



# Actors, associations and change

Understanding its controversies at Tectra – an ANT perspective. By Mads Røder

Master's thesis

- CPR-nr: xxxxxx-xxxx  
- Date of submission: 15.04.2013  
- Number of characters: 112.363  
- Thesis supervisor: Flemming Meier  
- Study programme: MSc. In Business Administration and Information systems – profile in Information Management

## Executive summary

This thesis focuses on how Actor-Network Theory (ANT) can be used to analyze and understand a change process in the case company Tectra.

The motivation behind it is partly because ANT allows a unique perspective and approach to analyzing change processes, and partly to test if ANT is applicable to my case, and whether there are any discrepancies between theory and empirical data. The research question then, is:

*How does the change process affect the involved actors, including the proposal itself, and why does the proposed change to the patent database encounter problems?*

The case description details the CEO of Tectra and his struggle to change the way Inteum C/S is used by the employees of Tectra in order to improve the reporting foundation.

Empirical data stems from qualitative interviews with the CEO and other key employees as well as my own observations during my 6-month work period, and various manuals and folders. In my thesis I assume a social constructionist stance.

The analysis is structured according to the four moments of translation as formulated by Callon, and through them is examined what happens as the CEO introduces a range of new actors into the network. The analysis examines *how* and *why* the network is transformed as both external and internal forces exert influence over actors and relationships. At the outset of the case, the CEO is the primary actor, but this changes over the course of time, altering the original intent and purpose of the database.

I end the analysis by examining an alternative to the CEO as primary actor; what would happen if the database, Inteum C/S was used instead (since ANT does not discern between human and non-human actors).

In the conclusion I revisit the research question and discuss the viability of ANT in my thesis, its strengths and shortcomings. I conclude that using ANT as theory of choice enabled me to analyze the case at a more granular level than otherwise possible: The CEO experienced issues because he did not take into account the relations between actors, as well as the relations that make up the actors themselves. By analyzing actors, relations and the influence they exercise during the translation process it becomes clear that as the CEO seeks to change all the actors in Tectra, he himself as well as his whole program of action is changed in turn, altering his perception of Inteum C/S and the end goal of the database.

## **Abstract**

This thesis uses Actor-Network Theory (ANT) to examine the Tectra case, wherein a CEO seeks to improve his reporting foundation by changing his employees' use of a database.

The thesis emphasizes the importance of associations that constitute actors (human and non-human) as well as the connections between actors in the network.

Based on a series of qualitative interviews with key employees a detailed analysis is carried out guided by ANT's translation process.

Throughout the thesis is a focus on how the composition of associations is responsible for the change in the actor-network.

I conclude the thesis with discussing the application of ANT, answering the research question of how and why change occurs in the Tectra case, and proposing further investigation of the role of ethics and values in ANT.

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## Preface

From the first time I was introduced to Actor-Network Theory (ANT) I have been fascinated by its simple main proposition, and the underlying complexities that follow.

I have always seen ANT as a tiny, technology-centric version of classic discourse theory: In the ANT universe, actors vie for power, seeking to attain domination through the development, use and discourse of technologies.

Here the attention is not on categorical class struggle, not a clash between bourgeois and proletariat, but instead on depicting the process of developing, implementing or using technology by going through the back door, as Bruno Latour describes it.

In the ANT universe, not unlike Walt Disney's, inanimate objects are given agency and importance on par with their human counterparts, and (can) play a significant role in the network they make up.

A new analytical perspective is opened up, as human actors must find ways to inscribe meaning into technological artifacts, which in turn change the perceptions of human actors as well.

It is this radical perspective that prompted me to use ANT in the first place, and it is a theory that has changed the way I think about the world and how we interact.

I would like to thank my supervisor Flemming for guiding me through the thesis process. I would also like to thank my fiancé Evija who put up with me during my writing, and pushed me when I needed it.

## Introduction

My thesis will focus on how Actor-Network Theory can be used to describe and analyze a specific change process. The setting is the Technology Transfer Office in the capital region of Denmark known as Tectra.

This office consists of a group of nine employees and their CEO, and it is the CEO who initiates the change process which involves an altered way of using a specific information system – a patent database named Inteum C/S.

It is the belief of the CEO that by improving the way Inteum C/S is used, he will be able to draft faster and more advanced types of status reports about Tectra for his own seniors.

I was originally contracted to resolve the issue of how to synchronize information between the invoice system and the patent database, in what started out as a four-month period.

As my work progressed however, it became apparent that these tasks originated from a deeper information problem within the group – there was no consistency the way information was used or stored – and a general confusion as to how the systems were actually used, which led to employees creating their own rudimentary database system.

There had been attempts to consolidate data in one system, and make employees use that system as intended, but these attempts had failed so far. It seemed that every time the CEO of Tectra came forth with a new initiative, it would never have the desired effect.

## Purpose of thesis

The purpose of my thesis is to apply ANT to the Tectra case, both as an experiment (are there any discrepancies between the theory and practice, and does ANT even ‘work’?), and also in order to investigate *how* and *why* the change process happens, and in what way it affects the actors involved. To me, ANT is interesting because it takes a different look at the way both humans and non-humans are ‘constructed’. That is to say, it does not see e.g. a person as merely one person, but rather that person in it self is an actor-network, made up of many different heterogenous *associations* that make that

person unique. While these elements are typically stable, or 'black-boxed', they can at any time be opened and become unstable, until a new arrangement of elements are in place again.

What are the implications if you take away a writer's pen – is he still a writer? The answer could be that he would take to using a computer for writing instead, but from an ANT perspective the interesting point is that he is no longer the *same* writer as before – his own actor-network (the associations that constitute him) has changed, because his writing utensil is no longer a pen, but a new piece of technology.

What happens when the purpose of a patent database is about to be changed, and how does it take place? That is what my thesis is about, and it requires not just looking over the case description (*what* happens), it also requires an analysis of the change process (*how/why* does it happen), because only then is it possible to see how actors and their perceptions of both the patent database and themselves undergoes a *translation* process.

When an information system 'causes' an action, changing the way patent documents are being stored, it is an actor. If a database manual in the office causes an employee to alter his user habits, that manual is also an actor. ANT calls this 'prescription' – meaning that a non-human actor imposes a behavior onto a human actor.

*"... there is not a net and an actor lying down the net, but there is an actor whose definition of the world outlines, traces, delineate, limn, describe, shadow forth, inscroll, file, list, record, mark, or tag a trajectory that is called a network."* (Latour 1996, p. 11)

This quotation is used to underline the inherent instability of a network, as it is constituted by the actions of the involved actors. Actors participate and mediate the relational networks, but are also the outcome of the same relationships (Cordella and Shaikh 2003).

Finally, I will set out to incorporate the three main tenets of ANT:

1. Agnosticism
2. Generalized symmetry
3. Free association

Plainly speaking this amounts to the notion that there should be no distinction between the social and the technological. Tatnall and Gilding are more eloquent in their summary:

*“ANT is based upon three principles: agnosticism, generalised symmetry and free association (Callon 1986b). The first of these tenets, agnosticism, means that analytical impartiality is demanded towards all the actors involved in the project under consideration, whether they be human or non-human.*

*Generalised symmetry offers to explain the conflicting viewpoints of different actors in the same terms by use of an abstract and neutral vocabulary that works the same way for human and non-human actors. Neither the social nor the technical elements in these ‘heterogeneous networks’ (Law 1987) should then be given any special explanatory status.*

*Finally, the principle of free association requires the elimination and abandonment of all a priori distinctions between the technological or natural, and the social (Callon 1986b; Singleton and Michael 1993).” (Tatnall & Gilding, 1999, p. 958)*

By following these principles, ANT is (in theory) free of the duality between the social and the technological that is usually assumed. Thus the ANT researcher can begin to look without bias at non-human actors and their importance on par with human actors.

It is not the actors themselves that constitute a network; it is the associations *between* the actors that one must follow – because they are the effects of exerted power that leads to change.

## Research questions and thesis structure

According to Bruno Latour's actor-network theory and its explanation for adopting a change, a proposal for change illustrates a conflict that leads to action. As soon as any new influence is perceived, actors will act (according to ANT's three main tenets, those can be humans or non-humans, e.g. technology or an environment). This thesis seeks to use ANT in order to describe and analyze how the change process in Tectra takes place, and why the result turned up the way it did.

My research question for this thesis is:

***How does the change process affect the involved actors, including the proposal itself, and why does the proposed change to the patent database encounter problems?***

This thesis is based on the Tectra case, which is accounted for in detail in the case description section. The case description is based partially on my own observations during my assignment there, and partially on interviews with the employees and CEO of Tectra.

Throughout the paper can be found quotes from the interviews that highlight the points of the thesis.

My analysis starts out with the Tectra CEO as the primary actor of the case, but as the analysis progresses and the network of associations change, the focus shifts elsewhere.

In my analysis I also discuss the viability of using a non-human (the patent database Inteum C/S) as the primary actor, and what implications it carries.

## Literature review

### Actor-Network Theory

The theoretical perspective chosen for this thesis is Actor-Network Theory (ANT) and the sociology of translation. This theory, mainly associated with authors such as Bruno Latour, Michael Callon and John Law, is a useful tool for showing and understanding the Tectra case for a number of reasons. ANT and the sociology of translation have historical roots in social studies of science and technology, making this perspective a natural choice for the study of a technology-centric case like Tectra.

