Nis Johannsen

Reconfiguring Maternity Care?

- Reflections on two Change Initiatives

PhD Dissertation - IT University of Copenhagen - February 2009

Abstract

This dissertation constitutes a reflection on two initiatives seeking to reconfigure maternity care. One initiative sought to digitalise maternity records and included a pilot run of an electronic maternity record in a Danish county. The other consisted of a collaboration between a maternity ward at a hospital and a group of researchers which included me. Both initiatives involved numerous seemingly different interests that were held together and related to reconfiguring maternity care. None of the initiatives can unequivocally be labelled a success, as neither managed to change maternity care, at least not in the intended manner. It was, however, an achievement to relate the different interests for a period. In this dissertation I will elucidate the proposed changes in the initiatives as well as expound on the manner in which they were proposed. It is argued that the different interests involved in the initiatives were not obstacles which the proposed changes should overcome, but are on the contrary necessary, as it is the alliances between the particular interests and the proposed changes that motor the initiatives. The interests were not invented through the initiatives but are formed through history. Although the two initiatives were different, some of the interests involved are exercised through the same kinds of logic. The word logic is used in a particular sense, which is different from the philosophical discipline bearing the same name. Rather, logic in this dissertation is about modes of acting, where different logics enable certain actions and make other actions less likely. The three logics studied are *The Logic of Centring the Citizen, Patient and Pregnant Women*, *The Logic of Seeking Progress through IT* and *The Logic of Standardising through Externalisation*. Engaging with the contingent processes forming the three logics approaches the question why the particular interests managed to contribute to the initiatives. As the ambitions stated in the initiatives were not realised it is not possible portray the consequences and politics of the proposed changes without merely speculating. Although the initiatives were not successful the ambitions remained. To approach the consequences and politics of the proposed changes an experiment is instead carried out. This experiment draws on the interests involved in the initiatives and the three logics, while it constructs a conceptual frame within which three experimental designs are constructed. The consequences and the politics of the proposed changes are engaged with in laboratory manner through collaborative development of the designs and through exposing them to members of field of maternity care.

Acknowledgements

During the process of my PhD project I have been fortunate to be surrounded by a great number of persons providing intellectual challenge and moral support, without whom this dissertation would not have existed, at least not in its current form. Firstly, I would like to thank my colleagues at the IT University in general for making it fun to go to work (almost) every day. This list includes Martin Scheil Corneliussen, Anna Valgårda, Javier San Agustín López, Lars Rune Christensen, Hrönn Sigurðardóttir, Birger Andersen, Dixi Strand and Jun Yoneyama (Dixi and Jun deserve additional acknowledgement for teaching the course Interaction Design with me). From ITU, I would like to thank Søren Mørk for the numerous discussions related to our enquiry into the philosophy of Gilles Deleuze and the work that he put into organising our PhD seminar on Deleuze, ethnography and STS. Additionally, a thankful acknowledgement goes to Joachim Halse who has taught me a great deal about anthropology and craftsmanship.

Apart from being affiliated with the ITU, I have enjoyed taking part in the HealthcareIT programme, where among others Magnus Nilsson has been inspirational. Another group of scholars that I have been fortunate to work with is the STS Reading Group of Copenhagen. In particular, I would like to thank the bold fraction that joined me in starting up the *subversive* part of the group, which includes Kåre Nolde Nielsen, Birgitte Gorm Hansen and Katrine Lotz.

A special acknowledgement goes to the staff of Hospital X for letting me observe their everyday work practice and allowing me to ask a great number of questions. I also thank the group of pregnant women who participated in the experimental workshop. For the layout and photograph of the front page, I would like to thank Janus Kohl Andersen.

The process of doing my PhD brought me to the inspirational institution, the Centre de Sociologie de l'Innovation at École des Mines, where especially José Manuel Mendes encouraged me through his enquiry into heat waves and where

Madeleine Akrich guided my project through discussions and feedback on my writings.

Also Torben Elgaard Jensen and Brit Ross Winthereik have helped me in producing this dissertation through feedback on earlier drafts. Additionally, I would like to thank my supervisor who has helped me stay more or less on track for the past years. I am very grateful to Peter Danholt who has not only provided me with useful comments based on his thorough reading of the dissertation, but also been a fellow traveller within the fields of STS and healthcare. Another intellectual travelling partner has been Jens Pedersen. His insistence on challenging every theoretical insight and position is at the same time admirable and inspirational.

Lastly, and most importantly, I would like to thank Max and Mari, whose love and support I look forward to return.

Copenhagen, February 2009

Nis Johannsen

Table of Contents

Chapter I

Introduction

This dissertation is about change. It is about reconfigurations in our empirical world. It is popular to promote change but the actual process is usually more complicated. Change, understood as reconfiguration, involves the coordination of numerous interests and parties, which is inevitably harder than talking about it. Change initiatives setting out to reconfigure practice in a particular way often arrive at different results than anticipated and hoped for. In other words: change is difficult. Change is, however, also inevitable. Because things are related to each other, changes in one place require reconfigurations in other places. One thing that is changing is maternity care, which is the focus of this dissertation. More specifically, it is a reflection on two cases that were about changes of maternity care. This dissertation is an enquiry into how these change initiatives were possible and how they made sense in their respective contexts. Maternity care can be defined in different ways depending on the position from which it is conceived. The official Danish guidelines to maternity care define maternity care as "a term encompassing all of the Health Services' activities in relation to pregnancy, birth and the post-birth period" (Danish Board of Health 1998, p.3). This is a wide scope, as it includes the time before, during and after birth. At the same time it is narrow because is includes only the activities of the Health Services, which makes sense, as these guidelines are directed solely at health care professionals. This dissertation does not solely address health care professionals, and includes also activities done by laymen in relation to pregnancy, e.g. the pregnant woman. However, because of the empirical data forming the basis of the dissertation, the temporal scope is limited to the period of the pregnancy, thus excluding birth and the post-birth period.

The first case is a study of a project seeking to develop and implement an electronic maternity care record. The ambition was to reconfigure Danish maternity care by digitalising the maternity record. There were a number of aspects in this project, among others the assumption that digitalisation would activate the pregnant woman and improve the collaboration between the health care profes-

sionals involved in the care. But also aspects which one immediately would find unrelated to maternity care were part of the interests in the project. A prominent interest was the wish to create a digitalised record for patients with chronic illnesses, which connected diabetes, asthma and other conditions to pregnancy. However, things did not turn out as expected, and the project ended prematurely failing to produce a digitalised record that met the current standard of care.

The second case, which relates to reconfigurations in maternity care and also serves as empirical foundation for this dissertation, is a collaboration between a maternity ward at a Copenhagen hospital and a group of researchers, including myself. This project was also about different interests that were held together as an initiative wanting to change maternity care. This case differs in character from the former in two senses: firstly, it was much smaller in scale and secondly, it is more an insider's reflection on the course of events than the observations and interpretations of the researcher following the project. The second case bears resemblances with the first regarding the character of the particular changes. Digitalisation, activating the pregnant woman and standardisation were key-elements in the both initiatives. Like the project about electronic maternity records the collaboration with the maternity ward also held great hopes that digital technology would reconfigure maternity care in a way which the participants found beneficial. However, as with the first case maternity care was not changed, at least not in the way it was hoped.

A particularly interesting aspect in relation to reconfiguring maternity care is the status of pregnancy. Pregnancy is necessarily and intimately related to one of the most fundamental aspects of any kind of society, namely reproduction. To maintain a society, even one we do not consider civilised, reproduction of the population is needed. This is to some extent visible in the organisation of health services and even more in the way people relate to their own and other people's pregnancies. The status of carrying a child also affects the citizen/patient configuration as society expects the pregnant woman as citizen to do the best she can in relation to her part of the work. What exactly her part is and how big it is, is by no means an issue that is settled once and for all. On the contrary, it can be influenced by other reconfigurations of care practices.

Object of the dissertation

This dissertation constitutes my reflections on the two cases briefly introduced above. The reflections are guided by the following three research questions:

- What kind of changes were proposed and how?
- Why were these particular changes proposed?
- What are the politics of the proposed changes?

The first question relates to the character of the changes proposed in the two projects. As briefly touched upon, the proposed changes in the two cases bear resemblances. There are of course also many differences, but I will focus on what is shared. This first question also relates to how the changes were proposed. To answer this I will explain how the projects were organised and how the different interests were related. I will also show how the two projects developed and what happened to the proposed changes.

The second question relates to the background for the proposed changes. It was an accomplishment to relate the different interests and commence the project about electronic maternity care records as well as relating the different agendas of the maternity ward and the researchers into a collaboration. Something and someone made it possible to relate the different things. To answer this I will look into what made these particular proposed changes make sense.

The third question relates to the effects of the proposed changes. As already revealed, neither the project seeking to change maternity care through digitalising the electronic maternity records nor the collaboration between the maternity ward and the researchers managed to change maternity care in the way that it was intended. This means that in order to answer the question I have had to materialise the propositions in an experimental way. The experimentation should be regarded as a laboratory experiment because the variables were particular for this experiment, which means that the result will not necessarily the same if the proposed technologies were implemented in the Danish society.

By answering these questions I wish to contribute to an academic setting and to the field. The particular academic setting that I wish to contribute to is the same

that I wish to situate this dissertation within, namely the field of Science, Technology and Society Studies (STS). STS is not a closed theoretical box, as it is not a well-established discipline like, for example, institutional theory within sociology. This means that STS with its cross-disciplinary character is constantly in the process of being related to other theoretical fields. This dissertation also draws on theoretical resources form governmentality studies and post-structuralist philosophy. Even though neither of these theoretical fields are in opposition to STS (I argue that they are related) they do not belong to STS, and some tensions arguably exist. The practical field that I wish to contribute to is more difficult to label and demarcate. However, it concerns maternity care and how citizens are related to the State through health care services. This is at the same time very broad and very narrow. Broad, because citizens' relation to the State through health care service is a topic concerning many people and many medical conditions. It is also narrow because I have only studied two particular change initiatives in relation to maternity care. This means that I am not able to speak about changes in maternity care in general, neither universally nor limited to a Danish context. The change initiatives that I reflect upon are not completely obscure and unlike others, but they, however, unique. This means that particular actors with particular interests are involved. Further, it is only certain aspects within maternity care that I am able to contribute to. The medical side of maternity care is out of range for this dissertation. However, I can and do not in advance wish to exclude any possible uses of this dissertation. But I can direct possible uses of it in directions which I find fruitful. What it refrains from doing is related to how I as an author am academically situated and what relations I have been entangled in through the empirical work forming the basis of the dissertation.

Having been trained in a faculty of humanities and entangled in discussions about STS, this dissertation as a product of my work does not seek to give authoritative answers to the three research questions that can stand alone through allying it with universal models guaranteeing truth. There are no natural laws, universal social structures or other universalisms incorporated in the arguments of the dissertation. The dissertation does not aim to establish regularity and order out of an alleged disorder through the application of universalities. The dissertation does deal with regularity but not as something that precedes disorder. Regularity is conceived as emerging through disorder and thus not existing in another realm where I as an author can take from and apply it to disorder.

Through the empirical work, which has taken around three and a half years, I have become entangled in a complex of relations to changes of maternity care. Some of these relations are stronger than others for a variety of reasons. Some of the reasons are related to my academic interests, others to personal preferences as some informants have been particularly interested in my work, while yet other reasons pertain more to the particular circumstances under which the research was carried out as they are related to funding issues and already established project collaborations.

The argument of the dissertation

The two change initiative that I have studied and reflected upon were complexes of various differing interests that for a period were hold together under the same label. The project about digitalising maternity records was initially part of an Internet portal's project description and later connected to diverse interests such as disease management in chronic illness, digitalisation of the health services, activation of the citizen, quality assurance, efficiency improvement and more. The collaboration between the maternity ward and the researchers related interests in helping the socioeconomically disadvantaged pregnant women by digitalising care for the socioeconomically advantaged, citizens relation to the State, monitoring of babies, standardisation initiatives and more. Both initiatives managed to relate these interests to reconfiguring maternity care. The many interests in the initiatives were not obstacles to be overcome in order to make practice adhere to a general direction for change, on the contrary they motored the initiatives. Without the particular interests there would never have been a project or collaboration. There were no strict direction or management in either of the initiatives, instead the interests and the coordination of them sat the course. That is to say that the interests made some directions lucrative and others not.

The interests, however, did not occur out of the blue. They were related to particular modes of reasoning, or as I argue, particular logics. The term logic is here used in a certain sense, as it designates style, which is closer to Michel Foucault's *discourse* and John Law's *modes of ordering* than to the philosophical discipline bearing the same name. Logics are formed through history and change through contingent processes. In order to understand why the initiatives developed how they did, I argue that we need to look into the formation of three different lo-

gics, which each contributed to the existence and development of the two change initiatives. I have called these logics *Centring the Patient, Citizen and Pregnant woman*, *Seeking Progress through IT* and *Standardising through Externalisation*.

The first logic consists of practices that seek to make individual citizens and patients active centres of processes in which they and the State are involved. In relation to the two change initiatives, the proposed activation of the pregnant woman was sought by supplying her with specific resources for action. These resources are based on a particular way of reasoning that is authorised by the State. This means that when the pregnant woman is positioned at the centre of the activities through a process where active empowering makes her capable. This empowering makes her strong on the basis of what the empowerer considers to be reasonable.

The second logic is premised on a conception that technology and sociality exist in different ontological realms and entails a belief that technology necessarily will improve the conditions of human life, at least if it is employed properly. It exists simultaneously with its reverse-headed twin that believes that technology necessarily is for the worse. It is, however, stronger than the dystopian conception of technology and motors several technology projects. With the development and employment of information technology the logic becomes even more powerful as the machinery becomes more obscure.

The third logic is about avoiding subjectively based work and care practises through articulating and enforcing external standards of what is good. In the two change initiatives the pregnant woman and health care professionals are proposed to access data based on reviews of which practices statistically have the best outcome. This way they become able to act on the basis of an external standard for what is considered optimal maternity care and not so much on the basis of what they happen to think is optimal care.

By studying these three logics I approach the question about why the two change initiatives existed and why they developed as they did. We are, however, on this basis not able to speak about the politics of the proposed changes, as they are indeed only proposed. The three logics are not neutral but neither do they merely force themselves upon practice. If they did, we could simply but studying the formation of the logics described the outcome once they been

realised in practice. Logics, interest and ideas involved in the initiatives are translated, modified and sometimes even circumvented. Both initiatives did not deliver the intended outcome, but the interests continued to exist. In order to learn more about the proposed changes I have experimented with interests involved in the initiatives. The experimentation takes place on a conceptual and a material level. The conceptual level frames the actions performed by the pregnant woman in relation to the pregnancy as *project management* and the pregnancy as a *project*. The material level consists of three experimental designs that enable the pregnant woman to manage the pregnancy as a project. The designs are experimental and particular in the same sense as experiments in laboratories are particular experiments. In order to reproduce the same results in other laboratories all the parameters must be the same. Some laboratory experiments can relatively easy be done the same way in other laboratories if the set-up is explicated to a satisfactory degree. My experiment is harder to reproduce because it involves complex translations of interests and because it is difficult to explicate exhaustively.

Through the specific translations that happened during the experiment the activities performed by the pregnant woman during pregnancy changes. The pregnant woman exercises management by relating the specific pregnancy process to a general pregnancy that is constructed through statistical means. The specific pregnancy is expressed through various visualisation tools so the pregnant woman as the project manager can evaluate and compare especially graphs and numbers. The pregnancy process is divided into several stages through which progress should be visible at certain evaluation points. The pregnancy project has an inside, where actors work directly on the project, and an outside, which depends on the project's success. Splitting the pregnancy up into smaller parts not only helps the pregnant woman manage the project but also the actors existing in the project's outside in assessing the expected progress.

Through the numerous divisions and splitting up of the pregnancy it becomes not only manageable but also molecularised and subject for endless optimisation. This together with the proliferation of visualisations opens up new demands from the project's outside. Pregnancy has never solely belonged to the pregnant woman as societies depend on reproduction. But in the experiment pregnancy becomes available to larger extent. Molecularisation is, however, not the only thing that happens. Visualisation technologies, such as ultrasound

scanning, and distribution technologies, such as the Internet, ensure that the pregnancy does not just consist of scattered numbers and graphs but also a very humanoid entity. Scanning images of foetuses waving, smiling or in other ways appearing like already semi-socialised citizens in our society, reconstruct the pregnancy and make the responsibility of the project manager even greater.

Structure of Argument and Outline of Chapters

The argument is presented through 12 chapters including the introduction and the conclusion. Before moving on I will in the following outline the content of each chapter (excluding this introduction and the conclusion).

Chapter 2: "Style and Approach". In this chapter I discuss the conditions for doing the kind of research that I have been doing. I discuss how knowledge is partial and how the researcher is situated. Through Bruno Latour's notion of *infra-reflexivity* I discuss approaches to reflect on the researcher's role in the knowledge production. To operationalise the ambition of infra-reflexivity I draw on Isabella Stengers and Vinciane Despret's attempts to gather *interest* and exposing one's propositions to *risk* by seeking *recalcitrance* from the object of study. Finally I explain how post-methodological frameworks differ from traditional, what the advantages and disadvantages there are when employing a post-methodological framework and situate this dissertation among three different post-methological texts.

Chapter 3: "Theoretical Point of Departure". Upon entering the empirical field my optics was not only shaped by my academic training, politics etc., also a particular interest in the relationship between the citizen and the State through the health care service was present. This interest will in Chapter 3 be explained with reference to the literature within the tradition of governmentality studies.

Chapter 4: "Theoretical Resources I – ANT and the Socio-Logic of Translation". Employing a post-methodological framework this dissertation does not confine theory to one place in the text. Theoretical resources are introduced in relation to where they are useful. In this chapter Actor Network Theory is discussed with emphasis on its core notion of translation

Chapter 5: "Two Change Initiatives". This chapter provides the accounts of two change initiatives in relation to maternity care. The first is an account of a large-scale project about digitalising maternity records. The second is an account of a collaboration between a maternity ward at a hospital and a group of researchers that included myself. Finally in this chapter, I will analyse the initiatives in order to extract the interests that made the initiatives possible.

Chapter 6: "Theoretical Resources II – Performativity, Regularity and Contingent Processes". This second reservoir of theoretical resources explains the theoretical concept of performativity drawing on particularly Michel Callon, Judith Butler, Annemarie Mol and John Law. Regularity is discussed with reference to Michel Foucault and Gilles Deleuze. Finally I will explain the concept of contingent processes because of its importance in relation to understanding the following three chapters.

Chapter 7: "The Logic of Centring the Citizen, Patient and Pregnant Woman". This chapter is the first in a series of three constituting the three logics, each telling a story of the formation of the specific logic in question. This first logic begins with empowerment initiatives in the 1970s America and end with centring practices in Danish health care.

Chapter 8: "The Logic of Seeking Progress Through IT". The account of this logic starts with a particular text by Kant about progress. The account moves from philosophical writings through examples of how new technology has been associated with progress and end with digitalisation efforts in Danish health care promising progress.

Chapter 9: "The Logic of Standardising Through Externalisation". The last logic has both a philosophical and practical point of departure. The Vienna Circle's quest against metaphysics and Taylor's Scientific Management both serve as important and early instances of this logic. The story ends with an analysis of how standardisation of Danish maternity care is sought through externalisation.

Chapter 10: "Experimentation". This chapter consists of the conceptual and the material level of experimentation and is based on the two cases as well as the logics. Firstly, the conceptual level will establish a frame in which the remaining material level will take place. Secondly, the material level explores maternity care through three experimental designs.

Chapter 11: "The Theoretical Point of Departure Revisited". Here I will come back to where I theoretically commenced my journey studying reconfigurations in maternity care in two change initiatives. I will discuss the governmentality thoughts introduced in Chapter 3 with respect to what is learnt through the three logics and the experiment.

Chapter 2

Approach and Style

2.1 Studying practice

In her book(let) *The Companion Species Manifesto* Donna Haraway explains how she is inspired by her father's desire to report from the matches he covered as a sport writer rather than write "meta-stories" or "look for scandals" in "the sports column, a more prestigious activity in the newspaper business" (Haraway 2003, p.18). Haraway does not seek to apply an analysis or use an apparatus of interpretation to elevate the account from the level of practice. Haraway's father wanted to stay close to the action as his faith was in the game, where both the fact and the story cohabit. Some parts of academic practice search for *angles for meta-stories*. This search presumes that the world is ordered and mundane practices are effects of, for example, structures that may be uncovered through analysis that goes beyond practice. However, with the turn towards practice, order is *produced* and thereby it becomes relevant to report about practice and describe how order is produced.

By using a metaphorical apparatus of vision, Donna Haraway deals with the issue of the researcher's role in the creation of knowledge (most notably in the influential paper "Situated Knowledges" from 1988 (Haraway 1991a)). The metaphor of vision shows that a view on something is always a view from somewhere. A view from somewhere on something is a particular embodied vision. To say that vision is embodied is also to say that it is situated. So when a view forms the basis for knowledge, it is always situated knowledge. To claim that one possesses objective knowledge is to possess *a view from nowhere* (ibid., p.188). Claiming to be able to see from nowhere, and thus not acknowledging the embodiment of the vision, is what Haraway refers to as a *god-trick* (ibid.,

p.189). As a politically engaged feminist Haraway is not only pointing to the epistemological problem of trying to pull this god-trick. Her analysis of Robert Boyle's objectivity production in the 1660s in London (based on Shapin & Schaffer 1985) shows that not only is the objectivity a construction[1], but it is a construction that is situated. In the case of Boyle and his witnesses in the Royal Society of London it is a situatedness that in particular embodies male-ness. The persons witnessing Boyle's scientific fact had to come from an "unmarked category", to be "an inhabitant of a culture of no culture" (Haraway 1997, p.23). This unmarkedness is a self-invisibility, which "is [a] specifically modern, European, masculine, scientific form of the virtue of modesty" (ibid., p.23). Haraway's point is that in claiming objectivity and modesty specific interests are involved in the construction of reality. Other interests could have been involved instead. The *modest witnesses* are acting as "legitimate and authorised ventriloquists for the object world" (ibid., p.24), although they are not.

Acknowledging that vision and knowledge are not disinterested objectives could lead to a position of arguing for subjectivity instead of objectivity:

> We unmasked the doctrines of objectivity because they threatened our budding sense of collective historical subjectivity and agency and our 'embodied' accounts of the truth, and we ended up with one more excuse for not learning post-Newtonian physics and one more reason to drop old feminist self-help practices of repairing our own cars. (Haraway 1991a, p.186)

Haraway is arguing that merely to deconstruct scientific and technological (arte)facts does not enable you to participate in world building practices. "Relativism is the perfect mirror twin of totalization in the ideologies of objectivity; both deny the stakes in location, embodiment, and partial perspective; both make it impossible to see well. Relativism and totalization are both 'god-tricks' promising vision from everywhere and nowhere equally and fully" (Haraway 1991a, p.191). The alternative to these poles is "partial, locatable, critical knowledges sustaining the possibilities of webs of connections called solidarity in politics and conversations in epistemology" (ibid, p.191). Haraway calls these situated knowledges feminist objectivity (ibid. p.188), and argues for a "strong objectivity", which she describes by quoting Harding:

[1] This is the argument put by Shapin and Schaffer (1985).

> A stronger, more adequate notion of objectivity would require methods for systematically examining all of the social values shaping a particular research process, not just those that happen to differ between members of a scientific community. Social communities, not either individuals or 'no one at all', should be conceptualized as the 'knowers' of scientific knowledge claims. Culture wide beliefs that are not critically examined within scientific processes end up functioning as evidence for or against hypotheses. (Haraway 1997, p.36, quoting Harding 1993)

Strong objectivity is thus acknowledging the partiality and situatedness comprised by cultural beliefs and social values. Instead of claiming objectivity through methods guaranteeing just that or saying that we cannot have objectivity, that everything is subjective, we should be reflexive in terms of our partiality and situatedness, or in other words, we should be accountable. As stated earlier, the researcher is among the instruments in the knowledge producing assemblage, and must therefore also be accounted for. The question is: how to be accountable and reflexive, as this is by no means an easy task.

To come closer to a productive way of being reflexive and accountable, a place to begin is with a discussion by John Law. In discussing how to be accountable Law talks about reflexivity as a method for explaining the consequences of the personal becoming an "analytical and political tool" (Law 2002, p.39). Reflexivity is not new to social science, as Alvin Gouldner in 1970 argued for a reflexive sociology (Gouldner [1970] 2003). Gouldner denied the common claim that both researchers and their factual output were value-free (ibid., p.269). Being reflexive is, however, not necessarily a practice that is easily done, or at least not easily done unproblematically. Making oneself accountable as a researcher often tend to result in "self-indulgent self-revelations", which John Law also refers to as "vanity ethnography" (Law 2002, p.43). The obvious problem with these is of course that the accounts are more about the researcher than the field. The field is, however, not just "out there". The field is partly constructed by the researcher on the basis of her/his situatedness. The obvious problem with "vanity ethnography" then is not so obvious again, as the distinction between what is seen "out there" and the researcher becomes blurred. This does not mean that self-indulgent self-revelations are unproblematic, but rather that there does not exist an external and independent criterion for what renders a reflexive account self-indulgent.

Michael Lynch (2000) reflects on reflexivity and its capabilities by reviewing a number of different kinds of reflexivities. Among his points is that reflexivity is not one thing, and that reflexivity does not guarantee a better account. Rather, "[a] self-consciously reflexive pronouncement will not necessarily strike others as profound and revealing. It may just seem pretentious, silly or evasive. In a world without gods or absolutes, attempting to *be* reflexive takes one no closer to a central source of illumination than attempting to *be* objective" (ibid., p.47, original italics). Lynch's alternative to the ambition of being reflexive is, however, not to abandon reflexivity, as reflexivity is "an unavoidable feature of the way actions are performed, made sense of and incorporated into social setting" (ibid., pp.26-27). In academic practice, Lynch argues for an ethnomethodologic reflexivity, which "is akin to Latour's (1988) "infra-reflexivity" (ibid., p.34).

Bruno Latour discusses in the paper "Politics of Explanation" how reflexivity very often is problematic and suggests a specific kind of reflexivity that does not involve the same problems as the typical version (Latour 1988). Latour sees the need for reflexivity as a tool for mending the damage inflicted by the journey from the field to the text. Without surveying different kinds of reflexivity with the same thoroughness as Lynch (2000), Latour makes a distinction between two kinds of reflexivity: meta- and infra-reflexivity. Meta-reflexivity is characterised by adding layers upon layers of reflexivity in order to either make the text appear not to refer to anything or to make the text appear to be "still present out there in the lived world[…], without deformation or transport" (Latour 1988, p.166). The first form of meta-reflexivity, associated with deconstructionists and personified by Derrida, fears that the text would be naively believed by its readers and therefore takes methodological precautions to show that the text exists by itself and not as a representation of the field. The account is supplied with meta-reflection to show that it is *just another story*. By seeking to position the account as a mere story, meta-reflection is employed to say that the account is not referring to anything. The second form of meta-reflexivity seeks to escape absence rather than presence by having us "believe that once all the methodological precautions have been carried out, the lived-in world of the competent members can be presented truer to life than in the gloss of the classic sociologist such as Merton" (ibid., p.167).[2] The account is supplied with meta-reflection, such as including actors like "the framework" or "the author", to make the ac-

[2] Latour associates this particular kind of meta-reflection with Garfinkel and ethnomethodology, thus reads the writings of Garfinkel differently than Lynch.

count *more than just a story*. By seeking to evaluate the account within the account, this kind of meta-reflection seeks to objectify the account.

This distinction of two different kinds of meta-reflection has similarities with Lynch's claim that "[s]ome research programmes treat reflexivity as a methodological basis for enhancing objectivity, whereas others treat it as a critical weapon for undermining objectivism and exposing methodological 'god-tricks'" (Lynch 2000, p.26). The goal in both forms of meta-reflexivity is to "render the text unreadable so that the usual two-way link between account and the referent be interrupted and suspended" (Latour 1988, p.166). By taking enough methodological precautions both deconstructivists and ethnomethodologists believe better texts can be written. This, Latour believes, relies on the assumptions "that the readers are naive believers, there is such a thing as normal consumption [of texts], people easily believe what they read and, finally, that believing is always to relate an account to some referent "out there"" (ibid., p.168). Latour finds these assumptions problematic and argues for the construction of accounts that are based on an infra-reflexive approach. As the name suggests, the level of reflection does not exist on another level than the actual text. Woolgar's *nth* degree of reflection exists on the same level as the first, as "texts, so to speak, live in a democracy, as far as semiotics is concerned" (ibid., p.169). Infra-reflexivity calls for one layer of text and seeks to eliminate the paraphernalia of methodological precautions. Where meta-reflexivity seeks to act upon the field from a distance, infra-reflexivity seeks to get closer to the field by being on the side of the known rather than the side of the knower. The account of the field is not above (or beneath) the field and should not abstain from performing in the field. Employing an infra-reflexive method inhibits the author from acting in the world, as Haraway notes: "The disease [the lack of objectivity] and the cure [meta-reflection] seem to be practically the same thing, if what you are after is another kind of world and worldiness" (Haraway 1997, pp.33-34).

Infra-reflection does not seek to objectify the account through methodological precaution, nor does infra-reflection seek to make the account unrelated and purely subjective. The author of the infra-reflexive account wishes to act politically within the field, but has, of course, no way of being sure that the account will do what s/he wishes for it. Being the author of this text I wish for the account to contribute to discussions about reconfigurations of maternity care, as well as I wish for this text to contribute to discussions about STS. By reflecting

upon what has enabled me to say what I say, I do not wish to deconstruct the account as "just another story" (which Latour associates with deconstructivist meta-reflection) or saying that the story exists on another and truer level than other stories (which Latour associates with ethnomethodological meta-reflection). I do not want to control the path or reception of the account, but neither do I want it to flow in a random direction. There are no guarantees (as Stengers told us above in relation to scientific practice) that my account will do what I want it to, as it "is in your hands and lives and dies through what you will do to it" (Latour 1988, p.171). Thereby the account acts in the world and with the world.

More specifically, my infra-reflexivity is two-fold and consists of experimentation through the empirical process and writing about it. The experimentation allows me to use myself including my preconceptions actively in the knowledge producing practice rather than trying to tame or efface it. Writing about this enables the reader to see what kinds of connections I have made during the process and how I have made them. This way I am not seeking to render myself or my preconceptions transparent and thereby seeking to make the text more objective (ethnomethodologists) or making it all about me (deconstructivists), because experimenting and writing about this is not about me. Instead, it is about the web of connections that I happen to be entangled in. The subject, the author, is not interesting in this regard. It is the connections that have emerged through the empirical process that is interesting.

Summing up, I will note in relation to Latour's distinction between meta- and infra-reflection that as a researcher I am an instrument. Instruments are situated in a complex web of interests and attachments. I acknowledge politics and partiality are necessary ingredients, which cannot be confined. The reflexive aspect of the account remains on the same level as the rest of the text and is woven through the fabric of the account and should therefore not be considered precautions to the remaining text.

2.2 Practising Infra-Reflection

When reflexivity is not something to be practised next to the process of research but rather as an integrated part of it, some notes on how I have sought to do it are in order. Meta-reflexive approaches often draw on pre-existing methodological instructions, but infra-reflexivity requires circumstantial techniques of reflection. It is, however, possible to outline an attitude for the reflexivity integrated in the knowledge producing practice before continuing with the specific set-up of my process. Drawing on primatologist Thelma Rowell's study of sheep, both Vinciane Despret and Bruno Latour call for a science that gives the object of study "a chance" (Despret 2005; Latour 2000). Rowell objects to what she calls "a hierarchical scandal" in ethology (quoted in Despret 2005, p.361), which sees sheep as boring and stupid. She argues that sheep have been given the fewest chances to be anything but boring and stupid. When you see sheep as sheepish, they will necessarily remain sheepish with all that entails. Latour's argument revolves around the following sentence formulated by Rowell in developing his position about articulated propositions (Latour 2000):

> I tried to give my sheep the opportunity to behave like chimps, not that I believe that they would be like chimps, but because I am sure that if you take sheep for boring sheep by opposition to intelligent chimps they would not have a chance. (Rowell quoted in Latour 2000, p.367)

Rowell, like all other beings, is situated in cultural, political and theoretical contexts. Instead of claiming to either see without the influence of her position or trying to meta-reflect away the influence, she chooses to experiment her way out of the seemingly problematic situation. Rowell is not seeking to turn sheep into chimpanzees. Merely, she employs the chimpanzees, or rather the cultural beliefs, political ideas and scientific literature about chimpanzees in which she is situated to experiment with her understanding of sheep. By stating that sheep are sheep, they become confined within the conceptual space of sheep as boring and stupid. But by experimenting not only with the sheep but also yourself, the sheep are provided a chance to be something else than sheepish, boring and stupid.

To give the object of study a chance is to acknowledge that scientific knowledge production entails the active participation of not only the scientist but also the

object of study. It is, however, not enough to include the object of study. It is only if the scientist is able to learn from the object of study or *to become affected,* as Despret drawing on James puts it, that science is scientific (Despret 2004, p.125; Latour 2004, p.214). Stengers, as we saw above, has taught us that there are no guarantees, in fact, that knowing is not only "not the automatic outcome of [any] all-purpose methodology: it is, to the contrary, a rare event" (Latour 2004, p.214). To become affected as a researcher is difficult and I will come soon to elaborate on how I have sought to give my object of study a chance through experimenting with design and presentation of IT artefacts.

In order to become affected, it is not enough to follow methodological guidelines, although they might be helpful. Considering (otherwise boring and stupid) sheep as (intelligent) chimpanzees was a conceptual experiment that allowed Rowell to become attentive to the sheep differently than just following the common understanding of sheep as boring and stupid. Rowell thus experimented with her beliefs and situatedness in an infra-reflexive manner. Concretely, Rowell studied a group of 22 sheep by starting every morning with the same ritual: bringing the 22 sheep 23 bowls of food, one to each plus an additional. With this simple arrangement Rowell provided the sheep the opportunity to show surprising behaviour without mobilising grand theories or expensive laboratories.[3] Whether or not the sheep actually took the opportunity to show Rowell surprising behaviour is another, but interesting, question. It is the methodological approach I take with me.

Giving the sheep a chance this way is putting forth *propositions* instead of *statements*. Following Latour (ibid., p.212), "statements are referring to matters of facts through the fragile bridge of correspondence[, they] are obstinate, not negotiable". That is, they are statements in the sense that are seeking classic objectivity. In the optics of social constructivism statements are relative and not having a referent, and are thus floating around unconnectedly and unrelatedly. Statements are in this way either positivist or social constructivist. In a positivist

[3] It is common to use food to attract sheep when studying them, but this is usually done in a way that focuses solely on the competition between the sheep and their hierarchy. Many studies of sheep are based on offering a number of sheep a lower number of bowls, and then observe how they compete for the food. Rowell is not seeking to show that competition is not a part of the sheep sociality, but she is saying that it is not necessarily the only thing that counts. By offering the 22 sheep 23 bowls of food Rowell is giving them a chance to show other features than just competition. Offering the sheep fewer bowls constitutes a bad experiment because it determines the outcome.

sense they can be either true or false, and if they are true, that is, if they correspond to a matter of fact, they are redundant and "could as well not exist at all" (ibid., p.213). If they are false, they are without value. In the social constructivist sense, statements are impossible to relate to anything since they have no referent and are purely subjective and relative. But as Latour says: "A little relativism takes one away from realism; a lot brings one back" (Latour 1988, p.173). Propositions are relative in the sense that they are contingent and are related to interest and power. They are fabricated, which, however, is not opposed to being real, on the contrary. A proposition conjugates, according to Latour (2004, p.212), "three crucial elements: a) it denotes obstinacy (position), that b) has no definitive authority (it is a pro-position only) and c) it may accept to negotiate itself into a com-postion without losing its solidity". Where "a statement says in words what a thing is[, a] proposition designates a certain way of loading an entity into another by making the second attentive to the first, and by making both of them diverge from their usual path, their usual interpretation" (Latour 2000, p.372). Statements rely on a presumptive distinction between the word and the world. Propositions in contrast entail that the word is part of the world, a world that "is made of interpretations, or propositions sent to others so that they might behave differently. In between propositions there is not *one* gap but many *differences*" (ibid., p.373). Meaning, according to Latour (ibid., p.374), is obtained "by connecting propositions which might or might not be slightly foreign to one".

Not all propositions are good, however. Bad propositions do not give the object of study a chance and are *inarticulate* (Latour 2004, p.210, 2000, p.379). In contrast to the popular understanding of articulation as being able to present an argument in a sophisticated manner, articulation in the Latourian understanding is about being able to sense and express in a way that relies on the object of study. Latour shows how articulation is something that you must learn by a story about how people in the perfume industry *become noses*, that is, become articulate, through training with odour kits (Latour 2004, pp.206-209). Again, the point is not so much that they after a period of intensive sniffing and talking about odours were able to express themselves in a more sophisticated way, but that they through training became articulate in a "deeper and more important sense" (ibid., p.210). Before they became articulate "the different odours elicited the same behaviour. Whatever happened to the world, only the same obstinately boring subject manifested itself" (ibid., p.210). After being exposed to several

different odours in specific order and being made to reflect and talk about them in a systematic manner, the students became able to notice the differences between the odours and became articulate.

In distinguishing between "good" and "bad" science, Latour, Despret and Stengers argue that articulated propositions are the mark of good science. Popper's falsificationism and its positivistic associates distinguish between good and bad science by disqualifying sciences that do not produce statements that are falsifiable. In this way a large number of sciences are automatically rendered bad and a few, typically harder sciences are left to reign. According to Latour the demarcation of good and bad science should be based on how specific research projects are able to produce articulate propositions. This renders a number of scientific practices good, which Popper and his associates would otherwise have judged as bad, and vice versa. Latour presents a list of eight elements, which constitutes what he calls "The Stengers-Despret Falsification principle" (and sometimes principles and shibboleths) (ibid., p.215). Three interrelated elements[4] are necessary to explain before showing how I have sought to do *good science*, which are: interest, risk and recalcitrance.

Interest

Interest as a necessary academic component is argued for by Latour (e.g. Latour 2004), Despret (2004) and Stengers (1997, 1999). They all use the term in both an ordinary sense and a specific sense, which is related to the etymology of the term. *Inter-esse* is the composition of the two Latin words for *between* and *being*, which is why Despret can equate *interest* with *making a link* (Despret 2004, p.124). Interest is what *links* "innovative fiction to a proposition recognized a scientific" (Stengers 1997, p.141). Stengers goes as far a stating that "no scientific proposition describing scientific activity can, in any relevant sense, be called "true" *if it has not attracted interest"* (ibid., p.83, original italics). The point is not that made by social constructivism that what is true is what is socially constructed, that is, what people think is true is true. Rather it is sociotechnical and pragmatic work, meaning that scientific propositions have to be linked to other

[4] Repeating the whole list here would be a bit too tedious as many of the elements are already included in what has been stated so far.

practices in order to be true. Pasteur's ideas about micro-organisms became true, not because they were accurate references to matters of fact, but because through the work of Pasteur and his laboratory, they were able to connect to the practices of, for example, farmers with ill animals. Pasteur's proposition consisted thus of micro-organisms as an alternative to the proposition about generatio aequivoca. This proposition was able to interest farmers (Stengers 1999, p.30).

Risk

When putting forth articulated propositions one runs a risk. If the propositions were inarticulate and merely stating the obvious and redundant (sheep are sheep), one does not run a risk, but neither is one being scientific. Presenting falsifiable statements is also to take a risk, but the kind of risk that is involved when putting forth articulate propositions is at another level. Instead of just risking the hypothesis (e.g. all sheep eat), one is risking the methodological set-up. The primary concern becomes: Are you asking the right questions of the object of study? While the Popperian methodology of science is based on falsificationism, which guarantees the scientific aspect, following Stengers' notion one cannot rely on such a thing. One has to put the specific methodological apparatus one employs to the test as well. The question in relation to the risk run becomes "Am I asking you the right questions? Have I devised the laboratory setting that allows me to change as fast a possible the questions I ask depending on the resistance of your behaviour to my questioning? Have I become sensitive to the possibility of you reacting to the artefacts instead of my questions?" (Latour 2004, p.216, referring to Stengers 1997). This results in a change of the traditional hierarchical relationship between scientist and object of study, as the scientist is no longer in command. In the Popperian regime the scientist can always formulate a new hypothesis but her/his way of interrogating the object of study from a position above is never questioned. Risk considered this way is not an unwanted but a crucial element in any scientific practice.

Recalcitrance

Popperian science deliberately seeks the negative since the scientist tries to let the empirical data negate her/his hypothesis. Equally, the Stengersian approach is negative in the sense that the scientist should "devise [her/his] inquiries so that they maximize the recalcitrance of those [s/he] interrogate[s]" (Latour 2004, p.217). The challenge is to enable the object of study to resist the categories and concepts of the scientist. Humans are particularly bad at being objects of study because they have a tendency "to abandon any recalcitrance and to behave like obedient objects offering to the investigators only redundant statements" (ibid., p.217). Natural objects, on the other hand, are "utterly uninterested by the inquiries, obstinately 'object' to being studied and explode with great equanimity the question raised by the investigators – not to mention the laboratories […] Human science laboratories rarely explode!" (ibid., p.217). This is one of the great strengths of the natural sciences; their objects of study are much better at resisting the researcher than humans seeking to please the researchers. The challenge for the scientist is to set up the inquiry in a way that allows for the object of study to object. One of the reasons for the hierarchical scandal in ethology which places the sheep low on a scale of intelligence and charisma, as explained above, is that sheep have not been provided the chance to protest. Sheep are neither as heavy nor as difficult to move around as a cow nor as dangerous as a tiger. Where a cow is immensely heavy and difficult to move around at the will of the scientist and the tiger is not likely to do what the scientist dictates (unless in a tamed version as those of Siegfried and Roy), the sheep "cannot really effectively protest [… w]ith sheep you can do what you like, they don't make any *obvious* protest, they just get miserable" (Rowell, quoted by Despret 2005, p.362, my italics). As Despret informs us, *to protest* means etymologically *to testify*. In order to make the object of study testify, the scientist must give the object a chance. Additionally, the scientist must be articulate as the objection is not always *obvious*, as Callon and Rabeharisoa's thoughtful text "Gino's Lesson on Humanity" teaches us (Callon & Rabeharisoa 2004). This text is a reflection on a dystrophic individual who refused to play the role that the sociologists had prepared for him in an interview. This points to the importance of the discursive arena that is created in an experimental set-up, such as an interview.

The details and effects of the experimentation will be discussed later (Chapter 10). However, an outline might be beneficial at this point. The experimentation

consists of two levels: A conceptual and a more material. It can also be divided into two phases: A workshop focussing on design and construction and secondly, presenting prototypes of artefacts to members of the field.

2.3 Traditional and Post-Methodological Framework

The framework of the dissertation is constructed specifically for this particular text. I have not taken a traditional framework from the shelves of the methodological library and made the empirical data, theories and argument fit in the framework. Instead I have built the framework with respect to the empirical data, theories and argument. This means that I have not advanced a proposition through synthesis and argument. A traditional framework could provide a template for a dissertation, which would have the following contents and advance through the following structure: method, case/empirical data, theory, analysis and finally conclusion (even though this traditional framework is admittedly somewhat of a straw man). Here empirical data and theory has a fixed relationship, which subjects empirical data to theory in the sense that empirical data is lying and waiting to be activated by theory. Theory in this sense is like a pair of glasses through which one can make sense out of data. This sense-making part comprises the analysis in the traditional framework. Theory is what can stabilise complex data and order it with respect to scientific traditions. The traditional framework works well if the world is fundamentally ordered through solid structures and forces. Theories describe order (with more or less accuracy) and the scholar can through synthesising theory and empirical data uncover what *really happens*. The specific analysis can of course challenge the applied theory if the data is not consistent with the theory, which requires that the a theory can account for why former results have been consistent with the old theory. I propose a different approach.

If the world is not in advance ordered into neat structures and forces a strict use of theories as ordering devices may do harm to the empirical data, as this could impose a supposed order that did not exist in advance. This does not go very well with the ambition of reporting from the field, which I, along with Haraway, argued for above. If the traditional framework provides the scholar with a fixed method to deploy theories, a more flexible framework can be called post-

methodological. This regards theories as situational. However true, universal and rhetorically persuasive they might seem, they are developed in a specific context with specific empirical settings, tools, optics and situatedness. This does not make theories less interesting. But it does mean that theories need translation and appropriation when they are used. It also means that they do something else than reveal the truth behind (beneath or above) practice. Theories, in the way they are employed in the present text, affect the scholar's optics and point attention to specific aspects of the empirical data. ANT and its notion of translation serve as central theoretical components in constructing this dissertation. I will not yet go into detail with what ANT or translation is about specifically, but merely use it as an example of how one can consider and use theory in different ways. My post-methodological appropriation of ANT and the notion of translation points my attention to translational issues when e.g. technologies are introduced in a maternity care. Without going into details on what ANT is about, I become focussed on how both practice and the introduced technology change in this new constellation. This way, certain aspects become important to point out in the dissertation and others not so important (in relation to ANT, intentionality was not at the centre of attention). If ANT had been employed as a theory that uncovers reality and orders empirical data, one would apply the notions of ANT to the empirical data and thus uncover existing networks and their relations as something existing out there. This way theory determines the product more than the empirical data.

In the present dissertation I seek to use theories to point my attention to particularly interesting aspects of maternity care and the pregnant woman's activities in relation to this as well as related design issues. Although there are no guarantees that they will do this, the theories employed are not chosen blindfolded. First of all, most of the theories share many assumptions and ambitions and are situated somewhere within STS or post-structuralism. I do not mean to imply that the theories in this dissertation are all alike; merely do I wish to point out that they share many assumptions and ambitions. I will situate the ideas in question when they appear in the text. Although most of the theories introduced and brought in play would agree on many things, not all of the theorists entering the text would sit comfortably with neither of the STS-scholars or post-structuralists (and vice versa). I cannot imagine that Judith Butler could tolerate Weissberg's anti politically correctness agenda (which we will see in Chapter 7).

However, Weissberg do offer interesting points, which I use in this dissertation despite the fact that his overall assumptions and ambitions do not agree with mine nor with important scholars' employed in my text. I specify what I extract from the theoretical compounds that differ substantially from the core of this dissertation when they appear, as well as I will point to the specific disagreements.

Another reason for choosing the theories that I have is that they have done something interesting where they come from. Concepts from ANT, for instance, have done wonderful work in relation to Madeleine Akrich's work on lightning kit in Africa (Akrich 1992). There are not only no guarantees that ANT will do the same for me as it for Akrich, on the contrary I assume my empirical data to be so different from Akrich's that I have to use ANT in another way.

When theories are used to draw attention to specific points in reading the empirical material rather than order it, the reason for structuring the dissertation after the tradition template becomes less interesting. This dissertation is structured in a way that seeks to make interesting connections between empirical data and theory. This means that there does not exist one large piece of text called "theory". Theoretical aspects regarding ANT and translation are introduced relatively earlier in the dissertation (Chapter 4) for practical reasons due to their importance through the text, in particular in relation to the chapter that follows it. Theoretical aspects regarding performativity, regularity and contingent processes are introduced later (Chapter 6) because of relevance for the three following chapters. Theoretical points from the field of governmentality are also introduced relatively early (Chapter 3), as they relate intimately to my theoretical situatedness and initial optics, which influence the rest of the dissertation.

Situating this framework in a small landscape of post-methodology

I am not the first to criticise the use of theories as ordering devices suppressing empirical data. Neither will I claim to be the first to deviate from a traditional methodological structuring of a scholarly text. Others before me has turned away from the rigorous demands of a traditional methodology and opted a post-methodological approach. I do not believe that it is possible or necessarily very

interesting to point to a clear point of origin of post-methodological writing, it can, however, be productive to distinguish between styles of post-methodology and situate this particular dissertation with respect to them. A great number of academic texts can be labelled post-methodological and there is no point going through them all, as the purpose is not to map the landscape of post-methodology. I regard post-methodology as a wide collection of attempts to deviate from the confinements of a traditional methodology. I have chosen to situate the present text in relation to three influential books within the field of STS. One of the reasons for choosing these particular books is that they are not just influential within STS but also specifically affects this dissertation. Another reason is that they are all deliberate experiments within a post-methodological landscape of texts. One can argue that there are more influential books within STS, but as mentioned, it is not my ambition to map out or give an account of the origin of post-methodology within STS or anywhere else. The books are: The Body Multiple (Mol 2002), Modest Witness (Haraway 1997) and Aircraft Stories (Law 2002).

The Body Multiple

In The Body Multiple: Ontology in Medical Practice Annemarie Mol seeks to answer the question "what is lower-limb atherosclerosis" by studying how it is done. She has spent approximately 2 years at Hospital Z studying how the disease is done as well as she "draws on a variety of literature: in philosophy, anthropology, science and technology studies, feminist theory, sociology, political theory" (Mol 2002, p.ix). Mol wants to ground her book "not only in the empirical "material", but also in the intellectual traditions of which it is a product" (ibid. p.xi)". Mol's argument about arthrosclerosis as a disease being done is a product of her "praxiographic" studies and her reading of theory; in short she calls her practice "empirical philosophy" (ibid. p.4). Mol refrains from a template dictated by traditional methodology. Her employment of theory and value ascribed to empirical work would not fit with a traditional framework. Mol's way of showing how arthrosclerosis is done as well as her participation in theoretical discussions is somewhat unique. Specifically, she has two different texts through the pages of the entire book (except the preface and the first page of each chapter). The text situated on the first part of the pages usually takes up a little more than half of the page and is set in a serif font (Scala), whereas the text occupying the lower part of the pages is set with a smaller font without serifs

(Scala sans). These differences not only install a difference between the texts but also a hierarchy. The text positioned at the upper part of the pages appears to be the main text. It is the text that shows how arthrosclerosis is being done. The other text is theoretical and specifically referred to as a "subtext" (ibid. p.ix). Mol imagines that readers accustomed to surf between television channels will shift between upper text and subtext with ease. Others are encouraged to "invent a way of reading that works for them from scratch" (ibid. p.xi). This makes the reader a part of the text, as s/he needs to make conscious choices regarding how to read the book. The two texts are not directly related in advance but becomes related by reading both texts (either one page at the time or chapter for chapter[5]) it is hard for the reader not to make links throughout the text (when she shows how arthrosclerosis is enacted and not just existing inside the leg of the patient it is hard for the reader not to link this to the discussion on performativity and different *versions* of the world (ibid. p.67)).

I find Mol's experiment very interested and in many senses successful, but also very extreme. It changes a reading practice that is several hundred years old. It also demands a lot from the reader if more than the obvious links between the texts are to be made. The theoretical discussions must appear straightforward for the reader to get the right grip of them and make interesting links. This presupposes that the scholar is extremely knowledgeable within the several fields and subfields drawn upon. I cannot claim to be at this level theoretically, which means that I am not capable of providing the reader with the right handles in order to make interesting links. However, like Mol I also consciously separate theory and empirical data without subjecting the one to the other like a traditional methodological framework would do.

Modest Witness

In Modest_Witness@second_Millenium.FemaleMan©_Meets_OncoMouse™ (or Modest Witness for short) Donna Haraway manages to involve many different and usually unrelated categories and realms (Haraway 1997). She draws on many different theoretical traditions ranging from biology to anthropology and feminist theory, which she continuously mixes up with politics, humour, art, technologies and globalisation to create a powerful and unique melange without

[5] I read both texts on each page, page for page during the first half of the book, then shifted into reading the upper text and then the subtext, chapter for chapter for the rest of the book.

diluting the components added. Modest Witness has, in my reading of it, not got the same linear directedness as The Body Multiple. The latter seeks to explain what lower-limp arthrosclerosis is, by how it is being done, at Hospital Z while drawing on various theoretical resources. Haraway does not necessarily leave the realms she visits to build her arguments. She does not just take humour from a cartoon and run away with it, humour is maintained throughout the text. Biology, for example, is not just a field where she gets certain concepts and then escapes from it. Part of her argument remains within the discipline. Haraway does not organise her book around a template given by traditional methodology, instead she "organize[s it] around the anatomy of meanings", and the names of the different parts come from semiotics (Haraway 1997, p.14).

Haraway is profoundly political throughout the book. Where others subscribing to a traditional methodology seek to hide their personal politics or at least to confine them in postscripts etc., Haraway weaves her politics through the fabrics of theory and readings of culture, biology practices etc. Even to separate her text into politics, theory and empirical data does damage to it, as it is the compilation that is interesting and she does not a priori consider the specific elements differently. This mixing up of usually kept apart elements also leads to a very particular style of language. A style that is definitely unique and very problematic to replicate. Another particular feature of the book is the syntax, which is exemplified by the title. The title contains words and/or numbers as traditional texts, but also the following characters: "@", "_", "©" and a "™", which together form an e-mail address. This enables her to draw numerous things together as she constructs a sender (the modest witness) that is situated (in the second millennium).

To be able to do what Haraway does presupposes that you are willing to, let alone able to, remain within several disciplines. I situate myself theoretically within STS sometimes undertaking smaller excursions to poststructuralist philosophy, but do not claim to inhabit both fields at the same time. To weave politics, theory and empirical data (or whatever we shall call Haraway's readings of culture, science and politics) together requires not only a remarkable confidence and ability to travel among concepts from different places but also an eloquence that I, as a non-native English speaking person, will remain forever

precluded from. However, like Haraway I do structure the text in accordance with the argument rather then adhering to a traditional framework.

Aircraft Stories

In Aircraft Stories John Law tells a story about the TSR2 aircraft. Or better: several stories. Like Mol's study object (arthrosclerosis) is multiple Law's is enacted through several performances. Both Mol and Law are interested in multiplicity and how singularity is sought through *coordination mechanisms* (Mol 2002, p.117) but Mol's is somewhat more focussed than Law. She seeks to explain what lower-limb arthrosclerosis is (by showing how it is done) but Law's focus more diffuse, as he sees six possible introductions to what Aircraft Stories is engaged with, as

> "it is about an aircraft; it is about refusing the space provided by the division between modernism and post-modernism; it is about fractional coherence; it is about the reflexive forms of academic subjectivities needed to apprehend the fractional; it is about the performativity of writing; and it is about the collusion that necessarily follow from that performativity" (Law 2002, P.8).

These six topics are dealt with through the eight chapters comprising the body the book. Each chapter "tells its own story and mobilises its own resources" and functions as a component in the book's overall sex-stringed argument (Law 2002, p.8). The book does not progress in a traditional sense through a substantive proposition, theory and synthesis. The chapters are more like the plateaus in Deleuze and Guattari's Thousand Plateaus (Deleuze and Guattari 1988). Deleuze and Guattari revolve around difficult concepts like *immanence, lines of flight, territorialisation* etc. in different ways through their different plateaus, thus continue to give the reader different examples of the concepts in use. According to the authors, the chapters/plateaus of Thousand Plateaus can, to a certain extent, "be read independently of one another" (except for the somewhat more linear conclusion) (Deleuze and Guattari 1988, Foreword). Law does not go as far as Deleuze and Guattari, as he does not specifically say that the chapters can be read independently of each other, but he does, however, distance his account from arborescence and seeks through his "multiple story-telling [to] make […] rhizomatic networks that spread in every direction (ibid., p.5).

Law refrains from creating a grand narrative and seeks instead to produce "[s]maller narratives – a lot of smaller keys" (ibid., p.5). This enables him to make interferences between his stories, but looses "the possibility of an overall vision" (ibid., p.5). I, like Law, do not want to create grand narratives. Making grand narratives is best practiced if one maintains a traditional methodological approach, as it is easier to ensure that one's focus is maintained throughout the book. I wish through smaller interferences between theory and empirical data, to make "a lot of smaller keys", as Law refers to. However, I do not follow him in his following of Deleuze and Guattari's rhizomatic practice. Not that I do not admire it, but it requires a theoretical skills that I do not have. The risk of destroying my empirical data through theoretical excursions is too big for me to follow a rhizomatic way of structuring. My text does have a beginning and an end and does advance. But not through a template provided by the traditional methodology, however.

Advantages and disadvantages of a post-methodological framework

In addition to how I share specific methodological aspects regarding style of writing with the three books chosen and how I differ, there are some general advantages and disadvantages in not structuring my text around a traditional methodology. A great advantage in turning away from a template dictated by classic methodology and opting a post-methodological style of writing is that empirical data is not confined within predefined theoretical boxes. I assume that it might do more if it actively contributes to structuring the text. Post-methodology offers no guarantees and it is not a new methodology that solves the old one's problems. As shown through the description of the three different examples, post-methodology can be practiced differently. I am inspired by each of the three examples, but do not replicate any of them, which perhaps points to a disadvantage of post-methodology. Even though a guidebook to post-methodology does not exist in the library scholars are inspired by each other's styles of writing. They do, however, need to put in a lot of work in appropriating the elements in their own style, which is necessary to avoid suppressing the empirical data. Another disadvantage, in so far as appropriation is a disadvantage, is the lack of uniformity and clarity in many post-methodological accounts. It is not just the scholar that has to do a lot of work constructing the particular structure. Also the reader cannot apply her/his reading apparatus to the text

without translation. From reading a great number of scholarly texts academic readers become accustomed to a particular way of reading. Reading a lot of texts shaped in the traditional mould tunes the reading apparatus into focussing on particular parts of the text and expecting a particular progression. Some academic journals require (formally or in practice) some or all of the following components: "abstract", "keywords", "literature review", "theory", "case presentation", "analysis", "conclusion" and finally, in many design/computer science journals: "implications for design". When having read many of texts with the same structure, the reader expects certain points to be made certain places in the text. Texts opting a post-methodological structure require much more from the reader. My dissertation is no exception, I am afraid.

