes. – – So, this is a critical week for us! We need to communicate that to everybody!”
The team proceeded to a report on general progress by C. who complained about some hanging cases.
PM.: “Can’t we just arrange a meeting with those who are the plug of the system here?”
Time for a meeting was scheduled.

The presented dialogues indicated a PM team that acted to overcome emerging hindrances, also when these took the form of slow or absent decision making. The PM team acted both to get decisions made and to have the right decisions made. In doing so, it applied various strategies: one was to call influential actors into meetings. Another one was to just take charge and define premises and then just inform the involved parties retrospectively. Yet another strategy was the more informal talks that have been referred to. As the PM team could just take charge, it seems it had taken a position of authority at least in some of the relations it performed. Also, exercising influence by informal talks shows how the PM team asserted its authority.

Observing the team there were several indications of the PM team operating quite freely. The project manager put words to my observations, saying that he and others from the team had actively, as he expressed it, ‘worked to keep the project owner and others on the premises an arm’s length away’ (PM. 15.04.04). He explained that the practice of having the project do the deliberation work had been important for the emergence of influence and commented on the practice in the spring of 2004:

> ‘We do the mapping of the case for them and suggest the solutions. Then we have to invest the resources required to make them accept the suggestion” (PM.15.04.04).

The project manager further told about the proactive decision-making:

> ”(…) Often, the case may be that we need a clarification or a decision, but we cannot make the decision ourselves. Then the staffs holding this mandate neither have the competence nor the resources to do so – or the head where it should be – and cannot make it either. But then, we can’t make the decision ourselves, so we have to make sure that we have the right persons involved in order to have them make this decision and that the decision they make is ours, in the sense that we can live with it. That’s what often happens; we have to make sure that those providing the premises make decisions at the right time and that they make the right decisions” (PM. 15.04.04).

In the spring of 2004 the PM team made increasingly strong suggestions on how the various decisions should be developed, and there were also several things that the project acted on before decisions were made. An example of the latter was a decision on tunnel work to be made by the Technical division. This decision was made after the work was completed. When acting in advance of decisions, the team had to be quite sure of what the future decision outcome would be. Therefore the lobbyist work was important (PM. 15.04.04), expressed by the PM team meetings as 'maybe we need to have a little talk with…' or 'we need to inform NN about what we think of this case'. Later, it was also revealed that the PM team felt it was important to keep in touch with influential persons in the political system regularly – "just to inform them about how things are going" (the GSM-R project manager 10.06.04). I was told that the proactive decision-making style had emerged in accordance with the perceived time pressure and that 'we just felt it was the only way to do it!" (PM. 20.06.04). The recurring argument of the PM team for why it needed to act within an enlarged action space was lack of time and also that the team had acquired knowledge that it believed other parties in the base organization lacked.

> "The staffs do not keep up with the tempo of the project, moreover, they neither possess the resources nor the competence to make the right decisions at the right time" (PM.15.04.04).

It was indicated above how the PM team managed to position itself centrally to influence the decision-making processes of GSM-R. The above discussions and comments were mostly related to the PM team's relation with the project owner and the technical premise providers in the base organization. Despite the team's lack of formal authority a space was created where the PM team could voice its opinions, contingently of the team's early strategic moves and the unfolding history. As problems with the technological development connected with time frames and economy, we will see that the PM team also worked highly politically with various external stakeholders.

Narrating

Despite all the internal and external actions undertaken, the project had great difficulties with stabilizing the system a few weeks before delivery. The project's dilemma was that on the one hand it had an unstable system that could, in a worst-case scenario, contribute to train accidents; this could not be risked. On the other hand, the delivery was regarded as extremely important, especially considering the funding discussion. Facing a situation where it probably could not deliver, the PM team initiated a calculation of the mere expenses of developing phase two of the project. This calculation indicated that building phase one would be relatively costly compared to the total cost of phase one and two. The conclusion was explained by the

development work conducted in advance of implementing the system for the first milestone.

Furthermore, the PM team started to prepare for a scaled-down solution, defining the difficult functionality out of the planned delivery. By doing this, the team could plan parts of the delivery but also remove itself from the responsibility of implementing a solution that was not working. The PM team appeared to find itself in a situation where it wanted to prepare for reduced delivery or no delivery at all, yet at the same time influence all involved actors to maximize effort in order to deliver as much as possible. As shown earlier, the PM team had learned that such dilemmas could be handled by applying discursive strategies. The following dialogues, from the PM team meeting 19.02.04, illustrate how the team acted on their situation.

> D.: “PM, you need to reflect a little on your own how we should handle this!”
> PM: “Yes, we need to communicate the right story”.
> E.: “I still don’t believe in it, this is an illusion”.
> E.: “Yes, the signal to you (PM) is that we do not believe in it”
> PM.: ” So, the question is what do we communicate?”
> PM.: ”It is certain that Alfa needs to have their deadlines”.
> C.: ”Yes, we need to make the decision that we go on air the first of April. This has political consequences”.
> D.: ”Yes, it is too expensive to give up now”.
> F.: ”As, Gamma expresses it, ‘we have operated trains for more than a hundred years, why stop now’. If the system is to be put on air April the first, JBV-net must have in the beginning of March – so they have a month”.
> E.: ”Yes, we need a month. But if we get a system light, I am not so worried about the required month… Hm, to take the positive side, the people up there (at OPM) are used to act quickly. That being said, I still do not believe in it”.
> A.: ”The persons in Gamma need training also. We haven’t touched upon that yet”.
> F.:” Alfa also needs clear procedures for what is going to happen in the upcoming period”.

The team discussed the importance of keeping the pressure on Alfa and it seemed to be a shared opinion of the PM team that they would face delay if Alfa did not produce faster.

> PM.: “Yes, so I assume we are all clear about what we communicate to Alfa”.
> A.: “But what do we communicate to Gamma and the rest of JBV?”

E.: “The trick is that both Gamma can leak information to both Alfa and the Ministry, if they understand that we are uncertain whether we make it or not”.
PM.: ”But, we will have conflicts if Gamma starts preparing for implementation on 01.04.04. and the system is not ready. They are so negative already, and preparations for implementations will be most demanding for them and … Hm, we need to communicate uncertainties in a way that is balanced”.
G.: “Yes, we need to communicate that only 10-15 % is not working”.
PM.: ”No, we need to communicate to Gamma and the Ministry that 85% works”.
G.: ”Hm… What we said to the Inspectorate last week was that with the limited solution we have already described, we believe that we will be able to make it.
Despite the low production at this point, the conclusion was the same as the last time.

Until the milestone was very close the project did not appear to know what the outcome of the dilemma would be. The PM team seemed to run parallel processes on delivering as much as possible, prepare for a scaled-down solution or no solution at all.

The discussion above indicates that the PM team continuously reflected on possible solutions and that what the team regarded as possible solutions varied over time. In the solutions it considered the team also appeared to be quite aware of the involved parties and what they needed. Also, the PM team had various ways of presenting different messages against one another, reflecting on how the situation could best be translated to influence the actions of others.

The dialogues also revealed that the PM team was aware of how the various actors were interrelated, here revealed in the assumed information leak from Gamma to Alfa.

The PM team held a meeting a few weeks later, on 08.03.04, and the general feeling of the group then appeared to be that they would be delayed. The team members discussed how much the team would be delayed for the reset delivery.

B.: ”It is important – isn’t it – that we do not talk about this discussion outside this meeting?”
PM.: ”Yes that’s important”.
C: “Important that we tell the Inspectorate about he processes we have to conduct to gain control on our situation”.
PM.: ”Yes, and it is important that we do not reduce the pressure on Alfa (…). We do not say anything to the other involved parties. But we play with open cards to the Inspectorate. We can ask them what they think about the current situation – since they hold us in one hand and Gamma in the other”.
PM.: “So, then we agree to say nothing outside this meeting – about us being delayed – the Inspectorate is the exception”.

Here, the PM team debated how the communication could be differentiated, depending on the expectations of the actor with whom the project interacted. Moreover, the PM team seemed to be in closer dialogue with the Railway Inspectorate than before to feel the mood of the Inspectorate regarding the scaled-down solution.

The team’s perception of the interrelation between actors in this case had to do with how the Inspectorate was connected to both GSM-R project and the main user of the system.

In an interview the week after the project manager expressed that the Inspectorate would have to be told very soon that the project would not be able to make the deadline. The PM team could start preparing the ground for a narrower solution, not the least to prevent Gamma from making the extra effort in training their people in very little time. The project manager revealed how the PM team participants had decided to communicate, via local levels, that there would be (too) little time for Alfa to train their people and test the system.

In the PM team meeting the week after (22.03.04), E. informed the members what had happened the previous week. There had been meetings with Alfa regarding 01.04.04, where it was indicated more than before that they could not make a full-scale solution. Someone had told Alfa that as long as they all worked together, and very hard, they could probably make it. A meeting had also been held with the head director of JBV where he was informed about all the components of the delivery that had been completed. Additionally, a meeting had been held with the Inspectorate to prepare for a very scaled-down delivery. E. went on, indicating that they (the PM team members) had to acknowledge that they would have major challenges with delivering anything at all, and he said:

> "However, as we had decided, we revealed to Gamma that the system is finished, but complicated, that it requires resources to handle it, and to train people. Gamma became insecure and ended up asking for extended permission to operate without GSM-R – so the project is off the hook. The cab-radios are still not working, but the system is implemented, so JBV machines can start using the yellow hand hold cabs (telephones). If we order several from Alfa and test them, we can select the best ones and use them. Then we can get off the hook and claim that the system is implemented and in use, but that Gamma has decided to wait with their implementation due to their lack of training and other required preparations. Gamma got their extension until 25.05.04".

E. further informed them that the head director of JBV wanted GSM-R to be implemented, so they would work to get enough hand-held phones to put the system in use. Moreover, they would apply to the Inspectorate for acceptance to implement the downscaled solution 01.04.04, adding a punch list of the things remaining for the emergency system to be implemented as planned. It was stressed that the pressure on Alfa needed to be maintained.

It was indicated that the PM team juggled with different translations of the idea to implement a down scaled solution. Some of the translations took the form of stories and these appeared to be dynamic, in the sense that they varied over time. The emerging stories also varied between actors, depending on what the project wanted from these. A few stories aimed at covering up the possible fallacy of not completing the delivery in time. Other stories emerged to influence actors to act in certain ways.

As the delivery could not be completed, the stories came to be about how extensive time was required to train locomotive operators as increased system complexity had been revealed. Along with this revelation, Gamma, the train operating company, applied for prolonged dispensation to operate without GSM-R. As this was granted, the GSM-R project had more time to implement the system. Even though some tasks had not been completed, JBV applied for permission to start using the system. The Railway Inspectorate did not grant the permission, and JBV also had to apply for extended dispensation for operating trains without GSM-R. On the 15th of May JBV started using the system and ten days later Gamma implemented it. This means that GSM-R was implemented for the first railway line within five months after the deadline and phase 1.0 was declared accomplished. However, much of the system functionality that should have been implemented was not ready as the system was put into use. Therefore it was decided to implement the remaining functionality together with the next delivery.

On the whole, the descriptions above revealed differentiation of the PM team's discursive strategies to cover up the technological problems and delays. Therefore, the team increased its competences, not just in operational matters, but also in how it could relate with various stakeholders and decision makers. It comes as no surprise that the two emerge in the same phase: Operational problems call for discursive tactics in order to stay afloat.

The actions and events that emerged along with the reset milestone became important to the further project development. They contributed to the project's emergence as a significant actor that efficiently worked the system.

An expectation about participation

The PM team's activity of pushing itself on various decisions makers, increased in the spring of 2004. The project manager explained that the difficulties with stabilizing the system made the project take a number of short cuts. When these actions were related to regulations, especially if they were interfering with safety issues, the team had to clarify the actions. To do so, it informed the technical premise providers and other decision makers about their challenges, indirectly or directly asking them to decide on this and that. In the early days of the project, the PM team had initiated the interactions, and as these persisted, the project manager or other team members were called into meetings and asked about different issues related to the project activities. Decision makers gradually began to expect the project representatives to be part of the discussion. It seemed other actors increasingly contacted the PM team and routines for decision dialogues seemed to be breaking. The project manager revealed that the project found it important to keep in touch regularly with influential persons in the political system – "just to inform them about how things are going" (PM. 10.06.04).

We see how the PM team took on a position where it was assumed to take part in the decision processes and discussions regarding GSM-R. Little by little it exerted authority and took steps on its way to becoming an indispensable actor in the GSM-R discourse that had to be passed in the decision processes related to GSM-R. There might be multiple causes that contributed to this development. One example is the first fumbling work to establish various relations that left the project with knowledge of actors and relations that could be applied strategically. Another example might be an expectation emerging as the PM team kept presenting itself as a participant of the discourse. The increased competence became a contingency as it made the team act to impact decision processes but also created and expectation of the PM team participating in these processes.

New milestone, but only few possibilities

It has been described how the first milestone delivery of the project was a scaled-down solution compared to the planned delivery. This meant that an extensive workload was transferred to the period between the first and second milestone. The PM team perceived the pressure to be high with regard to this delivery, and the team expressed fear of not making the next milestone delivery either, which was regarded as 'dramatic' and critical. After extensive discussions the PM team decided to reframe the project. Up to then one had talked about the milestone completed in May as phase 1.0 and the next one as phase 2.0. The PM team reframed the delivery plan by adding an extra phase that was labeled functional phase 1.5 and it also started to name all deliveries functional phases. This reframing meant a step-wise implementation of functionality, rather than the all-in-one solution that had been planned. Consequently, the delivery of complex functionality, not yet developed, was moved to a later date.

> "We saw that Alfa could not make the production of the remaining functionality in a controlled manner before 01.10.04. We needed to split it to get at least parts of the system implemented to get going" (PM. 17.08.04).

Contingently the previous delays the project continued struggling to keep up with the plan. To cope with this situation, it applied the discursive strategy of reframing the deliveries that were to be produced and thereby bought itself some time. It is also indicated here how the directions of the project were in heterogeneous manners contingent of technology that proved difficult to stabilize.

Enrolment rather than fire extinction

In the PM team's work on the alternative of reframing deliveries it emphasized being in close dialogue with the Inspectorate, because it wanted to know "their minimum requirements for accepting the 1.5 delivery" (PM team meeting 05.05.04). When the team decided on the reframing, the first institution to be informed was the Inspectorate. In June, July, and August the PM team engaged in numerous dialogues with the Inspectorate, discussing the technical delivery "just to figure out what they expected and what they would accept" (A. 17.08.04). These dialogues took the form of quite informal meetings and the PM team often initiated them (A. 17.08.04). In the PM team meetings these dialogues were referred to as "we have discussed this with the Inspectorate" (PM. 16.06.04), "that appears to be clarified by the Inspectorate" (PM. 03.08.04), 'we asked the Inspectorate what it thought about it and …" (A. 10.08.04). The dialogues appeared quite open and the Inspectorate provided the project with advice. Through these dialogues the

PM team developed an idea of what solutions the Inspectorate would accept. When functional phase 2.0 was put on hold later in the autumn, the project manager stated that the Inspectorate verified this decision. “It is, as far as I can understand, verified by the Inspectorate, during numerous meetings we have discussed it” (project council meeting 10.09.04). Furthermore, the project manager revealed a positive feeling regarding the funding of Phase 2 of the construction work. The PM team had, for a long time, explicated GSM-R’s numerous positive effects and the Inspectorate gradually started speaking very favorably of the GSM-R development.

From day one the PM team worked to include the Inspectorate in its decision of reframing the deliveries adding the functional delivery called 1.5. Previously the PM team had designed for the Inspectorate to be a neutral control organ in the GSM-R development. This role was in accordance with the formal position held by the Railway Inspectorate. When reframing the deliveries the PM team also seemed to initiate a process where the Inspectorate was to take the role of an expert. We see how the content of the 1.5 deliveries to a great extent emerged with the interaction of the Inspectorate and the project team. The Inspectorate became a co-developer of some parts of the GSM-R system. The frequent informal interaction between these two actors also seemed to lead to a development where the project gradually could give information on the outcome of critical processes before they occurred.

Before the PM team decided on the reframing, it engaged in extensive discussions on how it might get other actors to accept such a decision. It was placed emphasis on involving the Traffic operation and the Technical division at an early point6‘to make sure they agree to operate with the limited system’ (C. 05.05.04). The PM team decided to wait with involving Alfa until the design document was developed, to prevent Alfa from presenting options of further developments. It is noteworthy how the project owner was rarely mentioned in the discussions of whom to involve. To get acceptance for the reframed delivery, the PM team applied the strategy of first clarifying the possibility of acceptance with the Inspectorate. Second, it would work to align the parties that would be most affected by this decision, before formally approaching the Inspectorate with the request. The PM team worked based on an acknowledgement that the Inspectorate’s final acceptance relied on an approval from the other involved parties. The project manager recounted the following about how the project manager team had handled the process:

> “The technical premise provider was informed at an early stage. In order to get the Inspectorate to accept anything at all, the premise

> providers here in JBV must have accepted the solution" (PM. 17.08.04).

The project manager went on;

> "We have worked hard to communicate the decision of reframing to the Traffic operation. It was important to get the acceptance of this unit, then the technical unit and then the Inspectorate" (PM. 17.08.04).

In the summer 2004 the PM team had acquired extensive knowledge regarding who the important stakeholders were and how they could be handled efficiently. This knowledge enabled the team to facilitate the materialization of aimed for decisions as well as its control over system implementation. In its early days, the PM team spent much energy on fire extinction, as things did not work out. As the relational work evolved, the team became increasingly focused on aligning actors in advance of decisions. Sensitivity regarding whom to involve in decisions and how it could be done emerged in the PM team. The team also learnt how actors were entwined and became sensitive to what order the different actors should be involved to optimize alignment.

The PM team approached the Traffic operators and found resistance amongst them. "They want an all or nothing solution" (PM. 17.08.04). The PM team had to invest energy in explaining how the planned delivery, although being a scaled-down solution, was far better than the current system in operation. The PM team emphasized how safety was the number one priority and that implementing the system in accordance with the new plan would be safer than implementation according to the other plan.

The translations of the reframed deliveries were many and they were inter-related. The safety in implementation emphasis was one translation. Another translation was the team's internal discussion on how much functionality might be removed for the Inspectorate to still accept the system. Yet another translation appeared in a meeting with train managers (14.06.04) where it was stated that 'most of the functions to be completed at 01.10.04 are extra functions that may be taken out of the solution for now – without harm' (A. 14.06.04).

We see here how the PM team's logic of relational work was changing. Previously it had applied the logic to just act, see what happens, and solve the problems that emerge. Over time the PM team increasingly acted strategically as it learnt to know the various actors involved in decision-making processes and experienced wise ways of approaching these.

The PM team increasingly got to work on what it wanted and how to achieve it, and then approached actors to enroll these at an early stage. We also see the same idea being translated differently with regard to the actors that affected it. The decision of reframing also became legitimized by being embedded in the powerful discourses of safety.

To get the Inspectorate to accept the stepwise implementation, the main external user of the GSM-R system, Gamma, had to accept it. The PM team perceived this to be difficult as the relations between the two of them remained complicated. Gamma's reluctance to the system persisted and it made them refrain from investing in the required equipment. The conflict escalated as Gamma neither made the investment nor returned the equipment that the project had lent them. Being in the middle of this conflict, the PM team found it difficult to obtain the necessary approval from Gamma, and strategies for how to get them to accept it were discussed thoroughly. The team decided to emphasize how the stepwise implementation would both provide more time for training of the locomotive operators and make it easier as fewer new elements were introduced at each training session. Gamma welcomed the splitting of the phases as it meant reduced workload.