While ANT was formulated primarily by both Bruno Latour, Michel Callon, and John Law, I will focus mainly on the concept of “translation” articulated in most detail by Callon, and described in the scallop fishing case (1986b), the electric vehicle (1986a), and the economic market (1999), and also by Callon and Law (1988) in the case of a military aircraft project. This differs significantly from the term as used by Latour (eg 1987)

## Why ANT?

The primary tenet of actor-network theory is the idea of a heterogeneous network. That is, a network made up of many dissimilar elements. These coextensive networks comprise of both social and technical elements. Moreover, ANT treats the social and technical as inseparable. When buying items from a compartment store for example, the actor-network involved would include the buyer and the store assistant, but also the cash register, the money and the items involved. It may also includes other, less obvious elements such as the clothes the buyer wears in order to be admitted into the store, and so forth. Identifying all of the heterogeneous elements in an actor-network like this can be a difficult task, and it is the job of the researcher to understand which elements are real actors who change things, alter the network, and which elements are mere 'placeholders' for other forces, in which case they are not actors at all, and largely irrelevant for the actor-network. This is known as the problem of selection.

ANT is probably most known for its inclusion of non-human actors, or 'actants' in the analysis of the social world. The social world of ANT includes factors that other theories might disregard for social science, due to a different perception of what 'the social' means.

In ANT, the concept of the social has been explained most clearly by Latour's 'Reassembling the social'. Here he describes two ways of speaking about the term:

1. As something that is already created, a current state of affairs or stabilized network.
2. A materialistic concept or adjective with a certain unique quality to it akin to 'linguistic' or 'wooden'. (Latour 2005)

Latour argues that using the second sense of the word has some inherent flaws, and promotes a reassembly of the term 'the social':

*"What I want to do in the present work is to show why the social cannot be construed as a kind of material or domain and to dispute the project of providing a 'social explanation' of some other state of affairs"* (Latour 2005, p.11)

Instead, Latour argues that the social is not a thing as such, but rather an ongoing process in which things of all kinds are associated together, creating the network of actors.

'The social' is the term designating the process in which different things are assembled. It is not something in itself, but the process where other things are associated together. These associating elements are not only humans, or groups of humans, but can be non-humans as well. According to Latour, then, the social is not *explanatory*, as in other social theories, but rather something that should *be* explained instead. How is it that some connections come into being while others do not, and how is it that some of these connections are durable while others break down? In ANT it is the study of the creation and breaking down of connections between all kinds of different things, a process that is constantly happening.

As already stated, the central ontological claim of ANT is that everything is made up of networks of relations between elements:

*"All phenomena are the effect or the product of heterogeneous networks"* (Law 1992, 385).

In other words, everything we encounter in the world is the result of the ordering of all kinds of elements in specific ways, and the relations between these elements that are a result of this ordering. ANT is thus a relationist theory and not an essentialist one (Law 1992; Latour 1999): things are not what they are because they have some kind of essence that can be used to explain them, rather, it is only as a result of relations or connections between elements that something or someone exists and functions. In other words,

everything is a network-effect. Since this applies to every level, from the micro to the macro, a picture emerges of the world as consisting of an infinite collection of networks which are in turn composed of networks and which are themselves elements in other networks. In the words of Callon:

*“Behind each associated entity hides another set of entities that it more or less effectively draws together”* (Callon, 1987, p. 94).

Again, this holds true for everything. Everything is the effect of the specific concatenation of elements in networks:

*“Society, organizations, agents, and machines are all effects generated in patterned networks of diverse (not simply human) materials”* (Law 1992, 380).

A second central claim of ANT is that the complex networks that the world consists of often disappear from view and appear to us as boxes. The complex assemblies of heterogeneous elements are *“replaced by the action itself and the seemingly simple author of that action”* (Law 1992, 385). They become black boxes; single actors that are associated with the effects created in the networks. In other words, even though behind everything lies a network of heterogeneous entities that themselves are made up of networks – *“reality is infinite”* (Callon 1987, 93) – the world is simply too complex for us to understand. The ANT-term for this is ‘punctualization’ or black-boxing. To use Law’s (1992) example, a television is a network of electronic elements and human interventions, which is a black box. In every day life it is punctualized as an object that can be used to watch movies, and it is only when a television breaks down that people realize that it consists of many elements that they have to take into account in order to repair it (or take it back to the store).

Law does not specify what he means with these ‘human interventions’, but we can understand this by also including the (human) actions of turning on the television and directing one’s attention to the screen as part of the technology, besides the human interventions that go into the production and possible repair of the television. It is only when these actions are performed that the technology of the television properly functions. In other words, without them it is not a proper television, it is just material. This view is consistent with the

idea of ANT that everything is an effect generated in heterogeneous networks; what a television is, or any technology for that matter, is the result of both the electronic components and human actions.

The last claim of ANT that needs to be discussed is that the networks it postulates are never stable or definite:

*“No version of the social order, no organization, and no agent, is ever complete, autonomous and final”* (Law 1992, p. 386).

This means, in other words, that the relations between elements in any network are never completely stabilized. They can always break down. As already mentioned, the formation (and breaking down) of associations is a process that is constantly going on, on all levels. The social world is therefore not a (more or less) stable structure, but is a continuous work in progress. At any moment, new connections are being formed (or at least attempts are made) and existing associations break down (or are attempted to be undone). And as we have already seen, these movements (linking up and breaking down) are what should be studied from an ANT perspective on social science.

This does not mean that any network is unstable. In reality some structures (that is, assembled networks) will be considered stable. This is for example a consequence of the fact that the actors in the network frequently reinforce these networks. Thus, some networks are more stable than others, which mean that in these networks the breaking down of associations is less likely. In principle, however, any network can break down at any time.

This view of the world as consisting of networks of relations will be the starting point of this study. It will look at the networks and relations being build and undone in relation to the Tectra case.

## Translation – describing the emerging actor-network

It has been argued that ANT can be regarded as an ontological theory, which states that the world consists of networks that link heterogeneous elements together. With the sociology of translation, Callon (1986) has formulated a theory on how such networks come into existence, and thus how relations between elements are formed. It was developed with a focus on the study of science and technology. According to the sociology of translation, science and technology should be considered as networks in which all kinds of entities, humans and non-humans, are assembled together. Indeed, humans (or non-humans) are regarded as networks themselves:

*“The argument is that thinking, acting, writing, loving, earning -- all the attributes that we normally ascribe to human beings, are generated in networks that pass through and ramify both within and beyond the body. Hence the term, actor-network -- an actor is also, always, a network.”* (Law, 1992, p. 4)

The development of a new technology (or new use of one) starts with a proposal for new relations between elements, which together will form the network making up the new technology. Only when this proposal for a new network of relations is taken up by the actors involved, when all the entities are indeed assembled together in a specific way and stay assembled in that way, does a technology properly exist and function. As seen earlier, this approach does not make a distinction between technology, or non-human artifacts, on the one hand and humans on the other. It argues that technology, and in fact society, consists of different elements, both human and non-human, interlinked in networks of relations. The implementation of technology is the formation of such networks of relations between heterogeneous entities.

According to the sociology of translation, in this process of development and introduction of technology, the entities that are to be assembled together have to be transformed. Through this transformation an entity starts acting in a new way, thereby taking up a new role that places it in the new network of relations making up the new technology. If this transformation would not take place, the

role of the actor would not change. Therefore, a transformation is necessary to make actors take up their place in the new socio-technical network. To study these transformations of actors in the introduction of technology, and thus the formation of new networks, Callon introduced the sociology of translation. Translation, the core concept of this theory, is the same as the transformation discussed above: it is the displacement of entities, by which the normal behavior of an actor is changed. For example, if one normally goes to work by bicycle, then a flat tire would displace (translate) this behaviour into walking. A translation thus makes an actor act differently than it would do under normal circumstances.

It should now be apparent that the translation process destabilizes the existing network.

In the sociology of translation, implementing a new technology is the work of one actor, the so-called network-organizer or enunciator (Latour 1991), to draw together all kinds of heterogeneous elements and translating them, thereby putting into place a stable network of relations between them. It entails assigning new roles and behavior to the actors that it considers necessary for a new technology to function, and furthermore making those actors accept and remain faithful to these new roles. Again, technological innovation is not simply a matter of designing a machine; it means actively pursuing others (humans and non-humans) to take up a new role within a new network, thereby translating them into that technological network. Callon (1986) postulates four different moments of translation involved in the process of sociotechnical network construction, and thus the introduction of a new technology: problematization, interessement, enrolment, and mobilization. Each of these moments of translation will now be discussed in turn.

This first “moment” of translation, “problematization”, involves the definition of the problem and its solution. The subsequent three moments are all oriented toward the achievement of this solution through the manipulation of other actors and intermediaries. (Horowitz 2012)

During the first moment of translation – problematization – an actor (the network-organizer) identifies a certain state of affairs as problematic. To

address this problem, the actor who is responsible for the problematization proposes a new state of affairs, which should serve as the solution to this problem. In this new situation several other actors should fulfill a new role in order to make the solution work. This happens by making them pass through a so-called obligatory passage point, which is the core of the solution to the original problem. The obligatory passage point draws together different actors in a new role. If all the identified actors will pass through this point by adopting their new roles, then the solution will work and the problem is solved, or at least that is what is claimed at this stage by the enunciator. In this moment of translation the displacement consists of the proposal for the redefinition of actors and the ascription of new roles to these actors.

In the second moment of translation – *interessement* – the actors that are redefined in the process of problematization have to be interested to take up their new roles in the proposed network. Simply redefining and ascribing new roles to others is not enough; these definitions and roles have to be accepted. *Interessement* is the first step in this process. It is the collection of

*“Actions by which an entity attempts to impose and stabilize the identity of the other actors it defines through its problematisation.”* (Callon 1986, p. 207-208).

Since for the sociology of translation relations between actors determine what something is/does and not some essence, *interessement* from the point of view of the network-organizer means creating relations with other actors that are relevant and, moreover, of weakening the links between these entities and other actors, since these latter relations also influence the identity of someone/something. *Interessement* can be achieved by simply reasoning or negotiating with the entities under definition, thereby making them accept the definitions voluntarily, but it can also take the form physically blocking out other elements that create alternative links, and thus alternative identities, with the actors that have to be interested. This second moment of translation is thus an attempt to interest other entities to accept the definitions and roles that are proposed to them during problematization.