Chapter 3

Theoretical Point of Departure – Governmentality

As discussed above researchers cannot claim neutrality and renounce their particular politics, as they are situated within material-semiotic webs. As mentioned I do not seek to put my particular situatedness in a box next to the text thus meta-reflecting upon it in an attempt to make it all about me (deconstructivism) or make the reader subtract my situatedness from the account in search for objectivity. Even if I did find it diserable, it would not be possible to understand and describe my own situatedness from feigned outside perspective. However, I can point to a particular interest in entering the field in the first place. Upon entering my empirical field I was interested in the relationship between citizens and the State. Specifically, I was interested in how the State through technologies in the health care sector sought to shape the actions of the citizens in a particular way. This interest is shared with notable governmentality scholars. Entering the field is thus influenced by governmentality thoughts, even though I only had a crude and superficial knowledge of the tradition at the time. In the following section I will go into detail with the governmentality field. This is not an attempt to brand myself as a governmentality scholar in order to meta-reflect upon my situatedness in relation to the field. Instead it is merely an attempt to position my theoretical point of departure into the field. Governmentality thoughts remained throughout the empirical process, although I did not use particular governmentality terms. In Chapter 11 I will revisit the field of governmentality in the light of the empirical data and the analysis of it. I will in the

following construct the theoretical point of departure for the empirical work forming the basis for this dissertation.

Before commencing, it is important for me to state that I have no intentions of giving a full or authoritative account of the whole field of governmentality studies because the field is too diverse and constantly changing. The governmentality studies that I take as a starting point for this discussion are mainly based on works by Foucault and Nikolas Rose and to a lesser extent thoughts from Deleuze and Maurizio Lazzarato.

With the first volume of *The History of Sexuality* Foucault began to undertake a study of how the individual citizen has become a part of the State's *bio-capital* and how *technologies of the self* have been employed as part of *governing* practices and *bio-politics* (Foucault 1990). From the second half of the 19th century and onwards, a "governmentalization of the State" (Foucault 1991b, p.103, Rose 1999 p.18) has occurred, shaping the "actually existing liberalism" (Rose 1999, p.18) of Western societies. At least this is so according to Rose's interpretation of Foucault:

> […] the invention and assembly of a whole array of technologies that connected up calculations and strategies developed in political centres to those thousands of spatially scattered points where constitutional, fiscal, organizational and juridical powers of the state connect with endeavours to manage economic life, the health and habits of the population, the civility of the masses and so forth. (Rose 1999, p.18)

Governmentality is a perspective, developed by Foucault, that "draws attention to the heterogeneity of authorities that have sought to govern conduct, the heterogeneity of strategies, devices, ends sought, the conflicts between them, and the ways in which our present has been shaped by such conflicts" (ibid., p.21). This approach is opposed to thinkers of modernity who seek to locate a rationale behind (or beneath or above) management practices that are manifested on a practical level.[6] Foucauldian studies of government would, in investigating the transformation of theories, proposals, strategies and technologies, for the

> "conduct of conduct" […] address that dimension of our history composed by the intervention, contestation, operationalization and transformation of more or less ration-

[6] Discussed in Chapter 4.

> alized schemes, programmes, techniques and devices which seek to shape the conduct so as to achieve certain ends. (Rose 1999, p.3)

Conceptualised as government, power is in this Foucauldian sense, "action upon action" or the "conduct of conducts" (Foucault 2000, p.341). The action upon which is acted and the conduct that is conducted is of other individuals in society. Exercising government, thus, is acting upon action (of others) or conducting the conduct (of others).

In relation to the bio-capital of the State, governing, in the sense of governmentality, is conducting the conduct of the individuals which are part of the bio-capital, so as to achieve certain ends. This is also what Foucault is discussing as bio-politics in the first volume of *The History of Sexuality*, which is comprised by "strategies which recognize and act upon the positivity of the domains to be governed – the factors affecting rates of reproduction and population growth, the genetic make-up of the race and the like" (Rose 1999, pp.22-23). Rose has drawn in particular on the notion of bio-politics to investigate how the life of individuals in neo-liberal Western societies have become an object for politics and economics. Bio-politics grew out of the interest that emerged in the 18th century, by the political authorities, in the "management of life in the name of the well-being of the population as a vital order and of each of its living subjects" (Rose 2007, p.52). This is opposed to an earlier exercising of power, which was primarily in relation to allowing life and giving death, symbolised by the sword (Foucault 1994, p.140). In this way life becomes politicised, thus making way for *Vitalpolitik* (Lazzarato 2005). The new orientation left politics having to address "the vital processes of human existence: the size and quality of the population; reproduction and human sexuality; conjugal, parental, and familial relations; health and disease; birth and death" (Rose 2007 p.53). Foucault in the first volume of *The History of Sexuality* (Foucault 1990, p.139) discusses a diagram of biopower with two complementary poles, which in the 17th century works by having one pole focusing on the "political anatomy" of the specific human body, concerned with maximising its forces through discipline, and another pole, formed a little later than the former, focussing on regulatory practices of the population (ibid., p. 139). Throughout the 18th century these poles continued to develop separately; in the field that works through discipline, institutions such as the school and the army were formed, and in the field of population, demographics and schematisation of wealth and its circulation were devel-

oped. In the 19th century, however, these poles were conjoined "in the form of concrete arrangements (agencements concrets) that would go to make up the great technologies of power in the nineteenth century: the deployment of sexuality would be one of them[.]" (ibid., p.140). The distinction between the strategies seeking to control the health of the population and the individual blurs as the authorities seek to act upon the one through the other. Shaping the habits of the individual through architectural rearrangements is an example of this. In the 20th century biopolitics has become an integrated part of most political domains, leaving the management of the population and the government of bodies and their conducts intrinsically connected. Lazzarato understands biopolitics as "a government-population-political economy relationship, [which] refers to a dynamic of forces that establishes a new relationship between ontology and politics" (Lazzarato 2000, p.2).

Governing, in the sense of biopolitical governmentality, is exercised through the production and dissemination of technologies for the individual to use in conducting her/his own body. Foucault distinguishes in the text "Technologies of the Self" in the edited volume *Technologies of the Self* (Martin et al. 1988) between four "major types of […] technologies" (Foucault 1988a, p.18).

> (1) [T]echnologies of production, which permit us to transform, or manipulate things
>
> (2) [T]echnologies of sign systems, which permit us to use signs, meanings, symbols, or signification
>
> (3) [T]echnologies of power, which determine the conduct of individuals and submit them to certain ends or domination, an objectivizing of the subject
>
> (4) [T]echnologies of the self, which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thought, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality (Foucault 1988a, p.18)

According to Foucault these types of technologies, each of which is a "matrix of practical reason […] hardly ever function separately", but rather are interconnected. They imply specific modes of training and modification of individuals, not only in relation to acquiring skills, but also acquiring certain attitudes. Fou-

cault exemplifies this by pointing to the relation of manipulating things and domination in Marx's *Das Kapital*, "where every technique of production requires modification of individual conduct – not only skills but also attitudes" (ibid., p.18). Where science and linguistics have dealt with the two first types of technology, Foucault, and I following him, is interested in the last two. In the text "Technologies of the Self" Foucault defines governmentality as the "contact between the technologies of domination of others and those of the self" (ibid., p.19). That is to say, "the interaction between oneself and others and in the technologies of individual domination, the history of how an individual acts upon himself, in the technology of self"[7]. Foucault's usage of the term *technology* is both broader and narrower than the everyday sense of the word as it is not limited to designate equipment or materialised techniques and neither is it a mere tool. Through Foucault's definition of the four different types of technology and his work on "*Technology of the Self*" (ibid.) and political "*Technology of Individuals"* (Foucault 1988b), we get a sense of what the term in a Foucauldian sense designates. This sense, I believe, is not substantially different from how Rose defines technology:

> [Technology] is an assemblage of social and human relations within which equipment and techniques are only one element: "Technology, here, refers to any assemblage structured by a practical rationality governed by a more or less conscious goal… hybrid assemblages of knowledges, instruments, persons, systems of judgement, buildings and spaces, underpinned at the programmatic level by certain presuppositions and assumptions about human beings. (Rose 2007, pp.16-17)

In this sense the term technology is not a material arrangement helping the human in achieving a certain goal, thus displaying the characteristics of a tool. Nor is it a deployment of politics. Technology is not a mere tool for the rationally thinking human to use in achieving her/his goal. A final point in relation to the term technology is that it is never something existing passively "out there". It is an active performance (see discussion above on performativity), in Pitts' words, "Technology is humanity at work" (Pitt 2000). This is, of course, somewhat provocative but with a conception of humanity as sociality not restricted to a

[7]As Foucault in the same text agues, this interest or orientation of his has not always existed as he has earlier insisted more on just the technology of domination and power. The text expresses a later orientation in the work of Foucault and was written (or at least presented) just two years before his death in 1984.

domain solely inhabited by humans, it stresses the Foucauldian conception of technology as something politically performed.

The relation between the technologies of the self and the technologies of power, which Foucault here understands as governmentality, is, according to Foucault, rooted in one of the main principles of the cities in the antique Greece, namely "being concerned with oneself" or "taking care of oneself" (epimelesthai sautou). When Socrates teaches the citizens to "occupy themselves with themselves […] it was […] useful for the city – more useful than the Athenians' military victory at Olympia – because teaching people to occupy themselves with themselves, he teaches them to occupy themselves with the city" (Foucault 1988a, p.20). For Plato taking care of oneself is a political responsibility of the citizen, which in the Hellenistic and Roman periods becomes a universal principle. Exercising care for oneself in the Greek city is tying the citizen to the State and contributing to the collective by caring for oneself. The preoccupation with oneself also changes from being obligatory for young people in the formation of the political citizen to being an obligation throughout one's life. Taking care of oneself as a universal principle throughout life becomes associated with the body as "[p]ermanent medical care [becomes] one of the central features of the care for the self. *One must become the doctor of oneself* (ibid., p.31, my emphasis).

As Rose argues, "governing does not just act on a pre-existing thought world with its natural divisions" (Rose 1999, p.31), but a manageable space must be created. A manageable space becomes a place for governing

> a population, a national economy, an enterprise, a family, a child or even oneself, [which] becomes possible through discursive mechanisms that represents the domain to be governed as an intelligible field with specifiable limits and particular characteristics, and whose component parts are linked together in some more or less systematic manner by forces, attractions and coexistences. (Rose 1999, p.31)

To govern one needs ways of understanding and expressing key features of the domain, which is based on a language that is unambiguous. Statistics with its graphs and numbers has proven powerful in most fields of government. Understanding and expressing key features of the economy as growth rates, GDP, average income and interest rates is necessary in order to control it. Understanding and expressing key features of the body as BMI, blood pressure, growth rates for children and foetuses, weight and haemoglobin percentage is necessary

for governing the body in the way that has become the *modus operandi*. In the process of understanding and expressing key features of the economy and the body modelling, calculating and tabulating are among the techniques for governing. Constructing the manageable space with its particular representational language and its manipulation techniques is not only necessary for the doctor to govern the body of the patient or for the minister of finance to govern the State's economy. Conducting the way families conduct their economies and conducting the way citizens conduct their health, manageable spaces need to be created. A manageable space for conducting the conduct of others relies on specific technological set-ups.

The specific technological set-up for constructing manageable space and the technologies of the self are, in my understanding, embedded in Rose's more general term "technologies of government" (ibid., p.52). Technologies of government seek to shape the conduct (of others) in the hope of getting a desired effect and/or avoiding undesired effects. Rose also calls these technologies "human technologies" because they act upon human capacities with technical means. Rose offers a definition of these technologies:

> A technology of government, then, is an assemblage of forms of practical knowledge, with modes of perception, practices of calculation, architectural forms, human capacities, non-human objects and devices, inscription techniques and so forth, transversed and transacted by aspirations to achieve certain outcomes in terms of conduct of the governed (which also requires certain forms of conduct on the part of those who would govern). (Rose 1999, p.52)

I believe that dealing with governmentality in terms of the technologies that are used in relation to conducting the conducts of others makes it more graspable as it gives us a way of "identifying the ways in which human beings are individuated and addressed within the various practices that would govern them, the relations to themselves that they have taken up within the variety of practices within which they have come to govern themselves" (ibid., p.43). This is opposed to engaging with the project of constructing a general history of the human subject as governed. To make the concept of technologies of government even more understandable, Rose supplies us with two examples: "Scientific Management" and the popular schoolroom that was invented in the 19th century. Taylor (see my discussion in relation to standardisation in Chapter 9)

sought mechanisms to govern the conduct of the working man through "standard tools, adjustable scaffolds, methods and implementation of time study, books and records, desks for planners to work at, written instructions and instruction cards, bonus and premium payments, the scientific selection of the working man and many more" (Rose 1999, p.53). The popular schoolroom as it was developed in the 19th century is

> an assemblage of pedagogic knowledges, moralizing aspirations, buildings of a certain design, classrooms organized to produce certain types of visibility, techniques such as the timetable for organizing bodies in space and in time, regimes of supervision, little mental exercises in the classroom, playgrounds to allow the observation and moralization of children in something more approaching their natural habitat and much more. (Rose 1999, p.53)

In my understanding of the concept, Foucault's famous example of Bentham's Panopticon prison from 1791 is also an example of a government technology in the way that the architectural design makes the prisoner potentially constantly visible and, thus, makes certain actions desirable and others undesirable, that is, *shaping the conduct of the prisoner in the hope of getting a desired effect and/or avoiding undesired effects*. It is, however, not the particular design of the particular prison that I see as a government technology, rather it is the generic model, which was implemented in Western societies throughout the 19th century (Foucault 1991a [1975]).[8] Or better:

> [T]he Panopticon must not be understood as a dream building: it is the diagram of a mechanism of power reduced to its ideal form; its functioning, abstracted from any obstacle, resistance or friction, must be represented as a pure architectural and optical system: it is in fact a figure of political technology that may and must be detached from any specific use. (Foucault 1991a, p.205)

As earlier stated, Foucault defines governmentality in the text "Technologies of the Self" as the "contact between the technologies of domination of others and those of the self". This leads me to consider Rose's concept of government technologies as technologies that relate not only to the technologies of the domination of others and those of the self, but also to the *contact* between these.

[8] Foucault writes about the Panopticon as a machine, apparatus, machinery, model and even a political technology (Foucault 1991a, pp.200-209).

Points where the technologies of domination of others and those of the self meet are in the *assemblage of forms of practical knowledge, with modes of perception, practices of calculation, architectural forms, human capacities, non-human objects and devices, inscription techniques*, which form the fabric of government technologies.

As Foucault writes in "Technologies of the Self", the ancient Greek virtue of taking care of oneself later became particularly linked with taking care of one's body, thus leading the individual to become *the doctor of oneself*. Even later, in the 18th century, Foucault says about the necessity of being preoccupied with health: "The imperative of health: at once the duty of the individual and the objective of all" (Foucault 1984, p.277). Lupton has shown how health has become a moral imperative in modern Western societies and how it is expressed and embedded in policies and public health initiatives (Lupton 1995). It is, however, not just the amount of energy and time spent where one is concerned with one's health that increases; the nature of the concern also changes. Rose argues that through the biologisation of life dealing with health issues in relation to your own body becomes not so much a question of rectification but rather of optimisation as "[a]lmost any capacity in the human body or soul – strength, endurance, attention, intelligence and the lifespan itself – seems potentially open to improvement by technological intervention (Rose 2007, p.20). This implies that health is not something you just manage by working to get well when you are ill or generally living a healthy lifestyle in order to prevent illness. With reference to Deleuze, this leaves one in a state of metastability, as "you never finish anything" (Deleuze 1995, p.179); you can always increase the haemoglobin percentage, lower your cholesterol value, etc. The never-ending task of optimisation is opposed to the power of discipline as described by Foucault. The power of discipline results in a binary division and stigmatisation exercised through, for example, the prison, the hospital and the school, leading to divisions such as: dangerous/not dangerous, ill/healthy and normal/abnormal (Foucault 1991a). Along the same lines as Foucault and Rose and Deleuze, Lazzarato explains how the dispositifs of discipline and security (which are of course Foucauldian concepts) differ. In the case of disease the dispositifs of discipline operate by defining what is healthy and what is ill and then separating them, whereas the dispositif of security operates by preventing illness through, for example, vaccination. The latter dispositif aims at avoiding discontinuity and ruptures in separating the normal from the non-normal. Rather it uses statistics in designing "a differential cartography of normality", which can be used to calculate the risk of

the different groups (age, profession, city). "The technique of security consists in the attempt to put a lid on the most unfavourable curves, the ones that deviate the most from the normal curve" (Lazzarato 2005, p.4). One of the main points of Rose's *Politics of Life Itself* is that life as a molar entity that is lived is through biologisation being molecularised and thus made optimisable (Rose 2007, p.14). This means that being *the doctor of yourself*, there is always something you can do in relation to the different molecularised values and numbers, and performing this manipulation is not seen as manipulating life itself as much as a minor optimisation. Or as Rose writes: "Once vitality is anatomized at this level, intervention is no longer constrained by the normativity of a given vital order" (ibid., p.14).

Chapter 4

Theoretical Resources I – ANT and the Socio-Logic of Translation

Central aspects of Actor-Network Theory (ANT), especially its core notion of translation, are weaved through the fabrics of this dissertation. Instead of bringing out smaller aspects of ANT throughout the text, I have for practical reasons compiled the following theoretical section explaining ANT with special attention to the notion of translation. Before commencing, I must point out that a theoretical section on ANT in a dissertation can take many shapes depending on which parts of ANT the writer has focussed. There are the early works focussing on translation and transformation (e.g. Callon 1980, Callon & Latour 1981 and Callon & Law 1982, Callon 1986), there are later works revolving around the script metaphor (e.g. Akrich 1992 and Latour 1995) and there is what has been labelled "after ANT" where notable scholars seek to accommodate ANT to the criticism it has met from both inside and outside the field (e.g Law & Hassard 1999). A prominent new focus in relation to this is concerns multiplicity and performativity (which will be explained in Chapter 6).

Some of the scholars involved in the initial formation of ANT have later sought to remove themselves from the acronym due to other scholars' transformation of ANT into strict methodology (see e.g. Laursen & Olesen's 1996 interview with Latour and Latour 1999. In Reassembling the Social, however, Latour reunites himself with ANT. ANT, as I read it, should not be confined within a theoretical box and brought out to serve a user in search of a theory. I consider ANT as a heterogeneous field comprising a number of insightful studies of science and technology. This way ANT does not resemble a theory in a traditional sense.

The academic work that led to ANT took primarily place at the Centre de Sociologie de l'Innovation at École des Mines in Paris. Michel Callon, Bruno Latour and John Law (visiting) began around 1980 to formulate an actor-network perspective on science drawing on elements from semiotics, post-structuralism, anthropology and philosophy (Olesen 1996, p.35). Apart from reading theory (in particular Michel Serres, Gabriel Tarde and Algirdas Greimas), the Paris scholars also drew heavily on their own studies. Latour, for instance, had done ethnographic studies of laboratory practices at the Salk Institute (Latour & Woolgar 1979). From this study Latour and his colleagues extracted a number of observation, which became part of the ANT parcel. Before going into them, it is worth noting the means by which the study was undertaken. Latour used his anthropological training to study science like one would study foreign cultures. This approach made Latour and Woolgar realise that science was not only social or material but both. Since Kuhn's Structure of Scientific Revolutions (Kuhn 1962) inspired schools like SSK (Sociology of Scientific Knowledge) and SCOT (Social Construction of Technology) have showed how the production of science is social. When something becomes a scientific fact, it is not because it is a true in a nature realm transcending our, but because the dynamics of the social have made it so, according to SSK and SCOT. Barry Barnes and David Bloor formulated the *principle of symmetry* as part of The Strong Programme, which states that "the same types of explanations [should be] used for successful and unsuccessful knowledge claims alike" (Bloor 1974).

ANT acknowledges the principle of symmetry but denies that the explanations should be social. Callon suggests a generalised symmetry as he states that the same terms should be used in explaining the different actors (Callon 1986). Where the first principle of symmetry was an epistemological point the extended principle of symmetry is an ontological. Barnes and Bloor argued that different social configurations granted different access to nature. ANT, however, argues that nature is not out there to be accessed but enrolled in the social configurations thus making them sociotechnical or sociomaterial. It is not solely the social aspect that is important. This points to what ANT is probably most (in)famous for: treating humans and nonhumans alike. This is not because they necessarily are alike, but because there is no a priori difference between them. The world does not hold one ontological realm for humans and another for

nonhumans, but categories are constantly constructed and reconstructed. In order to understand how scientific truths are produced we cannot solely look for explanations in the social but study how the various actors act within the network producing the truth. One may argue that ANT contradicts its emphasis on generalised symmetry by distinguishing discursively between humans and nonhuman. However, this criticism is only valid if the scholar insists on applying the labels to actors in practice. Instead of applying the terms humans and humans ANT encourages the use of actor, or better actant. Actor and actant is the same in ANT, but the later, which derives from the semiotics of Greimas, avoids associations with intentionality and thus anthropocentrism. In "Mixing Humans and Nonhumans Together: The Sociology of a Door-closer" Latour (through his alias Jim Johnson) argues against the widespread anthropocentrism by showing how the action of closing a door has been delegated to a door-closer (Johnson, (a.k.a. Latour) 1995). A door-closer not only closes the door, but also acts politically as it through the hydraulic mechanics "discriminate[s] against very little and very old persons" (ibid., p.302). By referring to "*translation* [and] *delegation"* Latour describes the act of transforming the task of closing the door (and holding it in place by the hinges) to the particular technological set-up (ibid., p.299). Usually, however, we do not consider the complex technological set-up involved in an ordinary door at a place like the one Latour studies at Walla Walla University. This is because it has been *blackboxed* (Latour 1987, p.131). The object of many ANT-studies is to open the black boxes.

The use of the term actor in relation to network also points to an important and somewhat controversial feature of ANT. ANT dismisses the prominent debate in sociology concerning whether the agency of the actor or the structure should be given precedence. Instead of presupposing these categories sociologists should look at how particular networks are made through connections between particular actors. The debate between sociologists arguing for either the precedence of structure or the actor is fundamentally misplaced as it obstructs the researcher from understanding practice. Another highly profiled dichotomy within sociology (and throughout the modernist settlement (Latour 1993)) is the a priori division between micro/macro. Again, ANT argues that such categories do not exist in advance but are constructed in practice. Sociologists arguing that the macro level determines the micro level therefore prevent themselves from understanding practice. The idea that culture and nature exist in two separate

realms is part of what defines *The Modernist Settlement*, according to Latour (Latour 1993). His argument in "We Have Never Been Modern" is that although the modernist settlement continues to claim that culture and nature are two completely different domains they are in practice weaved together. Even to produce the separation (the work of purification (Latour 1993, p.11)) requires mixing up the cultural and natural (the work of hybridization/translation (ibid., p.11)).

If the world is not made out of stabile divisions and meanings determining actors and their actions, we must turn our gaze towards how divisions and meanings are created in practice. When construction is central we must look at the particular interactions through which constructions happen. Through these interactions connections between different actors are made and significations, concerns and interests enter a process of translation. In the everyday sense of the word it means to change an expression from one vocabulary or language into another. In ANT, translation is a notion taken up from the writings of Michel Serres by Michel Callon (Callon 1980), and includes also other kinds of transformations. According to Callon, "translation recognises the existence of divergences and differences that cannot be smoothed out, it nevertheless affirms the underlying unity between elements distinct from one another" (ibid., p.211). The different elements are not translated automatically, instead "[t]ranslation involves creating convergences and homologies by relating things that were previously different" (ibid., p.211). In doing this, knowledge and social actors enter a "joint, programmatic organisation", which makes Callon talk about the "socio-logic" of translation (ibid., p.211). The process of translation is not just turning something into something else. Neither is it merely giving something another flavour, character or colour while it remains the same *inside*. Translation is about partiality. As Law states, "[t]o translate is to connect, to displace, to move, to shift from one place, one modality, one form, to another while retaining something" (Law 2002, p.99). But translate is also to betray. Law states that while something is retained in the process of translating, other things are not retained. In that sense translating is "betraying whatever is not carried over" (ibid., p.99). In order to make this less abstract I will now to a story about the translational issues of an attempt to transfer a machine for compacting forest waste into combustible briquettes from Sweden to Nicaragua. Madeleine Akrich

originally told the story but I draw on John Law's reconstruction of it, as his version is specifically about the issue of translation.

The first connection being made was when someone wondered whether the Swedish machine for making briquettes could be used for solving the Nicaraguans' problem of lacking fuel. This relation was initially mental and social, but as soon as the machine was physically transferred to Nicaragua, things started to happen, or better: "the machine start[ed] to change" (Law 1997, p.2). The machine does not change in one powerful turn but through a series of negotiations. Law follows Akrich in her tracing of these. The first concerns which raw materials to use. The Nicaraguan vegetation is differs from the Swedish in the sense that there is not a lot of wood, at least not in the areas where the machine should operate. Instead cotton was deployed. A new raw material called for different actors than foresters, as cotton is a by-product of farming, not foresting. Unfortunately, Nicaragua did not have the required amount of farm labourers. Instead a Sudanese machine was brought to Nicaragua to collect the cotton. It also turned out that it was possible to use the roots of the cotton plant in the production of the briquettes, which led to a redesign of Sudanese machine. Foresting and sawmills happens year round in Sweden, but cotton waste is only collected 90 days a year in Nicaragua. This generated a need for storing the cotton waste, which resulted in storage houses. After everything had worked fine for two years, the stored cotton waste began to turn into powder. This time a new actor has entered the network after the farmers had begun to storage the cotton waste less compact. The physical reconfiguration called upon the actor Amphiserus Cornutu, which is a pest, to enter the network. The original Sudanese machine[9] had compacted the waste to certain extent, but after the redesign it no longer did that. The machine had to be redesigned again. The final negotiation in this story relates to the buyers. The Nicaraguan industry was not interested because their boilers would not burn the briquettes. Initially this sounds like a grand problem, but as Law points out, it is not; "it is another transformation" (ibid. p.3). The briquettes were transformed from industry fuel into fuel for domestic ovens.

[9] Which is not original of course. The Sudanese machine has without doubt also been through a number of transformations before functioning in Sudan and later in Nicaragua. That is, however, another translation story.

Akrich's story (reconstructed by Law) shows in straightforward manner some of the central points in ANT in emphasising the translational aspects. The main point is that the technology not only changes Nicaraguan practices but also the technology itself changed during the process. The technology was at the end of the story reconfigured, as it had been translated. Though some elements still remain at the end of this story, there is no guarantee that they will so forever. Without knowing what happened to the technology after Akrich went back to Paris, it is easy to imagine that more negotiations have taken place, changing the technology even more. Central to the translation aspect is that the technology cannot be understood alone any more than it can function alone. The specific physical apparatus functions and should be understood within a network of heterogeneous actors. It should be obvious at this point to stress that the network is heterogeneous, as social, natural and technical actors necessarily are parts of this particular network. The collection of actors is not only qualitatively heterogeneous, but also quantitatively unstable, as new actors are enrolled while others leave the network. A final point we can draw from Akrich's story is that the technology changes gradually. Enrolment of new actors like the pest requires modifications that might require additional modifications and so on and so forth. The machine is reconfigured to the Nicaraguan context in one turn when it arrives in Latin America.

In a more general way Latour distinguishes in Science in Action between two strategies for conceiving how technology is spread in society (Latour 1987). He contrasts the model of diffusion with the model of translation. The latter emphasises the local and particular translation that we learned about in Akrich's story. The former, which is the most widespread and generally acknowledged conception, is promoted by authors like Everett Rogers (Rogers 2003[1962]) and more recently Geoffrey Moore (Moore 1999). Specifically, the model of diffusion regards technologies as possessing an inner power, which motors the diffusion of the technology through society. Societies, are in the model "simply […] medi[a] of different resistances *through* which ideas and machines travel" (Latour 1987, p.136). The difference in resistance explains why the Diesel engine has spread quickly through the developed countries and slowly through underdeveloped. In other words, *the passivity* and *the ignorance* of the local cultures in underdeveloped countries resulted in a strong resistance slowing down the diffusion of the Diesel engine, according to the model of diffusion (ibid., p.136).

18 years after Latour's important ANT book, Science In Action, came out he touches upon a related issue in the introduction to the anthology *Making Things Public* (Latour 2005). With the phrase "making things public" he deals with the representational practices that go into creating what we in society consider real. These practices are translating and thus betraying the original. The problem is if we consider representations as neutral, non-distorting transportations of facts. This is also why Latour encourages us to move from matters-of-fact to matters-of-concern (ibid. p.19). In other words, representations are not neutral, they participate in the building of what is real, and certain kinds of representation participate in certain ways. Some representations are so powerful that they wipe away other kinds of representations, as they appear to only access the thing itself. When Colin Powell presented the evidence for the "fact" that Iraq did in fact possess weapons of mass-destruction at the UN Security Council on 5/2/2003, he showed representations produced by satellites and thus stressed that what he suggested where "not assertions but facts" (ibid., p.18). This is partly why the Danish parliament (Folketinget) chose to follow the USA into the war and why the Danish Prime Minister, Anders F. Rasmussen, said in parliament that Saddam Hussein possessed weapons of mass destruction: "it is not something we believe, it is something that we know" (21/3/2008). With the notions and thoughts of ANT still present it is now time to empirical matters.

Chapter 5

Two Change Initiatives

In this chapter I will tell the accounts of two change initiative, starting with a large-scale attempt to digitalise maternity records. This will be followed by an account of a collaboration between a maternity ward of a Copenhagen hospital and a group of researchers, in which I was a part. Lastly, I will focus on the interests that were included in both initiatives.

5.1 The Electronic Maternity Care Record Project

Accessing the site of the EMR Project

My interest in the dynamics of the relationship between the citizen and the state was very influential in forming the starting point of my empirical investigation. In Chapter 3 I explained this with reference to the literature. It was, however, not only my interest and optics that dictated how the empirical journey would set out. Circumstances related to my employment as a PhD student also proved influential.[10] Before even starting as a PhD student it was agreed that I should take part in the research program HealthcareIT (HIT), and I was very quickly associated with the subgroup within HIT that studied sundhed.dk, the national health portal.

The HIT program and sundhed.dk had at the time when I entered the project already agreed on a project description, which constituted the formal framing for the collaboration. Sundhed.dk had agreed to let the researchers from the

[10] In Chapter 2 I showed how Isabelle Stengers drew on the etymology of the term "interest" when she stressed how interest was about connections (between-being). I maintain that point when I above write about my interest and below when I write about interests in a project about records for maternity care. But I also draw on the common use of the term as something that orients an actor's focus to something, which is attractive. When I write about interest as existing within or being possessed by an actor, it is of course, in accordance with the way the term is normally used, but Stengers' etymological point is, however, maintained.

HIT program follow the implementation of an electronic maternity record (EMR). The researchers and sundhed.dk were initially interested in exploring two issues: the first was related to how one organises the development and implementation of health related IT projects that involve IT providers and different kinds of user (pregnant women, midwives, MDs and others). Secondly, an interest in the problem of user interfaces in medical settings was expressed early in the process (expressed in a meeting between central HIT members and sundhed.dk representatives, including the managing director of sundhed.dk).

Giving my interest and application for PhD scholarship it seemed obvious for me to join the researchers already collaborating with sundhed.dk. My first encounter with the field was through participating in an interview with a consultant from the portal. During the following months I additionally joined the other researchers in 3 other interviews with central persons within sundhed.dk or otherwise related to the EMR project.

In the winter of 2005 two of the HIT-researchers focussing on the EMR Project from another university than my own received additional funding, which was to be spend on the study of the EMR. For that they needed a person doing empirical work on the implementation of the EMR. Since I was already part of the group studying the EMR, I was hired as a research assistant for half a year, mainly to perform a series of interviews (due to practical reasons however, the duration of study was closer to a year).

Outline of the project

From the HIT-program we were five researchers involved in studying the implementation of the EMR. The first meetings between the researchers and people from the sundhed.dk organization were held in the beginning of 2004 and the pilot run of the EMR ended in September 2006. Ideas embedded in the EMR project were, however, already a part of the health care portal from its very beginning in 2002 (Danish Regions 2002, pp.14-15).

The EMR Project was organised through a central project group and two local project groups. The two local project groups consisted of health care professionals, IT-specialists, managers and consultants from the respective counties that had chosen to take up the invitation from sundhed.dk to be a part of the

EMR Project. The central project group consisted of representatives from sundhed.dk, the provider consortium, The National Board of Health, the counties and the local project groups. Additionally, one HIT researcher participated in the central project group and another in one of the local groups.

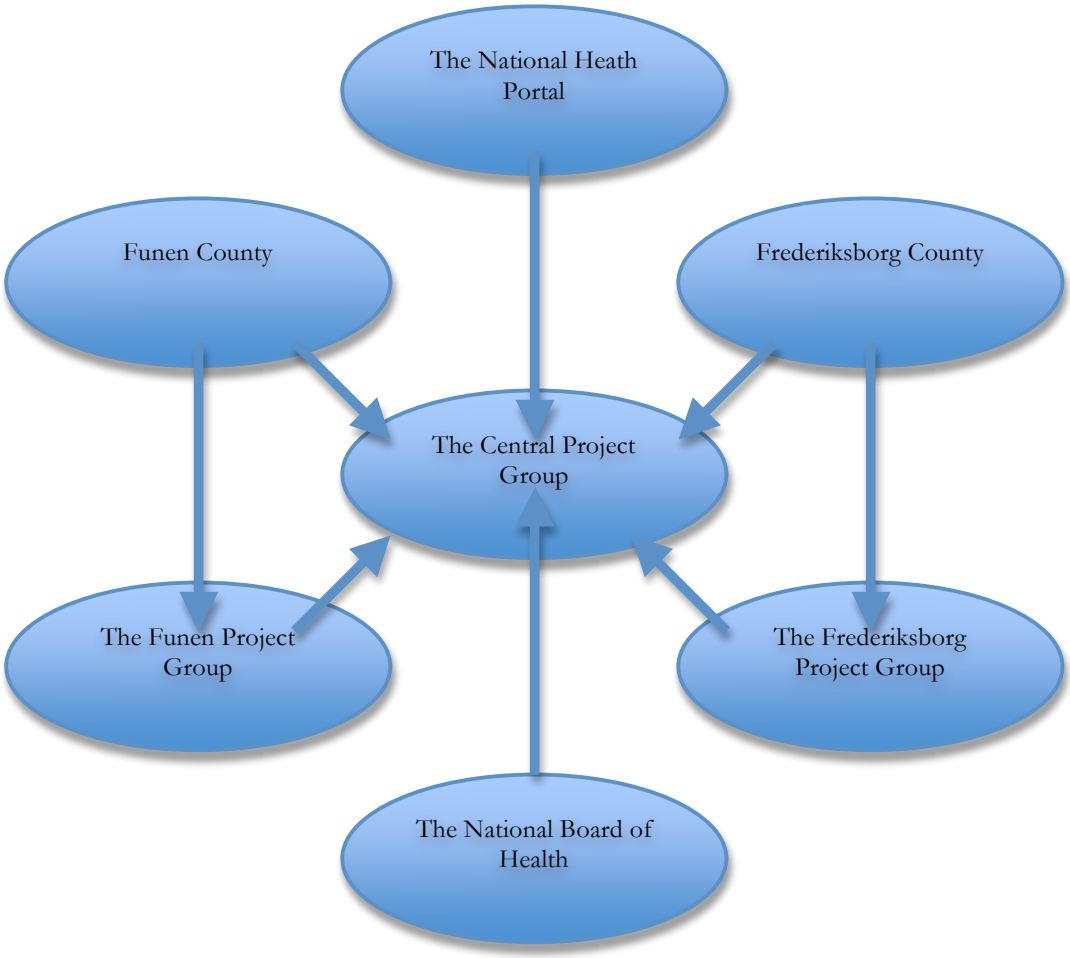


Figure 5.1: Diagram illustrating the Project organisation of the EMR Project

The two counties involved were Funen and Frederiksborg and they were the only to counties that applied, or at least, as a consultant from sundhed.dk says: "they were the only ones that volunteered with everything [which includes] re-

sources [and] project courses dedicated to this. We have a focus group consisting of counties that would like to be a part of the next version, but these were the ones we got" (interview). And as another consultant (from the provider consortium) says: "We had to take what we could get" (consultant from the provider consortium, interview).

In the spring of 2006 one of the counties (Frederiksborg) chose to exit the project due to various reasons (which will be touched upon below). After some delay the other county (Funen) initiated the pilot run in the spring of 2005. In May 2006 the local project group decided not to create more records and in September 2006 the remaining records were printed out and the EMR ended prematurely.

Framing of the EMR Project

In order to understanding what the EMR Project was about it is necessary to understand what the sundhed.dk was and is about. Danish Counties decided in 2001 to examine the possibilities of establishing a national health care Internet portal. Danish Counties managed to enrol other central actors in the Danish health care system and received 50 million DKK to establish the portal from the general economic agreement between the state and the counties and municipalities. The idea of gathering and controlling the flow of public and governmental health information and services on the Internet appeared in the National IT Strategy for the Hospital Service 2000-2002 as a recommendation called "Initiative 3E Gathered Internet Portal Containing Health Information" (Department for Health and Interior 2000, p.34). According to sundhed.dk the portal is an actual part of the succeeding official Danish IT strategy (National IT Strategy for the Health Care Service 2003-2007).[11]

According to the National IT Strategy for the Health Services there are four ambitions of the portal: "To gather future electronic communication between patients and the Health Services", "to act as a tool for communication for the various parts of the Health Services", "to provide the citizens/patients with an overview of the organisation of the Health Services and information related to the use of the Health Services, as well as to support the patient in taking care of

[11]http://www.sundhed.dk/wps/portal/_s.155/4503?_ARTIKEL_ID_=2094031113115831&contextfolderids=1023031028193611%2C1023031028191157 (accessed 9/12/2008)

[his or her] own health and treatment situation", and finally "provide professional information to the various professionals parts of the Health Services" (Department of Health and Interior 2003, p.50). These goals still serve as the official goals according to the portal.[12]

The EMR Project has been a part of the portal even before the portal was launched. The EMR is mentioned as a possible future aspect in the project description for the portal (Danish Regions 2002, pp.14-15). More specifically, the maternity trajectory as a case was mentioned as a kind of patient trajectory where the pregnant woman is the "carrier" of information between the health care professionals, and this trajectory should be (digitally) supported, which was to be stated in the tender document (ibid, pp.14-15).

The EMR is in the project description was meant to be implemented in the first phase of the portal's development (Danish Regions 2002, pp.12-14). This highlights a central developmental feature of the portal, namely that it will grow through different phases and new releases every half-year. The EMR was supposed to be part of one of these half-year releases. A consultant from the provider consortium explains this in an interview where he associates the releases with milestones that are set in advance, as it is "important to get [the portal] launched in 2003, security [then becomes] important. Next big venture is trajectory support[13]" (interview). The National Strategy, the project description and the tender document are all actors that sometimes are involved in the same network and are at other times involved in others.

Interests in the EMR Project before the pilot run began

In this way the EMR was already a part of the portal even before it was launched the 10th of December 2003 because it was part of the developmental logic pervading it. Specifically, the EMR was planned to be part of the third release, which was planned to happen the 1st of January 2005 (directing manager of sundhed.dk, interview). Several places, perhaps most prominently in the Strategy for the Health Services 2003-2007 (Danish Regions 2003, p.51), the EMR features as the first sundhed.dk-based electronic support for disease management in patient trajectories. Also through interviews with people involved in

[12]http://www.sundhed.dk/wps/portal/_s.155/4503?_ARTIKEL_ID_=2094031113115831&contextfolderids=1023031028193611%2C1023031028191157 (accessed 9/12/2008)

[13] "Trajectory support" is translated from the Danish term "forløbsunderstøttelse"

the initial development work of the EMR, the record is mentioned as the initial part of establishing a generic model for disease management. A consultant from sundhed.dk says:

> "[I]t is no secret that the maternity trajectory is something that we have seriously built our project [the portal] up around because it demonstrates the general line of thought that we would like to put into the project [the portal]. Many of the other things that we try to implement on the portal are supporting this goal to support more coherent patient trajectories across the sectors. The maternity trajectory has in this way taken up a lot of space because it shall carry the project [the portal] in future oriented way with similar trajectories. So I believe that we in the beginning of the project [the portal] have put a lot of energy into articulating demands and [stating] what we expect to from the specific maternity project and the generic model, which should serve as the foundation for the project, so it could be expanded to other trajectories." (Consultant at sundhed.dk, interview)

This consultant from the portal was aware of the fact that he could not contribute to the EMR Project with technical or medical knowledge (he was a graduate in political science). Instead he would in relation to "the fact that there is a unequivocal goal that it can be transferred to other trajectories" work to ensure that "the flexible model in the belly of the system will not just be used in relation to some pregnant women who needs a maternity record, but also be used in relation to diabetes trajectories or in relation chronic heart diseases" (consultant at sundhed.dk, interview). A member of the central project group and the Funen group makes a related comment as she states that the "reason why they chose to be a part of the project was that it was generic (interview).

Maternity care was chosen over diabetes, "COPD" (chronic obstructive pulmonary disease) and asthma because of two assumptions: 1) the pregnancy process and the care trajectory are relatively simple as well as "there is no description available for the pregnancy trajectory, it is regarded as unproblematic, but for heart, liver, asthma and lung conditions there is" (consultant from the provider consortium, interview) and 2) pregnant women are particularly interested in their bodily condition.

The first assumption relates to the fact that pregnancy lasts for nine months and there is a limit to how much this time can be exceeded. It is also limited how the condition can develop and usually also limited how many different kinds of health professionals are involved. As a consultant from sundhed.dk expressed it: "you get pregnant, go through a number consultations and give birth at one point, and that's it!" (consultant at sundhed.dk, interview).

The second assumption was literally written into the EMR Project. The Qualitative Preliminary Analysis Report states that pregnant women "typically are characterized by being actively seeking pregnancy related services and information on the Internet" (Qualitative Preliminary Analysis Report, sundhed.dk, p.7)[14]. Here presumptions existing between the two authors of the Qualitative Preliminary Report are being translated into text and inscribed in an actor. The actor continues through the design of the EMR to participate in the exclusion of needs and preferences of the pregnant women in the design of the EMR, just like the Latour's door-closer "discriminate[d] against very little and very old persons", as explained in Chapter 4. A consultant also conceives pregnant women we as being "top-motivated […] this is why we can afford to forget about the pregnant women a bit" (consultant from the provider consortium, interview).

These two assumptions suggested that it would be easier to succeed with the EMR as the first part of the generic model. The pregnant women would participate with good will because of their interest and activeness as well as the low level of complexity of the care activities was less likely to obstruct the project.

Other actors involved in the beginning of the EMR Project stated that a central aspect of the project was to improve efficiency. A consultant from the provider consortium points out that if the EMR will succeed serving as the first step in a generic model there will "economically be a giant potential in relation to diabetes and such conditions" (interview). Another consultant from the provider consortium says that by using the EMR the GPs "will save at least a quarter of an hour, excluding the time that the secretary spends, per pregnant woman. This

[14] This was the reason for excluding the pregnant women from the preliminary analysis for the project, as it was considered part of the basic and unquestionable knowledge about pregnant women as a user group, that they were active information seeking citizens (Qualitative Preliminary Analysis Report, sundhed.dk, p.7).

is converted into very hard currency for a GP, they are *top tuned billing machines*" (Consultant from provider consortium, interview). The same consultant later speaks about improving efficiency and stated, "it is usually not something in this relation that you would put as the first sentence because you don't want to scare the employees. So as the first sentence you will write *quality*" (consultant from provider consortium, interview). Improving the efficiency by digitalising processes involved in the maternity trajectory relates in this way both to a general way of managing patient trajectories within the health care services and specifically to a more profitable business strategy for the GPs.

Where the efficiency improving aspect was somewhat covered up, for the participants in particular, quality assurance was explicitly expressed throughout the beginning of the project. A consultant from the provider consortium answers the question "which main problems will the EMR solve" posed by the researcher with: "quality assurance in relation to what is written in the record" (consultant from provider consortium, interview). She and other actors involved in this phase of the EMR relate quality assurance to both the quality of the data that is exchanged during the maternity trajectory and to the quality of the consultations. In relation to the quality of consultations the rationale is that the midwife and GP will have more time with the pregnant woman if the data is electronically typed in. In relation to the quality of the exchanged data the assumption is that if it is typed in digitally it is easier to read and if it is structured around the fields in the EMR the documentation will become more methodical. If the structure of the EMR obtains a more pivotal role in the care it is believed that it will become more standardised. This implies that the procedures and practices of care in relation to the trajectory are described. As the project manager of the local Frederiksborg project states: "[I] see a huge improvement of quality when it is described who do what" (project manager of the Frederiksborg project, interview). Transparency in the process is also related to her wish to include the coding system[15] in the EMR: "If they [the GPs] in their referral of the pregnant women could include a code, then maybe that would improve the quality" (project manager of the Frederiksborg project, interview). Although the coding aspect or accreditation[16], which she also relates to the EMR Project, did not officially became a part of the EMR it highlights how the project manager

[15] The coding system that is referred to is at the heart of the accounting procedures of the Danish health care service and is called the DRG system (Diagnose Related Groups).
[16] Accreditation will be explained and discussed in Chapter 9, Section 3.

sees the EMR as a tool for standardisation, which she sees as something that could improve the quality.

Some people involved in the early stages of the EMR Project refer to how the electronic record will make health care professionals use digital media to a larger extent. A member of the central and local Funen project groups objects to the interviewer assertion that digitalising the paper-based record would not make a big difference: "well, I think we're in the beginning of a process […], we have to start with small steps […], especially because the midwives, for example, are not really accustomed to using IT." (member of central and local Funen project groups, interview). A consultant from the provider consortium states as one of the general ambitions of the project is to "push an additional [digital] system in the health care services that will increase effectiveness and quality" (consultant from the provider consortium, interview). The same consultantlso bemoans the repeated failed attempts to make health care professionals sign up for "The Digital Signature". The digital security of the EMR is based on The Digital Signature, which is developed by a private Danish company (TDC) and is used in most public digital services. The local project manager from the Funen project group insists that "it is absolutely crazy" how easy it has been to introduce The Digital Signature to the health care professionals in the project: "I don't think any other hospital in Denmark has succeeded in making so many people using The Digital Signature" (local project manager Funen, interview).

Another important issue that is mentioned by most of the actors involved in the early stages of the EMR is that the pregnant woman will benefit from the digitalisation of the record. When the people involved in this phase of the EMR talk about how the pregnant woman will benefit from the EMR it is usually in relation to the term shared care, which "has been proclaimed as *the* term [in the EMR Project]" (consultant from the provider consortium, interview). Shared care is a strategy for organising the care involved in patient trajectories that is based on sharing of responsibility and information[17]. A member of the central and local Funen project group states that: "The EMR Project is an example of having shared data. It is shared care, a new exiting area that we don't know much about. Now we want to get some experience with that, and that's why we entered the project" (member of central and local Funen group, interview).

[17] Shared care will be explained and discussed in chapter 7, Section 3.

The EMR Project is not merely related to shared care but indeed highlighted as a particularly visionary and important shared care project: "There exit other small initiatives trying to create shared care, diabetes databases and other things. But this is the first time that you go out and say: citizens, GPs, hospital staff, midwives and possibly the health visitors try to go all the way and create a shared documentation level" (member of central project group, interview). On one of the first meetings in the central project group, a member declared that the long-term goal was shared care, which meant that the portal, sundhed.dk, should be the pivotal system and not the various systems that the GPs happened to use. The vision of shared care thus managed to trump the 14-16 providers of systems to the GPs (according to consultant from the provider consortium, interview). This points to the power of the concept of shared care. Shared care, as we will see later (Chapter 7), is of course not an unambiguous thing. People involved in the first phase of the EMR Project differ in regards to the degree to which the pregnant woman should be explicitly a part of the shared care ensemble. All agree that the sharing of the care will benefit the pregnant woman, but not all believe that she should necessarily be an explicit part of the ensemble.

> One of the advantages would hopefully be partly supporting the patient trajectory in the way that the health care professional partners always have access to the newest data […]. [I]f the woman calls, for example, and has been to a scan, then the midwife can see, if she calls her, see what has been said to the woman. This way I believe that the woman to a larger extent will experience that there are others, and not just oneself, that are coordinating the trajectory, and that will be a huge advantage. (project manager of the local Funen EMR Project, interview).

The point expressed by the project manager is that by sharing the data related to the care, the pregnant woman would no longer be the main coordinator in the process. The advantage of the EMR is that the health care professionals will serve the patient better because of improved access to relevant data. Other people involved in the early stages of the EMR Project associate shared care and the project in general with activating the pregnant woman.

> Interviewer: How would you define shared care, what does it entail?

> Interviewee: To me it entails that you with focus on the patient and the relevant indicators, data that exit in relation to the patient, always have access to the newest and most updated data. It is also about activating the patient in his or her own patient trajectory, and in this way support the care by letting the patient have an active role to play. It could for example be self care in relation to data input of specific measurements or in relation to the whole concept of home care, which is build up around for example diabetes patients, people in AC-treatment who takes anticoagulant medication. And then broaden patient trajectories out to include a larger extent of citizen participation. And here we believe that we have made an infrastructure, which hopefully makes it pretty easy to get hold of the citizen without necessarily receiving to many services. (consultant at sundhed.dk, interview).

For this representative of the portal, shared care also involves an active patient who takes part in the actual care. However, from the interviews with the people involved in this initial phase of the EMR Project it seems that the ambition to activate the patient and include this in the care was mostly present in the very beginning and was gradually either written out of the project or temporarily suspended. It is a point in itself that it happened gradually. Like in Akrich's story about how the Swedish technology *gradually* changed after arriving in Nicaragua designing of EMR is slowly responding to the resistance it is encountering. It also shows how initial ideas, ambitions and reports do not determine the outcome. Like the Swedish machine for making briquettes was not *diffused* but *translated*, the EMR is materialised through translations. In the continuation of the comment above the consultant touches upon this gradually weakening of the aspect of activating the pregnant women while not efface it completely:

> [T]he maternity trajectory is a small taste of it [the activation of the patient], not that you have a very large stake in the actual treatment, you get some insight, which I suspect is necessary if you want to play an active role in you own patient trajectory. But is has a little bit of it. I can easily imagine that in the future there will be a bigger degree of self-monitoring and management of you own health trajectory. (consultant at sundhed.dk, interview).

When responding to a question about who will be the primary users of the EMR a consultant from the provider consortium notes that some of the early ambitions articulated in the EMR Project did not survive:

> Well, as the final design emerged the primary users were the health care professionals and it was not very oriented towards the women. This was not how it was supposed to be, but I believe certain economical interests caused this, but again…in the future everybody who has an interest and can contribute must… that is to the extent that the patient can examine him or herself etc. then he or she is also a clinical user… (consultant from the provider consortium, interview)

Here disappears the ambition to include the pregnant woman from the project because of economical reasons, which are not explained, through the translation of the ambitions, visions and reports to the actual design. But the ambition is not dead. It is not effaced. Another consultant from the provider consortium states that the project started out with "flighty plans", which they later sought to turn more "down-to-earth", or more specifically: "[The plans] were of the kind that is most easily implemented in PowerPoint, when it goes further into the world it becomes more troublesome" (consultant from the provider consortium, interview). The consultant realises that spreading the technology is not tedious, but differentiating between "easy" and "troublesome", it appears as if he views the resistance that the "flighty plans" will meet as the kind of medium that Latour associates with the diffusion model. The idea is good in itself and must overcome the resistance rather than take acknowledge the work of translation. Activating the pregnant woman was without a question an important reason to commence the EMR Project among the people working on it as well as it is consistent with as one of the four ambitions of the portal, which was "to support the patient in taking care of [his or her] own health and treatment situation" (Department of Health and Interior 2003, p.50).

An aspect on the one hand was very clearly articulated during the initial phase of the EMR Project but still entailed a number of concerns relates to the ambition of letting the record be the first step in a generic model to support care of chronic diseases. Firstly, there is a problem relating to whether or not the patient or pregnant woman should be activated or not, which following the discussing above, was a general issue.

> [I]t goes somewhat against saying that the pregnant women or the patients should be at the centre [of the care] when talking about shared care and all

> that, but I will, specifically in relation to the maternity trajectory, insist that the primary users, the ones that will really feel the effects, are the health care professionals. […] But when we talk about the next trajectories there will surely be focussed on positioning the patient at the centre [of the care]. It is the resources of the patient that can effect the compliance. (consultant from the provider consortium, interview).

This touches upon a very fundamental issue, namely the difference between pregnancy and chronic diseases, or more specifically, the difference between maternity care and care in relation to chronic diseases[18]. The project manager of the local Frederiksborg project states at one point (before the county exited the project) that she cannot see how the EMR can serve as a generic model because it was too specifically oriented to maternity care and was too much about the specific needs related to this. This raises a dilemma: "Well, I'd like to participate creating a generic model, definitely. But in order to get this one [the EMR] to work, we will have to be specific" (project manager of the local Frederiksborg project, interview). The project manager also points out that pregnancy and chronic diseases differ, as pregnancy is not chronic. Additionally, she questions (even laughs at) the assumption that the complexity of maternity care is limited. In relation to the many "examinations, law issues, security and a lot of other issues" the maternity trajectory is very complicated (project manager at the local Frederiksborg project, interview). The ambition to construct a record for maternity and then use it in other conditions without substantial changed relies on a diffusion model. As shown, however, not everyone subscribed to this, as they indeed see the different conditions as being too different and do not treat the EMR model as the only motor and the networks constituting the conditions as mere media through which the EMR will materialise.

Another dilemma concerns which pregnant women should be included in the project. It was decided that only pregnant women without complicating conditions (physically, socially or psychologically) should be included in the project. This was due to the same reason as why maternity care was chosen in the first place, namely that the initial case should not be overly complicated. A member of the central project group expresses the dilemma like this: "If you want a high

[18] There are of course also important differences between different chronic diseases and the respective care practices. These are, however, not differences that are touched upon during the EMR-project.

level of health care professional quality in the project and create a reliable general trajectory model, you should chose the complicated model, but if it is too complicated…" (interview). The fact that maternity care was chosen in order to simplify things also comprises a dilemma. A member of the central and local Funen project group states that it is problematic "that one has very quickly focussed on looking at the pregnant woman […]. This is of course necessary, otherwise it would not turn out ok, but one should every now and then interview). A consultant at sundhed.dk also points out that even though maternity care bears resemblances with the chronic conditions in question, "it would, of course, have been ideal if we have had more patient cases to shuffle[19] in order to find some common denominators" (interview). One specific issue that he mentions as differentiating maternity care from the other cases is the fact that "midwives are used to work interdisciplinary", which allegedly gives the EMR "a different perspective" (interview).

Specifically related to the GPs, pregnancy is also problematic compared to the other health conditions where the generic model should be implemented. A consultant from the provider consortium explains it like this:

> Yes, because they [GPs] are driven by other success criteria than others [health care professionals involved in maternity care] – there needs to be money on the table, and here you can say that the maternity case is not optimal because the volume is so small. Another chronic illness should have been chosen, something else as the first, because then there would have been some volume in it for them [the GPs]. (consultant from the provider consortium, interview).

An important question in relation to the role of EMR as the first step towards building a generic model for supporting care in chronic illnesses regards the differences between the level of complexity in the care of maternity and in the care involved in the chronic illnesses in question. The strategy was to build the generic model around something that would not be too complicated. Maternity care, however, quickly proved to be more complicated than presumed. This was one of the reasons why several functionalities were gradually written out of the EMR. A notable example is how the pregnant woman's ability to type in data in the record at one point no longer was a part of the idea. This can give the idea that the EMR initially was very ambitious and as it progressed one became more

[19] "Shuffle" was used as an English word in the Danish sentence by the consultant

modest regarding the requirements of the system. However, responding to the question about whether the project initially held more promise and now is somewhat deflated, a consultant from sundhed.dk said:

> No, definitely not. Actually it is the other way around. I think that everyone was surprised at how big the project has turned out compared to the goals and the approach to the project. The grant was given on an extraordinary loosely defined basis. You had some goals, you had some purposes, you had some principles, which should be the red line through the project, but filling out the frame was very much something that should follow. So I think that everyone was surprised as to how much you got, but perhaps equally as to how much it requires to move on. (consultant at sundhed.dk, interview).

So instead of lofty, but perhaps somewhat empty, visions the EMR grew as the content was put in the record according to this consultant. In a way the consultant appreciates the work of translation (as opposed to that of purification) in the sense that he does not bemoan the transformation of the original ideas as much as he value the actual materialisation. Another consultant from the provider consortium puts it differently and more specifically but largely makes the same point:

> Originally, the project was, as I see it in the contract, in principle a project where you "electrified the forms", that way making it possible to type in data. So far so good, but it becomes evident when you take a step forward […] that the maternity project was not just a form. It looks simple and that was also why it was chosen as the first trajectory project. But it is enormously complicated with so many stakeholders. (consultant from the provider consortium, interview).