Even though the relations between the PM team and Gamma were difficult, the PM team managed to enroll Gamma in the decision about reframing by using an attractive translation of reduced workload and postponed investment. It is also worth noting how the PM team was able to move the GSM-R development in a certain direction contingently of the knowledge it had developed with regard to stakeholders' preferences. The team utilized this knowledge to align the stakeholders, by working with them in the right order.

It has been indicated how the role of the PM team emerged into that of an 'authorized' decision maker. It made decisions and acted self-confidently to enroll other actors in its decisions. This was also evident regarding the project owner's role in the decision of stepwise implementation. When asked about the role of the project owner in this decision process, it was stated that "the project owner wasn't very involved in this …, no he wasn't, other than afterwards" (A. 05.08.04).

In general, the relational work of the PM team became quite efficient and the team acted with extended authority over time. One might say that the PM team had managed to make itself rather indispensable in the discourse on GSM-R. It took charge, decided on a stepwise implementation and then worked to align stakeholders by, juggling with translations of this stepwise implementation. As it managed to realize the stepwise implementation, it avoided loosing face when the planned deliveries could not be completed on

time. The PM team carefully translated the decision of reframing to be attractive to different stakeholders. It also worked consciously on the order in which the stakeholders were approached as it had learnt of the entwined nature of the relations.

Enforcing control

Since the problems with the technical solution were severe, the relationship between Alfa and GSM-R became more difficult in the summer 2004. Alfa did not manage to solve these problems and the PM team showed great worry and much frustration. The conflict reached its peak as the scenario of also failing the second milestone appeared increasingly real. In the autumn 2003 the two parties had worked to establish relations, and the tone had been positive and optimistic. Not knowing exactly what was required from the beginning, the PM team had communicated vaguely. As the task solving evolved, the functions and roles to be filled were revealed, and this disclosure made it easier for the team to communicate more clearly what it expected from Alfa. When the technical solution proved to be infused with troubles and Alfa had problems solving these, the PM team elaborated on how they needed to take Alfa by the hand and lead them in the right direction (20.02.04). The PM team took various actions to enable Alfa's work. Among other things, punch-lists were developed to focus their activity, work groups were established to solve problems, and shared planning sessions were also held. Besides, incentives were provided, as were threats of punishments. The PM team also held back information about changes in plans that would have made Alfa reduce its effort. For example, as the decision of reframing was made, the PM team resolved not to tell Alfa. When discussing the reframing (PM team meeting 05.05.04) the PM team members emphasized waiting to involve Alfa until the design document was completed and a new milestone established. While holding back this information as long as possible, Alfa could keep up its production, which might provide slack. "We would hold the upper hand then, hmmm … that's good for goodwill" (PL. 05.05.04). As the next milestone also was difficult to deliver for Alfa, they asked for slack.

In the summer 2004 the relationship was not friendly and the PM team applied stronger methods to obtain control of the technical delivery. It held back money and also placed a person from its own team in the organization of the sub-contractor. Furthermore, it demanded changes in the way the sub-contractor organized the project. When these activities had been implemented for some time, the quality and intensity of the sub-contractors' work was improved (PM. 20.09.04) and the PM team expressed satisfaction with the resource dedication of the sub-contractors. As the technology temporarily stabilized and the planned milestones were delivered late

December 2004, the relationship between the sub-contractor and the project improved.

The heterogeneity of the GSM-R development was indicated above as it was described how the technology took on its own life and subsequently made the PM team and the sub-contractors take actions to stabilize it. It was hinted at how the sub-contractor's lacking control of the technology development made the PM team invade its project organization to enforce control. The PM team combined its demand for focus and resources with withholding the information of the slack that it had created. How the nature of these two actors emerged through their interaction was also indicated. When Alfa could not fix the technical delivery, the PM team was forced to take on greater responsibility than it originally had planned.

As the project prepared for Phase 2, a thorough evaluation of processes and interfaces between Alfa, Beta, and the PM team itself was initiated. According to the evaluation, the PM team changed its way of organizing to match the interfaces of Alfa better, hoping to increase the efficiency of their interaction. The following discussion occurred at a PM team meeting 13.10.04.

> PM.: "Then we have to work with initiation of the evaluation and restructuring process together with Alfa and Beta".
> C.: "We must work to make Alfa take on the role they were intended to have".
> PM.: "Yes, because I do not think that they do not want, or disagree. Just that they could not manage to do so earlier. We must look at the total process, also our own to see what we can do to organize routines and
> interface to match Alfa better".
> E.: "Yes, I think we could look at the interface E and C to communicate better with Alfa".
> PM.: "This is needed, both with regard to their and our wishes. I expect them to have suggestions on the interfaces between us and them, and whether there are processes we do that make their work difficult, hm…".

We see how the PM team aimed for a mutual co-creation of the three parties as it initiated an evaluation where the results would lead to organizational changes in the three organizations to make interaction more efficient.

The beauty of strategic positioning

Throughout the first 18 moths of the project there was great insecurity about its funding after phase 1 constructions. The PM team had continuously worked to insure the project funding by forcing itself on actors it assumed to be influential in this decision. It informed these actors about the importance of GSM-R. In the summer 2004 the belief in funding seemed to be increasing. In a PM team meeting the project manager stated that the project would most likely get further funding, as the Inspectorate and the Minister of Transportation and Communication were acting in GSM-R's favor.

> "We had a meeting with the Minister of Transportation and Communication yesterday. She would not promise anything. But you know – she is our lady. And there is also the cost estimate we developed – where phase 1 appears much more expensive if we do not get phase 2" (PM. 18.08.04).

The quotes presented above indicate how the PM team managed to evolve into an influential actor through ensuring its own funding by having other powerful actors speak on its behalves. We see how technology and funding was connected and generated relational activity. This emerging pattern of interactions is also indicated in the observations presented below.

In another PM team meeting (23.08.04) the team again discussed the possibility of further funding. The PM claimed to have positive signals of funding being provided and referred to a 'certain important person' centrally located on the political scene, and with whom members of the team had interacted: "he is creative when it comes to raising money in alternative ways". Furthermore, the project manager said about aspects of the funding discussion (23.08.04):

> "We are not supposed to know anything about this. And we are not going to talk about this – but you guys have been around for such a long time that you understand. However, we obviously know too much about this and therefore I was called into a meeting at HK today. The message I got was that: the project does not officially have any opinion about this issue – until we are asked!)" (PM. 23.08.04).

Although it was not made public until mid-October that money for Phase 2 was granted, the planning of Phase 2 had been conducted during the spring and early summer. In a PM team meeting (20.09.04.) it was indicated that the Flom construction work was started before the official decision about grants was made and that there were positive signals regarding money to GSM-R in the governmental budget. In an interview (15.10.04) the project

manager admitted that they, due to a budget leak, could start the construction work quite some time before the governmental budget was made public.

Above I how noted how the technical task connected with funding processes and generated extensive project activity to form and maintain relations with various stakeholders. It seems that this activity contributed to provide the team with a position where it got early access to important information.

It's getting easier

At the end of 2004 things got easier for the PM team. First of all, the project, which had started out way beyond schedule, was finally on schedule after two years. It could start the next construction phase on time and with reduced time pressure. Moreover, the task to be conducted was easier as much of the innovation work had been accomplished and the childhood deceases of the first operation period were eliminated. Additionally, the implemented system had proved to function quite well, and the various actors being involved in the GSM-R development had gradually grown into their positions. Both relational and operational knowledge that could be applied to increase the task solving efficiency had developed. The effort to enable the sub-contractor's work finally appeared to pay off and Alfa seemed to dedicate more resources well as to solve the technical problems better. Furthermore, the OPM center's operation seemed to make the life of the PM team easier. The OPM centre had been on its feet for a while, and at this point it was fully established with employees and competence built over the first ten months of operation and routines developed (10.02.05). Gradually, this centre started handling much of the interaction between actors involved in the GSM-R development. The project manager revealed how the project's "responsibility for getting things going is now reduced little by little as we get them to take the responsibility" (10.02.05). The PM team had exerted influence on how OPM emerged and what it came to be. The PM team had been active in the hiring of central actors to the centre and also developed main procedures of OPM. Besides, the manager of OPM was situated in the PM team for more than a year before starting at OPM. The project had worked hard to make sure that OPM understood and would follow up on the ideas and aims of the project. Over time this made OPM develop into a third part actor that carried out the ideas of the project as well as voice the project's ideas when it could not do so itself.

Above it was indicated how OPM was apprised the PM team's intentions for future GSM-R operation. The PM team worked to ensure that OPM operated according to its intentions by embedding these into routines and working to have central OPM actors see things the GSM-R way.

A little less conversation – a little more action

After two years of operation the project activity and the GSM-R system seemed to get less attention from external actors. As the situation became easier, the relational activity of the project decreased. While the previous periods were characterized by extensive relational activity, such activity was remarkably reduced at this point in time. Less project activity required the involvement of different actors. As the major design phases were coming to an end, there were fewer innovations that had to get accepted. There also appeared to be fewer things that could go wrong, as much of the encountered uncertainty had been dealt with.

As time went by, the project appeared to be taken more and more for granted, and the project manager stated: ”We have been around for a while now so we are not very interesting to be fuzzed about “ (PM. 10.02.05). Since the project during this period seemed to be more on top of things, less relational activity was required. The PM team and also the more overall project had managed to position itself as a natural part of the discourses it took part in. It still had to work to reproduce itself, but the work appeared less controversial and the project seemed to move around more unnoticed.

Moreover, the project increasingly came to be presented as ‘the JBV of tomorrow’ and a project that contributed to JBV’s development into a high-technology venture (the Christmas letter from the head director to employees and business relations, Christmas 2005).

A comment

I have told a messy story of multiples facets. One could probably have developed a number of stories about this project. The story I have developed can be critiqued for being a fusion of the actions, words, anticipations and perceptions of the participants and my own perceptions of what happened. The story emerged as I reflected on selections of their words and their actions, as I selected a few citations among the great number found in my empirical material and also placed these citations and observations in the sequence and context they here appear. Along with this the story here presented is my version of how the GSM-R project evolved and the embedded character of this evolvement. I have not on purpose translated actions and words to represent something else than the experiences I came across. The story is a modest chronological presentation of the elements and events that I encountered were important to the GSM-R development and how these came together. As I indicated in Chapter 2, when reviewing project literature, I found few in-depth descriptions of projects. Therefore I wanted to tell a detailed story that could also be a background of

investigating my research questions. The research questions are elaborated on in a more focused manner in the next three chapters.

The story I have developed contains little critique of management actions and things that did not work out. For exploring the research questions posed I found it more appropriate to place emphasis on describing observations and my interpretation of actions and citations, than evaluating the efficiency of various actors and activities.

Chapter 7
Task and Competence

In Chapter 2 I described how I wanted to explore the evolving and embedded nature of a project. With this aim in mind, I decided to follow how project task and competence evolved over time as I presumed these processes to be essential in project organizing. Additionally, my empirical material seemed to point in the same direction. To explore these processes I created an approach based on a process point of view (presented in Chapter 3). I have accounted for how I implied that projects live in an equivocal reality constituted by multiple and heterogeneous streams. Along with the approach I have developed I will suggest that the project task and competence will evolve over time as entities and actions connect. I will also propose that the development processes are heterogeneous and contingent of their own history. In this chapter I will describe how it happened.

Although the development of task and competence were entwined, I have chosen to present the empirical material and the discussion of the two processes separately. I believe it makes it easier to identify the nature of the development processes and discuss possible findings.

In my study of task and competence I did not observe the evolving process as periodic, sequential, or in any other ways following a certain order (i.e. the discussion in 4.1). I believe the changes happened in continuous flows as ongoing processes. Changes did not appear to be caused by clear-cut shifts, but there seemed to be some incidents that contributed more strongly to the further development of processes than other incidents.

Even though the processes were ongoing, I found it is easier to identify and explore the variable characteristics as periodic processes. Along with this, I prefer to present the material on task and competence in four different periods. These periods emerged from the material in the sense that the actions undertaken with regard to these elements seemed to vary from, for instance, spring 2004 to autumn 2004. Analytically, I played with dividing the material into different time periods, drawing out the characteristics of each of these and then comparing the characteristics across the periods I had constructed. I found that playing with the empirical material this way made it easier for me to recognize changes in what emerged as characteristics of these processes I studied. However, I could neither identify certain points in time when change happened, nor certain phases in which the developments evolved.

7.1 Project task evolves over time

The role of project task was elaborated on in Chapter 2, in regard to the extent to which it can be clearly defined and believed to be commonly shared. Here, I will look into what my empirical material indicated with regard to task development. The question illuminated is; how does project task evolve over time?

Task is cultivation of technology (January 2003 – December 2003)
When the project started, the task specification was regarded as relatively clear and the involved parties operated from a belief in a shared understanding of what the task was all about: to build and implement the GSM-R system. Thirty-two countries had signed an EC agreement to develop these systems based on a common specification. Based on this specification the GSM-R project was to develop the system. At the project start-up it had a technical specification for the completed system, a mandate regarding production and implementation of the GSM-R system, funding for producing the system, and the technical competences that it presumed were required. The aimed for condition was the implemented GSM-R system. The process in between was regarded as relatively linear and controllable. Discussions about the task and the start-up actions seemed to be underpinned by the assumption that technology implementation is a rational and manageable process. The processes that the PM team aimed to undertake were presented in logical and sequential plans, both as milestone plans and more detailed activity descriptions.

It was presumed that the greatest challenge of the project was the limited time it had at hand for making its milestone deliveries. Other challenges related to unforeseen troubles and innovations were rarely elaborated on. The attitude was "just to work according to spec" (PM. 19.02.04)[40]. The technical specification can be seen as the premise provider of the project activity from the start as hiring people as well as establishing processes were done along with interpretation the technical specification. Based on the technical specifications experts on technical matters in the base organization had laid out the presumed core activities to be undertaken and explained the kind of competences that was required to perform such work. Consistent with these specifications, people were hired in to participate in the project. As we see, the project task was regarded as clearly technically specified and agreed on to the extent that one could determine the presumed 'core activities' specifically to also explain the required competences needed to perform these activities. Even though the task was regarded to be complex[41], there seemed

[40] Spec. is short for specification.
[41] Task complexity considers the variability in the task solving methods and (b) the extent to which it is possible to analyze the task to find out how one could solve it (Perrow 1967). Project task complexity has been discussed by different writers. Amongst others, Williams (1999) discusses project complexity as the uncertainty related to what the project is to create

to be great optimism amongst the involved parties as to how the task would be solved as a straightforward process. This optimism appeared based on the presumption that the task was merely technical and on a strong belief in how the technology could be managed.

The PM team did not, however, find all parts of the task as clearly defined as the technical end product. The ideas regarding how and by whom the system should be run in the future were vague, or "airy" as the project participants labeled them. It had previously been decided to implement the system in seven regions of the railway. As I described in Chapter 6, the PM team found this difficult and took action to change it by initiating the OPM unit. As one decided to develop this centre, the project task was changed to where the project's system implementation was to be carried out at one centralized unit, not seven train management centrals. The establishment of this centre implied that directions for both the physical centre and its operation had to be developed, and the physical unit and the organizing patterns had to be established in accordance with the premises. The PM team became important regarding the negotiation of the directions. It became the project's task to develop the OPM centre as a physical unit, as well as an operative unit with competent people and efficient routines. From implementing the systems in seven already existing units, the task was now extended to establish the future system operation centre. The PM team members expressed (20.02.04) that time pressure made them work with these two processes: developing the technical system and developing the aspects of OPM, in parallel. However, they believed they should have developed the operational organization first and then the system, the argument being that the future users would be more integrated into the development, possibly contributing to a better system for them. The time pressure did not allow for the development process to be sequential.

Task is ambiguity and relationality[42] (January 2004 – June 2004)

Over time, the task revealed itself to be more ambiguous than the PM team had first assumed. When productions started in autumn 2003 difficulties related to the technical solution emerged, but these were regarded as minor and soon to be fixed. The belief in managerial control of technology seemed to be maintained. However, in winter and spring 2004, the technical problems proved difficult to handle. As I have described in Chapter 6, the technical solution seemed to take on a life of its own and move in other directions than the PM team had intended. In winter and spring 2003 the team gradually came to acknowledge that the technical solution and the processes to develop it were difficult to manage.

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and how. Baccarini (1996) has discussed project complexity as the interrelated parts of the project, amongst others the tasks to be solved.

[42] Law (2004) uses the term 'relationality' to name indeterminate processes.

Moreover, as the team attempted to solve the task the specifications turned out less detailed than the team members had first assumed. A number of times the project faced choices where the technical specifications did not provide answers. The task also appeared to increase in size as the project worked on it. As the work progressed, the project's conduct deviated from planned activities. During the planning process emphasis was placed on extensive applications for standard shelf-solutions. As the project worked with the task, these solutions turned out to be difficult to apply.

Not only did the task change character as the developmental work was undertaken, but various actors also expressed different views on the task, for example; there were extensive discussions about the displays of telephones and radios and the setup menu. The touch screen had been presumed to be 'the only solution' in train cabins. As the train operators tried them out, they appeared difficult to operate when the trains were in motion. The operators also wanted to be able to eat their sandwiches while operating the system, but this made the touch screen too slippery. Dialogues with various actors, such as the technical premise providers in the base organization, the sub-contractors, and the users, revealed differing ways of viewing the technical system and how it should be operated.

As the project tried to figure out what the task was all about and how to solve it various stakeholders emerged. Thus, the PM team found itself in a situation where it perceived the project to be contested and that there were a number of problems emerging with the technical development, and numerous stakeholders asserted themselves very strongly in the negotiations of the project task. In this situation, relational activity increased. Even though the project was still talking about the task as being production and implementation of a technical system, the discussions during the PM team meetings were focused primarily on identifying various actors and deliberating on how these might be handled. The project manager spent extensive time working to force the sub-contractors both to work harder and in alternative ways with the technical solutions. Other actors were given attention for various reasons. The project manager team approached some actors because it believed that these actors could contribute to the problem solving. Others were approached because they were regarded as potential negative forces in the dispute about the future life of the project.

Task is innovation and extreme sport (July 2004 – December 2004)

It is worth noting that the project task, from being viewed as narrow, relatively clear and unambiguous when the project started, gradually grew to be presented as an uncertain development process and as something ground breaking.

At the start, the PM team presumed that it to a great extent knew what it had to do to solve the task. In summer and autumn 2004 there was more talk about how there were a great number of unforeseen elements embedded in the task solving and how

these were revealed as the PM team had worked with the task. It was emphasized how complex the task was and that technical developments were increasingly due to the efforts of the team. In a meeting between different users (14.06.04) and the owner representatives it was stated that this had been the pioneer work of product development (the cab radio and the train management terminal). Throughout this period the task was described in terms indicating that the opinion about the project task, at least the official one, had changed. Terms such as 'challenging', 'explorative', 'inventive', 'innovative' described the project as a world champion in GSM-R development (PM team meeting 02.06.04 and project council meeting 10.06.04).

What seemed to be an emerging way of viewing and presenting the task in the PM team was revealed as the team was asked to write an article in a magazine. The project manager asked the participants: "What version of the project do we present – what story do we want to tell?" (PM. 02.06.04). It was suggested they tell about adventure, about extremes, and about the exceptionally high time-pressure. Additionally, it was mentioned that topography had made construction difficult and one should communicate how challenging the system development had been. "We need winter and snow and tall masts – a lot of snow and a musk ox". "We need action!"