Enrolment, the third moment of translation, refers to the negotiations that are

necessary to make other entities accept the definitions and roles that are ascribed to them. If these negotiations are successful this means that the actors are interested in accepting their new roles: "Interessement achieves enrolment if it is successful" (Callon 1986, 211). The actors identified by the network-organizer are enrolled in the new technological network if negotiations with them succeed. Interessement by itself does not guarantee the success of the proposed translations. In order to make other entities accept new definitions and roles by which they are displaced, and thus alter their normal behavior, the conditions under which the entities are prepared to accept these translations have to be negotiated. This is the process of enrolment: multilateral negotiations and transactions as a result of which new roles and definitions, and thus a place in a new technological network, are accepted.

The final moment of translation is that of mobilization. The crucial question here is:

*"Will the masses ... follow their representatives?"* (Callon 1986, p. 214).

This question refers to the fact that only a few individual actors participate in the processes of translation leading to enrolment. These are the so-called spokespersons, which represent other actors in negotiations and thus translations. These actors can be elected representatives, but they can also merely claim to speak on behalf of other actors. In any case, following enrolment it is still an undecided but crucial question whether the silent masses, all those entities that did not participate in the negotiations but were implied in them, will follow their representatives or those that claim to represent them. If this is not the case then much of the work done in the earlier moments of translation has been in vain; the masses of actors that are necessary for a new technological network to come into existence will not actually take up their new roles necessary for this to happen.

Mobilization thus addresses the representativeness of the actors that function as the spokespersons for others. According to the sociology of translation this is an empirical question, which means that it cannot be determined at the

outset of an analysis whether entities will follow spokespersons. An important claim of the sociology of translation is that the behavior of actors cannot be deduced from their membership of social groups, like a professional group. The formation of networks is too dynamic to allow for such a static conception of identity: the social world, along with the natural, is being transformed in the process of network formation, and can therefore never be taken as a given at the start of an analysis. Rather, the way in which the natural and social world transforms in the process of technological development is what should be investigated. In other words, just because a spokesperson is an officially elected representative, this does not mean that those who are represented will automatically follow this spokesperson. It is something that has to be observed, rather than assumed.

If these four moments of translation are successful – if a problem is successfully identified together with the setting up of an obligatory passage point and the redefinition of identities and roles of other entities that make them pass through this point (problematization), if these other entities are being interested to accept this initial translation (interessement), if certain actors that take up the role of spokespersons accept the definitions and roles in negotiations (enrolment) and if the silent masses of actors that did not participate in these negotiations accept the representativeness of their spokespersons (mobilization) – then the actors involved will have been transformed and new relations between them will be formed: “The initial problematization defined a series of negotiable hypotheses on identity, relationships and goals of the different actors. Now at the end of the four moments described, a constraining network of relationships has been built.” (Callon 1986, 218) Technological development is thus regarded by the sociology of translation as a highly dynamic process in which actors are transformed and new relations between actors are put in place. The eventual result, if the translations are successful, is a new (sociotechnical) network that should address a state of affairs that was identified as problematic at the outset.

## Translation challenges

A translation may fail at any of the four moments: the other actors may reject the representation of themselves, the cooperation with the enunciator, the roles assigned to them, or the new 'reality' negotiated on their behalf by their representatives. Clearly, then, translation is inherently a power struggle, and the alliances it forges unstable and subject to influence from competing translations. Echoing Foucault's understanding of power as a "*perpetual battle*" (Foucault 1975, p. 35), ANT theorists (eg Latour 1986, Law 1991) have stressed that power (both "*power over*" and "*power to*") must be analyzed not – or not only – as a possession or capacity but rather as relational, dependent upon and limited by the ability to persuade or coerce others who simultaneously pursue their own goals. Power lies in networks, and thus is contingent upon the successful – albeit often short-lived – enrolment of (at least some) others (Horowitz 2012). Traditionally, technology studies seek to open technological 'black boxes'. Technology is viewed as the result of many negotiations and struggles between the involved actors, and studying these negotiations is the goal of ANT. (Sismondo 2004). In ANT there is a natural focus on the struggle that goes on between actors, as it is believed that it is these struggles that in the end shape the reality, at least for a time. The actions of the actors (verbal, physical or otherwise) are what should be investigated in the social world, and that these actions should ideally be left alone to tell the story, not to be accompanied by unnecessary analysis or explanation.

In this thesis I will attempt to follow this aim by mapping the negotiations and struggles in Tectra, both by following the developing 'front line' of actions taken by different actors, and by looking at the viewpoints of the actors, rather than taking any a priori viewpoints myself. Of course, since I was in fact part of the actor-network at Tectra, it would be impossible to claim to be unbiased. All in all, choosing to use ANT provides a great tool for examining the way technology is (or is not) used by the different actors at Tectra, capturing the complexities, struggles and mechanisms at work throughout the case

## Methodology

The relations that make up the Tectra case are the units of analysis in this thesis. There are actors within the case that are more or less central at various points in time during the case, and the case 'network' itself also changes in size, as actors enter and leave it.

It is however the relations between (and within) the actors that tie the case together, and therefore I will focus on them as they change and stabilize.

To analyze the connectedness thoroughly, I conducted qualitative interviews for data collection, on which this study partly relies. Formal and informal material was investigated. In the case of formal material (such as information folders about Tectra, its purpose in relation to the case was reviewed.

Furthermore, my own experience from Tectra is as important to the analysis as that of the other actors'.

I will assume a social constructionist stance in my paper.

The social constructionist stance can be seen as a middle position between the two 'extremes' of the realist and the nominalist positions. These positions argue either that the social world exists 'out there' independently of the individual (the realist), or that the social world is merely a collection of labels or constructs of the individual – there is nothing 'real' beyond the individual (the nominalist).

The social constructionist then, argues that the social world is constructed through interactions, both past and present. Through these interactions, concepts such as rules or ideas are established, and may become internalized with time, seeming as 'taken for granted' realities. These concepts are always prone to change though, through continuous social interaction.

It is not hard to see why the ontological position of the social constructionist is appealing to those working with Actor-Network Theory: They both share the basic premise that reality is constructed through social interactions, or as Leeds-Hurwitz states:

*“In this view, social reality is not a fact or set of facts existing prior to human activity.... [W]e create our social world through our words and other symbols, and through our behaviors” (Miller, 2005, p. 27)*

The social constructionist calls it words and symbols, while ANT would name it inscriptions and artifacts, but the concept is similar.

For example both ANT and social constructionism deals with the notion that the same object (or case) may be interpreted differently, depending on the eyes that see. In the Tectra case, this comes down to the choice of primary actor – which is the CEO of Tectra. Had I chosen a different primary actor, however, the conclusions of the thesis would be different. The viewpoints and motivations of the CEO are arguably not the same as, say, that of Inteum C/S, the database system, so although the overall case is the same, the CEO and database perceive the world in different ways. It is this recognition of the fact that what we see are ‘merely’ constructions, that argues for the choice of social constructionism as my point of view.

The answer to the research question will be a combination of empirical data and arguments informed by the theoretical perspective adopted in this thesis. This approach should yield new insights into the controversy surrounding the Tectra case. The empirical investigations have been performed on the basis of two kinds of sources: written documents and interviews.

For the analysis of written sources, any document that was considered informative for understanding the Tectra case has been included. Thus, whether it concerned policy documents, articles, technical documents, information pieces etc., no a priori judgment was made regarding the usefulness or value of documents; if it was relevant and contributed to a better understanding of the Tectra case, it was included. In relation to the interviews, the fact that the controversy has not yet ended also has an advantage: the actors have not yet disappeared from the scene, and therefore *“the trail is still hot”* (Callon 1991, 154). In most cases, then, it was possible to interview actors involved that were considered crucial for understanding the controversy. The empirical data has been laid out and described from the perspective of ANT and the sociology of translation, in order to gain a better understanding

of the case of the Tectra case. This theoretical perspective will be developed and discussed in the following chapter.

## Data collection

### Preparation

From the outset I was prepared to collect a qualitative type of data. This was partly due to my social constructionist stance, which generally favors qualitative data, and partly because the Tectra group consists of 10 people, making it potentially difficult to extract meaningful statistical (quantitative) data from.

I chose to schedule and perform a series of interviews with the CEO and key employees (who worked with Inteum C/S), because it gave me an opportunity to talk in depth about the issues they experienced with the patent database, as well as their perceptions of the case as a whole. Furthermore, I had an idea that many of my questions would somehow relate to my choice of theory (ANT), which could elicit complicated questions and answers. For this purpose, the interview also suited me best.

### Construction

For the interviews I wanted the participants to be able to talk freely about their experiences with Inteum C/S. The reason for this was that they might emphasize specific things as important, that I myself would neglect when constructing my interview questions, thus missing out on potentially important points. On the other hand I also had questions that specifically related to the ANT 'way' of thinking, which I needed to phrase in a way that the participants understood and was able to respond to in a useful way.

As a result I ended up using a semi-structured approach, incorporating an overall structure to the interview in the form of certain key questions that I needed to touch upon, but also allowing the participant to diverge if they felt it was relevant to the interview.

For the employees of Tectra, the interview questions were the same, while the questions for the CEO were slightly different, taking into account that he had a different approach to Inteum C/S and its purpose in Tectra, as well as the fact

that he was chosen as the primary actor in my thesis.

Furthermore, the thesis deals with the different perceptions and attitudes towards Inteum C/S, which requires a certain degree of sensitivity in the interview questions to address properly.

The interview questions can be examined in the appendix.

### Execution

Out of the 10 employees at Tectra, only half were directly involved with Inteum C/S. Others were part of a legal team (as detailed in the case description), who did not use the patent database in their daily work. Additionally, the group secretary was not responsible for entering or extracting data into Inteum C/S, although she did have certain synchronization responsibilities between Inteum C/S and Tectras economy system. For the purposes of my thesis though, I chose not to delimit her from the case, as the overall interaction and impact was of minimal relevance.

