Subject of innovation or : how to redevelop 'the patient' with technology

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Introduction

Research in 2011 confirmed the longstanding suspicion that the painting *Landscape with the fall of Icarus* is not in fact an original by Pieter Brueghel the Elder (1525-1569) (Currie & Allart, 2012). It is probably based on his composition, which is now lost. Nonetheless, the picture that has been part of the collection of the Royal Museum of Fine Arts in Brussels for nearly a century was most likely painted by someone else.

Icarus' story is well-known. He and his father tried to make their escape from the palace of Knossos by fashioning wings of feather and wax. The flight in itself was a relatively successful affair, as both men managed to take off. However, in spite of his father's warnings, Icarus flew too close to the sun. The wax that held his wings together melted and Icarus fell.

This story is a popular illustration of studies of technology and innovation. For instance, Peter-Paul Verbeek's latest book (2011), which deals with the limits of the human condition, has Matisse's painting of the Icarus myth on its cover. The story symbolises the recklessness that characterises mankind in its quest for progress. The progress that Icarus and his father try to accomplish concerns the transcendence of the natural limitations of being human. The particular example of flight as a means of leaving earth – for other planets – formed the inspiration for Hannah Arendt's book *the Human Condition* (1959).

Nevertheless, technology does not seem to be the complicating factor in the story of Icarus and his father. After all, the first part of the flight was successful. His father did stay away from the sun. The fall of Icaurs seems to be due to his recklessness, which is very human indeed. However, his daredevilry was to some extent induced by the enticements that the technology of flight offered. It is the combination of human nature and a technological artefact that caused his fall.

Brueghel gave a peculiar twist to the story of Icarus in his composition, assuming it is his indeed. Contrary to what one might expect, the main elements of the mythical story are hardly central to the painting. In fact, a careless spectator may easily fail to notice Icarus' legs sticking out of the water, at the right bottom. It is one of the points of Breughel's craft as a composer. This twist is well captured by William Carlos Williams in his 1960 matter-of-factly poem about the painting.

Landscape With The Fall of Icarus

According to Brueghel
when Icarus fell
it was spring

a farmer was ploughing
his field
the whole pageantry

of the year was
awake tingling
near

the edge of the sea
concerned
with itself

sweating in the sun
that melted
the wings' wax

unsignificantly
off the coast
there was

a splash quite unnoticed
this was
Icarus drowning

Instead of focusing on Icarus and the wing-artefact that enabled him to fly and fall, the poem is about the painting. This is curious given the recent scholarly debates about the artist that composed it and the artist that painted it. The discussion about the origin of the painting is particularly interesting from the point of view of technology, and even more so of innovation. Innovation is often juxtaposed with imitation. It is ironic that a much-loved painting, which was long attributed to one of the major innovators of the Flemish renaissance, is in fact an imitation. It is telling that art historians stress that the *composition* of the painting was still the master's. Apparently, innovation is to a great extent related to the making of *blueprints*, of visionary examples.

Few of Leonardo da Vinci's 'dream machines' materialised in his time, but he is still considered one of the giants of innovation.

To return to Brueghel's composition and the poetic transcription by William Carlos Williams, we could wonder what this tells us about the interpretation of the relation between Icarus and his wings. The picture seems to suggest that attempts to transcend the human condition are only a small detail in the 'bigger picture'. Man's hopes and tragedies are what happen while we are busy making other plans, to speak with John Lennon. The artist seems to give us a warning: the success of the innovation of flight is not part of the scene, only the failure. And even that is not big news.

It is good to know that there is another copy of this painting, in the collection of the Museum van Buuren, also in Brussels. Also this seems to be a copy of Breughel's lost original. A crucial difference with the more famous copy is that Icarus' father, Daedalus, *is* portrayed here. We see him flying above the (future) Icarian Sea, while his son tragically drowns. The Van Buuren image is probably less strong, considering that it emphasises the mythical story, which is so nicely delegated to the background in the other painting. On the other hand, it does help to explain the posture of the peasant at the centre of both paintings. In the more famous copy, we just see him stare at the sky. In the Van Buuren copy, it is clear that his gaze is fixed on the amazing achievement of Daedalus' flight. No one is looking at poor Icarus. This might suggest a rather important feature of the relation between man and innovation: we tend to look at the sky, hoping for triumph, rather than trying to learn from failures.

These are themes we need to bear in mind. The enticements of technological advances. The shady border between innovation and imitation. The fact that technologies and humans are different when they come together. The notion that innovation and attempts to transcend the human condition are just breadcrumbs compared to the whole of affairs on earth. The idea that we think of innovation in terms of blueprints, rather than in terms of engineering actual 'things'. And, perhaps most of all, that innovation is something very, very old.

At this point, we must abandon Icarus for more recent tales of innovation. This study is to a great extent concerned with the development of an Electronic Health Record (EHR) in the Netherlands. Nevertheless, there are reoccurring themes. These are well captured by Richard Freeman, in his analysis of policy statements about the French and British Electronic Health Record:

> 'Some of the policy statements analysed here have something of the quality of science fiction. They describe a technology which even until recently would have been thought incredible, or literally fantastic, and use it to invoke a vision of a better world. It is of course a truism of studies of science fiction that it reveals more about the contemporary mind than future reality, and so it is here. But what is interesting about many of these documents is their traditionally modern cast: they are concerned with the provision of welfare according to industrial standards of efficiency as well as the standardization and surveillance they entail. The application of new information technology in healthcare frequently appears as a totalizing project [,which] is much more akin to the electrification of the Soviet Union than travels in hyper-reality' (2002, p. 53).

With this last sentence, Freeman might refer to Nigel Osborne's 1987 opera that carries the title *Electrification of the Soviet Union.* The title is allegedly a reference to Lenin's dictum 'Communism is Soviet power plus the electrification of the whole country' (Evans, 2002). Technology is not necessarily the product of rocket science. In the case of Icarus, it was a well-crafted construct of feathers and wax. Nevertheless, its spread may involve great determination and long planning.

This image of technology is all the more interesting if it is presented as innovation, which still has the connotation of 'something new'. In the Netherlands, as in many other countries, a debate on the development of a better world with an Electronic Health Record in it was repackaged as an instrument to enhance innovation.

We may wonder how such developments relate to those who end up working with it. In the case of the EHR we may think of patients, doctors, insurance agents, to name a few. It is clear that there is often a political dimension to the making of technologies, but it is not always clear what it does to those who use it. In his book on *Political Machines*, Andrew Barry formulates it well:

> 'techniques and devices can become political – not just in the sense that they are used as instruments in conflicts between political parties or interests [..], or the sense that the deployment of expertise offers a way of resolving political controversy [..] but in the sense that technical designs and devices are bound up with the constitution of the human and the social' (2001, p. 9).