It is also noteworthy how, over time, the task was presented as gradually more all-inclusive and 'modern' by the Director General and other central actors in JBV. From being spoken of as an emergency communication system, the GSM-R system was presented as 'the communication platform of tomorrow'. The system became a natural part of JBV and their activity presentations. When mentioned in annual reports and press bulletins, it was placed in the context of making JBV a highly advanced technological company.

Task is exploration and exploitation of competence (January 2005 – July 2005)
As the story of Chapter 6 indicated, the whole situation of the GSM-R project, both with regard to time pressure and development work, seemed to ease late autumn 2004. Most of the system design and development had been undertaken. A number of solutions for the future GSM-R development had been chosen, meaning that there were fewer negotiations and controversies. Thus both development work and relational maneuvering seemed to decrease. With regard to task development, the PM team had accumulated widespread experiences. These experiences could be reproduced when the project later found itself in situations that resembled those previously encountered. Still, when the project participants spoke of the task solving, they seemed to perceive it as a challenging and complicated process that required dedicated effort.

7.2 Discussing task development

I have asked the question: how does the project task evolve? In keeping with the approach I developed in Chapter 3, technology development is always co-evolving with a number of other development processes of social, political, and economical character (Law 2004). However, when the project I studied started up, the nature of the project task was regarded as merely technical and the technical specification lay at the heart of the project's activity. This specification also laid the basis for recruitment of project participants and the organizing of the project. From the description above one might suggest that the task developed as the PM team worked on it in three different ways.

7.2.1 Task scope was broadened

One way the task developed was that it broadened in the sense that the project also was to develop the OPM centre in all its aspects. In addition, as the PM team learnt that the task encompassed more facets than the team had first assumed. What seemed to happen to the task, in the project I report on, is more generally discussed in project management theory as scope creep. Scope creep can emerge as the project's customers change the deliverables or as "the team themselves, in an effort to their best work, unwittingly increase the scope of the project" (Meredith and Mantel 2000:477). Scope creep can also occur due to knowledge inquiry, of the team or the customer, about the deliverables or the setting in which the deliverables are to be applied. In the case of GSM-R the changes seemed to happen both due to the PM team's effort to solve the task and also due to requests of the customers and altered ideas as the PM team as it learnt about its task. Traditional project management theories seem to regard the scope development as unwarranted and unwanted as these theories often provide procedures for controlling these[43]. It is stated that the project manager: "must be constantly on guard to identify such changes" (Meredith and Mantel 2000:478). As I presented in Chapter 2, the alternative perspective on project management works from the notions that projects are changing entities (Engwall et al. 2003:121) where boundaries and scopes are negotiated (Sahlin-Andersson 1996, Sahlin-Andersson and Söderholm 2002). My observations are in accordance with the alternative perspective. The plan of implementation was unspecified when the project started up. However, the activities of finding out how to implement the system and carry the implementation through grew to be important in the task solving.

[43] Examples of procedures to decrease and cope with scope creep are provided for example in Meredith and Mantel (2000:492), in Harvey (2005:81) and also in PMI's training program (modul 3).

7.2.2. Task became relational

Not only did the task broaden in scope but its nature also became more relational as the PM team worked to develop the system. There seemed to be at least three interaction patterns that contributed to this changing nature of the project task. The first one was the project team's perception of being contested by a number of entities. The PM team presumed that these entities had to be identified and approached. The second was the activity of the various stakeholders that gradually revealed themselves and requested participation in the negotiations of the GSM-R development. Thirdly, what I pointed to as the strategic positioning of the project team, could also have contributed to the increasingly relational nature of the task. The PM team argued that time could be saved if the team handled certain relations itself, instead of having to go via a third party. All these three patterns of interaction might have contributed in making the project task increasingly relational.

Within project theory Andersen et al. (2004:9) have coined the expression of PSO projects suggesting that all projects, even those where the deliveries were defined as merely technical, have to consider other involved transitions at both the individual and organizational level. It implies that the project task is not only technical in nature but also relational. Latour (2002b:32) firmly states "no technical project is technical first and foremost". As technical matters are not neutral, but rather blend together what Latour presents as heterogeneous engineering that leads to an amalgamation of "major social questions concerning the spirit of the age of the century and "properly" technological questions in a single discourse" (Latour 2002b:33). Latour's point resembles my focus on the project team's engagement in relational activity, by drawing on discourses of time pressure, competence and safety the team works with relations to enable its task solving.

7.2.3 Task appeared less specified and clear over time

When the project was started there were rarely any discussions regarding if and how the task could be understood in several ways. The involved parties seemed to believe that there was one way to understand the task and that they all shared this understanding. However, as the PM team worked on the task it appeared less specified and clear. The number of facets of the task seemed to increase along with the general task complexity as the task was infused with unforeseen problems. These made the technical solution difficult to stabilize and the project had to try several solutions to get the various elements of the system to work both separately and together. Numerous similar observations have been made by students of science and technology (the STS writers[44]) and the question becomes: why do

[44] For example the story of a highly innovative project of public transportation in the suburbs of Paris, Aramis, that proved most difficult to manage (Latour 2002b).

technology projects start out with the appearance of being quite simple and manageable and then grow to appear more multifaceted, complex, and more difficult to manage?

In the case I report on there were several interaction patterns that could contribute to increasing number of facets and complexity of the task. One suggestion is the mere fact that more actors came to act on the task over time than one had initially anticipated. This suggestion is based on a social constructionist argument, working from the notion that reality is socially constructed. In accordance with this notion they assume that actors enter a situation of social construction with different experience perspectives that make them work on a task in different and divergent ways. Since it has been suggested that various actors see the world in different ways[45], it can be argued that the more parties that act on the task and make verbal expressions about it, the more multifaceted and ambiguous the task becomes.

Another reason the task could develop into being multifaceted and appear ambiguous were the ongoing translations between action – verbal expression – action – verbal expression. Such a translations processes were amongst others described by Lindberg (2002:170), in her study of a project aimed at coordinating different health care units. In this project different practitioners came together to give life to the idea of a care-chain of elderly people. The starting points of the participants were their own practices. The idea of care-chain became real as they acted on the initiative to see what it would mean to the different practices. They shared stories about daily work and also worked to create models and concepts for their processes. These energizing processes consisted of numerous translations between actions and abstractions (Lindberg 2002).

The first two reasons for suggesting how the task appeared more multifaceted and complex over time were translations that were not consciously performed to be divergent. They became divergent as a result of different frames of reference or because of chains of making concrete and making abstract. A third interaction pattern that possibly contributed to the changing appearance was the careful attempts at divergent presentations. The PM consciously tried to present itself and its activities in different ways, depending on the presumed expectations of the actors with whom it interacted. I have previously described how the PM team anticipated that numerous actors contested its position (Chapter 6). In line with this perception, the PM team made an effort to present itself, its activity, and the object in ways that it presumed would be attractive to others. Above I described how the team developed competences in the expectations and preferences of other parties

[45] "Because different people and groups in an organization approach historical experience with different expectations and beliefs, shared understandings cannot be assumed" (March et al. 1991:144).

and applied these competences in the presentations of itself. As the team learnt that the others represented different and, to some extent, divergent interests, it tried to meet these interests in its presentations by differentiating them. The material also indicated that the team and others consciously worked with task translations for the purpose of aligning actors in the task solving. These translations came to provide the bases for further actions of the PM team and others and subsequently the premises for further possible task development. So, the PM team seemed to try transforming the presentations of its activities, task, and objectives in line with the expectations of the others. This is consistent with how Callon and Latour (1981) described the negotiation processes between machines, people, and constellations to recruit allies.

As I have also pointed to previously, the task was not only translated, but also framed in different discourses. The PM team framed it in discourses that were likely to be of great interest to project people, as they were based on the criteria by which project practitioners define projects. These are the criteria of restricted time for task solving, teams with high expertise and that work with unique tasks. In addition, the team made requirements for what I perceived as a more local meta-discourse in the base organization, a discourse of safety. I suggest that what I perceived as strategic application of powerful framings also contributed to the task's changing appearance.

I have elaborated on how the task came to *appear* more multifaceted and complex over time as actors carried it out and translated it. In addition, it seemed that the task was multifaceted and complex the whole time, but the PM team did not initially realize it. I have described how the PM team increasingly expressed an emerging recognition of the multiple facets and complexities of the task (autumn 2004). The project manager said in an interview that, "at the start we were unable to see the different aspects of the task" (PM. 15.10.04). These observations match the expression: the more you learn, the more you realize how little you know. Applying this statement to project tasks would indicate that it is difficult to realize the whole range of a task's aspects when starting out. Only as one works with it is the many-sided nature of the task disclosed. Similar notions have been presented by different writers, Latour (1998a), for instance, noted that the object we work with will change over time as we work with it, and its complexity will be revealed to us. Along with this, Engeström (1987) has indicated that defining tasks are such complex matters as all task are multifaceted, and therefore task definition is much what the project is about. Weick's (1979) argument that we can only deal with parts of reality at a time and therefore bracket off portions for further sense making can also support this argument.

In accordance with my empirical observations and theoretical inputs, I have suggested that the task was acted on and translated and that this made the task appear multifaceted and complex over time. I have also suggested that the capacity

of actors that start with a project task is limited in that they cannot realize the complex and many-sided nature of the task until they have worked with it for a while.

7.2.4 A proposition on project task development

In keeping with the observations and discussions on how the task developed in the project I have followed, I will make the following proposition about task development.

Proposition 1: ***Over time, the project task's scope broadens, the task's nature evolves from primarily technical to more relational and the task is understood as increasingly multifaceted as the project works to solve it.***

7.3 Project competence evolves over time

Here, I will describe how the PM team competence developed over time as the team tried to solve its task. As noted in Chapter 1, project competence is regarded as the situated knowledge, skills and aptitudes of the project.

Being a fumbling high performance team (January 2003 – December 2003)
I have described how the technical premise providers, in accordance with the technical specifications of the task, laid out the presumed core activities to be undertaken to solve the task. Moreover, these premise providers explained what kind of competences they believed would be required to perform such work. As much of these competences were not available in the base organization, one tried to recruit members to the PM team based on the explications of required competence, again based on the task definition. The base organization seemed to succeed in doing so, as the project manager expressed that 'these are very good people – the best around' (PM. 08.03.04). Still, the first year of the project was characterized by numerous indications of trial and error when it came to the operational task solving. 'We just had to act and see what happened' (PM. 10.11.03).

According to the project manager, in its very early days, the PM team did neither place much emphasis on relational activities nor was it very efficient in such. The team worked from the perception that it had been established to be a high performance team possessing the competences required for task solving. However, the project work quite soon evolved to be highly relational. The team experienced that a great number of interfaces with various stakeholders constituted its task work and the team members expressed uncertainty regarding how to act in the position they seemed to find themselves. While the technical or operational competence had been the core considerations when establishing the team, the idea of relational competence had not been an issue.

Competence boost (January 2004 – June 2004)

The PM team developed extensive knowledge and skills in winter and spring 2004. These competences seemed to fall into three different categories. One was the competence to solve operational problems. This kind of competence seemed to develop during lengthy discussions about technical matters (1). The team also acquired knowledge and skills regarding where and how to find knowledge and get skilful advices with regard to the challenges the team was struggling to meet (2). A third competence emerging was sensitivity regarding whom to approach to affect decisions and how this could be done efficiently. Furthermore, knowledge about who the stakeholders of the project were, what the different stakeholders wanted and how they could be handled (3). I will describe these three areas below starting with the development of operational competences.

The PM team developed extensive operational competence because the task over time was revealed to be increasingly multifaceted and complex. It appeared to incorporate more innovation than first assumed and the team found itself in numerous situations without obvious answers to the question of what actions to undertake or how to perform them. This meant that, even though the PM team had been put together to be a high performance team it had to develop operational knowledge. This competence development happened as a result of extensive discussions where different solutions were tried out mentally. In many of the PM team meetings I observed, the team was arguing back and forth, moving with the trial and error technique, about different solutions, their form and their possible consequences (ref. for example in Chapter 6, the account of how the team took action operationally). Along with the technical competences that gradually emerged during these discussions, competences also evolved on how to carry out discussions on the technical matters the team struggled with, and when to end the discussions. As spring arrived, the members had developed ways to carry out the discussions efficiently. They learned when discussions had reached their peak by being able to sense when little more could be gained by discussing the case further. Regarding the operational competence, one might therefore suggest that the PM team developed two capabilities: their technical competence and their skills in performing discussions of technical matters.

The PM team also increased its competences in utilizing knowledge developed by others. It learnt where useful knoweldge could be embedded and how it could get access to this knoweldge. As I have mentioned, the PM team found that it did not have the competences required as the task unfolded. Not only did the team try to develop these competences itself, but it also sought out sources where knowledge could be embedded. Knowledge seemed to be found in the numerous technical regulations and specifications embedded in the quality system of the base organization. In dialogues with technical premise providers these regulations were explored but they seemed to illuminate only some of the competence gaps experienced. Along with these explorations, the project owner representatives were

also approached. The PM team seemed to acknowledge, however, that the project owner representatives were of limited help in exploring the competence gaps. The general assumption emerging seemed to be, as the project manager expressed it (15.04.04), that "there aren't many people we can play ball with". This acknowledgement made the team conduct extensive discussions regarding where to seek appropriate knowledge and advices and also made the team try out different alternatives. The PM team engaged in workshops with similar emergency communication projects in other countries, and workshops were held with the sub-contractors and users. During winter and spring 2003/4 the project sought out quite a number of sources that proved more or less helpful, but as spring arrived the number of possibilities were reduced. There seemed to be a set of relations recurring in the project's exploration of competence. The 'knowledge-relations' that remained over time were mainly those who had evolved into so-called standing workgroups. Thus it seemed that the PM team, after having sought various sources for knowledge, had found a limited set of relations where knowledge and advices to enable task solving might be accessed.

Thirdly, the PM team memebers became competent in pertaining whom they could approach if they wanted things to happen faster or if they wanted to have an impact on decision outcomes. I have presented examples of quite typical diaolgues of the team (for example the descriptions of how the PM team took action realtionally in Chapter 6). These internal dialogues seemed to follow a pattern and often started with one of team members reporting on their situation. The project manager would typically ask: "is that a problem or will that be a problem regarding the planned delivery… ?". This question often referred to the time aspect of the delivery. Then, if the answer was affirmative, the next question would be: "what do we do?" The answer to this question was often: "who is responsible for this at the main office/at the Technical division or at the sub-contractors', and who can we talk with?" The PM team members discussed these questions and often identified whom to approach and how to compel them to make quicker decisions. The PM team spoke of 'time-appropriate-decisions'. Over time the team seemed to build up a sensitivity regarding whom to approach if the team wanted the project moved in a certain direction. The team also appeared to develop a sensitivity regarding what actors to move around to get certain things done, and how to do it when these were presumed to be involved in certain dialogues and decisions[46].

Along whith the knowledge of who the stakeholders were and with whom to interact to move the project in a certain direction, the PM team developed competences regarding how to interact with various interfaces; with the technical premise providers, the subcontractors, and stakeholders. As the story in Chapter 6 indicated, the PM team became quite sensitive regarding what to say and how to say things, and not the least the timing of messages. More specifically, the team

[46] This will be clearer as research question 2 and 3 are elaborated on.

became increasingly aware of how to frame a message to materialize it to its full extent an aimed for achievement. Gradually, the team learnt to differentiate between *how* messages could be framed differently depending on *whom* it communicated with. When about to approach a certain actor the team members often went on elaborating on their own history of working with this actor. Besides, they often tried to apply these competences as strategies for how to communicate with those they wanted to influence. Competence development in the team also came about as a result of emerging action strategies, for example the ways the team learnt to save itself time. There were times when the PM team needed formal decisions on what actions to take, but it was unable to get the decision makers to make these time-appropriate. Through experience the team learnt that it could act in advance of a formal decisions as long as it had tested what a few other actors in the base organization thought about the issue. 'We just have to get a feel for the decision' (PM. 10.03.04). In short, widespread relational competences emerged as the PM team frequently interacted with various stakeholders. This competence contained ideas of who the stakeholders were, what they wanted, and how they could be affected. This knowledge was turned in to strategic application of discources. However, what I found most noteworthy was the team's dynamic treatment of these questions, meaning that they turned to these questions over and over when interacting with the various stakeholders.

Applying, refining, and embedding competences (July 2004 – December 2004)
Winter and spring 2004 were characterized by heavy competence inquiry. During autumn 2004 there was still extensive development of knowledge and competence, but the learning curve was less steep. As the project evolved, the problem-solving dialogues were less extensive, yet more knowledge was developed based on shared reflections on how processes might be improved and how the obtained experiences might be valuable for future work. For instance, the PM team, on its own initiative, evaluated the interaction between itself, the PM team of Alfa and the PM team of Beta. It engaged in extensive reflection, focusing on how to improve the interaction between itself and Alfa's PM team 'to enable synergies emerging' (13.10.04).

I have explained how the project task solving became more about how to handle interfaces. Over time, the PM team appeared to develop sensitivity for what would work in the interaction of interfaces. This became visible, for example, in the team's reflections on the implementation of the system. Among other things, the PM team discussed how to facilitate system implementation by making sure that Alfa delivered the system to the project and then the project would hand it over to OPM. According to the PM team, if OPM and Alfa were to interact directly, the system would never be implemented. This conclusion was based on the PM team's explained perception of how the OPM staff always wanted more than Alfa could deliver. In addition, according to the team, there was a huge communication gap between Alfa and OPM. The mentioned sensitivity regarding interaction of interfaces also came about in the PM team's reflection on how to lay out system

operation routines to facilitate smooth practicing. At the heart of these reflections were experience-based development of guidelines for the interactions between the sub-contractor, the base organization, and the operational unit. These reflections were always referring back to the PM team's experiences with these parties over the past two years. The team used this sensitivity to embed their knowledge into codes and manuals and into routines of operation for OPM.

I have described how the PM team's competence development gradually became much about reflections on and maintenance of interface-knowledge. I will also illuminate how the team's knowledge work was reflections on their own work processes. In autumn 2004 the PM team compared the practices of various matters that had emerged over time with the procedures that initially were developed for handling these issues. Procedures for system design had been written as the project assigned the sub-contractor. These procedures described how the sub-contractor's sub-contactor would design the system in accordance with the EC-specifications. When a design was drafted it would be presented to Alfa to submit to the PM team. The team would then develop suggestions for improvements that Alfa would take back to its sub-contractor. As the three parties worked, they found that the design processes were almost never-ending. Gradually, the practices for system design were altered such that design processes always started with an extensive workshop where the GSM-R project representatives, as well as representatives of Alfa and Alfa's sub-contractor participated. These workshops were based on the EC specifications and different design alternatives were discussed pursuant to how these specifications were understood. The three parties worked to clarify their expectations and to develop a shared understanding of what the design should look like. Based on these discussions a comprehensive meeting report was developed. After all three parties had commented on this, the sub-contactor of Alfa designed the system with basis in the revised meeting report. This procedure for the design process gradually emerged as the parties worked with system design. When the team realized that they were not working in accordance with the procedure that had emerged, the procedure was rewritten. I take this example as another indication of how emerging knowledge and competences gradually became embedded in procedures and manuals of operation.

Knowledge work is decreased (January 2005 – July 2005)

Overall, it is my impression that competence development of the team gradually took the form of reflection based on experiences and refinements of competences already developed, more than the previously apparent learning by trial and error and activities to find knowledge sources. Over time, the task seemed less complex and more repetitive and fewer competences had to be developed through trial and error. The active work of the PM team to embed knowledge into routines, mentioned above, seemed to contribute to efficient operations.

7.4 Discussing competence development

The question initially asked was: how does project competence evolve over time? Based on the empirical material presented, I will make some suggestions about how the PM team competence developed.