As the time came for the actual interviews, I experienced a couple of unexpected hindrances, which slightly altered the planned interview process. Firstly, none of the participants apart from the CEO wished to be tape recorded, which meant that the interviews, which were scheduled to last 1 hour only, were slightly compressed, since I had to type in the answers, and did not have time to ask all the prepared interview questions.

Secondly, the participants preferred to stay anonymous, which means that the quotes used throughout my thesis are referred to as 'employee #1-5. This was not a problem as such, since they seemed willing to share their experiences, but in retrospect it might have been useful to inform the participants in more detail regarding the purpose of the thesis.

### Interpretation

In summary, the interviews yielded both expected and new answers to my questions. A common pattern however, was that the participants were generally not very confrontational, but rather positive towards Inteum C/S and its possibilities for data entry and reporting.

Before beginning the interviews I recognized my own bias towards thinking

that the employees were somewhat reluctant to embrace the new way of using Inteum C/S, or even downright resisting the change. In order to accommodate this bias however, I sought to ask my interview questions as neutral as possible, in order not to affect the answers of the participants. As it turned out though, the employees did not respond in such a fashion. Rather, the employees generally expressed concern regarding external pressures such as lack of time, or technical issues such as how to perform specific operations within the database.

What came next then was the task of making sense of the answers I got from the interviews in relation to ANT. One of the purposes of my thesis was to test ANT and see if it 'works' in the Tectra case. In my analysis, the results of my interpretation of the empirical data can be seen in relation to the translation process of ANT.

Not everything fit perfectly, and part of my analysis deals with some discrepancies between my empirical data and ANT. I will return to this point towards the end of the thesis, as it is neither a good nor a bad thing, it is simply part of the experiment of applying ANT concepts to my case.

### **Delimitation**

For the purpose of this thesis I will focus on the Business Development department within Tectra, since they are directly in contact with Inteum C/S. Thereby I exclude the legal group as well as the secretary of Tectra, but also other departments that are housed in the same building as Tectra.

Similarly I have chosen to disregard the executives of the capitol region of Denmark and also the politicians who make legislation. Although the network could be expanded to include these actors, I have chosen to delimit it to Tectra itself.

Theoretically I have chosen to focus solely on Actor-Network Theory, because part of the *raison d'être* for my thesis is to test the viability of ANT, and whether it can actually be applied to my case.

## Case description

### Poor reporting foundation leads to new initiatives

A thorough and structured description of the case is necessary in order to understand why the actors behave as they do. Since there are many aspects to this particular case, it is relevant to detail as much of it as possible. Latour himself argues that proper description is in fact often enough, and that if any additional explanation is needed, the description has not been good enough:

*“What is meant by an ‘explanation’, most of the time? Adding another actor to provide those already described with the energy necessary to act. But if you have to add one (red: explanation), then the network was not complete, and if the actors already assembled do not have enough energy to act, then they are not ‘actors’, but mere intermediaries, dopes, puppets. They do nothing, so they should not be in the description anyhow. [...] I’d say that if your description needs an explanation, it’s not a good description, that’s all. Only bad descriptions need an explanation“.*(Latour, B. (2004a)

In this thesis however, I argue that actual analysis is quite necessary, especially because part of the purpose of it is to test if ANT can be applied to the Tectra case at all.

### Tectra’s structure

Tectra is a separate unit within the Capital Region of Denmark that processes contracts and patents for the hospitals in the region. The name Tectra is a portmanteau of the words technology and transfer, which hints towards the function of the unit.

While the term technology transfer seems quite vague, it is in fact the particular process of transferring technologies from public institutions to the private sector with the intent of commercializing these technologies. Tectra defines their purpose in the following way:

*“The unit serves all the regional hospitals and psychiatry around patenting and commercialization of inventions made at the regional hospitals and offer legal assistance in concluding agreements.”*

Tectra was founded in 2007 in an effort to increase technology transfer between the public and private sectors with the aim of commercializing new inventions to the benefit of the general population.

The capitol area has five hospitals and seven psychiatric departments, and all of the employees there are obliged to contact Tectra if they wish to patent an invention and commercialize it later.

The CEO of Tectra refers to the regional council in Hillerød, which in turn takes orders from the regional politicians. Ultimately, it is the Danish parliament who have the final decision making power. It is rare that politicians directly influence the daily operation of Tectra, but as I have described in my introduction, a certain scandal in the research environment did cause a ripple down the chain of command, which contributed to me being hired at Tectra.

Tectra serves two primary purposes. Offering legal assistance to e.g. researchers or private organizations (Legal group), and patenting and commercializing inventions (Business Development group).

Legal assistance mainly relates to contracts being made between private companies and hospitals, regarding clinical trials. This is handled by a team of legal counselors and is to an extent isolated from the rest of the unit in terms of the type of job they perform.

This service is free of charge, and as such it is less relevant to include an economic perspective in the analysis, since there is no financial impact whether the team processes fewer or more contracts per year. Although not a part of any financial concerns, the legal group does provide an important service that the capitol region sees as important to the general cooperation between private organizations and the public health sector. Since Tectra's inception in 2007 approximately 500 contracts have been processed every year. These contracts are generally characterized by being rather short-lived, which explains the large amounts being made per year.

## Tectra's mission

The Business Development group collaborates with all employees within the health sector in the capitol region who wants to commercialize an invention. This is mandatory for employees, to ensure that inventions are patented correctly, and to properly determine if an invention has the potential to be commercialized.

It is mainly doctors who wish to patent their inventions, but the process is also for nurses and other medical staff. An invention in this context can be many things, from a hip joint implant to a new enzyme or an improved injection needle. Often, the invention is not complete when the inventor (or team of inventors) decide to contact Tectra, and it is then the job of the BD group to determine if it makes sense to continue development of the invention.

Example:

A doctor working at a hospital invents a new application for an enzyme, and decides it is worth trying to commercialize it. He then sends an application to Tectra, stating the type of invention etc. Tectra then starts investigating the potential of the invention, determining it through various parameters.

If the invention is deemed to have commercial potential, Tectra funds all legal expenses required to patent it. If the invention is later licensed to a private company ROI is divided between Tectra, the inventor and the hospital.

## Challenges at Tectra

There is a requirement from Region H stating that all relevant information pertaining to inventions must be journalized (public accessibility).

At the outset of the case, only a few were using the system (Captia) as required.

Tectra invested in another DBMS system two years back – Inteum C/S. This system contains information about all the inventions that Tectra has in its portfolio.

Unfortunately, the system was not up to date, since only a few employees used it as intended.

Efforts have been made to make employees use Inteum, but without success. Within a year, most employees have reverted back to using normal file folders on a shared Windows server to keep the patent portfolio organized.

### About Captia

While Captia was the system that employees were required by law to use, interviews quickly revealed that it did not have the required functionality to be a viable choice for managing patents. The CEO said this:

*“The system was very heavy to work with, and Captia wasn’t a suitable alternative, since all content from a project was piled together in one big bunch. In the Windows file folder structure you had a lot better structure and it was easier to figure out what you needed and where it was.”* (CEO)

Another employee agreed that the only option before Inteum C/S was the windows folder option:

*“It (Captia) doesn’t give the opportunity to make a good case structure, which makes it necessary for us to have either windows or something better”*  
(Employee #4)

A second employee also supported the need for a supporting database in addition to Captia:

*“I think most agree that Captia has too few possibilities as a system to use it as the only system for managing our cases. At Tectra it is especially important to have really good systems to manage the large amount of documents in a structured way”* (Employee #1)

## My role at Tectra

I was hired for a 6-month period to assist with improving the reporting foundation for the CEO. In short my tasks were to:

1. Get detailed knowledge of the information systems used by the employees of Tectra
2. Analyze how the process of how journalizing works – and how it is *supposed* to work.
3. Update the information in Inteum, to make sure the portfolio is up to date and that all information is gathered in one system.
4. Streamline information, so that the employees can work seamlessly between all information systems.
5. Copy all invoices from the invoice system to Inteum, in order to make financial reporting possible.
6. Mitigate the resistance many employees exert towards using Captia and Inteum in their everyday jobs.
7. Establish a project plan for improving the CEO's reporting foundation
8. Implement initiatives for improved use of Inteum C/S

The most important tasks were #6-8, which related to Inteum C/S, the patent database. I spent the first weeks getting to know the system and its feature set, to get an idea of what it was capable of, but also to understand how the CEO and employees at Tectra used it.

To this end I had face-to-face meetings with employees, and I studied the process manual for Inteum C/S, which detailed the intended usage as well as guidelines for most actions available.

It quickly became apparent that the process manual was out of date, and did not reflect how Inteum C/S was actually used by employees. Only some employees used the system and all, and those who did used it in different ways. Over time this had lead to a low data quality, making it difficult for the CEO to base any reporting on the data available.

As I got into the work rhythm I identified several issues that the other employees had with Inteum C/S. First among these was the fact that only the

super user was sure about what *type* of data, and how *much* data to enter into the system. This issue had three root causes, which became the subject of quite a bit of debate during the case:

1. The process manual stated that *everything* related to a patent project should be stored in the database (the manual was created when the system was implemented at Tectra).
2. The CEO was advocating that Inteum C/S be used optimally, to ensure him the best reporting data material, but at the same time he was not fond of the idea that the employees spending too much time entering data into the system
3. The employees themselves were not in agreement of what type of data were *relevant* to have in there, since many of these pieces of information were already stored elsewhere (Outlook and Captia).

### Choice of primary actor

This chapter investigates the main actors in the Tectra case by mapping their standpoints, arguments and concrete actions during the Tectra case. For the purpose of this thesis, the actors will be divided into protagonists and antagonists with the CEO as the primary protagonist. It can be argued that this creates a bias towards the antagonists, since they certainly would not see themselves as antagonists, but quite possibly the opposite! Here it is important to emphasize that it is only because this thesis adopts a particular view of the world (that of the CEO), that certain actors are seen as antagonists, and that the same actors might well be protagonists had their worldview been adopted rather than that of the CEO.