Even though the shape and content of the EMR gradually changed through the translations during the initial phase of the project, there was a firm believe that the EMR would be "rolled-out to the remaining counties" after "adjustments and improvements" had taken place (consultant at sundhed.dk, interview). A member from the central project group insists that the record will be immediately "spread out" to the rest of the country after the pilot run, because in order for the EMR to be reliable "a large-scale model is necessary" (member of the central project group, interview). The necessity of "a large-scale model" implies the need for the work of translation, which cannot be conceived in advance.

The ambition to "roll out" the EMR subsequently to the other counties after such "adjustments and improvements" subscribes to the model of diffusion. It does not take the work of translation into account. It does not foresee local "adjustments and improvements". A member of the central and local Funen project groups names the subsequent adoption as a criterion for success, and states specifically that:

> It is not just the counties of Funen and Frederiksborg that should be happy. There are also others that should be happy, and I think it would be particularly sad if you come out after two years and say: "well, no one else uses it". That would be a sign of failure (consultant the central and local Funen project groups, interview).

The consultant from sundhed.dk expresses another worry:

> My big worry here is that when we hopefully have made a project by the 15th of January, we have a good maternity project, but we'll have to start over again when we are going to make diabetes project. That would be terribly sad (consultant at sundhed.dk, interview).

Despite the worries about the applicability of the specific project in relation the generic ambitions and the lack of general ambition the pilot run itself is imagined to run relatively smooth and generally be successful.

The pilot run

The pilot run was about a lot of different and not always compatible things as different interests were connected to it. The concrete translation participated in complicating the project. There existed official goals written in official documents, but they did not have a privileged status. Contrarily, the specific interests and rationales discussed above were the ones that the various actors in the project related to during the run. The official goals were, however, also influential because they were inscribed in official documents and referred to during the project group meetings. The official documents were actors in the network along with project manager and many others, human as well as non-human. Officially the goals of pilot run were: Testing of: 1) IT-support of working procedures in the maternity trajectory, 2) The EMR's suitability compared to the Board of Health's form "Maternity Record", 3) The heath care professional's

use of the offered support of the maternity trajectory, 4) The pregnant women's use of the offered IT-support, and identification of: 5) Faults in relation the EMR, 6) Possible barriers for subsequent development of the EMR, and finally 7) Possible barriers for national diffusion of the EMR (Internal document "Overview of Pilot Run", from 8/2/2005).

In February 2006 Frederiksborg County decided to abandon the EMR Project all together. In their official account of why they abandoned the project the main reason is that the offer from their IT provider on an interface between the EMR and their obstetrics system was too expensive. They also state that the decision should be seen in the light of 6 factors: the EMR has shown instability in Funen, uncertainties in relation to the interface between the EMR and their obstetrics system, there is a risk that the GPs will have to do double work, the EMR is not necessarily compatible with relevant future IT solutions, the duration of the project is not clear and finally they mention printing problems (mail from the Health Care IT Committee of Health Services of Frederiksborg County to the local Frederiksborg project group from the 23/2/2006).

Funen County started up before Frederiksborg abandoned the project. The record as it was developed and tried out in Funen took as a starting point two paper-based records (the specific maternity record that the pregnant woman carries around and the referral that the GP sends to the place of birth). Briefly put, the EMR was a combination and digitalisation of the two paper-based records with some new data fields added (specifically: breast feeding, BMI, drugs use, fertility treatment, work environment, hepatitis B[20]). In relation to the organisational setup three medical centres (with 11 GPs in total), 60 midwives (from which 5 had a specific responsibility) and the D ward of Odense University Hospital (which included around 70 obstetricians, secretaries and nurses) comprised the health care participants in the pilot run. The goal was to recruit 100 pregnant women during the project. These women were to be recruited by the GP during their first consultation related to their pregnancies. The technical solution consisted of a web-based record system, which was accessible through the sundhed.dk portal. The health care professionals and the pregnant women needed to use The Digital Signature to access the EMR through the portal.

[20] The new data fields were not directly caused by the EMR, but by information about how The Board of Health's was updating the guidelines.

In October 2005 the first records were created and until May 2006 a total of 74 pregnant women were recruited. Some were specifically asked to participate and others were simply being told that they participated (which several made participants criticise the set-up). Following the ambition not to complicate things too much during this pilot run most of the women's pregnancies were relatively uncomplicated, at least from a medical perspective. The GPs were partly chosen because they were situated in the central part of Odense city, which excluded the pregnant women living in the more socially troubled areas of Odense[21]. In May 2006 the local Funen project group decided not to involve more women in the project and in October they decided that the records that were created and still used in the EMR should be printed out and used as the traditional paper-based records. This meant that the records were printed in three identical versions and sent to the GP, the midwife and the pregnant woman with a letter explaining the reason why. The official reason for this was the relatively high operation cost of making the records continually available for the users. Unofficially a number of issues have been referred to as the reason for why the EMR ended prematurely. An important and severe issue was the lack of technical interface between the EMR and the systems that the GPs used (which was also the main reason for Frederiksborg County to exit before the pilot run commenced). This resulted in cases where the pregnant women were not referred to the hospital because the GP had only typed in data in her/his own system. A GP explains it like this:

> We had some problems in the beginning when I had typed it in what I needed and exited the record I thought I was done. But I also needed to write an electronic referral to the hospital or the place of birth. And we actually forgot that sometimes. Then the pregnant women called after a while and said "when am I supposed to…", and the we could see, embarrassed, that we had completely

[21] This choice illustrates an interesting socio-material point. In Langdon Winner's classic text "Do Artifacts Have Politics" (Winner 1980) he shows how the bridges to Long Island in New York are political because the discriminate against tall vehicles like busses. This way only people who do not have to take public transportation to get to the beach can pass under the bridges. People relying on public transportation were predominantly poor people who could not afford cars. Similarly, the choice not to recruit women from e.g. Vollsmose or related areas of Odense is a way of discriminating. It is probably more interesting to go to the beach than to participate in a pilot run of an EMR record, but this is not the point. The point is that if the project group had chosen officially to avoid immigrant women it would have been politically incorrect and probably hugely problematic in the public opinion. The controversy is avoided through the assumption that spatial and material configuration is not political.

> forgotten it. There is something psychologically in this, when you have done some work one place, and then have to go to another place to ensure that the data will be retrieved by the midwives. This is really a, I believe, a criminal flaw this (GP, interview).

Another significant issue, which relates to the premature end to the EMR relates to the expectations to what would happen after the pilot run. As mentioned above the EMR held great potential in the eyes of many, not only as a record for maternity care, but also for a number of chronic illnesses. However, sundhed.dk never made any formal promises regarding the future of the EMR. When problems began to arise during the pilot run, it became clear to many of the participants that sundhed.dk was not necessarily interested in going forward with the record afterwards. The participants were given the impression that sundhed.dk would continue after the pilot run (by e.g. The National IT Strategy and by the Project Description for the both the portal and the project). When diffusing the EMR proved problematic due to the resistance, sundhed.dk renounced the ambition to continue the diffusion. This influenced the motivation for many of the participants in a negative direction. Many of the participants also complained over the frequent breakdowns and general instability of the system. One of the GP houses exited the project at an early stage because they experienced too many technical problems with the EMR. These reasons are not directly related to the specific interests discussed above. However they are of course indirectly related and should not be belittled. But instead of quickly writing the EMR Project off as a failure because it was prematurely ended, I will in the following discuss the course of the project in relation the specific translation of the particular interests expressed before the actual pilot run.

Generic Model

The first interest in the EMR Project was the wish to let the EMR serve as the first step towards a general record for conditions where the coordination of the care looked like that of maternity care. Many participants in the pilot run argued that it would be a good idea for many of the same reasons discussed above, but some argue that lessons need to be learned from the EMR before proceeding. One GP points out that it would not be an easy task, as he responds to the ambition of making this kind of portal for other patient groups, e.g. people with diabetes:

> Have fun, I say! [said ironically] Because there'll be even more variables. Well, we have this diabetes database on Funen and if you see how many data fields there is in it…you can sit and mess around and fill out…and where we in principle can communicate with ophthalmologists and hospitals and a lot of other things, everyone can type in data, right? I'd like to that work on sundhed.dk with the abilities they've shown so far. I got to admit openly that I don't believe that for a second. (GP, interview).

The period after the EMR Project contrasts the ambition to create a generic model and take one condition after another. This is of course not the same as saying that it is not possible, but sundhed.dk did not proceed as initially planned in relation to the subsequent diffusion of the EMR itself or in relation to other cases. The assumptions on which choosing maternity care as the first case were based on, as mentioned above, firstly, that pregnant women are particularly active and interested in their condition and secondly, that the maternity care was relatively simple. It is difficult to evaluate the first assumption on basis of the pilot run because many of the functionalities that addressed the pregnant woman did not appear in the final version of the record. A number of the women that participated in the project did not have a computer and others did not manage to obtain The Digital Signature that was necessary in order to get access to the record and thus participate as prescribed in the project documents and expressed in the interviews. If the pregnant women indeed are active and interested, as presumed, they might be that in another way than imagined. Comments from a pregnant woman participating in the project without really using the record suggest that when she is asked to reflect on what would make her use it:

> Then the scanning images would have to be there. I don't think I'll ever be writing in it. Then, perhaps, I should make a diary and write: today it has been kicking, but I'll never do that. I'm not like that. I'm pregnant and then I don't need much more. […] I like looking at the images. If the images where in there, I think I'd go in and have a look every now and then. It's fun, but we also get them in our hands (pregnant woman, interview).

This interest in "looking at images" is not the same kind of activity that was supposed and expressed in the initial stages of the EMR Project when the usability team allowed themselves to exclude the pregnant women from the analysis. That not all pregnant women are necessarily interested in all of the

specificities of their bodily condition is also expressed in the following excerpt from another pregnant woman from the project: "Why the hell should you look at how much you weigh and how many oedemas you have?" (pregnant woman, interview).

Increase efficiency

Due to technical problems during the pilot run a lot of participants were not able to perform their work as efficient as before the EMR. The participants were also obstructed from doing their work efficient in the beginning because they had to learn how to use the record, which is to be expected during a pilot run. Sometimes, however, the EMR changed the work procedures in a way that explicitly prevented efficiency. An example of this relates to the scanning procedure:

> It's because it's an extra task, normally we don't look them up before we scan them. So for me it is an extra task to look them up in the computer, perform the scan, and then someone else is using the computer when I come out again and I'll have to start over again (scanning nurse at Odense University Hospital, interview).

A GP states that he spends around 25% more time typing in data in the EMR compared to the traditional paper-based practice (GP Odense, interview).

Quality assurance

Several people expressed the ambition that the EMR would assure quality in maternity care. The ambitions were specifically related to the quality of the data, that efficiency would result in better interaction with the pregnant woman and the structuring effect of the EMR. In relation to the latter aspect a participating midwife states the following:

> I can just say that in relation to GPs, that we get a little more information. It's as if this thing, that they have to go in and type…it seems very…for instance, in relation to smoking, definitely. I'll say with the paper-based record there is about 10-20% that "don't know" whether they smoke or not. But it appears very clearly when they have to go in and type…it's significant. (midwife, interview).

That only 10-20% knows whether or not they smoke is of course an ironic statement and refers to the fact that the GPs in 80-90% of the cases checks the bow that says "N/A" instead of actually inquiring into whether the pregnant woman smokes or not. According to this midwife the EMR caused an increase in the level of quality because it forced the GPs to relate to an issue that was otherwise somewhat ignored. Regarding the ambition that the quality of the interaction between the health care professional and the pregnant woman would increase because the typing of data would happen easier, a midwife says: "The only thing is that it is on the computer, that is the negative aspect…it is hard to have…to sit in front of the patient with" (Midwife, interview). The particular materialisation of the EMR included a specific socio-material configuration that, in this case, was considered problematic. This materialisation was based on the existing configuration and the EMR entering this, which resulted in a translation of the EMR. A GP concurs as he says that the he "has become more focussed on PC-work than on the pregnant woman" (GP, interview). A nurse complains about the great amount of time that the number of IT-systems that lately have entered their work practice requires, and asks "where are we supposed to take the time from? There is only one place: The patient" (Nurse, interview). Several participants were pleased with the fact that handwriting had disappeared and has been replaced by a kind of text that is easily readable by all.

Digitalising health care services

A short while before the EMR pilot run commenced two other systems were implemented at the ward, an obstetrics database and a scanning database. Additionally, there was a lot of talk about the EPJ that should arrive soon but were delayed a number of times. The EMR was only one of several digitalisation efforts that the health care professionals at Odense University Hospital had to relate to. As a nurse says: "This is the way it works, *we have to* have IT enter our everyday life" (nurse, interview). The initial ambitions about digitalising the health care practices that were part of the EMR are consistent with how a number of health care professionals in the pilot run viewed the development of health care in general.

> I think on a societal level we are moving towards some records become electronic, so paper, well, I don't think we will see a lot of that. It is probably what we are working towards; things are being made electronic and of course also patient records and the maternity record. (midwife, interview)

Here the midwife associates the EMR with an inevitable development, which makes the EMR sensible. The digitalisation of health care was a linear process to which one can contribute by throwing in an additional IT-system. There were many systems (several recently introduced) at the hospital in Odense. They did not form one smooth stream of digitalisation in practice. Indeed, several of the systems were not integrated at all.

The pregnant woman will benefit (as an active part or not)

Before the pilot run there also existed a strong ambition that the pregnant woman would benefit from the EMR, either as an activated partner in the care or because the work around her was better coordinated. In relation to the latter several issues contradict this ambition. Perhaps most importantly the referral from the GP to the hospital was not also sent. Another example comes from a pregnant woman:

> I was 13 weeks into the pregnancy and have had taken a blood test and a scanning and everything was ok. I got a risk factor that was luckily way better, so there were no problems. But it is not stated anywhere. So I consider my self lucky that there are no problems, because I think that it seems as if a lot of data is lost.

Among some of the pregnant women there existed a fear that data was lost, which made them worry that the hospital would have the necessary data when they would give birth. There also existed a belief that the pregnant woman would benefit from the EMR because she would become activated in the care. However, as described above the aspects of the EMR that were supposed to activate the pregnant woman were gradually written out of the project to avoid too much complexity.

Summary

The EMR Project was initially strongly backed by influential actors like The National IT Strategy and in a way an integrated part of sundhed.dk. The specific vision in relation to the maternity trajectory and as a generic model for shared care did not have many opponents. It was a surprise to many that the project was prematurely ended in Funen and never got started in Frederiksborg. Despite the relative fiasco of the project the ambitions were never really questioned. On

the contrary, sundhed.dk regards the project a small success, with problems admittedly, because lessons have now been learnt, and anyone is free to proceed with the project. This bears resemblances with the diffusion model, which ascribes agency to the technical idea and resistance to the medium through which it is to be implemented. The work of translation was not acknowledges in this EMR Project and the particular translation rarely appreciated.

5.2 Account of the Collaboration with Hospital X

In autumn 2004, a group of researchers interested health care and IT from the IT University were asked to meet with representatives from Hospital X. The contact was due to the personal relation between a technical employee at the university and the manager of the maternity ward of the hospital. Some of us were keen to learn more about maternity care in particular and others were interested in more general aspects about the organisation of work within health care. At the first meeting we came six researchers to meet with the manager of the ward, the managing midwife and a secretary[22]. All three were also part of the *Innovacenter*, which was a branch of the hospital focussing on innovation and new technology. The manager of the ward was also manager of the centre. Later we were shown around the facilities of the Innovacenter and it was pointed out that our prospective collaboration would also be associated with the centre. At this first meeting we discussed possibilities for collaborating on developing technology that would improve the relationship between the expecting couples (or newly increased families) and the ward. One of the ideas was to include the (expecting) father more actively as an actor in the network constituting maternity care. Another area related to monitoring the new born babies, more specifically, their urine values and their whereabouts. The first aspect relied on a wish to be able to monitor the health status of the infants after they were discharged from the ward through tele-monitoring technologies. The other issue related to an ambition to always know were the hospital's patients were located. Specifically, the idea consisted in attaching RFID-tags to the babies and installing scanners around the ward letting let the staff know if the babies have been removed from specific areas of the ward (e.g. stolen). The first idea about monitoring consisted concretely in a nappy equipped with sensoring and communica-

[22] One researcher had held one initial meeting before this one

tion technology that would inform the ward about e.g. the level of bilirubin in the urine, which indicates whether or not the baby is suffering from jaundice.

The researchers interested in the more general issues relating to health care discontinued working with the hospital whereas the researchers interested in maternity care including me, began formulating a project proposal that should formalise the collaboration. From the first meeting it became evident that they had hoped that we, coming from the IT-University, would be helpful in materialising their ideas through technical skills. However, we did not posses these skills and more importantly, were not interested in it. We managed to persuade them that it was necessary to perform empirical studies to determine whether or not the ideas were as good as initially appeared and to determine whether other and more interesting ideas could emerge.

From the autumn of 2004 to the beginning of 2007 we held numerous meetings with the objective to formalise the collaboration. Both parties however, never signed the project proposal and the character of the collaboration was thus somewhat loose. During this period we conducted interviews with the staff and pregnant women and performed ethnographic observation of the work practice at the obstetrics ward. Additionally, we organised two more interventionist events: a presentation and a workshop.

I gave a talk on the history of obstetrics and midwifery and the disputes between the two approaches. The purpose of giving this talk was to satisfy our ambition to give back something to the hospital as well as to challenge my conception of the formation of the field. In relation to the methodological approach discussed above drawing in particularly on Stengers and Despret I sought with this talk to put forth a *proposition* for members of the field to respond to thereby *risking* my reading of the literature regarding obstetrics and midwifery (see Chapter 2 for a discussion on the two terms "proposition" and "risk"). I did manage to generate a certain amount of *recalcitrance* but not the kind I was looking for. I was hoping for my proposition to be taken up by a number of midwifes and obstetricians and modified to a certain extent.

The bustle at the ward had limited the number of participants to the manager of the ward. Although being somewhat disappointed I gave my talk hoping that he

would relate to the content. He did, however, neither expect nor appreciate the topic of my talk and before I was finished he interrupted me with the question: "how does this relate to The Intelligent Nappy?" At the time his reluctance towards engaging in a conversation about the history of obstetrics and midwifery irritated me a great deal, but later I began to appreciate it because it revealed something about the interests that connected the manager of the ward to our collaboration. This is the reason why I appreciate his reluctance now even though it during the meeting appeared to me as hostility and rejection of my agenda. For him "The Intelligent Nappy" constituted the reason why we should talk to each other in the first place. I had at the time conducted several interviews and performed many hours of ethnographic observation and done my best to connect this to my literature reading. His interests were however, revolving around their initial ambition to create technology to generate data about the babies. As mentioned, we had convinced him and his co-manager that interviews and ethnographic observation were necessary, but we had not appreciated their interest in new technology. In other words, we believed that our agenda was more relevant than theirs and that they would acknowledge this once they were exposed to my talk. In relation to The "Stengers-Despret Falsification Principle" discussed above we only thought of risking the hypothesis, which was my particular reading of the history of obstetrics and midwifery. Later I began to ask whether the right questions were asked and whether the set-up was appropriate.

The Workshop with Hospital X

After a number of interviews, meetings, observations and the presentation discussed above had taken place, we decided to continue along the lines of technology development. More specifically, we organised a design workshop in early November 2005 where we asked the participants to work with us in trying to materialise the different ideas that had occurred during our meetings. This workshop was the most intensive and generative event throughout our collaboration with Hospital X. This is why it will be explained in-depth in the following.

The workshop was organised by me and the two other researchers who at that time were involved in the collaboration with the hospital. We invited both the management of the ward, midwives and pregnant women associated with the hospital. Instead of bringing midwives *and* pregnant women as two different

groups of persons, they invited two pregnant midwives. The management also invited a representative of a medical technology corporation and member of the board of the Innovacenter. The group of participants comprised nine persons in total:

- Pregnant midwife A
- Pregnant midwife B
- Managing Midwife
- Manager of the ward and gynaecologist
- Representative of a medical technology corporation
- Researcher A
- Researcher B
- Researcher C
- Research assistant (mostly documenting the day using video camera)

Our ambition for the workshop was to agree on a direction for the collaboration. Inspired by methods from interaction design (Löwgren & Stolterman 2004, Beyer & Holtzblatt 1998), we spent the first half of the day drawing and formulating visions for new ways of doing maternity care and the second half of the day working with design materials to concretise these visions building mock-ups (Sharp et al. 2007, p.569). In interaction design, design materials used during design events such as workshops function as vehicles for experimenting with design ideas (Löwgren & Stolterman 2004). The underlying assumption for this argument is that language is insufficient for developing ideas and one needs feedback from material objects (Schön & Bennet 1996, p.177). Donald Schön's studies of how jazz musicians together create a musical expression during sessions of improvisation are exemplary for the process of externalising thoughts as necessary for being creative (Schön 1991). Schön refers to this process of externalisation and feedback as "see-move-see", which is a dialectic interaction in the sense that the designer (or jazz musician) responds to something that s/he sees, then acts upon that (makes a move) and then evaluates that (Schön 1992, p.5). In Schön's terms the design materials provide *backtalk* (Schön 1991, p.31) to the designer. So design materials constitute a resource for creativity for designers participating in a design event because materiality acts as conversational partner in the design situation. The design materials present in this workshop consisted of many different objects such as blue foam, LEGO bricks,

stickers, rubber bands, dolls (imitating infants), nappies and different kinds of pens and pieces of paper.

Figure 5.2: Pictures from the workshop with Hospital X

Our intent with the workshop also included getting input from pregnant women while working with the design materials. Although two pregnant women were present during the workshop, they were also employed at Hospital X and both of their managers were present. It was obvious from watching the video from the workshop that these pregnant women were very much aware of the fact that their employers were present, and if they forgot it, they were being made aware by the managers. An example of this is the multiple times that the managers took it upon themselves to explain the agenda and idea of the workshop to the pregnant midwives. The workshop took place in a room called "DesignLab" at the IT-University, which is both physically located far away from the maternity ward at Hospital X and constitute a very different environment than the one that exists at the hospital. Despite these changed surrounding, the pregnant midwives appeared as if they were still at work with their managers present. However, they did raise a number of very interesting remarks to the ideas during the materialisation and discussion (these will be taken up in part Chapter 10).

During the first part of the day where we drew and formulated visions for new ways of doing maternity care, the nine persons were initially divided into two groups and then joined again to present and discuss what the groups had produced respectively. We discussed how feelings of uncertainty and insecurity in relation to pregnancy were important aspects. Insecurity and uncertainty are terms that emerged during the workshop and will be maintained here although they might seem a bit clumsy.

During the workshop the ambition to do something about uncertainty and insecurity became the basis for the further work. It was argued that issue of insecurity and uncertainty are different for women who are expecting a child for the first time compared to women who have given birth before. The issue are at stake in both cases since all births are different, but first-time mothers experience insecurity and uncertainties to an extended degree. The insecurity of the pregnant woman is related to the lack of security about whether everything related to the pregnancy is as it should be. The pregnant women are seeking assurance that everything is as it should be in relation to themselves and the foetus. The feeling of insecurity is experienced throughout the pregnancy, but is explicit in the first and third trimester, as these involve a lot of changes in the pregnant body. Uncertainty is related to insecurity, but also to the general lack of knowledge about the health status and about what to do in a given situation. A woman often experiences a lot of uncertainty in the beginning of the pregnancy, as the physical signs of pregnancy at that point often are quite ambiguous. According to midwives at the ward interviewed before the workshop at the ward, pregnant women call the hospital on a number of occasions because they feel insecure in relation to the pregnancy. A lot of the women who call the hospital are socioeconomically advantaged and the questions are usually about minor incidents. Pregnant women who actually need help are not always taken care of properly because the socioeconomically advantaged women take up most of the capacity.[23] The managing midwife explained the rationale in focussing on the socioeconomically advantaged women rather disadvantaged during the first part of the workshop, by comparing the pregnant women to people going to an emergency ward at a hospital:

[23] Or because the hospital does not have enough resources, depending on the perspective.

> "…the number of people visiting a emergency ward within the last 10 years has exploded. 80% of the cases are related to children in their first year. […] [A] study of the emergency wards shows that it is normal conditions that people come to the hospitals with: rashes, small instances of cold, which are normal and not dangerous but people become very uncertain when they have this baby in their hands…our Crown Prince and Crown Princess drove to the GN [gynaecologic/obstetric ward] at the Rigshospital [Copenhagen University Hospital] in the middle of the night and came home again the next morning…well, if the role models can't even manage to do it…surrounded by all these resources." (Managing Midwife at Hospital X, workshop)

The midwife's point being that even people with a lot of resources experiencing trivial issues feel insecure and uncertain when a baby is involved. This insecurity and uncertainty is related to what the pregnant women experience during the pregnancy. The role models are a typically socioeconomically advantaged couple that want services from the health care service and takes an active part in health care. For the managing midwife, this is also a question of a particular generation of young people:

> This generation of people, they want to access the health care service and get service, and there aren't enough resources for that. This results in a lack of resources for those who really need them. Therefore you must come up with something else, where they can get answers to questions […] and where you can include their own stake in this, their own initiative, their own ability to act in this system. They do that anyway, but you must take them seriously. (Managing Midwife at Hospital X, workshop)

The managing midwife had before the workshop developed a model that focussed on socioeconomically advantaged pregnant women which distinguished between two modalities of interaction between the pregnant women and the health care services. During the first part of the workshop her group produced a drawing illustrating her point. It looks like this:

Figure 5.3: Picture of the common space

On the left side of the drawing it shows the pregnant woman's domain by a line resembling a woman with an extended belly. The right side is the domain of the health services, here drawn (and written) as an institutional facility with stairs, façade and health care professionals. Between the woman's domain and the health service is the hatched area, which is the "common space". The common space is divided into the "User Profile" and "Auxiliaries Central".[24] The former is a sphere where the pregnant woman and the health care services can communicate on "neutral ground" (and will be explained below), and the latter is a place where different auxiliaries can aid the pregnant woman and the health service in relation to specific aspects of pregnancy. More concretely, the Auxiliaries Central consists of different artefacts that can gather information about the health status of the pregnant woman and communicate these to the health service, typically the hospital where she is to give birth and/or the pregnant woman.

The drawing served as a framing for positioning the ideas that we designed during the second part of the workshop. One of the specific ideas further devel-

[24] Translated from Danish: Brugerprofilen and Hjælpemiddelcentralen

oped was the sphere called the User Profile, which consists of a "shared space" where the health service and the pregnant woman were thought to place their resources, as the following quotation points to.

> Moving some of the monopoly from here [the health care service] to here [the shared space], and some of the resources of the women out here [in the shared space]. The main principle of it is that a large number of independent pregnant women eat up a large part of the resources of the health care services, without creating more health as a result of that. If they got something they could use, resources could be allocated to the ones that we don't need to help with this. They have entirely different needs, and we must do something very special for them that don't look like this [the UP]. (Managing Midwife at Hospital X, workshop)

Instead of the woman coming to the hospital or to any other health service facility, either by presenting or calling, she would enter the shared space. With the User Profile the pregnant woman would have a specific record accessible through e.g. a web browser. Here she could book time for consultation with her GP, midwife or for a scanning. The pregnant woman could also pose questions to health care professionals and other pregnant women through a chat room. The health care service could automatically or manually at the will of a health care professional send out information about specific issues relating to pregnancy. Filtering mechanisms would ensure that pregnant women would receive information that is of their interest and not irrelevant spam. If a pregnant woman is overweight she would automatically receive information about how to avoid gaining too much weight. When a pregnant woman enters the third trimester she would automatically receive an information package entailing information about different ways to give birth. The pregnant woman would also receive test results through the User Profile as well as the health care professionals would be able to access them here. If a health care professional experienced that s/he received a large amount of question regarding the same issue, s/he could chose to distribute the answer to the relevant group of women using the filtering mechanisms.

The User Profile was a concept that was somewhat loosely defined and could entail different services depending on the circumstances. The Infection Detect-

ing Sanitary Towel[25] in contrast, was very specifically defined as a sanitary towel equipped with a sensor that could detect infection in the abdomen after the birth. This way she would not have to wait until pain and fever had revealed the infection before beginning the treatment. In relation to the distinction introduced above, The Infection Detecting Sanitary Towel belongs to the Auxiliary Central.

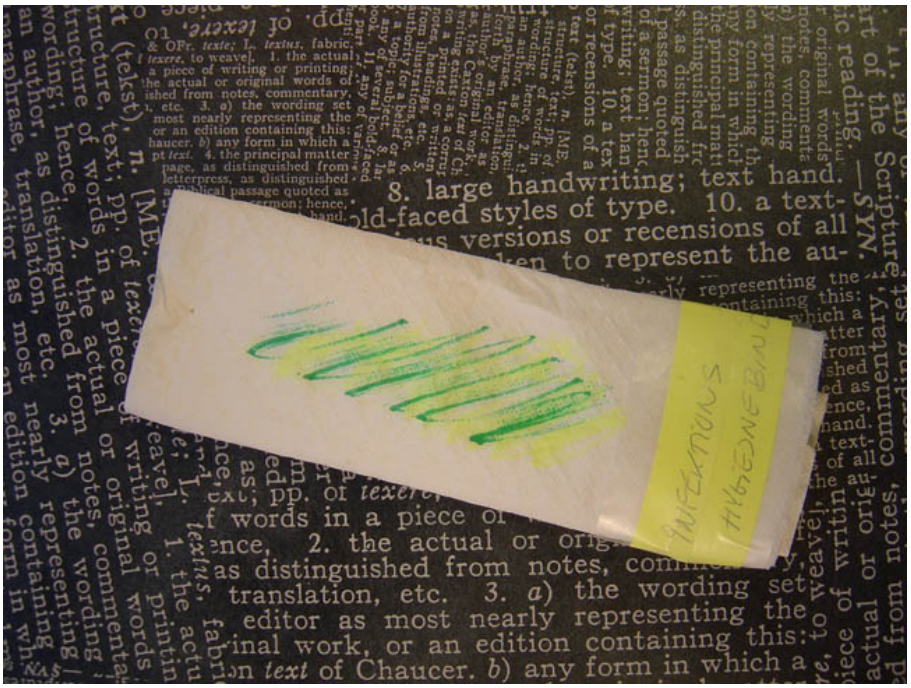


Figure 5.4: Mock-up of The Infection Detecting Sanitary Towel

The Breaking Water Tampon[26] resembles The Infection Detecting Sanitary Towel in the sense that it also belongs to the Auxiliary Central and also is about detecting something. Here however, it is prenatal and regards the beginning of the birth. Sometimes women going into labour are not sure whether the water has broken or not, because sometimes there is a lot of water and other times there is only very little to begin with. It is important to know whether the water has broken or not because infection may occur if the period between the water has broken and the birth commences is too long. This tampon would detect the liquid and determine whether or not it was amniotic fluid.

[25] Translated from Danish: Infektionshygiejnebind
[26] Translated from Danish: Vandafgangstampon

Figure 5.5: Mock-up of The Water Break Tampon

The Contraction Game[27] also addresses the uncertainty and subsequent insecurity that can arise when the pregnant woman is going into labour. As the game was developed during the workshop it could either belong to The Auxiliary Central or The User Profile depending on which direction the design would go. If it should belong to the Auxiliary Central it would be an interactive web-based tool that would inform the woman when to go to the hospital. Specifically, she would sit in front of her computer and indicate when a contraction begins and when it ends. The game would then generate a graph and compare it to an ideal graph illustrating the rhythm of the contractions. The game would indicate when it is time to go to the hospital and give her general advise about how to relax, eat and cope with the pain. The Contraction Game turned towards The User Profile would imply more interaction with staff at the Hospital. Instead of general advise about what to do, a midwife could for instance instruct the labouring woman to go for a walk or eat something depending on both the graph and what she states about her wellbeing.

[27] Translated from Danish: Vespillet

During the workshops it was argued that it is problematic that women about to give birth do not know how far they are in the process. That the contractions have started does not mean that she will give birth immediately, and she should not necessarily come to the hospital right away.

> What usually happens is that the woman calls and says: "I've had contractions for about an hour now, and now they occur with a seven minute interval". Then I say: "How long time do they last?" "Well, they last 45 seconds"… "Yes, you just stay at home." But many people insist on coming in because they don't dare stay at home. Or their men…often it is the man who calls and says: "Now my wife has contractions." Then I say: "Can I talk to your wife?" "No, she is sitting in the car." Well, he only called to say, "Now we're coming in". And we can easily hear that it is not now [that she is about to give birth]. And then they get bloody upset with us, because they don't think we take them seriously. Because when they come, they'll take up place in the maternity ward, and there's one in there who needs me, because she is giving birth. (Managing Midwife Hospital X, workshop)

A number of stories exist about women who barely made it to the hospital, which make the pregnant women likely to prefer approaching the hospital too soon rather than too late.[28] This is because of the uncertainty in relation to where they are in the process of giving birth and when to go to the hospital. Generally, there is a great deal of uncertainty related to the early stages of giving birth, as the women do not know whether the pain they are experiencing is normal or not. A lot of the times women come to the hospital, they are, as the quotation above indicates, being sent home again. This is problematic for the hospital because they are using a lot of resources examining the women and reassuring them that it is all right for them to go home. It can, however, also be problematic for the woman going into labour to be sent home from the hospital. Often the woman in this situation prefer to stay at the hospital in order to be reassured that things are all right, according to the health care professionals at Hospital X. Once they have left their homes they feel that they have commenced the journey towards the actual birth and feel disappointed when being sent back and having to start all over again. If they remained in the hospital they

[28] A woman encountered during the field study was sent home after having approached the hospital. After making a cup of tea she began giving birth and had to call paramedics who assisted the birth partly in the ambulance and in the hospital where the baby was delivered after having spent just 10 minutes at the facility.

would be monitored and the feelings of uncertainty, which can lead to insecurity, would be minimised. The problem seems to be big, as the Managing Midwife of the hospital says:

> And I've counted them [the pregnant women being sent home]. Last week. We have one to two in the night watch, and that is a time where you say that it must be really serious before coming in. You have to go down to the street, you have to drive, it is cold and unpleasant and all that. But you do it, and you are being sent home again. A lot of those come in. And we reject nearly always people on the phone one or two times. And it is not nice to be rejected. (Managing Midwife at Hospital X, workshop)

The pregnant women and their partners are instructed by the hospitals to call the maternity ward before showing up (through pamphlets handed out and on the clinic's website). This way the midwife can make an early assessment of whether the birth is impending or not, and instruct the woman to either stay at home or to come in to the hospital. At this point the midwife decides largely on the basis of the frequency and intensity of the contractions. If the midwife decides that the woman can easily remain at home for an additional period of time, this is not always received well, as the quotation indicates. Often it is the partner who calls the hospital and sometimes argues, in looking out for the wellbeing of his partner, strongly against the instruction to stay at home.

When the pregnant woman about to give birth enters the hospital without calling in advance the midwife either decides to tell the woman to go home or to keep her at the hospital. Besides information about the frequency and intensity of the contractions, the midwife can measure how much the woman's cervix has opened. In relation to the opening process and the rhythm of the contraction there exist specific protocols. X centimetres means that the woman is in X phase or the process of giving birth. Usually the pace of the opening process is one centimetre per hour. Often the midwife chooses to run a cardiotocography (CTG) measuring the contractions and the foetal heart rate. This way two graphs are printed on paper, one showing the contractions and one showing the foetal heart rate. With the print-out the midwife can assess whether the contractions are Braxton-Hicks contractions (false labour) or true labour contractions[29].

[29] During the birth of my son my girlfriend and I encountered the CTG technology in the process of assessing the state of the birth. Convincing my partner and me that we should go home rather

Both The Water Break Tampon and the Contraction Game assume that the pregnant women need more information in relation to when the actual birth begins. The pregnant woman often reads a lot about how different kinds and degrees of pain reveal something about where in the labouring process you are, but that is not necessarily enough. There is a vast amount of data, relatively easily accessible, on the different hospitals' websites about the physical indications for entering the actual birth stage. It is the specific data about the specific birth and pregnancy that is missing in the calculation. The argument as it was put forth during the workshop is that the woman can only sense the contractions and has to interpret their relevance. Sometimes women are not sure whether a specific sensation of pain is a contraction or not, and cannot with certainty tell herself or the midwife whether she is having contractions. Hence a rhythm of contractions can be difficult to establish. The textbook is unambiguous, but it is hard for the woman to follow it, as the following quotation indicates:

> Reading the midwife textbook, it says that when you have contractions for three hours with a regular interval of five minutes, and they last for a minute and a half, then you're three centimetres open. It is when it bites and is so painful that you don't have any doubt. But when you haven't tried it before, then you don't know whether it is menstrual pain that you think is *sooo* painful. (Managing Midwife at Hospital X, workshop)

It can be argued that there is a difference between women who are giving birth for the first time and women who have done it before. Experienced pregnant women have of course a better notion of what a contraction is than first-time pregnant women. But in the acute situation it can be hard to remember the details from the last time. Additionally, it must be noted that births vary, also for the same woman. Thus experience is not necessarily enough to avoid the feelings of insecurity.

The last idea that was given shape during the workshop was the one that had existed in our discussions at the meeting with the hospital from the beginning,

---

than stay at the hospital, a midwife ran a CTG and used the print-out as a reference for the true state of the birth.

namely The Intelligent Nappy. In relation to the distinctions framing the ideas materialised at the workshop, The Intelligent Nappy belonged to The Auxiliary Central. It would alert the parents and the hospital if the baby is suffering from jaundice. It was also suggested that the nappy should be equipped with a thermometer enabling it to alert parents and hospital in cases of high fever. Finally, the nappy could alert parents and hospital in cases of dehydration. In addition to the nappy itself the idea, as it materialised during the workshop, also entailed a "home station" which would communicate with the nappy through RFID-technology (Radio-Frequency Identification) and with the hospital by means of the Internet. Finally, a baby monitor was designed as a supplement to the home station. The rationale of The Intelligent Nappy is that parents should not worry needlessly. Supposedly parents and socioeconomically advantaged women, as argued above, trouble themselves and the health care services with trivialities thus taking up limited resources available at e.g. the hospital.

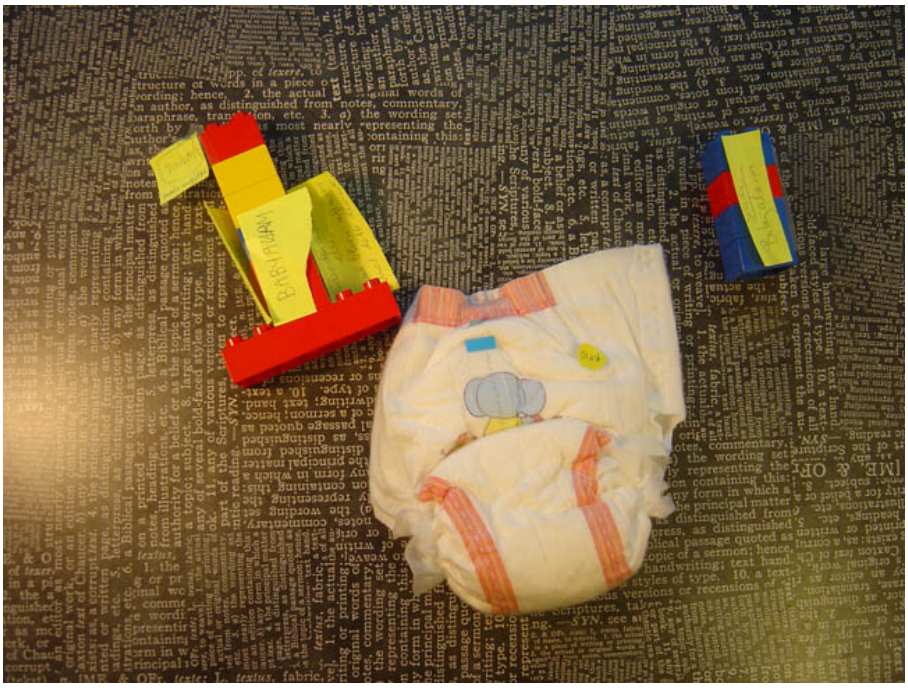


Figure 5.6: Mock-up of The Intelligent Nappy including the home station and baby monitor

The materiality of the mock-ups played an important part during the workshop, as it inspired new directions for the design. In relation to The Intelligent Nappy the physical nappy generated a discussion about where the detecting chip should

be located which differed for boys and girls. Because the home station and baby monitor where built with LEGO bricks it inspired a participant to connect the two, which started a discussion about possibilities for implementing the bilirubin monitoring in technology that most parents already posses. Another of the many examples of how the *material mattered* (Eriksen 2006) in the design situation is the shape of the baby monitor that inspired a participant to use it as a mobile phone, which initiated a discussion about when and how the parents would contact the hospital in case of the device detecting possible jaundice. A participant pointed out during a break that it is really constructive to "think things through with the things [the material]".

At the very first meeting we had with the management of the ward we also discussed the possibilities of including the father as an active actor in the network as well as their ambition to monitor the newborn babies was introduced. The latter issue was briefly discussed but never materialised and thus not taken any further. The former issue was connected to The Contraction Game, as it was suggested that the soon-to-be father could play the game while the labouring woman could try to relax. This way the role of the partner would be strengthened. Also The Intelligent Nappy was suggested as a technology that would make the father more active because there was an outspoken belief at the workshop that men generally liked electronic technology and monitoring.

At the end of the workshop we promised to summarise the day's activities on the basis of the videotapes and the mock-ups. It was not however, before March 2007 that they got a catalogue of ideas, which I made. This catalogue included all the different materialisations of ideas that had happened during the collaboration with Hospital X and during a workshop held with pregnant women who were not related to Hospital X.

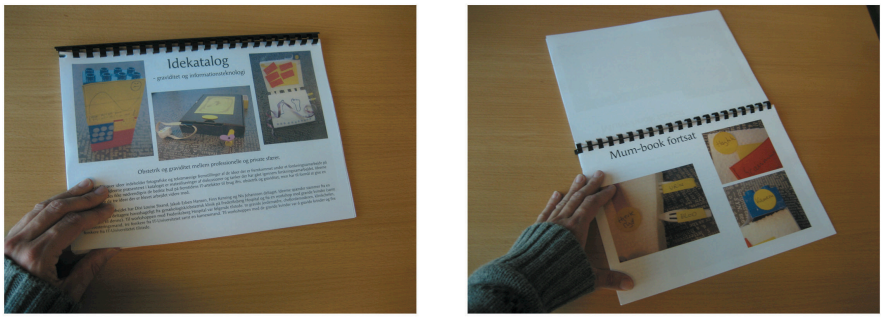


Figure 3.4: Pictures of ideas catalogue (see Appendix B for the actual catalogue)

After the workshop the collaboration with Hospital X faded somewhat in intensity. One of the researchers quit her job and left the project, I focussed mainly in my empirical work on the EMR Project and the last researcher associated the collaboration with Hospital X was not actively engaged in the empirical work at this point either. We did try to formalise the collaboration by making the hospital sign a project description, which we believed would make us all commit to the project. A number of juridical and technical issues allegedly discouraged the hospital from signing the document. During the period we held a few meeting discussing the future of the collaboration and most prominently The Intelligent Nappy although I stated that my focus was on the prenatal issues. We considered the collaboration had withered away when the manager of the ward contacted us again in January 2007. Due to restructuring of the hospitals in Copenhagen Hospital X and Copenhagen University Hospital should merge their obstetric wards. Because of this the hospital needed to establish an overview of their activities and wanted to get a copy of whatever written material that existed in relation to the collaboration (from e-mail from manager of the ward). We decided to hold a meeting where they got the ideas catalogue that I had produced. The meeting took place in the beginning of March 2007 and included the manager of the ward, the managing midwife and two researchers from the IT-University including me. They got the ideas catalogue and were shown posters of three refined designs, which they were very positive towards (the refined designs were part of an experiment which will be discussed in Chapter 10). They later got the ideas catalogue as a digital file, which they put on the website of the Innovacenter. At the meeting they invited us to appear at an upcoming open-house event to show the three refined concepts to the public. I

took up this invitation and the open-house event went well but was the last contact between the researchers and the hospital.

It never became evident why the project description was not signed but it is clear that the ward had different interests than the researchers had. The coordination of these interests did not occur smoothly which resulted in longer periods without collaboration and the very uncertain ending. At the workshop there was a lot of enthusiasm and the participants talked about patent rights and awards for brilliant new innovation in a cheerful and optimistic tone. This is a contrast to the diffuse effacing of the collaboration. We initially managed to attract the interest Hospital X because of our research on maternity care and IT and probably because of our employment at the IT University. They managed to attract our interest with their medical specialisation and their interest in reconfiguring maternity care. The particular coordination of interests, negotiations and necessary translations did, however, not occur.

5.3 Lessons Learnt from the Accounts

The two accounts given differ in character because the first about the EMR Project is about a large initiative with many people involved, and the second about our collaboration with Hospital X is not only smaller in scale but also more an insider's reflection than an outsider's view.

In the EMR Project an important and seemingly straightforward issue is whether or not the project was a success or not. Because it ended prematurely and was not spread out to the remaining counties it seems obvious to judge the project as a failure. Representatives from sundhed.dk on the other hand has referred to the project as a success because it provided valuable insights about what it takes to create an EMR or another record for supporting shared care in relation to chronic illness. Taught by experience sundhed.dk decided after the project that that kind of project was not something that they should engage in, in the future. A representative from sundhed.dk, who acted as project manager through the last part of the EMR Project, explained at the final meeting in the Funen project group that they had done what they could do and now it was free for other health care authorities to take up the idea and go ahead with it. It is not my agenda here to determine once and for all whether or not the EMR

Project was a failure in general but compared to the initial ambitions stated in the project material and in documents about the national health portal in general it did fail. Not only did the EMR fail to provide the basis for a generic model for chronic diseases but it also failed to function as intended in relation to maternity care.

An aspect that influenced the project greatly was the diffuse character of management throughout the project. The project manager of the general project not only changed several times, but the organisation employing the manager also changed. One of the companies from the provider consortium initially managed the project and later sundhed.dk took over and carried the project to the end. At one point the provider consortium even hired an external consultant to manage the project. A number of people involved in the project were also somewhat confused about the difference between and competencies of the different project groups. It was not always clear who could decide what. It also proved problematic during the pilot run to align the work and interests of the participants because they belonged to organisations that differed not only in names but also in character. There was a big difference in the motivation for the GPs and the health care professionals at the hospital to be a part of the project. The staff at the hospital, including the midwives at a facility located at another place, were told by the management that they were parts of the project and had to use the EMR along with the many other IT systems recently introduced. Whereas the GPs as *top-tuned billing machines* (as characterised above by a consultant) decided to be part of the project because they saw a competitive advantage in either becoming more efficient or by being on the cutting edge (as a GP participating in the pilot run explained as the reason for joining the project. The different project groups consisted of different representatives but had ultimately no decisive power to enforce certain necessary decisions. The GPs could choose to leave the project at any time they wanted to (as one of the medical centres also did). The sundhed.dk organisation existed as a subproject under Danish Counties (now Danish Regions) and the people employed got the paycheck from here. This might initially position Danish Counties as the deciding and managing power, but they had outsourced this power in relation to the project to sundhed.dk. Additionally, there were the local counties that proved to be influential. It was Frederiksborg County (specifically The Health IT steering committee) that formally made the decision to exit the project. One might think that The

National Board of Health ultimately was the deciding power because it is closely related to The Ministry of Health and Interior (now Ministry of Health and Prevention). However, as a consultant stated: "The National Board of Health is a giant paper tiger, they have the right to say a lot and absolutely no power to enforce it anywhere" (consultant from the provider consortium, interview).

The lack of clear direction and management was problematic for the project, but something managed to hold it together and carry it a certain distance. This something also made many and quite diverse interests into a singular project. That the project got started at all is an achievement that did not come by it self, rather something connected the diverse interest into one project. To find this something we have to look at the account given above about the specific interests and reasons for why people involved themselves and their institutions in the EMR Project as well as how these developed during the course of the project. The various interests mentioned as reasons to take part in the project included seeking to establish a generic model for chronic illnesses, improving efficiency, quality assurance, digitalisation of health care services and lastly to make the pregnant woman benefit from either better coordination of activities around her or by making her more active in the care. These interests correlate with some of the central aspects in the collaboration with the maternity ward at Hospital X. The first aspect, the generic model, was not particularly related to any of the aspects that came up during the collaboration with Hospital X because our discussions revolved around their medical specialisation, namely obstetrics and midwifery. The ambition to increase efficiency in the EMR Project was very much present throughout the collaboration with the maternity ward. To focus on providing socioeconomically advantaged women with technology so they could take care of themselves was fundamentally about saving resources that could be allocated for something better (women who actually needed them). Assuring quality was also an important aspect, but perhaps in another way than in the EMR Project. In the collaboration with the ward quality assurance was not related so much to ensure that the health care professionals would live up to certain standards for quality in their work but more about a general assurance of quality of care. An example that illustrates this comes from the designs developed at the workshop, which were about detection. Sensing and communication technology should ensure that pathologic conditions were exposed and subsequently dealt with. The interest in digitalising health care services expressed by

some of the people involved in the EMR Project was a pivotal point in the collaboration with Hospital X. A reason for this was the ward's close affiliation with the Innovacenter which focussed specifically on new technology. The final interest extracted from the empirical data about the EMR Project was the ambition to make the pregnant woman benefit from the EMR, as either active part or passively by better coordination among the health care professionals. Through the collaboration with the maternity ward there was an explicit focus on activating the pregnant women (and at some point also their men). Or more specifically, it was about activating a certain kind of woman considered to be the typical representative of the generation who currently comprise the majority of pregnant women.

The EMR Project and the collaboration with the maternity ward at Hospital X shares on a general level the medical domain of maternity care and the orientation towards changing the current practice. And also on a more specific level do they resemble each other regarding how maternity care should change. This is not coincidental as they are both situated within a Danish health care arena and none of the two initiatives exist cut off from the rest of Danish maternity care. They are not identical, however, since the specific actors are not the same and the specific connections and interests differ. Formally, they are both obliged to adhere to the guidelines of The National Board of Health and informally they participate in some of the same discursive arenas. Again, this does not mean that they are the same, but rather than pointing out how they differ, I will focus on what is shared between the two initiatives

The three first interests described in relation to the EMR Project (the generic aspect, improving efficiency and assuring quality) are all related to standardisation. The generic aspect relies on the assumption that there is something going through the different selected conditions that can be dealt with the same way. This assumption is hard to disagree with, as numerous aspects in relation to the different conditions today are dealt with the same way (many of the communication technologies and channels are the same, consultations with GPs are structured the same way etc.). The assumption, however, also entails that more aspects could be treated the same way, which calls for further standardisation. The Second interest expressed in relation to the EMR Project was to improving efficiency, which relied on one specific way of doing things. Instead of health

care professionals doing things differently there should be one standardised way of doing it. To assure quality is usually considered an admirable ambition but one can question the means for doing it. The way that the EMR was supposed to assure quality (see above for a discussion of whether it succeeded) was to standardise the exchange of data. To make midwives able to read what the GP record the EMR had specific fields and the data was typed in electronically. This standardises the form and content of the text. The three first interests in relation to the EMR Project not only share the aspect of standardisation as the fundamental method but also a specific way of reaching standardisation. Many aspects of maternity care are standardised through time and various spatiotemporal constrains and affordances, but these three interests rely on externalisation as central to the standardisation practice. A standard existing between the health professionals serves to ensure that different chronic illness (here including pregnancy) as being dealt with equally, to improve efficiency and to assure quality. I will in the following refer to this through going logic as *The Logic of Standardising through Externalisation*.

Before continuing I have to make a few points about the term "logic" clear. With logic I designate the rationale existing in and through practice. This use of the term differs from the philosophical discipline bearing the same name, which in Mol's understanding "seeks to formulate the rational rules for reasoning: rules for deductively drawing justified conclusions from initial premises" (Mol 2008, p.100n14)[30]. If I had drawn on the philosophical discipline this could leave the reader with the understanding that by logic I mean that practices are coherent and possible to grasp through its logic. This is not the case. My use of the term does not differ substantially from that of Annemarie Mol in her book Logic Of Care (Mol 2008). Mol has taken "the term 'logic' and r[u]n away with it" in order to distinguish between the rationale of practices of care and choice, respectively (Mol 2008, p.8). In her use of the term there are affinities between it and the concepts of "discours" and "modes of ordering." The former, associated with Michel Foucault and the latter with John Law, are, however, not adequate for Mol, as her "concern is not with the ways in which socio-material orderings come into being and establish themselves, nor with the power involved with the process" (Mol 2008, p.8). For Mol, and me, logic is about what is appropriate or

[30] Or as Lemon defines it: "the study, by symbolic means, of the exact conditions under which patterns of argument are valid or invalid" (Lemmon 1998)

logical to do in some site or situation, and what is not. It is, however, not something that is explicit, written down or otherwise articulated. Logic is "embedded in practice, buildings, habits and machines (Mol 2008, p.8). Talking or writing about it, like Mol does, and I am about to, requires translation. It also requires a particular treatment of empirical data, as Mol writes:

> I have treated my materials in the same way chemists do when faced with a mixed liquid. They distil it in order to separate out the various components. In a similar way, I have separated out 'good care' from messy practice. In real life, good care co-exists with other logics as well as with neglect and errors. Here, I have left out such noise in order to distil a 'pure' form out of mixed events. Something coherent, something that could, for as long as it lasts, indeed be called a *logic*. (Mol 2008, p.10, original italics).

What I above referred to as interests in relation to the EMR Project and in the collaboration with Hospital can for analytical purposes be described as logics. The term interest designates the particular connection emerging between actors and the logic (inter-esse=between-being), and is still relevant. In relation to the EMR Project and the collaboration with Hospital X I am interested *the ways in which socio-material orderings come into being and with the power involved with the process*, and do therefore not use the term logic to describe what these are about in general. However, in trying to understand why the EMR Project and the collaboration with Hospital X developed how it did, I will use the term logic to deal with the particular interests that were involved.

The fourth interest was the digitalisation of health care services, which existed both in the beginning of the EMR Project and during the pilot run and also, and in particular, in the collaboration with the maternity ward at Hospital X. This ambition to digitalise health care services generally relies on an assumption that digitalisation will improve things. On some occasions however, there might be more specific reasons for promoting digitalisation. At Hospital X, The Innovacenter might have held the assumption that digital technology would improve health care services, but the centre also related to digitalisation on a more intimate level, as it's *raison d'etre* was promoting and developing new technology. This only makes sense because there exists a through going logic that relates progress to IT. I will in the following refer to this as *The Logic of Seeing Progress through IT*.

The last interest discussed in relation to the EMR Project is the ambition that the pregnant woman should benefit either from being an active part or through improved collaboration between the health care professionals. The latter aspect relates to standardisation in the sense that it was mostly due to uniform means of communication that the health care professionals would increase their awareness of the other health care professionals' work. The assumption was that through standardisation, every health care professional involved would have improved informational resources for doing her/his job. The former aspect and way for the pregnant woman to benefit from the technology was central in the beginning of the EMR Project and gradually written out of the project due to technical and economical reasons. The ambition remained, however, and it continued to be associated with the care related to chronic illness. Activating the pregnant woman was a key issue in the collaboration with Hospital X. The idea was that she could perform a lot of the work that they at the ward currently performed. Part of the reason for this argument is that the health care service should focus their resources on women who actually need them, but it was also a clearly expressed assumption that pregnant women would gain from being activated. This assumption rested on the idea that pregnant women are very interested in their condition and generally wish to be able to do more in relation to this. The argument put briefly is that by making the pregnant woman an active centre in the network constituting maternity care, resources will be added to the network and the pregnant woman will benefit from becoming part of something she had previously been held out of. I will in the following refer to this a *The Logic of Centring the Citizen, Patient and Pregnant Woman.*

Before dealing with these logics I will turn to the second theoretical reservoir in order to provide my understanding of the character of these logics.

Chapter 6

Theoretical Resources II – Performativity, Regularity and Contingent Processes

6.1 Performativity

In relation to telling a story about the TSR2 aircraft, or stories as he prefers, John Laws argues that they do not just represent the aircraft but also help perform it:

> [T]elling stories about the world also helps perform that world. This means that in a (writing) performance reality is staged. And that staging ensures that, everything else being equal, what is performed is thereby rendered more obdurate. More solid, more real than it might otherwise have been. It becomes an element of the present that may be carried into the future. (Law 2002, p.6)

Since a story connects to reality it is also able to change reality without having to establish dubious links between different ontological realms. A performance is a particular staging of something that involves a particular collection of heterogeneous actors. A discourse, a description, a story, an instruction, a statement and other linguistic elements might all be performative in the sense that they are able to "make a difference" (Law 2002, p.39) in the sense that it "is not about creating but about making happen" (Callon 2007, p.327). The linguistic elements are, however, not, as explained, above or underneath the world, but rather in it. And for a linguistic element to work in the world, that is to perform, it needs to be enacted. In Callon's text on econimcs and performativity he uses "socio-technical *agencements*" to designate the relation between statements and their worlds (ibid., p.319). He uses the French term agencement, which he takes from

Deleuze and Guattari, to designate an assemblage of heterogeneous elements that have carefully been adjusted to one another, where the statement and the world exist in the agencement. Deleuze and Guattari's French term is often translated into "assemblage" or "arrangement", which Callon as a post humanist argues could imply the problematic aspect that human agents have arranged or assembled non-human elements. In explaining what a statement can do and how linguistic elements are performative Callon refers to how operating instructions to VCRs are part of the device and participating in making it work (ibid., p.319). The instruction instructs and thereby acts. It is not a merely stating something redundant but actively participating in making the VCR function. The instruction is, however, not a performance in itself. It is only if the user does not know how to use the VCR and includes the instructions in the performance. Callon uses in his recent work on performatvity and economics the word *performation*, which he defines as the following:

> We can agree to call *performation* the process whereby socio-technical arrangements are enacted, to constitute so many ecological niches within and between which statements and models circulate and are true or at least enjoy a high degree of verisimilitude. (Callon 2007, P.330)

As the earlier quotation from Law hinted at, a performance is a *particular* staging of reality. Something is left out or not staged. In Law's book on the TSR2 military aircraft he stages reality in a particular way (or ways), and in doing that he draws on other particular stagings of the world. He argues that an object (e.g., an aircraft) is not just there, it needs to be performed as that particular object (*the* aircraft). Like the aircraft, the project working on developing it did not exist in itself. Numerous activities needed to be narrated into a project and thus performed as a project (an issue I will go into in first part of Chapter 10).