7.4.1 The competence level transformed

The recruitments of the PM team and the rest of the project participants were based on specifications of operational competence to solve the particular task at hand. At the outset, project participants and initiators of the project perceived the project to have the required competence. As the nature of the task changed, the perceptions of competence were altered in the sense that the team felt a lack of competence. I have described how the PM team and its sub-divisions acted on the task to identify what it was about and how it could be solved. The team undertook what it hoped was adequate actions but without knowing much about the consequences. It seemed the team members acted to see what would happen. This activity resembled the principle of learning by doing, as it was described by Dewey (1938) and learning by trial and error (Bandura 1977). The activities of the PM team that I observed resemble what March described as knowledge development through exploration.

> "Exploration includes things captured by terms such as search, variation, risk taking experimentation, play, flexibility, discovery and innovation" (March 1991:114).

Through these activities the PM team seemed to increase its knowledge and skills in operational and relational activity. This suggestion regarding exploration is supported by a notion from the sense making perspective about knowledge as "an activity in which the subject partly interacts with and constitutes the object" (Weick 1979:165, drawing on Gruber and Vonèche 1977). Although the activity was fumbling at first the team had a steep learning curve, and thus I suggest that the team also had talent for these activities. It seemed that the team obtained extensive operational and relational competence[47].

7.4.2 The competence content changed

I can rarely determine the project's initial level of relational competence, but the project manager has indicated that it was limited. He explained that little was said about who the involved parties were or how these parties should be drawn in the

[47] Several qualitative studies of project groups have come up with similar findings, for example Bragd (2002), Lindberg (2002) and Engwall et al. (2003) have described project groups' learning through exploration.

project. In my early observations, the PM team's relational work appeared fumbling. Eventually, the team seemed to become efficient in these matters. It seemed that as the PM team enacted the task as relational, it started developing competences on the relational activity. This argument is in line with the suggestion above regarding how the PM team developed competences through learning by doing (Dewey 1938) and exploring (March 1991). The expansion of competences seemed to evolve in the teams' awareness as vital questions with regard to the task solving:

- Who are the actors that we have to consider to develop the task?
- What do these actors expect from us?
- How do we act to give them the perception that they get what they expect from us?
- How to act to affect these actors?

My observations have indicated that altering knowledge and competence seemed to be an ongoing process that was highly related to the participation in activities and relations. Wenger (1998:4) has pointed out that knowledge is actually knowing and "knowing is a matter of participating (…) of active engagement in the world" (Wenger 1998:4). I believe that this was the case for the project I studied. Moreover, Wenger (1998:13) has proposed that learning as social participation reproduces and transforms the social structure where it takes place. This seemed to be the case for the PM team, who applied the enacted competences of relations in its further interaction and thereby altered the pattern of interactions. In addition, the team's relational competences evolved from abstract to concrete, from an idea of who the stakeholders were and how these could be handled, to hands-on guidelines for further action (Weick 1995). As the different patterns of interaction between the project and its stakeholders emerged, the relational competences became increasingly fine-grained and fine-tuned. The project's relating to various actors seemingly developed as shared histories of learning where situated competence was developed (Wenger 1998:87). The relational competence development will be further explored in Chapter 8.

I suggest that the PM team developed extensive competence in how to handle both operational and relational matters. This means that the team's competence areas expanded, from being merely technical to also being relational.

7.4.3 The competence work altered

In the beginning of the project the PM team worked extensively with problem solving dialogues and activities to develop knowledge and competence. I have suggested that the PM team engaged in learning by doing (Dewey 1938). Even though the team had been composed to possess the required competence, it was engaged in extensive exploration (March 1991). As the team acted and made sense of the actions (Weick 1979), the team members were able to develop shared

patterns of beliefs and cognitions (Argyris and Schön 1996 and Weick 1979). I have described how sensitivity emerged over time regarding what possible solutions could work and how interfaces could be handled. From mainly being based on trial and error logic, the PM team's dialogues grew to contain more experience-based reflections. A number of experiences had been gained and the competence work came to be about maintaining these competences for the future by embedding them into routines and manuals by re-writing the procedures. Broadly speaking, one might say that the competence work of the PM team developed from emphasis on direct task solving, using the strategy of trial and error, to working more with refining and maintaining the competences required. One might also say that the team, as it had developed knowledge through exploration, could exploit this in its further activity. Additionally, I suggest that the team's work with developing codes, routines of operations, and manuals might facilitate other actors' exploitation of the knowledge and competence that had been developed[48]. One example of the latter suggestion was the team's rewriting of procedures for design work after new practices had emerged as the involved parties worked with design. The activity of the team in re-writing strategic procedures resemble what Argyris and Schön (1996) describes as double-loop learning. Not only were practices for operation developed but also the more fundamental procedures and values were revised.

7.4.4. Propositions on project competence development

In accordance with the empirical material and the theory presented, I have developed two propositions about project competence development.

Proposition 2: ***The project competence increases as the project explores its task and, over time, it becomes highly relational and situated, while learning what actors it must consider, what their expectations are, and how to meet these expectations.***

Proposition 3: ***The project competence experiences changes as project conduct evolves; from exploration and inquiry at the beginning, it increasingly includes embedding knowledge into codes, manuals, and routines of operation.***

[48] The team's activity to store knowledge resembles what is often described as important for organizational learning (Argyris and Schön 1996).

7.5 A comment on task and competence

In this chapter I have indicated how the task, although it appeared as quite clear in the beginning, evolved as the PM team worked with it in three ways. It was broadened in contents and also became increasingly relational in nature. Additionally, it appeared as increasingly multifaceted and ambiguous. The development of the task and the task's appearance altered the competence requirements of the team and generated activities to enhance competence. Along with the task development and the task solving activity, the team's competences evolved in various ways. As the task was enacted to be highly relational and competences on relational activity were developed, the team experienced that it could work efficiently with stakeholders, affecting their actions. Experiencing its own efficiency in relational activity and in obtaining influence, the PM team also worked to make the task more relational. Thus, I suggest that the task development and the competence development were co-evolving and entwined processes. This was also indicated in the first proposition regarding how the task grew increasingly relational and the second proposition suggesting that the project's competence became highly relational and situated.

The propositions I developed indicate that the project competences were continuously evolving as the PM team acted on the task and that it took the form of knowing in action and interaction (Wenger 1989, Orliowski 2002). My empirical material supports the notion that project work was "at the same time an acting process and a learning process" (Lundin and Midler 1998:2 and how projects can be non-linear expectation-action-learning chains). The description of how situated competences were developed and applied to act more efficiently indicates that a valid learning process (March et al. 1991:144) occurred. That is a process "by which an organization is able to understand, predict and control its environment" (March et al. 1991:144). Over time, the PM team's ability to act efficiently on its environment increased.

7.6 Task solving process

In Chapter 2 I presented what seemed to be deviating views on the extent project work consists of pre-planned task solving processes of high rationality, linearity, and controllability that can be managed to reach clear goals. The traditional perspective to project management argues in favor of high rationality, linearity, and control, while the more alternative project research has criticized these ideas. The latter perspective suggests that the task, the task solving processes, and the project goals are processes of social construction.

The traditional project theories generally seem to share the opinion that knowing where one is going is of great importance when starting a project[49]. In accordance with this belief I assumed that the PM team participants would be able to explain clearly the direction of the project activity, but when I spoke with them it appeared difficult for them to do so. Moreover, this uncertainty appeared to grow as the team worked with the task. When the team had worked for about twenty months I asked the project manager if things had turned out as the team had expected. The project manager looked at me and said: "I am not sure to what extent we actually knew where we were going. It was hard to picture when we started" (PM. 15.10.04).

My observations of the PM team supported the citation of the project manager about the team's uncertainty. It seemed that the task appeared ambiguous. I suggest that the PM team, since it did not know where to go and what to do, found itself in an unfamiliar situation. Actors being in unfamiliar situations have few automatic responses triggered, in that there is little knowledge to exploit (Weick 1979). They have to engage in exploration to develop knowledge that can be used for task solving (Weick 1979). The empirical material indicated observations of how the PM team seemed to act to solve the task in an trial and error way, or as they expressed it themselves: "we just act and see what happens', 'maybe we should try ……?"', and "the road develops as we walk it". These observations of the PM team's actions and expressions provide strength to the indications made by critical voices to the planning and control models of the project management theories. They indicate that PM teams act as creative problem-solvers in very uncertain contexts (Charue-Duboc and Midler 1995, Pinto et al. 1995, Bragd 2002), rather than as pre-programmed entities.

Through the PM team's early exploratory attempts to solve the task, the substance of the task seemed to be reconstructed a number of times. Among others, as I accounted for, the task developed from being merely technical to becoming highly relational. Influenced by Weick (1979), I will suggest that the project team's task solving was not determined by the task as the project owner had defined it. That is, the PM team did not simply act on the task that was placed in front of it, but rather on the perceptions the team had constructed as the first task solving attempts were made. Weick (1979) used the example of an orchestra to explain his point, saying that:

> "What the orchestra members face is not simply the composition placed in front of them, but rather what they do with that composition when they play it through for the first time. The musicians don't react to the environment, they enact the environment" (Weick 1979:139).

[49] This is amongst others indicated by the great importance that is often placed on having clear goals.

In accordance with this, the project task solving is not a reaction to a task, but an enactment of a task, where the first attempts provide contingencies for what may happen later. When the PM team subsequently split the task into sub-tasks and work procedures, it was done according to how the project task was enacted – not the task itself. In the words of Weick, the orchestra exists in the mind of the musicians (Weick 1979:141). The salient assumption is that the musicians and the PM team possess cause maps of the task as they have enacted it. The participants in music making or GSM-R making will super-impose these maps on flows of experience (Weick 1979:140). This means that as the PM team enacts the task solving to be dealing with actors who contest the project, the team will impose this idea on the project reality by acting, as we saw, to identify the various stakeholders and form and maintain relations with these. As these other actors are worked with, they respond and the project task will in turn become more relational.

In my observations of the PM team there were several statements regarding how the team needed to, or had managed to, 'scramble this and that together'. I asked the project manager what he and the team members meant by that and his answer illustrates the argument I presented above:

> "When we started planning the time frame of realization was extremely ambitious. And then there was no option to change the time schedule; we didn't have the freedom to do so. Then the issue became negotiating what we could produce, … or defining the right product in as much as the time frame persisted. Thus, given that one cannot reverse all decisions, we need to see what we can do to scramble the most important things together and then get on with it. That is, I think, what I mean by this expression. The system could not be developed the way it was specified within the given time frame. If we were to have delivered what was initially planned we would have needed much more time which we had not" (PM.15.10.04).

The citation above indicates that task solving became negotiations about what the most important things were and how to work with these. It has been pointed out that task solving in groups has proved to be much about establishing what the problem is, being a process requiring dedicated negotiations (Engeström 1987, Engeström 1999). "The initial existence of a shared problem or task can rarely if ever been taken for granted in work teams" (Engeström 1999:398). This is in accordance with the idea that meaning is a social construction process. "Meaning is not self-evident, but must be constructed and shared" (March et al. 1991:145).

Above I argued in favor of acknowledging that project task solving starts with the project team inventing the task and the question becomes what does this mean for the nature of the further task solving process? Weick (1979) has argued that organizations that have recognized that tasks are invented will not work on finding the truth, but rather try to develop different and reasonable versions of reality

(Weick 1979). Consistent with this the task solving should be expected to be negotiations for credible versions of reality. Several indications of how the PM team's task solving appeared as explorations of reality accounts have been provided (Chapter 6 and the presentation of task and competence); for instance, the examples of the team's explorations and presentations of different versions of the technical system's nature and its contribution. Other examples were found in the PM team's activities to anchor decisions and to explore which translations of decision the different parties would consider as credible. With regard to this, the task solving was not so much about finding the right and sufficient information as it was trying to make it a credible version. In order to develop credible accounts of development processes; actions, information and interpretations that occurred dispersed in time and place, must be connected. To be connected these entities must be translated and fitted together to appear as a chain. A number of studies have pointed out that the interpretation of what elements go together becomes more important (March and Simon 1958/1993, Weick 1976, Orton and Weick 1990) than trying to find the 'right' information in such connection processes. This implies that project task solving is driven more by plausibility[50] than accuracy. Therefore it is a challenge to develop coherent presentations of incoherent development process. It has been suggested that a good story can enable creation of coherence, as the story can fill in the gaps and provide the missing explanations. "A good story holds disparate elements together long enough to energize and guide action" (Weick 1995:61). Furthermore, Weick has stated that sensemaking needs a good story, it needs:

> "something that preserves plausibility and coherence, something that embodies past experience and expectations, something that resonates with other people, something that can be constructed retrospectively but also used prospectively, something that captures both feeling and thought, something that allows for embellishment to fit current oddities, something that is fun to construct. In short, what is necessary in sensemaking is a good story" (Weick 1995:60-61).

In addition to the suggestion of how stories facilitate sensemaking (Weick 1995), it has been pointed out that organizations tend to devote themselves to developing collective understandings of history. It has been proposed that organizational experiences tend to be translated and developed through story lines in the

[50] To say that projects work from the logic of plausibility might be seen as a serious accusation. However, Weick (1995) has suggested that accuracy is secondary to plausibility "*in that speed often reduces the necessity of accuracy in the sense that quick responses shape even before they have become crystallized into a single meaning. A fast response can be an influential response that enacts environment" (Weick 1995:57).*

interactions and that these story lines are broadly shared (Martin et. al 1985, Levitt and March 1988).

The story line of the GSM-R project was presented in a story of after-rationalization. I have described how the PM team was put together to be a high performance team in the GSM-R development. The task assigned was initially assumed to be highly technical and manageable. The PM team early acknowledged that the task was more complex and multifaceted and less manageable than first assumed, but still the team worked with the appearance of being in control. In winter and spring 2004 the team acted as if it were on top of things by presenting neatly packaged solutions for the Railway Inspectorate and others. When the team failed to complete promised deliveries, stories of unforeseen events were connected to the actual situation to explain and to provide expectations for further activities.

As the PM team applied for the extended time the first time, the testing challenges were argued to be the main cause. The second time the milestone could not be reached, the PM team managed to get Gamma, the main user, to apply for prolonged dispensation for operating without the system. This was a planned strategy that the team discussed in different meetings, deciding to explain to Gamma how this organization had too limited a time for training employees in system operation. Since the PM team had a reputation for being highly competent, it would not admit to the problematic situation but explained instead that the 'unforeseen challenges' of testing and training, rather than *lack* of competences and skills, had caused the delayed deliveries. The delayed deliveries meant that the system was implemented gradually. Several quite limited deliveries, rather than just a few but more extensive ones were carried out. In communicating this fact, the PM team emphasized that the step-wise implementation would both make the training of the users easier and the implementation safer. As the problems with the promised deliveries persisted, the aspects of innovation emerged and seemed connected to the challenges related to development of the competences required. As summer and autumn of 2004 went by, *the adventure of GSM-R* development was presented with emphasis on how innovation challenges, tremendous time-pressure, difficult topography and weather conditions had turned the project task solving into an extreme sport. The project communicated that it was a little delayed, but still satisfied, as it worked with a highly innovative task and under extreme conditions. This story line appeared to be shared by the project members. As I observed it, the project owner also seemed to pick up on this story when presenting the project and its situation in various forums. In line with my empirical and theoretical reflections I have developed a proposition regarding the nature of task solving.

<u>Proposition 4:</u> Project task solving is based on inventing project tasks and negotiating credible versions of the task solving process. Credible versions are developed as actions, and events that happened dispersed in time and space, are connected and presented in story lines.

7.7 A digression – project goals and plans

Project plans and goals are commonly considered as important of organizing projects' task solving activities. I will make a brief comment on both goals and plans. As this is not at heart of my thesis I will not go into the well of theories discussing theses issues, but rather make a brief comment based on my empirical observations.

In Chapter 2 I touched upon how project goals are discussed as determinants of the task solving activities in projects. Based on observations of the technology development project I followed, I will make three suggestions regarding the determinants of project task solving. The first suggestion is that the nature of the task solving process is open in the sense that it is not conditional of a clear and shared goal. Second, the task solving is contingent on the project's history and cannot take any direction. The reason to start the project was the goal of implementing GSM-R. It is not likely the project would emerge developing bicycles, as its funding had been provided by the government to the state owned organization that owned the project. When the funding was provided, a number of premises affecting the directions had been connected to the funding, among others it was depending on EC specifications for the end result. Another factor the project developments were contingent upon was the team's composition. The team had been composed to be a high performance team and had to maintain its appearance as such, by working hard to develop the GSM-R system. Moreover, it seems likely that the team's body of knowledge guided what could happen next. Thirdly, I will suggest that the boundaries for what could happen next were fluid. These three suggestions merged to an impression of how there seemed to be a zone of possible development for the GSM-R project.

> "The notion of zone is crucially different from the notion of goal. While a goal is a fixed end point or end state, a zone is the distance or the area between the present and the foreseeable future" (Engeström 1999:66).

An important characteristic of development zones is that they are dynamic (Vygotsky 1978). As the process in concerns develops, the existing state and the state aimed for are changed, which makes the zone of possible developments change. This means that when a child has learnt to write, the development zone for how the child can communicate is different than it was before the child acquired the skill of writing. When the project has developed operational and relational

competences to align other actors its zone of possible development is different than before these competences were developed.

If the project task solving has a zone of possible development, detailed planning becomes complicated. Observing the GSM-R project, the PM team worked with plans both at an over all level and at a detailed level. It comes as no surprise that the detailed plans were revised over and over again and that there seemed to be limited faith in these plans. However, the milestone plan seemed to have an important function in the task solving.

During my observations the task solving activities of the PM team both seemed to increase and to become more focused as the different milestones were coming up. As these approached the PM team engaged actively to package the expected delivery. This packaging came about as connecting the technical development with social elements, regulations and also stories, taking care of the stakeholders' expectations. Moreover, the packaging took the form of bringing together what had happened up to the milestone in question, by experimenting with plausible combinations of elements. This experimentation was guided by what was expected. Moreover, it rendered a closing of options as well as new actions and conscious attempts to restructure actions. The reframing of the deliveries and the initiation of the process evaluation were examples of such.

I will suggest that in the project I studied the milestones were composed as events that incorporated both past and present, but also anticipations of the future. These observations fit the principle of recursive relations that I presented in Chapter 3. This principle gives emphasis to how the understanding of a "now" is formed out of the meeting between a past and a future" (Bakken and Hernes 2003:70). As I have given significance both to the principle of recursive relations and contingencies, I have implied that projects, at all times, live partly in their past, but also may consider different futures (Bakken and Hernes 2003:70). The milestones seemed to embed all the three modi of time, and to carry anticipations, of the PM team as well as those of the stakeholders, and retrospections. As anticipation and retrospection have been suggested to be essential devices for structuring 'things' in a way that seems meaningful (Weick 1995, Patriotta 2003), I suggest that the milestones structured the project activity and enabled it as they were connected events of feed-back and feed-forward. The milestones seemed to enable focused actions and active attempts to connect loose ends to make a package. In addition, the milestones appeared to be points for restructuring activity and embedding expectations of future activities. This was for instance shown in the examples of the generation of the process evaluations process that I described in Chapter 6.

In this chapter the development of task, PM team competence and the nature of task solving has been discussed, to explore how important processes of project organizing evolve.

Chapter 8
Relations

In this chapter I will present empirical material illuminating the second research question that I posed: *How do projects form and work with relations?*

In Chapter 2, I described how project literature discusses the extent of projects being embedded entities. While the traditional perspective rarely works with issues of embedding, the more alternative perspective discusses projects as embedded. I wanted to explore how a project formed and worked with relations by connecting and reconnecting actions and entities. I will present empirical materials that illuminate the second research question, point to the appearing tendencies in the material, and discuss possible findings.