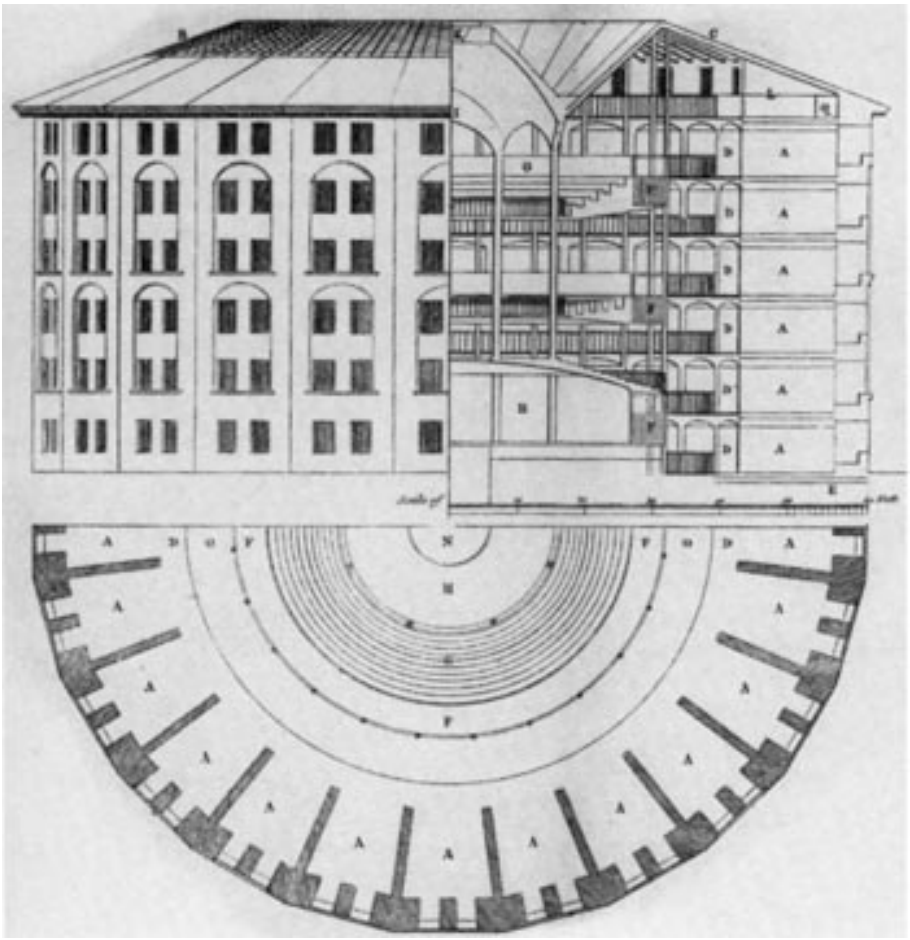
This leads to issues that the French philosopher Michel Foucault (1926-1984), on whose work Barry draws, discusses as questions concerning 'subjectivation'. Particularly the 'constitution of the human' implies the construction of the human subject, according to Foucault. This issue has motivated his life's work. He has shown that we are not only 'subject' to our own endeavours of self-development, but that we are simultaneously created by engaging in power relations with science, politics, modern institutions, and potentially, with technology. Understanding the tension between self-constitution and constitution-of-the-self-in-relation-to-others will probably never seize to be important. While we know a good deal of this tension through the work of Foucault, the role of technology is still unexplored territory.

In this study, I am concerned with the relation that is established between healthcare innovation and the recipient of care. The central question is how the 'subjectivity' of the care receiver is shaped in this relation. Part of the contribution is to develop an approach to questioning technology-related subjectivation. In a broader sense, this questions the relation between technology and politics. Before going into this question further, I explain the importance of examining technology and innovation in the light of Foucault's work. I hope this will reflect the paradox that I started off with.

Postpanopticism: Foucault in the 21st century

What is at stake in this study is the theoretical challenge to assess the importance of Foucault's work for the 21st century. This is the reason for selecting a case in the field of technology and innovation.

Since the 1990s, social scientists have struggled with the question of how to approach Foucault's legacy in the light of societal developments of the past two decades. Foucault is typically associated with notions like discipline and surveillance. This is largely based on his most popular work, *Discipline and Punish* (Foucault, 1977). It gives a philosophical reading of the history of our way of dealing with criminals and other 'dangerous individuals'. The book is subtitled *the birth of the prison*. The form that is discussed as the epiphany of disciplinary punishment is Jeremy Bentham's model of the panopticon, a very particular type of prison:



'at the periphery, an annular building; at the centre, a tower; this tower is pierced with wide windows that open onto the inner side of the ring; the peripheric building is divided into cells, each of which extends the whole width of the building; they have *two* windows, one on the inside, corresponding to the windows of the tower; the other, on the outside, allows the light to cross the cell from one end to the other. All that is needed, then, is to place a supervisor in a central tower and to shut up in each cell a madman, a patient, a condemned man, a worker or a schoolboy. By the effect of backlighting, one can observe from the tower, standing out precisely against the light, the small captive shadows in the cells of the periphery. They are like so many cages, so many small theatres, in which each actor is alone, perfectly individualized and constantly visible. The panoptic mechanism arranges spatial unities that make

> it possible to see constantly and to recognize immediately. In short, it reverses the principle of the dungeon; or rather of its three functions – to enclose, to deprive of light and to hide – it preserves only the first and eliminates the other two. Full lighting and the eye of a supervisor capture better than darkness, which ultimately protected. Visibility is a trap' (1977, p. 200).

As the multiplicity of 'inhabitants' of the cells already indicates: the panopticon is more than just a prison for Foucault. It is a metaphor for a general approach to questions of surveillance, punishment, discipline and control in modern Western society. A few years after this book was published, Foucault called the panopticon the 'very formula of liberal government' (Foucault, 2008, p. 67). He described this principle as panopticism.

Coming back to the question of the relevance of Foucault's work for the 21st century: the panoptical model is often considered dated by now. Under the banner of what some call 'postpanopticism', different scholars have proposed ways of apprehending the legacy of Foucault's work. Postpanoptical approaches are generally alternatives to, or updates of his model. Contrary to critiques, Roy Boyne argues that Foucault's later work is, in fact:

> '[t]he logic of Foucault's advocacy is precisely post-Panoptical. Faced with mounting evidence that the authoritarian absolutism underpinning the Christian concept of the self, for which Bentham's Panopticon was a precise model, is subject in the late twentieth century to increasing opposition, he was trying to learn from the past what the possibilities for the future of the self might include. As Mitchell Dean points out, this same logic is at work in his notion of governmentality' (2000, p. 302).

It is generally acknowledged that Foucault's late work implies a change of focus in one way or another. This focus on the development of personal ethics seems to be at odds with the focus on power and domination of his 1970s work. Even though it is clear that Foucault shifted his attention to other topics, and to another way of reasoning, I do not consider this as a complete break with his earlier work. I believe that the notion of 'governmentality', which Boyne refers to, is important in understanding the transition that took place in his thought. This notion was the focus point of Foucault's research at the end of the 1970s. It never led to a major publication. After his work on the history of the prison, he turned his attention to the role of state government in society. Obviously, his analysis differs from that of others. Governmental-

ity, for Foucault, is not about the practice of government, but about the 'reasoned way of governing best and, at the same time, reflection on the best possible way of governing' (Foucault, 2008, p. 2). One of the areas he studied was the rise of neoliberalism. It is the topic of a series of lectures at the College the France, which was recently translated into English under the title *The Birth of Biopolitics* (Foucault, 2008). In order to understand the connection to his later work, I pose that it is crucial to acknowledge the postpanoptical nature of this work. Most importantly, this is shown in the way the role of control in conceptualised. Foucault makes clear that this is fundamentally different from his earlier model by arguing that in neoliberalism, 'control is no longer just the necessary counterweight to freedom, as in the case of panopticism: it becomes its mainspring' (2008, p. 67).

One aim of this study if to show that Foucault's own vision of the postpanoptical society addresses a good part of the criticism he would receive after his death. What I hope to make clear is how a study of technology and innovation can add to this.

Post-Fordism

Over the past decade, Foucault has been presented as the philosopher of the Fordist era, the observer of conveyor belts, classroom order and military discipline. Given trends such as neoliberalism (Fraser, 2003; De Giorgi, 2007), globalisation (Fraser, 2003) and the rise of the information and network age (Munro, 2000), Foucault's rendering of Bentham's panoptical prison as a model of society is deemed dated, or even defunct. Zygmunt Bauman has argued that the model of spatial confinement – of labour, education, medicine, etc. – was typical for the industrial era. Now that people work at home, students do educational activities online, and patients are preferably not hospitalised, he argues that the 'trap' of visibility is less an issue than before. This would imply the end of mutual engagement between supervisors and supervised. He contends Foucault's views by pronouncing our phase of modernity 'liquid' (Bauman, 2000a). In a similar fashion, Bruno Latour (in Boyne, 2000) has argued that, even though many things in our society are visible – think of video surveillance – these are only segments of a larger whole, which could never be combined to produce a 'total gaze' as in Orwell's *1984.* Others add to this that visibility is much more problematic in modern networked organisations than in traditional hierarchic, or bureaucratic ones (Munro, 2000); that the disciplinary gaze has evaded because of decentralisation, desocialisation, privatisation (De Giorgi, 2007; Fraser, 2003);

and that Foucault's staging of the disciplinary society in the nation state is less valid because of globalisation (Fraser, 2003).

Different ways have been presented to categorise the different approaches of postpanopticism. Some have grouped them around their *relation* to Foucault's model: displacing, supplementing, reducing it, or declaring it redundant (Boyne, 2000; Ajana, 2005). Others have categorised the *type* of criticism that has been formulated. I focus on distinctions in the view of the *postpanoptical subject*. The subject of panopticism was controlled to provide against the perceived dangers that excessive freedom was thought to imply. Some maintain this view of the subject in postpanopticism, and argue for an 'update' of the mechanisms that are put forward to maintain it. Others have rejected this view of the subject, in favour of one that is controlled to be as free as possible, in a certain sense of the term. This view seems to be in line with Foucault's own view.