Law and Vicky Singleton make a similar point, but in a more concrete sense elsewhere by referring to Singleton's son who plays with a tractor. For a farmer having to plough a field, the material entity, which Singleton's son plays with, is not a tractor in the sense that it is a wreck that does not work. For the young child, however, the material entity is a tractor in the sense that it works for him and his play, which of course differs from that of the farmer (Law & Singleton 2000, pp.770-771). As Callon notes, the question is not so much whether some-

thing (e.g., an economic equation) is true but how it performs. However, things do not work by themselves, rather "[f]or something to work takes work: a performance" (ibid., p.771).

The American feminist Judith Butler is often associated with the notion of performativity and makes a similar point when she argues that gender is performed rather than naturally given. Rather than seeing gender as naturally given and modifications of it as artificial Butler states that: "If the 'reality' of gender is constituted by the performance itself, then there is no recourse to an essential and unrealized 'sex' or 'gender' which gender performances ostensibly express. Indeed, the transvestite's gender is as fully real as anyone whose performance complies with social expectations" (Butler [1990] 1999, p.527). Gender, like aircrafts and atherosclerosis, is not just there, but has to be performed.

Annemarie Mol's argument for atherosclerosis as a multiple object is built up around the ideas of performativity (Mol 2002). She does, however, object to Butler's conception of performativity because it does not, according to Mol, take into consideration the agency of the materiality (Mol 2002, pp. 38-39). She also prefers to speak of *enactment* rather than performance because the latter term inherits the Goffmanian idea that there is a backstage behind the stage on which the performance is enacted (ibid., pp.35, 41). Both her points are valuable and when I below write about performativity it is well known that performances must be enacted through sociotechnical agencements and there is no backstage-reality superseding the stage. Mol also reminds us of the appropriate connotations that the word performance, which include script and props (Mol 2002, p.32). This means that there are different heterogeneous entities on the stage performing where some are more visible than others (actors, actresses, props, lightning, costumes, music, script). Law uses performativity, performance and enactment where Mol insists on enactment and Callon tends to prefer performation. Although I acknowledge their respective reasons for using the different terms, I find it difficult to see any fundamental differences in their use. I will use performance and performativity although I am aware that both terms have been used differently than here (e.g., in Goffman 1959). Saying that atherosclerosis is multiple relates to Mol's emphasis on practice as it means that the illness is not something inside the leg of a patient, it is how it is being performed. This way she also disregards the idea of perspectivalism as it leaves the object untouched (Mol 2002, p.12). In order to engage with practice and not positions of actors,

inaccessible objects and dubious links between them, she argues for studying how different versions of atherosclerosis are enacted. Mol's argument for multiplicity is very much in line with Law's study of different performances of the TSR2 aircraft. In relation to pregnancy, this means that we must turn our gaze from the object inside the pregnant woman and different perspectives on it to how pregnancy is performed in practice. In this dissertation I therefore consider performances of maternity care rather than what it is for differently positioned actors. It is not the ambition of Law merely to show that the singular really is multiple and leave it at that. Specifically, he argues against this debunking business and looks at how the multiple is being related and made into singular (Law 2002, p.15).

Performance is, as argued above, an element of the present that might (or might not) be carried into the future. A performance, to the extent that it works, affects future performances when it affects something else. However, a performance on one stage cannot just be moved to another stage and still be the same. Even if the main actors are the same, many other and less visible actors probably are not, and the stage definitely is different. In this way experiences of what works and what does not work have to be translated. The way in which a certain prop works on a particular stage, to stay in Mol's terminology (Mol 2002, p.32), also changes because it only works with that stage and its different entities. If the prop is transferred to another stage it is, like technology in the terms of ANT, translated. This means that when reality changes, which I believe it is fair to say that it does, it does so through the different performances. If we were to stick with the representational idiom where statements refer to reality with more or less accuracy, changes of reality would have to happen in another realm than that of statements, e.g., on a backstage. Following Andrew Pickering, however, the performative idiom allows us to study how statements and other performances come to work, which, if we had stayed in the representational idiom, would have cut off from doing. (Pickering 1995).

As Haraway taught us above (in the beginning of Chapter 2) in relation to sports journalism, we have to look at practice in order to understand practice. This sounds simple, almost stupid, but it is nevertheless not always the way the social sciences, for example, conduct their inquiries. Sociology is too often concerned with sociological rules and models that precede and determine practice; psychology is too often concerned with cognitive capabilities and emotions; and the

humanities are too often concerned with the human interpretational apparatus interpreting reality. Whether these branches of the social sciences focus on the individual human being or on the relations that exist between them, they all too often look for something that precedes and causes practice. This focus on practice is not only expressed in recent STS literature but also in the writings of Nietzsche. In *On the Genealogy of Morals* he criticises popular morals for always looking for a subject behind the deed:

> For just as the popular mind separates the lightning from its flash and takes the latter for an *action*, for the operation of a subject called lightning, so popular morality also separates strength from expression of strength, as if there were a neutral substratum behind the strong man, which was *free* to express strength or not to do so. But there is no such substratum; there is no "being" behind doing, effecting, becoming; "the doer" is merely a fiction added to the deed – the deed is everything. (Nietzsche [1887] 1989, p.45, original "", and italics)

Nietzsche calls for focussing on the deed, which is, as he states, "everything". The deed can, in my reading of Nietzsche, be seen as the performance. So, following my reading of Nietzsche, the performance is everything. Performances need sociotechnical agencements including for example subjects and objects, the deed/the performance is not subjected to these. There is no reason to go looking for a substratum or backstage, whether it is thought to be in the individual (as psychology and the humanities too often do) or between individuals (as sociology too often does). In individuals and between them there might exist many interesting strata, but none of them are axiomatic in the way that they should be the foundation for other strata and thus somehow be more real.

A part of Callon's text on performativity and economics is called "Performativity: Truth as Success". This title elegantly expresses what has been argued for so far, namely, that what counts is what works. This might lead to the kind of criticism that ANT has been exposed to from feminists, which revolves around the argument that the accounts produced through a performative approach only tell the stories of the winners and thus express a Machiavellian attitude (Star 1991). This is true to the extent that one forgets that it could have been otherwise. As Law argues, a performance is a particular staging of reality, which means that there can be others. Things that could have happened, but did not, as they were not performed have never been real. Seeking elsewhere than in reality is akin to the Christian morality so heavily criticised by Nietzsche. When

the Christian is dissatisfied with the development of her/his life even though s/he lives up to the Ten Commandments, s/he finds comfort in the fact that the after-life will be sweet and that the people around the Christian who are happy without obeying the Ten Commandments will burn in hell. Nietzsche argues that such comfort makes it impossible to acknowledge reality and take responsibility for one's actions and their consequences (third essay in *On the Genealogy of Morals*, Nietzsche [1887] 1989). Criticising performative accounts for not dealing with anything but what has happened is thus a move away from focussing on practice. Telling stories of what works is not the same as not wanting it to be different. It is indeed the strength of the performative approach that it is activist and produces tools for reconfiguration. Change is not only in the hands of the researcher or practitioners; it relies on both sides (to the extent that we can talk about sides here). The following quotation from Callon, which ends his text on performativity and economics, explains this in a more eloquent way:

> We no longer have to choose between interpreting the world and transforming it. Our work with the actors, is to multiply possible worlds through collective experimentations and performations. (Callon 2007, p.352)

6.2 Regularity

Performances are not unrelated events happening by coincidence. Neither are they determined by underlying or transcendent rules. Several STS scholars have discussed and employed theories of performativity. How different performances distributed in time and space are related is, however, rarely the topic of STS studies. Law acknowledges that STS and Foucault share a lot methodologically but states that they differ in their empirical scope (Law 2004, p.35). According to Law, Foucault argues that the modern episteme still produces conditions of possibilities at the beginning of the 21st century, at least in relation to how one might understand science. STS (here Latour and Woolgar are mentioned) start on a smaller scale. Law's distinction is somewhat harsh and does not acknowledge the work done by Foucault in establishing the modern episteme and, more importantly, how it does not exist alone but in co-existence with other technologies, epistemes and dispositifs. Law's distinction is, however, useful as long as we do not take it too literally. STS scholars (such as Latour and Woolgar

whom he mentions, but also himself in, for example, Law 2002) are concerned with producing more ethnographically inspired reports from a site where Foucault seeks to understand what connects the different sites through time by describing a general and thoroughgoing societal logic such as the modern episteme. My study is situated within STS but I use Foucauldian thoughts on regularity to understand how certain performances are related to others. I do start with the local and have no ambitions of installing a new societal logic, which my empirical data should only serve to prove, but I do wish to study the logic with which the two change initiatives come into being.

A place to look for how regularity is constructed in and through practice is found in the works of Michel Foucault and Gilles Deleuze (sometimes together with Felix Guattari). It has in particular been Deleuze who with his lecture "Qu'est-ce qu'un dispositif?" in 1988 (Deleuze 1989) and his book "Foucault" (Deleuze 2004) has turned public attention to the *dispositif* as a central term that transverses the writings of Foucault. The idea of the dispositif as something that Foucault has been occupied with throughout his work is somewhat controversial because it is not in line with Dreyfus and Rabinow's book *Michel Foucault, Beyond Structuralism and Hermeneutics* (Dreyfus & Rabinow 1983), which has had a very strong influence on the reception of Foucault in the English-speaking world (Raffnsøe & Gudmand-Høyer 2005, p.153). Dispositif is a French word, which is impossible to translate accurately into English (which is one of Dreyfus and Rabinow's reasons for not dealing seriously with it, ibid., p.153), but often referred to as *apparatus*. The dispositif is a through going logic that is constructed in and through practice. It makes certain actions more likely than others, but never determines them because it always works together with other dispositifs. In relation to specific practices, the dispositif is a prescriptive element that affects practice. Foucault (2007) argues in *Security, Territory, Population – Lectures at College de France 1977-1978* that there exist three modalities of dispositifs: dispositifs of the law, discipline and security (Foucault 2007). He emphasises that though it is tempting to see them as succeeding each other, they usually work together and sometimes even rely on one another. The idea of dispositifs as regulatory types of logic that exist in and through practice rejects the naive realist stand as well as the social constructivist. Regularity is something that is created in practice and is continually adjusted through "the small tremblings" that occur when different dispositifs collide in practice (Raffnsøe & Gudmand-Høyer 2005, p.162). Regularity is not something that is behind or beneath prac-

tice as a natural law or above in a realm of ideas. But there is regularity in practice as everything is not equally likely to happen and not everything is possible.

For Deleuze regularity is an immanent achievement reached through the work of assemblages and machines. That is contrasted with the "specifically European disease" of transcendence (Deleuze & Guattari 1988, p.18) that runs through Western thought, which views regularity as pre-existing in a transcendent realm and somehow orders practice. An emphasis on immanence runs throughout the numerous concepts that the philosophy of Deleuze, partly with Guattari, produces. Deleuze and Guattari insist that the dynamic place is in the middle, between things: "The middle is by no means an average; on the contrary, it is where things pick up speed" (ibid., p.25). Deleuze's insistence on being *between the things* is inspired by the thoughts of Foucault (and vice versa). I believe that the Foucauldian concept of the *dispositif* expresses how Foucault, and Deleuze through his commentaries on the concept, put emphasis on practice and denounce the realm of the transcendent.

So regularity is something that is constructed and continuously reconstructed. The changes do not just happen as if they were unrelated and did not refer to anything. The logic by which these changes occur is created through practice, or as a Deleuzian reading of Foucault would say, through singularities (Deleuze 2004). So in order to understand how the change practices of the two initiatives exist and what they entail, we have to have an historical attitude. This is also what Foucault argues for when he calls for a "history of the present" (Foucault 1995, p.31). In Rabinow's understanding of this famous Foucauldian term, the goal is to "identify[...] apparatuses [dispositifs]" and "to trace their emergence, and thereby to make them available for thought and change" (Rabinow 2003, p.55). Dispositifs transverse different societal institutions but this dissertation is merely reflecting upon two change initiatives. This means that the conception of change and regularity that is entailed in the notion of the dispositif and the wish to make the report available to thought and change will remain, but Rabinow's suggestion to uncover the history of the specific dispositifs will not. Before turning to the question how to study the three logics in light of Foucault's dispositif, but without the same focus and without using the actual term, I will make the discussion about change and regularity more concrete by relating it to birth and maternity care. I will do this by telling a story about how birth and pregnancy have changed throughout history. As discussed in relation to perfor-

mativity, pregnancy is related to maternity care in the way that a pregnancy consists of the performances of it. There is no pregnancy behind (or inside) the practical performances. So understanding how birth and pregnancy have changed, we need to look at how pregnancy and birth performances have changed. It is of lesser importance that throughout the tale there has been a foetus inside the woman compared to how this foetus has been manifested in practice. Although the topic for this dissertation concerns maternity care, i.e. neither pregnancy nor birth, both are necessarily entailed in maternity care. The following history serves to concretise the theoretical argument about change and regularity as well as to relate it to the topic of this dissertation. The tale is neither supposed to be an authoritative account of birth and pregnancy in general nor to constitute the specific Danish history of maternity care, as neither is the subject of this dissertation. Instead, it consists of five examples of how birth and pregnancy have not merely been dealt with differently but been different in and through their performances.

Example (a)

Before midwifery during the 17th and 18th century was formalised and modern medical science became engaged in non-pathologic births and pregnancy trajectories, maternity care was largely independent of professional approaches. An older woman with experience in these matters was usually present at a birth. The older woman would offer advice, massages, potions, irrigations and talismans, and the other women present would help by giving the woman physical and emotional support (Marland 1993).

Example (b)

Around the middle of the 19th century, when midwifery became regulated through schools and formalised training, birth and pregnancy came to include an actual midwife. Men, however, were only included in the work in so far as it was not directly related to the actual birth. Men would ease the domestic workload by taking upon themselves more chores (d'Harcourt & Fontanel p.28).

Example (c)

During the 18th century modern medical science established itself throughout Europe (Foucault 1994). As a part of this, obstetrics became focussed on non-pathologic births, whereas the interest of medicine previously had been limited to cases where complications were involved. An infamous example of this approach to birth and pregnancy is

> Joseph DeLee (1920), who argues for treating the symptoms of birth and pregnancy as equal to illness and accidents. This view had been contested (most famously by Dick-Read [1959] 2004), but in practice birth and pregnancy practices came to include a whole new range of knowledge and material artefacts. The hospital also replaced the home as the typical place of the birth.
>
> Example (d)
>
> Whereas birth and pregnancy previously involved only women, and later male obstetricians, the equality campaigns of the 1960s and 1970s drew many of the expecting fathers into the work related to birth and pregnancy. Consultations with the midwife and the GP and appointments at the scanning centre came to involve the man as well. Figuring out what, and especially what not, to eat, practising breathing and generally preparing for birth have become parts of the man's work.

6.3 Contingent Processes

Isabelle Stengers seeks in "The Invention of Modern Science" to understand the formation of modern science (Stengers 2000). In doing this she draws in particular on the chapter "Geophilosophy" in Deleuze and Guattari's "What is Philosophy?" (Deleuze & Guattari 1994). They argue for an approach than includes *geography* and not only *history* when seeking to describe the development of philosophy as a discipline. As usual with Deleuze and Guattari their use of terms like geography and history is quite specific and not really explicated. A reason for this might be that in order to understand the terms one needs to see how they function. Without wanting to, or being capable of, give an authoritative account of the Geophilosphy of Deleuze and Guattari; I understand geography as contrasting history, as the former is about contingency. Consider the following passage from Chapter four, "Geophilosophy", in "What is Philosophy":

> Geography wrests history from the cult of necessity in order to stress the irreducibility of contingency. It wrests it from the cult of origins in order to affirm the power of a "milieu" […]. It wrests it from structures in order to trace the lines of flight that pass through the Greek world across the Mediterranean. Finally, it wrests history from itself in order to discover becommings that that do not belong to history even if they fall back into it: the history of philosophy must not hide the fact that in every case the

> Greeks had to become philosophers in the first place, just as philosophers had to become Greek. "Becoming" does not belong to history. […] Philosophy cannot be reduced to its own history, because it continually wrests itself from this history in order to create new concepts that fall back into history but do not come from it (Deleuze & Guattari 1994, p.96).

History needs geography when one tries to understand how new concepts are created. However, [w]ithout history, becoming would remain indeterminate and unconditioned, but becoming is not historical" (Deleuze & Guattari 1994, p.96). Deleuze and Guattari seek to understand why philosophy appeared in ancient Greece, and for that they need the unhistorical geography, and argue that the appearance "[w]as a result of contingency rather than necessity, as a result of an ambiance or milieu rather than origin, of a becoming rather than history, of a geography rather than historiography[…](Deleuze & Guattari 1994, pp.96-97). Where history insists on necessity, geography insists on contingency. The milieu is not merely a context for history to manifest itself in. Neither is context, however, everything. Philosophy did not appear in ancient Greece *because* the milieu favoured the philosophical thought just as capitalism did not appear in the West *because* of the context. This would render philosophy in ancient Greece an extension of the city-state and capitalism an extension of Western democracy. But the philosophy was no friend of the city just as modern philosophy is no friend of capitalism, it is actually what saves philosophy according to Deleuze and Guattari (Deleuze and Guattari 1994, p.99).

Answering the question about why capitalism appeared in the West and not in the third or eighth century where the necessary (according to Marx) components of "naked labor" and "pure wealth" also were available, Deleuze and Guattari say: "Because the West slowly brings together and adjusts these components, whereas the East prevents them from reaching fruition" (Deleuze and Guattari 1994, p.97). This means that becoming does not happen merely because the necessary components exist. In Stengers' appropriation of Geophilosophy she makes "contingent processes" the cornerstone. In the following quote she explains how she conceives of these.

> The idea of a contingent process excludes explanation, which would transform the description into a deduction. It also excludes arbitrariness, which would insist on the contingency only in order to affirm, in a monotonous manner, that nothing had taken place, that the constructed significations and engendered problems are all valid because

> they are all relative to their context. The contingent process invites us to "follow" it, each effect being both a prolongation and a reinvention. "The contingent recommencement of the same contingent process, in different conditions" (Stengers 2000, p.72, original quotes)

As I read this Stengers quote she takes from the Deleuzian/Guattarian Geophilosophy the point is that contingent process excludes two kinds of determinisms: contextual and transcendent. The emergence of modern science cannot be *explained* only from the context, which would be a mere deduction. Neither is the emergence of modern science arbitrary, which would render the context a mere medium, through which the process manifests itself. Instead, Stengers claims that contingent processes *invite us to follow them*. This way it is possible to singulise processes and thereby distinguish them from that which there are not. Again, this is not ascribing a deterministic power to processes, merely contingency. When contingent processes form alliances with contexts, the processes are being prolonged and reinvention occurs. Stengers quotes Deleuze and Guattari in calling this "contingent recommencement". It is precisely a *re*-commencement and not a commencement, as it is a prolongation of the process. It *is* not the process, but it is a contingent recommencement of the contingent process, which means that there "is no necessary continuity passing from" somewhere in time/space to somewhere else in time/space (the part in quotes is the text that precedes Stengers' quotation of Deleuze and Guattari 1994, p.98). Continuing my efforts to turn these somewhat abstract thoughts on contingent processes into a strategy of engaging with my empirical data, I will continue to follow Stengers:

> How, then, should we characterize the history of the modern science as a contingent process? It is not enough to speak, with Kuhn, of the contingent existence of those societies that have admitted or respected the autonomy of scientific communities. Nor is it enough to locate, with Kuhn, the contingent advent of a paradigm. In both cases, as soon as it finds the occasion of its beginning, the contingency would preside over advent of a process endowed with its own necessity. In order to avoid simply ratifying what is, I will try to interpret the ensemble of modern science, those that are and those that might be, that is, to prolong, to reinvent, "to recommence with other givens"" (Stengers 2000, p.72)

Here Stengers declares that it is not enough to follow Kuhn, because it only acknowledges context and not the contingent process. Kuhn would not help in

understanding the relation between the emergence of something new and the contingent process, which the new is a recommencement of. Where Deleuze and Guattari describe the development of philosophy and Stengers the emergence of modern science through the concept of contingent processes, I am interested in the three logics that influenced the EMR Project and the collaboration with Hospital X. Like Stengers' treatment of the development of modern science I will treat these three logics as contingent processes. I will not show every small step that has influenced the next, but rather focus on important instances of the logics through their respective development. Ancient Greece constitutes the beginning in most account of the history of philosophy, which it also is for Deleuze and Guattari. For Stengers, choosing a starting point for her account on the formation of the modern sciences is also somewhat given, as "[…] Galileo's scientific work [and] the "Galileo affair" […] constitute a quasi-obligatory reference for all narrations of the origin of modern science" (Stengers 2000, p.72), including her own. In my endeavour to give an account of the three different logics, I am less fortunate, because no "quasi-obligatory reference" exists for any of my logics. Instead, I have chosen a specific point in history in each of my accounts, which I have found particularly significant. These points are not points of origin, and other people seeking to describe how these logics have developed, may very well choose other points in history to begin their accounts. In the next three chapters I will continue Stengers' understanding of contingent processes, and take up three logics' respective invitation to *follow them*. I will do this to understand why the particular interests made sense while others did not. This is not to look for the *meta-stories* determining practice, which Haraway's father sought to avoid. The logics exist in practice and not behind practice. Or better: they are part of *the game*, not determining the game before or after it is played.

Chapter 7

The Logic of Centring the Citizen, Patient and Pregnant Woman

7.1 Introduction – Pregnant Women, Citizens or Patients?

The actors included in the networks comprising maternity processes have changed over time. When birth and maternity care became activities that needed to be controlled by the State to eradicate the quacks, the pregnant woman entered into a relation with the State via the health authorities during her pregnancy. People with that kind of relationship with the State via the health authorities are usually referred to as patients. Patients are, however, also a particular category of individuals suffering from illness.[31] During my empirical work at the maternity ward at The University Hospital of Odense in relation to the sundhed.dk Electronic Maternity Record Project, I noticed that the pregnant women were referred to as patients. Apart from the use at that site, I have often heard people, especially midwives, point out that pregnant women are not patients, as they are not ill. Whether pregnancy and birth are pathologic or natural can be discussed theoretically with reference to the literature (e.g., DeLee 1920 vs. Dick-Read 1959, as mentioned above), but in my empirical data none has expressed the view that either birth or pregnancy is pathologic as such. Though few, if any, would insist on calling birth and pregnancy pathologic, a lot of the medical work around pregnancy and the physical symptoms surely resemble the work around patients suffering from a pathologic condition. The scanning procedures, pain relief, testing of urine, measuring blood pressure, pain, heavy heartbeat, nausea, etc. occur in pregnant women as well as in many patients suffering from pathologic conditions. It is in no way my purpose here to decide whether pregnancy or birth is pathologic or whether pregnant women should be labelled patients or not, my point is simply that pregnant women to a certain

[31] Latin: pati = to suffer

extent have a relation to the State via the health authorities that resembles that of a bona fide patient.

Apart from being called patients, pregnant women are also referred to as citizens, which implies that the individual is related to the State.[32] Citizenship entails rights and obligations that have changed through history. When individuals are connected to the State as citizens, certain rights and obligations characterise the relationship, distinguishing it from that of a patient. Implications of the differences between being connected to the State as a patient vs. as a citizen will not be discussed here, but are touched upon in relation to revisiting the theoretical point of departure in Chapter 11.

The relation between the patient and the health authorities has changed during history. There have been several initiatives seeking to strengthen the position of the patient, or better "centring the patient". This term is taken from an interview with a consultant involved in the EMR Project who stated that "the pregnant women or the patients should be at the centre" (as we saw in the sentence's full length in Chapter 5). The term also appears in a text by Richard Grol where he discusses patient empowerment in terms of "placing the patient at the centre", which we shall see below (Grol 2001, p.2582). The action of centring someone or something is the work of reconfiguring relations in order to establish the patient at the centre position. This can be done by moving the patient to the centre or moving the other parts to the periphery. I have met the concept of centring the citizen, patient or pregnant woman in several places in ethnographic fieldwork. It usually has a normative dimension in the sense that the centre is regarded as a better place than the periphery and in the sense that the one actor being centred gains from this. The normative dimension of the concepts is not present in the way I perform it in this chapter. Centring as a concept in this chapter is merely an analytic tool to describe reconfigurations of relations between State, health care and individuals. Some of the initiatives I have studied have used the term centring and others have not. They have all, however, shared the ambition to centre the individual in the way just described.

In the beginning part of my ethnographic practice I experienced the logic of centring the patient, citizen and pregnant woman during the initial studies of the

[32] The Danish term for citizen is "borger", which derives from the German word Bürger. Despite different origins both the Danish and the English term originally refer to the individual's relation to the city.

Electronic Maternity Record project. As discussed in Chapter 5 it was assumed that if the pregnant woman was centred both the she and the health care services would benefit, as the quality and efficiency of the care would improve. The centring logic, as I initially encountered it, was not limited to pregnant women, as the EMR was intended to serve as a generic model for chronic illnesses. Pregnant women are not chronically ill, as discussed above, but share nonetheless some aspects with chronically ill persons. Studying the centring logic I have the 1960s American empowerment initiatives particularly influential in shaping the logic. This does not mean that The Logic of Centring the Citizen, Patient and Pregnant Woman is invented, discovered or otherwise initiated at this point. Diverse philosophical endeavours as existentialism and thoughts from the Age of Enlightenment can be argued to influence the logic in question. However, I do not intent to show the genesis of the centring logic but merely characterise it through its development.

This has led me to tell the tale of the Logic of Centring through Centring the Citizen, Patient and Pregnant Woman and its orientation towards health, emphasising the notions patient empowerment and shared care. Neither concept has a fixed meaning or essential core characteristics that can be lived out or applied in different contexts. Instead, they must enter performances with other actors, all formed by their particular development. This way both concepts have a history (or better: geography), making them able to do what they can do. And to understand what they can do, we must consider their history. Finally, I will look into centring initiatives that have not directly claimed to either share the care or empower someone, but seek centring through other terms and practices.

7.2 Centring through Empowerment

Patient empowerment has since the 1960s been a concept that has been connected to various interests and has had diverse implications. From grassroots organisations seeking emancipation to health care services seeking better compliance from patients, patient empowerment has been about strengthening the agency of the patient. Patient empowerment is connected to a larger trend of general empowerment, which, according to empowerment critic Robert Weissberg, "in the landscape of nostrums addressing contemporary problems, is ubiquitous", as it is said to "substantially improve his or her life by abandoning

passivity and embracing emancipation" (Weissberg 1999). Weissberg writes in his book, The Politics of Empowerment, about the emergence of empowerment. He is very critical of the term and often the agendas that are associated with it. His argument for attempting to devaluate the term is largely is mainly based on the fact that the term is used inconsistently though various context and is associated with different agendas. In a performative approach this is not problematic, as the term does not correspond a certain agenda or approach. On the contrary, the term gains part of its strength from being associated with different agendas. Building his conservative argument against empowerment in general, Weissberg does, however, offer interesting knowledge about various empowerment initiatives.

General Empowerment

Even though the ubiquity of empowerment can be seen as the mainstreamed and glorified realisation of the 1960s slogan "Power to the People" and is philosophically derived from the ideas of the "likes of Karl Marx, Emma Goldman, Mao Tse-tung, Mahatma Ghandi, Malcolm X, Martin Luther King", empowering initiatives are currently popular across the political spectrum (ibid., p.2). With the scope going from Bill Clinton's enlisting of federal funding to uplift and empower impoverished urbanities, through George Bush's wish to make "empowerment" the centrepiece of domestic programs to assist citizens, to Newt Gingrich founding of "National Empowerment TV", the mainstream spectrum of American politics seems to be filled. When such different actors share the ambition of empowerment the object of empowerment can't be the same. Weissberg sees empowerment as a "trendy political bandwagon" that one can climb on. Behind empowerment is usually another agenda than just uplifting or giving power to someone, which is one of Weissberg's key concerns with the notion, as he sees it as a "political subterfuge: Promot[ing] a problematic civic program by disguising it in high-sounding rhetoric" (ibid., p.12). That is because he, and probably the public supposedly being fooled by the subterfuge, sees the concept as a linguistic entity corresponding to action or intent. However, the term is neither empty nor a linguistic entity corresponding to a matter of fact. Empowerment needs enter into a relationship with other actors to become an agencement performing a specific empowerment program. It is not evil or good in itself, as it is not the same when it is part of an agencement including Newt Gingrich as when it enters into a relation with Bill Clinton's administration.

Rather, we must study the particular alliances and see what happens to the different parts.

Empowerment has entered into many relationships with dubious partners and has in those relationships played different roles. We can, however, establish one relatively stable point of reference – the dictionary. Empowerment is a transitive verb derived from the verb "power". Merriam Webster offers several definitions of "power", among them the "ability to act or produce an effect" and "possession of control, authority, or influence over others"[33]. And the etymology tells us that it comes from an alteration of the Latin word "posse", which means *to be able* (Weissberg 1999.). Weissberg let "possessing "power" mean[] a capacity to impose one's will or achieve a position of superiority" (ibid., p.16). There are two central elements in the first part of the two-fold definition: "to impose" and "will", and two central elements in the second: "achieve" and "a position of superiority". The first part establishes a someone (or a something) inhabited by a will that can be imposed on something other than oneself (or itself). This is usually thought to be a subject. The second part establishes a hierarchy among different positions and renders it possible (and implicitly desirable) to achieve the superior one. The term empowerment, then, is to enable someone (or something) to impose one's will or achieve a position of superiority. This way of understanding empowerment makes a distinction between *the empowered* and *the empowerer*.

Empowering the Body

To be able to empower others one needs to have the power to do so. The empowered is in this way part of the medium through which the empowerer is imposing one's will, which implies a hierarchy as the empowerer is active and the empowered is passive. However, the power to empower the empowered can also be possessed by the same person, i.e., one can empower oneself, or better still, "*take* the power rather than *letting* [yourself] be empowered" (Johannsen & Kensing 2005, p.204). This was very much the agenda for the feminist project "Our Bodies Ourselves", that since the 1970s has sought to reclaim the female body, which allegedly had been taken by the (male) medicine (Boston Women's Health Book Collective (BWHBC) 1978). Instead of learning how to exercise care for oneself by adhering to the official medical advice, the collective pro-

[33] http://www.merriam-webster.com/dictionary/power

duced the book *Our Bodies Ourselves*, which consisted of personal descriptions of the female body and health-related issues in general. There was no official medical approval of the descriptions, as the aim was that the descriptions should not be transformed into the same esoteric knowledge system that the Collective set out to oppose. The project has enjoyed a continuous existence since 1970 and came out with the eighth edition of the book in 2005, adding the subtitle: "A new edition for a new era" (BWHBC 2005). Moreover, specific volumes for specific cultures and countries have been published throughout the world, mainly written in and by people situated within the cultures/countries, as one kind of imperialism (the medical scientific) should not be replaced by another (the Western world). According to the website of the project[34], the project introduced (and builds upon) the following key ideas (exerpt):

> That women, as informed health consumers, are catalysts for social change;
>
> That women can become their own health experts, particularly through discussing issues of health and sexuality with each other;
>
> That health consumers have a right to know about controversies surrounding medical practices and about where consensus among medical experts may be forming;
>
> That a pathology/disease approach to normal life events (birthing, menopause, aging, death) is not an effective way in which to consider health or structure a health system.

In these "key ideas" empowerment is performed, as the power to take care of the health is transferred to the women. It is clear that "through discussing issues of health and sexuality with each other" power is sought to be taken. Women should not let themselves be passively educated by the medical science industry complex as much as actively talk and listen to each other. "The woman, as informed health consumer", knows that there exist controversies in and around medical practices, and she has "a right to know" about them. It is she, as a consumer, who chooses what services to "consume". It is the woman who should "become her expert", not a passive client being treated by the system. Another important "key idea" is the conception of phenomena like birthing, menopause,

[34] http://www.ourbodiesourselves.org

aging and death as "normal life events".[35] Our Bodies Ourselves is a revolutionary project in the sense that it is about taking the power of describing the body from the suppressing establishment. To be emancipated from the sexist society one must oppose it as, "By accepting society's general view of us [women] we were perpetuating it" (BWHBC 1978, p.14). The unwillingness to submit to a more reformist and dialogue-based approach is also clear when the Collective state that, "The anger that is in us is a starting point for creative change and growth (ibid., p.14). The performativity of the Our Bodies Ourselves project supports the argument for texts being performative introduced above.

Patient Empowerment

Inspired by the general empowerment trend described earlier and the more revolutionary approach of empowering yourself, patient empowerment has emerged. Within the medical tradition it is a strategy "to improve outcome and be cost effective" (Degoulet et al. 2004, p.120). The "outcome" is measured on a medical scale, which means that it is related to recovery times, mortality rates, etc. General patient empowerment could be argued to also encompass the above self-empowering strategy, which has to do with subjective descriptions of bodily phenomena. For the sake of clarity, I will, however, focus on this medical patient empowerment and let the term be related to the, supposedly, objective improvement of health care through an increased level of participation from the patient. The citizen involved in patient empowerment is still a patient, i.e. someone suffering from something (e.g. an illness). Patrice Degoulet et al. define it as "the increasing ability of the patient to actively understand, participate in, and influence their own health status" (ibid., p.120).

Peter Salmon and George Hall declare that, "Patient empowerment pervades clinical practice, teaching and research: patients are expected to take control over their illnesses or treatment where possible, and doctors are expected to encourage or "empower" them to do so" (original quotes, Salmon & Hall 1997). So the patient has a health status that needs to be improved by the patient taking control over it, and the health care professional has the capacity to enable the patient to do so.

[35] This is very much in line with the approach briefly touched upon in Chapter 4 that opposed the pathologic conception of and practice around birth and pregnancy that Joseph DeLee and the obstetric tradition represented.

As briefly touched upon in the beginning of this chapter, Richard Grol refers to patient empowerment as "placing the patient at the centre of the provision of care" (Grol 2001, p.2582). Thus it is also in tune with the other quotations as the patient is being "placed" at the centre, or is being empowered. In the article "Improving Medical Care Quality" Grol reviews different recent strategies for improving quality in medical care, among these patient empowerment, which, according to him, can be argued for from three perspectives: *an ethical*, *a psychological* and *an epidemiological perspective*. From an ethical perspective, "patient empowerment is seen as a basic value and underlying premise".[36] From a psychological perspective, patient empowerment with greater patient control "is assumed to lead to better adherence to treatment recommendations and thus to better health". From an epidemiological perspective, patients are viewed as rational beings that "can share in decision making". Patient empowerment is thus something that has a certain ethical quality that "is in tune with wider political and cultural emphasis on choice"[37] (Salmon & Hall 1997, p.1) and "gains scientific justification from psychological research and theory that attests to the superiority of ways of coping with challenges – including illness or treatment – that exert control over the challenge" (ibid., p.1). Finally, patient empowerment distributes decision making among "rational beings" by delegating decision-making work to patients, and thereby employing resources not yet allocated.

Salmon and Hall claim that, "it is normally *assumed* that [patient empowering] interventions enhance feelings of choice or control, [but] researchers have rarely demonstrated that they do" (italics original, Salmon & Hall 1997, p.1). Rather, looking into some more concrete attempts to seek patient empowerment, Salmon and Hall discovers that some projects lead to a disempowering of the patients, as "they had to fit in with the staff's needs and "cooperate"" (ibid., p.3). Studying a project on patient-controlled analgesia (pain relief with, for instance, aspirin, codeine and morphine), Salmon and Hall find that the transferring of power from the staff to the patients was enjoyed by the staff, as they no longer had to take responsibility for the suffering of pain by the patients, but not necessarily appreciated by the patients. Instead of helping the patient by relieving their pain, the patients, who did it themselves, were told off when not adminis-

[36] Grol is thorough in his work on patient empowerment as he reviews seven publications, each addressing from two to thirty-four patient empowerment initiatives.
[37] An emphasis that also Annemarie Mol describes and criticises in "The Logic of Care" (Mol 2008)

tering the pain relief "correctly". From their review of the literature about patient empowerment projects, the authors argue that the accounts of patients' perspective "suggest that patients do not generally embrace empowerment" (ibid., p.5). In their argument the authors treat empowerment as a universally coherent object that is either good or bad. Empowerment is, however, something that needs to be performed, and whether it is good or bad relates to the performance, which necessarily includes much more than just the linguistic object. It is of propositional character as discussed in relation to the methodological considerations of Stengers and Despret in Chapter 2, as it needs attract interest from actors in the field.

Patient Empowerment through IT

Patient empowerment is intimately tied to knowledge and information. The feminist project Our Bodies, Ourselves was also seeking empowerment through distribution of knowledge and information by creating another kind of representation. With information technology, the basis for exercising patient empowerment has changed, as the way information is distributed has changed. Degoulet et al. (2004) define four domains where computer technologies can enable patient empowerment: *Patient record sharing*, *Knowledge sharing*, *Shared decision*, and *Self care* (ibid., p.121). *Patient record sharing* will allow patients to make data entries, correct erroneous data, cancel sensitive information and record patient preferences in order to strengthen the role of the patient and enable the medical staff to be more attentive to the patient's needs. *Knowledge sharing* will give the patient access to filtered high-quality general knowledge regarding the shared view of the top healthcare providers, and enable focused education of patients. Here the patient's medical knowledge is thought to be enhanced. *Shared decision* will integrate the patient's preferences in the decision-making, and thereby challenge the hierarchy of healthcare professionals and patients. *Self care* enables the patient to care for him/herself on the basis of the information presented. Self care also challenges the role of the GP and calls for a general change in the attitude of medical professionals and their training:

> To enter into a win-win mode of cooperation with proactive patients, healthcare professionals should be prepared for in-depth revision of their education and training programs and accept deep changes in their attitude with patients. (Degoulet et al. 2004, p.124)

The 3rd Track of the Heidelberg Working Conference on Health Information Systems in 2002 was on patient empowerment. Patti Brennan and Charles Safran's report from the track advocates for Collaborative Health Information Systems and for the abandoning of the traditional concepts of computerised patient records (Brennan & Safran 2003). They argue that it is the collaboration of the interdependent healthcare professionals and patients that should be made possible via information systems, or as they boldly put it: "A single philosophy grounds all recommendations: health professional/patient collaboration forms the cornerstone of contemporary health care" (ibid., p.2). Their recommendations are not based on the ethical perspective proposed by Grol concerning equality of health care professionals and patients, "but upon [their] recognition of the present *essential* role of the patient in insuring accomplishment of health care goals" (my italics, ibid. 2003, p.3.). Rather than exercising an ethical agenda, they claim that they "ask only that the information systems catch up to the *realities* of health care" (my italics, ibid. 2003, p.3.). In the realities of current heath care, we learn that the patient has an essential role in accomplishing the health care goals. It is not, as in the paper by Grol (Grol 2001), a strategy among others to "improve the quality of health care"; instead, patient empowerment has become imperative. This way Brenna and Safran's approach is more related to the psychological and epidemiological perspective.

Summing up

We have seen in the discussion above how patient empowerment is connected to a general trend, which, in the words of Weissberg, is a mainstreamed and glorified version of the 1960s slogan "Power to the people", and thus has become "a trendy political bandwagon to climb". No doubt there is a great deal of "high sounding rhetoric" around patient empowerment, but acknowledging the concept as performative, we see that this "bandwagon" is not an innocent vehicle that takes one where one may need it, rather it has affected how health care is performed. Grol draws on many concrete patient empowerment initiatives and Salmon and Hall also reflect on a patient empowering project that, allegedly, was very real for the patients, as they had to bear the burden of being in charge of their pain relief. We then looked into empowerment as we learned about the feminist project Our Bodies Ourselves, which was (and is) a revolutionary re-

claiming of the female body. The medical side, which Our Bodies Ourselves opposed, later "hijacked" the concept to delegate responsibility to the patient in order to improve adherence to the prescribed cure, thus improving health care from a medical perspective. Salmon and Hall showed that this was not necessarily desirable from the perspective of the patient and removed the health care professionals emotionally from the patient. How IT has vitalised patient empowerment was shown by reference to the work of Degoulet et al. Finally, we saw how patient empowerment, in the eyes of Brennan and Safran, has achieved an imperative status to which, in their understanding information systems, must "catch up to".

7.3 Centring by Sharing the Care

Another concept that has influenced the relation between the actors related to health care is "shared care". Like patient empowerment, shared care has differed through its many performances in many different contexts. Unlike patient empowerment, however, it is not a general trend that pervades the whole of the (Western) society. The concept of shared care is oriented towards care, but not always the kind of care we saw in the case of patient empowerment. Groups of parents and other citizens sharing the care of seriously ill persons or disabled children are also referred to as providing shared care. Here care is as much health care as "care" in our daily sense of caring for our children, for example. In the following discussion, however, shared care is a concept that is related to sharing the concept of care within health care. The concept has a somewhat different character than patient empowerment, as it has not been involved in the same political disputes. It is difficult to find the kind of harsh critics of shared care as Weissberg is of patient empowerment. Maybe it is because shared care does not pervade society as patient empowerment is claimed to do, or maybe it is because it does not involve the same problematic issues. To investigate this, we must follow our performative stance, consider what "shared care" does. Firstly, we will turn to how it has been performed in more academic settings, primarily medical academic settings. Later we will consider how the concept has been performed in Danish health care settings. This latter focus will lead us from health technology assessment (HTA) through IT development to the ex-

ample of how shared care was an influential part of the centring ambitions in the initial phase EMR Project.

The literature on shared care in the medical domain is extensive. The literature review of shared care by Hampson et al. consists of 230 articles (among several hundred titles considered) (Hampson et al. 1996). In this plethora of medical texts concerning shared care, the book *Shared Care – The Future Imperative?* by Peter Pritchard and Jane Hughes stands out, as it is, according to the authors, probably the first monograph of its kind. The book takes as its starting point the changing nature of health care. One (health) professional cannot in isolation, it is claimed, meet the needs of the patient. Where diabetes, for example, was previously dealt with solely by the hospital, the care now includes the community and the primary sector. Pritchard and Hughes point to other changes concerning health care: the aging population, increasing demand, the need for cost containment and the fact that specialists are becoming more specialised. In addressing these changes shared care "has an essential part to play" (Pritchard & Hughes 1995, foreword by Barbara Stoking). Before moving on to Pritchard and Hughes's actual definition of shared care, we must mention that they see shared care as "a three-way knowledge flow across the boundaries between patient, general practitioner and specialist". Working through several provisional definitions of shared care, the authors finally arrive at the following preferred working definition of shared care:

> Shared care applies when the responsibility for the health care of the patient is shared between individuals or teams who are part of separate organizations, or where substantial organizational boundaries exist. (Pritchard & Hughes 1995, p.5)

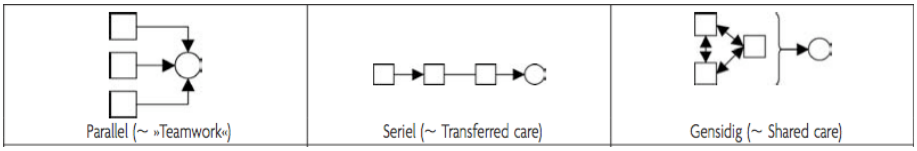
Pritchard and Hughes focus on responsibility, which allows the authors to differentiate shared care from numerous examples of care where the responsibility shifts from one health care institution or individual to another. This is what Pritchard and Hughes refer to as *transferred care*, which focuses on the transferring of the patient and the information, and transfers responsibility from one institution or individual to another. In striving for "the ultimate (but probably unattainable) goal of integrated care", Pritchard and Hughes imagine responsibility throughout the patient trajectory to be shared across the borders that exist in health care. *Integrated care* is "where each patient's varied needs in all sectors are met, whatever the obstacles" (ibid., p.xi), and is an aim recommended by the

World Health Organisation (WHO). *Seamless care* is along the same lines as integrated care, but "even more extreme", as "[i]t implies an obstacle-free integration across organizational boundaries" (ibid., p.8). The authors claim that their definition of shared care is superior to blindly striving for integrated care or seamless care, as the definition highlights the seams rather than imagines that the boundaries do not exist.

Apart from exploring the "nature of shared care", as one of the chapters is called, and reviewing the literature on the subject, Pritchard and Hughes set out a course for achieving shared care that involves seven steps. These are in numerical order: 1) "Developing effective teamwork in all teams." Both in primary and secondary care teamwork skills need to be learned to the same degree, as they need to keep in tune. 2) "Developing a shared understanding of the domain." By, for example, conceptual modelling teams across the different cultures, structures and knowledge must reach a common understanding of the task. 3) "Developing and implementing guidelines." There must be developed and implemented a common reference point from which to act. 4) "Developing effective communication." Practising shared care involves an explicit need for knowledge sharing. In this, information technology is seen to be the saviour.[38] 5) "Learning to change and facilitation." Individuals must be in a "learning mode, working in a learning organization". 6) "How can information technology support shared care?" Here the authors call upon "knowledge-based" decision support systems, which will enhance the supply of relevant knowledge. And finally: 7) "Interface audit and quality development." Concurrent as well as retrospective audit through knowledge-based systems should be implemented (ibid., pp. 17-20).

Shared Care and Health Technology Assessment

Following Pritchard and Hughes, a thorough and lengthy HTA-report (Health Technology Assessment) on shared care distinguishes between teamwork, transferred care and shared care (Holm et al. 2006).



[38] This issue will be taken up in the next chapter.

Figure 5.1: Diagram showing the difference between parallel, serial and shared care (Holm et al. 2006, p.76)

Addressing the issue of dependability, the authors of the report state that care performed as teamwork involves parts that are parallelly dependent, and that in transferred care the parts are serially dependent, whereas the parts in shared care practices are mutually dependent or interdependent. Teamwork, where independent teams work around the patient without much interconnection, are not directly dependent on each other but on the patient to be in the correct condition to begin their work. One can say that the teams are indirectly dependent, but as there is no interconnection between the teams, they are not directly interdependent. Transferred care implies a dependence, but it goes only one way, as the institution receiving the transferred patient depends on the previous institution having done its work. The institution from which the patient is transferred is, however, not dependent on the receiving institution. Shared care implies, according to Holm et al. (2006), that the actors involved in the treatment are interdependent as care is one shared complex of activities. In relation to the role of the patient, the authors see a gradually increasing influence in the care practice for the patient, from the patient being an "object" in teamwork to the patient being a "provider" of the treatment[39].

This particular performance of shared care consists of a report published by the National Board of Health as part of a series on HTA, and a trial carried out at a Danish hospital. The trial consisted of an organisational configuration "formalised and designed as a shared care scheme" (ibid., p.17). The report commences with framing shared care as one of the strategies for accommodating the demands for "»the continuous patient trajectory«, holism and continuity, evidence-based treatment, and high quality in treatment" (original "»«", Børlum Christensen in the foreword, ibid.). "The continuous patient trajectory"[40] is a concept that is used in every major report about the configuration of future Danish health care published by the Board of Health. It is a concept that stresses that care should be experienced as continuous, and shared care is in the

[39] The terms are translated from Danish. Through the rest of the dissertation Danish reports, texts and interviews are also translated.
[40] Translated from the Danish word "Sammenhængende Patientforløb".

beginning of the report subjected to the more prestigious and powerful "The Continuous Patient Trajectory" concept.

Another part of the initial framing has to do with the whole set-up. As mentioned, the report is part of the series about HTA. HTA is, as the name implies, addressing issues in relation to technologies in health care. Shared care is therefore rendered a technology, even though it is stated that shared care is more a form of organisation than an actual technology.

Shared care is discussed with reference to how it performs in relation to a trial regarding anticoagulant therapy. But just like the EMR was intended to turn into a generic model for disease management, shared care is here related to other conditions (here "disorders"):

> As the trial proved to be clinically successful, the question arose as to whether the co-operation model was immediately implementable and whether the results could be transferred to shared care schemes for other disorders. (Holm et al. 2006 p.17)

On the basis of a literature review the authors relate shared care to eight other actors: people with chronic illnesses, pregnant women, eye diseases, investigation and diagnostics, acute treatment, rehabilitation, terminal patients and palliative care, and finally health promotion and disease prevention (ibid., p.45). This is a diverse melange of actors as we have humans, conditions and actions. We have actors that are multiple and others that are singular. When the actors, singular or multiple, act, they do, however, stand out from the "pure *many*", the pure disjunctive diversity as a something, as a one, as an actor (Deleuze 1993, p.76). After displaying shared care with the eight diverse actors the report, through a process of distilling, generates seven actors from the eight initial ones. These are: diabetes, asthma, hypertension, cancer, psychiatry, ischemic heart disease and arthritis. These actors are somewhat more similar and are possibly thought to play together with shared care in a manner that is less problematic. The report even melts them into one actor called chronic illness. There are a lot of problems in performing this singularity construction as each of the seven actors, despite initially looking similar, is rather different. The contribution of shared care in terms of the success of the treatment and the organisational set-up also varied a great deal:

> The way in which the particular shared care arrangement was organised, seems thus to depend on the specific problem one wanted to solve. (Holm et al. 2006, p.50)

With some force, however, the seven actors are merged into the actor of chronic illness. The report installs five themes that unite the seven actors: guidelines, education, communication, inclusion of the patient, and follow-up and quality assessment. These themes resonate, as it is also stated, with Pritchard and Hughes's seven steps shown above, thus bringing in the monograph *Shared Care the Future Imperative*.

Shared care in the case of the Electronic Maternity Record Project

As we have seen above, an apparently singular entity like pregnancy or a project has a multiple existence. This seems obvious with the Electronic Maternity Record Project. The project differs somewhat from when the executive of sundhed.dk, Morten Elbæk, mentioned it at an e-health business convention compared with a pregnant woman's consultation with her GP at Funen in the pilot run of the project. There are numerous interests involved in the EMR, which makes the multiple performances differ. Following the ideas of Mol and Law about multiplicity, we have different performances of the project, rather than different perspectives on it. We have also seen how shared care was an important part of the project and how the EMR was supposed to be the first part of a generic model supporting chronic illness. Now we will turn more specifically to how shared care was performed as a centring initiative, even though it was more than that (as argued in Chapter 5).

The EMR Project is not only multi-facetted but consists of multiple performances. In the documents about the EMR Project (minutes from meetings in the different project groups, project description by sundhed.dk, various presentations, online presentation) shared care is not mentioned very often, and only occasionally does the concept appear. In the beginning, however, shared care was, especially for the vendor consortium, an important concept. This is apparent from interviews with key people in the project. The first project manager, who was part of the vendor consortium and the official representative for it, declared in an interview that "shared care has been proclaimed as *the* term [of

the project]". When the researcher inquires into what the concept encompasses, the project manager responds:

> Interviewee "[Shared care] encompasses all who are in contact with the patient"
> Interviewer: "But not the patient?"
> Interviewee: "Yes, the patient in the centre"
> (Project manager and representative of the vendor consortium, interview)

The project manager continues to inform the researches that "the concept has been taken from England, where they have come a bit further in relation to patient trajectories". A consultant from sundhed.dk also, upon being asked about it, talks about shared as always being able to access the relevant information about the patient, activating the patient, and more broadly, involving citizens and their trajectories, for example, by the use of IT (as we have also seen above in Chapter 5).

A project manager working for the vendor acknowledges the potential of the EMR to contribute with data for research (e.g., growth of foetuses), but stresses that this is not what they (the vendor consortium) see as the benefit of the project: "it is to a large extent about this involvement of the citizen. You know, this thought about shared care" (project manager, sundhed.dk, interview). Here the project manager understands shared care, more or less, as becoming synonymous with involvement of the citizen.

On the web portal itself, it is today very hard to find any traces of the EMR Project now abandoned. However, in the English version of the portal (which is merely a presentation as the portal itself only exists in Danish) under "Features – citizens", under the category "access to own health data", "Shared care: Pregnancy Records", is to be found (www.sundhed.dk).[41] The "feature exists here along with "Cross-sectorial personal electronic medicine profile", "Patients' medical history (since 1977)", and "Online Donor Registration and access to own data". One of the project managers of the project also appeared with a presentation in a workshop about technologies supporting shared care, arranged by the group under SundhedsITnet working on shared care. With this presenta-

[41] The specific URL is http://www.sundhed.dk/wps/portal/_s.155/4503?_ARTIKEL_ID_=1023050920094421, accessed 10/4/2007.

tion the EMP-project is connected to shared care and the technologies enabling it.

At the workshop there was also a presentation given by the vendor of the EMR-solution, who also drew on the EMR Project as a case of shared care. The presentation of the vendor refers to the perspectives in shared care as "continuity in cross-sector processes" and "the patient as active participant in own prevention, treatment, and care". By looking at the website of the vendor[42], and by clicking the link "we offer", we learn that the vendor offers various IT services in relation to: hospitals, health professional knowledge, implementation aid, central health authorities, shared care, sundhed.dk and GPs. Shared care is here performed as a category in relation to which IT services can be applied (or sold). Supplying the title of the link the following is stated: "support of the clinical process and chronic patient trajectory". Visiting the linked page we notice that *disease management* appears next to shared care in the heading separated by a "/". Shared care is now performed as something related to disease management. Continuing our reading we learn that shared care is: "solutions enabling gathering and exchanging of relevant information between health care professionals involved in the treatment of a patient, thereby creating continuity of care". The active patient is not included initially in this definition, but with disease management the patient becomes involved. As shared care and disease management are performed together under the title shared care and as they continue to act together, the patient is implicitly active throughout the process.

The vendor goes on to mention four specific "solutions that they currently have in usage": beside the EMR, the projects also mentioned by the vendor at the shared care workshop addresses depression, diabetes, and a solution for anticoagulant therapy. Again, shared care is performed as something that can relate phenomena as diverse as pregnancy and diabetes. The four phenomena are not claimed to be the same or treated equally, but must nevertheless have some characteristics or attributes that are either equal or treated equally as shared care applies to them all.

Shared care was in the present case performed as a concept enabling patient involving and health care professional collaborative. It was also linked to

[42] The specific URL is http://www-05.ibm.com/services/dk/gbs/healthcare/shared-care.html, accessed 28/8/2008.

chronic diseases and disease management. For the vendor shared care was performed as a category in the health arena, to which their IT services were applicable (and thus good products to spend money on).

Above the concept of shared care has been unfolded and performances in the academic literature as well as in Danish e-health projects have been followed. Shared care has influenced concrete configurations of health care set-ups and the way academics and professionals write about health care configurations.

7.4 General Centring in the Danish Health Care Sector

Centring of the patient, citizen and the pregnant women in general is ubiquitous in Danish health care. Where the previous sections have focussed on the concepts patient empowerment and shared care, respectively, this section will broaden the spectrum and look at centring in general. To map out all centring initiatives and concepts in relation to Danish health care would not only be a dissertation in itself, but probably a never-ending task. I will add to the two concepts by a quick inquiry into official reports and their work on centring the patient. The number of official reports is limited to two, and so we will discuss "National Strategy for IT in the Hospital Service 2000-2002" (Department for Heath and Interior 2000) and "National IT Strategy for the Health Care Service 2003-2007" (Department for Heath and Interior 2003). These two reports are not only powerful actors within Danish health care but also intimately connected to sundhed.dk. I will limit the last discussion in this chapter to addressing the centring mechanisms of the national e-health portal that were not included in the discussion about shared care. The review of the portal will commence with the portal in general and continue with the EMR Project.

Strategy 2000-2002

The "National Strategy for IT in the Hospital Service 2000-2002" is a report written by a collective of central actors in Danish health care. The Ministry of Health published it in December 1999 after it had gone through a process of public hearings. The report is official in the sense that it is the strategy of the

ministry and it is, as it is clear in the foreword, a prolongation of the government's platform, in which it is stated that the utilisation of IT in hospitals should be taken further. The report is, not surprisingly, mostly about IT, but throughout emphasise a centring of the patient. Consider the following quotations from the report:

> The Hospitals Service must with better information about quality and service support a development, where patients to an increasing extent, become enlightened, self-helped, and critical users. (Department for Heath and Interior 2000, p.10)
>
> [F]rom now on it should the patient's record as well as the staff's. (Department for Heath and Interior 2000, p.11)
>
> Access to all this information [from the Internet] will increase the citizen's possibilities to take care of her/his own health and to participate in making decisions regarding the treatment. (Department for Heath and Interior 2000, p.34)

In this strategy a good patient should strive towards becoming an enlightened, self-helping and critical user. With a kind of co-ownership of her/his medical record, the patient will take care of her/his health (to an unknown extent) and participate in decision-making regarding treatment.

