Rannveig Røste

Innovation in Public Services: Wicked Problems and Multi-layered Solutions

The papers of this dissertation are not available open access, due to copyright matters.

Paper 1
Coevolution and innovations in governance: A case study of the new public service system for electric vehicles in Oslo
Røste, Rannveig
https://www.taylorfrancis.com/books/e/9781134628414/chapters/10.4324%2F9781315885612-17

Paper 2
The political dimension of wicked problems: A process study of the emerging innovation in public charging services for EVs in Oslo
Røste, Rannveig

Paper 3
Innovation in public services: a multi-layered approach
Røste, Rannveig

A complete version of the dissertation may be borrowed in the BI Library

Innovation in Public Services

Wicked Problems and Multi-layered Solutions

Rannveig Røste

No. 6 – 2018
SERIES OF DISSERTATIONS

BI

NORWEGIAN
BUSINESS SCHOOL

Innovation in Public Services

Wicked Problems and Multi-layered Solutions

by
Rannveig Røste

A dissertation submitted to BI Norwegian Business School
for the degree of PhD

PhD specialisation: Innovation and Entrepreneurship

Rannveig Røste
Innovation in Public Services : Wicked Problems and Multi-layered Solutions

Table of Content

Abstract

This thesis targets the topic of innovation in public services. During the last decade, innovation in public services has been addressed as a universal tool for improving existing public services and solving grand social challenges. A range of promising concepts in the scholarly literature have addressed this topic, as have ongoing debates on the public agenda, at the governmental level and in research policy programmes. Nevertheless, these debates include quite a large number of piecemeal and rival views that have contributed to a fragmented understanding of the phenomenon. The problem is that this fragmented understanding has left us with the dangerous idea that there is a 'magic concept' that can fix any problem. The overall purpose of this research project is to contribute to a more comprehensive understanding of the topic, by categorizing existing viewpoints and developing a theoretical framework to explain how innovation in public services develop over time.

The theoretical framework provided here has developed out of existing knowledge in the two scholarly disciplines of innovation and public administration, in the neo-Schumpeterian approach to evolutionary theory and the neo-Weberian approach to institutional theory, respectively. The combination of knowledge from these two disciplines has revealed new knowledge that has helped conceptualize a social dimension of innovation. This is manifested in a distinct rational-legal authority in the context of the public sector, and a layered characteristic in the recognized outcomes of innovation in public services at the micro-level, and the drivers and hindrances at the aggregated level in the distinct social setting.

The thesis contributes to theory development through a process study. The setting for the process study is the emerging innovation of public charging services for electric vehicles in the city of Oslo from 2007–2014. This new public service was selected because of its interesting history, which gives us glimpses into the generative mechanisms to innovation in public services discussed in the scholarly debate. Most importantly, this new public service was initiated by a governmental goal and developed through ongoing processes of interactions over time, with politicians, public managers, private firms, third-sector organizations, etc. However, the implementation of this goal met many obstacles, not least in the existing policy for transport, the lack of technology for building the charging stations, and the small initial market for the new service. The study of how these hindrances have been overcome has uncovered interesting insight. In revealing these patterns, data has been analysed using real-time and retrospective data, collected through a combination of methods, including personal

interviews, document analysis, archive studies, statistics, public debates, and visual inspections of the technological equipment of the charging stations.

The main findings show how the new public service of the charging stations for electric vehicles developed in inter-organizational processes of interaction over time. The interaction between the governmental and political events was found to be especially important for the development of this new public service, and was examined further. This examination identified several critical incidents of governmental policy and politics that initiate, drive and hinder the emerging innovation. These many events demonstrate the compounded nature of the political dimension of wicked problems, in the range of activities that take place at various phases in the policy-cycle to solve challenging social problems in governmental goals, existing policy, public procurement, related governmental decisions, political trends, etc. I then focused further on the theoretical explanations to these observed empirical patterns, which ended in a multi-layered approach to innovation in public services. With this approach, I demonstrate the heterogeneity of the phenomenon, distinguished in five key processes to innovation in public services. The five key processes are drivers in various social settings, explicated in a taxonomy to innovation in public services. The taxonomy reveals my conclusion, that the phenomenon of innovation in public services cannot be reduced to a simplified idea fostered by one generic instrument, and must instead be understood as a part of many ongoing processes of change and development in a setting of wicked problems in the public sector.