The story of Chapter 6 provided numerous indications of how the project formed and worked with relations. Here, I will look into a few relations one by one. I did not select these relations in advance, but rather chose to explore them further as they emerged as recurring and central when I followed the PM team around. Since I have previously elaborated on how the development of the technology related to various political, social and, economical processes, I will not elaborate on the relational emergence of technology here. What will be illuminated is how the PM team interacted with actors in the base organization, with the sub-contractors, users, and with the Railway Inspectorate.

As I have previously mentioned, I look into the evolvement of relations from the project's perspective, descriptions and actions. If the descriptions were developed from the perspectives of one or several of the other actors, they would have been different.

8.1 Relating

Observing the project, I noticed that some relations were formed as the PM team started its conduct while other relations emerged over time. There were two relations laid out from the beginning: the PM team's relation with the project owner and with the main user group[51]. In addition, the relations between the project and its two sub-contractors were formed early in the project's conduct. In its early days the PM team also initiated a direct relation with the Railway Inspectorate. In the story of Chapter 6, I have described how the PM team felt contested and

[51] Since the project was established to build a train management system it was a given that the main user group would be the train operators.

therefore took action by identifying what it perceived as the most important stakeholders, amongst these the Railway Inspectorate. Thereafter, the PM team approached the project owner with the request to handle the interaction with the Inspectorate itself. As it was heard, the PM team became the first in the base organization to handle the interaction with the Inspectorate itself. Thus, from the early days of the project there were four actors to whom the project quite obviously had to relate: the project owner, the train operating companies, the sub-contractor, and the Railway Inspectorate. I will take a closer look at these relationships. In addition, I will briefly look at how a few other actors related. The descriptions will not make up a tidy pattern of how relations were formed and worked with, because my observations were not. The relations seemed messy and changing over time and rather ambiguous. I will start by describing how the PM team and the project owner related.

8.1.1 Relating to parties in the base organization

From the very beginning of its life, the PM team engaged itself in actively exploring and defining its position in relation to the different stakeholders in the base organization. The main premise providers of the project in the base organization were the representatives of the project owners, the technical premise providers, and the premise providers of traffic operation.

In Chapter 2 I discussed how project theory pre-supposes that project owners determine the activities of project teams and project managers. The PM team I observed seemed to act quite independently of the project owner, and, generally speaking, the freedom seemed to increase over time. The project appeared to have a larger action space than most project theories suggest projects to have; this might be because of the extensive energy the PM team had invested in broadening its boundaries of operation. The project manager had expressed that the team needed to create space for itself in order to get things done. “We had to get them an arm’s length away” (PM. 19.02.04). ‘Them’ here refers to the owner representatives and other stakeholders within the base organization. As presented in Chapter 6, a recurring argument presented by the PM team was that lack of time required that the team took greater part in decision processes than project teams are normally supposed to. Moreover, since the task appeared ambiguous and multifaceted with numerous interfaces to be handled (PM. 15.04.04), the team increasingly argued that with its unique expertise it had to be given more action space, as it would improve task solving.

Additionally, the project offered to do the deliberation work in decision processes and was trusted with this responsibility. Over time, as the PM team seemed to develop extensive knowledge in subject matter, it was also able to suggest the best alternatives in different decision processes. The direct interaction with the Railway Inspectorate (described in Chapter 6) also provided the PM team with first hand

information that appeared useful when exerting authority. The observations of the PM team from winter and spring 2004 revealed that it gradually exercised authority and made some rather important decisions that were not contested. The project manager explained that as long as the decisions of the team lay within the boundaries of the broadened action space, other actors did not interfere. It seems that the PM team had negotiated increased freedom to decide for itself.

The PM team not only approached the project owner to enact action space and influence, but also the premise providers for technical solutions and the premise providers for traffic operation in the base organization. The team described the task and the problem solving as unique, both compared to the other activities of JBV and to other telecommunication projects. Once more it argued that, in accordance with these specific requirements and the team's unique competence, it should be involved when decisions were made.

The Technical division was involved with the project from the beginning, as it was this department in the first place that spoke in favor of Norway signing the EC contract on developing the GSM-R system. Still, there was not much interaction between the two in the early days of the project conduct. As the PM team worked with the task it had to initiate more direct contact with the Technical division. It wanted to gain insights into the specifications and regulations and to get access to the competence this division possessed. Moreover, the PM team found its task solving would benefit from having decisions of the Technical division made faster than they had in previously, and it therefore approached this division more often to enforce decision-making.

In its early days the PM team did not spend much energy on the relations with the Traffic operation unit. Only some interaction occurred, as there was no tradition in the base organizations for projects interacting with this unit. Additionally, the traffic operators had limited capacity available for such interaction. When the troubles with Gamma escalated and the number of design cycles increased, the project approached the Traffic operation unit more often. The aim of this interaction was to create workable solutions, both for Gamma and for the Traffic operators, as they would be closest to the future GSM-R operation. The project manager also explained that this interaction had three other functions. First, it proved efficient in testing the reality of the requests of Gamma. Second, the PM team could acquire knowledge about how to interact with Gamma as the Traffic operation unit and Gamma had a long history of interaction. Third, it enabled the interaction with Gamma. Although it had been developing slowly, the interaction of the Traffic operation unit and the PM team seemed to turn into a very useful one, and in autumn of 2003 the two parties seemed to interact quite frequently. Still, the project manager indicated, looking back, that it would have been useful to interact more with the Traffic operation unit in an early phase.

In general, the interaction patterns of the PM team with the project owner, the Technical division, and the Traffic operation evolved in different ways. Over time, the project interacted more frequently with all these parties and all parties initiated the interactions. In its early days the PM team had mostly initiated interaction. From forcing itself on the premise providers in the Technical division and in the Traffic operation, the PM team gradually came to be asked about what alternatives it assumed to be the best and what it preferred. As the project was accepted as a voice in these decision-making processes and developed competence, it appeared taking on the position of suggesting the best solution, also 'just informally'. I guess one might summarize that the PM team started at the sideline of decision processes in the base organization but gradually became a natural part of the discussion where the guidelines were constructed. I suggest that in the interaction of the project with the project owner, the Technical division, and the Traffic operation, it took on responsibility and exerted authority.

8.1.2 Relating to the sub-contractor(s)

The spring 2003 the project assigned its sub-contractors and relations with them were gradually developed. These relations took the form of being procedural and formal, rather than informal, and the PM team concentrated on drawing up contracts and getting basic routines established. It actively worked to implement the agreements and routines by trying out different models of cooperation amongst the three of them. The three parties seemed to "feel each other out", and through these explorations the boundaries of authority and responsibility gradually evolved. The relations seemed friendly and polite, and communication was vague. In one of their meetings (20.02.04) the PM team discussed how it, on purpose, had communicated ambiguously with Alfa because the team was uncertain about the solidity of the contract with Alfa. After having explored various aspects of the contract and concluding that it took care of the PM team's concerns, it communicated clearer.

In the winter of 2003/4 the communication between the three parties increased in precision as the three parties had started the work and obtained some experience. At this time the PM team decided to transfer Beta's contract to Alfa, for Alfa to handle, in order to reduce the number of interfaces it took part in[52]. Besides, during this period the task revealed itself to be more ambiguous, broader and more difficult to control than initially assumed. This made the PM team initiate interaction more frequently, the dialogue became more concrete, and the PM appeared more demanding. There seemed to be a growing dissatisfaction in the PM team regarding the work and competence of Alfa (20.02.04), which surfaced in expressions such as: "Alfa lacks resources, hours and competence in planning"

[52] I have only described the relationship between the leader team and one of the sub-contractors, Alfa, since Alfa got to handle Beta's contract.

(22.03.04). In spring 2004 the PM team's discussions increasingly became more about how to enable Alfa to do their work, amongst other things by changing their own organizing to compensate for the lacks of Alfa's. It was argued, "since Alfa lacks competence and responsibility for planning and managing the processes that are required, it is even more important that the project functions optimally" (E. PM meeting 22.03.04). Another member responded that "we have to make it easier for Alfa by being good ourselves" (PM meeting 22.03.04). The PM team also discussed how they could evaluate and really use the experiences obtained in Phase 1 to become better and interact more efficiently in Phase 2 (PM meeting 22.03.04).

As Alfa did not deliver as promised and in accordance with the expectations of the PM team, the relations between the two became more difficult. In winter 2004 the PM team took actions to increase the production of Alfa by helping them plan and prioritize. From spring 2004 shared planning sessions with Alfa and the team were held monthly and a person from the PM team was transferred to Alfa to help out with the planning work. The PM team also spent extensive time discussing Alfa's plans, to identify the reality of these, and lack of reality was pointed to a number of times. Moreover, the PM team worked to help Alfa by providing incentives, as well as threatening with economic punishment. As the story showed, the PM team held back information about being delayed, in order to make Alfa work as hard as possible for as long as possible. This strategy seemed to get the project to where it wanted to be, since the same strategy was applied when it reframed the delivery summer 2004.

During spring and summer 2004 relations between Alfa and the PM team were characterised by both parties displaying mistrust. The PM team had expected Alfa, being a multi-national telecom giant, to just take care of the technical delivery, which was not done. The PM team expressed disappointment and frustration regarding Alfa's work, and with its project management in particular. The PM team demanded that Alfa replace several members of the organization, amongst others the project manager. In addition, the PM team insisted on having a say in whom the sub-contractor employed. As the 1.5 milestone approached, follow-up meetings between the team and Alfa took place on a daily basis. Also, the project manager held meetings with the top management of the sub-contractor every other week. After daily meetings between the PM team and Alfa representatives and weekly meetings with top management of Alfa's base organization, Alfa provided more resources, altered the project organization, and carried out the GSM-R team's request to replace the project manager. In autumn 2004 the project manager and his team indicated that the quality and intensity of the sub-contractors' work had been improved and they were more satisfied with Alfa at this point. When task solving eased in autumn/winter 2004 and the project was more on top of things, the relationship of the sub-contractor and the project improved. Evaluations were undertaken and adjustments of both parties' project organizing were made. In spring 2005 the PM team and Alfa interacted less frequently as the team was more

satisfied with the level of resources dedicated by Alfa as well as their work. However, Alfa's problems with regard to keeping up the planned production remained and generated frustration, and team activities increased to enable Alfa's work and to rectify failures.

Above, I have described how the interaction of the project and the sub-contractor evolved in the sense that it gradually became more concrete and decreasing in formality and politeness. I have also illuminated how the PM team developed strategies to enable and enforce Alfa's work to get the technical solution under control. Over time, the PM team became more satisfied with the work, competence, and Alfa' use of resources, yet the relation appeared troublesome throughout the period I followed it. The two parties displayed quite different reality perceptions and I asked the project manager about his perception of the coherence between the perspectives of the two of them;

> "I think there are gaps regarding some issues but not all. I do think they are decreasing, though – and not too severe now. I think, in many ways, it tried to take on the role we had intended for it. It just did not make it" (PM.13.10.04).

Furthermore, the two parties had started their interaction with differing logics of operation (PM. 13.10.04). Alfa was used to the telecom business logic of acting first and fixing later. While the PM team also worked with the trial and error logic its participants were embedded in the logic of safety being the number one priority. Over time, Alfa increasingly took on the argument of safety and dedicated more resources to having more complete, i.e. more secure, products ready for implementation, and this made the interaction easier (PM. 13.10.04).

8.1.3 Relating to the main user

It was obvious from the beginning of the project conduct that the main user of the GSM-R system would be Gamma, the largest train operating company in Norway. In the early days, Gamma did not participate actively in the negotiations about the nature of the system. It did, however, explain very clearly and frequently how it did not want the GSM-R system. During spring 2003 several meetings between the project representatives and Gamma occurred where possible design solutions and expectations of functionality were discussed. Over time, these meetings evolved into standing groups for system design. In addition, a project council was established early in the project life and Gamma started to participate actively in this forum. The representatives of Gamma seemed to stay tuned in to the process, presenting various requests, also after most of the system design and functionality had been decided on. These continuously presented requests of 'more' created frustration on both sides, both parties expressing how they did not get through with their communication.

The interaction between Gamma and the PM team appeared to be quite problematic. Gamma did not want the system, it was most skeptical of the information provided regarding the system and also refrained from testing it. As Gamma expressed it, the GSM-R system's implementation works created insecurity amongst the train operators. The system implementation would also mean extensive work with altering a number of operating procedures and training the people in these new routines. Moreover, installing the system in the trains would mean inconveniences and, not at least of all, enormous costs for Alfa. Meetings between representatives of Gamma and representatives of the project were frequently held, also at top management level. Still, interaction remained difficult and Gamma continued to be generally negative to the GSM-R development. Gamma explained their dissatisfaction with the system, as they always wanted more than the system was designed for and more than the project aimed to deliver. These divergent perceptions caused a number of extra design cycles and discussions. Gamma's lack of enthusiasm appeared not only through its verbal expressions but also in its actions, causing problems with system implementation. Employees of Gamma would play with system components as they were installed, or just not follow the user instructions, causing problems with getting the fragile system on the air. In several cases representatives of Gamma also interfered with the testing sessions. These actions made the PM team develop strategies for keeping Gamma's representatives away as they were doing installation and implementation. Moreover, the two parties strongly disagreed on the responsibility for the required training. Still, what caused the most problems for system implementation was Gamma's delayed equipment investment. To get the system implemented, the PM team decided to buy the equipment and lend it to Gamma. Over time, the investment discussion turned into quite problematic one, as Gamma a year after the system had been implemented had not made the investment and also refused to return the borrowed equipment to the project.

Over time, the PM team seemed to develop knowledge of efficient ways to approach Gamma, as well as how it could take actions to get around the problems in this relation, for example by denying Gamma access to the system testing processes. Another example of how the PM team coped with Gamma was related to negotiation of responsibility for training people. The PM team claimed that responsibility was in Gamma's hands, yet, at the same time it offered to help out with resources, thereby buying itself free of this responsibility. Finally, as I pointed to above, since Gamma did not make the required investment, the PM team invested in the equipment and then lent it to Gamma. The PM team also seemed to apply knowledge that was developed through the interaction with Gamma in broader strategic activity to buy itself time, amongst other things. In the story of Chapter 6 it was illuminated how the PM team extended its deadline of delivery in April 2004 by acting to influence Gamma. Its strategy was to explain thoroughly for Gamma how difficult and time-consuming it would be for Gamma to train its employees in GSM-R operation. This made Gamma ask for extended operation

without GSM-R and thus the project had more time to complete the remaining functionality.

It is also noteworthy how the PM team developed knowledge about what Gamma wanted and how Gamma would act, as well as how the team's relation with Gamma was entwined with other Gamma relations. This knowledge was applied strategically in the team's further activity. One example was how the team, to align the Railway Inspectorate in the reframed solution, acknowledged the importance of aligning internal and external stakeholders before approaching the Inspectorate. As the PM team worked with strategies to align stakeholders, it discussed how the internal traffic operators would probably not be positive; therefore it would be better to approach Gamma first because they would be. The team argued that Gamma would probably welcome this solution as it could delay the investment decision further and would also get more time for training train operators. These two examples indicate that the PM team acquired knowledge about Gamma's preferences and way of thinking and could apply this in the interaction with Gamma to move the project in the direction it aimed for.

If comparing the Gamma-PM team relation with other relations of the PM team, the first one seemed special. It was more embedded in a broader history than the other relations. What I mean is that Gamma and the base organization of the project had more of a shared history as they used to be one company until ten years ago. Since the split, the interfaces between them have been vague and the question of ownership and responsibilities of properties and operations difficult, or, in the words of the project manager, 'there is a history of disagreements' (PM. 19.05.04). This history seemed to tap into the interaction between the project and Gamma and make it difficult. Both Gamma and the base organization of the GSM-R project were owned by the Ministry of Transportation and Communication and supervised by the Railway Inspectorate, and this also made the relationship special. During the discussions of the PM team meetings the members seemed most aware of this interrelation, and it seemed to affect actions, such as the strategic communication. When the PM team members discussed what stories they would tell to the various parties, emphasis was placed on how to balance the stories presented to the various parties, arguing that, amongst others, the Inspectorate and Gamma were interrelated.

From the description above one might infer that the relation between the project and the main user was quite difficult, but that the PM team over time learned how to interact more efficiently. The description also indicated how the relationship between these two actors was embedded in a troublesome history of the project's base organization and Gamma that also made their interactions difficult.

8.1.4 Relating to the Railway Inspectorate

The relations between the PM team and the Railway Inspectorate started out quite formal, in the sense that the project members behaved in a formal way when they interacted with representatives of the Inspectorate; they spoke of the Inspectorate with respect and prepared themselves extensively in advance of their meetings. Moreover, the PM team made an effort to show the Inspectorate that it was highly competent and that it had the production process under control. What seemed like loose ends during internal PM team meetings were translated into neatly packaged technical solutions and deliveries when presented to the Railway Inspectorate.

Interacting with the Inspectorate implied exploring unknown territory for the PM team. The team members expressed insecurity regarding how this interaction should be performed and the project manager described how they had 'tried to appear competent and trustworthy' (PM. 06.06.04). Over time, the dialogue between the PM team and the Inspectorate developed in two ways; into a less formal one and one more frequently performed. I suggest one could say that the relation was more open, in the sense that the team seemed to explain their perception of the production pace and system quality more frankly. Furthermore, the interaction pattern evolved such that the PM team increasingly asked for the opinion and advice of the Inspectorate. Gradually, the Inspectorate appeared to develop into a position to provide expert advice to the PM team. The PM team also seemingly used the interaction to explore the requirements of the Inspectorate in various matters to obtain in-advance-of-action-verifications. For instance, this was the case with regard to the reframing, as was shown in the story (Chapter 6). So, the PM team appeared to use information on the outcome of critical processes in advance of their occurrence.

The relations between the Railway Inspectorate and the PM team gradually changed over time, as the latter seemed to acquire knowledge about the expectations and preferences of the Inspectorate and then applied this knowledge strategically. One example of such an application of knowledge occurred as the PM team decided to rescale the system. The PM team's discussion revealed how it had learnt that including certain other stakeholders in advance of asking the Inspectorate could facilitate the Inspectorate's approval of particular solutions. The team found out that the Inspectorate regarded the premise providers of technical matters and the traffic operation of JBV, as well as Gamma, as important stakeholders. When these were included in solutions it seemed easier to get the Inspectorate to accept them.

The relationship between the PM team and the Inspectorate also seemed to change over time in the sense that the PM team increasingly tried to get the Inspectorate to speak on its behalf during the political discussions it participated in. In summer and

autumn 2004 the Inspectorate took on this role and spoke favorably of the project in conjunction with the National budgeting process (ref. Chapter 6).

Finally, I find it worth noting that the project used references to its interaction with the Inspectorate in the dialogue with other actors. The PM team appeared to perceive the Railway Inspectorate as representing a voice authority in the GSM-R issues. The aim of the PM team when making these references seemed to be to strengthen and legitimize their arguments in order to align other actors.

Above I have described how the interactions of the PM team and the Railway Inspectorate evolved over time. It started out as quite formal, where the project worked to impress the Inspectorate. Gradually, it appeared more frank in that the PM team exploited the Inspectorate's knowledge by asking for advice and withdrawing information regarding possible decision outcomes before these outcomes were made public. The inspectorate also became a favorable voice in the public discussion of the GSM-R project.

8.2 An emerging awareness of entwined relations

I will here illuminate how the relationships the project held with various actors were entwined and affected one another.