Strategy 2003-2007

The "National IT Strategy for the Health Care Service 2003-2007" was published in May 2003 by the Ministry of Health and Interior.[43] The strategy continued and replaced the existing strategy (National Strategy for IT in the Hospital Service 2000-2002). The strategy is official to the same degree as the earlier one, and even supplied with a foreword by the minister. The authoring collective consists of representatives from all the key organisations in Danish health care. Through the summer of 2002 a prelude to the report was through the process of public hearings. Below are a selection of quotes from the report summarising the thoroughgoing centring of the patient in the strategy, beginning with the words of the minister himself:

[43] After a change of government the Ministries of Health and Interior where merged into The Ministry of Health and Interior.

> [I]t is a clear goal to create the foundation for giving the individual better opportunities for getting influence on, and being able to participate active in her/his own treatment. (Department for Heath and Interior 2003, Foreword by Minister)

> It is a goal for the development of IT in the health care service to contribute to a better interplay between citizens and the health care service, and generally to support the individual to the largest possible extent in taking care of her/his own health and treatment situation. (Department for Heath and Interior 2003, p.7)

> The health care services shall by better information about quality and service make it possible for the citizens to be enlightened, self-helped, and critical users of the health care service. (Department for Heath and Interior 2003, p.12)

> The utilisation of IT is a way to reach the citizens directly and to benefit from the information that the citizen can contribute with. (Department for Heath and Interior 2003, p.16)

> Already today experiences from giving patients (e.g. with chronic illnesses) ability to register data about themselves are being gathered, which could be contributing to supporting the physicians' professional assessment and counselling of the patient, and not least, be contributing getting the patient more actively involved in her/his own treatment. (Department for Heath and Interior 2003, p.18)

The extension of the first IT strategy has not only expanded its scope by including the whole health care service instead of just the hospital service, but also increased its centring of the citizen and patient. To "be enlightened, self-helping and critical users of the health care service" is no longer something that the citizen should become to an increasing extent, the citizen shall become enlightened, self-helping and critical as such. Additionally, the citizen and patient become centred in a way that actively supplies the treating or caring team with information. The citizen and patient are in this way performed as part of the care/treatment complex.

Centring of the patient by the national e-health portal and the Electronic Maternity Record Project

The national e-health portal, sundhed.dk, actively participates in centring the patient in Danish health. Besides supporting the health care professionals, the aim of the portal is to supply the citizen and patient with information. Among the reasons for doing this is the ambition to centre the citizen as an active and deciding actor. In the National IT Strategy for the Health Care Service 2003-2007, discussed above, the portal's centring effects are as follows:

> A common public health portal shall be the shared entrance to information [about the particular GPs and their particular services to her/his patients] in order to support the free choice of the citizens and their active involvement in their own treatment and care. (Department for Heath and Interior 2003, p.13)

The following discussion will show how sundhed.dk is centring the patient, the pregnant woman and the citizen by looking specifically at the EMR Project. Of all the different initiatives concerning the portal, the case of the EMR Project will receive attention not because it is decidedly the most patient centring initiative of the portal, but because it is the part of the portal that I have followed the closest.

The EMR Project

Above we touched upon how the EMR Project was performed as a shared care project. We have also seen in Chapter 5 how activating the pregnant woman was an ambition that especially was articulated in the beginning of the project and later written out of the project, as we have seen. It managed, however, to persist as an ambition throughout the project, also among the participants. Now we will go into more detail as to how the EMR Project went about centring the patient, not necessarily as shared care, but in general.

The main organisation behind the national e-health portal, Danish Regions[44], in a publication from the beginning of 2007 argued for advantages in sundhed.dk acting as the one shared access point to the information and communication in the health services. The publication argues for the portal's potential to break down the existing hierarchy between the patient and the health care profes-

[44] Other organisations behind the portal are The Ministry of Health and Prevention, the municipalities and the pharmacies. Due to a larger reorganisation of the Danish public system during the last years, the names of these organisations have changed. When the portal started the organisations behind it were Danish Counties, Ministry of Health and Interior, Copenhagen Hospital Corporation, the municipalities of Frederiksberg and Copenhagen and the pharmacies.

sional, and for an inclusion of the patient in the treatment in general. Several services are suggested that could realise this potential to break down the existing hierarchy, and some existing services are portrayed. Among "existing services for the citizen" the EMR is presented under the headline "direct involvement in the personal digital patient trajectory" (Danish Regions 2007, p.10). A pilot run of the EMR Project is introduced, which means that there is both a pilot project and something larger, which the pilot run is trying out. As mentioned, this presentation appears in the category "existing services for the citizen", again presenting EMR as something that exists, which it does, in the same way as Singleton's son played with a real tractor earlier. The EMR, it is stated, will give easy access to information to the pregnant woman about her pregnancy, and the typing in of data in the record is claimed to "create active user-participation and give personal responsibility". The pregnant woman is not only given access to information, she is here (unlike in the pilot run at Funen) supplying the record with data. With this she is given a particular kind of responsibility, as she has to do her part in creating a knowledge base for the health care professionals to act upon. Regarding the four domains where computer technologies could play a part in relation of patient empowerment discussed by Degoulet et al. (2004) above, the EMR addresses *patient record sharing*, *knowledge sharing*, *shared decision* and *self care*. However, self care is only addressed as a potential, and not so much in the actual project.

After explaining how the EMR in the pilot run was mostly aimed at supporting the health care professionals, a project manager goes on to say that "in the following trajectories [diabetes, asthma, etc.] it should definitely be the patient who is at the centre. It is where the resources of the patient can change something in relation to compliance" (project manager and representative for the vendor consortium, interview). Despite the limited degree of patient centring in the immediate actualisation of the EMR, it holds the potential to centre the patient, according to the project manager. The rationale behind this centring is to mobilise previously unused resources of the patient to comply with the treatment. In Grol's terms, that is the epidemiologic perspective. Another aspect that was never implemented in the pilot run, but played an important part in the discussions early in the project, and generally believed to be implemented in a later version, was the possibility for the pregnant woman to type in data in her records. A member of the central and one of the local project groups expressed her disappointment at the lacking functionality as follows:

> "And then I also think that you would get the pregnant woman to use [the EMR] to a larger extent [if she could type in data before consultation with e.g. the GP]. And then I think that, if you could go in [on your profile in the EMR] and see…well if you don't have anything else to do, then it might be interesting, but if you contribute to typing something in, then you will feel some ownership for it". (Vice Head of office and member of central and local project groups, interview)

Part of the centring of the patient in this quotation consists of gaining ownership over the data in the records. The assumption, according to the interviewee, is that there is a higher degree of motivation when the woman can actively participate in the delivery of data, as it then becomes more interesting to relate to the data in general.

Summary

The logic of centring the citizen and patient influences many parts of society. Influenced by emancipatory projects from the 60s empowerment movement became the strategy for lifting the ill-fated out of their misery. The feminist project Our Bodies, Ourselves showed how it is possible to lift yourself out of misery or suppression and how that is different from being lifted out by others. Empowerment strategies have become popular within health care as a way of making patients take part in the care, thereby transforming them from objects being worked on or at to active participants. Patient empowerment like shared care has functioned in different ways connecting to different interests. Shared care has played an important role in several projects and initiatives, e.g., the Electronic Maternity Record Project under the national health portal. Lastly, we have seen how general centring, not necessarily employing terms such as patient empowerment or shared care, has played a part in the construction of the future health care reality of Denmark. The logic of centring the citizen and patient is strongly influencing the way health care is being arranged, with or without the utilisation of concepts such as patient empowerment and shared care.

The logic of centring the citizen, patient and pregnant woman has neither been invented nor discovered in the EMR Project or during the collaboration with Hospital X. I have at an earlier stage in the dissertation showed how the logic was important keeping the different interests together in both the EMR Project and the collaboration with Hospital X. This chapter has shed light upon the

contingency and development of the logic. I believe that with this light we are better suited for engaging with performances in which the logic is a part.

Chapter 8

The Logic of Seeking Progress through IT

The second logic that I have encountered through the two change initiatives is the Logic of Seeking of Progress through IT. Progress is in this logic embedded in development, which means that the world inevitably improves. The Danish Council of Ethics ("Etisk Råd" in Danish) "provides advice to the Danish Parliament and raises public debate about ethical problems in the field of biomedicine".[45] As a part of the Councils' practice of advising the Parliament it organises a future panel. A seminar on the future of health care in 2004 set the starting point for the debate with the following text:

> In the future health care system IT will be in everything. We will see the electronic patient record. We will see intelligent hospital beds, bandages and pillboxes. And we will see many more medical sites on the Internet, where you can diagnose yourself by tests. (from the Council's website, http://www.etiskraad.dk/sw963.asp)

As the basis for the seminar seeking to discuss the ethical issues at stake in the future health care system, this text unambiguously defines the ubiquity of IT in the health care system as inevitable.

The EMR Project, including a pilot run of it, was explained in the last chapter and showed in Chapter 5 partly propelled by an assumption that centring the pregnant woman would improve care. This was in particular evident in the beginning of the project, but faded somewhat as the practical implementation came. Assuming IT as something inevitably good was also present throughout the project, however. My collaboration with Hospital X to a large extent revolved around an idea of future IT as something that would improve current maternity care. The belief in IT as a way of progressing is often opposed, and

[45] According to their website (http://www.etiskraad.dk/)

negative consequences of IT are highlighted. Objections to IT were also encountered during my studies. The two pregnant midwives that participated in the workshop with Hospital X both objected to delegating too much responsibility to the technology in relation to detecting possible illness. Both an undistorted belief and disbelief in IT is, however, subscribing to a deterministic understanding of IT. Either it will lead to something better (if employed properly) or to something worse (unless it is circumvented).

During my initial empirical studies I had my first encounter the logic during a meeting with the management of the maternity ward at Hospital X. We were six people from the IT University who had arrived to meet with the management of the ward. Although we had diverse interests we were looking for a suitable place to study something related to IT, people and organisation. This means that we wanted to do empirical studies at the ward. The management, however, primarily talked about how IT could bridge the gap between the clinic and the home, as explained in Chapter 5. They showed us an IT-based arrangement that could monitor babies.

Studying the development of the logic as a contingent process, I have found the philosophical project of the Age of Enlightenment, more specifically that of Kant, a good place to start. Liberating man from God through insistence on reason progress becomes possible to another extent because man is no longer merely the exercising God's plan. This is why I believe that the Age of Enlightenment is a particular good place to commence. This is, however, not the same as saying that progress or belief in progress did not exist before this time. Continuing, I will show how progress beliefs have been intimately entangled with the development of technology in general and later of IT in particular. Finally, I will concentrate on health and maternity care and on how the logic is articulated and through propositions influencing practices related to maternity care.

8.1 Philosophical Performances of Progress

In seeking to provide a new moral philosophic foundation for the technologised world, Hans Jonas shows how a problematic mixing of progress in relation to phylogenesis and ontogenesis provides the starting point for the idea of progress (Jonas 1984, p.165). Since the teleological philosophy of Aristotle (in par-

ticular, The Nicomachean Ethics, Aristotle 2003) it has been an individual virtue to strive towards becoming a better man (and later also a better woman). Starting life with nothing and adding more and more, progress at the ontogenetic level can seem reasonable. Jonas even states that progress as a necessary law of development is in the individual's becoming (Jonas 1984, p.165). Extrapolating the necessary progress in ontogenesis to phylogenesis is, however, not valid according to Jonas. Looking at how the individual (always, unless something is seriously wrong) becomes better, wiser and stronger from infancy to adulthood has, however, served as an inspiration for conceiving the development of humanity in general.

The idea of progress as embedded in development in general was first consistently articulated in the Age of Enlightenment. Especially Immanuel Kant has become an important exponent for the thought of progress. In *The Contest of the Faculties* (Kant [1798] 1970) Kant seeks to show that progress is embedded in humanity as such by searching for empirical data to support the claim.

> We must therefore search for an event which would indicate that such a cause exists and that it is causally active within the human race, irrespective of the time at which it might actually operate; and it would have to be a cause which allowed us to conclude, as an inevitable consequence of its operation, that mankind is improving. This inference could then be extended to cover the history of former times so as to show that mankind has always been progressing, yet in such a way that the event originally chosen as an example would not in itself be regarded as the cause of progress in the past, but only as a rough indication or *historical sign*[.] (Kant [1798] 1970, p.181)

Kant is searching for a "historical sign" (ibid., p.181) or an event that shows that man is striving for something better. This event that Kant is searching for cannot be a heroic deed, since we cannot tell what kind of motivation is propelling the hero. He might, for example, be thinking about personal winnings. Kant mentions that the French Revolution:

> aroused in the hearts and desires of all spectators who are not themselves caught up in it a *sympathy* which borders almost on enthusiasm, although the very utterance of this sympathy was fraught with danger. It cannot therefore have been caused by anything other than a moral disposition within the human race. (Kant [1798] 1970, p.182)

That spectators not directly involved in the revolution were "enthusiastic" is, thus, Kant's "historical sign" of the fact that progress is embedded in humanity. Humanity will always strive towards improving the level of morality.

> Thus the proposition that the human race has always been progressively improving and will continue to develop in the same way is not just a well-meant statement saying to be recommended for practical purposes. Whatever unbelievers may say, it is tenable within the most strictly theoretical context. And if one considers not only the events which may happen within a particular nation, but also their repercussions upon all the nations of the earth which might gradually begin to participate in them, a view opens up into the unbounded future. (Kant [1798] 1970, p.185)

Through "the public instruction of the people upon their duties and rights" (ibid., p.186) the immanent progression is accommodated; this is the *enlightenment* of the Age of Enlightenment. Finnish philosopher and logician G.H. von Wright argues through "*The Myth of Progress*" that Kant and Rousseau were exponents of what he calls "the classic modernity" (von Wright 1994). Von Wright's definition of modernity is not directly related to an STS conception of modernity, pre-modernity, post-modernity or non-modernity for that matter (see e.g. Latour 1993). Neither is his project generally in the spirit of STS, as his ambition more is to show how progress is a myth resting on false assumptions through philosophical means rather than trying to understand how it performs through empirical investigations. He does, however, deliver interesting insight into the formation of the logic as well as he points to the consequences of acting on the basis of the logic.

In von Wright's understanding, the classic modernity sought through enlightenment to liberate the arts, morality and knowledge from forced-upon obedience to rulers and spiritual authorities. Rulers (e.g., the pre-revolution king and the church) are hindering the progress of humanity and thus the liberation and natural development. The ideal of progress was in the 1800s taken up in England (e.g., by Mill and Spencer) and in France (most notably by Comte) and associated with positivism (von Wright 1994, p.24).

At this point of time in Germany there were no important exponents of the positivist progress ideal, but there was Hegel who, according to von Wright, is one of the most important thinkers of progress. Hegel fundamentally sees his-

tory as a line of progression where dialectics forms the pattern of development. The thesis/being (Sein) and the anti-thesis (Nichts) become dissolved in the synthesis (Werden), which is of a higher level (Stigen 1998, pp.659-660). This development does not consist of three ideas, but according to Hegel of three stages of one idea. The driving force of this dialectic development is the spirit (Geist). The spirit is also associated with an immanent reason that guarantees progress. In the philosophical progress cosmology of Hegel the past is rendered a precursor to the present, and the present is rendered a precursor to the future.

Von Wright argues that the idea of progress led to a colonisation of the Third World prior to the First World War. Since our Western enlightened civilisations were at a higher level than the Third World, it was morally justifiable to colonise the land and enlighten the people. After the First World War two kinds progress played a strong part in forming the development of the two major parts of the world: the Hegelian/Marxist progress philosophy became the State authorised way of thinking in the East and the neo-positivism and analytical philosophy had a major influence on the West's employment of science and innovation as a necessary part of the capitalistic economy. Marx's analysis of capitalist society came to the conclusion that the workers would rise and lead the way to a post-capitalist world (of communism). Marx inherits Hegel's mechanics of development, the dialectics, but replaces the abstract spirit of reason with the more concrete materialism. Man's dialectic interaction with nature was believed to guarantee the inevitable progress in the communist countries. The neo-positivism and analytical philosophy is realist in the sense that what we can observe is real. On the basis of old observations we observe new phenomena, and our knowledge of the world becomes better and better. With better knowledge welfare will increase as we can deal better with nature in our interactions with it. Von Wright labels the progress thinking that emerged after the First World War neo-modernity.

The ideal of progress in classic modernity was a value which with the emergence of neo-modernity changed into something that can be measured and dealt with concretely. Before progress had been reified it was an abstract and political value as opposed to concepts such as "growth", "development" and "change", which are characterised by their ability to be registered and measured (von Wright 1994, pp.43-45). The idea of progress has become fundamental in modern Western society because of the appealing political ideal taken from classic mod-

ernity and the measurable mechanics of neo-modernity. The dreams of emancipation in general and the liberation of the arts, morality and knowledge are currently lived out through the completeness of man (moral), and the accumulation of knowledge and milestones within science and innovation (knowledge). The arts seem still, however, somewhat untameable. The reification of progress in relation to morality can be seen in the continuous formalisation of democracy, which is constituted by the growth in law making, bureaucracy, rational administration and social reforms. Today we, according to von Wright, measure the completeness of man by referring to economic indices and the percentage of people voting at elections. Numbers produced by these measures tell us that we (in the West) are at a higher level than those in the Third World. The reification of progress in relation to knowledge has lead to an increased focus on managing the accumulation of knowledge and ensuring that new insights are being made within useable areas.

Von Wright objects, not surprisingly, to the reification of progress. He argues that there does not exist an external and objective scale for measuring whether a man is better or worse morally, and as well we do not have any guarantee that our current knowledge is at a higher level than it was previously. The reification of progress in relation to the completeness of man leads to the opposite of the intention because of the plethora of laws and regulations disabling the emancipation of the moral. To put von Wright's story of the decay of progress brief, we can say that the ideals of classic modernity have been corrupted in their current alliance with neo-modernity. This tale of decay offers us interesting knowledge about the formation of the logic of progress and some of the consequences of acting on this basis of it. It appears, however, as if the logic exists in another level than practice. More specifically, it seems to be determining practice rather than being a part of it. This is also why von Wrigth does not seem very constructive in leading us out of the "Myth". If, however, we regard it as a logic existing in and through practice, I believe we are able to engage with it and try to change it.

8.2 Progress through Technology

Albury and Schwartz set out to destroy "the Myth of Progress" in their book *Partial Progress* (Albury & Schwartz 1982). As they state in the introduction to the book:

> We are discouraged from coming to grips with 'science and technology'. Instead we are offered a myth, a myth that blurs and pacifies the mind, the myth of a classless, unbiased, inherently progressive science and technology. (Albury & Schwartz 1982, p.1)

Albury and Schwartz claim that there exists a myth that blinds us and makes us incapable of asking relevant questions of new technological innovations. They claim in line with von Wright that the discourse of progress has become so deeply embedded in our (Western) society that we are often being deceived and lured into believing that new innovations (new laws and regulations for von Wright, and new technological arrangements for Albury and Schwartz) are for the better, even when they in fact are changing reality for the worse. New innovations are of course not generally always for the worse, sometimes new innovation are good, but the progress discourse, or "The Myth of Progress", silences the voices that question the good of a new innovation. New innovations are related to the powers that bring them into being. Albury and Schwartz focus on different macro-sociological entities called classes to show how the ruling class (factory owners) deliberately deceives the ruled class (workers). In their focussing on these categories with fixed preferences, their vision of how "The Progress Myth" works through technology and people in specific projects, is also being blurred. Their objection that the myth is disabling our critical apparatuses is, however, important and correct.

In their book they show how the interests of the factory owners was influencing the development of a mine lamp in the 19th century that would avoid igniting the gasses in the mines. Many workers had been killed because of the gasses, which had led to the closing of large parts of most mines. The lamp developed by Humphrey Davy was introduced as a huge technologic progress that would save lives. It was impossible to be negative towards lifesaving progress. The public reception was also positive as the media embraced the lamp. The lamp did not deliver what its creator (Davy) and promoters (the mine owners) had promised and numerous workers were killed using the lamp before it was finally taken out of use. The point of Albury and Schwartz with the example is not to

beat up on a failed technology or to bemoan the death of workers. The authors use the example to show how "The Myth of Progress" did the work of silencing the critical apparatus of the media and the public. The truth was, claim the authors, that the mine owners were desperate to harvest the coal in the parts of the mines that had been closed down because of gas. In search for greater profit the mine owners promoted the technology as a part of technological progress, which is inevitable and good. That the mine owners were as desperate as claimed and showed no sympathy for the mineworkers, is hard to know on the basis of the study. However, if we forget about intentions and the moral dispositions of the mines owners and concentrate on the silencing work of the so-called myth, we see that the logic of seeking progress through technology was a part of the performance.

Progress might be good, but it is partial, claim Albury and Schwartz. Numerous technologies in the history of industrialisation have meant great progress for the profit making of factory owners, but the opposite for the workers. Through the reification of progress and the interests of powerful factory owners progress has been intimately linked with innovation and the development of technology. New technologies are accompanied by the progress legacy As hinted at above, the logic of seeking progress through technology, is more embedded in our reality than it is a "Myth" for powers like factory owners to use for their own gain. It is a logic that exists because it exists in practices. It is not an underlying or transcendent logic that can exist for a long time behind practice and which is then pulled out to work. The logic of progress needs to be performed to pervade our society. One way of noticing the ubiquity of the progress logic in our Western world is by paying attention to the way "the future" is being used. In a linear logic of time it is reasonable to say that the future does not (yet) exist. Several Danish organisations claim, however, to know the future and offer their services to people willing to pay. The two most important Danish organisations are Innovation Lab and The Copenhagen Institute for Future Studies and will here serve as examples of how the logic of progress is currently performed. The latter claims to "advise regarding the future with analysis, seminars, lectures, courses, reports and [their] magazine"[46], while the former states the following on its website:

[46] http://www.cifs.dk/dk/omcifs.asp (accessed 23/5/2007)

> Innovation Lab has through an international network overview of the future technology and its utilisations. Members of Innovation Lab get insight in the new possibilities, that the new technology brings, and ideas to use the potentials.[47]

The Copenhagen Institute for Future Studies and Innovation Lab claim to have privileged access (through international networks and studies). Innovation Lab in particular has a deterministic view of how there is one technological development that spawns technologies that companies can make into products. This view is in line with the positivistic progress philosophy in their notion of a knowledge reservoir of accumulated knowledge. Innovation Lab is presenting the future to companies for money as a place where most of our current problems have been solved through technology. Technology in this view becomes better and better based on the accumulation of knowledge, which is intrinsic to the progress logic.

Pointing to Innovation Lab et al. as involved in performing the progress logic is not to show that they claim to know something that does not exist. I argue that some future telling practices are less innocent than others. Predicting the outcome of a football match is usually only harmful to the one predicting (and sometimes to the betting agency). Stating what technology *is the future* is also to state what technology *is not the future*, which influences not only the companies but also citizens. Associating a particular technology with the future is thus to employ the future as an actor in the present to further specific interests.[48] This is possible because the future does not have any representatives, as Jonas mentions (Jonas 1984, p.22). When The Danish Council of Ethics states that in the future Danish health IT *will be in everything*, as we saw above, this is not a detached statement devoid of politics. Rather, it also to rule out configurations of health care that does not rely on IT. The past is more difficult, because several powers have different connections to it, which means that representations of the past are often disputed. The practice of presenting new technological products and arrangements as something from the future, or *as* the future, thus performing the progress logic, or boldly as part of a seemingly existing line of progress is ubiquitous in our current Western society. To show this let us move on to health care and information technology.

---

[47] http://innovationlab.dk/sw289.asp (accessed 23/5/2007)

[48] For an in-depth analysis of how companies, politicians and organisations have used the future as an actor in the present, see Andersen and Johannsen 2004 and 2006.

8.3 Progress in Health Care through IT

Health care has like other areas in society on numerous occasions been connected with the logic of progress in general. Medical science builds to a large extent on a scientific idiom of progress in the sense that science is built up on the idea of knowledge accumulation. With the emergence of information technology and its dissemination across society health care has lately been connected to The Logic of Seeking Progress through IT. Before considering particular technological projects, I will start by looking at some official reports.

> A targeted and efficient use of modern information technology is today a determining parameter for companies and institutions. This is also true in the Health Services. In the foundational charter for the government from March 1998 it was stated that the utilisation of modern information technology should be furthered as much as possible at the hospitals in Denmark [.] (Department for Heath and Interior 2000, Foreword)

From the Foreword of the national Strategy for the Health Care Service 2000-2002 we see that (modern) IT is a determining parameter for the Danish Health Services just as in more commercially oriented areas. The Danish government seeks to spread IT as much as possible at the hospitals in Denmark, as there is something good, or at least inevitable about IT.

> There is today no doubt that this task [of dealing with efficient managing of an increasing amount of information] can only be effectively solved by proper use of modern electronic information technology, and a well-staged IT employment will be necessary to solve the problems that the hospitals are facing in the approaching years. (Department for Heath and Interior 2000, p.9)

IT becomes here not a tool among others to deal with the distribution and proliferation of information but the only and inevitable way. Not using IT is thus implicitly problematic and backward. The quotation also introduces a distinction between "proper use" and a use that is not "proper", without specifying the latter. IT demands a specific use in order to deal with the task described.

> There are clear potentials in the use of IT. But there is still some way before the potentials are being fully utilised[.] (Department for Heath and Interior 2000, p.11)

This quotation expresses what the former quotation implied, i.e., that IT demands a particular employment in order to benefit from the full power of IT, an employment that does not currently exist but will eventually emerge.

> A targeted and efficient use of modern information technology in the Danish Health Care Service is essential in order to meet society's increasing demands as well as the political objectives of high quality, information, influence and participation in the health care service. (Lars L. Rasmussen in Foreword, Department for Heath and Interior 2003)

The Foreword of the newest edition of the ministerial strategy (2003-2007) was written by the minister himself (or at least signed by him). Here IT and its correct use become a tool for accommodating the increasing demands of society. Again, something that will help us overcome the problems of the future.

> IT leverages the modernisation of procedures and the division of work tasks. It can help achieve a number of benefits such as improved professional quality and better management and organisation of work. (Department for Heath and Interior 2003, p.22)

IT is something good that can leverage the apparently inevitable modernisation. It *can* help us solve problems and give us benefits. IT does, however, not stand alone. IT demands a certain response from the human realm. In this distinction between human use and non-human IT, it is the human side that is, or has to be, flexible. IT is something we (humans) can employ or not, but definitely should, because it is good in itself. We can corrupt its goodness and miss out on the benefits, but should of course seek *proper use* to *fully utilise* the potentials. The use and utilisation of IT in the quotes listed above are a general entity. The proper use is not so much how a particular individual, e.g., a health care professional, should act in front of an instantiation of IT, e.g., a computer. The proper use of IT and the right employment should rather be seen as how we humans as a society relate to IT as a diffuse mass. This line of thought is, as argued above (Chapter 4), modernistic and performs humans and non-humans as being a priori different, thus overriding practice.

Sundhed.dk

A more specific embodiment of the somewhat diffuse IT mentioned in the strategies is the national health portal. The reports are not yet naming the portal sundhed.dk (the first one suggests sundhedsinfo.dk, which means health information.dk in English), but both strategies stress that a national health portal would be a proper utilisation of the potentials of IT. In the background material of the portal, sundhed.dk is presented as follows:

> Sundhed.dk will become a straightforward and effective way to dialogue both between professionals and citizens. Health care professionals will get the possibilities to exchange information about patients and records – as a citizen you will get brand-new possibilities for following [the care] and having your questions answered. […] Sundhed.dk is the direct access to the health care service and provides one common access to all information. Therefore it will be straightforward for citizens to get insight and to contact the Danish health care service. (Danish Counties 2002, p.1)

The technology is in itself a "straightforward and effective" communication tool and "brand-new possibilities" are being offered by the technology to professionals and citizens. Current ways of accessing the health care service (by telephoning your GP, showing up at the emergency ward, etc.) has been replaced by sundhed.dk. Reading on in the background material of the portal we encounter a development that the health care service is undergoing. Sunhed.dk has predicted this development and builds the medium through which the health care services can act. As the health care services are not as far in the development as sundhed.dk, the portal will therefore gradually release new functionality in synch with the development of the health care service.

> Sundhed.dk is a medium for the health care service. We are building the foundation for the coming development of the health care service. Gradually as the development in the health care service allows it new functions and possibilities will be added. […] Sundhed.dk will be experienced as a silent revolution. (Danish Counties, 2002, p.2)

A linear progressive flow forms the basis of sundhed.dk, but the sluggishness of the health care service prevents a faster development. This is why the portal will be felt as *a silent revolution* as opposed to a violent revolution changing everything in a moment. When sundhed.dk won the, allegedly prestigious, EU eHealth award within the category eHealth Administrative Support Tool and Service for Citizens, the chairman of the board of sundhed.dk stated that "We are based at

the absolute front of the eHealth super-league[49] (press release, sundhed.dk 6.5.2004). eHealth is here being compared to a sports contest which has the duration of a season and has a leader and other competitors trailing behind in the table[50].

The maternity project, discussed in Chapter 5, was also seen to be an instantiation of the inevitable progress that will be materialised through Danish health care. As argued in detail above, the project was released as part of the new functions that sundhed.dk adds, more specifically as the first step of a generic model to support chronic disease management. With the health care professionals working with the EMR Project during the pilot run, there was also great recognition of the inevitable trend towards more digitalisation among the project participants. One nurse expressed it in terms of the disappearing paper (as we saw above). The reality of health care work at the hospital is changing due to *the times*, which is not just a *way we are heading*, it is *the way it has to be*. This impression of the inevitability of this development is gained from an interview with another nurse talking about how it feels to work as another nurse in the EMR Project.

> "Generally I think it is fine. Partly because of the times we live in…everything is accessible on computers, on the Internet, and our work becomes more and more dependent on using computers and databases for this and that. So I think that is the way things are heading, and that is also the way is has to be, I think." (Nurse at Odense University Hospital, interview)

The digitalisation of society realised by computers and databases being brought in makes the work practices dependent on the technology. Again, The Logic of Seeking Progress through IT is not just lying there to be used and thrown away. Becoming reality at the hospital it changes practices and makes work dependent on it. The digitalisation is manifested in the elimination of paper, or at least the belief that this is happening, and the creation of electronic records. Among the electronic records are, of course, the EMR, but also the general Electronic Patient Record (EPR). For many of the health care professionals involved in the EMR Project, the pilot project was somehow a step towards the full-scale em-

[49] "Super-league", or "superliga" in Danish, is the name of the best football league in Denmark.
[50] During the life of the portal it has received a number of awards in different competitions within eHealth and eGovernment. The physical trophies were put on display in a meeting room where guests, such as myself, participating in meetings, could see them.

ployment of the all-encompassing EPR. Speaking about working with the EMR Project one nurse said:

> "I hope I'll get good at using this system [the EMR], and that it will be a start to the employment of EPR in general. So maybe it is good to get it in small bits, because this [the EMR] will become a little piece of the EPR. In this way it can be a good process, because you will be ready when the larger part comes." (Nurse at Odense University Hospital, interview)

In this way a nurse must be ready for the flow of digitalisation coming towards the hospital and the work practices of the nurse. The EMR is a minor part in the larger EPR that is approaching the hospitals. It is, however, not unproblematic adjusting work practices to digitalisation. EMR is merely a small step on the way to either the paperless hospital or the EPR along with other steps. Odense University Hospital had recently implemented a scanning database along with other minor digitalisation initiatives and had the larger EPR hanging over their heads. Taking about the many systems that are currently being implemented, a nurse stated:

> "Yes, and then there is the problem that we are very busy, we can't just say, now we'll go in and play and have a good time and try to enter this system. Generally we're always behind, and new things are coming our way all the time. […] Our working days are characterised by the introduction of new technology all the time, and we don't have the time to learn to use it." (Nurse at Odense University Hospital, interview)

The nurse feels that they are always behind in trying to catch up with the systems being implemented. The future predicting company Innovation Lab, encountered above, talks about "waves" washing against us.[51] The continuous flow of new IT systems being implemented or tried out at the ward at the hospital in Odense can, with the terminology of Innovation Lab, be seen as waves washing against the shore. The waves have momentum and cannot easily be stopped. A Managing Midwife also complains that extra work is involved in the implementation of the EMR. But she still defends it because, as she argues, you cannot measure the value of the system right away.

[51] More specifically they refer to pervasive computing as the "next wave", which allegedly will be bigger than mobile telephony and the Internet; see http://innovationlab.dk/sw292.asp.

> "If we look at it in the longer run…I don't see it as a necessary evil…but still…the reason why I think it is ok to spend the time doing this, is because it is a step on the way…that this can actually get a lot better, no doubt about that…but we just have to, even though it can be hard to see the value immediately, but we have to look at it in the longer run. And when we introduce it to our employees, it is very important to use these grand-scale and longer-run perspectives. So part of the value is that it has value in the long run." (Managing Midwife at Odense University Hospital, interview)

The EMR might be problematic in some senses, but because it is part of something larger it is acceptable or even desirable. Whether that is the paperless hospital, the EPR or the general digitalisation of society is part of the logic of the progress through IT. If the EMR does not work out (which it did not), some parts of it will still live on. Discussing with a nurse at the hospital what will happen after the pilot run, she said that:

> "That I don't know, I don't really have any ideas about it, but it probably will because the way we function we have to have IT entering our working day. And that we have. But whether it is going to be [the EMR] I can't say." (Nurse at Odense University Hospital, chat)

The ward at the hospital is continuously exposed to new digitalisation initiatives. The logic of progress through IT is embedded in the practice of the hospital. The final quotation we will see in relation to the EMR Project and The Logic of Seeking Progress through IT is that of a pregnant woman involved in the project. The EMR Project did not do a lot of good for the pregnant woman. On the contrary, it led to a large amount of uncertainty and waiting time. The quotation below reveals that despite of the problems experienced with the EMR, the belief in IT is so strong that it renders the EMR reasonable. The EMR is even being referred to as a "good cause":

> "I feel like the [electronic] systems must be developed so this paper-based record that I got […] I'd rather support that we get some development and collaboration instead of holding on to old systems that you know. Then nothing happens, then we'll have paper-based systems for 50 years, even though the computer should be functioning better. There has been waiting time, but when the hell isn't there waiting time at a hospital? And I suppose it is to a good cause." (Pregnant woman involved in the EMR Project, interview)

Hospital X

As explained in detail above (Chapter 5) a pivotal point for the collaboration between researchers from the IT University and the maternity ward at Hospital X was the Intelligent Nappy (IN). The IN seemed, at least for the management of the maternity ward, to hold an almost unlimited potential in monitoring the infants though sensors and chips located in the nappy. The nappy could, for example, measure the level of bilirubin[52], indicating whether the infant is suffering from jaundice. The researchers stated several times that their interest was in the complexity of the work on the ward and in maternity care and pregnancy in general. We argued that in order to find out whether the IN was a good idea or not, we had to observe the work practices and talk to a number of pregnant women. We were granted access to do ethnographic fieldwork and to conduct a number of interviews with pregnant women and members of the staff. When I gave the presentation at Hospital X discussed in Chapter 5 the reply: "How is that related to the Intelligent Nappy?". This anecdote is not to complain about the lack of interest in my presentation, but to stress how the IN as a technological fantasy functioned throughout the collaboration

Summary

The logic of seeking progress through IT is like The Logic of Standardising through Externalisation, as we shall see, inherited from much thought from the Age of Enlightenment. Kant's "historical sign" of the progress of mankind was articulated as being immanent and later Hegel explained how the mechanics of progress function through dialectics powered by the spirit. Where the Marxian variant of dialectics constituted the "official state philosophy" of the communist world, the Western capitalist societies drew on the positivist notion of accumulation of knowledge and technology. The neo-modern emphasis on measuring progress has, according to von Wright, led to a betrayal of the ideals of progress formulated by classic modernity, and has made actual progress harder to obtain.

Albury and Schwartz have shown how heralding new technology as part of progress has had a blinding effect on perceiving the actual advantages and disadvantages of the technology. By claiming to represent the future through new

[52] Bilirubin is the yellow breakdown product of normal heme catabolism (www.wikipedia.org/wiki/Bilirubin

technologies or discursive practices, the future is brought into the present to further specific interests. This practice is silencing alternative voices and disabling alternative powers in the construction of the future.

I have argued that The Logic of Seeking Progress through IT has influenced health care, and that the government through ministerial reports lays out a course for the health care system that necessarily entails IT, because there is something essentially good in IT. This belief was also explicit in the national health portal, sundhed.dk, and the EMR Project. The EMR Project was problematic in a lot of ways, but many participants insisted that it was necessary because digitalisation *is* the future. Some even believed that the project was good because it gave them IT in small bits, which would make them ready for the larger chunk when it inevitably came. Finally, we recalled how the collaboration between researchers and a hospital revolved around a belief in progress through IT, even when the researchers continued to complicate the picture, as part of their methodological strategy. In relation to both the EMR Project and the collaboration with Hospital X we can see that The Logic of Seeking Progress through IT is not entirely new. Regarding performances of the logic in the past enable us to get a better understanding of the dynamics involved in the EMR Project and collaboration with Hospital X.

Chapter 9
The Logic of Standardising through Externalisation

9.1 Introduction and Theoretical History

Through my empirical studies of the EMR Project and the collaboration with Hospital X I experienced performances related to The Logic of Standardising through Externalisation. There are several ways of standardising practice. Some are related to the way regularity is created through practice (as discussed in Chapter 6). The logic comprised by standardisation through externalisation relates to a particular kind of standardisation that relies on rendering practice explicit. According to Timmermans and Berg in their book *The Gold Standard*, "the notion that predictability, accountability, and objectivity will follow uniformity" has its roots in the Enlightenment Age's emphasis on rationality and control (Timmermans & Berg 2003, p.8). The Enlightenment called for reason as a pre-subjective ideal that we should strive for. One should disregard personal interests and desires as subjective and in opposition to objectivity. Reason, on the other hand, was seen as objective and the ideal that we must strive to reach, and through accumulation of knowledge science would approach truth and objectivity.

I first witnessed performances in relation to this logic during my studies of maternity care at my first day of observation at Hospital X. It was during a meeting for the people who worked in the ward where they were introduced to an artefact called the Visual Analogue Scale (VAS). The artefact, which I will discuss below, could produce a number that indicated the level of pain felt by a woman in labour. This number could be set in relation to various procedures and other numbers. The idea of standardising individual sensations and expressions of pain through an externalisation appeared not only surprising to me but also important in relation to care work at Hospital X. I chose to follow the history of

the logic to the beginning of the 20th century in America and Vienna. In America standardisation initiatives were practices that externalised what factory workers had to live up to and in Vienna positivist philosophers formulated principles that would avoid claims of subjective and inaccessible knowledge. I have chosen a double-sited starting point for this logic because the show us different aspects of the logic and because they were not directly related at the time. It is possible to find precursors for both but what makes them particularly interesting for my account of the contingent process constituting the logic is their emphasis on operationalisation. After these I will go into detail with Evidence-Based Medicine (EBM), Accreditation and finally, the VAS as standardisation initiatives related to health care.

The quest for objective knowledge is also an attempt to dismiss metaphysics as obscure and inaccessible. A leading figure of the Vienna Circle, Moritz Schlick, formulated the verifiability principle, which says that a statement is meaningful if and only if it can be proven true or false, at least in principle, by means of experience (Schlick [1932] 1996). This principle is a democratic endeavour in the sense that it opposes the power wielded by scientific or spiritual authorities in saying what is true and false. Only if *we* can go out and verify the statement is it sensible. No subjective belief is more authoritative than any other.

To avoid subjectivism some kind of externalisation of knowledge is necessary. Externalisation comes in forms such as constitutions, guidelines, rules, laws, procedures and manuals. They are supposed to function as entities directing subjects and the world. Timmermans and Berg show how the well-known example of directing human subjectivity through externalised measures, Frederick Taylor's Scientific Management, is an early method of producing standards for human activity (Timmermans & Berg 2003, p.10). Scientific management has mostly been popular with the owners of factories, as they were not the ones having to suffer the physical and psychological consequences of having to live up to their standards. There is, however, more to the story of Scientific Management than pure exploitation of the workers. Taylor himself states in the infamous text *Principles of Scientific Management* from 1911 that:

> The principal object of management should be to secure maximum prosperity for the employer, coupled with maximum prosperity for the employee. (Taylor 1911)

Of course, maximum prosperity for the employer is considered somewhat bigger than that of the employee. The important thing, however, is that, according to Taylor, it is not a zero-sum game of one class exploiting the other; the combined maximum is increased through the creation of external standards. Producing the standards entails four parts: first the setting of the standard, then determining the standard, then articulating the standard, and finally making sure the standard is being followed. Setting the standard consisted in Taylor's work, for example, of measuring how long different workers took for a specific part of a larger process. Taylor would chose the most efficient way of doing the job and set that as the standard for the rest to adhere to. Articulating the standard could be done verbally or through instruction cards. There were many ways for Taylor of enforcing the standard, for example, through people acting as overseers or through machines setting the pace, e.g. the assembly line.

Even though Scientific Management was criticised and did not become a great success for either workers or factory owners (especially not for workers), it is an important early example of the desire to create objective standards for the subjective person to adhere to. It was, in Timmermans and Berg's words, "an attempt to transfer the skills from the machinist to the slide rules and instruction cards of management, changing rule of thumb management into its scientific counterpart" (Timmermans & Berg 2003, p.11)[53]. Taylor's methods emphasised objectivity through deployment of externalised standards, but not necessarily inheriting the belief in progress of the Age of Enlightenment (as discussed in the last chapter). Neither did he base his external standards on something arbitrary or transcendent like a God or the idea of reason; instead, he observed practice and constructed a standard on the basis of what he saw. In many ways Taylor's endeavour seems reasonable, but of course naïve in the way that he thought it was possible to standardise the people working as well as the tasks, and in the way he did not take into account what effect it would have on the workers merely to adhere to a set standards which they had no influence on setting.

Other types of standards have become necessary parts of the way we live in a modern world, and appear thus less controversial today. Or to invoke the vocabulary of ANT introduced earlier, *they have been black-boxed.* An example of

[53] Taylor's project beautifully illustrates the ANT argument about delegation, which we encountered in Chapter 2.

this regards a technical object as mundane as the refrigerator installed in (almost) every kitchen in the Western world. Today it is hard to imagine a refrigerator as being driven by anything but electricity. In the 1930s the gas-driven refrigerator seemed, however, a promising way of keeping fresh food cold, as it seemed to be the most reasonable one in terms of energy use. But the economy of energy in households was not as powerful an actor as General Electric (Cowan 1985). As we see with the refrigerator, "standards have a significant inertia and can be very difficult and expensive to change" (Bowker & Star 2000, p.14).

To create standards and articulate them in external objects has become an important part of the way the Danish health care system works, as it has throughout modern Western medicine. To "go through all the processes" in health care organisations and "the ability to document the work processes" have become much more than something to gain a competitive advantage, it has become inevitable. Timmermans and Berg argue that the terms *standardisation* and *standard* are "broad terms, differently defined, covering many entities, even when confined to the medical context" (Timmermans & Berg 2003, p.24). They define *standardisation* as "the process of rendering things uniform", and a *standard* as "both the means and outcome of standardization" (ibid., p.24). In the process "of rendering things uniform" in the health services one has to study the practice of health care and determine a standard. This is where Taylor measured the different tasks performed by machinists. Even though standards appear arbitrary to practice (some machinist might have had a hard time understanding how Taylor came up with a specific period of time allowed for performing a task), the standard does not come of nowhere. Something has been observed and taken into consideration in setting the standard. In this there is the action of observing and the action of setting the standard. The questions are what has been observed and how has it been observed. Additionally, it is important to understand how the standard has been constructed. The standard is usually set by relating the observation to some sort of intended version of practice, e.g. a goal. In "means and outcome of standardization" is embedded the articulation of the uniform. Timmermans and Berg do not in the definition given above seem to touch upon the important aspect of enforcing standards, which, in the case of Scientific Management, was when the overseer looked the machinist

over the shoulder or the assembly line was set at a specific pace.[54] Splitting Timmermans and Berg's definition of standardisation up leaves us with four steps in the process of standardisation practices, which fit well with Taylor's standardisation process: 1) Observing practice, 2) Determining the standard, 3) Articulating the standard, and 4) Enforcing the standard. These steps of standardisation will below be used when looking at standardisation practices in relation to health care. Differentiating between the steps will function as a tool in opening up the *black boxes* of standards.

To standardise the plethora of standardisation initiatives in the health care sector Timmermans and Berg distinguish between four ideal typical categories of standards in health care (ibid., pp.24-26). 1) *Design standards* are about standardising the structural specifications of entities (e.g., things and groups of people). 2) *Terminological standards* are uniform sets of words, expressions, codes, etc. (designating diagnoses, drugs, treatments, etc.). 3) *Performance standards* set outcome specifications (of complication rates, score of examinations, etc.). 4) *Procedural standards* specify processes (tasks, etc.). In going through different standardisation initiatives that I have encountered in relation to pregnancy and maternity care, I will use these distinctions to separate the embedded layers of standardisation in initiatives and artefacts. These distinctions and the differentiation of the steps in standardisation will not be applied or forced upon the standardisation initiatives discussed; instead, they will serve as analytical tools whenever they seem productive.

9.2 Evidence-Based Medicine (EBM)

One of the first concepts I encountered during my fieldwork at Hospital X was *evidence* (at a meeting with the management of the maternity ward at Hospital X). It was a concept I had heard of before in relation to health care, but never in a concrete sense. Coming from the academic field of the humanities, the concept bedazzled me since I have been trained in questioning the linear causality that is usually associated with evidence.[55] Evidence in the hard sciences has often referred to nature talking through objective and disinterested scientists. Many

[54] However, they do touch upon the subject later in chapter 3 of the book in relation to professional "compliance" with Clinical Practice Guidelines (Timmermans & Berg 2003).
[55] In Danish *evidence* is usually translated as *bevis* but in scientific settings the word *evidens* is used. When I encountered the *evidence* concept, it was in terms of the formal and scientific word *evidens*. It is also the word used in the EBM discourse in Denmark.

scholars, notably Donna Haraway (Haraway 1997), have shown how men who claimed to act as ventriloquists, were anything but disinterested and objective (as discussed above in relation to methodology in Chapter 2). Listening to the need for evidence to support a specific decision or technology seemed strange to me when a lot of the activities I saw at the maternity ward did not seem to be evidence-based, but rather based on experience, training, etc. I learned that evidence should be understood as a reference to an external standard for doing things. It is the pivotal point of Evidence-Based Medicine (EBM) that decisions regarding treatment, etc. should be backed by evidence, thus moving the power of decision from the individual to an external standard, the evidence. But how does this evidence come about: how and what has been observed and how has the standard been determined? How is it articulated and how is it enforced? To answer these questions, let us consider the literature for a moment.

Throughout the history of medicine one can apply a distinction between empiricism and rationalism (Wulff 2005). The rationalists have tried to deduce their way to diagnosis and treatment, and the empiricists have used some kind of induction to arrive at diagnosis and settle on a proper treatment.[56] This distinction is somewhat ideal since physicians usually have used both deduction and their experience in practice. Both strands, however, can be singled out in the literature and the debates within the medical field. Perhaps the first to formulate principles of an empiricist approach was French physician Jules Gavarret (ibid.), notably in the book *Principes généraux de statistique médicale*, which is referred to as a key reference in EBM (Huth 2006, Sackett et al. 1996). Gavarret in 1840 laid out the statistical guidelines for an empiricist approach to medicine as an answer to humoral pathology[57], which had dominated mid 19th century France.

The next important milestone referred to in this story about the formation of EBM is the British physician Archibald Cochrane, whose book *Effectiveness and Efficiency* (Cochrane 1972) has become central for EBM (Timmermans & Berg 2003, Wullf 2005). Cochrane argued for investigating medical interventions with randomised clinical trials. Bad interventions (harmful, overly expensive, non-

[56] Whether Wullf would agree with Timmermans and Berg's claim encountered above that standardising has its roots in the emphasis on rationality from the Age of Enlightenment is unclear. The emphasis on reason of, for example, Kant should, however, not be associated with rationalism. Kant's project largely set out to synthesise rationalism and empiricism, thus neither adhering completely to the ideas of rationalism or of empiricism.

[57] Humoral pathology is based on Hippocrates's idea of the four essential fluids.

effective) should be abandoned. He also argued for systematic reviews of randomised controlled trials on a given topic (meta-analysis). This was thought to give professionals quick access to adequate information about the feasibility of a given intervention or diagnosis.

Alvan Feinstein in his 1967 book *Clinical Judgement* criticises the dominant conception of laboratory research as basic research and research by the bedside as applied research (Feinstein 1967, Wulff 2005). Both practices were important, he argued, fundamental and basic to the medical field. The clinical practice should follow the same stringency and rigour as research in the laboratory. The new emphasis on scientific focus on the patient was called "clinical epidemiology".

Among the important figures in articulating EBM is David Sackett, a clinical epidemiologist who has focussed on developing research methods for testing medical innovations and interventions and the scientific validity of these. He has also been hugely significant in developing methods "for educating physicians in applying the current best evidence from research", and "instrumental in coining and promoting the term evidence-based medicine and articulating its principles" (Timmermans & Berg 2003). It was the work done at McMaster University in Canada around Sackett that lead to the concept of EBM (Wulff 2005).

In a series of articles in 1992, The Evidence-Based Medicine Working Group published the "User's Guides to Evidence-Based Medicine" in the *Journal of the American Medical Association (JAMA).* In the guide about teaching ("Evidence-Based Medicine: A New Approach to Teaching the Practice of Medicine") EMB is described as a new paradigm (in the sense of Kuhn) in medicine. The old paradigm was based on "unsystematic observations, basic mechanisms of disease and pathophysiologic principles, traditional training and common sense and content expertise and clinical experience offer a sufficient base for creating guidelines" (Evidence-Based Medicine Working Group 1992, p.3). Whereas the "new" paradigm argues that also the following is required: "Systematic attempts to record observations in a reproducible and unbiased fashion markedly increase the confidence one can have in medical knowledge" and "[u]nderstanding certain rules of evidence is necessary to correctly interpret medical literature (Evidence-Based Medicine Working Group 1992, p.3).

These assumptions for EBM are in line with the often-cited definition from the *British Medical Journal* editorial (Sackettt et. al 1996), where EBM is defined as follows:

> Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. (Sackett et al. 1996)

Usually (e.g., in Timmermans & Berg 2003) only the first part of the definition is quoted but the last part is also important because it acknowledges the clinical expertise. The editorial in *BMJ*, where the quotation comes from, is written as an answer to the critics of EBM bemoaning the loss of clinical expertise. The problem is, however, that clinical expertise is a somewhat indefinable entity but "the best available external clinical evidence" can through meta-analysis be defined. EBM is largely a procedural standard, as it prescribes the best treatment and medication in care. However, it is indirectly standardising the terminology and the design of the set-ups, as the procedures are based on particular designs and employ a specific terminology. EBM is not setting performance standards deliberately, because that is the task of administrators and politicians utilising the scientific data available. But again, EBM indirectly influences what is realistic and feasible in relation to care.

Easy access to texts and reviews through information technology is necessary for EBM to have any practical value, as Timmermans and Berg write (quoting Dickersin and Manheimer): "although science has long been acknowledged as the backbone of medicine, the actual practice of evidence-based healthcare may not have been possible before information systems technology advanced to its current state" ("current" was current in 1998, Timmermans & Berg 2003, p.17). It is simply not enough to have the giant reservoirs of knowledge available, the information must be easy accessible for the health care professional. Timmermans and Berg dedicate a chapter of their book *The Gold Standard* to investigating how EBM is employed in practice (ibid., Ch. 5 "Evidence-Based Medicine and Learning to Doctor"). Here they distinguish between a "librarian resident" and a "research resident" in the different ways the residents employ EBM in the different EBM-friendly environments where their studies take place. In relation to the consultation of the literature, the librarian resident would merely use the

locally available database (MD Consult), whereas the research resident would go to the library and access additional databases. Furthermore, the research resident would evaluate the literature rather than merely applying it as the librarian resident would. EBM claims to be more egalitarian in its emphasis on the medical texts and in "putting lower value on authority" (Evidence-Based Medicine Working Group 1992, p.4). However, Timmermans and Berg's study shows that "EBM did not erase the preexisting unequal power relationships but introduced information technology and epidemiologic criteria in the personal dynamic" (Timmermans & Berg p.165). The democratising abilities, thought to inhabit EBM, did not in Timmermans and Berg's study seem to emerge, but neither did the dehumanisation claimed by the critics. Summing up the studies of EBM, Timmermans and Berg write:

> Supporters offer EBM as a solution to the problem of variability while critics fear that standardization leads to dehumanization of care. Critics and supporters view EBM as a straightforward plan of action authorized by scientific imperative. Instead, EBM accentuates some of the messy contradictions of medicine. (Timmermans & Berg 2003, p.164)

I will follow Timmermans and Berg in saying that EBM is not one thing (a straightforward plan), either good or bad. It depends on the local settings and the particular forces that it is connecting with. Neither is it, however, a neutral entity that can be employed for whatever purpose. It arrives into existing practices loaded with specific types of rationality. Additionally, EBM does not only come into existence when it is being employed in particular wards in particular hospitals. As a concept it is heavily involved in numerous performances in the Danish health care.

In relation to the four steps of standardisation introduced above, all are embedded in EBM. The observation of practice is a necessary part of EBM for it to function at all. EBM has to incorporate observation practices in the medical work. These observations are communicated through papers in medical journals and received through the online medical databases. Both through the meta-analytical work of review papers and through the search engines of the databases the standard is both determined and articulated. There are no single points where the standard is determined or articulated. It is in the practice of the searching and the reviewing that the determining of the standards happens. The

articulation is in the midst of the practices of writing the papers, the reviewing of the particular papers for the particular journals, the publication of the journals, the meta-analysis of papers, the mechanics of the search engine, and the particular search performed by the particular health care professional. The fourth and last part of the procedural distinctions of standardising, the enforcing of the standard, is in the case of EBM done in different ways. In the studies of Timmermans and Berg enforcing the standard was embedded in the environment of the hospital wards, as they were "EBM friendly environments". Ambitious residents seeking a good career might do better by basing their medical work practice on EBM.

An example of how EBM shapes maternity care in Denmark is the ministerial publication "Maternity Care – Guidelines and Report (The health services initiatives in relation to pregnancy, birth and maternity period"[58] (The Danish Board of Health 1998). This important document consists of guidelines for health care professionals and is based on the available evidence of medical interventions in relation to birth and pregnancy. The guidelines standardise the design of the care set-up, as they prescribe the sharing of responsibility between the GP and the midwife and how many visits to each the woman is entitled to. The guidelines also standardise procedures, such as the content of the specific visits to the GP and the midwife. The terminology is not directly being standardised with the guidelines, but some degree of uniformity is necessary for the general standardisation of the performance. The main lobby organisation regarding birth and pregnancy in Denmark (Fødelslobbyen[59]) complains about the fact that the guidelines are complied with by the local professionals[60], and calls for complications that have arisen in relation to birth and pregnancy to be dealt with on the basis of what is "evidence-based" as part of their "philosophical cornerstones" or "principles".[61] This is not surprising considering that the lobby organisation was represented in the working group responsible for the report that the guidelines are based on (ibid., p.74).

[58] Translated from Danish: "Svangreomsorg - Retningslinier og redegørelse (Sundhedsvæsenets indsats i forbindelse med graviditet, fødsel og barselsperiode)"
[59] Consisting of parents and health care professionals. In English, it is called "The Birth Lobby", which is part of the larger "Forældre and Fødsel" (Parents and Birthing).
[60] http://www.fogf.dk/Fodselslobby/index.php
[61] http://www.fogf.dk/Fodselslobby/index.php?artikel=8

The preface of the publication (written by managers from The Danish Board of Health) points to the need for renewed ministerial guidelines as "new knowledge in a number of areas has emerged" (ibid., p.3). This newly found/formed knowledge is important as "[i]t is within recent years recognised that that the majority of the routine maternity care is being performed on the basis of an insufficient knowledge base" (ibid., p.135). "The guidelines for maternity care are based, to the largest possible extent, on documented knowledge in regards to professional content and the effect of clinical practice" (ibid., p.30). Some areas, however, are under-examined (organisational aspects and effects of health promotional activities), which leads to "a general need for an increased effort on documentation and evaluation of services and results related to maternity care to [aid] decision making and quality assuring processes on all levels in the health care services" (ibid., p.137). The health authorities as well as the individual professionals are called upon to supply better documentation (ibid. pp.31, 136). The report, which forms the basis for the ministerial guidelines, is based on "a review of existing scientific and descriptive literature. The literature is found with help from Medline; additionally, information has been retrieved from the Cochrane Database" (ibid., p.109). The report also mentions that "the publication of "A guide to Effective Care in Pregnancy and Childbirth" (Enkin et al. 1995) and the establishing of "The Cochrane Pregnancy and Childbirth Database" (Kierce et al. *undated*) have resulted in a better knowledge base for professionals engaged in maternity care" (The Danish Board of Health 1998, p.133).