The panoptical subject updated

Even though some have reported a *reduction* in the need for panoptical measures, this does not necessarily do away with the subject of panopticism. Boyne (2000), for instance, names anticipation techniques, such as simulation, prediction and foresight, as means of *reducing* the need for panopticism. Creating virtual models has allegedly reduced the need for continuous surveillance of problems in the real world. He quotes Bogard in saying that '[e]ventually this will lead, by its means of perfection, to the elimination of the Panopticon itself' (2000, p. 300). Even thought such mechanisms of control sound somewhat more friendly that perpetual surveillance, they are still postulated to prohibit freedom, rather than to promote it. On the other hand, one might argue that such anticipatory measures provide a framework for allowing subjects a certain sense of freedom. This, however, does not seem to be Boyne's argument.

An argument that is similar to the thesis of reduction can be found in the idea that panopticism has become *redundant* in our phase of modernity, considering that its goal might have been reached: the creation of the 'normal' Western subject. In this case, the seized relevance of Foucault's framework is not due to the rise of new mechanisms, but due to its success. This thesis, however, is not taken very seriously, even by Boyne (2000), who coined the argument. Another 'redundancy argument', which proved to be more influential, is based on an extrapolation of Foucault's views on biopolitics. Some

quote Rabinow's work on genetic engineering as a mechanism that will create subjects that do not require discipline (Munro, 2000).

Munro's (2000) article on 'non-disciplinary power in the network society' is somewhat ambiguous when it comes to the view on the subject. On the one hand, he shows many examples of alternative power relations, in which disciplinary mechanisms are resisted, based on the use of information technology. This, however, does not seem to lead to a new view of the subject, even though it could. Such an active conception of the subject would be in sharp contrast with Foucault's views of the panoptical subject. On the other hand, the notion of resistance is far from foreign to a Foucauldian analysis. Already in *Discipline in Punish* (1977), Foucault pointed at the relevance of resistance. Interestingly, however, Munro immediately places his focus on the restriction of the control of the new forms of resistance that he discusses. His argument then should rather be regarded as an 'update' of the disciplinary toolbox that information technology offers. Subjects are no longer confined to non-communicative cells, but operate in 'connected nodes'. Governance of such a system turns into 'governing at a distance' (see also Fraser, 2003; Rose & Miller, 2008). In relation to that, IT enables the surveillance of data flows between these nodes, rather than visually monitoring every subject individually. It makes it possible to extend surveillance beyond the time and space limitation of a factory, classroom or army base. Munro points at concepts like Zuboff's 'Information Panopticon', or De Landa's 'Panspectron' to illustrate augmented views on control in the information society. In view of authors that provide the exact opposite argument (Yar, 2003), i.e. that the move away from confined spaces makes surveillance impossible, the definition of surveillance and the consequences of different forms become significant in the debate.

The new postpanoptical subject

The major factor distinguishing certain authors in the post-panoptical debate is the question of how new forms of freedom that the subject experiences relate to updated forms of normalisation and control.

Bauman's understanding of 'liquid modernity' departs from the panoptical subject, in the sense that he proposes that surveillance mechanisms have been dis*placed* by mechanisms of seduction. This argument is similar to what Frans Birrer has called 'systems of subliminal enticement' (2000). This concept implies a systemic analysis of relations, in order to uncover how actors' conduct is impacted by enticements that are not always outspoken. Of-

ten, such seduction or enticement is not beneficial to other actors within the system. Bauman argues that Foucault reflected on producer society, whereas our society is characterised by consumption. Deleuze (1995, p. 181) adds to this that capitalism these days is no longer about production, but about marketing. Such views portray consumers as being conditioned by continuous enticements, but as 'free' in the negative sense of the term. De Giorgio summarises the argument as follows:

> 'Whereas the reproduction of a work ethic could be assured through a net of disciplinary strategies aimed at normalising individuals, the instillation of a consumerist aesthetic requires something different: perhaps a system of control that leaves the individual as free—to choose what and how to consume—as possible' (2007, p. 251).

Bauman refers, amongst others, to Mathiesen's (1997a) concept of the *Synopticon* for building his case of the 'liquidity' of modernity. In his article, Mathiesen *supplements* the analysis of panopticism, by arguing that our society is just as much a 'viewer society' as it is a 'surveillance society'. The synopticon is about the 'many watching the few', referring mainly to the impact of mass media. Bauman (incorrectly) interprets the synopticon as a replacement of the Panopticon (2000a, p. 85-86), in line with his view on consumer society. He presents such societies as 'disengaged', not only in terms of the lack of contact between subjects, but more importantly in terms of the relation between supervisor and supervised. Bauman attributes the mutual engagement between supervisor and supervised to the Panopticon, which is lost in postpanopticism, according to him. With respect to postpanopticism, a term that he explicitly uses, he argues:

> 'We have moved now, as Mathiesen suggests, from a Panopticon-style to a *Synopticon*-style society: the tables have been reversed, and it is now the many who watch the few. Spectacles take the place of surveillance without losing any of the disciplining power of their predecessor. Obedience to standards (a pliable and exquisitely adjustable obedience to eminently flexible standards, let me add) tends to be achieved nowadays through enticement and seduction rather than coercion – and it appears in the disguise of the exercise of the free will, rather than revealing itself as an external force' (Bauman, 2000a, p. 85-86)

Others have put more emphasis on freedom in the sense of resistance, as we have already seen in the case of Munro (2000), based on the relaxation of panoptical control. In contrast to Munro, others have argued that this leads to a new subject, stating that 'the social individual is in no sense a passive object of a normalising gaze (on the way to becoming 'docile'), but is a creative and active subject in the management of his own visibility' (Yar, 2003, p. 264). Even though it seems clear that the juxtaposition between a sense of freedom and mechanisms of control is a core issue in postpanopticism, there is little agreement on the outcome of this.

The final point relating to a new type of subject relates to the alleged shift from a disciplinary society to a 'control society', which Deleuze has argued for. When arguing that '[i]ndividuals have become *'dividuals,'* and masses, samples, data, markets, or *'banks'*(1995, p. 180), he actually calls the existence of a single postpanoptical subjectivity into question. Nikolas Rose explains this argument by saying that 'we are dealing [..] not with subjects with a unique personality that is the expression of some inner fixed quality, but with elements, capacities, potentialities' (1999, p. 234). He does, however, add a cautionary remark here:

> 'Of course, these metaphors function more as hypotheses than conclusions. And they are framed in terms that are far too epochal: Foucault's disciplinary societies were not 'disciplined societies', but those where strategies and tactics of discipline were active; likewise, Deleuze's control societies should not be understood sociologically, but in terms of the emergence of new possibilities and the complexification of the old' (1999, p. 234-235).

The latter remark makes it clear that the question of what the postpanoptical subject is, is yet to be answered. In this sense, I provide an exposition of Foucault's own ideas in this area. This is mainly the topic of chapter two, but, in a sense, the whole thesis may be regarded as such.

I hope to have made clear that technology plays an important role in the conceptualisation of Foucault's work in the 21ste century. A particularly relevant way of connecting technology to questions of subject-formation is to look at discussions on innovation. Innovation connects questions of technology to an economic way of reasoning, at least for a majority of the community that deals with the topic.

Approach of the study

In the remainder of this introduction, I give an overview of how I approach the topic that I outlined so far. This implies that I provide two outlines of the study, a set of bifocals if you will. One is based on my background in public administration and political philosophy. The other is based on the notion that the work for this research was carried out in close proximity to more practice-oriented research in the technology and innovation group of a computer science institute, and a 'Living Lab'. The combination of these two lenses is probably best described by what is often called science and technology studies (STS), social studies of technology (STS), or science, technology and society (STS). Nevertheless, they can also be read as separate angles to the research.

The two lenses lead to two different ways of reading this study, two different outlines. First, a 'Foucauldian outline', in which I present the core theoretical issues in relation to subjectivation. The focus on technology and innovation requires that I draw on the work of other scholars, mainly from the philosophy and sociology of technology. Second is a 'healthcare innovation outline', in which I explain the empirical case on which I draw: the introduction of innovation in Dutch healthcare. In particular, I examine a large number of different policies and technologies: the so-called 'Diagnosis Treatment Combinations', the 'function-oriented description' technique in health insurance, the 'Quality-Adjusted Life Years' (QALY) calculation, a national infrastructure for an Electronic Health Record, a Personal Healthcare Budget, medical chat rooms and user-centred innovation projects.