I have described how the GSM-R PM team's relations were formed and nurtured as well as how they evolved over time. I have also pointed to what seemed to be an emerging awareness in the PM team regarding how some of these relations were entwined. One example was how the PM team's base organization was related to Gamma and the Railway Inspectorate, where Gamma and the Inspectorate related formally. The formality of these relations was special, but their entwined appearance was not. As I followed the project around I found it noteworthy how the PM team gradually became very aware of how the different actors to whom it was related, had relations with one another and how these relations seemed to be entangled. Some of these relations were formal and initiated by the project, while others were not. Obvious examples of entwined relations are those between the team and the two sub-contractors. The project first signed contracts with each of these two. In the plans that were initially laid out for managing the project, these three actors were assumed to interact and cooperate comprehensively. As these interfaces turned out to be complicated Beta's contract was transported to Alfa. Following the action pattern after the transportation of Beta to Alfa, it seemed difficult to get the two of them to act as one. The two parties did not appear to speak on each other's behalves, but rather tried to be the first one approaching the PM team with requests and complaints. It took extensive time before these relations were straightened out.

Other examples of entwined relations were those between the PM team, the Traffic operation unit of JBV, and Gamma. These relationships were not planned but evolved as the project had problems coping with Gamma's requests. The relations between the PM team and the Traffic operation unit were more about the handling of Gamma and also had an effect on how the project acted with regard to Gamma. The project manager revealed how these relations had emerged and the effect of their emergence on the coming process He said the following when describing the relationship between the project and Gamma:

> "As you know, there has been an awful lot of fuss with Gamma, which made JBV's traffic operation necessary to a larger extent than initially planned. That has, of course, increased the workload and complexity. (…). Gradually, we worked more integrated than we had thought initially. But it was not a very conscious elaboration in the first place whether to involve them. I guess we assumed that they would be more operative themselves. And also, and of course, it is the case that one has to work with the process before one discovers what parties should be involved and what roles these parties need to take on. These relations have to emerge little by little" (PM. 15.10.04).

There were other examples of entwined relations. For instance, the construction unit of JBV, Delta, was also assigned to be the sub-contractor of Beta. The relationship between Beta and Delta was infused with problems and the Delta representatives would often take these issues to the PM team; sometimes also involving the Director General of JBV. Delta requested that the PM team solved these problems. I will not go further into the issue of entwined relations. The point was that the actors with whom the project interacted were also related, and as the project worked with the task these relations became interconnected. As I have indicated, the project became aware of how several relations were entwined. This awareness came about when balancing translations of decisions, actions and ideas.

8.3 Discussing relational work

Traditional project theories tend to regard projects as isolated units and neglect the environmental, social, and historical conditions in which they are embedded (Engwall 2003b). Amongst other, Kreiner (1995), Pinto (1998), Bragd (2002), Sahlin-Andersson (2002) and Engwall (2003b) have pointed to the importance of understanding projects as embedded in social relations.

I started from the assumption that projects are embedded. The empirical material I have presented indicates that the project took part and evolved in a number of relations. The material shows how the PM team dedicated itself to relational activity. Additionally, my account indicates that the relating activities of the PM

team came to transform vital processes of the project and its overall nature. Next I will point to some characteristics of how the GSM-R project formed and maintained relations.

8.3.1 Project relations were emergent

If projects are highly embedded in relations, the question becomes with whom do projects relate? The material presented indicates that some project relations, such as the one with the main user groups and others were laid out early in the project, while others emerged over time. One example of an emerging relation was the one between the PM team and the Traffic operation unit. Early in the project operation the project did not consider this relation very important, but as the team acted to solve the task and the relation with Gamma proved difficult, it became necessary to establish relations with the Traffic operation. The project manager told me a story where the role of the Traffic operation seemed to be emerging.

> "Their role became apparent over time. Hm, yes, I guess that was both because we did not realize it and also because little by little they came on strongly and wanted to take part and exert influence. Of course we new from the start that the Traffic unit and the Technical Division had to be part of this, but obviously, as they came on stronger they had affected the process in various ways" (PM. 15.10.04).

As I discussed in Chapter 3 this is, from the process approach I have applied, not very surprising. A salient assumption of process theory is that processes co-evolve and affect one another. What actors that will be involved in development processes it is difficult to predict in advance. Latour (2002b) demonstrated this point quite beautifully in the story of Aramis, where the different parties important to Aramis' development were emerging. The parties became important as they connected with other entities and took the guided transportation system one step further. Through these unpredicted connections of emerging entities that system managed to stay on the drawing board for twenty-four years before it got dismantled. Who came to be important actors to Aramis seemed to be in the open as the project started out and the comment was made that "a project is called innovative if the number of actors that have to be taken into account is not given from the outset" (Latour 2002b:72). In the GSM-R project the number of actors that became involved were emerging rather than pre-determined. As Latour (2002b) proposed, projects with high uncertainty resemble receptions where the invited guests do not show up, but rather a bunch of uninvited parties emerge who want to have a say.

It has also been indicated that projects' task definition evolves over time, which might result in new actors being connected to the project. Sahlin-Andersson (2002:250) provided an example regarding a project that was to replace a burnt down theatre building. As resources were scarce it was difficult to move the project

from a planning phase to reality. To materialize the project, the project task was reframed a number of times by connecting it to other tasks, and subsequently the contextual relations of the project changed (Sahlin-Andersson 2002:250).

8.3.2 Relating meant acting

Project theories tend to presume that projects have to identify and consider stakeholders. However, when these have been identified and their perspectives and interests have been considered, the project can go on with its task solving without spending much energy on nurturing the relations with the stakeholders. It has, however, also been suggested that projects might be regarded as coalitions of stakeholders that have to be acted on to be existent (Andersen 2005, referring to Taylor 1999).

As I described my assumption of fundamental instability in Chapter 3, I also displayed the assumption of mine that all things exist in connections between human and non-human actors. Moreover, I accounted for my interest in the connecting of projects and their stakeholders and argued that I would label this particular connecting, relating. I also accounted for a belief in that actors connect, or relate, as they find one another attractive. From the empirical material I have already presented, I will draw out some interesting issues with regard to how the relating happened in the project I followed.

In keeping with the approach I developed in Chapter 3, it is likely that the project exist in stakeholder alliances. Taking such an approach to the stakeholder work of projects means implying that projects, to solve their tasks, must get other stakeholders to act in favor of the coalition. Moreover, for the stakeholders to remain in the coalition they must find the task and the task solving attractive. As the perceptions of what is attractive may change over time, it is required to keep acting to maintain the coalition. From a more traditional project's theoretical point of view one might presume that the relations would be quite self-sustained once established.

The empirical material presented here indicates that the project's relations were not self-sustained. The project team, once it had established various relations, did not stop acting on these, but rather it engaged in presenting itself favorably. These self-presentations appeared to be efforts to nurture the relations. A number of examples were provided in connection with the milestone 01.04.03 where the team thoroughly discussed the differentiated presentations it would make when interacting with various related actors. Other examples were related to the reframing of the milestones. When working on the reframing, the PM team discussed whom to approach first and how to approach the different parties. Between these events there were corrections of actions 'to keep them warm', by providing incentives, working with contracts, or just engaging in the 'little

conversations'. I have mentioned that the project was engaged in a number of regular activities, such as the standing work groups, with users and designers, the regular meetings with the Railway Inspectorate, and the meetings with top management of Alfa. All these regular activities seemingly also contributed to keep the relations warm. Throughout my observations the PM team continued to interact and nurture these relations.

The observations of the project's continuous actions to care for the relations are in accordance with the presumptions of a fluid reality. Under fluid conditions, maintenance of relations requires action, rather than inertia. It means continuous work with the relations through which the thing grew into this thing in the first place (ref. the line dancer example of Tsoukas and Chia (2002) presented in Chapter 3). Weick (1979:44) talks of a similar mechanism for organizations, calling it 'chronic rebuilding':

> "The idea of process implies impermanence. The image of organizations that we prefer is one that argues that organizations keep falling apart and that they require chronic rebuilding. Processes continually need to be re-accomplished" (Weick 1979:44).

In the case of the technology project its existence seemed fragile, as there were technical problems, as environmentalists questioned the sites where installations were placed and also there were accidents during construction works. Moreover, extreme weather conditions made it difficult, future users refrained from the emerging system and other projects kept fighting for the economic resources on which the technology project was based. In this situation of instability and fluidity the project had to act to keep relations, and thereby its own existence, from falling apart. It seems likely that the project would act to maintain itself. As the continuous acting that I observed was actions of presentations, and presenting is the mechanism of connecting entities to form relations, the PM team seemed to reconnect its relations over and over.

8.3.3 Relating meant variable acting

I have pointed to how the PM team could maintain the relations it took part in, only by continuously re-accomplishing the processes. The nature of these actions has not yet been discussed. On the one hand, taking a learning perspective, one might assume the PM team over time learnt how to act efficiently and that it would exploit this knowledge and skills by trying to repeat successful actions. On the other hand, the point made regarding all representations involving translations, would imply that the nature of relations were unfolding as the actors interacted. By combining the idea of projects as coalitions of parties that find the coalition attractive, and the idea that relations evolve as they are acted on, each actor may be

expected to act dynamically over time to appear attractive. This would make the nature of the action patterns more dynamic and changing, than repetitive.
In the case I studied the activities were not repetitive, rather, the PM team seemed to alter its way of acting with regard to one and the same actor. I suggest that the PM team differentiated its work over time. One example that supports this is the description of the team's interaction with the Railway Inspectorate. In the early days of this interaction the PM team acted with respect; it kept 'an appropriate distance' and mainly presented its work as neatly packaged solutions. Over time, the activity became more about withdrawing information and advices. Another example is the PM team's way of relating to Alfa, where the team started out being vague, polite, and distanced. After a while, the PM team became increasingly concrete, less polite, and it approached Alfa more frequently and in a more self-assertive way than it did in the early days of their relationship.

In the other material that I have presented, there were several indications to support the suggestion that the PM team differentiated the way it acted over time. The discussion of the difficulties related to the notions of clearly defined and stable project goals and plans also focused on the perceptions that the task might change over time (Kreiner 1995). If stakeholders change their perception regarding the task, the PM team might be expected to act in a differentiated manner over time to meet these. It has also been pointed out that different parties of a project may not, at project start-up, be aware of what they actually want, and that what they want might change over time (Blomberg 2003). It seems likely that to maintain attractive in a relation the project must act divergently over time.

As I previously pointed to, from a process approach it is not surprising if relations are maintained through divergent acting. Some relations might be maintained by performing similar actions to those performed initially. Still, as pointed out when introducing the concept of translation (Chapter 3), copying actions and ideas is difficult. Different studies have indicated that small, incremental corrections of actions occur as one is just trying to work things out from day to day. These small changes could be emergent accomplishments of performing routines (Feldman 2000) or ongoing improvisation (Orliowski 1996). Even when one looks at imitation processes where one tries to copy accurately, there are elements of innovations (Sahlin-Andersson 1996, Czarniawska 2002 about mimesis). It has been proposed that there is a difference between the descriptions of how relations are established and how relations are reproduced. Furthermore, the descriptions of reproductions of relations tend to treat relations as less variable than descriptions of forming of relations (Law 2000). Law (2000) claims that the descriptions of relational maintenance must, to a greater extent, incorporate the variable nature of this effort.

In keeping with Law (2000), Bakken and Hernes (2003) have argued that it is the recursive nature of relations that allow for reproduction of interaction over time. As

I understand it, being recursive means all entities and relations involved are refined. This means that variation causes reproduction. Based on my empirical observations of the PM team's activity and the theoretical reflections I have made a proposition regarding the nature of projects' work to maintain relations.

8.3.4 Relating meant differentiated acting

The PM team I studied seemed to act in differentiated manners when relating to stakeholders. I have described how the PM team developed knowledge of the other actors it interacted with and how this knowledge was applied to fine-tune the team's actions. The actors with whom it related, represented various interests and preferences. In accordance with this, the team developed competences that appeared both generic and situated. They were generic in the sense that as the team acted it discovered more general ways of meeting and treating stakeholders; they were situated in that each actor was composed of unique sets of preferences, characteristics, and ways of acting. The uniqueness of each actor meant that the knowledge developed and applied in each relation would be differentiated across relations. This implied that the PM team learnt to take on different roles and present itself and its activities in various ways depending on whom it interacted with. Why would the PM team do so?

I have already elaborated on how the team had to appear attractive to the other participants in the coalitions for these to remain in the coalition. Since the interests of the different actors were diverse, the team had to differentiate its presentations. I observed a multiplicity of presentations, that were differentiated and to some extent also divergent, living side by side. One obvious example of this are the stories (mentioned in Chapter 6) the project worked with as the milestone 01.04.04 was difficult to reach. The PM team worked to differ its messages and the framing of the messages. The differentiation depended on whom it worked with on the local expectations and contingencies embedded in each and every relation. These attempts to differentiate generated a number of translations of the project's activities and the GSM-R system.

In Chapter 7 I described how the PM team, as it was acting on relations, developed situated knowledge of the other actor's preferences and expectations. The collaborating actors develop knowledge of one another, which could be applied to fine-tune the relations between them, and thereby alter the relating activity.

I have indicated that the PM team gradually acknowledged how relations were entwined. Along with this awareness the team worked to balance its differentiated relational work. The example of story telling (in Chapter 6) illuminates how the PM team seemed to plan its actions consistent with the awareness of the entwined relations. The PM team tried to carefully monitor and balance its communication and actions with the various actors, referring to their indeterminacy.

My observations indicate that relational work had to be differentiated as the various actors had different and divergent interests. Since these actors are also related, the translations can hardly be too divergent, as it would probably make concerted actions difficult.

8.3.5 Propositions on project relating

I started from the assumption that projects are embedded in relations. The empirical material indicated that the project formed relations and that these relations were emergent and needed to be chronically rebuilt. I also noted that, as the interests of each and every stakeholder might change over time, maintenance of the selfsame relation implies variable acting. At last, it has been illustrated how aligning of stakeholders representing heterogeneous interests, means differentiated acting. To capture these findings I have developed two propositions for further research on projects as highly embedded phenomena.

Proposition 5: ***Since the project's relations are emergent and not self-sustained, the project must act to nurture and maintain the relations throughout its operation.***

Proposition 6: ***As stakeholders change their interests over time, and represent heterogeneous interests, the project can only form and maintain relations by varying and differentiating its actions over time, yet acting balanced at the same time.***

8.4 A comment on relating in practice

Based on my empirical observations and reflections I have developed two propositions for forming and maintining relations. Additionally, I would like to describe my empirical observations of a phenomenon I have labelled chunking. As I have not been able to find a theory illuminating this phenomenon, I will refrain from making propositions about it.

I have indicated that, in the project I studied, neither the project's initiators nor the project team elaborated much on relational work in the early days of the project conduct. As relational activity was acknowledged as an important part of the project task solving, the PM team engaged in such activity and came to take part in numerous relations. It seemed that the PM team chunked some of these relations, maybe to make its world easier. One example of chunking was related to the initial idea of developing the system in seven different regions. The project seemed to find this inconvenient as it strongly argued in favour of establishing the OPM centre. As the OPM materialized the project would implement the system

interacting with one actor, the OPM, instead of the seven regions. Another example might be the PM team's arguing how it should handle the relation with the Inspectorate itself. This change implied that the relating activity was reduced from a triadic PM team-project owner-Inspectorate relation, to a dyadic PM team-Inspectorate relation. Yet other relations that were chunked were those of Alfa and Beta. The PM team started out signing two contracts with the sub-contractors. As I described above, Beta's contract was transferred to Alfa, for Alfa to handle. Although this resulting in one sub-contractor proved to be difficult, it was the aim of the PM team to make it function this way. I use these examples as indications that as it was working with a number of relations, the PM team worked to reduce interfaces by connecting them. It seems that by acknowledging that projects are highly embedded in relations we can start investigating how the realting is handled in practice.

Chapter 9
Distribution of influence

The third research question invites to explore how influence is distributed over time in a project setting.

I suggest that the PM team exercised considerable influence, in the sense that it managed to affect the actions and decision of other actors. When I say it exercised influence, I mean that it became a strong voice in the negotiations of the GSM-R development, both with regard to the system that was actually developed, the process whereby it was developed, and the framing conditions of the development process.

In the descriptions of Chapters 6-7-8, there were several indications of how the project exercised influence; I will follow up on these here. I start by pointing to a few examples of actions that the PM team undertook to influence certain outcomes and indications of actual influence. Then I move on to elaborating on how this influnce could come about. As the discussions and suggestions developed here draw on much of the empirical material already presented, this chapter will have a slightly different form than the chapters discussing research questions 1 and 2.

In keeping with my appproach where patterns of interactions are assumed to determine outcomes, the exercise of influence can be expected to come about as a composite effect of how these other processes, I have described, evolved. This means that pre-defined autority distributions amongst project owners, projects teams, and other actors involved in project development at large are questioned.

9.1 Enacting influence

The story of Chapter 6 and the descriptions of relations in Chapter 8 contained several indications of how the PM team tried to act to impact other entities. I will briefly repeat a few examples and point to some possibly indicating that the team had obtained influence. Finally, I will reflect on how this enactment could come about.

9.1.1 Examples of acts to influence

A great number of the PM team's activities were connected with problems of stabilizing the technology. Amongst the voices of the GSM-R development, the technology appeared to be strong in the sense that it managed to generate extensive project activity. As for the problems with the technological solution, we have seen how the PM team worked with relations to align various actors in the task solving, either by acquiring advices and knowledge to enable task solving or to cover up problems with solving the task. I will highlight a few examples of the PM team's activity to influence other actors, that were related to the technological development, and the troubles managing the technology in the way one had initially thought would be appropriate.

The first example relates to the PM team's interaction with the sub-contractor. The project assigned Alfa to manage and develop the technical deliveries of the GSM-R implementation. Since Alfa was unable to get this under control, the PM team acted to influence the quantity and quality of Alfa's work. I have described how the PM team participated in the planning processes of Alfa, told them how to perform various work processes, how to organize their work, and even whom to employ in central positions. We saw how the PM team spent extensive energy exerting pressure on Alfa's work to influence the technology, and how it applied incentives to motivate or force Alfa in certain directions.

The second example of how the project acted to obtain influnce relates to the PM team's actions for buying itself additional time to complete system functionality by making Gamma apply for extended dispensation to operate trains without GSM-R. Representatives of GSM-R made it clear to Gamma how complex and time consuming the training of their employees would be. Gamma applied to the Inspectorate for prolonged dispensation This request for prolonged operation also meant an extension of the project's time frame.

Yet a third example of the PM team's activities to influence other actors relates to its anticipation of potential problems with implementing the technical solution, not to technical design and development through the project. The project found it difficult to implement the system in accordance with seven different regional directors and initiated the development of the OPM and worked to make it valid.

These three examples indicate that the technology was a strong actor in that it generated PM team activities. These examples are different in a way that the PM team's activities directed at Alfa were openly focused on obtaining control; the activities to influence Gamma were more subtle. The first and

second examples were generated as the team experienced difficulties developing the technology. The PM team initiated the third activity as it anticipated problems connected to system implementation. In that sense, this initiative was more proactive than the actions in the other two examples.

One of the most important decisions the PM team seemed to work to have an effect on was the required funding of Phase 2. From my observations of the team's internal discussions and its discussions with the project owner, members of the project council, and with the sub-contractors, I sensed a great insecurity regarding the funding of construction Phase 2. The decision about funding was to be made by the central politicians, but the PM team tried quite openly to influence this decision by approaching various actors it presumed to have a say in this matter, formally or informally. The team explained a number of expected benefits from the GSM-R implementation and presented a success story about the construction and development work up to this point.