The ministerial guidelines follow the same line of thought as embedded in EBM in the way knowledge is rendered visible and in the construction of an external standard that health care professionals are to follow. The guidelines have been instrumental in the design of the Electronic Maternity Record. I have discovered in interviews that the guidelines, as the physical publication, has been referred to as "The Red", "The Little Red" or "The Red Book", due to its physical appearance and influence (humorously drawing on the nickname for Mao Tse-tung's book). It was not just the ministerial guidelines written down and printed in a book, it was a physically existing actor heavily influencing the way maternity care was performed and arrangements around it were designed. One person in the central project explained how she saw the Red Book:

> "Obviously, I think you should follow [the red book]. It is obvious, because someone has done some thinking, which is fine. The point where you must pay attention is to

> whether the thoughts are being followed." (Member of the central project group, interview)

Like the rest of the initiatives in Denmark regarding maternity care, the EMR is obliged by law to adhere to the ministerial guidelines, which is a powerful way of enforcing standardised maternity care. The need for standardisation of maternity care is also apparent in the preface of the guidelines, as "there is a large variation among the offers to pregnant women across the country" (The Danish Board of Health 1998, p.3). When asking the leading midwife at Hospital X during my fieldwork to explain the interaction between the pregnant woman and the health care services during the pregnancy, she said that what I was actually asking about was the law. More precisely, she said the following to my question about the process of pregnancy:

> "I think what you need to know is how the legislation is on this area, because that constitutes the basis for it all. What is so wonderful about maternity care in Denmark is that it is based on […] the guidelines from the Board of Health, which are based on the law on midwifery and on the law on maternity care." (Managing Midwife at Hospital X, interview)

By that she pointed to the fact that there is an external standard describing that interaction, which is conveyed to health care professionals and health care administrators in the guidelines just discussed. EBM in general and The Danish Board of Health specifically regard illness and pregnancy as universally coherent objects in the sense that it is possible to construct universally valid guidelines for treatment. If the objects were not universally coherent it would not be possible to articulate guidelines. This way an orderly world is performed through EBM.

9.3 Accreditation

Another strong standardising force in Danish health care is accreditation. Accreditation is, following the meaning of the word, a kind of certification, which hospitals around the world can apply for. During my fieldwork at Hospital X I quickly became acquainted with accreditation. The first day of my ethnographic studies (excluding preliminary meetings) was a Monday and started in the morning with a meeting for all the midwives and social and health care assistants under the Managing Midwife. It was an obligatory meeting where the partici-

pants were checked off on a list. According to the Managing Midwife, the registering of the participants was done in order to document to management that certain information had been conveyed to the employees. The first subject on the agenda was the presentation of an acute record, which was a record that had to be filled out every time the midwives had provided a pregnant woman with acute care. The record was a part of the hospital's (and the organisation's behind the hospital) quest to become accredited. Being unaware of accreditation and the ubiquitous need for documentation and registration, I was surprised to hear the harsh responses to the demand for record keeping:

> (Midwife): "There is a mistrust in us!"
> (Midwife): "It is bureaucracy" (said about accreditation in general)
> (Midwife): "This accreditation is making me sick."[62]
> (From field notes)

And consider the following conversation between an ordinary midwife and the Managing Midwife that also took place during the heated discussing at the meeting:

> (Midwife): "It is not my job to satisfy the dreams of accreditation"
> (Managing Midwife): "To work here for the moment, it is! …You can't escape the fact that this [accreditation] is one of these [things] that you have to do!" (From field notes)

The Managing Midwife seemed to understand the frustration expressed by the staff but remained clear and firm that accreditation and documentation in general were not something avoidable, and bemoaning it would not help particularly. On several occasions she referred to the acute record, along with another record and a scale for measuring/registering pain (the VAS; see below), as one of the "three turds".[63] Later during that day the management of the hospital had called for a meeting about the status of the accreditation process, which I was invited to attend. Before going into the details of that particular meeting, let us turn to background the accreditation process taking place at Hospital X.

The organisation behind Hospital X, Copenhagen Hospital Corporation, explains that accreditation answers three questions: "Is the hospital doing what is right? Is the hospital doing it (sufficiently) well? Is the hospital improving its

[62] Translation of "Det hænger een ud af halsen det her akkreditering".
[63] Translation of the Danish word "lorte"

performances? (From the Copenhagen Hospital Corporation website)[64]. According to the preliminary analysis for accreditation in Copenhagen Hospital Corporation (Copenhagen Hospital Corporation 2000b), part of the reason for choosing to think along the lines of accreditation is the following:

> A systematic and continuous build-up of quality work, management, human resource development, education and more is a prerequisite for reaching the goal [of strengthening the quality in the trajectory of the particular patient]. In the search for suitable methods for such a systematic effort the eyes fell upon accreditation, which enjoys an increasing popularity in many countries these years. (Copenhagen Hospital Corporation 2000b, p.1, Preface written by the Chairman of the Board)

Accreditation is a product which can be bought by hospitals around the world, and is sold by the American Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (or more specifically, their internationally oriented sub-organisation Joint Commission Worldwide Consulting (JCWC)). The Joint Commission (as it is called both in writing and verbally for short, which leaves some confusion as to whether one is referring to JCAHO or JCWC) has formulated around 350 different standards where around half of them are obligatory for the hospitals to adhere to if they want to be awarded accreditation. The collection of standards designates directly the design, terminology and procedures in relation to the practice at the hospital. Performance standardisation is usually also involved as any specific demands made by local management are added to the standards that the hospitals have to meet.

The standards can, if so desired by the local management, be supplemented by local standards, and in combination function as the criteria for the evaluation (Copenhagen Hospital Corporation 2000b, p.15). Throughout the documents explaining accreditation and its employment in the Danish capital is an emphasis on externality. The standards of the Joint Commission are external to the local context, the standards supplied by Copenhagen Hospital Corporation, derive from a published set of goals for the organisation[65], and are external to the local practice of the clinic; finally, the three consultants are external as they are not Danish. The aspect of externality is stressed as an important issue to secure

[64]http://www.hosp.dk/hvidovre.nsf/ResponseDokumenter/515C13478CBC51B2C1256B02002CB4B2

[65] "Mål for H:S i 2000" (Copenhagen Hospital Corporation 2000a)

objectivity; lack of externality is expected to lead to the subjectivism that is to be avoided.

The process of accreditation in the Copenhagen Hospital Corporation, in accordance with the theoretical approach of the accreditation framework, consists of three phases: 1) Pre-analysis. The three consultants conduct visits to the hospitals of Copenhagen Hospital Corporation and through questionnaires and interviews gather a sufficient amount of data to produce a report that addresses the hospitals' practices in relation to the standards. The three consultants spent a five-week period in Copenhagen during their studies. 2) Preparation. In this phase the hospitals can react to the report and "through education, consultancy, and adjustments of procedures and guidelines rectify inadequacies" (ibid., p.15). This period lasts from six months to two years. 3) Survey, accreditation. When management believe that their hospitals meet the standards, they apply to the Joint Commission for accreditation. The consultants will revisit Copenhagen and over a period of three to six days assess whether the standards are being met. If the hospital is lucky enough to pass the assessment, it can apply for re-accreditation after another three years (as accreditation is something that only lasts for three years). The hospital I visited was fortunate or skilful (or both) and got re-accredited (the first time they got accredited was in 2002 and then again in 2005). The process of accreditation follows the different steps of standardisation explicated above. The consultants arrive with some standards that have been formed by earlier observations and some standards formulated by Copenhagen Hospital Corporation, and compare them with actual practice. This forms the basis for the determining of the particular standards that are articulated in reports and in meetings. The standards are enforced when the hospital either passes or fails the accreditation. The standards are enforced with a view to the forthcoming visit of the accreditation consultants by both top management and the various layers of local management.

The consultants from the Joint Commission were generally impressed with what they saw during the pre-analysis in the first round, but formulated a number of inadequacies. The standards that the hospitals needed to meet were emphasising systematic feedback, adequate coordination, dissemination of experience, follow-up, prioritisation, problematic aspects of variation, need for documentation (both of what is and what is not being done), reviewing across, wards taking stock of situations, infection control, enhancing of existing plans, coordination

of descriptions of professional positions, people development sessions and re-education (along with some positives, which are here skipped)[66]. In short, the Joint Commission, through its consultants, calls for more externalisation of procedures and standardisation. Medical practice should not just be performed by intuition and experience, but should follow externalised guidelines, which should be documented in order for other people to know what is being done. So how does this resonate with what I experienced at the meeting about the second round of accreditation?

The meeting took place in a large auditorium where a representative from the accreditation people presented their "findings" for around 60 attendees. The meeting served the purpose of informing staff about what the consultants had agreed upon before the upcoming final evaluation visit from the Joint Commission. "Findings" comprised the inadequacies that the consultants had found at the hospital. The people attending were, apart from me, administrative and managing staff from the different wards at the hospital. To meet criticism in advance, the consultant stated that if their findings were not based on correct information, they still posed problems as the consultants had been led to believe in false facts, which was labelled "performance problem". Among the inadequacies were mentioned that the chief physicians did not seem to be willing to participate in staff development sessions.[67] And the hospital, which often was referred to as "the company", was apparently not able to make them participate. People in the auditorium laughed a lot when this inadequacy was mentioned; the chief physicians seemed to be smiling themselves. During the meeting an administrative employee from the particular ward I studied asked the consultant whether or not it was a problem that they had their own definitions of what counted as drugs, which deviated from the rest of the hospital. The consultant said that it was a very big problem because then the particular drug might not be locked away. The consultant asked if the head of the ward was present at the meeting, and everyone turned to look at the head of the particular clinic, only to laugh loudly. The head of the clinic himself seemed also to be amused. The consultant seemed somewhat less amused and apologised for the fact that he apparently had avoided the gaze of the consultants.

---

[66] As stated in the summary of Copenhagen Hospital Corporation 2000b, p. 6-7. Other parts of the report go into more detail of the inadequacies than these few sentences can show.

[67] Translated from the Danish term "medarbejderudviklingssamtaler"

During later visits to the ward during my study I saw a number of violations of the standards that were presented as extremely important to follow. I was amazed to see patient records lying around when they were supposed to be locked away. The drugs, which were also to be locked away, were often accessible as the safe was open or the keys were lying around. I confronted the staff with my observations and explained that I had heard at the accreditation meeting that it was very important. The staff sometimes smiled and explained that they could not always wait to lock up the safe and did not always put the records back in the locked cabinet if they knew that they would use them again soon. Usually, however, they just laughed loudly. There were great discrepancies between the written accreditation material on the one hand and the consultant's words on the other hand as far as the daily practice in the ward was concerned. The main phenomenon I noticed in relation to the daily practice of working with the demands of accreditation at the ward was that of humour. To be able to laugh seemed an important feature in relation to the implementation of the accreditation standards. The standards imposed on the health care professionals at the hospital were difficult to adhere to. By referring to how the standards were not adhered to I do not wish to give the impression of laziness or a general unwillingness of the health care professionals to improve their work. On the contrary, the health care professionals' ability to cope with the consequences of accreditation impressed me.

9.4 VAS

Later during the Monday morning meeting I attended at the maternity ward, the third topic (and third "turd") on the agenda was the Visual Analogue Scale (VAS). The VAS is interesting as a standardisation technology because it unlike EBM and Accreditation does not function through very large and complicated networks of heterogeneous actors but revolves around a small physical externalisation. The amount of other actors in the network performing the VAS standardisation does not have to be very high.

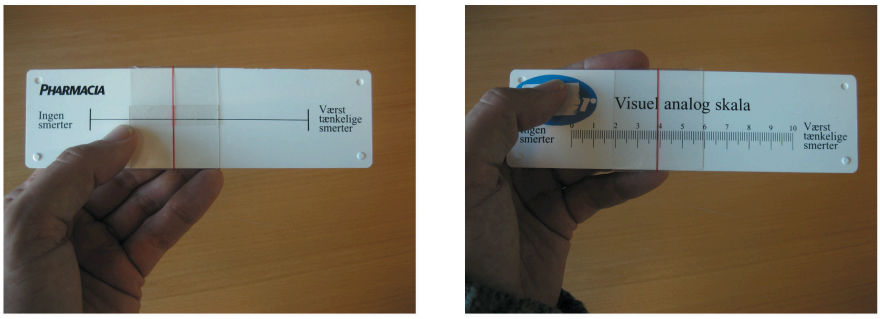


Figure 7.1: Pictures of the Visual Analogue Scale (which I got from a midwife who stated in colourful terms that she did not need this particular artefact)

The VAS was imposed on the ward by the management, and imposed on them in turn by the Copenhagen Hospital Corporation. In a management sense it is a productive actor in that it produces quantified assessments of pain by generating a number which is easily written into the record. The VAS standardises the terminology as it translates the colourful expressions of pain into a number. This way all the local and individual ways of swearing and yelling are expressed on one numeric scale. The VAS acts together with the midwife, for example, when inquiring into the sensation of pain felt by the woman in labour, as the midwife holds up the VAS and asks the woman to manipulate the device. Without the VAS the midwife would ask how much it hurts, and then make an assessment on the basis of the words articulated by the woman, the way they were articulated (did she scream or pronounce them calmly?), previous experience with the particular woman, general experience with women giving birth, and many other parameters. With the VAS only one parameter is valid: the woman's statement. The internal reflexive work of the midwife is not allowed, as it cannot be located and documented as easily, and so the practice is not accountable. When the VAS/midwife hybrid is acting, the midwife holds up the VAS and asks the woman to assess her pain on a scale from "No pain" to "Worst possible pain". On the back of the VAS there is another scale only visible to the health care professional where the woman's assessment is translated into a number between 0-10 (where 0 is "no pain" and 10 is "worst possible pain"). The VAS is used before and after pain relieving drugs are given and the number from 0 to 10 is written into the record. The effect of the drug is thereby documented as well as the

woman's own sensation of pain.[68] The externality of the VAS consists of both the singularity of the VAS object and the fact that it is physical. The work around pain assessment can be confined to the VAS, which is external to the cognitive processes of the midwife. Additionally, it is located in a physical device that needs to be physically manipulated, instead of verbally articulated.

The midwives reacted strongly to the VAS and to the fact that they were obliged to use it from the day of the meeting in all of their pain-assessing practices. One midwife stated that "it was a dismissing and overruling of their professional capabilities" (from field notes). Another midwife shared an anecdote from another hospital in the Copenhagen Hospital Corporation that had already employed the VAS with the rest of the meeting participants:

> "A woman who had just given birth assessed her own pain on the VAS, resulting in the number eight on the health care professional side of the scale. This meant that she could not be transferred to the ward where women usually go after giving birth, but had to stay in the more intensive ward. The staff assessed the pain to be around 2, but was not allowed to discuss their view of the situation with her. After a period of time during which the woman maintained her assessment, a smart nurse asked her what she would have done at home in relation to that kind of pain. Would she take an aspirin or maybe something stronger? The pregnant woman shook her head and explained that the pain was nowhere near as severe as something that would require aspirin."[69]

Again, the point is not whether the anecdote is true or not, but that it is a linguistic performance taking part during a meeting. The anecdote illustrates the dilemma that the midwives thought they would be in when bypassing their ability to reflect on the situation in order to meet the need for documentation. Another midwife said that when they have to use the VAS, "we will with our professional capabilities have to act contrary to what we know is better".

[68] Because the woman places the intensity of the pain somewhere in between the two extremes without regard for any number, the number produced has decimals. If the woman were asked to assess her pain on a scale from 0-10, she probably would not come up with a decimal.
[69] The anecdote is written on the basis of my field notes. They are not the exact words of the midwife.

Summary

The logic of standardising through externalisation has a long history before specifically influencing health care in general and pregnancy and maternity care in particular. To seek control and uniformity through reason was a legacy from the Enlightenment, which influenced the logic of creating externalities for directing practices. Also, the positivist ambition to replace obscure esoteric knowledge with measurable facts has influenced work processes and artefacts hugely. Different physicians have worked on relating different care practices to each other and thereby identifying best practice in order to eradicate malpractice. Evidence-Based Medicine as a concept has had a strong influence on Western health care, with its emphasis on the external evidence of the best care possible. Maternity care in Denmark has to adhere to ministerial guidelines that are based on the standards that evidence shows is best. Monitoring the effects of interventions and relating them to each other in a meta-analytical framework to produce the evidence that set the standard. The complex of accreditation, which is partly based on a large set of standards and sometimes on a smaller local set that the specific hospitals need to meet in order to gain certification. Like the VAS, the process of accreditation was not a popular and straightforward standardisation mechanism to implement at Hospital X. As shown, The Logic of Standardising through Externalisation has a historical formation. Not as a linear progression determining everything it encounters, but as a logic developing as a contingent process.

Chapter 10

Experimentation

I argue that the three logics just described goes through the EMR Project and existed through the collaboration with the maternity ward at Hospital X. Both the EMR Project and the collaboration ended without delivering the results that were anticipated by several of the involved parties. This left some of the researchers curious and frustrated because we had expected to see how the technologies would influence maternity care[70]. In the case of the EMR Project, some of the aspects that interested me, following my governmentality focus, were written out of the project before the pilot run commenced. Specifically, the activation of the pregnant woman was put on hold during the project. It was, however, still present discursively and also expected to be a part of the following records thought to support care for various chronic illnesses. We wanted to avoid regarding the discursive level as either too real or unreal. The activation of the pregnant woman, for example, could be regarded as unchallenged and only temporarily put on hold. The ambition exists, as showed (in Chapter 5 and Chapter 7), in many reports and was continuously expressed through the EMR Project and through the collaboration with the maternity ward. Many of the participants in the EMR Project regarded the ambition as something that would be implemented in future records unchanged. This renders the discursive level stronger than the present as it is involved in networks co-determining the future.

[70] We were at this point three researchers involved in studies of maternity care at the IT-University. Two of us shared the described interest in the changes new technology would bring about. We both did empirical work at Hospital X, but only I followed the EMR-project at this point. This is the reason why both "we" and "I" appear in the text.

We could however, also choose to regard the discursive level as unreal existing in reports and through talk but never influencing practice. Following a performative approach the question is not so much whether the discursive level is real or not, but how strong it is. The discursive level is real, but not in any important sense, alone. Something discursive, like something material, needs to enter a network of heterogeneous actors in order to take part in a performance. The actual performance of for example the activation of the pregnant woman as talked and written about in the EMR Project and through our collaboration with Hospital X remains to be seen. Whether the ambitions will ever be more than declarations and intentions also remains to be seen. The technical and economical problems that these ambitions allegedly encountered in the EMR Project do not exist everywhere and always, however. Instead of either regarding the ambitions as too real or unreal, we wished to explore them in a performative sense. It is not possible to generate the specific connections and concrete translations that would emerge if the EMR was implemented in an unobstructed version or if some of the artefacts developed with Hospital X were produced and sold. The exploration of the ambitions constitutes an experimentation that draws resemblances to the work carried out in scientific laboratories. Experiments in laboratories are often trying out certain ideas in controlled and small-scale environments. These experiments generate effects that have limited value, as they are performed under specific conditions. If the conditions change, the effects are also change. The results have to be translated if they are to make sense in different settings. Our experiment takes place under specific conditions that differ from those under which a large-scale project like the EMR Project would take place. This means that different connections and concrete translation of ideas and visions would take place.

The specific connections and translations are, however, not arbitrary and if we could simulate the conditions under which they would happen, our ambition was that we would be able to produce results that could expand the knowledge about the ambitions existing in both the EMR Project and our collaboration with the maternity ward. The exploration took elements from the EMR Project and our collaboration with Hospital X and carried them further than in the two projects to see what would happen.

The experimentation consists of two phases. A workshop with pregnant women comprises the first phase and proposing conceptual designs to members of the field constitute the second phase. The workshop with pregnant women constituting the first phase was an experiment planned and undertaken by another researcher and myself, whereas I was in charge of the second phase. The activities during the second phase was carried out through participating in an open house event at Hospital X, a weblog and through posters hanging in the waiting room at the maternity ward at hospital X. I will incorporate the results of this second phase while explaining the particular designs and reflect upon the approach afterwards.

The experimentation can also be divided into two levels, where a conceptual level constructs through the notion of "project" and "project management" a way to express pregnancy and the actions performed in relation to this pregnancy by the pregnant woman. This level frames the other level, which is the level of stabilisation, which seeks to include materiality in order to contribute to stabilise the performance. During the workshop that was a part of our collaboration with Hospital X a number of interesting comments emerged during discussions and stabilisation of ideas. These will also be included in the text about the experiment even though it was not meant to function as such at the time it was held. The division of the experiment into levels and phases is applied retrospectively and we did therefore not use the terms at the time. We were, however, aware of the difference between the levels as well as I felt the need to supply the first phase with the second.

The overall ambition of our experimentation was to be able to generate a more nuanced attitude towards the central aspects in the EMR Project and in the collaboration with Hospital X that where not stabilised. Some might perhaps argue that since they were not stabilised they are not important and should be forgotten about. However, as argued, they still exist and will unquestionable be related to other project in general and specifically in relation to maternity care. Following the EMR Project and participating in the collaboration with Hospital X gives me no indication of anyone involved writing off the ambitions discussed because they were not stabilised. On the contrary, participants in the EMR Project continue to praise central aspects of the EMR (e.g. the centring of the pregnant woman) even though there were not stabilised. They maintained that it was

only the specific management and implementation of the EMR that were problematic.

10.1 Conceptual Level

To describe pregnancy as a project occurred to me while reading the report "Continuity of Care in the Spotlight", where a physician from a Danish hospital talks about the emergence "of patients who want and are capable of being project managers for their own illness" (Danish Counties 2004, p.15). This prompted reflections about how pregnancy and management could express central aspects of our collaboration with Hospital X and the interests that held the EMR Project together. In the following I will explain what project and project management entail respectively. I will look into the etymology as well and current operationalisations of the concepts in terms of formalised practices. This first level of the experimentation serves to frame the second stabilising level of the experimentation.

Project

Pregnancy as the central term in the practice of pregnancy processes can be conceptualised as a project when influenced by the Logic of Centring the Citizen, Patient and Pregnant Woman, The Logic of Seeking Progress through IT, and The Logic of Standardising through Externalisation. The everyday sense of the term project varies. In the dictionary project means:

> Main Entry: 1proj·ect
> Pronunciation: ‘prä-”jekt, -jikt also ‘prO-
> Function: noun
> Etymology: Middle English projecte, from Medieval Latin projectum, from Latin, neuter of projectus, past participle of proicere to throw forward, from pro- + jacere to throw -- more at JET
> 1 : a specific plan or design : SCHEME
> 2 obsolete : IDEA
> 3 : a planned undertaking: as a : a definitely formulated piece of research b : a large usually government-supported undertaking c : a task or problem engaged in usually by a group of students to supplement and apply classroom studies

> 4 : a usually public housing development consisting of houses or apartments built and arranged according to a single plan
> (http://www.meriam-webster.com/dictionary/project)

The way I am conceptualising pregnancy as a project is related to the dictionary's definition 3a: "a planned undertaking". This sense is in line with the etymology of the word, as it derives from *pro* + *jacere* (something that comes before + to throw). A project is then something thrown forth, a grasping of what will come in the future. Not the whole future as such but *a something*, indicating that it is a set of delineated activities. These delineated activities are narrated into one by all belonging to the project. A project is the setting of a course for the activities, as they are being placed under the same label, which is the project. To just let things happen and relate events randomly when they happen can be seen as the opposite of a project. To describe how multiple performances are being narrated into a singular project, John Law and Vicky Singleton use the term *projectness* (Law & Singleton 2000). Law and Singleton's argument is that when describing activities around developing technology "as a "project" we tend to breathe life into a whole set of assumptions that we might think of as "*projectness*."" (ibid., p.4, original quotes). Telling tales of the project is not an innocent activity as it performs the activities in a particular way. Performing pregnancy as a project is not an innocent activity, as it invokes the assumptions of projectness. In this conceptualisation of pregnancy as a project, based on the interests in the two change initiatives and the logics they were part of, we can use Law and Singleton's assumptions of projectness to explain what performing pregnancy as a project entails. Law and Singleton mention nine assumptions of projectness that are entailed in performing technology stories as stories of projects. They state that performing technology stories as project imply:

> that technologies (in part) evolve under centralized control;
> that they need to be managed;
> that if they are fragmented then this is likely to be a problem;
> that they involve coordinated puzzle-solving;
> that they benefit from a coordinated perspective;
> that they indeed move through stages, have a chronology;
> that they may have setbacks that need to be overcome;
> that how they evolve is a function of background "macrosocial" factors of one kind or another as well as other relatively stable conditions in the real world;

> that there is more technological knowledge around at the end than at the beginning.
> (Law & Singleton 2000, pp.4-5)

Even though the projectness of the conceptualisation of pregnancy definitely entails technologies, it is not the same kind of technology story that Law and Singleton address, as their work is oriented to how stories are told. I believe, however, that the assumptions embedded in projectness as stated by Law and Singleton can be used to understand what pregnancy as a project entails. From these assumptions of projectness it is clear that projects need management. This management seeks through coordination and control to avoid fragmentation, to overcome setback and generally ensure a progression that moves through stages. The management of the dynamic elements of a project requires something else to be stable. Macrosocial factors and standardisations often serve as resources for this assumed stability.

In addition to the assumptions listed by Law and Singleton I will note that projects are temporary and thus have a beginning and an end. This means that the progression in projects changes the state of something. Also entailed in projects is that projects have an inside with different levels of control and an outside realm that it is not directly controlling. The managing centre and other actors directly working on the project inhabit the inside of the project. In the outside there are a number of external stakeholders that are not directly involved in the project but are somehow connected to it and affect it. The project can be dependent on the stakeholders and the stakeholders can be dependent on the project, and often it is both. To relate the outside of the project to what is inside there is a demand for documentation and transparency. Additionally, projects produce something. This is often the reason why external stakeholders are related to the project. Finally, projects consume resources. The need for resources sometimes ties the external stakeholders to the project, as they may be supplying the needed resources.

Project management

When the pregnancy changes, changes in the socio-technical network also occur. Some actors are excluded and others might enter. The pregnant woman in

the network is unlikely to be excluded from the network, but her role can easily change. When pregnancy is performed as a project, a need for management emerges. This need leads to a conceptualisation of the woman's role in maternity care as a manager of the project, as she becomes the centre of control. As with the term project, the term management has several connotations, and consulting the dictionary will therefore serve as a starting point for getting to a useful reading of the term.

> Main Entry: 1man·age
> Pronunciation: 'ma-nij
> Function: verb
> Inflected Form(s): man·aged; man·ag·ing
> Etymology: Italian maneggiare, from mano hand, from Latin manus
> transitive verb
> 1 : to handle or direct with a degree of skill: as a : to make and keep compliant <can't manage their child> b : to treat with care : HUSBAND <managed his resources carefully> c : to exercise executive, administrative, and supervisory direction of <manage a business> <manage a bond issue> <manage a baseball team>
> 2 : to work upon or try to alter for a purpose <manage the press> <manage stress>
> 3 : to succeed in accomplishing : CONTRIVE <managed to escape from prison>
> 4 : to direct the professional career of <an agency that manages entertainers>
> intransitive verb
> 1 a : to direct or carry on business or affairs; also : to direct a baseball team b : to admit of being carried on
> 2 : to achieve one's purpose
> (http://www.merriam-webster.com/dictionary/manage)

To describe how management is to be understood in relation to project, I will on the basis of a combination of the entries in the dictionary note that manage *is handling something with a certain degree of skill, accomplishing something, and directing something*. This something is of course the project or the pregnancy. The word has arrived in the English vocabulary (like so many other words) from the French; mesnagement (later ménagement). The French language received the word from the 16th century original use in Italian, *maneggiare*, which referred to "handling a horse" or "putting a horse through the paces of a manège". The 16th century

Italian construction is based on the Latin word for hand, i.e. manus.[71] The interesting lesson of this etymologic excursion is not the languages or the countries that the term management has travelled through, but the point of origin of the term for hand, what the hand controls or seeks to control, and the manège. In the original sense of the word the hand controls or seeks to ensure that a horse's pace follows the course of the manège. The hand is in many ways the symbol of power over something else, as it is the hand that clicks important keys on the keyboard when using the important management tool, the computer. It is also the hand that holds the gun and the hand's index finger that launches the nuclear missiles. Earlier it was also the hand that held the sword, wrote the laws, and even the hand of the king that was kissed. The hand has always been associated with the bodily locus of power. The hand is the cardinal point of power when the human governs the horse around in the manège, giving us the term management. Management needs to have an object. The contemporary connotations of the English word management do not involve horses, but still do involve an object. In this conceptualisation of the role of the pregnant woman in the pregnancy process, the object is the project or the pregnancy, and that object still needs to be controlled. The manège sets the course of the object being managed. To manage something is done on the basis of an established course that is external from the object itself. If a horse is managed without a manège, there is still a planned course that the hand is making the horse follow. The plan can of course be more or less detailed, but management needs a course external of the object.

Looking into how the term management is performed today, a place to start is management theory. One of the most important and most cited authors of management theory is Henri Fayol who formulated his main ideas in the 1917 book, *Administration Industrielle et Générale*, and has later been associated with the five main principles of management: 1) planning, 2) organizing, 3) commanding, 4) coordinating, and 5) controlling (Fayol [1917] 1949). In relation to the assumptions of projectness these five aspects fit well, as the projects do not carry themselves. As stated above, they need management and someone to steer them. Fayol is also known for the principle that an employee should only have one boss ("unity of command" ibid.). This honours the projectness' need for centralised control. Several methods and theories have been based upon Fayol's

[71] http://en.wikipedia.org/wiki/Management

early definitions and guidelines for management. In modern organisational configurations the idea of projects has come to be an important way of managing. Managing projects has led to the construction of a term of its own, project management, due to the immanent need in projects for centralised control. Without claiming to have a complete grasp of the management literature, I will point to some concepts and methods, as this will help me to explain what managing pregnancy as a project means. Specifically, StageGate® and PRINCE2™ methodologies will be explained as operationalisations of project management in order to be more specific about what is meant by the terms.

Stage-Gate®

A contemporary method for managing projects is Stage-Gate®, which I will now introduce in order to later point to specific aspects of as part of the experimentation. Robert G. Cooper has studied innovation of new products and the management of the projects leading to these. With the registered trademark Stage-Gate® he has set out a course for managing projects developing new product. As the name implies, the model divides the course of the project into a set of stages and gates. The stages are multi-functional and parallel as opposed to projects that move from an R&D phase, for example, through development and into a marketing phase (Cooper & Kleinschmidt 2001). The "[g]ates are scrums or huddles on the rugby field, the points during the game when the team converges and where all information is brought together" (ibid., p.6). At the gates the different actors (teams or persons) share their knowledge with the other and a larger picture is being drawn. This picture has to live up to a predefined set of "must meet" project requirements (ibid.). The management of the project has at every stage got to either say "go" or "kill", thus either allowing the project to enter a new stage or aborting the project altogether. Illustrated graphically, the course of the project looks as in the following two illustrations:

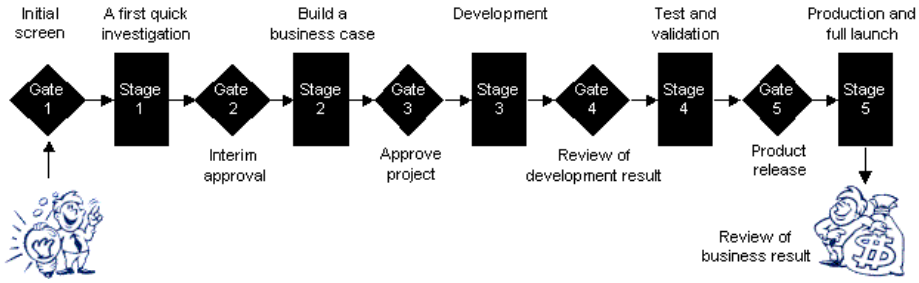


Figure 10.1: Diagram showing the process of StageGate® (From website of U3, a Danish bureau specialising in Stage Gate® management)[72]

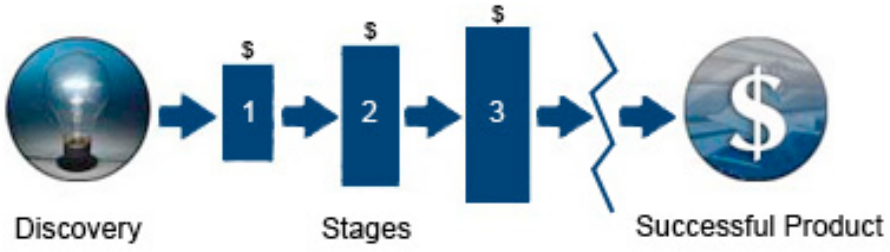


Figure 10.2: Diagram showing the process of StageGate® (From website of Robert G. Cooper, Cooper & Edgett)[73]

Both illustrations show a course of development going from left to right through stages. They also both have a clear beginning and end; the beginning is illustrated with a light bulb, indicating that an idea has been conceived. The end is illustrated with the international symbol for money, a dollar sign. Though the second illustration does not have gates, growth is illustrated by the growing of the three blocks with dollar signs on top. Both illustrations separate graphically the conceiving of the idea and the end product clearly. The last illustration even separates the final product with a zigzag line, indicating a kind of rupture. One of the advantages, according to its promoters, of the Stage-Gate® model is that is creates transparency for all actors involved in the project. Cooper and Kleinschmidt quote a manager: "at least we're all reading from the same page of the book" (ibid., p.8). The model renders the steps in the process of the project visible for, at least, the manager.

[72] http://www.u3.dk/default.asp?u3=stage-gate-process.html
[73] http://www.prod-dev.com/sg-stages.shtml

The Stage-Gate® model emphasises control and to a certain extent predetermination. There is also a certain degree of continuous evaluation of the process, as each stage results in a gate where the progress is reviewed. Thus there is a plan for how the process should develop and a continuous evaluation of how it actually has developed[74]. The Stage-Gate® model in this sense relies on continuous regulation in order to succeed, although the possibility of aborting the project is always an option at the gates.

PRINCE2™

Another formalised way of managing projects is PRINCE2™. This is a methodology in its collection of methods and techniques for managing projects and a brand as it has trademark status and is owned by the APM Group (though not yet registered like Stage-Gate®). It was originally designed for IT project management in the UK, but has become adopted in other areas and countries. PRINCE2™ is an abbreviations created of the initial letters in "Projects in Controlled Environments", and is set out to aid the systematic management of projects, which is much needed as we can see from the following text:

> Whenever we decide we want to do something, go somewhere, build something, achieve something, we need to know the answer to some questions. What are we trying to do? When will we start? What do we need? Can we do it alone, or do we need help? How long will it take? How much will it cost? These are typical questions asked at the start of any project and the answers are the building blocks of project management – defining what we want to do and working out the best way we can do it.
>
> Structured project management means managing the project in a logical, organised way, following defined steps. A structured project management method is the written description of this logical, organised approach. PRINCE2 is a structured project management method. (From the website of APM Group, the owners of the brand)[75]

Initially, this approach seems applicable to many aspects of life as it is related to *whenever we want to do something*. The organisation behind PRINCE2™ claims that we need to clarify what it is we want, and find out the best way of getting it. It is

[74] This resembles the logic of cybernetic systems in the sense that they have explicit goals and through feedback continuously change behaviour in order to succeed.
[75] http://www.prince2.org.uk/web/site/AboutPRINCE2/WhatIsPRINCE2.asp

this that forms the *project plan* for the course of the project. The methodology consists of a number of methods and techniques for carrying out *projects in controlled environments*. The PRICE2™ approach cut the process of the project into a clearly demarcated start, middle and end. The management of a project in this sense is based on controlling the different parts and keeping them from flowing into each other. The underlying assumption in this is that the activities involved in, for example, *doing something, going somewhere, building something, or achieving something* are not to be trusted to just develop. They need to be controlled through the following temporal divisions:

- An organised and controlled start, i.e., organise and plan things properly before leaping in.
- An organised and controlled middle, i.e., when the project has started, make sure it continues to be organised and controlled.
- An organised and controlled end, i.e., when you've got what you want and the project has finished, tidy up the loose ends. (Office of Government Commerce 2005)

PRINCE2® relies on a plan and setting up a process that entails an environment and a management to ensure that the plan is followed. In this sense PRINCE2® relies more on good design of the process than the Stage-Gate® model. Regulating the project during the process is not possible as it is with the Stage-Gate® model.

The rationality of the project manager and projectness belong to the same kind of rationality and emphasise centrality, control, accountability and progress. Development must be described in advance, as the manager must lay out a course. The manager must also monitor the project at different points in time (gates) and evaluate it by comparing it to the course laid out (project plan). The project manager must envisage the entire process in order to make sound decisions in relation to the project. The manager of the project has a body of actors who are often dependent on each other. The manager must make sure that there is sharing of knowledge, either by planning or during the process.

The manager does not manage without aid, however. PRINCE2™ and Stage-Gate® provide complexes of aid to the project manager. On a lower, yet necessary, level of aid the project manager has tools for describing, measuring, calcu-

lating, communicating, articulating, and others more. A modern project manager is not able to function without the aid of, for example, Microsoft Project, an email client, a mobile telephone, Microsoft PowerPoint, paper and a pen. With these technological artefacts a framework and terminology of project management is needed. The project manager does not become a project manager by deciding to be one. It would not be possible for a person in the middle of nowhere (literally speaking) to become a project managing just by declaring to be one. A network of actors comprising a project must be invoked. Actors here are not only human and non-human physically demarcatable entities, but also the preceding training of the project manager, the needs of external stakeholders, expectations of project team members, etc. Among all these actors, the project manager is the entity controlling, but the relation of power is, as Foucault has taught us, not one-way directional (e.g., in Foucault 1991a). The actors managed by the project manager also influence the way the manager manages. The training has formed the way the project manager evaluates, decides and acts in general. The terminology of project management in general and the methods and techniques of PRINCE2™ and Stage-Gate® in particular enable the project manager to conceive of and respond to surroundings in a particular way. The notions that best describe the project manager are, however, related to control and power.

Pregnancy conceptualised as a project calls upon a centralised entity to control its activities. The project manager is answering this call and promises to control the project so that it will stay on the course that has been set. The project manager is using a specific vocabulary and methodology when managing. Framing pregnancy as a project and the activities performed by the woman in relation to the pregnancy as project management is somewhat abstract and does therefore not provide the basis for a good experimentation alone. In order to try out the some of the central aspects embedded in the EMR Project and in our collaboration with Hospital X, these concepts only provide the framing for the actual experiment. The following part of the text will explain and analyse the concepts that were developed.

10.2 Material Level

The first phase in the experimentation was a workshop held at the IT-University were pregnant women participated, along with the researchers and a research assistant. The workshop consisted of seven pregnant women, who were from the beginning to the very end of their respective pregnancies. The researchers prepared this workshop by presenting three prototypical concepts, from which the participants would choose two and further develop these. The participants in this workshop were asked to think along the lines of socioeconomically advantaged pregnant women. Even though they were all well educated and living in the capital, which could constitute two characteristics of socioeconomically advantaged pregnant women, we cannot say that these women acted as reliable and truth-speaking witnesses. This is not problematic as this was neither a test nor an attempt to validate something. The beginning of the workshop served to frame the work that they would later perform. Initially I presented what we described as a trend in health care services, namely that citizens, patients and pregnant women are being activated. The quote introduced above about how patients want to be project managers of their own illnesses was also shown to them. After that the participants were instructed to build mock-ups based on the three prototypical concepts suggested by us. The three prototypical concepts were a mobile communication board called The Nexus Board, a kit for the pregnant women called The Pregnancy Kit with a number of undefined functions and finally an artefact called The Contraction Meter that would measure contractions of the pregnant going into labour. These three artefact were presented as these pictures show:

Figure 10.3: The three prototypical artefacts as they were presented

These three prototypical artefacts constituted the starting point for the pregnant women to experiment with concretising the pregnancy as a project and their activities in relation to the pregnancy as project management. After the partici-

pants in smaller groups had built mock-ups, they were asked to do two exercises with their mock-ups. First they were asked to relate their mock-up to a specific person, and think about what kind of demands this specific person would make to the design. The participants could choose between three very distinct public persons (a controversial Danish handball player (Anja Andersen), a provocative therapist and promoter of claimed male values (Carl Mar-Møller) and the pop singer and American celebrity Britney Spears). This exercise was inspired by the technique within the field of interaction design called "designing for extreme characters" (Djajadiningrat et al. 2000). After this exercise the participants were asked to do another exercise, also inspired by Djajadiningrat et al. 2000, called "interaction relabeling". The point of this exercise was to let the participants relate their design to another material artefact. Again the researchers had chosen three artefacts from which the participants could choose one: a toy cash register, a replica gun (an extremely realistic Sig SP 2340) and the remote control for a remote controlled model boat. These two exercises were meant to inspire the participants to look at what they had done so far in another light. The outcome of the workshop was six mock-ups of IT artefacts for socioeconomically advantaged women to help them get through their pregnancies. The workshop was videotaped and later analysed.

This first phase of the experiment was inspired by the thoughts by Schön introduced above (in Chapter 5 in relation to the collaboration with Hospital X) but extended somewhat. Schön is interested in how creativity is practice when designing or producing something good. For example a good design for a school building (Schön 1992, p.5). Our ambition with the workshop was not to let the participants come up with designs that were good. Rather drew on Schön's studies of externalisation and conversation with the material as a way to "think things through with the things [the material]" (as expressed by a participant a the workshop with Hospital X). Framing the exploration of the aspects we wanted to know more about through the exercises and the three prototypical designs meant the participants could not just criticise or praise certain aspects at will. The idea with the workshop was that they should try to make the necessary connections for the central aspects that we found interesting to work and thus point to the translations of these aspects that would happen. This approach is a way of "reading with the text", as it acknowledges the reports and statements about the EMR Project and the collaboration with Hospital X as material-semiotic actors. "Reading against the text" would be to look for hidden assump-

tions etc. and try to prove them wrong (Bruun Jensen & Lauritsen 2005). On the contrary, following the performative agenda for this dissertation the focus is more on how they work than on whether they are true or not.

The participants were guided and controlled to a certain extent through the set-up. However, at times they managed to escape from the role that they were asked to assume and provide interesting feedback and reflections.

Figure 3.2: Pictures from the experimental workshop

As mentioned we sat out a course for the experiment at the workshop by proposing three prototypical artefacts, which the participant should develop two of them further. From the six mock-ups built by the participants and concepts developed earlier (e.g. at the workshop with Hospital X) We chose to carry three designs into the next phase of the experiment. In the following I will unfold these three designs one at the time by showing aspects relating to the following aspects (not necessarily in strict order, however):

• where the design comes from?

• what it is about?

• how does it perform pregnancy as a project and the woman's activities in this relation as project management?

• how does it relate to the three logics explained?

• how does it relate to my empirical data from the EMR Project?

• how does it relate to my empirical data from the collaboration with Hospital X?

• comments that emerged in relation to this design (during the realisation as well as from the second phase)?

10.2.1 The User Profile

The first design differs from the other two in the sense that it is not an artefact as such. It is more a conceptual model for the overall interaction between the pregnant woman and the health care service. In that way the two other designs fall under the general conception of this design in a way, which will be explained below shortly. This User Profile (UP) distinguishes between socioeconomically advantaged pregnant women and disadvantaged. The general assumption behind the UP is that by taking care of the socioeconomically advantaged pregnant women digitally, a lot of resources within the health care service can be allocated to the pregnant women who are socioeconomically disadvantaged. The UP is set out to aid the socioeconomically advantaged pregnant women. The number of socioeconomically advantaged women is thought to be very high, which is one of the primary reasons for sundhed.dk starting the generic shared care project with pregnant women. It has been argued that pregnant women are generally more interested in their bodies and the medical phenomenon than other citizens that enter a relationship with the health service. This argument was one of the reasons for why pregnancy was chosen as the first trajectory to support in the generic model. A midwife at Hospital X explained during the workshop that, "they [the pregnant women] come to the midwife and have read everything, been to the chatroom, and baby [related] websites, and have seen the date of birth on a kind of electronic [calendar], which exists on the Internet". The vast number of Internet sites and the tremendous activity on pregnancy related discussion forums and weblogs do support this claim. The interest in their situation

is part of the reason for their status as socioeconomically advantaged. The UP was, as explained in relation to the account on the collaboration with Hospital X, developed at the workshop with the maternity ward at Hospital X. Specifically, it was the managing midwife who brought the idea of focussing on socioeconimically advantaged women through IT to the workshop. She even brought the name UP. The UP was during the workshop changed and specified through drawing and discussing. After the workshop the UP has not changed significantly, but its final shape was a result of a research assistance's and my collaboration. Because it is more a way to distinguish pregnant woman and communicate that a physical artefact we chose to express the UP by using the method storyboarding from the field interaction design (Sharp et al. 2007, p.558). The design as it was presented to pregnant women and health care professionals looked as follows:

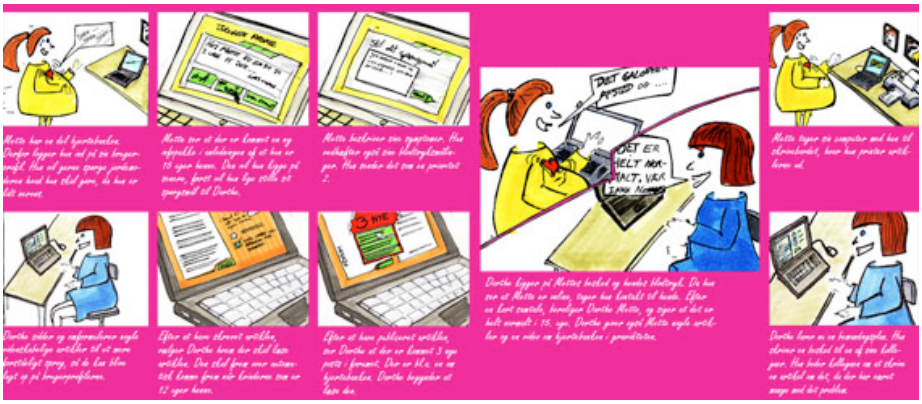


Figure 9.2: Scenario showing the functionality of the User Profile

The presentation of the UP design consists of a scenario where a pregnant woman is experiencing heavy heartbeat, which makes her insecure. She approaches her PC and logs onto the UP. At the same time a midwife is working at her PC (reformulating some scientific articles into more easily understandable language). The pregnant woman sees that a new "info-package" has been made available to her, as she has entered her 15th week. She decides to read it later, and poses a question in relation to her heavy heartbeat. Meanwhile, the midwife specifies who will see the reformulated article she has been working on. The pregnant woman is asking her question by describing the symptoms and attaching measurements of her blood pressure. After publishing the article, the midwife sees that a number of new questions have emerged, among them the pregnant wo-

man's inquiry about heavy heartbeat. The midwife sees that the pregnant woman is online and decides to contact her. The midwife reassures the pregnant woman that heavy heartbeat is normal and gives her a link to articles dealing with heavy heartbeat during pregnancy. The pregnant woman immediately prints the articles and the midwife continues her work at the PC, and decides to produce an article about heavy heartbeat during pregnancy for all pregnant women since this was not the first approach about this.

This scenario explains part of the functionality of the UP. Rather than calling the hospital or presenting in person, the pregnant woman states a question in the UP. The midwife can on the basis of this and previous approaches see that there is a need for general information on the subject. The idea is that the next time a pregnant woman feels insecure because of heavy heartbeat, she will see that an article explaining that there is nothing to worry about is available to her.

Apart from the possibility of asking questions, the pregnant woman has access to the medical record concerning her pregnancy. In this way the record does not exist, as it does today, in the domain of the health service. The information is free for the woman to use to make decisions about what she wants. The uncertainty caused by the lack of information is here minimised as she can easily access her record. Additionally, the data is explained through commentaries and articles relating to different issues. The UP also has a community functionality in the sense that it is possible to ask other pregnant women about pregnancy related issues. It is also possible to follow previous conversations about pregnancy between pregnant women to the extent that the women have made them public and the health care services, e.g. the midwife, have approved them. The information about general issues in relation to pregnancy is in the UP, gathered and made accessible through search engines and reviews of other more academic medical texts. The idea is that the pregnant women will have large resources of knowledge in one place, rather than dispersed over the Internet, books and pamphlets. The information that she otherwise would have to obtain by asking a health care professional or other pregnant women is right at her hand in the UP. The plethora of information available on the Internet, in books and in pamphlets has, in the UP, gone through a process of validation and approval, to remove the many instances of contradictory advice given in relation to pregnancy, and thus minimising insecurity and uncertainty. Today pregnant women come to the midwife having read information on a number of websites, etc. But

this information is not necessarily correct, which means that the midwife (or GP) has to "re-inform" the woman:

> "The midwives are gradually spending more time re-informing the pregnant woman." (MD, manager of the maternity ward of Hospital X, workshop)

> "There are a lot [of midwives], maybe mostly from the older generation, who feel that they have to spend a lot of time to sort out everything that the pregnant woman reads on the Internet. But I understand that you can't help reading all these things, and we have to spend time on it. It is something about following the development that is happening, isn't?" (Midwife at Hospital X, workshop)

Apart from the general information about pregnancy related issues, the UP includes, as stated, the particular record of the particular pregnancy. The pregnant woman can read the information about her particular pregnancy and compare it to the general knowledge on pregnancy. In this way she does not have to just sense the bodily phenomena and try to articulate them, and then seek knowledge about them. She can access the medical attributes of a pregnancy and research further as to whether they are as they should be.

The pregnant woman can access information by searching the UP. But the UP pushing the relevant information to her also does an important part of the informational work. When she enters the third trimester she does not necessarily have to search for information that is relevant for women in the third trimester, as an "info-package" is automatically *pushed* to her. Some of the information packages must be signed by the woman to be accessed. In this way the health care authorities have an indication that she has read the particular data.

On the basis of measured data and what the pregnant woman types in the UP about her preferences, medical history etc., the UP will push specific information packages to her. If she is overweight a particular knowledge pool is opened up, and another if she smokes, and so forth. In the beginning of the pregnancy a lot of information is being typed in the UP by the pregnant woman and the health care professionals. This forms the basis of the plan that is articulated in the UP.

The use of the UP shows how pregnancy can be practiced as a project. Resonating with the definition above of project and discussions about projectness,

pregnancy as a project is "a planned undertaking, something thrown forth, a grasping of the future". The plan articulated in the UP becomes in this conceptualisation the project plan or the established course for the pregnancy. During the process of the pregnancy there are numerous activities, which are being narrated into a singular project with help from the UP. The numerous activities of the pregnancy process happen in relation to a centralised control exercised by the woman through the UP and the informational resources provided to her. It is by communication with the different actors involved in the project that the pregnant woman can exercise control over the activities. The pregnancy as a project needs a centre of control to make sure that the pregnancy follows the course laid out. This is the action of management (discussed in more detail in relation to the Pregnancy Kit). The controlling centre of the pregnancy is closely connected to the pregnancy but is also distinguishable from the pregnancy. The controlling centre is managing a project, which becomes an external object that is manageable (the implications of this separation will be dealt with in Chapter 10).

The controlling centre is managing a project that has inside and an outside. The UP gives the pregnant woman an interface for manipulating the pregnancy. Other pregnancies are also relevant to health care professionals involved in a particular pregnancy, but the managing powers of one pregnant woman are excluded from the others. They are outside the particular pregnancy, but nevertheless important as they are being related to the project through the UP, for example, when the midwife compares questions from different women. Other pregnancies and accumulated data about pregnancy related issues form the informational outside of the project. Pregnant women might also belong to the outside of another pregnancy project on both an abstract and concrete level, abstract in the sense that pregnant women like all other citizens depend on reproduction as fundamental for the continuation of society, and concrete in the sense that she might have friends or family expecting a child.

In the UP the pregnancy as a project has a clear beginning with the creation of the file in the system. Some things related to the project occur earlier (such as the conception) but the project is delineated by the creation of the record in the system and the transferring of the record from the UP system to the archive. In the EMR Project this delineation was also present in the sense that the pregnancy as an EMR pregnancy came into existence when the record was created

by the GP or the GP's secretary in relation to the first visit. The project ends when the birth begins, and the administrative actors involved in the UP take care of closing the electronic parts of the project. After that the project has ceased to exist. This temporal understanding is also stated in the project management terminology of PRINCE2™, as projects have a beginning, a middle and an end, which are all separable from each other.

Fragmentation of the pregnancy is undesirable as it challenges the centre of control. The activities are necessarily fragmented to a certain extent because pregnancy is comprised of multiple performances, as explained above with reference to Mol (2002). This leads to a need for coordination of perspective in order to avoid continued fragmentation. The different activities must be related to what is good for the project. The puzzle-solving in relation to the pregnancy needs to be coordinated so the different actors involved do not spend resources dealing with the same issues. Pregnancy as a project has a chronology that moves through stages. A pregnancy is divided into different smaller parts, which constitute the whole pregnancy. The three most common divisions are months, weeks and trimesters. In the UP some information packages are released and automatically pushed to the pregnant woman when she enters a new stage in the project. Splitting the entire project up into stages makes it easier for the controlling centre because it only has to regard the information relevant for the specific stages.

In the first trimester it is important to establish the project plan. This includes choosing the place of birth, figuring out how to adjust potentially harmful lifestyles such as drinking, smoking or hazardous work, and deciding on dietary supplements. The activity of choosing the place of birth differs regionally as different places of residence provide different options for giving birth. In Copenhagen, where a large part of my empirical data derives from, one has three to four options relatively close to where one lives. The hospitals are able to offer different services and have different reputations among pregnant women and their partners. The pregnant woman is supposed to inform her GP about her choice of place of birth at the first consultation. It can, however, be difficult to *inform* your GP about your choice when the GP possesses knowledge and strength of argumentation that surpass that of the pregnant woman. The first trimester usually also entails nausea or "morning sickness", and the beginning of changes of the woman's body (e.g., growth of the breasts). The follow-

ing trimesters present different issues and call for other kinds of information. Near the end of the pregnancy, information about pain relief and different types of birth is given. An important division of the project into stages is the division into weeks. Different weeks function today as milestones for many women, with the 12th week often being the point where the pregnancy's existence is communicated to the woman's surroundings; the 20th week being the point at which nausea might disappear; and the 40th week, of course, being the deadline for a specific online tool available on the national health portal, sundhed.dk, called the Birth Date Calculator, which performs the pregnancy as 40 stages (which I will go into in relation to the Pregnancy Kit).

During the pregnancy setbacks might occur. These setbacks can be like setbacks in the kind of technological projects Law and Singleton write about, where the development of the product is too slow, but usually the setbacks in relation to pregnancy projects are in relation to the project plan. The pregnant woman can find it too hard to quit smoking; she may gain too much weight; or perhaps she may feel overly tired. These are the kinds of setbacks that can be overcome by taking certain actions. One pregnant woman encountered in the EMR Project at Funen experienced a setback in relation to not being able to stick to the allowed weight growth. Discussing this with her GP, she found a way to approach the intended curve, which was to avoid using her car too much.

Projects also entail an evolution that is based on macrosocial factors and other relatively stable conditions in the world. This is especially evident in the establishing of the project plan, as pregnant women are being put into different macrosocial classes, such as smokers/non-smokers, ethnic Danes/non-ethnic Danes, and overweight/normal weight. Positioning the specific project in relation to these kinds of macrosocial factors also appeared in the EMR Project. It was central to the EMR-record that the GP's use of the system ensured that the pregnant woman was related to macrosocial like smoking, overweight etc. Another issue related to the development of the project of pregnancy is the embedded progress in the project, that there is something more at the end of the project than there was in the beginning. In the pregnancy as a project this "more" is the product of the pregnancy, the child. With the help of the UP the controlling centre can follow the development of the object of the project continuously. The UP also allows external stakeholders to monitor the development of the project. Societal representatives like the GP or the midwife can keep an

eye on the current status, and if necessary intervene. The existence of external stakeholders is also an additional issue entailed in projectness. Belonging to the outside of the pregnancy, a number of actors have stakes in the project without directly being part of the activities in the project. These external stakeholders require transparency in the process and documentation for the progress of the project. In the UP a vast amount of documentation is being produced and displayed, as the data produced during consultations and examinations is automatically rendered visible. This documentation and striving for transparency are related to the logic discussed above, called The Logic of Standardising through Externalisation in the sense that an external measure is created for different actors to consider and to compare with a standard of what is considered good. The documentation work during the specific project will feed into the statistics and contribute to the creation of the external standard which other projects are measured up against. The documentation work implies continuous translations, as the UP requires a specific, quantitative way of performing aspects of the project.[76] The striving for transparency in the pregnancy as a project is in particular closely related to the accreditation initiative discussed above. The project has a steady course established on the basis of an ideal course and on the particular issues relevant to the particular pregnancy. Establishing this course is also related to the ambition of creating *a controlled environment* in PRINCE2™ terminology. The objectives must be clarified and formulated in a document, the project plan, to provide an easily accessible description *of this logical, organised way*.

Every intervention from either the health care professionals or the woman herself is documented in the UP. This means that if abnormalities occur, it should be possible to understand the reason for these from the documentation about the project after they have occurred. The external stakeholders have in this way during and after the project access to the documented details of the project. Another element of the UP that relates to The Logic of Standardising through Externalisation is the kind information that the woman receives through the UP. The information has, as described earlier, gone through a process of validation before being pushed to the woman. It is not the opinion of one health care professional, which is transformed into an article for the woman to read. Rather, it is based on several studies and literature reviews. Thereby an external standard for what is the right way to act is presented. To provide authoritative informa-

[76] The nature and impacts of translation during pregnancy as a project will be elaborated on in the discussion of the Contraction Meter.

tion can be said to be the *raison d'etre* of the national health portal, as it was established as a reaction to the number of unapproved (by the Danish Board of Health) websites containing information about health (Danish Counties 2002, p.5). Like the principles of EBM medicine, the UP seeks to eliminate the internal and obscure reasoning and instead establish an external reason for practitioners to use. Thereby the pregnant woman draws on an empiricist approach rather than a rationalistic approach (Wullf 2005).