These two lenses are structurally reinforced, in the sense that all parts and chapters of the study are given a title that reflects the dual focus. These can be found on the top of each page. Before going into the two lenses: a few more words about the approach in general.

The notion that I have both a theoretical and a practical focus does not imply that I merely 'apply' Foucault's work to technology and innovation. The approach is not exclusively to deduce concepts from his work to study empirical material. This is impossible in some of the cases that, because his work only offers a bare foundation for inquiring postpanopticism. Nevertheless, some chapters are structured this way. In other cases, I evoke a discussion of particular practices in relation to pro-innovation policy in Dutch healthcare to further a theoretical discussion. This is particularly at stake if Foucault's concepts seem inadequate to facilitate this. In the remainder of this introduction, I indicate where this is the case.

A Foucauldian outline

Theoretically, this study deals with the question of how people are 'subjectivated' in relation to technology and innovation. Michel Foucault's work forms the theoretical backbone. In a reflection on his efforts of the 1960s to the early 1980s, he argued that his goal had always been to study 'the different modes by which, in our culture, human beings are made subjects' (1982, p. 777). Foucault himself researched three of such modes throughout his work: turning people into objects of inquiry (early work), dividing people into social or political categories (middle work), and self-constitution (late work). I will slightly adapt his scheme, and add one 'mode', as I explain later.

The goal of this research is largely the same: I study how our 'postpanoptical' subjectivity is shaped in relation to technology and innovation in healthcare. Foucault distinguished between a number of ways in which subjectivation can occur. In this section, I explain to what extent I follow his approach. To some extent, I follow the types of subjectivation that he identified, but also add to this. Part of my theoretical objective is to re-assess Foucault's classification.

Apart from the theme of subjectivation, this study does not have a unitary theoretical framework that is applied consistently throughout. I take an incremental approach, in the sense that I add layers of theory along the way. This is necessary to unfold the complexity of the issue. In every chapter, I take another angle at probing the question of subjectivation. One way of looking at it is to say that I try to get 'deeper' into the matter by adding complexity. This creates a purposeful tension between some of the chapters, in the sense that the increased complexity of one chapter implies a reflection on the previous. Another way of looking at it is to say that I try to 'broaden' the scope, by including an entirely different way of examining subjectivation.

The chapters are grouped in four parts. They consist of two chapters each, with the exception of Part 1, which has one chapter only. The parts relate to the different 'modes of subjectivation' and to the different ways of examining innovation in healthcare. Within the 'Parts', the chapters touch on particular theoretical issues, applied to a particular case. In the remainder of this section, I introduce the overall logic for the different parts of the study.

Part 1: Modes of inquiry

The first type of subjectivation that Foucault distinguishes is to subject people to 'the modes of inquiry which try to give themselves the status of sci-

ences' (Foucault, 1982, p. 777). Inquiry is typically thought to relate to a specific object. This object, however, is not stable. As an example, Foucault discusses how modern economic theory contributed to the constitution of people as 'productive subjects' (Foucault, 2002). Before the 19th century, people were considered very differently when studies of the development of wealth were considered. Inquiry 'forms' the subject.

Particularly in his older work, from which the issue of object formation stems (Foucault, 1972), Foucault mainly examined scientific developments. Particularly considering that he later re-presented this work from the point of view of subjectivation, it seems that Foucault assumed a causal relation between scientific discourse and every day practice. To put it simply: scientific developments shape the world. One way of opening this rather rigid assumption to some extent, is to point our 'gaze' to types of inquiries that are not exclusively scientific. Governments make inquiries for instance. Just think of statistics of criminal behaviour, or local studies of citizen participation. Such inquiries also have their object, which may also develop over time. Are such 'practical' studies influenced by scientific developments? Did they form autonomously or perhaps in the interaction of science and practice? The relation between science and politics is a field with a considerable history. It is addressed by authors in various domains, ranging from science studies (e.g. Latour, 1993b) to political history (e.g. Amadae, 2003).

Part 2: Blueprinting power relations

Secondly, Foucault argues that people can be subjected to what he call*s* 'dividing practices'. In his historical studies, Foucault showed how we came to distinguish between people that are healthy or sick, or normal and abnormal, to name a few. At a first sight, this does not seem to be all that different from what I explained under the header of 'modes of inquiry'. Also inquiries have the potential of creating divides, by introducing categories and classifications. The difference here is that this second mode of subjectivation draws attention to 'practice'. In a sense, this relates to my earlier point about the exclusive focus on academia in the first 'mode'. The difference is, however, that the focus is not on inquiry here. 'To divide' seem to apply to the practice of societal and political institutions. Foucault refers to examples like the 'mad and the sane', the 'sick and the healthy', the 'criminals and the good boys'. What was called a 'madman' in the 19th, for instance, was entirely different than in the 18th century. The same applies to contemporary examples of conditions like ADHD. A much-heard statement is that a child that would have

been described as 'energetic' a few decades ago is now considered as medically deficient. If we take the medication that comes with such a label into consideration, it may be clear that children are subjectivised very differently now than before.

I want to broaden this useful idea of dividing practices, by broadening it to the more general notion of relations. Foucault's work has to a great extent focused on this. In *Discipline and Punish* (1977), the relation between the prison supervisor and the inmate plays a crucial role. It is the assumption of the prisoner that he might be observed which makes him exercise self-control. This notion of the potential of a surveillance relation in extrapolated to the model of 'panopticism'. Also power, one of his central concepts in examining subjectivation, is defined in relational terms. In Foucault's words: '[p]ower exists only when it is put into action' (1982, p. 788). He does not want to analyse power as something that some have, and others don't. Power is not an attribute, or property that individuals or institutions may 'own'. In this respect, institutions are rather the effect of power plays over time, than what causes them. He argues that

> 'the analysis of power relations within a society cannot be reduced to the study of a series of institutions, not even to the study all those institutions which would merit the name 'political.' Power relations are rooted in the system of social networks' (1982, p. 792-793).

The study of power relations, in the sense of what we call politics, is also central to Foucault's governmentality work (Foucault, 1991). In a sense, however, he takes a step back from the analysis of practice. As the definition that I used above suggests: governmentality is rather about the reflection on the practices of government than about the actual study of these practices. In terms of the focus on power relations, this implies that Foucault is interested in the reasoning and reflection about the types of relations that are considered to be beneficial from a governing point of view. They are not (yet) put into action and, therefore, are not to be considered as power relations as such.

This brings us back to a question that already appeared in relation to the discussion of the modes of inquiry. May we assume that discourses, in the sense of a set of statements over time, have a structuring effect on societal practice? May we assume that what scholars and politicians discuss in their plans, writings and other interactions affect the way our relations develop?

Do they indeed influence our subjectivity? Part 2 of this study will evoke questions like these, even though they will only be developed in Part 3.

The same opposition between a discursive and a practice-based notion of governmentality runs through the history of the use of the concept. Foucault started to reflect on the practices of government after his sabbatical, and dedicated himself to the topic during the period between 1977 and 1979. As I said before, he never published a major work on the topic. The concept was popularised in the 1990s by British scholars such as Nicholas Rose and Peter Miller (for a collection of articles see e.g. Rose & Miller, 2008). In the impressive range of studies that emerged from this school, the focus was mainly on the practice of government. Over the past years, however, Foucault's lectures on the topic were published, and translated into English (Foucault, 2007a; 2008). This re-established the understanding of governmentality as a reflection on governmental practice, rather than as practice itself. I do consider dividing practices, such as distinguishing categories like patient/consumer, ill/healthy, normal patient/expert patient, etc. However, I discuss these as part of a process of reasoning about governing healthcare.

An important concept in studies of governmentality is the notion of 'technologies of government' (Foucault, 2008). These technologies denote the practices that governments apply to steer the conducts of their subjects. Foucault refers to this as the 'conduct of conduct'. In this conception, technologies refer to techniques, tools or methods, rather than to 'hardware' or physical artefacts. Nevertheless, artefacts can be applied as a technology of government. To a great extent, this is the prime proposal of Part 2. Even though Foucault was accustomed to using terms like 'techniques' and 'technologies' in earlier work already, the term technology of government belongs to his governmentality period. He connects this to the modern concept of civil society, which is an aggregate of individuals and population. He argues that it is 'the correlate of a technology of government the rational measure of which must be juridically pegged to an economy understood as process of production and exchange' (Foucault, 2008, p. 296).