9.1.2 Examples of actual influence

It is difficult for me to determine the effect of the PM team's work. There were, however, several indications of it acted with influence.

I have mentioned that the PM team worked very hard to affect the decision regarding funding of Phase 2. As I indicated in the GSM-R story (Chapter 6), the project manager gradually expressed that the PM team perceived positive signals about funding (PM. team meeting 23.08.04). The PM team's perception changed from being most uncertain to being quite confident a while before the actual decision for funding was made. As the team started construction work on railway lines in the Phase 2 development, before the official funding decision was made public, it had to be fairly certain of the decision outcome (PM team meeting 20.09.04). When asked, the project manager revealed that there had been a budget leak (PM 15.10.04).

I will give another example indicating that the project exercised influence. The story of Chapter 6 described the project manager, in a PM team meeting (23.08.04), recounting that he had been called in to the Director General the same day and told that, regarding a certain issue, the project was not to voice its opinion. I take that the PM team had possibly gained influence, as it was indicated that it would matter if it voiced its opinion.

Another indication of the PM team exercising influence relates to the team's gradual positioning as natural part of the GSM-R discourse. As I have described, over time, an expectation regarding the project's participation in various processes seemed to emerge. This was a change from the PM team's

position in the early days when it had to force itself on processes it wanted to participate in. It was also desribed how the project, after a while, was positioned so that it could 'just have a talk' or 'inform …' various actors about the decision outcomes it aimed for. It seemed that the team was listened to when it spoke.

I will provide a last indication of how the PM team possibly exerted influence and it relates to desired outcomes of decision processes. There seemed to be number of choices to be made as the project worked to solve the task. In several of these situations, the PM team expressed very clearly which solutions it preferred. Several of the solutions the PM team perceived as appealing became true, and some of these had major impact on other parties, as well as on organizational routines. One example I observed pertained to the OPM-centre that the project initiated. I have elaborated on how this additional organizational unit had severe consequences for the base organization; among others, it implied centralization of the base organization's infrastructure management, which meant depriving the regional directors of power and resources[53]. Other examples I learnt about were various new projects that the GSM-R project initiated and generated. For example, the project started an assignment for testing out how the GSM-R system could also be used to inform train passengers of trafic, departures, etc. The GSM-R project initiated and devloped technlogy for this system, which is now being tested. The development and implementation of such technology will have an impact on the routines of train opearators as well as train passengers.

9.1.3 Project enactment of influence

I have provided examples of actions to influence and various indications of actual influence. Looking into project theories for understanding the emperical patterns, distribution of influence is rarely discussed. In general, traditional project theories insist that project managers and project teams should have limited power. They are to act within the guidelines developed by the base organization (Gobeli and Larsson 1986). Furthermore, the hierarchical explanation model, providing the project owner with the power to decide for the project, has been widespread (Kreiner 1995).

I have accounted for my assumptions regarding fluidity and indeterminacy. Applying these principles to the issue of influence distribution, power becomes circuitous in the sense that it is contingent of patterns of

[53] Again, I will refrain from speculating on what the implications at an organizational and national level would be if the OPM becomes part of the other emergency communication project (ref. Chapter 6).

interactions[54]. This means that power is regarded as the effect of interactions and negotiations over time (Callon and Latour 1981), and how power is exercised becomes more important than who governs (Flyvberg 2003). Moreover, the essential thing to consider is what sets of relations can do (Hernes, forthcoming 2006). Taking this approach, the various spatial dimensions, that are often applied to explain the distribution of influence, do not hold much explanatory power as they all start their explanations from a fixed point. As I have accounted for (in Chapter 3), when applying a process approach to projects these distinctions are dissolved, and the possibility is opened for projects to enact influence. This means that projects can even become more influential than the actors whom project management models designate to be most influential, i.e. the project owner.

I observed how the PM team took liberty in choice situations and asked the project manager about this.

> "JBV has a formal way of distributing the responsibilities and authority with regard to project work. The project owner is to develop these premises, to create the charter, to provide the guidelines of the directions of operative processes, and to make sure the project is well anchored in the base organisation. The project managers are to implement in accordance with the premises provided by project owner. In this case[55], however, many of these functions lay in the project. Often, we are asked to provide the guidelines and make the decisions and then just inform the owner about what we have done" (PM. 15.10.04).

The project manager explained how the PM team in many cases made the decisions that, with regard to the management system of the base organization, should have lain in the hands of the project owner. It seemes that the project team I studied exercised influence that exceeds the ideas embedded in normative project management tehories.

9.2 Guidelines for project actions and decisions

As I have observed that the PM team acted with influence I came to wonder about how freely the PM team actually could act and decide?

[54] This statement is not to be understood as one where agency is imposed on structure (Latour 1998).
[55] The GSM-R project.

Mostly, the PM team appeared to act in accordance with three 'guide-lines'. The PM team tried to follow the general guidelines developed early in the project. Talking about decisions, the project manager suggested that "they are almost always developed with regard to the early strategies that were laid out for the project" (PM. 15.03.04). Furthermore, the decisions of the team were guided by the views of other actors who could either provide useful knowledge or who would be affected by the consequences of the decision. The PM team would then seek out various entities, among others, the Technical division and the Traffic operation, if they felt the decision included too much of a responsibilty for them.

> "The reasons for asking them are their competence, but also because they are the staff that should have made these kinds of decisions so it is wise too involve them" (PM. 15.10.04).

Moreover, as for what the PM team presumed to be political decisions, choices would not be made until the matter had been discussed with the Director General of JBV. For example, when wondering whether to air the system, the project manager explained that if the team would not act as planned, the project manager, the Director General, and the project owner representative would have to sit down and discuss what would be a better solution strategically. The project manager insisted the reason for this was that this decision was politically loaded and would have great impact on the face value of JBV.

In accordance with the above, I say that the PM team practices seemed to vary when it came to decisions it assumed it could make. Although the project had exercised extensive freedom to decide and act, it was indicated that, it would not make decisions freely, but rather contingently upon the more general strategies of the project. The team would engage others to obtain opinions and advices in order to make better decisions or to assign them to make the decision the team aimed for. Although acting to exceeded the intentions of its initiators, the project did not break entirely free. Rather, it appeared actively to seek directions for actions and decisions by involving stakeholders. This means that not only was the project contingent upon its own history by nature, it also took actions to act logically over time.

9.3 Contributors of influence exertion

I have indicated that the PM team acted with impact and that its activities were guided by its own history as well as the actions and decisions of others. Here, I will look into patterns that possibly contributed to the project's exertion of influence. I have previously pointed out how exerting influence

came about as the composite effect of a number of procesesses related to development of task, competence, and relations; a lot has already been said about this. Amongst other things, I have proposed that the team became more efficient, as it practiced relational work. Subsequently, the PM team experienced that it could affect decisions and actions of others and, in sum, the direction of the GSM-R development by actively using relations. This learning seemed to be reinforcing itself as the team increasingly practiced relational work. This consequently made the task become more relational and also provided the project with more influence.

In Chapter 3, I questioned the value of studying project development by isolating certain issues, as I assumed that understanding is better obtained through investigating sets of relations. In keeping with this, I find it difficult to separate certain factors and say that they were the reasons the project exercised influence. Having in mind that the authority enactment emerged as numerous co-evolving processes entwined, I will still highlight three interaction patterns that appeared to facilitate the positioning of the PM team. These three patterns of interactions are related to strategic positioning, practicing influence and strategic use of presentations.

9.2.1 Initial strategic moves

Since the observation of the PM team's acting with influence, surprised me, I asked the project manager how the team had obtained this position. His answer indicated that he and other members of the PM team had dedicated extensive effort in putting the team in a position where it held some responsibility.

> "We had to identify important processes and then claim responsibility for some of these. To save time, we could not conduct the project in accordance with the ordinary procedures as it would cost too much time waiting for them to make the decisions" (PM. 15.10.04).

The project manager referred to how the PM team had acknowledged that it had to handle the interactions with the Railway Inspectorate and had insisted on this. The team members claimed reponsibility for this interaction, arguing that the team was highly competent in this specific matter. Morover, they argued that the first hand information the team could obtain by handling this relation itself was important for its task solving ability (PM. 15.10.04). The project manager also revealed how the team had presumed that reducing number of nods in which the information travelled could reduce the risk of misunderstandings.

Additionally, being asked about the position of the PM team, the project manager emphasized the importance of mapping out work to the project team's exertion of influence. The project manager said about the deliberation activity that:

> "it gave us a chance to voice our opinion. We always say what we mean is the better alternative, or what the only way would have to be. I do not believe that we ever presented a totally open-ended solution for the project owner. We need to know what is best and what we want as we are about to act on it. I think that is what project work is all about" (PM. 15.10.04).

Both the handling of the strategically important relations and the mapping activities provided the team with possibilities to obtain first-hand information and also opportunities for voicing its opinions. Moreover, the PM team was strategically positioned with regard to selecting what kind of information that could circulate in the GSM-R discourse and how it ought to be framed. Along with these observations and quotes, I suggest that the PM acted strategically to exert influence, and that it did so by assuming a discursive position.

> "To assume a discursive position is a political move, it equates to positioning oneself in a network of social relations structured by power, interestedness and the mobilisation of interests" (Gherardi et.al. 2002:433).

When taking on a discursive position, one may assume a mode of ordering that produces a body of knowledge. In a moment, we will see that this position bent space wherein the influence increasingly could be exercised.

9.3.2 Just do it – acting relationally

In keeping with Weick (1979, 1995), I have elaborated on how the PM team, as it acted on the task in its early days, enacted the task as relational.

In Chapter 6, I described how the PM team, when faced with challenges, called various actors into meetings just to have a talk with them. The team developed a perception that the staff having various responsibilities for making decisions did not keep up with the project time-wise and competence-wise (PM.15.04.04). As the team did not possess the mandate to make the formal decisions that seemed required to develop the GSM-R system, it forced itself on different actors holding this authority and acted to influence their decisions (PM. 15.04.04). I have described how the team over time came to be expected to participate in decision processes (ref. Chapter

6). Along with this change of viewpoints with regard to the PM team's positioning, the team's relational activity increased. There seemed to be a self-reinforcement cycle, in that the team increasingly acted to have impact on the decisions and actions of others, and the team learning that it could exert influence. According to the project manager, as well as my observations of the PM team meetings, the project spent extensive time on the various decisions it wanted to realise, and it developed the knowledge required and proposed the better solutions (PM. 15.03.04). "As we act on things, we understand which is the only way to do it, and then we have to make them see the same" (PM. 15.10.04).

I assumed that as one acts, one enacts a portion of reality that forms the basis for further actions (Weick 1979). I will here argue that this was the case for the whole set of entities participating in the GSM-R development.

The PM team acted as if the task was relational and thereby it evoked responses from other actor's, reponding to the realtional activities of the team. As the PM team acted as if was to lead the process, and the other actors reponded to these actions, the GSM-R development became a more relational process in which the project increasingly was to take the lead.

9.3.3 The invincible visibility

I have illustrated (in Chapter 6 and 8) how the PM team seemed to be able to align others in its activity. Among other things, the team managed to get others to speak on its behalf. I have mentioned that the team worked very hard to affect the decision regarding the funding of Phase 2. In a PM team meeting I observed (23.08.04), the project manager put words to the team's work aimed at influencing a certain person who was a political lobbyist: "He is creative when it comes to raising money in alternative ways". Furthermore, during this meeting, it was also indicated that the project interacted directly with the Minister of Transport and Communications and that she would speak in favor of GSM-R project (PM team meeting 23.08.04). The story of Chapter 6 also revealed how the PM team gradually expressed a greater confidence in the second construction phase being funded as the Railway Inspectorate came to speak on the team's behalf (02.06.04). These observations seem to indicate that the team aligned others to speak on its behalves.

As I described in Chapter 8 the PM team developed a sensitivity to the order of alignment as it gradually acknowledged that various relations were entwined. The example I provided indicated that the PM team considered both which actors to align and in what order to align them, as it worked to reframe the delivery system.

Latour and Callon (1981) elaborate on a phenomenon they call the big leviathan, suggesting that micro-actors can become macro-actors by aligning various entities in their network. Taking a process approach, it is not so much the number of allies, but that they are aligned in such a way that they appear as one. Weick (1979)[56] talks about how minority becomes one and how the one can be stronger than majority.

> "Despite the size of the original group (N=100) and despite the fact that there are supposedly 100 different influential people, in reality in the crucial decisions – those thought to be the majority decisions – are made by one person: the minority. The point is not that the one-person rules; the important point is the fact that this control is made possible by the pattern of alliances that exists in the group. It is the pattern of relationships, not the fact that 'a great man' sits on the top of the heap, that makes it possible for influence to be concentrated" (Weick 1979:17).

The story I have told, describes the PM team struggling to maintain its ability to influence as its position was constantly threatened by the technical problems. The story shows different actions undertaken by the project to enlist others and to enforce control. Among others, the PM team applied powerful discourses to help legitimize their own position in various negotiations[57].

9.3.4 Creating an image – using presentations

In Chapter 2, I elaborated on how project managers and their teams can enact informal power by acting to affect the project-related perceptions held both by the owners and other stakeholders[58]. As the case report indicated, the team worked consciously to present itself and its activities in various ways (translations).

The project I account for established a perception of the project as urgent (Blomquist and Packendorff 1998, Engwall 2003). For example, it acted to enforce the decisions to be made faster, and also argued for enlarged action

[56] Weick refers to Cyert and March 1963) making a point about how one must locate crucial alliances that control a great number of people.

[57] This resembles the display of macro actor forces to determine decisional outcomes of an organization as described by Hernes (2005 in Czarniawska and Hernes, 2005). The case story told here will imply a less straightforward idea of authority distributions in project organizing than often presumed.

[58] In Chapter 2 I showed described how amongst others Sahlin-Andersson (1989), Blomquist and Packedorff (1998), Bragd 2002 and Engwall (2003) have worked with issues realted to image creation.

space as it assumed it would be able to meet extreme deadliness. It has also been indicated that projects of high prestige take on the image of being extraordinary and unique (Sahlin-Andersson 1989). Moreover, Engwall (2003:20) has argued that it is important that the project can "construct an image of the project as technically interesting and strategically important to its parent organization". The empirical material I have presented revealed how the PM team utilized both these arguments. In the project that I have investigated, it became apparent that extensive PM team activity was dedicated to self-presentation. The presentations were multi-faceted and varied over time. Their aim seemed to be to maintain the life of the project. It has previously been indicated that groups, when making decisions, produce additional justifications for these decisions in the form of stories aimed at increased engagement and excitement about the decision (Westenholtz 2003). The project account I developed showed similar tendencies in the project activity. Along with these observations and reflections, I will suggest that the project consciously developed and utilized situated images to enact influence.

9.3.5 Propositions on project influence

This chapter has indicated that the project I followed came to exercise influence. Interaction patterns that could contribute to the team's influence were illuminated, highlighting strategic moves, the mere practicing of realtional activity and the creation of images. In accordance with the emperical material and the arguments presented I have developed two propositions regarding project influence.

Proposition 7: ***The project's development of influential practicing is contingent upon the early strategic positioning of the project, its proactive actions to influence, and the will to assume discursive positions.***

Proposition 8: ***The project's exercise of influence is contingent upon the project's ability to activate others in voicing its opinions by consciously lending authority from powerful discourses.***

Chapter 10
A project becoming an actor

I have told a story of a technology development project in the making.

Reviewing the project management research literature, I found two issues particularly interesting: the issues of projects as evolving and projects as embedded phenomena. Within this research field it has been debated whether projects are evolving or more stable, and whether projects are fairly embedded or more isolated phenomena. I took the assumption that projects are continuously evolving and wanted to explore how processes important to project organizing develop over time. Along with the literature review and early pre-field work project task and competence stood out as vital processes in project organizing, and I decided to explore how these evolved. I also decided to explore projects from the salient assumption that projects are embedded in numerous relations, and asked: how do projects form and work with relations? Furthermore, as I was reflecting on these issues and how to understand project behavior in light of these, I came to wonder about who or what determines the actions and directions of the project? In accordance with my reflections, the following research questions were developed to empirically explore and describe the nature of project development:

1. How do project task and project competence evolve over time?
2. How does the project form and work with relations?
3. How does the project's distributed influence evolve over time, and how can it be explained?

Process theories study things in their making. They explore how things become what they become, and therefore I assumed that developing a process approach might be fruitful to my exploration of the research questions. As I decided on a process point of view, I started working with projects from the assumption that projects find themselves in heterogeneous streams and also that heterogeneous streams constitute projects. This means that I assumed reality to be evolving rather than stable. In keeping with this, for a project or a technical solution to appear stable it has to be rebuilt chronically. In Chapter 3, I elaborated on how I believe that organizing goes on all the time, but that organizations cease to exist; therefore, the patterns of interactions where a project builds and rebuilds itself came to be at the heart of my research.

To study these patterns of interactions I created an approach that spun around the following three concepts: connecting, heterogeneity, and contingency. Upon reflection on process theories, these concepts emerged as useful for explaining project task, competence, relations, and influence. Rather than presuming these concepts to hold predictive power, I have thought of them as sensitizing devices in my study of project processes.

My approach implies that in the study of project task, competence, relations, and influence one must explore how entities and actions connect in heterogeneous manners and how this lays the principles for what can possibly happen next. Discussing connecting and connections, I emphasized how processes co-evolve and affect one another. This means that what happens with task, or competence, or relations, or influence is dependent of the connections these processes take part in. I assume that if these project processes are connected they will affect one another. Furthermore, these entities will transform the connections they hold with one another and the nature of the project at broad.

Several times I have indicated that the project I followed enacted influence and developed into an actor that could, to a large extent, decide for itself and also affect the actions and decisions of others. I suggested that the project acted with more influence than one might expect. It appeared to be more influential than traditional project theory assumes projects to be. Additionally, it seemed to exceed the intentions of its initiators. Simplistically speaking, the project was initiated to be a tool in the hands of its owners, to fulfill the intentions of GSM-R implementation. Over time, it grew to be an actor that exercised influence on the actions and decisions of others. I have indicated how it seemed to perform some of the responsibility and authority that are often assumed to be in the hands of the project owner. Having project theory in mind, this development surprised me. To make sense of my empirical material I played with metaphors. As I perceived the project enacting and exercising influence I used the metaphor ‘the tail wagging the dog’ to reflect on these observations.

I think the wagging of the dog came about as a composite effect of several processes. Among these, the development of task, competence, and relations seemed important. In Chapter 7 and 8, I described how these three processes evolved. I will try to link some of my discussions and arguments together to provide some explanations for how the tail could come to wag the dog.

10.1 The tail wagging the dog

The manner in which the project came to be an influential actor in relation to other stakeholders could be seen as a purposive attempt to orchestrate relations around it. Additionally, less purposive activities directed at the task solving, or activities for covering up incidents of less successful task solving, contributed to the enactment of influence. I have used the metaphor 'orchestrating' to describe the activity of the PM team. Orchestrating implies assembling and coordinating the performance of tasks, competences, and relationships (Pitt and Clarke 1999).

At the beginning of the project, the dominant discourse was centered on managing an unambiguous, though complex, task with a set deadline and a restricted budget. The rationale underlying this discourse embraces a means-to-the-end operation, efficiency, and productivity in the hands of management. The project was initially seen as a managerial tool which, when managed and controlled by the project owner, would lead to the achievement of a preset goal. Within the context of this discourse, the task was almost exclusively considered as technical and was merely turned into a specified and controllable one. The project was to perform according to technical 'spec'. It seemed to be taken for granted that the competence and other resources required to perform this way would be mobilized and come together in a way that would make the aimed for transition materialize. However, when recognizing the historical and cultural context in which the project developed, the task was no longer occupying a stable position in the project management discourse. On the contrary, as the task scope broadened and the task also appeared more ambiguous, a different set of discursive measures, as well as development of specific task competences, became required. It is worth noting that the PM team gradually became more indispensable, and was taken for granted as an influential actor, as ambiguity increased and manageability decreased. This had not been foreseen at the outset.