A lot of resources go into performing the project, which I earlier referred to as the consumption of resources. The State allocates a number of resources by paying the health care professionals, maintaining hospital facilities, etc. In relation to the inclusion of the pregnant woman in the UP, "the resources of the woman are being added", as one of the participants at the workshop where the UP was conceived, said. To include the resources of the woman is a kind of centring that is related to the logic of centring patient, citizen and pregnant woman. The inclusion of the woman is sharing the care in the sense that the medical care is not only performed by the health care system. The sharing of the responsibility for the care, which Pritchard and Hughes mentioned as defining shared care, is in the UP only happening to a certain extent. It is at least not an equal sharing of the responsibility, as it is the pregnant woman who is responsible for the project as such, while the health care professionals are only responsible for their delineated parts.

The kind of project management found in the UP is related to the logic of regulation that is embedded in the StageGate® management technology. Managing pregnancy projects through the UP involves a kind of continuous regulation that is also entailed in the StageGate® processes. The UP helps the pregnant woman to avoid doing the wrong thing but does not help her doing the correct thing, as there are several ways of reaching the goal. The trajectory might develop differently than expected, but through points of evaluation (scrums) activities can be adjusted.

Comments to the UP that emerged during the experiment

The UP relies on the distinction between socioeconomically advantaged and disadvantaged pregnant women, while it focuses on the socioeconomically advantaged women. During the experiment this distinction was challenged in the

following ways. First of all, a pregnant woman commenting on the weblog raised an important question about "who gets to define the socioeconomically advantaged and disadvantaged respectively?" ("Helle", from experiment weblog). It is difficult to establish uniform criteria for when pregnant women are socioeconomically advantaged because many factors are significant. Today pregnant women are being labelled socioeconomically advantaged and disadvantaged, respectively, but this works because it does not happen explicit: "it happens to a great extent today [the labelling], but not very explicit (my partner and I couldn't help noticing that the GP had written in our record "socioeconomically advantaged")" ("Helle", from experiment weblog). The health care professionals involved in this pregnancy can from reading the maternity record see that this couple is socioeconomically advantaged, but it does not have the same effect as the UP would have because it does not result in a particular technologically supported pregnancy trajectory that is very different from the an other specific trajectory. This is not the same as saying that the labelling that happens today is without influence, but there does not exit two well-defined tracks today as there would with the UP. Another aspect in relation to being socioeconomically advantaged is that a woman very well be considered socioeconomically advantaged, but when she becomes pregnant she might change. Or as participant in the workshop said: "this is really the schism for this pregnant woman [the project manager] if she is used to being a super woman, and then there is a situation she can't control, because you can't and you're terrified, and you are that a thousand million times during pregnancy" (pregnant woman, workshop). In relation to the increased level of information, this is also problematic. The woman providing the last quote continues:

> You can become even more insecure, because it is again about being able to sort information, and you might be able to do that under normal conditions, but when you're pregnant it becomes very hard sort within old wives' tales. What is true? And you can easily get over-informed, it is super hard. (pregnant woman, workshop).

In relation to the exercise from the field of Interaction design called Designing for Extreme Character, this aspect was also noted. While reflecting on their product in relation to the Danish elite athlete Anja Andersen, a participant said that "you can [as an elite athlete] be on top of everything, but when you get pregnant, biology takes over" (pregnant woman, workshop).

Information is not just information, and when the health care service assumes that pregnant women would like to have more information about pregnancy in general and about their pregnancies in particular, it is not always the kind of information that the health care services imagine. The account from the EMR Project pointed to that. Additionally, a pregnant woman from the workshop supports this:

> Bur it is also about what is information? I'm, for example, deeply addicted to reading one birth tale on www.netbaby.dk every day, I simple must. From when the person experiences the first contraction all the way till a picture of the child at the end of the tale. And you won't find this on sundhed.dk, will you? And this is also information. People thought things were all right, but things were really problematic, or it felt all wrong, but then the birth was perfect and smooth. This is, at least, information that I need. (pregnant woman, workshop)

10.2.2 The Contraction Meter

Aspects of the second design initially come from the workshop which was a part of the collaboration with Hospital X. It was in particular the sensing aspects that were a part of the Water Break Tampon and the Infection Detecting Sanitary Towel that lived on in this second design. Later it was refined for the workshop with the pregnant women, were it was modified and concretised. It's current design was developed by a candidate student (who was employed as research assistant) and myself. The Contraction Meter (CM) is placed in the *Common space*, more specifically in Auxiliary Central. Hence it is an artefact that aids the pregnant woman and the health service in a particular aspect of the pregnancy. As the name implies, it is a device that measures the contractions when the woman is about to give birth, and displays information about this.

The CM is designed to minimise the pregnant woman's feelings of insecurity and uncertainty in relation to the beginning of the birth process. The final design of the CM, and as it was presented to health care professionals and the public, looks like the following:

Figure 10.4: 3D rendering of the Contraction Meter

The design of the CM consists of two main parts, a handheld device and a patch to place on the stomach. There is also a small memory card to store data, which can be inserted in the handheld device. The use of the CM starts when the pregnant woman thinks that she is going into labour. The patch on the stomach senses the contractions in the uterus in the same way as the CTG and transmits the data to the handheld device. The handheld device forwards the data from the patch to the maternity ward of the hospital where the woman is supposed to give birth. The computer in the maternity ward creates a graph showing the frequency of the contractions and their intensities. The graph is visible to the midwife in front of the computer, who will react if the graph shows that the birth is about to occur. The graph is also visible on the screen of the handheld device, but does not stand alone. The decision whether the pregnant woman should approach the hospital or not belongs to the midwife at the hospital. The midwife uses her experience to evaluate the development of the contractions.

This bears resemblances to The Contraction Game in the sense that this also included a midwife at the maternity ward to through experience could give sound advises.

Additionally, the pregnant woman will continuously evaluate the pain that she is experiencing and slide a little green knob up or down depending on whether the pain has increased or decreased. The scale goes from "no pain" to "worst possible pain" on the woman's handheld device. When looking at the graph showing the frequency and intensity of the contractions, the midwife can also see the pain assessment made by the woman herself. The midwife's view of the pain assessment shows a scale with numbers from zero to ten. In this way, the midwife can make a decision on the basis of the quantitative measuring of the contractions (in frequency and intensity) and a qualitative assessment made by the pregnant woman. Both parts of the data appear, however, quantified on the screen of the midwife. This enables the health care professional to use the same criteria in each case. The midwife instructs the woman by simple text messages and explanatory video sequences. When the pregnant woman wants to contact the maternity ward to indicate something that is not being reported by the pain assessment scale or the contraction-measuring patch, she can press a button and record an audio clip. She can choose to press two different buttons for this, as she can chose between two levels of priority. If the pregnant woman has an important question, she might choose the priority-one button, whereas if she has noticed something else (e.g., a distinct smell[77]), she might choose the priority-two button. The handheld device also features an emergency button enabling the pregnant woman to call the emergency services immediately.

An additional feature of the CM is the diary functionality. The pregnant woman can throughout the process press a button to record an audio entry in her diary. She can also choose to record an entry by pressing the video button, thus recording a video clip. The diary is stored on the memory card inserted in the handheld device, and is thought to be the woman's property. The diary from the birth process can be accessed later by the woman as souvenir from the birth or studied in the case of the woman having another child at a later stage.

The CM is part of the tools for managing pregnancy as a project. The Auxiliary Central introduced earlier, which entails the CM, is a collection of tools for

[77] Which might indicate amniotic water.

managing pregnancy as a project. Like the tools, which are necessary elements in software development projects, the Auxiliary Central contains tools for describing, measuring, calculating, communicating and articulating. The CM does all these things on different levels. In doing this it translates sensations between different domains. This action of translation is here to be understood in both the everyday sense of the word and in terms of ANT, as explained in Chapter 4. In the everyday sense of the word it means to change an expression from one vocabulary or language into another. In ANT translation is about the transformations of interests that occur when technology moves through different networks. When the contractions are being measured by the patch, and through the CM are communicated to the maternity ward, the contractions are going through a process of translation, from a rhythmic contraction of the muscles of the uterus to radio waves to the zeros and ones of the ubiquitous digital language to graphically displayed curves on the screen of the midwife's computer. Through these translations the contractions become something else, in the optics of ANT. This is problematic if one insists on an unchanging essence inside the contractions, but following the performative stance, this thought can in the words of Law be said to be "a dream of communion, intellectual, ecstatic, religious, erotic […] that does not have much of a role to play in a world of oscillation between singularity and multiplicity, interference and partial connection" (Law 2002., p.99). It is because of the translations that change the nature of the contractions that the pattern of contractions can be displayed to the midwife in the maternity ward. As translations are a matter of practice only some can happen (theoretically many are possible, however). An alliance between the different parties must be made, and the translated element must make sense in the new network. Performing an event such as contractions of the uterus as a curve makes sense in this particular situation because it can easily be related to other contraction rhythms graphically displayed on the screen. Translations give room for existence, as the contractions performed in another language or network are connected to other entities and interests. But other parts of the bodily performance of contractions could have been *carried over*. The sensation of pain is not *carried over*, and thus *betrayed*, as Law told us in Chapter 4 us (Law 2002, p.99).

The little green knob that the woman can slide up and down, depending on how much pain she is experiencing, is a central knot in another process of translation in the practice of the CM. It is through the manipulation of the knob that the subjective experience of pain that the pregnant woman is experiencing is trans-

lated to an expression between zero and ten. The quantified experience of pain connects very well the production of standards explained above about The Logic of Standardising through Externalisation. Experiences of pain felt by all pregnant women can be related after the process of translation. The translation process centred in the little green knob is related to the Visual Analogue Scale (VAS), as it, like the VAS, produces a decimal number, which is easily transported to other media, e.g. the record. In the CM the quantified performance of the pregnant woman's sensation of pain is automatically registered in the record. From the record it can be retrieved to create an accumulated standard for pain during different stages of entering into labour. The collection of quantified assessments from one facility can also be expressed as a number, which can be compared to other facilities. This can help the pregnant woman to choose where to give birth and politicians and administrators to evaluate the particular facility. In this way the CM is part of the measuring mechanisms producing data to empower the pregnant woman. The CM is prolonging the logic of the centring of the patient, citizen and pregnant woman in its contribution to the creation of informational resources for the woman to use in the decision-making processes. It is also related to The Logic of Standardising through Externalisation in this process since the expression of pain is standardised. This is what Timmermans and Berg refer to as *terminological standards*. As an IT device the CM connects all three logics.

The management practice in the CM is related to that of the PRINCE2® methodology in the sense that there is one course for the project, which should not be deviated from. Large parts of the management work consist of avoiding deviation from the course determined in the project plan. The CM aids the project manager in staying as close to the course as possible by delivering information about the actual status in relation to the course. Unlike the regulatory practice in the StageGate™ management, the idea is here not to adjust or regulate the course on the basis of the trajectory so far, but to get back to the course if it is deviated from.

Comments to the CM that emerged during the experiment

The CM gives pregnant women entering labour information about where in the process they are through objectified data about contractions. Whether or not this kind of information will have a reassuring effect on the women relies on

their how they would relate to this kind of information. One pregnant woman commenting on the experiment weblog does not think that she would rely on it: "I don't think that I as a first-time mother would rely on such an artefact. It is more assuring to talk to a midwife face to face" ("Anonymous", experiment weblog). A participant on the workshop concurs, as she, while refusing to participate in developing the CM, states that "it is definitely people that gives me security, that thing there [pointing towards a mock-up of the CM] does not make me feel secure. It is some kind of false image of security" (pregnant woman, workshop).

A participant at the workshop also points to the fact that insecurity is something that is created. She had been pregnant in Greenland for several months before coming to Denmark, where other procedures for maternity exist. In relation to insecurity she says:

> It is perhaps something that is created. Most of my pregnancy has taken place in Greenland. Then I came to Denmark, where they went berserk over the fact that I had not yet seen a physician. There were totally stressed and sent me to Hvidovre [Hospital]. And how could it be that I had only seen midwives, and…but they all say that things are fine. And the physician at Hvidovre Hospital didn't do anything else than at the seven midwife consultations [that I have had], that is, ask me how I feel, and then out again. A lot is being created in the Danish Health care service about us being able to control everything, even on the most detailed level. […] They looked at me [and said]: Well, you don't look like one of those who haven't been attended, I didn't show up being a drug addict (pregnant woman, workshop).

This participant makes an interesting point about how increased control can result in increased insecurity.

10.2.3 The Pregnancy Kit

The Pregnancy Kit (PK) as the third design belongs to Auxiliary Central. It is a digital artefact that the pregnant woman uses to obtain information about the pregnancy throughout the process. The artefact was initially designed as one of the three prototypical artefacts framing the workshop with the pregnant women. When the artefact was presented to the participants of the workshop it was only an empty container, which they should fill with functionality. This means that all of the functionalities of the PK come from this workshop. After the workshop a student and I created the current design on the basis of the discussions and

ideas that emerged at the workshop. The design is supposed to minimise the insecurity experienced by the woman throughout the pregnancy by decreasing uncertainty. The PK follows the same rationality presented in the UP, which says that by supplying the socioeconomically advantaged women with tools to give them answers about the pregnancy, the health care professionals can focus on the socioeconomically disadvantaged. Hence the PK is meant to support the socioeconomically advantaged pregnant woman during the process of pregnancy. The socioeconomically advantaged pregnant woman is as mentioned a construction that was present during the workshops, in our collaboration with Hospital X and in the EMR Project. The construction was assumed and designed for but never directly involved in either case. The constructed woman bears resemblances with a *persona*, as used in the field of Interaction design (e.g. in relation to scenarios Carrol 2000).

During interviews with pregnant women and at both workshops the need for additional information has been expressed several times, and not only written general information about pregnancy, but also, or rather, specific information about the pregnancy that they are involved in. One pregnant woman during the workshop with pregnant women said that, "hearing the foetus's heartbeat brings you close to it". The Managing Midwife at Hospital X said at a workshop, speaking in relation to the monitoring of bodily functions during pregnancy, that, "taking an element of uncertainty out of the woman's life can influence the process of birth, since it is those who are most afraid and tense that have the most problematic births, in comparison with those who have come to terms with the facts. It is our experience." She also mentioned during the same workshop that monitoring bodily functions during pregnancy was not like diagnosing yourself, but more related to women checking whether they are pregnant, have ovulation or have reached the menopause. "It is not a diagnosis, it is information." Additional information is thought to make pregnant women feel more secure in carrying out their part of the work in the pregnancy process. An example of this is the way the ultrasound scans reassure the pregnant woman that there is a foetus inside her growing belly. In spite of pregnancy test(s) and the GP's verification of the pregnancy's reality, there might still be uncertainty in relation to the reality of the pregnancy and foetus. Visual representations of the foetus produced by ultrasound scans often have a reassuring effect on pregnant women, as I will argue below. In summary, the assumption is that there is a need

for more representational work in relation to the pregnancy in general and specifically the foetus. The PK was designed and presented as the following:

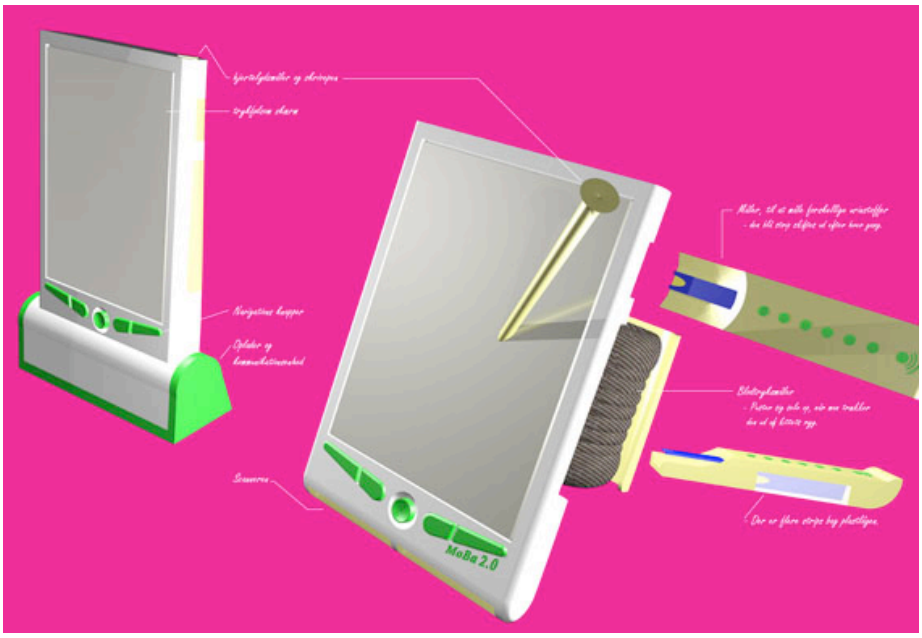


Figure 10.5: 3D rendering of the Pregnancy Kit

The shape of the PK is familiar to many as it looks like that of a PalmPilot or a similar PDA. It also has the touch-sensitive screen, navigation buttons and the pen of a Palm Pilot. In it's folded state the PK looks like an ordinary PalmPilot, and the interaction with it is also largely the same as with a PalmPilot. The pregnant woman can by pressing the buttons and touching the screen with the pen to access different information about the pregnancy. The information that she can access is mainly information that she has collected herself with the PK. In the PK are four different instruments for gathering information about the pregnancy.

The pen used for pressing the screen can be extended and function as stethoscope for listening to the foetus's heartbeat. The pen/stethoscope transmits the sound waves registered to the central handheld unit, which will play the sound through its speaker. The screen of the handheld unit can also display a graph showing the electrocardiogram of the foetus. Both the sound and the graph can be saved and accessed later or transferred to a PC. From the PC it can be emailed or otherwise transmitted to friends, family and the health care service.

This feature is largely similar to the equipment that the GP and the midwife use today for listening to the heartbeat of the foetus. This equipment is also possible to either buy or rent (for one month at the time) to "provide security during pregnancy" (as stated on a dealer's website).[78]

The PK also has a band, which extends from the back, and which can be put around the arm of the pregnant woman to measure the blood pressure. The data about the blood pressure can also be transferred to a PC and stored locally on the PK. The pregnant woman can access the latest reading of the blood pressure and compare it with earlier readings. She can also see the different readings on a graph showing the development of the blood pressure. Persisting high blood pressure during the pregnancy can indicate several things, e.g., pre-eclampsia, while general changes in blood pressure are normal during pregnancy. If the blood pressure continues to be high, measures should be taken, as high blood pressure can result in bleedings before the birth, slow growth of the foetus or even the death of the foetus. Kidneys and liver might also be harmed by a longer period of high blood pressure. This feature is largely the same as in the blood pressure monitors that health care professionals use or supermarkets sell.[79]

The third feature of the PK is the ability to analyse urine. To do this the woman pulls out a small object containing strips and sensors. The woman will lower a strip into a container of urine, then insert this in the object containing the strips and sensors, and finally insert the whole thing in the central handheld unit. The strips are disposable after use, and the artefact carries additional strips. The urine is analysed by the PK, and as the two other functions, data can be saved locally in the artefact or be transmitted to a PC. By testing the urine, it is possible to detect whether there is an excretion of albumin, sugar or bacteria. Albumin occurrence indicates pre-eclampsia or bladder infection. Excretion of sugar is important to detect, as it might mean that the woman is suffering from diabetes. The occurrence of bacteria in the urine is usually a sign of bladder infection, which should be treated.

The last functionality of the PK is the ability to perform ultrasound scans. With the underside of the artefact, the woman can scan the foetus by letting the scan-

[78] Dealer accessed 29/8/2007: http://www.billige-teste.dk/baby_watcher-c-9.html
[79] Seen in the Danish discount supermarket Netto at Nørrebrogade in Copenhagen on 15/11/2007.

ning sensors touch the lower part of her stomach. The screen of the handheld unit displays real-time images produced by the scanning sensors. Like ultrasound equipment used at hospitals, the PK can zoom and the contrast can be adjusted to produce the best image of the foetus. The pregnant woman can choose to record a video sequence of the foetus or to take a single shot. The PK can store the video sequences and pictures as well as so they can be transferred to a PC. When the PK has to be recharged, it is placed in a dock and displays the image of the last scan performed. The pregnant woman can, for example, choose to place the recharging dock of the PK on her bedside table, and thus see the image of the foetus as the first thing when she wakes up in the morning.

At the workshop with the health care professionals at Hospital X, the gynaecologist and manager of the ward related the pregnancy process to the driving of a car. There are a number of indicators informing the driver about the car's status during the driving process, but only if something is severely wrong will a red light show. So the speedometer, fuel indicator, etc. reassure you that things are all right, and help you to make minor adjustments to current activities. But if a red light comes on, your attention must be directed to that.

The PK provides a good aid to the pregnant woman and helps her perform the central elements of managing. Like the speedometer of a car, by measuring blood pressure, testing urine, performing ultrasound scans and recording the sound waves produced by the foetus's heart, the PK will tell the pregnant woman about the course of the project. In the case of *mannegiare* in relation to putting a horse through its paces in a manège, the barriers around the manège mark out the course which the human guiding the horse work makes the horse follow. In the case of pregnancy the course is created at the beginning of the pregnancy on the basis of the particular relevant issues (social factors, medical history, hereditary diseases, etc.) and the norm, which is constructed through the accumulation of data from pregnancies, evidence from interventions, macrosocial factors and political considerations. The PK will provide the pregnant woman with information about the particular pregnancy that she is managing and relate that to pre-established curves of how it is supposed to be. The monitory aspect that transverses the PK only makes sense in so far as that the data produced can be related to something else, which is the ideal, or the planned pregnancy. Continuing the metaphor of driving a car, we can say that the number of kilometres per hour displayed by the speedometer mainly makes sense in rela-

tion to knowledge about speed limits. If the speedometer says 90 km/h and a sign along the road says 80 km/h, the driver has to correct the speed if s/he wants to obey the traffic laws. Similarly, just as the human in the manège corrects the pace of the horse with the hand should it deviate from the course, the pregnant woman as a manager is also expected to take measures to correct the pregnancy when it deviates from the project plan. In the PK, as well as in the EMR Project, it is again the hand which constitutes the locus of the management power. It is the hand that manipulates the buttons in the PK and the mouse and keyboard in the EMR Project to govern the activities involved in the pregnancy. Via the hand's connection to the interface of the pregnancy set-up the pregnant woman becomes the *unity of command*, as demanded by Fayol. In the terminology of PRINCE2™, this *unity of command* becomes the project manager who is *responsible for doing the organising and controlling*.

When one undertakes a task like pregnancy that involves a series of actions and events, there are a number of expectations. If the course of events does not live up to these expectations, it is normal to make corrections. With the PK it is the kind of information about the course of events that turns it into a case of project management. The woman is presented with the sound of the foetus's heartbeat as well as a graphic curve, the values of her urine and blood, and ultrasound images of the foetus. These data are not neutral one-to-one representations of something happening inside the belly, but specific performances of the pregnancy. The data is presented in a way that makes it possible for the manager to evaluate the status of the project in relation to the plan. If the pregnant woman has not experienced pregnancy before, it becomes even more difficult to know whether things are all right just by paying attention to the bodily sensations. The claim of design is that the quantified and graphically displayed data presented by the PK makes the evaluation process easier.

The management of pregnancy as a project in the PK is related to how the pregnant woman was thought to act in the beginning of the EMR Project. The EMR is a part of the larger national health portal, and the way the pregnant woman is envisioned to use the EMR should thus be seen in relation to that. The EMR is split into a woman's room and a health care professional's room. From the woman's room the woman managing the pregnancy has access to two kinds of representations: representations of the particular pregnancy and representations of an ideal pregnancy. In order to prepare for visits with her GP or

the midwife, the pregnant woman would go through the data in her room. Initially in the EMR Project she was also thought to type in data before the first visit (which she currently does on a form during the first consultation with the GP just before meeting the GP). The division between the particular pregnancy and the ideal pregnancy follows a general classificatory logic pervading the entire portal of sundhed.dk. The portal has a vast amount of data about health issues available for the citizen (and the health care professionals) to access without logging onto the portal. When logged on, the citizen can access data about health issues in relation to her/himself. The general data available to citizens, and in the present case to the pregnant woman, is authorised by the health care authorities and based on statistically established evidence.

In the general part of the woman's room in the EMR the woman can read about different examinations and make a sound choice whether to have them or not. Since 2004 all pregnant women in Denmark have been offered a nuchal fold scanning which screens for the possibility of Down's Syndrome. The test involves an ultrasound scanning of the foetus where the clear translucent space in the tissue at the back of the foetus's neck is measured, and together with a blood test of the mother, produce a number indicating the risk. This test is, however, only a screening and cannot with certainty tell whether the unborn child would suffer from Down's Syndrome. If the number indicating the risk exceeds 1/300[80] the woman is advised to have an amniocentesis or placenta biopsy performed, which can detect Down's Syndrome without this uncertainty. The main problem with this test is that the procedure entails a 1/100 risk of losing the foetus (around the 15th week). Around 4/5 of women choose to continue this testing procedure at Rigshospitalet (Copenhagen University Hospital) (Tabor, 2/6/2008). Here it is the woman who is asked to make the executive decision of whether to proceed with the testing procedures or to stop because of the danger involved (possible together with her partner). In principle, it is also the woman who will decide whether to have the screening performed in the first place. Even though the screening is presented as a mere offer, it is nevertheless the norm for a woman to agree to it. This renders the possibility to not have the screening performed more of an offer than having it. At Rigshospitalet (Copenhagen University Hospital) Professor Ann Tabor estimates that

[80] According to the Danish Board of Health. The Rigshospital (the Copenhagen University Hospital), however, has chosen a number which makes it even more likely that the woman will proceed with the testing procedures (1/280).

99% of the pregnant women are having the nuchal fold test taken (Tabor, 2/6/2008).[81]

Following the analogy of driving a car introduced above, the practice of management during pregnancy can be compared with using a GPS when trying to find one's way in an unknown area. The screen on the GPS device has an ideal route and presents the driver with a continuously updated version of the where the car is. The physically existing car is positioned through satellites and displayed on the screen on the ideal course (or off course if it is deviated from). The pregnant woman can, through the PK, also see the ideal course created in the beginning of the pregnancy and a display of the actual pregnancy. When a turn is ahead when driving a car or an important decision is ahead in the case of pregnancy, it is displayed on the screen of the GPS device. If the course somehow is deviated from, the GPS device and the PK also show a way of getting back onto the right course.

The ideal course is, as explained above, established in the beginning of the pregnancy by combining accumulated data about Danish pregnancies and information about the particular woman. One place where the accumulated data is presented on sundhed.dk is through what is called the Due Date Calculator. Numerous women use this tool today, including pregnant women interviewed during this PhD project (a specific pregnant woman stated that it was the only part on sundhed.dk she used). It serves mainly two functions, as it, as the name indicates, provides the pregnant woman with a date for birth and, secondly, and in relation to the aspect of management more importantly, it provides a description of what happens in each of the different stages of pregnancy. As discussed above, the stages in the Due Date Calculator are divided into weeks. In the EMR the Due Date Calculator is connected to the woman's room as part of the general information. The course is set out by the Due Date Calculator with a description of where the project is supposed to be in each week. By typing in the date of the last period of her menstrual cycle, the Due Date Calculator will tell the woman how far the pregnancy has progressed and presents the text of the particular stage at the top of the screen, with a list of some of the weeks shown below. Besides dividing the project into stages, the Due Date Calculator

[81] She is aware of other hospitals where the percentage is lower, which she believes is due to language problems and cases where pregnant women get in contact with the health services too late (i.e., later than the 15th week).

also makes several distinctions between a number of actors involved and re-connects them. The following tale shows the (translated) highlights extracted from a display on the Due Date Calculator.

> "Your pregnancy will look like the following week for week:
>
> Week 3
>
> 1-2 hours after intercourse the sperm cells will have reached 30-40 cm on their way to the egg in the uterine tube. About 20 hours after intercourse the first cell division of the fertilised egg will commence. […]
>
> Week 4
>
> The placenta is formed and the foetus gets it nutrition through the placenta […] spinal marrow is in the process of formation. A part of this will later become the brain.
>
> Week 5
>
> The foetus is now 2.5 mm in diameter. A simple heart shaped like a tube is formed and begins to beat. […]
>
> […]
>
> Week 8
>
> […] The heart is now positioned in the ribcage and the foetus has developed a neck. Hands and feet are visible as small lumps […]
>
> Week 9
>
> […] Internal sexual organs are formed in both sexes. Girls have at this point immature eggs lying in their uterine tubes. There are about 10 million immature eggs. […] The foetus responds to touching.
>
> Week 10
>
> […] The heart is fully developed. It beats 140-150 times per minute. […]
>
> Week 11

[…] External sexual organs can be detected and testicles can be distinguished from uterine tubes. Boys' testicles now produce the male sex hormone testosterone.

Week 12

[…] The foetus now resembles a child and the head is completely upright […]

Week 13

[…] The face resembles more and more that of a human being […]

Week 14

[…] The ears are now positioned correctly and look like human ears. […] External sexual organs are visible and it is possible to tell the difference between boys and girls. […]

[…]

Week 17

[…] The foetus can how hear sounds.

[…]

Week 19

[…] Most people have felt life […]

Week 20

[…] The heart can be heard through a [...] stethoscope or by a Doppler examination (here ultrasound is used and you will be able to hear the sound of the heart through a speaker). […]

[…]

Week 22

[…] The child can react to loud sounds. […] The child responds to touching like a one-year old. The child's hearing is well-developed and it can respond to music and other sounds. […]

Week 23

[…] The brain is still developing rapidly.

[…]

Week 27

The child is now 22 cm in height in a sitting position and weighs 1000 grams. If the child is born now it will have good chances for survival.

[…]

Week 29

[…] Specific brain activity during sleep (REM) can be registered, which indicates that the child is dreaming.

[…]

Week 32

[…] If there is something that the child dislikes it will kick violently. This could be very loud sounds, for example.

Week 33

[…] All inner organs are fully developed. Now it is first and foremost the brain which is being refined.

Week 34

[…] If it is born it will, with a high probability, be able to manage on its own without developing impairments. […] The child prefers perhaps specific music or specific sounds. Mom's and Dad's voices are likely to seem calming.

[…]

Week 36

[…] The child has assumed birth position in the case of first-time mothers, and is lying head down.

> Week 37
>
> […] The body prepares itself to give birth.
>
> […]
>
> Week 39
>
> The child is 33 cm in height in a sitting position and weighs 3400 grams. The child is ready to be born and its parents are impatient! […]
>
> Week 40
>
> […] Now you have reached the due date and the child must be born. […] Congratulations on your child! And welcome to a new citizen of the world."[82]

Through the weeks in the Due Date Calculator the object of the project is divided into several actors. In the beginning there are the sperm cells reaching for the egg. Later, and for about half of the story, there is the foetus, which is the main actor throughout the tale. The foetus slowly develops vital organs and grows throughout the story. In the 9th week the foetus is gendered as a boy or a girl, as the internal sex organs are created. Two weeks later this process proceeds as the external and thus visible sex organs are developed, though it is not before the 14th week they are visible and a scanning can determine whether it is a boy or a girl. In the 12th week the foetus resembles a child, and in the 13th week its face even resembles the face of a human being. Through a Doppler examination, a wooden stethoscope and the pregnant woman's sensory apparatus it is possible to detect various signs of the foetus's existence from the outside. The foetus can sense sounds in the 17th week and later respond to this as well as to touching. In the 22nd week the foetus leaves the tale to make way for the new central actor, which is the child. The child becomes bigger and stronger, and from the 27th week on has good chances for survival if born prematurely. In the 34th week the child is so strong that it has a high probability of being able to manage on its own without developing any impairments. The child slowly de-

[82]http://www.sundhed.dk/wps/portal/_s.155/1969?contextfolderids=1023031028205427%2C1023031029164600

velops preferences, and the ability to express them. In the 32nd week the child is able to kick violently if it dislikes something. Mother and father's voices are likely to have a calming effect, and the child might prefer particular kinds of music. Near the end of the pregnancy, the mother's body emerges as being ready to give birth, and the feelings of the parents as they are beginning to feel impatient. The tale ends with the child being ready to be born, leaving the place to become a new "citizen of the world".

Through the stages of the pregnancy the Due Date Calculator is slowly constructing a new citizen of the world with the help of several actors. The project in the Due Date Calculator clearly has an outcome or a product as described above in relation to projectness. It is this product that connects to the external stakeholders, which are interested in this citizen of the world. Being the manager of a project producing a new citizen of the world, the woman cannot just do as she pleases, as the product will not just belong to her. The woman becomes responsible for something more than herself, which leads to an extended citizenship (which I will discuss in Chapter 11).

Another aspect of the PK is its ability to perform ultrasound scans of the foetus. These images can be viewed by the woman and her partner as real-time video or as images later, e.g., on the bedside table. They can also be sent to family and friends through email or be posted on various websites, e.g., the mother's own weblog. These images would be more or less accurate representations of the foetus, informing friends, family and others about the appearances of the foetus through the renderings of a scanner. Following a performative line of thought, we have to look at the local performances of the displaying of these representations and the translations involved in the process. Monica Casper writes that the scanning technology and the transportation of the images changes the foetus: "[V]isualization technologies like ultrasound reconfigure fetuses as cyborg images, grey-scale "baby pictures" on high-resolution photographic film. These images become "immutable mobiles" (Latour 1987) which convey fetal cyborgs across multiple domains" (Casper 1995, original quotations and reference). When pregnant women today distribute ultrasound scanning images across multiple domains, "foetal cyborgs" come to exist in the homes and offices of friends and family members. Casper's notion of a "fetal cyborg" is inspired by Donna Haraway's usage of the term cyborg (Haraway 1991b) and expresses the technologically mediated foetus that is produced by the scanning. Looking at the

foetal cyborgs contributes to the construction of this particular kind of foetus by associating expectations and hopes with it. Clicking the mouse button of the computer that controls the ultrasound scanning machinery produces images. The clicking is done when the foetus appears particularly human (e.g., when it is holding its hand up). This can result in images showing the foetus waving or otherwise appearing humanlike. The process of scanning, transporting and showing the images is part of making the pregnancy and the foetus real.

Because the foetus is inside the pregnant woman, it is not possible to see the foetus directly. Among other things, the foetus is represented by its heartbeat, accessed with stethoscope or Doppler equipment; its physical dimensions accessed by the midwife's touch and the pregnant woman's own body when "kicked" by the foetus; and the foetus's shape and (internal and external) organs accessed by a visual rendering of ultrasound scans. Just as Powell's satellite photos had a privileged status at the Security Council meeting on 5/2/2003 (as discussed in relation to ANT and translation in Chapter 4), ultrasound images also have a privileged status in the case of representing the foetus. Satellite and ultrasound technologies both produce convincing visualisations through black-boxed techniques based on esoteric science. Unlike other techniques of performing the foetus, ultrasound scanning produces a visual presentation. In the situation where the scanning is performed, the woman and her partner can even see the movement of the foetus. The live images of movement and the still pictures produced by the scanning are interpreted by the non-professional spectators with the mental apparatus developed by watching normal photographic images produced by exposing photographic film to light for a short period of time. The images are, however, produced in an entirely different manner as sound waves are sent through the skin of the woman and reflected off features in the woman's uterine area. By digitally processing the signals of the reflected sound waves a fuzzy grey low-resolution image emerges on the screen. After some adjustment, a lighter area can be distinguished against a dark area, thus displaying an object against a background.

Many pregnant women and their partners look forward to the scanning procedure because it performs the pregnancy as real for them. Especially for first-time pregnant women, the idea of being pregnant is very abstract and difficult to understand. To perform the foetus as an image assures the woman that there is something resembling a human being inside her belly. In relation to managing

pregnancy as a project, this kind of performance is beneficial as an ambiguous status of the pregnancy is likely to be problematic. The representational work makes both the foetus and the pregnancy real by portraying the foetus graphically. The nuchal fold scanning performed around the 12th week has the effect of concretising the pregnancy. It does, however, concretise the pregnancy and the foetus in a particular way, which is related to the technology involved in the procedure. Further in the pregnancy (around the 20th week) pregnant women in Denmark are offered a scanning procedure that searches for deformities, which is also highly anticipated by many women. The following tale is from a weblog where a pregnant woman shares her feelings and experiences during her pregnancy with the readers. The quotation concerns the scanning procedure which looks for deformity.

> "I have looked forward to this scan for quite some time, and I'm fairly convinced that we're being told the sex of the child. I know that it is not always possible, but the expectations were high! Probably also because we had such a positive experience with the [neck fold scan]. Well, after just a little period of waiting, we enter. The scanning woman […] seems nice, and we start. We see Baby making some sucking motions (it looks like he's just waking up), before she starts the thorough scanning. She is fairly nice, and explains constantly what she is doing and what she is looking for, but every 25th second she goes: "Here he is lying and relaxing". After 10 minutes I'm about to throw up and want to shout in her face: "Yes, what else is he supposed to do? Go for a walk?"
>
> All in all, the experience becomes very clinical and a bit too routine-like for my taste. She has her check list that she goes through, and she probably does a good job, it is just a bit too evident that she does this 20 times a day, and probably doesn't think it is all that exciting anymore. And when Einar near the end asks her to look for the sex, she uses exactly 11.seconds to note that, no, she probably can't tell what sex it is. And then we're done. No more watching the face again, just scanning and then "out". I can't hide how disappointed I am. Somehow I had probably built up the wrong expectations of what should happen. After the experience, I can see that it is probably not so bad after all, but during the situation, it felt very unjust and I was devastated because we weren't told the sex [of the baby]! Now I'm just very, very happy that everything looks all right with Baby! It'll probably be a perfect little rocket coming out in the end." (Hermine, pregnant woman, on a pregnancy weblog)[83]

[83] Accessed 23/7/2007 at http://www.mama.dk/blog/hermine/archive/2007/05/23/52.aspx

The tale of this pregnant woman suggests that the scanning is not the same kind of event that the health care service is making it out to be. The nurses performing the scanning usually, as in this case, have a list of issues to go through. Seeing the face several times and looking thoroughly for the foetus's sex is not the rationale for the scanning in the eyes of the health care service. Regardless of the rationale of the health care service, however, watching the face and, in particular, getting to know the foetus's sex is important for many pregnant women. Knowing the sex of the foetus is part of the process of making it real. When the sex is known a name can be attached to the foetus in accordance with current notions of what is masculine and what is feminine. This also opens up the possibility for purchasing and receiving gifts for the soon to be born baby, as many prefer to choose light blue colours for boys and light red colours for girls. The material arranging of the home also plays a strong part in making the pregnancy real. Both buying and living in an environment of baby gear tell the woman and her partner that a baby is coming. Going through the commentaries to a post about having an extra scanning performed, a two-times mother wrote:

> "It is immensely wonderful to know the sex before the birth. I have known it both times and have thought it to be magnificent because in that way it becomes more real and affecting." (Liselotte, two-times mother, in commentary on a weblog)[84]

The particular scanning discussed was additional to the scanning procedure searching for deformities to discover the sex of the baby, which apparently the woman was not told at the scanning procedure looking for deformity. That kind of scanning can be bought from private clinics, often under the name "safety scanning". The name indicates that it is not a scanning that primarily will look for deformities, Down's Syndrome or other problems, but merely will assure the woman that things are all right and safe. In addition to these kinds of scans, the woman can chose to have 3D/4D scanning performed. Most hospitals have the equipment to perform this type of scanning, but it is not included as part what the pregnant women are offered. It is only to scan for particular problems when the normal 2D scanning machinery is considered not to be detailed enough. A 3D scan shows the foetus in two dimensions, but adds depth to the image with shadows. The 3D images are displayed in sepia as opposed to the black/white of the 2D. A 4D scan indicates that the dimension of time is also added, which represents the foetus in a video clip. Pregnant women having this scanning per-

[84] Accessed 23/7/2007 at http://www.wannabemama.dk/?p=15

formed get a DVD that they can watch at home or even distribute via the Internet. Casper writes in relation to the traditional 2D ultrasound images that the representation of the foetus "*becomes* the phenomenon" as "these visual fetal cyborgs replace the organic foetal beings still inside their mother's bodies in another part of the hospital or at home" (Casper 1995, original italics).

Figure 9.5: 3D and 4D scans of foetuses

The management exercised is more closely related to that of PRINCE2® than that of StageGate™ because of the thoroughgoing aspect of control. The PK relies, like the CM, on a course that is set at the beginning of the process and the continuous assessing of the status serves primarily to get the project back on course if it has deviated from it, as there is only one course.

Comments to the PK that emerged during the experiment

The PK raised a number of comments about how the technology would influence pregnancy during the workshop. More specifically, the remote control which was introduced as part of the design exercise made one group reflect upon who controls who:

> "It is a good schism this, who controls who? You'd think as this kind of pregnant woman [managing pregnancy as a project], I'm in control, but with a device like this [the PK]…"
>
> Another participant interrupts: "that's what the rhetoric say"
>
> "You initially think that, and then you actually end up being controlled by the system" (group of participants, workshop)

Another pregnant woman participating in the workshops says something similar: "the more information you seek and the more you try to take care of things

yourself, the more you're also somehow being guided on a more subtle level […] by the health care services and the cultural context that you're in, and somehow also by the policy level (pregnant woman, participant). This points to an interesting aspect of control and power that I will go more into in Chapter 11. Another interesting point is the role of the remote control introduced during the workshop, as it prompted a reflection on the aspect of control. The remote control, which belonged to a remote controlled boat, also made the group realise that "it requires a good connection between the remote control and the [what is being controlled]. It requires that you can see it". When controlling a toy boat with a remote control, one must be able to see it. This also goes for pregnancy. The problem is that pregnancy is only immediately visible on a very superfluous level, hence the plethora of representational technologies.

A pregnant woman at the workshop responded to this kind of control by arguing that by using something like the PK "you forget to listen to your own intuition" (pregnant woman, workshop). To this, another participant responded: "you get a very poor feeling of the body […] because you leave it to a technical level" (pregnant woman, workshop). This made the first participant add that: "it puts in a layer of reflection between what you feel, you have to see it before you feel it" (pregnant woman, workshop).

10.3 Reflections on the Second Phase of the Experimentation

The second phase of the experiment consisted of exposing the three designs discussed above to the field. After the experimental workshop with the pregnant women where they were asked to think *with the text* in relation to the interests in the two change initiatives, a student working as a research assistant and I began the work of articulating the designs through graphic representations. I sought to give the object of study a chance to speak, by putting forth *propositions*, as explained in Chapter 2. These propositions were not primarily expressed through the language but rather through graphic representations. The propositions were designed in a 3D-modelling application. The designs were articulated through three posters and an Internet weblog.

Figure 3.5: Three posters presenting the three conceptual artefacts (Appendix A for larger images)

The concepts were presented on posters, which were printed in the A0-format (841mm × 1189mm) and placed in the waiting room of the maternity ward of the hospital. Before they were placed there they were presented in a smaller version at an open-house event at the hospital. I was asked by the management of the ward to participate in the event and spent half a day showing the posters and talking to people coming in from the street to participate in the open-house event and to the staff of the hospital. The staff included health care professionals such as midwives, physicians and nurses, as well as administrative staff such as people from hospital management. During the open-house event and through the posters in the waiting room of the maternity ward, people were referred to a so-called weblog. The weblog presented the project in general and each of the three concepts. It was the ambition of this weblog that people participating in the open-house event, people looking at the posters in the waiting room and participants of the workshops would not only read the presentation and look at the graphic representation but also engage in a discussion. Readers of the weblog could choose to engage in a discussion by commenting on the project.

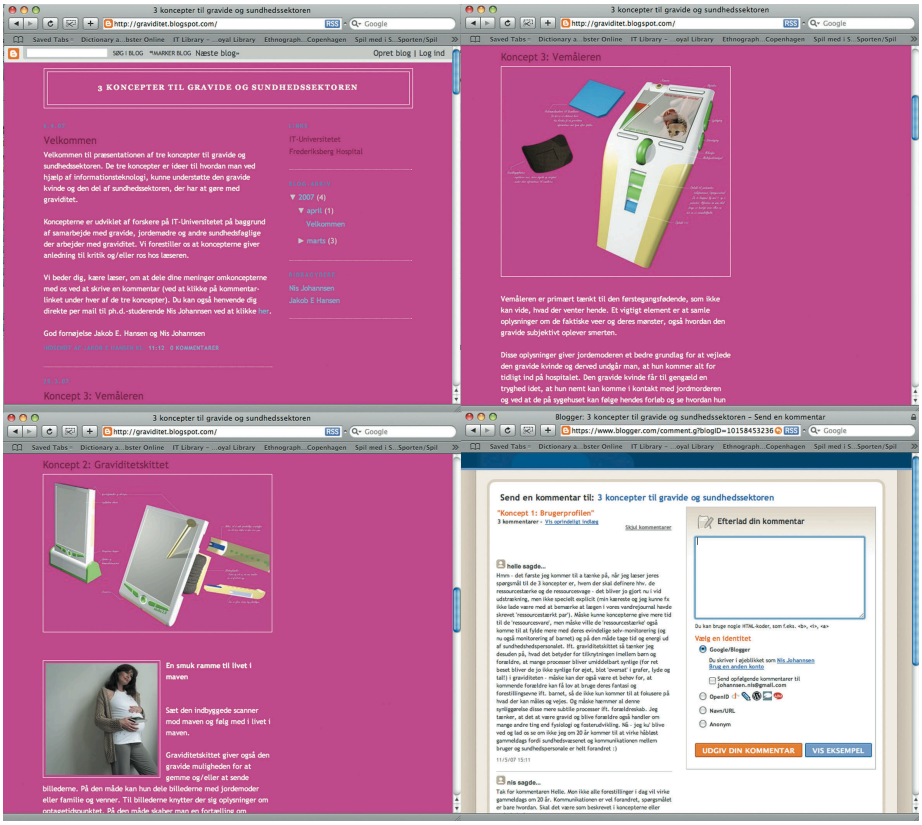


Figure 3.6: Screen dumps from weblog

I had a number of valuable conversations during the open-house event and got an impression of the variety of the field. The aesthetisation, however, was not entirely unproblematic. The ambition was but also to let people from the collaboration hospital *protest* (in Despret's sense). Here I believe the project ran into the common problem, described in Chapter 2, with humans as docile objects of study because of their tendency to accommodate the scientist. Another issue was the fact that the management of the ward was in general very focussed on making the ward look productive, to a higher degree than usual, I believe. This might have been due to the fact that at the present time there was a general restructuring of the obstetric wards at the hospitals of Copenhagen going on, which involved the possibility of this particular ward being closed or merged with another. The will to survive as a ward was displayed during the open-house event where I showed the posters. Apart from me and another man demonstrating an example of state of the art foetal surveillance technology (STAN), there

were only midwives present who through verbal argumentation, stickers and pamphlets argued for the continuation of their workplace, and thus their jobs.[85]

The medical manager of the whole hospital also came by during the open-house event, and was very thrilled with the posters. He began talking about how they could be included in the hospital's general PR work. Here another agenda was trying to commandeer my project, which resulted in a lack of coordination of the different protocols at stake during the collaboration. To invoke the vocabulary of ANT introduced in Chapter 4, my project were connected to various interests ranging from saving the particular workplace to making the whole hospital look good. In other words, my project was translated. The aesthetisation of the propositions allowed them to be incorporated in the other campaigns in a way that did not make a direct contribution to my project, at least not to the extent that I sought. Perhaps because I was not willing to let my project be translated, thus somehow subscribing to *the model of diffusion* to the extent the project is analogous to technology. The weblog allowed me to put forth my propositions, but only to expose them to resistance to a small degree. A number of people were made aware of the existence of the weblog through the posters, oral conversation and mails, but only three people actually participated in the discussion on the weblog. A lot of work was put into articulating the propositions in a way that allowed the concepts to appear real in order to avoid too much language, put perhaps this made it too hard for members of the field to protest.

The three designs, which served as propositions, were not articulate enough to generate the kind of response I was looking for on the weblog. Presenting them orally, however, was very educational and allowed members of the field to formulate resistance and reflection in general. Putting forth these propositions I thought they could stand alone and the medium was not as important. It seems, however, that the aesthetics was too hard to control when they acted like probes at a distance. It is more the particular translations that occurred in the construction of the designs that help me to engage with *the politics of the proposed changes* than exposing them. Above I have discussed the various translations of the proposed changes as they happened in this particular experiment. In the follow-

[85] They even managed to incorporate me in their campaign as they got me to wear a sticker from their campaign.

ing chapter I will look at these translations in the light of my theoretical point of departure – governmentality studies.

Chapter II

The Theoretical Point of Departure Revisited

In Chapter 3 I described my theoretical point of departure for my empirical journey in terms of governmentality. Since that we have seen the development of the EMR Project with emphasis on how the different interests involved carried the project a certain distance but could ultimately not deliver either the anticipated generic model for chronic illnesses nor for maternity care. We have also seen how specific interests connected researchers and the maternity ward of Hospital X for a period. Three logics were particularly important throughout both projects, as they made some actions sensible and other not. These logics each have a history that I have characterised as a contingent process. This means that they are shaped through practice and through performances. The logics do not determine practice but have a propositional character. The three logics are all active through the two empirical cases and, as we have seen, in several official reports and initiatives in Danish health care. They do not, however, determine practice and propositions continue to meet resistance. The logics still exist and through conceptual and material experimentation I have sought to see what kind of translations would occur if technologies and practices based on the logics were realised. Coming to the end of this dissertation I will now revisited my theoretical point of departure in order to see what we can say about the two cases, the logics and the experiment through the optics of governmentality. I will additionally see what I can say about governmentality from the lessons that I have learnt through the cases, the logics and the experiment.

I have in relation to The Logic of Centring the Citizen, Patient and Pregnant Woman (Chapter 7) written about how individuals have become preoccupied with their health through different kinds of patient centring strategies and practices. As discussed, citizens and patients centred through empowerment strategies are by *the empowerers* being equipped with specific means to help themselves. In the optics of governmentality this can be seen as conducting the con-

duct of these individuals as the empowered's conduct is conducted by *the empowerers*. Exercising governmentality in relation to health is performed through the technologies of government oriented towards health. An example of such a technology is sundhed.dk. Again, technology should not here be seen just as a material arrangement seeking to aid the human user in achieving a goal, but something in line with the definition by Rose given above. That is, put briefly, *an assemblage of relations structured by a practical rationality governed by a more or less conscious goal*. The *more or less conscious goal*, here, is the wellbeing of the population and the technology, being a government technology, is based on shaping the conduct of the individual, as it aspires *to achieve a certain outcome in terms of the conduct of the governed*. The wellbeing of the population is *a more or less conscious goal* because even though it probably also existed in the mind of the former Minister of Health and Interior (Lars Løkke Rasmussen), it is not the only place, and not the most important place. More importantly, the goal of the wellbeing of the population is, as Lupton shows, an imperative that is expressed and embedded in policies and public health initiatives. As discussed above in relation to regularity, performativity and contingent processes (Chapter 6), something like the preoccupation with health issues exists in and through practice. It is not confinable to the minds of subjects or to a transcendent place – be it structure or *Geist*.

The Danish national health portal sundhed.dk aims at giving the citizens the informational resources for taking care of themselves, as we saw in Chapter 5 and 7. Considering Foucault's bi-polar diagram of power, it is clear that the two poles are conjoined in sundhed.dk as both the population and the individual are being governed at the same time. As the portal exists today it is not as strong a government technology as, for example, the popular schoolroom because it is not (yet) an obligatory point of passage for being concerned with one's health. Sundhed.dk as an Internet health portal seeking to conduct the conducts of the citizens is very much in the making. This does not mean, however, that there are not other informational resources for pregnant women to use, the Internet in general, for example, is arguably an important source of alternative information.

The EMR Project, which sundhed.dk tried out in a Danish county, is also related to the logic of governmentality and its technologies. My understanding of government technologies as proposed by Rose makes me conceive of this project as *related* to the technology but not being a government technology as such. Like the "Scientific Management" as a government technology was a generic

model that could be (and was) implemented in various ways in various settings, Internet health portals can be (and are being) implemented in various ways in various settings. Following the logic and practice of governing, the EMR Project worked to create *discursive mechanisms that represented the domain to be governed as an intelligible field with specifiable limits and particular characteristics, and component parts linked together in some more or less systematic manner by forces, attractions and coexistences* (as Rose explained the fabric of government technologies above in Chapter 3). In the pregnant woman's room of the record, she could see the different bodily aspects of the pregnancy project that she is governing. To govern in a way that is sensible, she is also presented with *key features* of the "normal". The normal is, here, constructed through statistical means. It is by relating the two kinds of representations that the aspect of governmentality is expressed in the EMR. If the woman only had access to representations of the particular pregnancy that she manages, she could steer the project in an arbitrary direction. But with a *normal*, and thus desirable, course set out, as discussed in Chapter 10, the woman's conduct is likely to be based on the rationality expressed and embedded in the technology. The thought that she could steer the project in an arbitrary direction is, of course, somewhat hypothetical since normality is ubiquitously exercised through practice. The EMR Project, or sundhed.dk, for that matter, does not function alone but in relation with other technologies. The three designs in the experiment also each display the different types of logic of a government technology as they supply the project manager with both the norm and representations of the pregnancy in ways that allow her to act in a certain way. To manage pregnancy as a project through the designs explained is based on the use of technologies of the self in the sense that these technologies *permit the pregnant woman to effect by her own means a certain number of operations on her own body, so as to attain a certain state of happiness* (paraphrasing Foucault's definition of technologies of the self encountered above).

In relation to *technologies of the self* Foucault discusses different *techniques of the self* (Foucault 1988a). These techniques are necessary for using the technologies of the self but not reducible or belonging to the technologies. Put somewhat plainly, we might say that the techniques of the self are tools for the technologies. As Foucault writes about them (e.g., ibid., pp.34-39), they include techniques for examining yourself, and revealing yourself. Foucault gives examples of stoic and Christian techniques of the self, for instance "letters to friends", "disclosure of self", "memorizing", "confessing" (ibid., pp.34, 40). Examining

yourself is very much the core element of the Pregnancy Kit, as it is used by the woman to gather information about the body of herself and of the foetus. Testing the blood using the Pregnancy Kit is a technique of the self, and so is writing about experiences and bodily sensations during the day in the User Profile (or in the EMR, as it was thought at one point). Through exercising care for oneself by using the Contraction Meter a continuous examination and revelation of oneself take place, as the contractions are being measured and communicated to the birth ward at the same time.

To govern yourself, or manage yourself, one relies on specific techniques and needs technologies. The *field* is represented and made manageable in a certain way. As discussed in relation to manageable space, a certain kind of representation is necessary in order to make the object manipulable. To make pregnancy manipulable it is necessary to use representations based on numbers, statistics, graphs and curves. In the Pregnancy Kit the urine and blood are represented by numbers, and the heartbeat is represented by a sound and a curve. The Contraction Meter measures the contractions and represents them by expressing the intensity with a number and relates them on a graph. The User Profile represents a number of different aspects related to the particular pregnancy by numbers, graphs and curves. In the EMR the pregnant woman is also presented with these kinds of representations. When she needs to act upon the pregnancy she will relate these representations to the representations of the normal, the ideal course of the pregnancy. This is constructed through statistical aggregations and also expressed in numbers, curves and graphs. A current example of this is when the Danish pregnant woman has received the results from the "double-test". Compiled on the basis of the result of the neck fold scanning and a blood test, she receives two numbers relating to each other as a fraction. The first number is 1 and the second number is of course higher. This expresses the probability of the pregnancy ending up with the production of a child with Down's Syndrome. This fraction is completely arbitrary without something to compare it to. For the sake of governing, the hospitals in Denmark have standards (based on the Danish National Board of Health's standard) for advising women to undergo additional testing or not. If the risk is below 1/300, the hospitals advise the woman not to undergo amniocentesis; if higher, they advise her to do it. This representational practice is related to Rose's thoughts on the moleculisation of life; pregnancy is being molecularised. That is, the molar entity, the pregnancy, is being cut up in smaller component parts and represented

through numbers, curves and graphs. Whether or not the woman should have additional testing of the foetus is a decision where the resources for taking it are formulated by the State. In this way the State is conducting the conduct of the pregnant woman. The two poles of Foucault's bi-polar diagram of power, where one pole is concerned with the quality of the accumulated population and the other with the body of the specific individual, are in the present case merged into one. The health of the individual is sought to be optimised at the same time as that of the collective population. Not having the defective baby is performed as a rational choice, being beneficial for both the state and the woman.[86]

Foucault distinguishes in *The Birth of the Clinic* (Foucault 1994) between the body-as-object and the body-as-subject. The former is, as also Langstrup Nielsen states, "the pivotal object of medicine" (Langstrup Nielsen 2003) upon which the health care professionals perform their work. The body-as-subject is traditionally only sensing the consequences of the medical intervention, but with the inclusion of the pregnant woman in the medical work she is also working on the body-as-object. Governing the body, thus, splits the pregnant woman's body into two different kinds, a passive body-as-object and an active body-as-subject in the practice of governing. The body was also split before the inclusion of the patient, but body-as-subject was not included and therefore did not have to deal with the body-as-object.