To consider civil society as a unit of governance is important in the light of my earlier remarks on subjectivation in societal relations. The fact that civil society is an assumed aggregate of individuals and the collective implies a set of assumed relations. Foucault is interested in the history of ideas about the relation between the individual and the collective. Even though it never developed into a major line of his work, it is of some importance in understanding his conception of governmentality. Foucault argues that, throughout history, different assumptions about the reciprocal relation between the whole and its parts have existed (Foucault, 2008). The most important development,

in this respect, has been the transition from social contract theory to liberalism, and later neoliberalism. While social contract theory assumed reciprocity between individuals and the collective to be based on a contractual agreement, neoliberalism believes it to be the outcome of a process of what I will call 'orchestrated synthesis'. The latter is related to what might be called the 'neoliberal subject': the *homo economicus.* This is one instance of discussing postpanoptical subjectivation. This shift in political perception forms the basis for chapter two. Because I position the notion of reciprocity as such a central concept in this study, it will play a role in the other parts as well. Both the theoretical and the practical lens will focus on this notion throughout.

What does all of this have to do with technology, if we do not look at it as tools or methods, but as artefacts? As things, as 'stuff'? What does technology have to do with societal relations, with governmentality and with the constitution of the subject? Even though we might interpret Foucault's work by looking at some of the physical constructions that he discussed, Foucault was not a philosopher of technology. In this respect, the work of Bruno Latour can help to provide a more detailed discussion. One of the main contributions of his work has been to overcome the idea that only human subjects can act. Like Foucault, he claims that human-centeredness is one of the main constituents of modern thought. However, contrary to many thinkers in the last decades of the twentieth century, he does not suggest to overcome the flaws of modernity by pronouncing ourselves and our societies 'postmodern'. Instead, Latour claims that 'we have never been modern' (Latour, 1993b). By claiming that 'objects too have agency' (2005b, p. 63), he overcomes the artificial divide between humans and 'nonhumans', which has influenced our thinking for centuries. Instead, he claims that also nonhumans have the capacity to act. An actor is 'what is made to act by others' (Latour, 2005b, p. 46).

Then, how to relate Latour's work to Foucault's in the sense of what I have discussed above? As I said, Foucault always had a good eye for techniques in which a particular power relation is embedded. Already in an early methodological statement, in 1969 (Foucault, 1972), he drew attention to the importance of analysing the role of systematic 'grids of specification', which often involve techniques for categorisation, classification and normalisation. Nevertheless, Latour claims that Foucault is one-sided for not labelling the acting role that concrete artefacts play (Crawford, 1993). In a later essay, Latour (1991) explicitly stated that it is technology that makes society 'durable', arguing that technological artefacts are used to make networks or associations more stable. The most stable ones, Callon and Latour argue, are those that no longer need to be considered. This is what they call black boxes. For

instance, we could imagine technologies, or other artefacts, which perform a certain repeated task that is likely to succeed every time. He uses the example of a door closer to illustrate this point (1988). Later, in a Heideggerian move, Latour also pointed out that the value of black-boxes often appears only when they break, when they need to be reconsidered (Latour, 1994; 1999).

Latour does not say much about subject formation. In fact, he is generally not very supportive of the term subject, considering that it evokes the subject-object dichotomy that he opposes. In this sense, it is probably not surprising that his remarks about the human subject are somewhat unorthodox. Referring to technology and other artefacts, he argues that '[h]umans are no longer by themselves' (Latour, 1999, p. 190). Subject formation is no longer an exclusively human affair. In fact, one might go further by posing that it probably never was. Then what do technologies do with respect to the human subject? According to Latour, they operate much like what you would call 'plug-ins' on the internet, as 'vehicles that transport individuality, subjectivity, personhood, and interiority' (2005b, p. 207). He continues by arguing that 'to obtain 'complete' human actors, you have to *compose* them out of many successive *layers*, each of which is empirically distinct from the next'. The term 'plug-in' may suggest a human-directedness that you would not expect of Latour. It is clear, however, that he does in fact point at technologies that have the capacity to act. In reference to this, the argues that, '[w]hile none of the plug-ins have the power to determine, they can simply *make* someone *do* something' (2005b, p. 214-215). I argue that the electronic health record is one of such plug-ins, one of such layers that give shape to the human subject.

Important to note here is Latour's assertion that a technology – like the above-mentioned door closer – functions according to a 'script'. A script of a technology is something else than its functionality. While functionality simply refers to the 'ability to reach the end to which [technologies] were designed', scripts refer to the type of behaviour that the technology is meant to evoke, as it is summarised by Verbeek (2006, p. 362). Often, the notion of function and script cannot be separated entirely. For instance, adding new functionality to an existing technology is likely to change its scripts.

Apart from evoking behaviour, the script of a technology can also contain morality. Latour uses the earlier-mentioned example of the automatic door closer to illustrate this. Such artefacts come in a number of different forms. The hydraulic door closer that Latour seems to admire, for instance, has the advantage of not banging the door in your face after releasing it, but it has the disadvantage of being very hard to open. As such, such artefacts 'discriminate against very little and very old persons' (1992, p. 159).

How can we consider the notion of scripts and the behaviour and morality that they evoke in connection with questions of subject constitution? We might turn to Foucault's most famous example, the panopticon, as an illustration. Bentham's prison was constructed in such a way that it evoked a particular behaviour and morality. By assuming that they *might* be subjected to surveillance, inmates are probed to continuously examine their own conduct in order to avoid additional punishment. The subject of panopticism (Foucault, 1977, p. 195) is self-disciplined. This indicates that the type of behaviour – monitoring of one's own conduct – and the morality – laid down in a code of conduct – that is evoked by the panopticon's script is intricately tied up with the type of subject that is created. Therefore, the script concept forms a good addition to make the connection between technology and the subject, even if Latour does not formulate it as such himself.

A second logical step is to consider the notion that technologies are typically designed. I will not dwell on this too long, considering that my focus is not on the design process, but on the projected design itself. If it is acknowledged that techniques and technologies can have scripts, it makes sense that designers can try to purposefully embed them. To further this argument, Latour builds on the work of Madeleine Akrich, who states that 'a large part of the work of innovators is that of 'inscribing' [their] vision of (or prediction about) the world in the technical content of the new object' (1992, p. 208). The notion of inscribing a particular moral norm has given rise to what Peter-Paul Verbeek calls 'materialising morality' (2006).

Another important addition of Latour's work is the notion of 'macro-actors'. This is at stake in chapter three. In the early 1980s Latour co-authored a paper (Callon & Latour, 1981), in which Hobbes' Leviathan, the epiphany of the modern institution that is the result of power games, is described as a very large network of human and nonhuman actors and actants. A similar approach could be taken at analysing Foucault's studies of discourse and formation of technologies of government. The discourse of neoliberalism, for instance, could be conceptualised as an attempt to construct macro-actors that would further the goals and expectations of a political program. To go back to the very beginning of this introduction: the electrification of the Soviet Union could be regarded as an attempt to construct a macro-actor that would represent the power of communism.

With respect to the role that artefacts and other nonhumans play in such macro-actor networks, a number of points ought to be made. First of all, Latour claims that 'technology is society made durable' (Latour, 1991). Large networks, for which the Leviathan is the ultimate metaphor, are stabilised by the actors that hold them together. You can consider them as the bolts and

screws in a construction. Just imagine what would happen if all telephones, buildings, internet cables and bridges would suddenly dissolve in thin air. A second point is that nonhumans 'do' things in such a network. They are more than mere stabilisers, they are actors as well. They make us do things. As in Foucault's work, the notion of relations is of great importance here. On the one hand, we need to conceptualise how humans relate to nonhumans. On the other hand, there are also many cases in which nonhumans play a role in the relations between humans. The third point is that the things that nonhumans do often come with a particular morality. A last point to be mentioned here is that humans often attempt to control what these nonhuman technologies do, for example by 'making' them. One of the major debates in contemporary philosophy of technology, after its 'empirical turn' (Achterhuis, 2001), is that, if we start considering nonhumans as actors, they might also play part in the morality of our lives (Verbeek, 2005; 2006). It is argued that, instead of waiting for artefacts to influence our lives in a certain way, we may also attempt to 'materialise morality': we could make electronic health records in such a way that patients and doctors are more likely to interact in a manner that we find desirable.