As we will see, these actors can be divided into protagonists and antagonists, or programs and anti-programs. The main protagonists are the CEO and his programs, and antagonists of the suggested program of action, both actors and actants in the Tectra case. Understanding the motivations of both protagonists and antagonists are crucial for understanding the Tectra case.

The first, and arguably most important, protagonist in the Tectra case is the CEO. We have seen that the Ministry of Health is the actor who has initiated and directed the development of the EPD, eventually taking full control over the project. It can therefore be considered as the network-organizer of the EPD and, in this capacity, is a natural advocate of the technology. The Ministry of Health regards the EPD as a useful, and even necessary, innovation in Dutch health care. The arguments expressed by the Ministry of Health to support this position will now be discussed.

*“So “translation” is a verb which implies transformation and the possibility of equivalence, the possibility that one thing (for example an actor) may stand for another (for instance a network).*

*This, then, is the core of the actor-network approach: a concern with how actors and organisations mobilise, juxtapose and hold together the bits and pieces out of which they are composed; how they are sometimes able to prevent those bits and pieces from following their own inclinations and making off; and how they manage, as a result, to conceal for a time the process of translation itself and so turn a network from a heterogeneous set of bits and pieces each with its own inclinations, into something that passes as a punctualised actor.” (Law, 1992, p. 5-6)*

In order to provide a quick overview of the Tectra case, I find it appropriate to include a model depicting the case progression, seen from an ANT perspective. I draw inspiration from Latour's hotel key case (Latour, 1991) and its model showing the progression of the hotel manager's struggle to get his guests to deliver their room key to the front desk before leaving the hotel. I argue that using the same type of figure with my own case is equally relevant, as I can use it to show how the CEO struggles to stabilize the network, but is (like the hotel manager) faced with resistance from a variety of actors, and must transform his initial plan to accommodate this.

The model helps to show the chain of associations between actors (human and non-human), or as Latour describes it – the current shape of the front line:

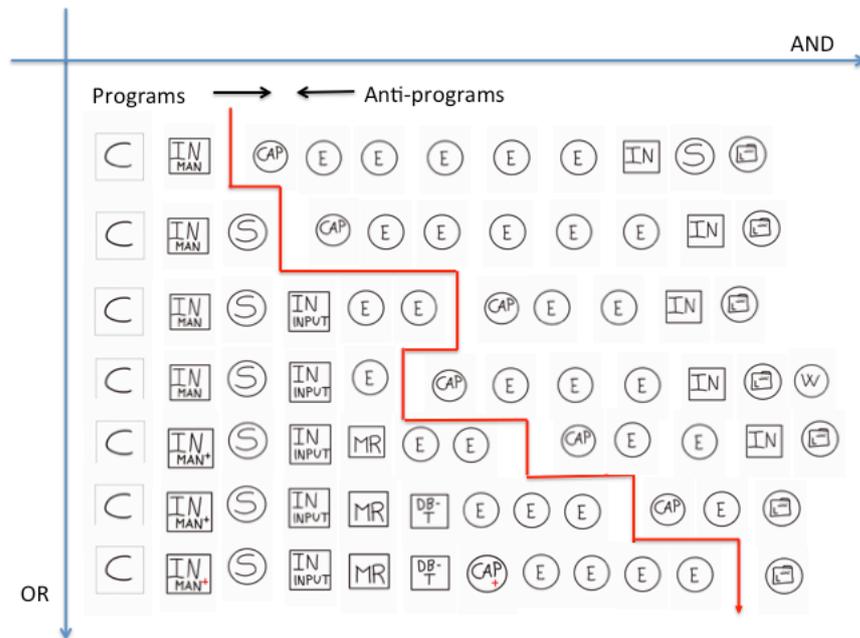
*“...the only interesting reality is the shape of the front line. Whereas the asymmetry between the feasible and the unfeasible, the real and the imagined, or the realistic and the idealistic dominates most studies of innovation, our account only recognizes variations of realization and de-realization. The front line traced by the exploration of what holds and what does not hold together records the compatibilities and the incompatibilities of humans and non-humans – that is, the socio-logics of the worlds in which we live.” (Latour, 1991, p. 110)*

To Latour, the separation of the technical and the social is meaningless, serving only to confuse and detract from the actual, current reality. In the ANT tradition, all relevant actors must be regarded, in order to ascertain where transformations have occurred, and how power relations have shifted:

*“We are never faced with objects or social relations, we are faced with chains which are associations of human and non-humans. No one has ever seen a social relation by itself... It is the chain – the syntagm – we study or its transformation – the paradigm – but it is never some of its aggregates or lumps. So instead of asking ‘is this social’, ‘is this technical or scientific’... we simply ask: has a human replaced a non-human? Has a non-human replaced a human? ... Has this chain of association been extended or modified? Power is not a property of any one of those elements but of a chain” (latour, 1991, p. 110)*

In the Tectra case, the enunciator for the implementation is the CEO, and it is from his point of view we seek to describe the translation process. It is the CEO who sees the need for a change in the availability of data for his reports, and thus decides to take action by initiating the creation of the Inteum C/S process manual (although he is naturally not aware that his first program will not ensure him success). This is his program of action. As can be seen from the figure below however, the initial message to the employees that there will be a new process manual is not enough for the process to run smoothly. As anti-programs appear and obstruct the process, the CEO proceeds to create ‘anti-anti-programs’ to counter them. This process is shown in a vertical and horizontal axis; the vertical axis shows the substitutions of the original

program of action, as it is continually modified to better suit as many actants as possible. The horizontal axis then, depicts which actants have accepted the program of action and now supports it.



**LEGEND**

Inteum C/S	Captia process
Database trainer	Improved Captia process
Mads Røder	Inteum manual
Super user	Improved manual
Employee	Increased workload
Legacy file system	CEO
	Inteum data input

This model gives us a cursory look at the immediate situation in the Tectra case, but is important to note that it only has limited usability, since it does not take into account the deeper chain of associations, which I will examine closer in the next section.

## Analysis of the controversy

In the following sections I will analyze the Tectra case above by going through the four moments of translation put forth by Callon, as detailed previously. Each section corresponds to one of the four moments of translation – problematization, interessement, enrolment, and mobilization. I have already presented the case itself, and the course of action has been summarized to provide an overview of *what* has happened. In this section I will analyze *why it happened*, by using the vocabulary of ANT.

As I have showed in the case description, and as visualized in the frontline model, the CEO of Tectra does in fact go through several translations each time he introduces a new actor or actant into the network. One way of analyzing the case could be to go through all four moments of translation for each program of action in order to achieve a more chronological walkthrough. For the purpose of this thesis however, I find it more appropriate to address some of the key issues within each moment of translation, in order to pinpoint exactly why the CEO is encountering difficulties.

Finally, I find that including all instances of translation in this analysis will be confusing both to write and to read. Therefore I will focus on a few key examples that still sufficiently illustrates each of the four moments of translation, and how ANT can reveal the mechanisms of the issues that the CEO is experiencing.

## Problematization

Problematization is the definition of a state of affairs seen as ‘problematic’ in some way by the principal actor (the CEO). This state of affairs needs to be addressed by the new technology. The problematization lying at the basis of the project of Tectra took place in 2010-2011, when Tectra CEO identified the current use of the information management systems by the employees as problematic, and proposed a better foundation for annual reporting on progress of Tectra’s project pipeline was required. More specifically, the standards for creating, storing and retrieving information were non-existing or conflicting, which increased the time it took for the CEO to create annual report significantly.

This proposal *is* the actual problematization put forth by the CEO. He identifies some obligatory passage points (data input quality needs to increase, reporting must be easier), includes a set of actors and actants, and tries to define their identities via their relation to these passage points.

Through the use of the new IT system – Inteum C/S, the foundation for more efficient reporting would be laid out, while also saving costs and increasing accountability. Once all the relevant actors (employees in Tectra), chosen by the CEO, was storing and retrieving information from Inteum C/S in the correct manner, would annual reporting reach an acceptable maturity level. For the purpose of this thesis, the CEO of Tectra is the enunciator of the case, and translation of the employees’ use of information is what the case (and the thesis) is centered around: From a disorganized, heterogeneous process, to a more homogeneous process without discrepancies in regards to what kind of information is stored, or where it is stored. In this system, consistent data input is crucial in order to be able to use it properly. Therefore, the CEO needed to achieve a higher level of ‘sameness’ in the data put into Inteum C/S. The quote below highlights the CEO’s need for a new solution to the reporting issue:

*“The previous CEO bought the system (Inteum) which was tailored for technology transfer business. One person was made responsible for the*

*system, but nothing was done about it – it wasn't taken seriously enough – so no one wanted to drive the process forward.*“ (Employee #2)

To support his vocal proposition regarding the reporting issue, the *CEO* decrees that a *process manual* will have to be made for *Inteum C/S* in order to standardize and improve the information entered into the database. As is, the practice is too diverse, with some employees diligently updating the system, while others largely skip it. It is emphasized that this is something the *employees* must do, driven by the *Inteum C/S super user*. It is the assumption of the CEO that by raising the quality of the information put into the system to a high level, his reporting issue will be largely *solved*, since he will then be able to pull figures and numbers out of the system to use in his reports.

All the actors in the paragraph above have been marked in italics, to denote their ties both to the CEO's project, and his proposition that an improved use of *Inteum C/S* will lead to a better reporting foundation for the CEO, and that the employees will be the ones doing the improving (the *obligatory passage point* for this case – something the employees will want to have an opinion on).