Rose argues, as mentioned, that life is being molecularised and thus split into numerous numbers and values. I agree with him, but in the three designs and the management practices associated with these, there is also something *molar* at stake. For the body-as-subject to relate to the body-as-object it is molecularised as we have seen because of the many microscopic values that are being measured and managed. But in the case of pregnancy it is not only the pregnant woman's body that is of interest. As discussed through the designs and explained in the conceptual part of the experiment in relation to projectness, pregnancy as a project has an inside and an outside. The outside includes external stakeholders that are interested in the outcome of the project. In other words, the pregnancy is not the property of the pregnant woman alone; it also belongs to the surrounding society. This is not a new thing as the State has always depended on the production of new population, or better, the reproduction of its population.

[86] This is a kind of eugenics that is based on and exercised through the technologies of government and the logic of governmentality (Rose 2007, p.55).

The new thing is the kind of activation of the pregnant woman, or how she is being turned into a manager of the pregnancy as a project. Like a manager of a project in any organisational setting, the pregnant woman is undertaking a job, which produces an outcome that is beneficial for the collective. The pregnancy as a project becomes larger than the body-as-object (and the body-as-subject) of the pregnant woman through representational mechanisms. Pregnancy is represented in various ways. Rose states that many of the representations of the body are based on atomised fragments, thus performing the body as multiple molecular entities. But pregnancy is also *molarised* through representational mechanisms.

Visualisation technologies, which Rose mentions as a representational mechanisms molecularising the body and life, are in the case of pregnancy constructing a molar entity which external stakeholders can regard on their computer screens and through print-outs on their pin boards. To be precise, visualisation technologies together with communication technologies together with human labour construct many different molar entities, e.g., cyber foetuses, as Casper refers to them. Rose shows how technologies such as X-ray, medical film, mammograms, ultrasound, foetal images, EEG, PET, SPACT, fMRI scans and more atomise life. "Some reconstruct an apparent mimetic realism at the molecular level […and o]thers vizualize life in terms of manipulable strings of information" (Rose 2007, p.14). I agree that the way that molar entities such as "a boy inside the woman's belly" or "a becoming citizen" is being created through molecular mechanics, but the level of the molecular is left when the molar entities emerge. These molar entities rarely just exist for themselves as fragmented and scattered pieces but are being related to each other through different interests. The hopes and expectations attached to the *becoming citizen of the world* is in this way brought back to the manager of the pregnancy.

In one of Deleuze's later and somewhat atypical texts, "Postscript on the Societies of Control", he writes, inspired by Foucault, about how the society of control is replacing the society of discipline (Deleuze 1995). Along the same lines as Rose, he points to the dissolving of the individual. Where the society of discipline has two poles, comprised by the *signature*, which indicates the individual and the *number*, which indicate its position in the mass, the society of control has neither but just the *code* (ibid., pp.179-180). In the society of discipline the pair individual/mass is decisive, where in the society of control "[i]ndividuals have become "*dividuals*", and masses become samples, data, markets or "*banks*'"

(ibid., p.180). The individual has been dissolved in the code because it is less stable. The individual in the society of discipline was subjected to different delineable moulds, whereas the individual in the society of control is continuously moulded by the mechanisms of control (*modulation*), "dividing each within himself" (ibid., p.179). When the pregnant woman is managing pregnancy as a project through the designs that from the experiment, Deleuze's diagnosis of the difference between the society of discipline and that of control seems relevant. The woman as individual is "dividuated" into numerous numbers and values in the health system and these are being compared with and acted upon in relation to the desirable course or the norm, which in Deleuze's terms constitute the data or the bank. In relation to the modern health care service Deleuze writes:

> In the *hospital system*: the new medicine "without doctors or patients" that identifies potential cases and subjects at risk and is nothing to do with any progress toward individualizing treatment, which is how it's presented, but is the substitution for individual or numbered bodies of coded "dividual" matter to be controlled. (Deleuze 1995, p.182)

Considering the translations occurring in the experiment substantiates Deleuze's thoughts to a large extent. However, as objected to in relation to Rose's thoughts, the experiment also reveals the construction of a molar entity, which is the project or the becoming citizen of the world. So along with the *disintegration* of the individual into the "dividuated", a process of *re-integrating* the "dividuated" fragments is also in effect.

Foucault shows how being concerned with oneself and exercising care for oneself in the Ancient Greek city is a political endeavour of subjectivating the individual as a citizen. Rose and Lazzarato show how in the age of biopolitics life has become part of the State's capital and how governing yourself is governing a part of the biocapital. To exercise care for yourself and to govern yourself thus entails a kind of responsibility, which ties one to the State as a citizen. In Rose's sense, one is getting the responsibility for a larger part of the State's biocapital, the larger extent that the citizen is governing her/himself. My argument is that when representational mechanisms are also creating a molar entity, and the pregnant woman is managing pregnancy as a project, she is not just becoming responsible for a larger part of a molecularised biocapital, she is also becoming responsible for a new molar entity. This, I believe, is tying the pregnant woman

to the State in another and stronger way than if she was just becoming responsible for a quantitatively larger part of the biocapital. When we condemn pregnant women for smoking cigarettes in cafés (to the extent that you can still do this, of course), it is not just because we regard her as a bad governor of the extension of the biocapital for which she has become responsible, it is additionally because we regard her as a bad *manager* of the molar entity which she has become responsible for producing, i.e., the *becoming citizen of the world*.

The both quantitatively and qualitatively extended responsibility means that it is more difficult to step outside the norm as it is performed more strongly through the technology. Exercising the standard for good pregnancy management thus ensures a general good level of care quality, at least from the perspective of the health care services. Mechanisms of control are embedded in the practice of pregnancy, which makes alternative and non-approved ways of doing pregnancy difficult. The authorities and the surrounding citizens are likely to intervene if the project is being managed poorly. This may lead to the isolation of women not adhering to the prescribed way of doing pregnancy management. Like the way certain mothers who participated in a Danish *docu-soap* have been ridiculed on various chat forums and at dinner parties because of their inability to adhere to the standard of good mothering, bad pregnancy managers might also be made out to be misfits worthy of ridicule and public condemnation.[87] As shown, central to both the EMR Project and the collaboration with Hospital X, was a conceptualisation of pregnant women as particularly strong (physically and mentally) and as interested in their bodies and pregnancies. The norm as it is constructed and enforced through the technologies is thus appealing to a particular kind of citizen in Danish society and is less attractive to others. It is also easier for some to adhere to than for others. In line with the creation of guidelines and standards, discussed in Chapter 9, it becomes increasingly difficult through this particular shaping of a pregnant woman's conduct to be anything but a project manager of pregnancy.

After the experiment and our revisit to the theoretical point of departure we are now in a position to explicitly address the third research question about the politics of the proposed changes. Implicitly, however, I have addressed the

[87] E.g., in a discussion forum on an Internet portal for mothers and fathers where people were debating this issue, they agreed on the lack of cognitive abilities of these young mothers participating in the TV-show, as they called them stupid and ignorant. http://www.morfar.dk/forum/showthread.php?t=985&page=3 (accessed 30/7/2008)

question by showing how the designs would work and by revisiting the governmentality thoughts introduced in Chapter 3. Generally, I will say that the pregnant woman's relation to the body changes. The experiment illustrated that numbers and values replaced intuition and physical sensations. But not only her relation to the physical body changed, also her relation to the more indistinct entity constituted by the future baby changed. This is because it is represented through different media than analogue. The process of making the pregnancy and the future baby real is different and faster with ultrasound and heart rate monitoring technologies. In the experiment these representation technologies are not only at work in alliance with the GP and midwife but a part of the woman's everyday at home. The assumption that socioeconomically advantaged pregnant women will stop burdening the health care services if she can retrieve information was central in the collaboration with Hospital X. It was, however, questioned as we saw how an increased level of information not necessarily leads to less insecurity but also makes pregnant women aware of what can be wrong.

Chapter 12
Conclusion

Coming to the end of this dissertation, it is now time to recapitulate the argument as I conclude. I stated three research questions in the introduction relating to the two cases that serve as empirical foundation for this dissertation. In relation to the cases I have through the text sought to answer "What kind of changes were proposed and how?", "Why were these particular changes proposed?" and "What are the politics of the proposed changes?". Answering these questions has structured the dissertation in the sense that Chapter 3 looked into the particular changes proposed with regards to their character and the manner in which they were proposed. Chapter 7, 8 and 9 were about the logics that made the particular changes make sense. The last question was addressed through experimentation in Chapter 10 and by revisiting the theoretical point of departure in Chapter 11. These chapters did not do the job alone, however. To answer the research questions in more detail, I will in the following proceed one chapter at the time, thus including theoretical points and the methodological means by which I have sought to answer the questions. I will in the chapters mentioned above deal specifically with the three questions.

Chapter 2: "Approach and Style" provided the methodological background for engaging with the field and answering the three questions. Studying practice is neither a trivial nor an innocent activity. Donna Haraway taught us that when studying practice no position is privileged and a view is always a view from *somewhere*. The subject of scholar is part of the knowledge production, which poses a challenge for the scholar and the reader. Should we give up on objectivity and say that everything is subjective? An affirmative answer would make answering the three research questions a waste of time in an academic respect. Invoking Sandra Hardings *strong objectivity*, however, allows me to speak with partiality as long as I am not the only one with access to the world. I cannot

uncover all angles of the two change initiatives. Not only because I would require more time, but also because my situated vision only revealed certain aspects to me. It has been argued for a long time that the scholar is part of the knowledge production. The question is what we do about it. Alvin Gouldner argued for a reflexive approach, which, however, in the eyes of John Law easily becomes *self-indulgent self-revelations*. Bruno Latour distinguished between two approaches to reflect on the author's role in the text: *meta-reflection* and *infra-reflection*. Employing the latter avoids crypto-objectivism and deconstructivism by placing reflection on the same level as the rest of the text and the study. I have sought to incorporate myself and reflection on my influence, in the empirical process, as opposed to leaving it to end, by seeking *recalcitrance* towards propositions put forth during the empirical process. Thereby, I have sought to *risk* my conceptions of the two change initiatives. To do this I have had to connect myself to the initiatives through attracting *interest*.

The structure of the dissertation does not adhere to the demands of a traditional framework, which entails a linear progress where after a methodological chapter empirical data and theory is laid out and then synthesised through analysis leading to a conclusion. Because I do not ascribe the same ordering powers to theory, I have instead employed, what can be labelled, a post-methodological framework. In this the empirical data is not subjected to theory but draws in theoretical resources when they are needed. Rather than writing the genesis of post-methodology, I have positioned this dissertation among Donna Haraway's Modest Witness, Annemarie Mol's Body Multiple and John Law's Aircraft Stories. These texts have influenced this text and, I argue, are all important examples of unique post-methodological efforts. Post-methodology is advantageous in my project because it does not repress empirical data the same way as a traditional framework can do, however, it requires more from the reader because it circumvents a well-established reading practice within academia.

Chapter 3: "Theoretical Point of Departure" consists of an account of governmentality studies. The purpose of the chapter is to provide the reader with an idea of the theoretical point of departure of the author before entering the field. Governmentality studies are interested in the citizen's relation to the State. More specifically, governmentality studies argue that certain technologies (of the self) are employed by the citizen when s/he exercises care for her/himself. These technologies enable certain actions which are in the interest of the State. Instead

of forcefully making the citizen adhere to certain ways taking care of her/himself, government technologies make it lucrative for the citizen to do what is in the interest of the State. The State, in this way, *conducts the conduct* of the citizen, which is different from a disciplining approach (or *dispositf*) where the State would simply *conduct* the citizen.

Chapter 4: "Theoretical Resources I – ANT and the Socio-logic of Translation" explains central aspects of the theoretical tradition of Actor Network Theory (ANT). Among the plethora of concepts within ANT, translation is for my purpose particularly important and thus given special attention in this chapter. ANT taught us to acknowledge material agency and avoid a priori distinctions, such as human/non-human. Instead we were encouraged to think along the lines of networks and actors. The process of translation refers to adjustments that occur when e.g. technology is being transferred from one place to another. While some things are carried over, other things are *betrayed*. This was explained with a story about a Swedish technology being transferred to Nicaragua. The Nicaraguan networks in which the technology should be a part differed from the Swedish. This resulted in a number of gradual translations of the technology. It was not modified upon arriving in Nicaragua once and for all, rather a series of smaller reconfigurations were needed. This breaks with what Bruno Latour refers to as *the model of diffusion*. In *the model of translation* technology does not posses an inner force through which it overcomes resistance and diffuses itself upon society. Technology enters relations with actors and enters networks in practice. This requires translations altering the technology.

Chapter 5: "Two Change Initiatives" constitutes the empirical backbone of the dissertation and addresses the first research question. The first initiative is a project seeking to digitalise maternity records. The project was a part of the national health portal and even written into the project description of the portal. Even though the project upon first glance appears somewhat straightforward as it merely seeks to digitalise the maternity records, it was anything but straightforward. As taught by ANT, technologies need to connect to existing practices through interests which in turn translate them. The project consisted not of one interest (to digitalise maternity records) but of numerous. The technology did not posses an inner force but was made relevant through interests in disease management in chronic illness, digitalisation of the health care services, efficiency improvement, and quality assurance among others. The project ended

prematurely and did not live up to the expectations stated in various documents, but it was an achievement to hold the diverse interests together for a period.

The other change initiative is consisted of a collaboration between a maternity ward and a group of researchers at the IT University. This initiative was somewhat smaller in scope and studied from the inside, as I was among the researchers. There were also a number of interests involved in this case, though not as many as in the former case, as it was not connected to as many actors and practices. The generative highlight of the collaboration was a design workshop in which we together explored reconfigurations of maternity care through exploratory designs. A number of ideas emerged form this work, among them a focus that remained through the remaining exploration including the later experimentation phase. This focus comes from distinguishing between socioeconomically advantaged and disadvantaged pregnant women, and consists on designing IT for the socioeconomically advantaged in order to liberate resources to deal with the disadvantaged in other ways. This focus resonates with one of the assumptions in the first case, which was to start the process of building a generic model for disease management in chronic illness with pregnant women because a lot of them are socioeconomically advantaged and thus assumed to be interested in exercising care for themselves.

There were several similarities between the two change initiatives. Besides both being oriented towards change, I found three main categories of interests making the two initiatives possible. These are an interest in activating the pregnant woman in the care, developing IT, and standardising practices. These interests existed before the specific initiatives and are each developed through time. Like Annemarie Mol I characterise these lines of interest as *logics*, which enable certain connections and make other unlikely.

Chapter 6: "Theoretical Resources II – Performativity, Regularity and Contingent Processes" is the second chapter providing theoretical resources for the argument. The chapter explains how regularity is achieved through performances in practice as opposed to existing before practice. It is argued that performance is a constructive notion to explain events, as it refuses to explain things with reference to a priori existing regularity. Judith Butler argues that gender is performed through practice and not as something given in advance. Drawing on Michel Foucault and Gilles Deleuze I argue that regularity achieved through

performances influence other performances, which in turn affects the regularity. To designate particular regularities Michel Foucault uses the term *dispositif*. I, following Isabelle Stengers, am interested in the development of the regularities, which leads me to employ the notion of *contingent processes*.

Chapter 7: "The Logic of Centring the Citizen, Patient and Pregnant Woman" is the first logic that I followed as a contingent process. The account of the logic began with the 1960s empowerment initiatives seeking to strengthen the position of the citizen. In relation to the power over the citizen's body, the feminist project Our Bodies, Ourselves sought to take the power back from the medical establishment by creating and distributing alternative description of bodies. This process centres the individual by *taking* the power, which is different from how medical tradition through patient empowerment strategies has sought to *give* power to the individual. The difference is important because when the individual is given power a certain rationality also follows with the tools for exercising the power. The individual is here passively centred by the active empowerer, making the individual able to perform actions on her or his own body in accordance with medical rationality. Shared care has become a popular concept that lately has both accompanied and partly propelled numerous initiatives in relation to health care in Denmark. The idea is that care should be shared, preferably also with the patient. The existence of this logic is the first reason for why the particular changes were proposed in the two change initiatives.

Chapter 8: "The Logic of Seeking Progress through IT" constitutes the account of the second logic. The story of this logic started somewhat earlier than the previous story, as it started with the Enlightenment philosophy of Kant that articulates progress as something inevitable in development. Later, the logic became relevant to technology development, leading to a belief in new technology as something necessarily good. The logic of seeking progress through IT is today so strong that future technological innovations are being revealed to paying customers who then can choose to invest in them. In organising the health care services, IT has become a tool that, given it is used properly, will solve current problems. The extra workload and daily troubles imposed by the EMR Project on the health care professionals in Odense was accepted and explained away with the belief in IT as both inevitable and good. The collaboration with the maternity ward was also largely held together by a belief that IT would inevitably lead to something good. Because the second logic exists with its particular

development, the particular changes proposed managed to connect themselves to several practices.

Chapter 9: "The Logic of Standardising through Externalisation" ends the historically inspired analysis of the logics. This logic was followed back to the Enlightenment Era and the Vienna Circle in their respective attempts to replace metaphysics with reason. Later, we saw Frederick Taylor's Scientific Management in which he attempted to standardise work practices in order to increase profits. In health care standardisation through externalisation has had a strong influence, of which Evidence Based Medicine is an example. EBM is an ongoing process, which entails studying medical interventions and phenomena, articulating the standard through journals in particular, and enforcing the standard through designing the work practices. EBM also plays a part in standardising maternity care in Denmark, exemplified by the "Red Book" containing the official guidelines. Another powerful standardisation initiative that and works through externalisation is accreditation. During my studies at Hospital X accreditation played an important role in shaping the daily work practice at the maternity ward. Lastly, we encountered the pain assessment scale VAS that was a physical externalisation of the subjective experience of pain. The existence and development of this logic constitutes the third and final reason for why the particular changes were proposed.

Chapter 10: "Experimentation" was about the attempt to create the translations that would happen if the ambitions in the two change initiatives had not met as much resistance. The experiment should be regarded as a laboratory experiment in the sense that the specific translation that occurred are not necessarily the same that would happen if the ambitions from the two change initiatives were realised in other contexts, for example in the Danish society. The experimentation consisted of a conceptual level and material level. The first, which framed the second, characterised pregnancy as a *project* and the actions performed by the pregnant woman in relation to the pregnancy as *project management*. The second level of the experimentation produced three designs for managing pregnancy as a project. They drew on interests in the two change initiatives and the accounts of the contingent processes of the three logics. The first design was called The User Profile (UP) and was based on the distinction between socioeconomically advantaged and disadvantaged pregnant women, and focussed on supplying the former women with information about ideal pregnancy trajectories and their

specific projects. Through the UP, the pregnancy is being divided into several stages, separated by gates where the manager can assess the progress. During the different stages information packages are automatically and digitally pushed to the woman.

The second design was called The Contraction Meter and where the UP was a tool for managing the entire pregnancy as a project, the CM was only intended for the stage where the pregnant woman is going into labour and considers when to go to the hospital. It does, however, follow the same ambition of reassuring pregnant women through supplying information. The CM measures the contractions and compares the intensity and rhythm with the ideal pregnancy in this stage. In order to inform the maternity ward about the progress, the information is also transmitted to a computer here. The pain that labouring women experience is recorded in the CM and automatically in the record when the woman manipulates a small knob on the device. The process of aligning the particular course of the final stages of the pregnancy with the ideal involves a lot of translation work.

The third and final design was called The Pregnancy Kit and allows the pregnant woman to measure her blood pressure, analyse her urine, magnify the foetus's heart beat and through ultrasound display and record visual images of the foetus. Besides visualising the current progress of the project, the PK also renders this visible to the outside realm of the project. This consists of stakeholders not directly working on the project but who are nevertheless dependent on its outcome. This information consists both of numbers and graphs, which are immediately comparable to other numbers and graphs by health care professionals, but also visual images of the foetus and the sound of the heartbeat, which in character is more diffuse. It is, however, not irrelevant as it contributes to the existence of the project in other places than around the location of the woman. Through email, weblogs and printers the status of the process of producing the future "citizen of the world" may be communicated to friends, family and colleagues who are thus able to follow the progress of the project.

The three experimental designs reveal the connections and translations required to make them function within networks of maternity care. However, only in laboratory oriented manner, of course. In relation to the third research question, which was about the politics of the proposed changes, we can say that the preg-

nant woman's relation to the body changes. The experiment showed how numbers and values replaced intuition and physical sensations. Also the relation to the future baby changes, as it is represented through other media. Ultrasound scans and monitoring of heartbeat makes the future baby real in another way than without these particular mediations. We also saw how an increased level of information not necessarily leads to less insecurity but also makes pregnant women aware of what can be wrong. The assumption that socioeconomically advantaged pregnant women will stop burdening the health care services if she can retrieve information is thus questioned.

Chapter 11: "Theoretical Point of Departure Revisited" provides the last part of the argument. Here I come back to where I theoretically started my empirical journey. After showing what the proposed changes in the two change initiatives were about and how they were proposed, showing why they made sense through the respective stories of the three logics and finally showing what kind of translations that occurred through the experiment, it is time to ask what kind of sense the theoretical point of departure makes at the end of the trip. The thoughts explained with reference to governmentality studies in Chapter 3 make sense to great extent. The translations occurring through the materialisation of the ideas and ambitions can be characterised as the State *conducting the conduct* of the pregnant woman. The means for this also to some extent resonates with governmentality studies, as the pregnancy and the pregnant would are being split into numerous numbers and values in order to facilitate the practice of government. Something else also happens in the process, however. In addition to the molecularisation something *molar* is also created through the representation and distribution technologies. The different bits and pieces are being reconstructed into a project that is made available to actors existing in the project' outside to monitor. To invoke the vocabulary of governmentality studies, this means that the pregnant woman does not just become responsible for a quantitatively extended part of the biocapital but also its qualitative extension. In relation to the third research question, this means increasing demands to the pregnant woman.

This concludes my reflections on two change initiatives in relation to maternity care. It has been my ambition to contribute to the academic field of STS and the practical field interested in reconfigurations of maternity care. Whether or not I have managed to do this in the way I wanted remains to be seen, as Latour re-

minds us: "my [...] text is in your hands and lives and dies through what you will do to it" (Latour 1988, p.171).

Bibliography

Akrich, M. (1992): The De-Scription of Technical Objects. In Bijker, W. & Law, J. (eds.): *Shaping Technology / Building Society*. Cambridge Mass. MIT Press, pp. 205-224.

Albury, D: & Schwartz, J. (1982): Partial Progress : The Politics of Science and Technology. London. Pluto Press.

Andersen, J.K. & Johannsen, N. (2004): Det Intelligente Køleskab og fremtidens informationsteknologi - er stikket trukket ud? MA Thesis, Department for Information and Media Studies, Aarhus University (unpublished).

Andersen, J. K. & Johannsen, N. (2006): Digitalt røg i fremtidens køkken. In Brock, S., Rasmussen, A. & Hansen, B. (eds.): *Tankeføde, om mad, måltider og fødevarer i sammenhæng*. Århus. Philosophia, pp. 201-217.

Aristotle (2003): The Nicomachean Ethics. London. Penguin Classics.

Bansler, J.P., Havn, E.C., Johannsen, N., Winthereik, B. (2006): Elektronisk svangrejournal i Fyens Amt : - Evaluering af et pilotprojekt. In series: *CICT Working Paper*. Center for Information and Communication Technologies (CICT). Kongens Lyngby. IMM, The Technical University of Denmark.

Beyer, H., & Holtzblatt, K. (1998): Contextual Design: Defining Customer-Centered Systems. San Francisco. Morgan Kaufmann Publishers.

The Boston Women's Health Book Collective (1978): Our Bodies Ourselves. Harmondsworth. Penguin.

The Boston Women's Health Book Collective (2005): Our Bodies Ourselves: A New Edition for a New Era. New York. Touchstone.

Bowker, G. & Star S.L. (2000): Sorting Things Out, Classification and Its Consequences. Cambridge, Mass. MIT Press.

Brennan, P. & Safran, C. (2003): Report of conference track 3: patient empowerment. In *International Journal of Medical Informatics* 69, pp. 301-304.

Butler, J. ([1990]1999): Gender Trouble: Feminism and the Subversion of Identity. New York. Routledge.

Callon, M. (1980): Struggles and Negotiations to Define What is Problematic and What is Not: The Socio-logic of Translation. In Knorr-Certina, K.D., Krohn, R, and Whitley, D (ed.): *The Social Process of Scientific Investigation: Sociology of the Science Yearbook, vol. 4*. Dordrecht. Reidel, pp. 197-219.

Callon, M. (1986): Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay. In Law, J. (ed.): *Power, Action and Belief: A New Sociology of Knowledge*. London. Routledge, pp. 196-233.

Callon, M. (2007): What Does it Mean to Say that Economics is Performative? In Mackenzie D., Muniesa F. & Siu L. (eds.): D*o Economists Make Markets? On the Performativity of Economics*. Princeton. Princeton University Press, pp. 311-357.

Callon, M. and Latour, B. (1981): Unscrewing the Big Leviathan: how actors macrostructure reality and how sociologists help them to do so. In Knorr-Cetina, K. D and Cicourel, A. V. (eds.): *Advances in Social Theory and Methodology: Toward an Integration of Micro- and Macro-Sociologies*. Boston, Mass, Routledge and Kegan Paul: 277-303.

Callon, M. and Law, J. (1982): On Interests and their Transformation: Enrolment and Counter-Enrolment. In *Social Studies of Science* 12: 615-625.

Callon, M. & Rabeharisoa, V. (2004): Gino's Lesson on Humanity: Genetics, Mutual Entanglements and the Sociologist's role. In *Economy and Society*, Vol. 33, Issue 1 Feb. 2004, pp. 1-27.

Carrol, J.M. (2000): Making Use: Scenario-Based Design of Human-Computer Interactions. Cambridge, Mass. MIT Press.

Casper, M.J. (1995): Fetal Cyborgs and Technomoms on the Reproductive Frontier - Which Way to the Carnival? In Gary (ed.): *The Cyborg Handbook*. New York and London. Routledge.

Cochrane, A.L. (1972): Effectiveness and Efficiency: Random Reflections on Health Services. London. Nuffield Provincial Hospitals Trust.

Cowan, R.S. (1985): The Industrial Revolution in the Home. In Mackenzie, D. & Wajcman, J. (eds.): *The Social Shaping of Technology*. Buckingham. Open University Press.

Cooper, R.G. & Kleinschmidt, E.J. (2001): Stage-Gate® Process for New Product Success. Edited by Arleth, J. Copenhagen. Innovation Management.

Copenhagen Hospital Corporation (Hovedstadens Sygehusfællesskab) (2000a): Foranalyse til akkreditering i H:S – rapport over forløb og vurdering. Copenhagen. Copenhagen Hospital Corporation.

Copenhagen Hospital Corporation (Hovedstadens Sygehusfællesskab) (2000b): Mål i H:S 2000. Copenhagen. Copenhagen Hospital Corporation.

Danish Board of Health (Sundhedsstyrelsen) (1998): Svangreomsorg - Retningslinier og redegørelse. Copenhagen. Sundhedsstyrelsen.

Danish Counties (Amtsrådsforeningen, by Siticom Group) (2002): Etablering af National Sundhedsportal. Projektbeskrivelse. Copenhagen. Danish Counties. Retreived the 26/8/2007 from: http://www.sundhed.dk/Images/alle/redaktion/pdf/sundhedsportal.pdf.

Danish Counties (Amtsrådsforeningen) (2004): Sammenhæng i Søgelyset. Fremtidens Sundhedsvæsen til Debat. København. Amtsrådsforeningen.

Danish Regions (Danske Regioner) (2007): Kvalitet i Regionerne - Danske Regioner mener: Én hovedindgang til det digitaliserede sundhedsvæsen. Retrieved the 26/8/2007 from: http://www.regioner.dk/upload/publikationer/kvalitetsreform/sammenhaeng/digitalt%20sundhedsvæsen%20-%20pjece1.pdf.

Degoulet, P., Fieschi, M, Jaulent, M-C & Ménard, J. (2004): Patient Empowerment, Cybermedicine and Medical Education. In Nelson, R. & Ball M.J. (eds.): *Consumer Informatics - Applications and Strategies in Cyber Health Care*. New York. Springer, pp. 120-128.

DeLee, J. B. (1920): The Prophylactic Forceps Operations. In *American Journal of Obstetrics and Gynecology*, 1:34.

Deleuze, G. (1989): Qu'estce qu'un Dispositif? In Michel Foucault Philosophie. Recontre Internationale Raris 9, 19, 11 janvier 1988. Paris. Éditions du Seuil, pp. 185-195.

Deleuze, G. (1993): The Fold: Leibniz and the Baroque. Minneapolis. University of Minnesota Press.

Deleuze, G. (1995): Negotiations 1972-1990. New York. Columbia University Press.

Deleuze, G. (2004): Foucault. Frederiksberg. Det Lille Forlag (Danish version).

Deleuze, G. & Guattari, F. (1988): A Thousand Plateaus: Capitalism & Schizophrenia. London. Continuum.

Deleuze, G. & Guattari, F. (1994): What is Philosophy? London and New York. Verso.

Department for Heath and Interior (Indenrigs- og Sundhedsministeriet) (2000): National Strategy for the Hospital Service (Nationale Strategi for IT i Sygehusvæsenet 2000-2002). Copenhagen. Department for Heath and Interior.

Department for Heath and Interior (Indenrigs- og Sundhedsministeriet) (2003): National Strategy for the Health Care Service 2003-2007 (National IT-strategi for sundhedsvæsenet 2003-2007). Copenhagen. Department for Heath and Interior.

Despret, V. (2004): The Body We Care for: Figures of Anthropo-zoo-genesis. In Akrich, M. & Berg, M. (eds.): *Bodies on Trial*, special issue of *Body and Society*. Vol. 10, No. 2/3, pp. 111-134.

Despret, V. (2005): Sheep Do Have Opinions. In Latour, B. & Weibel, P. (eds): *Making Things Public*. ZKM Center for the Arts. Cambridge Mass. and London. MIT Press, pp. 360-368.

Dick-Read, G. ([1959] 2004): Childbirth Without Fear - The Principles and Practice of Natural Childbirth. London. Pinter and Martin.

Djajadiningrat, J.P., Gaver, W.W., Frens, J.W. (2000): Interaction relabelling and extreme characters: methods for exploring aesthetic interactions. In *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques*. ACM Press, pp. 66-71.

Dreyfus, H. & Rabinow, P. (1983): Michel Foucault, Beyond Structuralism and Hermeneutics. Chicago. University of Chicago Press.

Eriksen, M. A. (2006): Material Means: 'Re-Representing' – important explicit design activity. Exploratory paper. In *Proceedings of the ninth conference on Participatory Design* – PDC2006, Italy, July-August 2006

Gouldner, A. ([2003] 1970): Towards of Reflexive Sociology. In Delanty, G. & Strydom, P. (eds): Philosophies of Social Science. Philadelphia. Open Press University.

Enkin, M., Keirse, M., Neilson, J., Crowther, C., Duley, L., Hodnett, E. & Hofmeyr, J. (1995): Guide to Effective Care in Pregnancy and Childbirth. Oxford. Oxford University Press.

Evidence-based Medicine Working Group (1992): Evidence-based Medicine. A new Approach to Teaching the Practice of Medicine**.** In Journal of American Medical Association: 1992 Nov 4;268(17), pp. 2420-2425.

Fayol, H. (1949): General and industrial management. London. Pitman Publishing company.

Feinstein, A. (1967): Clinical Judgement. New York. Krueger & Co.

Foucault, M. (1984): The Politics of Health in the Eighteenth Century. In Rabinow, P. (ed.): *The Foucault Reader*. New York. Pantheon Books, pp. 273-289.

Foucault, M. (1988a): Technologies of the Self. In Luther, H.M, Gutman, H. & Hutton, P.H. (eds.): *Technologies of the Self - A Seminar with Michel Foucault*. Amherst. University of Massachusetts Press, pp. 16-49.

Foucault, M. (1988b): The Political Technologies of Individuals. In Luther, H.M, Gutman, H. & Hutton, P.H. (eds.): *Technologies of the Self - A Seminar with Michel Foucault*. Amherst. University of Massachusetts Press, pp. 145-162.

Foucault, M. (1990): The History of Sexuality v. 1. New York. Vintage Book Edition.

Foucault, M. (1991a): Discipline and Punish: The Birth of the Prison. London. Penguin Books.

Foucault, M. (1991b): Governmentality. In Burchell, G., Gordon, C. & Miller, P. (eds) *The Foucault Effect: Studies in Governmentality.* Chicago. University of Chicago Press, pp. 87-104.

Foucault, M. (1994): The Birth of the Clinic - An Archaeology of Medical Perception. New York. Vintage Book Edition.

Foucault, M. (2000): The subject and power. In Faubion, J.D. (ed.): *Michel Foucault, Essential works of Foucault 1954-1984, vol. 3, Power*. London. Allen Lane The Penguin Press, pp. 326-348.

Foucault, M. (2007): Security, Territory, Population - Lectures at College de France 1977-1978. New York. Palgrave Macmillan.

Goffman, E. (1959): The Presentation of Self in Everyday Life. New York. Doubleday Anchor Books.

Gomart, E. (2005): Political Aesthetics. Image and Form in Contemporary Dutch Spatial Politics. In Latour, B. & Weibel, P. (eds): *Making Things Public.* ZKM Center for the Arts. Cambridge Mass. and London. MIT Press, pp. 726-733.

Grol, R. (2001): Improving the Quality of Medical Care - Building Bridges Among Professional Pride, Payer Profit, and Patient Satisfaction. In *Journal of American Medical Association.* 2001;286, pp. 2578-2585.

Hampson, J.P, Roberts R.I. & Morgan D.A. (1996): Shared Care: A Review of the Literature. In *Family Practice* Vol. 13, No. 3. Oxford University Press, pp. 264-279.

Haraway, D.J. (1991a): Situated Knowledges: the Science Question in Feminism and the Privilege of Partial Perspective. In *Simians, Cyborgs and Women: The Reinvention of Nature.* New York. Routledge, pp. 183-201.

Haraway, D.J. (1991b): A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century. In *Simians, Cyborgs and Women: The Reinvention of Nature*. New York. Routledge, pp. 149-181.

Haraway, D.J. (1997): Modest_Witness@Second _Millenium.FemaleMan©_Meets_OncoMouse™. New York. Routledge.

Haraway, D.J. (2003): The Companion Species Manifesto: Dogs, People, and Significant Otherness. Chicago. Prickly Paradigm Press.

d'Harcourt, C. & Fontanel, B. (1997): Babies: History, Art, and Folklore. New York. Harry N. Abrams.

Holm, T., Lassen, J.F., Genefke, J., Melchiorsen, H., Hybel U. & Sørensen, J. (2006): Tværsektorielt samarbejde mellem almenpraksis og hospital – shared care belyst ved antikoagulansbehandling som eksempel. En medicinsk teknologivurdering MTV-raport, Medicinsk Teknologivurdering - Puljeprojekter 2006; 6(2). Sundhedsstyelsen- Center for Evaluering og Medicinsk Teknologivurdering.

Huth E.J. (2006): Jules Gavarret's Principes Généraux de Statistique Médicale: A Pioneering Text on the Statistical Analysis of the Results of Treatments. The James Lind Library.

Jensen, C.B. & Lauritsen, P. (2005): Reading Digital Denmark: IT Reports as Material-Semiotic Actors. In *Science, Technology & Human Values*, Vol. 30, No. 3, pp. 352-373.

Jensen, C.B., Lauritsen, P. & Olesen, F. (eds.) (2007): Introduktion til STS - Science, Technology, Society. Copenhagen. Hans Reitzels Forlag.

Johannsen, N. & Kensing, F. (2005): Empowerment reconsidered. In O. W. Bertelsen, N. O. Bouvin, P. G. Krogh, & M. Kyng (eds.): *Proceedings of the 4th Decennial Conference on Critical Computing: between Sense and Sensibility* (Aarhus, Denmark, August 20 - 24, 2005). ACM Press, New York, NY, pp. 203-206.

Johnson, J., (aka Latour, B). (1995). Mixing human and non-humans together: The sociology of the door-closer. In Star, S.L. (ed.), E*cologies of Knowledge: Work and Practices in Science and Technology.* Albany. SUNY Press, pp. 255-277.

Jonas, H. (1984): The Imperative of Responsibility - In search of an Ethics for the Technological Age. Chicago and London. The University of Chicago Press.

Kant, I. ([1798] 1970): The Contest of Faculties. In Reiss, H. *Kant's Political Writings*. Cambridge. Cambridge University Press.

Kierce, M., Renfrew, M.L., Neilson, J.P. & Crowther, C. (eds). (*undated*): Pregnancy and Childbirth Module, In: *The Cochrane Database of Systematic Reviews* (Database on disk and CDROM). The Cochrane Collaboration, Oxford. BMJ Publishing Group.

Kuhn, T. (1962): The Structure of Scientific Revolutions. Chicago. University of Chicago Press.

Latour, B. (1987): Science In Action: How to Follow Scientists and Engineers through Society. Cambridge, Mass. Harvard University Press.

Latour, B. (1988): The Politics of Explanation: an Alternative. In Woolgar, S. (ed.): *Knowledge and Reflexivity, New Frontiers in the Sociology of Knowledge*. London. Sage, pp. 155-177.

Latour, B. (1993): We Have Never Been Modern. Cambridge, Mass. Harvard University Press.

Latour, B. (2005): From Realpolitik to Dingpolitik or How to Make Things Public. In Latour, B. & Weibel, P. (eds) : *Making Things Public*. ZKM Center for the Arts. Cambridge Mass. and London. MIT Press.

Latour, B. (1999): On Recalling ANT. In Law, J. and Hassard, J. (eds.) *Actor network theory and after*. Oxford and Keele, Blackwell and the Sociological Review., pp. 15-25.

Latour, B. (2000): A Well-Articulated Primatology - Reflexions of a Fellow-Traveller. In Strum, S. & Fedigan, L. (eds.): *Primate Encounters*. Chicago and London. University of Chicago Press, pp. 358-381.

Latour, B. (2004): How to talk about the body? The Normative Dimension of Science Studies. In Akrich, M. & Berg, M. (eds.): *Bodies on Trial*, special issue of *Body and Society*. Vol. 10, No. 2/3 pp. 205-229.

Latour, B. (2005): Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford and New York. Oxford University Press.

Latour, B. & Woolgar, S. ([1979] 1986): Laboratory Life: The construction of Scientific Facts. Princeton. Princeton University Press.

Latour, B. & Weibel, P. (eds) (2005): Making Things Public. ZKM Center for the Arts. Cambridge Mass. and London. MIT Press.

Law, J. (1997): Traduction/Trahison: Notes on ANT. Retrieved the 17/1/2009 at http://www.comp.lancs.ac.uk/sociology/stslaw2.html, Department of Sociology, Lancaster University

Laursen, H.H. & Olesen, F. (1996): Interview med Bruno Latour. In Laursen, H.H. et al. (eds.) Verde nom tænkningen – Menneske, ting og nature. Philosphia 25, 3-4, pp. 243-267.

Law, J. (2002): Aircraft Stories - Decentering the Object in Technoscience. Durham and London. Duke University Press.

Law, J. (2004): After Method: Mess in Social Science Research. London. Routledge.

Law, J. and Hassard, J. (eds.). (1999): Actor Network Theory and After. Oxford and Keele, Blackwell and the Sociological Review.

Law, J. & Singleton, V. (2000): Performing Technology's Stories: On Social Constructivism, Performance, and Performativity. In *Technology and Culture* - Vol. 41, No. 4, October 2000, pp. 765-775.

Lazzarato, M. (2002): From Biopower to Biopolitics, in: *Foucault: Madness/Sexuality/Biopolitics*, *Pli*, The Warwick Journal of Philosophy, vol. 13, 2002, pp. 112-125.

Lazzarato, M. (2005): Biopolitics/Bioeconomics : a politics of multiplicity, in Multitudes # 22, autome 2005.

Lemmon, E.J. (1998 [1965]): Beginning Logic. Indianapolis. Hackett Publishing Company.

Lupton, D. (1995): The Imperative of health - Public health and the regulated body. London. Sage Publications Ltd.

Luther, H.M, Gutman, H. & Hutton, P.H. (eds.) (1988): Technologies of the Self - A Seminar with Michel Foucault. Amherst. University of Massachusetts Press.

Lynch, M. (2000): Against Reflexivity as an Academic Virtue and Source of Privileged Knowledge. In *Theory, Culture & Society*, Vol. 17, No. 3, (2000), pp. 26-54.

Löwgren, J. & Stolterman, E. (2004): Thoughtful Interaction Design: A Design Perspective on Information Technology. Cambridge, Mass. MIT Press.

Marland, H. (ed.): (1993): The Art of Midwifery: Early Modern Midwives in Europe. London. Routledge.

Mol, A. (2002): The body Multiple - Ontology in Medical Practice. Durham and London. Duke University Press.

Mol (2008): The Logic of Care. Oxon & New York. Routledge.

Moore, G. (1999): Crossing the Chasm: Marketing and Selling High-tech Products to Mainstream Customers. HarperBusiness Essentials.

Nielsen, H.L. (2003): Self-Monitoring : IT and the Construction of the Competent Patient. Copenhagen. Papers in Organization (pio); 2003-50 / IOA.

Nietzsche, F. ([1887] 1989): On the Genealogy of Morals (Translated by Kaufmann, W.). New York. Vintage Book Edition.

Office of Government Commerce, Great Britain (2005): Managing Successful Projects with PRINCE2. London. Office of Government Commerce.

Olesen, F. (1996): Konstruktive studier af videnskab og virkelighed. Fra sociologi til kulturforskning. In Laursen, H.H. et al. (eds.) Verde nom tænkningen – Menneske, ting og nature. Philosphia 25, 3-4, pp. 11-47.

Pickering, A. (1995): The Mangle of Practice: Time, Agency, and Science. Chicago and London. University of Chicago Press.

Pitt, J.C. (2000): Thinking about technology: Foundations of the Philosophy of Technology. New York. Seven Bridges Press.

Pritchard, P. & Hughes, J. (1995): Shared Care – The Future Imperative. London. Royal Society of Medicine Press.

Rabinow, P. (2003): Anthropos Today. Reflections on Modern Equipment. Princeton and Oxford: Princeton University Press.

Raffnsøe, S. & Gudmand-Høyer, M. (2005): Dispositivanalyse - en historisk socialanalytik hos Fucault. In Esmark et al. (eds.): *Poststrukturalistiske Analysestrategier*. Frederiksberg. Roskilde Universitetsforlag, pp. 153-176.

Rogers, Everett M. (2003): Diffusion of Innovations, 5th ed.. New York, NY. Free Press.

Rose, N. (1999): Governing the Soul: Shaping of the Private Self. London. Free Association Books Ltd.

Rose, N. (2007): The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century. Princeton. Princeton University Press.

Sackett, D.L., Rosenberg, W.M.C., Gray, J.A.M., Haynes, R.B. & Richardson, W.S. (1996): Evidence Based Medicine: What it is and what it isn't. Editorial in *British Medical Journal* 1996;312, pp. 71-72.

Salmon, P. & Hall, G.M. (2004): Patient empowerment or the emperor's new clothes. In *Journal of the Royal Society of Medicine*: 97(2). The Royal Society of Medicine, pp. 53-56.

Schlick, M. ([1932] 1996) Positivism and Realism. In Sarkar, S. (ed.): *Logical Empiricism at its Peak: Schlick, Carnap, and Neurath*. New York: Garland Pub.

Schön, D. (1991): Education the Reflective Practitioner. San Fransisco. Jossey-Bass Publishers.

Schön, D. (1992): Designing as reflective Conversation with the Materials of a design situation. In *Knowledge-Based Systems*. Vol. 5, no.1, pp. 3-12.

Schön, D. & Bennet, J. (1996): Reflective Conversation with Materials (An Interview with Donald Schön), in Winograd, T (ed.).: *Bringing Design to Software*. New York. ACM, pp. 171-184.

Shapin, S. & Schaffer, S. (1985): Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life. Princeton. Princeton University Press.

Sharp, H., Rogers, Y. & Preece, J. (2007): Interaction Design - Beyond Human-Computer Interaction. Chichester. Wiley.

Star, S. L. (1991): Power, Technologies and the phenomenology of Conventions: On Being Allergic to Onions. In Law, J. (ed.): *A Sociology of Monsters: Essays on Power, Technology and Domination*. London & New York. Routledge, pp. 26-56.

Stengers, I. (1997): Power and Invention: Situating Science. Minneapolis. University of Minnesota Press.

Stengers, I. (1999): For en Demokratisering av Vitenskapene. Oslo. Spartacus.

Stengers (2000): The Invention of Modern Science. Minneapolis. University of Minnesota Press.

Stigen, A. (1998): Tenkningens Historie. Ad Notam Gyldendal.

Suchman, L. (1987): Plans and Situated Actions: the Problem of Human-Machine Communication New York. Cambridge University Press.

SunhedsITnet (2006): Datasheet on sundhedsITnet. Retrieved the 21/4/2007 from:
http://www.sundhedsit.net/fileadmin/sundhedsitnet/Faktaark/sundhedsITnet-faktaark.pdf.

Taylor, F. W. (1911): The Principles of Scientific Management. New York. Harper & Row.

Timmermans, S. & Berg, M. (2003): The Gold Standard - The Challenge of Evidence-Based Medicine and Standardization in Health Care. Philadelphia. Temple University Press.

Weissberg, R. (1999): The Politics of Empowerment. Westport. Praeger Publishers.

von Wright, G.H. (1994): Myten om Fremskrittet. Halden. Cappelens Forlag.

Winner, L. (1985): Do Artifacts Have Politics? In Wajcman, J. & MacKenzie, D.A. (eds.) The Social Shaping of Technology. London. Open University Press.

Wulff, Henrik, R. (2005): Vejen til Evidensbaseret Medicin. In *Ugeskrift for Læger* 2005;167(50), pp. 4724-4725.

Web recourses:

http://www.sundhedsit.net/ (accessed 20/4/2007)

http://www.cifs.dk/ (accessed 20/4/2007)

http://innovationlab.net/ (accessed 20/4/2007)

http://www.hosp.dk/hvidovre.nsf/ResponseDokumenter/515C13478CBC51B2C1256B02002CB4B2 (accessed 20/4/2007)

http://www.billige-teste.dk/baby_watcher-c-9.html (accessed 29/8/2007)

http://www.mama.dk/blog/hermine/archive/2007/05/23/52.aspx (accessed 23/7/2007)

http://www.wannabemama.dk/?p=15 (accessed 23/7/2007)

http://www.etiskraad.dk/ (accessed 20/5/2007)

http://www.acure.dk/media/sundheddk%20demo.pps (accessed 20/5/2007)

http://www.u3.dk/default.asp?u3=stage-gate-process.html (accessed 14/4/2007)

http://www-05.ibm.com/services/dk/gbs/healthcare/shared-care.html (accessed 28/8/2008)

http://www.merriam-webster.com/dictionary/power (accessed 27/8/2008)

http://www.merriam-webster.com/dictionary/manage (accessed 27/8/2008)

http://www.denbedstestart.dk/_/media/Files/Sunde_vaner_5%2008.pdf (accessed 7/7/2008)

http://www.nhs.uk/livewell/pregnancy/pages/healthyeating.aspx (accessed 7/7/2008)

http://www.mor-far.dk/forum/showthread.php?t=985&page=3 (accessed 30/7/2008)

http://en.wikipedia.org/wiki/Management (accessed 27/8/2008)

http://en.wikipedia.org/wiki/Bilirubin (accessed 27/8/2008)

http://www.sundhed.dk/wps/portal/_s.155/1969?contextfolderids=10230310 28205427%2C1023031029164600 (accessed 9/9/2008)

http://www.sundhed.dk/ (accessed 9/9/2008)

Press releases, Radio programmes, newspaper articles and other:

Sundhed.dk, press release (6/5/2004):

http://www.sundhed.dk/wps/portal/_s.155/4503?_ARTIKEL_ID_=1023040 506132444. Accessed 20/5-2007

Sundhed.dk, press release (29/3/2006):

http://www.sundhed.dk/wps/portal/_s.155/4503?_ARTIKEL_ID_=1023060329132841. Accessed 20/5-2007

Sundhed.dk, press release (17/3/2007):

http://www.sundhed.dk/wps/portal/_s.155/4503?_ARTIKEL_ID_=2779060317103658. Accessed 20/5-2007

Børsen, newspaper article (15/9/2005): Når orden bliver en konkurrencefordel.1st. section, pp. 44- 45

Ann Tabor, Professor at Rigshospitalet, (2/6/2008, 17.10) in P1 Radio, Denmark's Radio

Internal document "Overview of Pilot Run", from 8/2/2005

Mail from the Health Care IT Committee of Health Services of Frederiksborg County to the local Frederiksborg project group (23/2/2006)

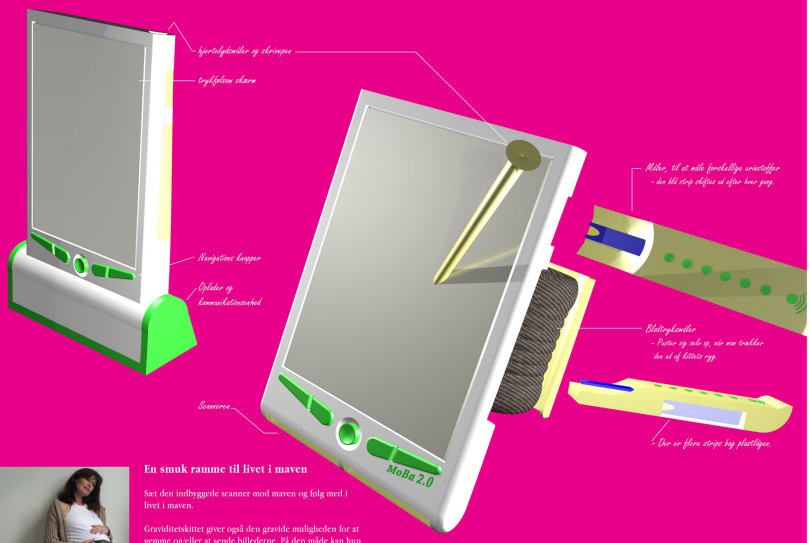
Table of Figures

Appendix A - Three Posters


Ve-måleren
Trykhed, oplysning og den personlige graviditets fortælling
Vemåleren set forfra og fra siderne
- ca. 1:1
Hukommelseskort til Vemåleren
- Da det er et eksternt kort
kan kvinden få sin graviditets
informationer med hjem efter fødslen.
Vemålingsplaster
- registerer veer, deres styrke og varighed
- sender disse informationer til vemåleren.
Kamera
Højtaler
Værst tænkelige smerter
Ingen smerter
Lyddagbog
Videodagbog
Mikrofon
Multifunktionshjul
Opkald til jordemoder
telefonsvarer /spørgecentral
De to knapper lig med 1. og 2.
prioritet. Altefter om man skal
bruge et hurtigt svar eller om
det er et normaltilfælde.
Opkald 112
Måling af veerne og af deres intensitet
Vemåleren får informationer om evt. veer fra et veplaster, som den gravide kvinde kan klistrer på maven når tiden nærmer sig, eller hun er i tvivl om veerne har sat ind.
Målingen af veerne er især en hjælp for førstegangsfødende.
Vemønsteret kan så aflæses på skærmen og af jordemoderen på sygehuset. Det vil sige, at de deler informationen og har en fælles adgang til viden om fødselsforløbet, som de kan gribe tilbage på i rådgivningssituationen.
Oplevelsen af smerten
På skærmen befinder der sig en kugle, som kan køres op og ned. Ved hjælp af denne kan den gravide selv angive hvor kraftigt hun oplever smerten.
Det sikrer at den subjektive følelse bliver en del af beslutningsgrundlaget.
Den gravide ser kun skalaen fra 'ingen smerter' til 'værst tænkelige smerter'.
Jordemoderen derimod får smerteangivelsen oversat til en skala fra 0 til 10 med decimaler.
Et minde for livet
Vemåleren gemmer alle oplysninger og hændelser i forhold til den tidslige kronologi på et hukommelseskort, som kvinden får med hjem efter fødslen.
Dette giver den nye familie muligheden for at dykke ned i fødselsfortællingen. Den meget intense oplevelse kan være svær at huske korrekt og mange har mange spørgsmål bagefter.
Men vemåleren er ikke bare et stykke værktøj, den er også en multimediedagbog, som familien kan glæde sig over bagefter.
Vemåleren er primært tænkt til den førstegangsfødende, som ikke kan vide, hvad der venter hende. Et vigtigt element er at samle oplysninger om de faktiske veer og deres mønster, også hvordan den gravide subjektivt oplever smerten.
Disse oplysninger giver jordemoderen et bedre grundlag for at vejlede den gravide kvinde og derved undgår man, at hun kommer alt for tidligt ind på hospitalet. Den gravide kvinde får til gengæld en trykhed ved at hun nemt kan komme i kontakt med jordmorderen og ved at de på sygehuset kan følge hendes forløb og se hvordan hun oplever smerterne.
Vemåleren er på størrelse med en mobiltelefon og kan derfor tages med overalt. Den kan også afspille mediefiler, som kan være nyttige for den gravide og hendes familie.
I stedet for at komme med tidskrævende forklaringer, kan jordmorderen sende færdige videoer ud til kvinderne, når situationen er til det. Vemåleren holder alle dens informationer fast og knytter dem til en tidslig kronologi, på den måde bliver den også til en dagbog.
Et par åbne spørgsmål: Vil produktet give den gravide mere tryghed og et bedre graviditetsforløb? Vil produktet skade eller forbedre dialogen mellem den gravide og det sundhedsfaglige personale? Hvis skyld er det, når der sker fejl? Hvilken indflydelse vil det havde på graviditets- og fødselsfortællingen? Hvordan vil produktet påvirke forholdet mellem den gravide og hendes partner og rollefordelingen optil fødslen?
Vi vil gerne høre din mening!
Gå ind på: http://graviditet.blogspot.com/
Her vil du kunne se mere om projekterne og diskuter projekterne med os.
Vi håber at høre fra dig.
Kontakt person: Nis Johannsen - ph.d. studerende - nijo@itu.dk
De ander projektdeltager:
Finn Kensing - docent på ITU - kensing@itu.dk
Jakob Esben Hansen - ITU studerende - Jakobesben@itu.dk

Graviditetskittet

Scanning + Blodtryk + Hjertelyd + Urinstoffer



En smuk ramme til livet i maven

Sæt den indbyggede scanner mod maven og følg med i livet i maven.

Graviditetskittet giver også den gravide muligheden for at gemme og/eller at sende billederne. På den måde kan hun dele billederne med jordemoder eller familie og venner.

Til billederne knytter der sig oplysninger om optagetidspunktet. På den måde skaber man en fortælling om barnets vækst.

Indblik i to menneskers sundhed

Med det kompakte graviditetskit kan man måle blodtryk og urinstoffer, høre barnets hjertelyd og scanne barnet.

Her ses hvordan man måler blodtrykket. Udover talværdier, kan man også se en kurve over de sidste målinger sammenholdt med normalværdierne.

På denne måde bliver ændringer synlige og det bliver nemmere for den gravide at vurdere, om det er nødvendigt at tale med jordemoderen.

Stemning og videndeling

Opladeren forvandler graviditetskittet til en smuk billedramme til fx. natbordet, men samtidig sørger den for at informationer mellem den selv og sundhedsvæsnet bliver udvekslet.

Idéen bag graviditetskittet er at samle nogle af de måleinstrumenter, som kan hjælpe den gravide og hendes partner med at træffe de rigtige beslutninger og give dem en følelse af øget kontrol i forhold til dialogen med sundhedsvæsnet.

Graviditetskittet er primært tænkt til den ressourcestærke gravide. Med graviditetskittet er det muligt at foretage scanninger af barnet, overvåge barnets hjertelyd, ens eget blodtryk og måle urinstoffer. Enheden giver også adgang til at dele og udveksle informationer i et community og med sundhedsvæsnet. På skærmen vil det fremgå, hvem der har adgang til målingerne og informationerne.
Skærmens størrelse tillader også at man betragter den i fællesskab, fx par, veninder og "sammen med jordemoderen. Det kompakte design gør at den nemt går ned i håndtasken og dermed understøtter en dynamisk og aktiv livsstil. Af samme årsag er alle funktionerne samlet i en enhed uden for mange løsdele.

Et par åbne spørgsmål: Vil produktet give den gravide mere tryghed og et bedre graviditetsforløb? Er der en fare for at kvinden bliver afhængig af at `se` sit barn og dermed udsætter det for unødige scanninger? Vil produktet skade eller forbedre dialogen mellem den gravide og det sundhedsfaglige personale? Hvilken indflydelse vil det havde på graviditets- og fødselsfortællingen? Hvordan vil produktet påvirke forholdet mellem den gravide og hendes partner?

Vi vil gerne høre din mening!

Gå ind på: **http://graviditet.blogspot.com/**

Her vil du kunne se mere om projekterne og diskuter projekterne med os.
Vi håber at høre fra dig.

Kontakt person: **Nis Johannsen** - ph.d. studerende - **nijo@itu.dk**
De ander projektdeltager:
Finn Kensing - docent på ITU - kensing@itu.dk
Jakob Esben Hansen - ITU studerende - Jakobesben@itu.dk

Appendix B - Ideas Catalogue