Then, let's think back to the relation with Foucault's work. Now we are faced with political attempts to delegate norms, desired forms of behaviour and possibly ethics to nonhumans, which stabilise macro-actors that support the ideas of a particular governmentality discourse. These macro-actors are, in fact, networks of relations that are stabilised to a certain degree. The way these relations are stabilised is of great importance from the point of view of subjectivation.

This leaves me with one more issue that is important for this part of the study. An important question is to assess the 'level' where politics takes place. One of the major contributions of Social Studies of Technology (SST) is the argument that politics is not an affair that is limited to the ministerial council. In this community, particularly the role of technical experts has received a great deal of attention. Authors like Bruno Latour have even positioned nonhumans as political actors in the 'parliament of things' (Latour, 1993b). The notion of alternative spaces of politics adds up to what Ulrich Beck has called 'sub-politics' (De Vries, 2007). This does not imply that the parliament and the ministerial council have no relation with politics anymore. The question is what happens at different levels, and how this relates to subjectivation.

Part 3: The shadow of the dominant discourse

In Part 3 of the study, I elaborate an angle of subjectivation that I have not found explicated in Foucault's work. I argue that people's subjectivity can also be influenced by what is *not* heard in a discourse. In my introduction of Part 2, I discussed subjectivation in relation to the way societal relations are conceptualised in a particular discourse, and how there are subsequent ideas about how to materialise these relations. All statements that reflect such ideas voice certain assumptions and expectations. To a certain degree, I connect to those who study the role of expectations in the development of technology (e.g. Van Lente, 1993; Borup et al., 2006). It is *expected* that there are certain governance techniques that will enable the free competition that neoliberals favour. It is *assumed* that people can be constituted as a *homo economicus*. What happens, however, if these expectations and assumptions don't hold? What if it turns out that we don't have the capacity or inclination to make the rational choices that free competition requires? What does that mean for our subjectivity?

Obviously, we can just wait and see. An alternative would be to examine political discourses when they occur, before the ideas have reached a certain level of completion. Foucault's historical studies all look at developments that lasted hundreds of years, *in retrospect*. The fact that they are 'histories of the present' (Foucault, 1977) implies that they relate the story of what *did* happen. Historical writing has the logical tendency to omit stories that *did not* happen, but that *could have* happened. Authors such as Andrew Feenberg (e.g. 1999; 2001) warn us that the course of historical developments might seem pre-determined with the benefit of hindsight, but that they aren't when they are still in process. This is his 'indeterminism' thesis. I use this awareness as a motivation to study discourses that are not yet done, that have not yet stabilised.

This relates to what I said about the things that are not heard in a discourse. Statements that relate to stories that 'do not happen' are often not heard. This is particularly the case in historical accounts. However, there are also many examples of statements that are not heard in the present. This might be because they criticise the expectations or assumptions that I mentioned, or simply because they are not said by the right people, at the right place and time. There can be many reasons. I believe such statements generally need to be heard. Very practically, they may contain alternatives that are well worth considering. More importantly, perhaps, is the risk that unheard statements, and the people who voice them, run the risk of subjugation, of being silenced.

I leave the question whether such statements have a 'right to be heard' to other political philosophers, or to activists perhaps. This applies in particular to the question whether *all* statements have such a right. This is obviously a question for normative accounts of freedom of speech and other human rights.

What I suggest here is that researchers ought to make such statements heard. Many researchers do so already. However, they often fail to account for their normative motivation for doing so. Such a starting-point does not imply a normative evaluation of the claims that particular statements make. Such evaluation typically takes place in the discourse. This does not imply that researchers are outsiders. Their statements are statements like any other. Frans Birrer (1993), for instance, has plead for something like 'evaluating the evaluator', in what he calls counter analysis.

In one way of looking at it, such a normative starting-point sets this study apart from the approach that Foucault has taken. I believe, however, that this is a useful addition. Foucault was criticised by Jürgen Habermas for being a 'cryptonormativist' (Habermas, 1994). Similar concerns were raised by Nancy Fraser, who, already in 1981, argued that '[c]learly what Foucault needs and needs desperately are normative criteria for distinguishing acceptable from unacceptable forms cf power' (Fraser, 1981). Even though Foucault claimed that his methods were purely descriptive, there is an undeniable feeling of a normative undertow. Habermas argued that Foucault never accounted for the grounds on which he could base this alleged normativity. The normative starting-point that I describe, which is certainly rather minimal, is an attempt to reduce the feeling of implicit normativity.

In another way of looking at it, this normative starting-point seems to be in line with Foucault's intentions. Resistance became increasingly important in his later work. For him, enlightenment meant to adopt a critical attitude to the present (Foucault, 1984b). In part 4 of the study, I pay more attention to the question of what constitutes a critical attitude, on what it is based. In part 3, I don't focus on the attitude, but merely on critical statements in the discourses I study. This mainly applies to statements that relate to expectations and assumptions that underpin the 'dominant discourse'. I suggest that expectations that are maintained in spite of serious criticism may be considered 'immoderate'. I want to stress that this is not a normative claim of external evaluation of the statements that are criticised.

Many statements remain in the shadow of the dominant discourse. One way of assessing how this occurs, is by examining the argumentation mechanisms that such statements encounter. I was convinced of the importance of studying argumentation in relation to questioning technology on the basis of

Frans Birrer's work (Birrer & Pranger, 1995; Birrer, 2007). The study of argumentation is another field that Foucault did not explicitly expand on. Argumentation is a complicated field. Many scholars who deal with these questions attempt an external evaluation of the 'quality' of a discussion (e.g. Van Eemeren, 2010). The distinction between rhetoric and rational argumentation is important in this respect. Habermas' (1985; 1987) ideal of a power-free sphere of undistorted communication had a strong influence on this way of thinking. Foucault (1997) considered this idea as utopian. He opposed domination, but considered power as 'force', not as something that was inherently undesirable. I follow the Foucauldian line. Nevertheless, I do believe there is sense in analysing how argumentation occurs, but in a similar way to Foucault's analysis of power relations.

Particularly with respect to the types of issues that Foucault analysed under the banner of governmentality, it is common to find argumentation that draws on a large number of interconnected premises. We might refer to this notion as 'clusters of argumentation'. Such clusters seem to be accepted as a whole, rather than on the basis of their specific premises. Therefore, such premises are hard to criticise, as they are bound up with others. Effectively, criticism is often met by 'evading mechanisms'. This does not necessarily imply that actors that support the dominant discourse intentionally mislead critics. I argue that evasion is simply often found around such types of discursive formations.

The fundamental question that remains is what it means if the expectations on which the constitution of a particular subject is based are criticised for being incorrect or unrealistic. This is particularly interesting if this criticism is evaded, as I described above. What is the impact of clustering in a discourse on our subjectivity?

Part 4: Shaping the self

The last mode of subjectivation relates to 'the way a human being turns himself into a subject' (Foucault, 1982). In his later work, Foucault admitted he had focused too much on how people are created by others, mainly by scientific disciplines, religion and governments. I examine the question how people shape *themselves* in relation with technology.

As I said before, Foucault's work of the 1980s is often considered as a break with the themes that he had dealt with up to the mid-1970s. Indeed, he moved away from the history of modernity, to go even further back, to antiquity. On the other hand, he did provide a motivation for this shift of focus

in interviews. It seems that his work on governmentality, which I introduced before, is an important link between the first part of his 1976 *History of Sexuality* and the subsequent two volumes that came out in 1984. There were no major publications in between. In a lecture in 1980 at Dartmouth College, he said: 'When I was studying asylums, prisons, and so on, I insisted, I think, too much on the techniques of domination' (1993, p. 204). Instead of this, he became aware of the relevance of practices of the self. In the same lecture, he argued that, in contrast to his earlier work on domination-centred government, he would like to 'study government [..] starting from the techniques of the self' (1993, p. 204). Even though he never performed this project entirely, we can have some ideas as to how this work might have developed.

One of the main points in this respect is that Foucault positions the self-constituting subject as an ethical and political subject. The influence of his thinking about enlightenment, as a 'critical attitude toward the present' (Foucault, 1984b), seems to have influenced his reading of the texts from antiquity. One of the modes of expression of a critical subject should be to 'speak courageously', which is denoted by the term *parrhesia* (Foucault, 2004). Around the same time, Foucault developed political ideas about *confronting government* (Foucault, 1984a). This seems to voice a right to decide how one wants to be governed, or even, not to be governed at all (see also Pavlich, 1998; Cadman, 2010).