As part of the problematization, the CEO also assumes that the employees at Tectra will be interested in having a process manual constructed, in order to better use the system. However, as with the other assumptions, they are only that, since he cannot truly know the interests of any actors or actants (not yet), or how they will ultimately react. In other words, even the assumed reaction patterns of the actors are only part of the CEO's problematization, or what he thinks are relevant factors to his initial proposition.

As Callon also notes, the problematization is more than just the CEO's proposition:

*“...the problematization, rather than being a reduction of the investigation to a simple formulation, touches on elements, at least partially and locally, which are parts of both the social and the natural worlds.”* (Callon, 1986b)

The CEO establishes (or assumes) the identity of the involved actors, as well as the link between them: If the employees wish to contribute to a better functioning group (whatever their motivations may be), if the database system

wishes to be used fully as intended (however may be used right now), they must accept the CEO's proposition of being able to write reports more easily.

The employees in the Tectra group vocally agree that this should be so, since the original agreed-upon purpose of the system was to have an integrated, high quality database with all the patent projects stored and up to date. At this point in the translation process though, the CEO is not significantly closer to his goal than before he stated his proposition. Although his employees agreed with it, the problematization (and the involved actors) are still very hypothetical, and the strength and veracity of this network has not been tested.

In other words, the employees may not necessarily see a 'problem' as such, even though the CEO has 'problematized' the specific situation. Therefore it is also important to remember the difference between having a specific problem, and the concept of problematization, which Callon defines more along the lines of a proposal of change.

Further more, the CEO has 'blackboxed' several actors, which, as I will discuss later, have unintended consequences for the case outcome.

## Interessement

The moments of interessement in the translation process is, in the Tectra case, characterized by the network-organizer introducing a string of actors and actants into the network over time. Once again it is important to emphasize that I argue for the existence of several iterations of the translation process: every time the CEO anew seeks to convince the employees to use the system, the translation process seems to restart.

However, since it can also be argued that the whole Tectra case is one large project (and since the translation process is never-ending), I will continue the analysis by analyzing interessement examples of the CEO's attempt to *"impose and stabilize the identity of the other actors it defines through its problematization"*. (Callon, 1986b)

In the span of the case, the CEO seeks to interpose himself between the other actors and 'entities' (actors or actants) that might seek to define the CEO's proposed network. Of course, the CEO does not physically have to stand in the way between two actors (although one of his programs do in fact involve physically designating where the employees must be once a week), as he can also choose to introduce a new actor into the network to the same effect.

*"To interest other actors is to build devices which can be placed between them and all other entities who want to define their identities otherwise. A interests B by cutting or weakening all the links between B and the invisible (or at times quite visible) group of other entities C, D, E, etc. who may want to link themselves to B."* (Callon 1986b)

More simply put, what this means is that the CEO needs to make sure that the employees at Tectra are not distracted or hindered by some other event, person or technology, which could cause them not to do as the CEO wishes. To prevent this, the CEO must start some activities, or do something concrete to make sure he has the attention of the employees. Below, I have chosen a series of examples of how the CEO goes about this.

The first example of interessement I will analyze is weekly data input 'meeting' introduced by the CEO. As Callon describes, interessement is the act of separating actors from the (unwished) influence of other, unwanted actors, and this physical example of 'going between' the employees and the actant 'high workload' demonstrates this in a very literal way.

As shown in the case description, one issue that the CEO faced was that his employees were working under a high workload. This workload is also shown in the frontline model as an actant, or anti-program to the CEO's overall program of action. The high workload was not as such a surprise to the CEO, since he was responsible for delegating projects to the employees, but he realized that when faced with the choice of doing their 'regular' work, and entering data into the database, most of the employees would choose the former.

So in the vocabulary of ANT, a new actant (the high workload) seeks to influence how the employees act towards the database, causing them to revert to their old habits. The CEO, not interested in this outcome, seeks to intervene by having weekly data input days, where he sits down with the employees and they spend 1-2 hours bringing the database up to date, thus ensuring that they are not affected by the high workload, which would otherwise cause them to neglect the task. The logic behind this action was that if the CEO actually sat down with the employees and entered data into the system, the employees would have no other choice than also doing the job, since their manager was physically next to them for 1-2 hours, with that one specific goal.

As one employee mentions, this initially worked:

*"Using the Thursdays for Inteum worked pretty well I think, because we had to do it, since [the CEO] was there. But when he stopped being there because he was busy... After a while I used that time for other things" [Employee #3].*

This may be seen as a typical example of interessement from the CEO's side. Below is shown the introduction of the weekly data input session on the frontline model:

As I will show below, the introduction of the input session turns out to be only a partial success.

Half of the employees are positive towards the concept, finding it useful and meaningful to have the input sessions as a mandatory work task. By being 'forced' by the CEO to sit down and enter data into Inteum C/S, they are no longer influenced by the high workload in the same way as before (in the sense that they will at least now do the task, they might still be stressed out). As mentioned in the case description however, these sessions did not have the intended effect, at least not to the degree that the CEO had wished for. As time went by, the sessions went from being a time where the employees and the CEO would sit and enter data into Inteum C/S, to being just a block in the work calendar, a symbol of 'free' time available the employee for doing other tasks, should it be required. The CEO describes it with the following quote:

*"Some used it (the Thursday sessions) and took it seriously, and others used it more as 'extra time'. Eventually it took shape as general 'free' time where you couldn't get booked for meetings in that time slot."* (Employee #1)

The input sessions do in fact end up shaping the network in a different way than the CEO had expected, by causing the employees to use this time for other activities than he had anticipated (i.e. *not* entering data into Inteum C/S!).

Another problem soon arises, which can be seen as further compromising the input sessions; the CEO realizes that he himself does not have the needed time to sit in on the sessions:

*"I should have gotten someone else to do my data input for me...I didn't have time to enter data into Inteum myself, and at some point I stopped being at the input sessions entirely."* (CEO)

This shows that the CEO is not able to maintain control over the actor-network, or at least that he does not understand the importance of his own presence in the input sessions. As shown above, the employees start losing dedication to inputting data soon after the CEO stops participating in the sessions.

A second example of interestment is the CEO's choice of hiring me on a 6-month contract to revitalize the use of Inteum C/S, among other things. This is

after the introduction of the weekly data input session, yet it is still an act of interessement, albeit in a later iteration during the case.

It was clear to the CEO that his initiatives was not getting him where he wanted to be, the actors were still not agreeing on the use of Inteum C/S – the network had yet to stabilize. Rather than having the system go into complete disuse again, I was hired in to make an effort to design and implement new processes for using it. As the CEO expresses it:

*“Basically it (my hiring) was to be able to make the yearly reports in an easier fashion. The report states exactly how many contracts are coming from different hospitals, what projects we have, how many patent applications we are helping with, and the key to organizing it all was in Inteum, I think”.* (CEO)

However, the CEO had at this point realized that it might not be feasible to assume that the employees were able to utilize the maximal potential of the system’s capabilities:

*“You were hired to meet this challenges. Further more, we needed a sanity check – where are we, system-wise, where do we want to be, and what is the gap between these to states?”* (CEO)

Once again, the CEO introduces a new actor into the network in an effort to separate the employees from unwanted actants: The initiative of the input session did not work as intended, and the process manual was not used, and workload remains high). By hiring me, the CEO hopes to reformulate the purpose of the project in order to achieve success.

One employee expressed a positive attitude towards my job role:

*“I’m so happy that you were hired... the problem was that I never got around to actually entering project data into Inteum, so it was a relief to have someone to make sure I did it, when we started working with the new input method.”* (Employee #2)

From this quote it is clear that my (as an actor) was introduced to separate the employees from the high workload, causing them not to enter data into Inteum C/S. Furthermore it is evident that, at least this actor, is happy for the separation, since the employee agreed that using the system is a good idea

(for details on employee opinions see diagram 2).

Another employee, the Inteum C/S super user, stated that without extra help, he didn't see any realistic way of following the CEO's wishes for data input:

*“The problem is that we do things differently, not everyone enters all the data into Inteum, so it's mixed up. I think we need to take our time to do this right, but we also have our real work to do.”* (Employee #1)

What is also interesting from the quote above is the fact that the employee (the super user, no less) makes a distinction between 'real' work, and entering data into the database. In other words, the actors (employees) are very much influenced by an unwanted force. By introducing me into the network, the CEO hopes to mitigate this influence.

## Enrolment

Enrolment concerns the negotiations by which the actors that are being redefined into a new network of relations accept these definitions and the new roles assigned to them.

As we have seen so far, the CEO of Tectra has sought to define, or problematize, the situation, tentatively assuming the positions of the different actors involved. Next, he proceeds 'interesting' the actors, or stepping in between them and other, unwanted actors, who might exert influence in an unwanted or unforeseen manner. Success in these moments of translation however, does not ensure a compliant actor-network in the end: Actually making sure that the other actors and actants do participate and agree is the third moment of translation – enrolment:

*“No matter how constraining the trapping device, no matter how convincing the argument, success is never assured. In other words, the device of intersement does not necessarily lead to alliances, that is, to actual enrolment.”* (Callon, 1986b)

The term enrolment seems quite broad, and encompasses a variety of methods, both physical and mental, to get actors to cooperate in the wake of the intersement process. Upon first look, the moments of translation can sometimes seem jumbled together, or at the very least a bit blurry in terms of where one moment starts and another ends. This is particularly evident in the Tectra case, where the CEO introduces many new programs of action over the course of time. Here it is essential to remember what Callon says regarding these two moments, in order to separate them properly:

*“Intersement achieves enrolment if it is successful. To describe enrolment is thus to describe the group of multilateral negotiations, trials of strength and tricks that accompany the intersements and enable them to succeed.”*  
(Callon 1986b)

In other words, after having introduced me into the department as a new actor, or program of action, as a means of intersement, the enrolment can now

take place in an attempt to negotiate and convince the employees at Tectra to follow the CEO's program of action.

The first example of enrolment that I will go in depth with is the decision to revise the Inteum C/S process manual, which, at the same time, is also a great example of ANT in action, so to speak.