Orchestrating relations was a process partly generated through the exercise of knowledge that had specific power effects. Knowledge is linked to systems of powers, which produce and sustain it, and to effects of power that it induces and is also extended by (Foucault 1986:74). Discourse facilitates the process of translating meaning and systems of knowledge embedded in the social context into specific practices and structures. In this particular context, knowledge about project management and the task at hand were identified and assembled as crucial competences needed for success. Specific operational competences for handling the task were developed, as well as relational competences, such as negotiations with sub-contractors, project ownerships, and organizational interest groups. As I have described,

these new competences emerged simultaneously with the changes in task in the direction of being more multifaceted and ambiguous. For example, when faced with the risk of not meeting a deadline, the project translated the perceived situation into different stories, both to maintain faith and to keep up productions. Gradually, the PM team refined its ability to use discourses strategically, and, over time, also to create a more defined position in relation to other stakeholders.

Additionally, the data indicated that the PM team worked to exceed the boundaries of operation that it was initially granted, in the beginning of the project. It undertook three activities that opened up for broadening the project's action space further. The project required expanded action space and influence on decisions that normatively should be in the hands of its owners (1). It argued that the task, although specified in detail, was complex and had to be solved within extremely limited time, and that empowering the project would enable its task solving. Moreover, the PM team argued that, due to the complexity of the project and its own competences, it could do the mapping work in decision processes involving GSM-R (2). As I have described, this gave the project an opportunity to voice its opinions in various matters. Over time, the project came to not only be mapping but also suggesting decisions. Yet another activity of the project, was that, based on its perception of being politically contested, it actively engaged itself in identifying its stakeholders and proactively started to develop relationships with these (3). The project requested that it handle relations with various actors it found to be centrally located in the GSM-R discourse. Since it was granted permission for such, the PM team was placed in a position where it obtained first-hand information and would be able to affect what information was shared and which stories that were circulated. Contingent of these activities of bending space around itself, where the project assumed a discursive position, the gradual enactment of authority could come about.

As the project, due to its perception of being contested, identified and approached various stakeholders, it also invented the task as relational, not merely technical. Contacting these stakeholders the project laid the foundations for further interaction between the project and the stakeholders. This meant that the project had to consider the opinions of these stakeholders when choices were made, and also instill faith in more relations when the technical solutions proved difficult to stabilize. Moreover, contingent upon the project's initiative, it became possible for these other actors to act on the task, which seemed to contribute to the task's increasingly relational nature.

The gradual experience with problems of solving the task led the PM team to employ strategies to make it appear to be on top of things. That, in turn, seemed to influence the role that the PM team could occupy. These

observations made me question the notion of linearity and control embedded in the mainstream project management literature. The case story illustrated that choices made regarding task insolvability affected the discursive repertoire and strategies utilized by the project. For example, when the PM team aimed to have an impact on the stakeholders' decisions, it forced itself upon these and presented the requests legitimized by claiming to have expert competence in this unique task, extremely limited time, or the discourse of safety. These processes did not take place in a deterministic manner; rather, they evolved, sometimes simultaneously, sometimes subsequently, but always in relation to each other. What is noteworthy, however, is how the PM team developed situated competence of what the powerful discourses were and how these could be used to legitimize its own actions and requests. By connecting its own activities with powerful discourses, the team seemed to borrow authority.

Seeing that the technology grew in importance, the relational work was dedicated, both to gaining control over the technology and to covering up the failed delivery. As the PM team struggled to live up to expectations with regard to task solving efficiency, it dedicated its efforts in instilling and maintaining sufficient trust from its stakeholders. Different strategies, such as differentiated narration of the situation and reframing of the delivery, were applied. For instance, the PM team developed stories that emphasized the occurrence of unexpected incidents and requested innovations that had not been foreseen. These translations were enabled and legitimized by embedding them primarily in a safety discourse. Over time, this relational activity also seemed to facilitate the project's exercise of influence. We have seen how the PM team became efficient in packaging actions and entities that happened dispersed in time and space as coherent development stories. Moreover, the team's proactive relational activity seemed to escalate the effects of the early activity to positioning the team strategically in the discourse.

I have described how the project's ability to assemble and coordinate the performance of tasks, competences, and relationships to orchestrate attractive processes and outcomes improved over time. The team's operational competence kept increasing and contingently the space it occupied as a 'highly competent unit' in the GSM-R discourse increased. It was progressively more often allowed to voice its opinion in decisions, and was in increasingly manners able to obtain first hand information, as well as to affect the GSM-R stories circulating. Gradually, the PM team developed situated competence regarding whom to approach in various matters and how, combined with knowing whom not to approach. Furthermore, as the project was able to differentiate its translations to match the expectations of heterogeneous interests, it became increasingly efficient in getting these to

act in the manners the project aimed for. From forcing itself on decision makers, the project was invited in. Over time, various heterogeneous interests were aligned. As the PM team experienced how it could get other actors to act in the aimed for directions, it actively attempted to influence the timing and contents of decisions. It seems that the task's nature became even more relational as the team experienced its own efficiency in affecting decisions and actions of other actors. Through information about their views in choice situations, strategic application of story telling, reframing situations, and in other ways engaging in translations, the PM team managed to get others to speak on its behalf. Moreover, sensitivity emerged in the PM team regarding, not only whom to involve and how, but also the order of involving the different parties to maximize its own influence. Additionally, the PM team found channels for accessing the competence of others, as well as having solutions it aimed for pre-verified. As the solvability of technology became dependent upon further funding, the project worked harder to get others to speak on its behalf by applying its situated relational competence strategically. Little by little, (the project seemed to become an indispensable actor in the GSM-R discourse.

According to the managerial discourse of projects, decision-making is largely exogenous to the actual project. However, the escalation in task complexity called for a different handling of the activities and relations than depicted in the beginning. The descriptions indicated how the project managed to save itself time and enforce decisions through lobbyist activities. Drawing on a discourse of safety, of competence in task mastering, and a discourse of extremely limited time, the project managed to create space wherein further action and development could be maintained. By instilling the faith of others through occupying the discursive space left open by existing discourses, the project emerged from an action unit not granted authority for making decisions, to becoming an influential actor orchestrating both its own activity and the activities of others. Although it lies in the nature of projects to be terminated, imprints of the project are placed on the future activity of the base organization and the other actors cooperating on the technical solution that the project developed and the discourse it produced.

I have tried to draw together the main arguments, presented in Chapter 7-9, regarding the project's evolving position as an influential actor and have placed emphasis on how the link between task and competence seemed to be vital one.

The team was, in the first place, a high performance team in this particular task solving. Still, since the task called for comprehensive capabilities the team engaged in exploration and developed knowledge and skills. Over time,

the team came to possess extensive operational competence that placed it in a unique position in the GSM-R discourse. By displaying its capabilities, the team showed the decision makers how they relied on the team's competences and gradually they requested that the team participated in decision processes. In due course, the operational competences of the team became combined with highly fine-tuned relational competences, which enabled the team to maneuver efficiently in the net of evolving relations in which it was embedded. Gradually, the project reached a position where it could partly order the GSM-R development's organizing. It combined operational and relational competences strategically, carefully crafting translations to meet the expectations of heterogeneous interests. It consciously worked with the order of alignment to have actors with formal and informal influence speak on its behalf. It has been suggested that the backcloth, from which actors engaged in politics draw their legitimacy, makes politics real (Latour 1998:56). Over time, the project engaged not only in politics, but also contributed to crafting the backcloth of the GSM-R politics.

10.2 The project's character changed

I have worked from the notion that the nature of a project emerges as an effect of the connections in which the project takes part (presented in Chapter 3). Based on my observations I have suggested that the project team I studied, in order to form and maintain connections both with human and non-human actors, had to act differently in each relationship as time passed. I have also proposed, looking across the relations of the project team, that it had to act in a differentiated manner at the same time since stakeholders represent heterogeneous interests. This means that activities of the team were changed over time and multifaceted across relations. As I was reflecting on this continuous adaptability of the PM team, its multifaceted task, and the system translations, I started struggling with the question of where to place the boundaries of the GSM-R project. Could the heart, or the core, of the GSM-R project be identified? Observing how dynamic and multifaceted relational activity of the team became, along with the observations of how relations were entwined and how project task and knowledge evolved over time, I had great difficulties determining: 'that is the project and there are its boundaries'. It appeared fluid, yet, it persisted.

Project literature does not elaborate much on project boundaries as they tend to be seen as givens in accordance with the task or goal and the resources provided. Compliant with this view, it is assumed that once established, the GSM-R project would stay pretty much the same over time and it would build the initially specified technical system. However, there have been

studies pointing to how project boundaries evolve as the effect of projects interacting with their contexts (Lundin and Söderholm 1995, Sahlin-Andersson 2002). This means acknowledging that project boundaries are not set in stone but rather evolving processes contingent of interaction patterns. Law has proposed that entities can appear stable by being *fluid adaptable* (Law 2000:10). Law (2000) explains this suggestion by using an example drawn from de Laet and Mol (2000) of a bush-bump. The bush-pump was regarded as unstable, and this instability was explained in various ways. These observations made de Laet and Mol (2000) propose that the boundaries of the water-pump were fluid. They maintained that the boundaries of the pump could be constructed by focusing on its nature as a water-producing device. The emphasis would then be placed on the mechanics required for the water production to happen. Another way to do it might be to sketch the boundaries from the notion that it was a sanitation device, and emphasize the clean water and what it would bring to hygiene. Still, it could not perform as a sanitation device without the mechanics, the manuals, and the tests. Regardless of which of these two ways one selected to draw the boundaries, the fact remains that the pump can only be operated when it is part of some kind of community that host the physical pump and operates it; thus the boundary of the pumps could also include the community. So where to place the boundaries for what the pump could be used for?

In accordance with the pump's fluid boundary, the decision of what would be required to make it work also emerges as fluid. One might think that all entities have an essence to them, being determinants for being or not being the entity one is speaking of (a bush-pump, a technology project etc.)[59]. If the essential parts of the technology project were replaced, this would not be the technology project anymore. The example of the bush-pump makes one look in a different direction. In this example, even what could be labeled as strictly essential pump parts were replaced by 'what was at hand' as the parts broke down. These replacements might have altered how the pump was used. Still, despite replacing both 'essential' pump parts and altering the use of the pump, one could say that it remained a pump. Law (2000) suggests that the bush-pump remained stable, that it existed, by changing its relations all the time. The relations of the pump, keeping the pump as a pump, were reproduced, not in a stable but rather in a variable manner. It could therefore be labeled as a variable object (Law 2000:10). In accordance with this, an object or a class of objects may be understood as a set of connections that gradually shifts and adapts itself rather than one that keeps itself rigid.

[59] I used the example of Aramis (Latour 2002b) in my discussion of project development. I find it important to note Latours statement when discussing Aramis; "there is no such thing as the essence of a project" (Latour 2002:48).

In Chapter 2, I accounted for how I started my study of projects from the theory of the temporary organization, which distinguishes projects by the characteristics of time, task, team and transition (Lundin and Söderholm 1995). In the case I report on, the overall *timeframe* persisted but evolved as reframing deliveries, down scaling solutions, and applications for extensions of time frames. The *task* remained to implement the GSM-R system, but as was indicated in Chapter 7, the task scope broadened over time, and the task became highly relational and multifaceted. Even if the main idea of GSM-R implementation persisted, the task changed in numerous ways. The *team* persisted, yet it was changed in the sense that some participants were exchanged, the organizing of the team changed, and the competences of the team were altered in different ways along with the team's task solving activity. I find it difficult to determine the *transition* to be created, as the project is not completed yet. What we do know is that the project, in addition to the planned transition, managed to develop the OPM, which, as I indicated in Chapter 6, might lead to quite fundamental transitions, also for actors external to the project's base organization. I find the essence of the GSM-R project difficult to determine, and the boundaries to be fluid. The project appears fluid adaptable, which is in accordance with the suggestions of how "unwarranted adaptation" (Kreiner 1995:342) may be a benefit of reducing the impact of hierarchical structures in project contexts. In keeping with the above observations and reflections one might speculate that project character seem persistant only as the project manages to be fluid adaptable.

Although there are texts emphasizing how project boundaries and structures may be negotiated (Sahlin-Andersson 2002, Kreiner 1995, Lundin and Söderholm 1995, Andersen 2005), little has been said about production and continuous re-production of project character and how this character can be multifaceted. One might, however, look to the field of organizational identity to try to understand these issues better. Recent research on organizational identity has provided suggestions resembling the indications presented in this thesis. It has been proposed that the identity, or character, of an organization does not exist in a vacuum or as a stable entity (Goia et al. 2000), but, rather, it grows out of relations (Scott and Lane 2000). It is fluid and adaptive to environmental changes (Goia et al. 2000), it is unfolding in organizational patterns of interactions and gets infused by meaning (Weick 1979). Furthermore, it has been proposed that appearance of a stable organizational identity, or character, requires enduring organization/ stakeholder relationships (Scott and Lane 2000:143).

I have worked with the principle of recursive connecting (Chapter 3). It implies that given changes in the project task, competence, relations, and grant of authority, the whole character of the project would be changing. I have suggested that not only did these processes evolve, they also co-

evolved and affected one another, and subsequently enabled the project to develop multiple translations of the technology development and of itself as an organization. The increasing relational character of the task seemed to call for this as the various parties involved represented heterogeneous interests. It appeared that these processes of the project, as well as its overall character, had to be fluid adaptable for the project to keep itself alive. I propose that the character of the project was continuously in the making.

It has been suggested that "*how* an entity *becomes* constitutes *what* that entity *is*" (Whithead 1978(1929):23, in Bakken and Hernes 2002:64). The project character seemed to be enacted gradually as the project interacted with actors. Through presenting multiple translations, to which the various actors with whom it interacted could respond, the project's character gradually emerged. In accordance with these reflections, one might speculate if project character is a fluid adaptable phenomenon, continuously in the making and fractured in nature.

10.3 Further research

I have tried to include the main points of the empirical indications and arguments in 8 propositions that were offered in Chapter 7-9. To sum up, the following propositions for furher research were developed:

Proposition 1: ***Over time, the project task's scope broadens, the task's nature evolves from primarily technical to more relational and the task is understood as increasingly multifaceted as the project works to solve it.***

Proposition 2: ***The project competence increases as the project explores its task and, over time, it becomes highly relational and situated, while learning what actors it must consider, what their expectations are, and how to meet these expectations***.

Proposition 3: ***The project competence experiences changes as project conduct evolves; from exploration and inquiry at the beginning, it increasingly includes embedding knowledge into codes, manuals, and routines of operation.***

Proposition 4: ***Project task solving is based on inventing project tasks and negotiating credible versions of the task solving process. Credible versions are developed as actions, and events that happened dispersed in time and space, are connected and presented in story lines.***

<u>Proposition 5:</u> Since the project's relations are emergent and not self-sustained, the project must act to nurture and maintain the relations throughout its operation.

<u>Proposition 6:</u> As stakeholders change their interests over time, and represent heterogeneous interests, the project can only form and maintain relations by varying and differentiating its actions over time, yet acting balanced at the same time.

<u>Proposition 7:</u> The project's development of influential practicing is contingent upon the early strategic positioning of the project, its proactive actions to influence, and the will to assume discursive positions.

<u>Proposition 8:</u> The project's exercise of influence is contingent upon the project's ability to activate others in voicing its opinions by consciously lending authority from powerful discourses.

The aim of this research has been to develop fresh propositions that may trigger research on the evolving and embedded nature of projects. I hope they will contribute to further research within the project management field.

10.4 The contribution

I have accounted for the main audience of this thesis being researchers within the field of project management research. The propositions for further resreach are the main contribution of this thesis.

I suggested at the very beginning of this thesis that its relevance lies in both the themes investigated and the way they were explored. I think the approach I created for exploring projects as evolving and embedded phenomena might be a valuable first step for understanding projects from a process point of view. I have argued that the project management field of research is too normative and that contributions within this field raise too few questions regarding how things come into being and evolve; questions like: how are project tasks, competences, and other resources brought together and what are the effects of these combinations over time?

Drawing insights from various process contributions together, I chose to work with three concepts to enable my account of the project development. These were the conncepts of connecting, heterogenity and contingency. These concepts particularly illustrate how the relationship between task development and the development of project team competence might be

understood. They also explain the relational activity of the project team. In several ways, both the concepts and questions adressed are intertwined. In the following account, I will explain how.

Connecting is a concept that draws our attention to how the project can come into being and consolidate itself by relating in different ways to actors in its environment. This highlights the role of the project team as developer of connections with all the bits and pices that are required to give life to the project, and sustain it during the project period. It seems that the project must first and foremost relate in order to be perceived as an actor among actors. An important implication is that project management is about translating activities to be acceptable to other entities for connections to emerge. Heterogeneity is a concept that draws our attention to how technology project's directions are neither pre-determined nor determined by a predefined entity, such as the project owner's orders. The development of the project came about as heterogenous entities connected, in the sense that the technology, operational and relational competences, politics, economics, and powerful discources on, amongst others, project management, all came together. The concept of heterogeneity highlights the project and project task as taking part in a constellation of multifaceted interests. Conceived this way, project management continuously activates heterogenous set of actors that are required to create the aimed for transition. Contingency is a concept that draws our attention to how developments are influenced by their own history, which underscores the role of the project team as a creator of conditions for the possible further development.

It has been pointed out by Lindkvist and Söderholm (2002) and others that there are few detailed descriptions of project behaviour. I believe this dissertation contributes in thoroughly describing the actions of a project. Looking at the descriptions, the inevitable question to pose is; what is it a descrition of? What does the case actually represent? I have described (in Chapter 4) how demarcating a case and developing research questions could as well be both the aim and the process of research (Dubois and Gadde 2002). I started out demarcating my case in accordance with different criteria, one of these being the criterion of typicality. I have reflected on how I, as I learned to know the case, believed that the project I investigated was more valuable in terms of illuminating project development in a multi-organizational framework. The case also illuminates fairly well how technology processes are embedded in political environments. The research process I describe illustrates that how we regard projects, cases, and good research questions is an evolving process. In keeping with this, I suggest that project management research might benefit from the application of more emergent research designs that might be useful in capturing the evolving character of projects.

Finally, one might speculate on the impliactions of my research on the project management practice field. I find it inappropriate to make suggestions for practical implications on the basis of this research, as my contribution was aimed at the project management field of research. In order to make suggestions about practices, the issues discussed need to be explored further. Therefore, I would like to just make a general comment at the end.

Establishing projects seems to be a central way of organizing contemporary work life. Some organizations, such as the large oil companies in Norway, describe themselves as project based companies. The account developed here indicates that the rational and functional emphasis within the normative project management might, in some cases, be infused with a number of political processes of emergent character that to some extent might be fruitful and/or required. This account also deviates from the management models that we often teach when training project managers. Although it deviates, it does not imply that these models do not contain valuable processes and insights. I assume that, even when telling stories about project practices that do not resemble the normative models, the models might contribute with productive insights into organizing of project work. Still, my accounts of how vital project processes emerged and the unfolding project character of a powerful actor may serve as important modifiers to the belief that projects are processes that can be controlled by project owners. It seems that projects have the potential for empowering themselves.

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