Foucault claimed to have found practices in classic Greek and Roman times that were not subjected to technologies of government, or that were free of normalisation as he put it (1997, p. 254). These practices were part of a broader phenomenon that was described as the care of the self. Self-constitution is hard work, which is often described as a set of ascetic practices. Writing, listening, reading and speaking – in particular ways – are examples (Foucault, 2005). In Greek and Roman times, people were motivated to develop themselves by keeping notes on their daily achievements, by discussing their personal developments with friends or tutors, and by more of such practices. One's physical health was considered as 'one of the crucial forms of the care of the self' (2005, p. 59). Generally, care of the self adds up to adopting a critical attitude toward the self, and toward activities with which the self engages. At the same time, a view on the 'care of others' is a crucial part of such practices. Nevertheless, on the basis of Foucault's discussion, it is not clear *why* people would take care of themselves and others.

Foucault suggested that examples from antiquity can further our thinking about subjects in our own time, even though he stressed that we should not attempt to transfer historical models to the present. Particularly the no-

tion of the care of others is an interesting alternative to the neoliberal perception of reciprocity, a line that runs throughout the study.

I connect this part of Foucault's work to the theme of technology and innovation. I argue that technology may be regarded as an element of the institutionalisation of the care of the self. As I said in my introduction to Part 2, different authors have claimed that we may consider to purposefully embed certain norms in the technologies that we use. One such approach could be to create such technologies that would 'invite' people to work on themselves. In addition to this, there are obviously many examples of technologies that have this effect unintentionally. Others, like Peter-Paul Verbeek (2008) have done interesting work in this area. I take a different approach, however. I do not examine technologies as instances that 'make' people perform ethical reflection. Instead, I examine technologies as mediators in performing the type of practices that are considered in relation to self-constitution. What is clear, however, is that self-constitution always occurs against the background of other power relations. The question is what this implies for self-constitution.

We could also imagine that people could attempt to constitute themselves by getting involved in the design of the technologies that will use in the future. This notion is referred to as the democratisation of technology, or of innovation (respectively Feenberg, 2001; Von Hippel, 2005). In this respect, technology still operates as a mediator, but in a different sense than before. The involvement of people in the creation of technology is no recent development. Since the 1960s, different advocates have taken up the political objective of making design processes more democratic. As before, however, also here we need to acknowledge the complex of power relations in which self-constitution is cast.

A healthcare innovation outline

In this second outline, I provide the second 'view' on postpanopticism, i.e. the practice-oriented one. Before going into the four parts of the study, I provide some general comments on the approach to the empirical material.

Approach to the empirical material

The empirical topic of the study is innovation in Dutch healthcare. To put it very simply, this is narrowed down by studying the line from setting a political definition of what innovation means in the context of healthcare, to a

number of pro-innovation policies and the interaction of people with concrete technologies. This does not imply that I organise the empirics according to a linear model of policy making and implementation. First of all, the presentation of the practice of healthcare corresponds to the theoretical structure that I outlined above. Second, I do not consider the different parts of the case that I study as separate entities. I try to present a holistic perspective of healthcare innovation, but take different angles at it in the different parts.

This approach requires a combination of different methods. Following Foucault's approach of focusing on written discourse, a good deal of the policy-related discussions relies on an analysis of documents. This important for another reason. When trying to grasp the impact of a particular way of reasoning, it is often more convincing to be able to refer to written statements than to quotations in an interview. On the other hand, certain aspects of a discussion are simply not captured in documents. Particular in order to assess the role of non-politician experts, I do rely on interviews. Scholarly publications are a third source of information. In some cases, it is used as a way to discusses cases for which I did not gather primary data. In other cases, I use such publications as primary statements that are contrasted with statements in documents that constitute political discussions.

Then, a last word about the relation between technology and innovation. I use a broad understanding of technology in this study. In keeping with work in the STS community, and with Foucault's work, I do not limit technology to the colloquial understanding of 'that which is made by engineers', or 'things that have a power chord', to name a few. I also include techniques, architectures, forms, procedures or methods of organisation. Barry explains this by making a distinction between 'technical devices', which can both be material and immaterial, and 'technology', which 'refers not just to a device in isolation but also to the forms of knowledge, skill, diagrams, charts, calculations and energy which make its use possible' (Barry, 2001, p. 9). Particularly considering the way in which Foucault used the word technology, such a broad scope seems important in discussing questions of subjectivation. Nevertheless, it is important to distinguish between different types of technology in order to get a better grip on the case of healthcare innovation. First of all, innovation does not necessarily involve the type of tangible substance that is often associated with technology. Also processes can be innovated, for instance. From a broad perspective, this can still be understood as a technology, however. Secondly, I also discuss innovation-related subjectivation without discussions *innovations.* In the first part, I argue that the shaping of a subject is related to the way innovation is conceptualised and measured. Further on, I discuss policies that are supposed to enhance innovation by creat-

ing certain incentives. Also these policies shape people in a certain manner. Even though there are certainly techniques involved in doing this, which I will comment on, they are not technologies like an electronic health record. I would argue that the innovation discourse implies a particular way of thinking about, and dealing with, technology. It may use or produce hardware or software, but also involves a set of techniques that form the subject in a particular way. The way in which this subjectivation occurs is likely to be different when we consider technology in a non-innovation context.

Part 1: Measuring healthcare innovation

In the first part of the study, I focus on 'modes of inquiry' surrounding innovation and healthcare. In line with the above, I do not exclusively focus on the ways in which innovation and healthcare studies 'try to give themselves the status of sciences'. Part 1 partly has an introductory character. In order to grasp the notion of subjectivation in relation to innovation, it is important to provide at least a short overview of the (economic) discourse on innovation, now about a century old. Following work by Benoit Godin (2006; 2008; 2009b; 2009a; 2010a; 2010b), we can distinguish between two traditions of thinking about innovation. The reason for bringing this up is to assess to which tradition the discussion on innovation in healthcare policy seems to belong. Just like Foucault pointed out in his work, history is applied here as a 'history of the present' (Foucault, 1977). My goal is not to cover the entire history of innovation, but one that suits to understand the background of a topical political discussion.

The political discussion on innovation in the framework of healthcare policy cannot be separated from the discourse on the economisation of Dutch healthcare since the late 1980s. The main question here is how these two threads come together, i.e. how did innovation become an object in healthcare policy that required inquiry? The constitution of this object in the interplay between academia and policy practice is particularly clear in the way in which approaches to perform measurements on healthcare innovation are devised. Particularly in the 1970s, there was much interaction between academics and practitioners about approaches to express medical results in financial terms. The notion of productivity is important here. Such financial 'expressions' typically involved measurement. The emerging topic of innovation entailed the re-conceptualisation of these measurements in the light of the parameters of this discussion. Framing measurements this way has a strong impact on the constitution of the subject.

This is only a first step. Obviously, there is more to subjectivation than merely relating it to how the object of healthcare innovation is defined and measured. Throughout the study, I focus on two particular policy instruments that are supposed to enhance innovation: the infrastructure for a national Electronic Health Record (EHR) and a Personal Healthcare Budget. Development of electronic health records goes back to the 1950s (Kaplan, 1995). I mainly focus on attempts to create an infrastructure with national coverage. In the Netherlands, this discussion started mid-1990s. I regard the foundational study of the Public Health Council as the starting-point (RVZ, 1996). The first experiments with the personal budget started around the same time (TK, 1997/1998a). They were based on activism of the movement of people with a disability in the 1980s (TK, 1987/1988). The notion that both these policy measures took shape around the same time is important, considering that they are part of a broader discussion to restructure Dutch healthcare. I will pay most attention to the electronic health record, considering that it is a richer case from the point of view of technology as artefacts. In political discussions, these policy schemes are generally not considered as innovations themselves, but as framework conditions to stimulate others to innovate.

The topic of innovation is also interesting for sociologists of technology. An important question is how innovation scholars think about technology. Is it considered an instrument that will just respond to market needs, or is there some sort of innate dynamic of technology that will determine societal and economic progress (Williams & Edge, 1996)?