As has been established, the CEO, whose overall goal was to make reporting easier, hired me to effectuate this by making the Inteum C/S database operational by any means. Some groundwork had already been done up to this point by trying to define the problem (the employees verbally agreed to this problematization), and by taking actions to 'isolate' the employees from unwanted influences. What waited next was to take concrete actions to ensure that the employees would in fact also use the system and keep it up to date.

To kick this off, I hosted a team meeting inviting everyone, where I suggested a new baseline for what type of information was entered into Inteum C/S, which was then discussed by the CEO and the employees, in order to reach an agreement. During this meeting the CEO realized that it was not actually feasible to have the employees utilizing the full potential of the system.

During this enrolment instance where the actors negotiate, it is in fact also the CEO who is changed, at least in his perception of the capabilities of both Inteum C/S and the employees who use it. At the beginning of the case, the CEO knows that the database holds the potential to make his reporting job considerably easier, however as the controversy unfolds he realizes that this is in fact not the case – the database is no longer the same, and neither is the CEO. The outcome of the meeting is that the new process manual will be much smaller, in fact more similar to a booklet, intended to make it easier for the employees to consult the manual quickly, if they are in doubt. Furthermore, the bar is lowered considerably in terms of *what* goes into the system in the future. Expecting the employees to enter everything into the system is unrealistic, so it is instead decided to have a considerably smaller set of data that the employees should from then on enter into Inteum C/S.

One of the interviewed employees noted:

*“Having the meeting was a good thing...We finally got on the same page with how to use Inteum, because before we couldn’t really agree to anything, and that just meant that none of us did anything anyway.”*

Another issue that emerged from the meeting though, and one which the CEO had not taken into account in his initial problematization, was the proficiency of the employees in using Inteum C/S. As it turned out, the only employee comfortable using the system was the super user. Everyone else (including the CEO) was not comfortable using it, which prompted the CEO to introduce another actor into the network in order to enroll the employees – namely the Inteum C/S certified trainer from America, hired to come in for an afternoon to give a needed brush-up on the system functionalities. This is also my second example of the enrolment moment in the translation process.

As one of the employees notes, this decision to hire the trainer provides palpable relief with several of the employees:

*“It’s embarrassing, but I actually can’t remember how to use many of the functionalities of Inteum. I remember how to upload documents and such, but most other stuff is just gone.”*

Another one agrees:

*Hiring the instructor was helpful, because I had forgotten a lot of how the system was supposed to be used. For example I couldn’t remember how to connect patent applications together with key deadlines, which the instructor taught us again.”*

As can be seen, the CEO is able to successfully negotiate the the use of Inteum C/S. By introducing the two new actors, revised process manual and database trainer, he is able to enroll the employees into his program of action, first by lowering the bar regarding what type of information they input, and how much, and second by bringing in a trainer to give a brush-up on the employees’ Inteum skills.

## Mobilization

Mobilization concerns the issue of the representativeness of representatives. It is about the acceptance of spokespersons, who have represented others in the setting up of a technological network, by silent masses of actors: “Will the masses ... follow their representatives?” (Callon 1986, 214). The idea is that, since only a few actors participate in negotiations on a new technology – actors who (claim to) speak in the name of others – the question remains undecided whether those who are being represented accept their spokespersons, and with that their enrolment. Only then will the actual elements that are implied in the new technological network take up their role, since up to that point it is only the representatives who agree on it. Callon explains it the following way:

*“If consensus is achieved, the margins of maneuver of each entity will then be tightly delimited. The initial problematization defined a series of negotiable hypotheses on identity, relationships and goals of the different actors. Now at the end of the four moments described, a constraining network of relationships has been built.”* (callon 1986b p.15)

In the Tectra case it means looking at how the employees end up aligning themselves to the new way of using Inteum C/S. From the case description it is known that the employees actually end up using the database, but in a different way than the CEO had originally intended. This new way of using it was less complex, requiring less time to enter data, but at least the CEO now had everyone on board. During the workshop initiated by me, a consensus was made between the CEO and the employees, with the super user acting as technical expert on the system.

However, while mobilization would normally entail a set of representatives speaking for a silent majority, all the actors are in fact present at the workshop at the same time, instead of only the super user or a similar representative. Inteum C/S is not present though, since it is a software program. In fact, it is because of this actant that the workshop is held in the first place.

In order to make sense of the mobilization moment then, I point towards the revised Inteum process manual, which can be seen as the representative of Inteum C/S, the program itself. In the manual the purpose of the database is stated, including the list of actions that must be taken by the employees in order to enter data correctly, as well as entering the correct data.

In many ways the act of revising the process manual can be seen as one of the final stabilizing acts in the case: the CEO has sought to introduce a better way of using Inteum C/S thought the case without any particular success, but the different actors introduced can also be seen as preparing the actor-network for this revision, where it is decided how the employees will use the database going forward.

This is done by inscribing the behavior of the employees into the process manual – a text that designates the actions of the employees (regarding Inteum C/S) in the future, which was agreed on by everyone at the workshop prior to the revision. This inscription serves to achieve what Callon describes in the quote above, namely making sure that a constraining network of relationships has been made – the actors now have a relatively fixed set of actions available to them, based on the workshop held, and inscribed into the process manual.

The second example I will analyze is that of the database trainer, whose actions can also be seen as a mobilizing force in the translation process. As previously mentioned, not every employee felt comfortable with using the system. One reason often mentioned was that it was an advanced piece of software, and that it was not easy to remember all the details of how it worked. To accommodate this problem, the database trainer was hired for a day of intensive brush-up on the system, and was asked to focus on the core tasks that were decided on during the workshop before.

From an ANT point of view then, the database trainer is a constraining factor, who seeks to narrow in the possible actions of the employees: Rather than brushing up on all the system's functionalities, the focus is purely on these core tasks that they are supposed to perform from then on.

In other words, Tectra is now considerably closer to a new, temporary

alignment of interests and a new agreement as to how Inteum C/S will be used in the future.

It is interesting to see that although the CEO manages to pull through with his mobilization, the new purpose of Inteum C/S is very different from his original program of action. In order to be able to convince the employees to use the database in a new way, he must not only modify their way of seeing Inteum C/S, and the purpose of their jobs by extension, he must also himself alter his understanding of Inteum C/S, and what it is capable of.

Through this 'shared' inscription in the process manual, it can then be said that in the end Inteum C/S itself is also altered. From being a highly advanced databased with many inherent possibilities for advanced reporting, it is now turned into a rather simpler tool, used for more simple reports. This is only temporary though, and with time new negotiations will change the actors and actants again, as well as introduce new ones, while others disappear.

## Mobilization issues

As a final part of the analysis, I will focus on the role of the Inteum C/S super user in the mobilization part of the translation process. According to Callon it is typically a representative of a silent majority that must be convinced of the enunciators program of action on behalf of that majority. In this case however, the super user is 'out of tune' with the other employees, and does not adequately represent their interests. While the super user is indeed the go-to person for the employees in matters regarding Inteum C/S, the observed difference in system use of the super user and the employees was so large, that the employees did not feel confident letting the super user speaking for them during the workshop.

This is directly the opposite of Callon's famous case of the fishermen of St. Brieuc Bay (Callon 1986b), where a few scallops represent a silent majority, sitting on the bottom of the sea. In the Tectra case there is a vocal majority that speak out exactly *because* the super user is not representing them. The consequence is that the CEO and the super user cannot, by themselves, constrain the actions of the network and stabilize it. They must include the employees in the workshop, and they must alter the original intent of the CEO towards how Inteum C/S is used.

## Post-analysis controversies at Tectra

In this section I will discuss some of the events that occurred after the case, to highlight the inherent instability of 'stable' networks, as well as discuss some of the shortcomings of using ANT in the Tectra case.

After my time at Tectra was over, I began writing this thesis, and eventually returned there to gather my empirical data in the form of interviews. Naturally I was also interested in hearing about how things panned out after I left, and if the employees were still using Inteum C/S they way we had agreed on before I left. Was the network still stable?

My first surprise in this regard was that the CEO had left Tectra some time after the case events, and that there had been some organizational changes, pooling Tectra with another group related to public biotech service.

Some things were still the same though, and the employees still performed the same jobs, and still used Inteum C/S as part of their daily tasks.

When I interviewed the employees they were generally positive towards the new way of working with Inteum C/S, even though the original enunciator, the CEO, was no longer there to enforce it:

*"There's a better data quality overall now... For example our invoices from Maconomy are now titled the same as in Inteum"* (Employee #4)

Another states that the process for entering data into Inteum C/S has made project management easier for them:

*"It helps to have all the project files in one place. This way I know where my files are, and it is easier for me to keep an eye on deadlines or to get an overview of the status of a patent."* (Employee #1)

The super user noted that there was a definite increase in the use of Inteum C/S, and it seemed that all employees were now on board with the concept, because they finally felt comfortable using the database. Additionally, they had introduced small handy reference cards, or 'quick guides' meant to help the employees with the basics of Inteum C/S, rather than using the large and rather cumbersome process manual. This easy-to-use guide made the effort

required significantly smaller for the employees, if they had any problems with the system.

It is interesting to see the continuous change process that happens throughout the case and after it, as it highlights the notion that an actor-network never fully stabilizes (at least not for long). The CEO establishes a temporary understanding of how Inteum C/S should be used, but he leaves Tectra soon after, changing the network. Later again quick guides are introduced into the network with inscriptions ensuring that the employees continue to use Inteum C/S as agreed.

Actors and actants continually leave and enter the actor-network, every time risking the stability of it, potentially challenging the existing way of doing things.

There are few remnants of the original *raison d'être* for starting the whole thing as well; namely making it easier for the CEO to make reports for the regional executives and politicians. The CEO himself is gone, and with him, the desire to use Inteum C/S for reports specifically. Instead, the employees have embraced the software program for their own purposes, in order to make their work easier. It no longer matters that that was not originally the real intent, the actor-network has changed – Inteum C/S is no longer a reporting tool for the CEO, it is a tool for managing patents and projects for the employees. They do not use it to its full extent, and reports cannot be drawn purely on the basis of that program, but the enunciator is no longer there to pull it in that direction.

## An alternative primary actor

The purpose of this thesis has been to test ANT in ‘the real world’ and try to apply to the Tectra case. I have done so with the CEO figuring as the primary actor, initially following his reasoning for setting events in motion.

Would it be possible though, to employ a non-human entity as the primary actor instead? After all, one of the main tenets is equality between human and non-human actors – generalized symmetry. As Law says:

*“Truth and falsehood. Large and small. Agency and structure. Human and non-human. Before and after. Knowledge and power. Context and content. Materiality and sociality. Activity and passivity...all of these divides have been rubbished in work undertaken in the name of actor-network theory”* (Law 1999, p.3).

In this section I will discuss how the analysis would look by employing Inteum C/S as the primary actor instead of the CEO.

Having the database as primary actor firstly involves determining what its program of action is – or in other words, what is its intention? One obvious obstacle here is the inability to actually talk to Inteum C/S, since it is a system rather than an actual person. So while ANT does not discern between human and non-human actors, it does put the researcher in an awkward position for this purpose.

Instead I argue that one can turn towards the associations connected to Inteum C/S. As we have established, the actor or actant is made up of a series of heterogeneous relations or associations, so by looking at these associations it could be argued that one can approximate the intentions of the actant.

This should not be confused with some kind of determinism, but simply as a means to account for a possible 'purpose' of Inteum C/S.

For this example I will point towards to associations that can give an indication of purpose:

1. The creators of Inteum C/S
2. The original procurer of Inteum C/S to Tectra

By looking at the feature set of Inteum C/S and purpose of its creation, the first pointers can be seen. As already described, Inteum C/S is a database specifically made to manage patents in all its phases. To support this function, a series of features have been implemented such as a calendar, mail support, reporting tools and deadline alert systems.

With all these features it can be argued that Inteum C/S 'wants' to be used extensively to manage the patents of Tectra. Furthermore, it wants to be used in relationship with other systems such the group's mail system. Furthermore, it can be of maximal use if the reporting tool is used to generate overviews and status reports on past and present patents, as well as future deadlines or upcoming changes.

The next hints towards what Inteum C/S 'wants' is what is was bought to do at Tectra. The previous CEO procured it in order to manage patents in a broad sense of the word 'manage' – and little written documentation is available. Both the CEO and employees gave the same explanation though:

*"The last CEO was the one who introduced Inteum, because she thought the group needed a better system for saving and retrieving all the files related to our development projects."* (CEO)

*"Before (Inteum C/S) we mostly used windows' folder system, so she (the previous CEO) bought Inteum to structure our files better."* (Interview #3)

The previous CEO did not procure Inteum C/S exclusively to improve the reporting foundation, but rather to lift the patent management at Tectra in a general sense.

My approximation of the purpose of Inteum C/S as primary actor then is to have its features (both basic and more advanced) utilized at Tectra, but not

with a specific focus on reporting for the benefit of the CEO. This is a significant deviation from the CEO's wishes,

Since the actual case plays out the same way regardless of what actor or actant is followed, the perception of it may vary greatly. For example, the CEO was not able to carry out his original plan for the revised use of Inteum C/S, and he was eventually forced to change the goal. From his perspective he was not entirely successful with his program of action because the reporting foundation was not significantly improved. Looking at the perspective of Inteum C/S however, a different picture emerges.

Following the associations it consists of, its purpose is to be utilized by the employees of Tectra, which is what happens to a larger degree throughout the case. It achieves this by affecting other actors in the network through its own feature set. For example the CEO sees the potential of its reporting tool, and thus launches a series of initiatives to improve the use of the database. Some of these are successful, while others have limited effect, but slowly there is an increase in use of the system. Similarly, the revision of the process manual is in the interest of Inteum C/S since it makes the employees more comfortable using the system and its features.

The implication of using a non-human actor is interesting because it highlights the focus on the associations between actors, which needs to be examined to understand why networks are constructed the way they are. It is not imperative to follow a human actor to trace the complex relationships between employees, technologies, manuals and CEO's.

There is however a tendency to use human primary actors because they are simply much more convenient to follow. As can be seen from this section it is speculative at best what the true intentions of Inteum C/S are, since it is not sentient. That does not mean that it is not an important actant, and by looking at the associations between the actors in the network I could still arrive at the same conclusions, but it is not ideal as a primary actor.

## Conclusion

In my introduction I asked the question “*How does the change process affect the involved actors, including the proposal itself, and why does the proposed change to the patent database encounter problems?*”

To answer this question I used Actor-Network Theory as my theory of choice, and collected data through qualitative interviews with key employees at Tectra. At the same time I wanted to investigate whether ANT was in fact applicable in a real life case, and what problems I might encounter.

I applied the ANT concept of translation to the Tectra case, in order to understand why the case developed as it did. By examining my empirical data in the framework of the translation process I was able to see some of the deeper complexities that provide an answer to the research question.

An actor-network can consist of many entities – humans, technologies, environments, texts and so forth. But every one of these entities is also an actor-network in itself, built up of associations that together represent a whole. It is by following these associations and how they change that I can conclude why the CEO encountered challenges during the case.

The involved actors and actants were changed in several different ways. Most notable was the CEO, the primary actor who sought to improve his reporting foundation through an improved use of Inteum C/S. Several initiatives were begun to effectuate this, with varied success. As the CEO sought to change the actor-network though, the network in turn changed him. External influences such as time constraint changed the CEO’s perception of what was feasible in terms of the use of Inteum C/S.

Each of the employees at Tectra also went through a change. Associations with Inteum C/S as something difficult to use was changed as the database trainer entered the actor-network and taught them how to use it better.

The external influence of time constraint was mitigated as a common agreement was inscribed into the revised process manual. In other words, the definition of an employee at Tectra is no longer the same as it was before, because the associations that make the construct of an Tectra employee are no longer the same.

When I started out with my thesis I was sure that I wanted to use ANT, but it took time before I realized what the conclusion of it was. Using more “ordinary”

theories usually yield some sort of value-laden end result: This worked, or that was a failure.

ANT is radical from a philosophical perspective because it actively rejects the proposed duality between the social and the technological - it does not give predominance to human actors over non-human.

For my thesis this ontological “non-discrimination” leaves a very particular analysis of the Tectra case: It is an analysis of who *have* power in the network and who *exerts* power, but it is equally an analysis of the associations that constitute the actor-network – to speak of one is to speak of the other:

*“When you simply have power – in potentia – nothing happens and you are powerless; when you exert power – in actu – others are performing the action and not you...[power] as an effect, but never as a cause”* (Latour 1986, p.265).

To effect a change, actors must exert power, causing other associations to act, which changes the network, eventually stabilizing it. This happened in the Tectra case, but I argue that concluding that the CEO was or was not successful is not ideal.

Instead, I would conclude that the CEO simply changed. His original goals no longer the same, so to speak of success or failure is not what is important. What is important is to follow the associations in the actor-network, which is what I have done in my thesis.

I wanted to test ANT, to see if it was applicable to my case, and in that regard I conclude that it is usable. ANT can reveal the complexities about an environment due to its focus on relationships and associations between actors. It answers the question of why the Tectra case is as it is.

Can it be used to describe *everything*? I will return to that in the “Future research” section.

## Suggestions for future research

Should further examination of the Tectra case be conducted, it could be interesting to investigate the impact of ethics, values and norms on the case. While ANT can in principle be used to examine everything I found that it was difficult to take work culture or morality into consideration– it is hard to pinpoint what the essence of e.g. “working hard” is, and to ANT there is no essence, there is only *effect*.

While this is intentional from ANT, it does raise the question whether such principles can reliably be converted into purely effects in academic research.

Lastly, future research could seek to extend the chain of associations to a wider degree, including e.g. politicians responsible for legislation affecting Tectra, or the larger building that houses Tectra, but also other departments within the capital region of Denmark, that may have influence as well.

# Appendix

## Abbreviations

ILC – Information Life Cycle

ANT – Actor-Network Theory

IT – Information Technology

IS – Information Systems

DBMS – Database Management System

ERP – Enterprise Resource Planning

Reg-H – Region H (Capital Region of Denmark)

BD – Business Development (Group)

CEO – Chief Executive Officer (Head of the Tectra group)

Tectra – Technology Transfer (Unit)

## List of actors and actants

- CEO of Tectra
- Law group (3 employees)
- Business Development (BD) group (4 employees)
- Inteum C/S super user (BD)
- Inteum C/S patent database software
- Inteum C/S process handbook
- Inteum C/S external trainer
- Mads Røder (6 months of working in Tectra)
- High workload ('foreign' influence on actors)

## Interviews

The names of all interviewees are known to the researcher.

- 1) CEO of Tectra
- 2) Employee #1 (Business Development)
- 3) Employee #2 (Business Development)
- 4) Employee #3 (Business Development)
- 5) Employee #4 (Business Development)

Following are the interview questions for the employees for reference.

- 1) *What is the purpose of Captia and Inteum C/S?*
- 2) *How was Inteum C/S introduced? (Training, documentation, information)*
- 3) *How have you experienced Inteum C/S?*
- 4) *How do you use Inteum C/S in your daily work?*
- 5) *What were some of the positive sides and challenges with Inteum C/S?*
- 6) *How did you experience the CEO's initiatives to improve the reporting foundation?*
- 7) *How did you experience the workshop with the Inteum C/S trainer?*
- 8) *How would you evaluate the revised process manual for Inteum C/S?*
- 9) *How do you use Inteum C/S today compared to 6 months ago?*
- 10) *What happened after the CEO left regarding the use of Inteum C/S?*

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