Part 2: Planning the electronic health record

The stake of analysing empirical material in Part 2 is to give practical accounts of governmentality at two different levels. These may be called the 'political' and the 'subpolitical' (De Vries, 2007). Both these 'levels' are in line with the reflective understanding of governmentality that I unfolded before. Different technologies of government are considered from the point of view of 'how to govern best'. The question is, however, how differently we regard the question of subjectivation, depending on the level at which it is analysed.

Rather than discussing how innovation is conceptualised in health policy relates to subjectivation, as in Part 1, I examine attempts to produce a new patient-subject by concrete policy measures. The policy for creating an infrastructure for an electronic health record aims at re-establishing the power position of the patient in his/her relations to other players, such as care providers and insurance companies. The health record is supposed to supply the

patient with a richer body of information concerning his/her own care situation. In a near-Foucauldian move, knowledge is assumed to equal power. The personal budget, which only appears in Part 3, is supposed to grant patients the 'power of choice'. If one is in control of one's own expenditures, rather than leaving this to a governmental agency, one is assumed to be in charge of one's health. Both these ways of thinking are often related to what is called 'patient empowerment' (for the electronic health record, see, e.g. Munir & Boaden, 2001; Beun, 2003; Ueckert et al., 2003; for the personal budget, see, e.g. Anderson et al., 1991; Ungerson, 1997; 2004; Morris, 2002; Anderson & Funnell, 2005).

Chapter two is in line with the discursive formation of postpanoptical governmentality that Foucault describes. In fact, I draw on his analysis of the rise of neoliberalism (Foucault, 2008). I connect the issues of innovation, productivity and civil society to the political discussions surrounding the introduction of the infrastructure for an electronic health record. I argue that reciprocity is an important concept in understanding how all these issues relate to each other. More in particular, the chapter deals with *neoliberal perceptions of reciprocity*, and the question of how these perceptions influence this particular political debate. I show how the content of the EHR 'innovation policy' adds to the earlier discussion on subjectivation in relation to productivity, but I add an element. By introducing the notion of reciprocity in the ideas behind this new infrastructure, people are regarded to have particular relations – to civil society, to other citizens and to government – that shape their subjectivity.

Particularly the question of technical standardisation is important here. In order to enable the different actors in the healthcare sector to interact on the technical infrastructure, standard ways of communicating need to be enacted. By enforcing a particular standard, rather than another, government can control the types of systems that are eligible to connect to the infrastructure (King et al., 1994). This is more than just a technical issue: the choice for a particular standard is a highly political matter. At the same, it is clear that technological trends have a strong influence on political decision-making about the type of standard that should be adopted.

Chapter three moves this analysis to the subpolitical level. In a sense, it 'unpacks' the discursive analysis of chapter two, by showing that reality is significantly more complex. An analysis of postpanoptic forms of control needs to bring this complexity forward. On the basis of an analysis of the process of defining technical standards for the electronic health record, it turns out that not one, but multiple EHR's could be defined. All of them have a certain potential of being realised. I use Bruno Latour's (1994) work on

macro-actors, 'inscription' and delegation to study the different ways in which standard-makers construct models of their visions of a future electronic health record. Just like in chapter two, these different models are to some extent imaginary. In this sense, they fit with the view of governmentality that I described. They are reflections on how to govern, making use of the EHR infrastructure. Nevertheless, the models, if realised, would have strongly differing implications for the subjectivity of the imagined patient-users.

Part 3: The reality effects of pro-innovation policies

As I explained in my outline of Foucault's work, the stake of this part is to analyse subjectivation from the point of view of what is not heard in a discourse. I analyse the role of critique in practice. First, I examine the electronic health record, in order to 'unpack' the discussion that was started in Part 2 even more. Second, I introduce the case of the personal healthcare budget.

Large-scale innovation projects often come with wide-ranging expectations, particularly with respect to the positive impact on the systems in which they are placed. To some extent, these may even be described as having utopian traits. Such expectations and their underlying assumptions are accepted relatively uncritically. The consequences are that innovation processes are frustrated, and that downsides and ethical issues are downplayed.

In chapter four, I discuss the role of expectations surrounding the infrastructure for the electronic health record. Major expectations are that the record will contribute to cost efficiency, quality of care and the transition from supply-oriented to demand-oriented healthcare. On top of that, it is expected that data from the record could be used for secondary, 'macro-level' purposes. The point of the chapter is to assess how realistic these expectations are, and to see what this implies for the subject. I do this by examining critical statements in the discourse, which question or contradict these particular expectations. These critical statements, however, mostly stem from academic literature, which remains largely unheard in political discussions. This even applies when attempts are made to translate this literature to the Dutch political context (Berg et al., 1998).

The discussion on the second line of 'innovation policy' that I highlighted earlier on, the notion of a Personal Healthcare Budget, provides another good case to address this issue. I introduce this case for the sake of offering a different perspective on subjectivation in relation to healthcare innovation, but one that is well-aligned with all the major themes that also turn up in the discussion of the electronic health record: productivity, civil society,

and most importantly, a new power position of the patient. Also here, we see the notion of reciprocity appear again, as a practical way of organising the personal budget policy instrument. In contrast to the EHR, the personal budget *was* introduced in the healthcare system.

The second chapter of this part (chapter five) will focus on this question of what happens to the subject if the expectations of the dominant discourse turn out to be faulty. I articulate how the dominant image of the 'good patient' (RVZ, 2007) is constructed in a 'cluster of argumentation'. Unravelling this cluster is a difficult affair, which makes the possibility of effective criticism problematic. This relates to my earlier statements about the 'evading mechanisms' that can be found around the particular discursive formation of clustered argumentation. If, however, we examine the image of the patient that critics put forward, an entirely different type of subject appears. This subject stands in the shadow of the dominant discourse.

Part 4: Interacting with technology

In the last part of the study, I examine self-constitution in interaction with technology from different angles. This is connected to the general line of the research, on the basis of the argument that innovation policies in healthcare are not neutral in terms of the *types* of innovation they are supposed to generate. The postpanoptical subject is 'made to be free', but in a very particular way. Therefore, we have to take into consideration that that the technologies we may interact with, for reasons of self-development, are often part of a political network. Nevertheless, the impact of concrete policies is less direct here, as it also depends on the types of applications that technology providers design.

At the same time, trends in the types of innovations that are being generated influence policy. The way in which the EHR 'infrastructure' is constructed will enable or disable particular applications. Also the personal budget is likely to create particular types of innovations. Applications are expected in the 'bordering areas between living and care and care and well-being' (TK, 2001/2002a, p. 3).

The notion of self-constitution provides an entirely different way of looking at the Electronic Health Record than the angles that I outlined in Part 2. Many EHR applications provide functionalities like keeping an electronic diary of one's health developments. Unfortunately, this has not been researched much so far. Instead, I draw on literature on chat rooms for particular medical conditions to evoke relevant questions. Also here, we can ques-

tion the opposition between neoliberal notions of expected reciprocity and the notion of a care for others. One of the most important observations in studies that deal with self-constitution is that there is always a certain ambiguity about the subjectivation that takes place. Practices that are considered as empowering, or as a way for people to offer resistance to dominant discourses, usually imply an element of control as well. This adds up to Foucault's idea that the subject is fundamentally constituted in the interplay between 'technologies of government' and 'technologies of the self'.

The second way in which I discuss self-constitution in relation with technology, is by examining how citizens are involved in the design of new technologies and innovation. The recent European 'movement' of Living Labs forms an interesting case in point. Living Labs are local or regional platforms in which people are in some way involved in innovation processes. Unsurprisingly, there are about as many definitions as there are labs. This movement is interesting in the framework of this study for various reasons. First of all, it has gained serious momentum in European policy circles over the past few years. Apart from that, healthcare is one of the most pursued areas of innovation in these labs (Katzy et al., 2007; e.g. Almirall, 2008; Kanstrup, 2008; Pitse-Boshomane et al., 2008; Mulder et al., 2008). To be more particular, some of them focus on the development of electronic health records and the standards that I discussed before (Jara et al., 2009). Even though Living Labs are not necessarily aimed at furthering democratisation, many authors have suggested they could, and should fulfil this role. I take this point of view as a starting-point for discussing how self-constitution takes place in Living Labs, and how this relates to attempts of other stakeholders to enforce their ideas onto the citizen-participants. This voices the same ambiguity as I highlighted before. After discussing Living Lab practice, I investigate different proponents of democratisation to evoke alternatives to the way the labs operate now.