Acknowledgements

thanks to Marianne Mølmen for all your help at various points of time during my project, and to Tove Faye-Lund at the archive for your great effort. Thanks to all the people at the Agency, and the other people that I interviewed, for sharing your time, knowledge and for your faith in me.

I will also greet the people that have contributed to my PhD project in various ways, and at various times. I will express my gratitude to Lars Fuglsang and Atle Midttun for the useful feedback you provided at my pre-doctoral defence. My tribute to Jan Roar Beckstrøm, Lars Coenen, Birte Horn-Hanssen, Tonje Hungnes and Fanny Paschek, for reading and commenting on drafts of the thesis. Appreciation to Rolf Rønning that invited me into the Routledge book project on innovation in public service sectors, which provided me a great arena at an early start of my project. Credits to Matthias Weber and Torill Ringholm that invited me into other relevant writing projects. My obligations to my former director at NIFU, Per Hetland, and to Johan Hauknes and Magnus Guldbrandsen who initially encouraged me to apply for the PhD position. Thanks to NIFU for having me back from the long PhD pause, for allowing me to apply for leave of absence, and for being patient with me during the completion of the thesis.

My acknowledgment goes also to people that have supported me in more indirect ways. Gratefulness to all the people who has commented on my conference papers and inspired my work in seminars and PhD courses. Thanks to colleagues at NIFU, and my friends in the Research Area of Innovation. Special thanks to Liv Reidun Furberg and Anita Eltoft for professional, and hearty, physical therapy when my shoulders and backs were hurting from the thesis. Thanks to my friends, I am looking forward for more laughs with you in my new post-PhD-life. My appreciations to my parents, and my parents-in-law for helping out with our busy family life.

Finally, I want to thank the person that has stood by me throughout the whole process: my husband, Jan Roar Beckstrøm. Thank you for being there, in good and bad days, and for your everlasting support on the long journey. Thank you also for your interest in my work, and for the feedback on drafts of the thesis – you have been a great co-co-supervisor. I also want to thank my two beloved kids: Torbjørn and Håkon. Being with you has provided me wonderful balance in my life in this period. I love you.

Oslo, December 2017, Rannveig Røste

Chapter 1   Introduction

1.1   The Topic of Innovation in Public Services

Innovation in public services has received a great deal of attention in the last decade. News articles and conferences have called for a need to improve innovation skills, to work smarter, cut costs, and to develop new and better ways to deliver public services. The need has been laid out using exciting examples of fancy technology replacing out-dated technical equipment in hospitals, self-reliant technical assistance for the elderly, and smart solutions for users of public transport. Innovation has also been promised as the solution to the massive fiscal pressure for health and care services, associated with the ageing population with an increased need for medical and care, and a reduced workforce to reimburse the costs. Similar promising prospects have been addressed to reduce work intensive sides in other parts of the public sector; for example, digitalization in education and self-services for administration of business certificates.

The topic has also been addressed at the governmental policy level. In Norway, it reached the political agenda with a White Paper on "An innovative and sustainable Norway"[1] in 2008. This paper basically addressed the unexploited potential for innovation in public services. It was followed by a Green Paper in 2011[2] stipulating the potential for political strategies in health services and care services. The Norwegian Association of Local and Regional Authorities (KS) has been a central actor. It placed innovation in Norwegian municipalities at the core of its overall vision in the early 2000s. At the international level, the Directorate for Public Governance at the OECD has drawn attention to "Innovative Government".[3] Its strategy is to promote innovation by an observatory database that collects, shares and reflects on good practices. In the EU, the topic has added to the growth plan of Europe 2020.[4]

Several national and international research programmes have contributed to this growing interest. In Norway, innovation in public services became a targeted area with the establishment of the Regional Research Funds[5] programme by the Research Council of

---

[1] St.meld.nr. 7 2007-2008: "An innovative and sustainable Norway", Norwegian Ministry of Trade and Industry, December 5., 2008
[2] NOU 2011:11: "Innovation in care", led by Kåre P. Hagen, Norwegian Ministry of Health and Care, June 16, 2011.
[3] OECD 2017: "Innovative Government", Directorate for Public Governance.
[4] EU 2017: "Europe 2020 – A European strategy for smart, sustainable and inclusive growth".
[5] RFF, for more information see: https://www.forskningsradet.no/servlet/web/prognett-rff-hovedside/RFF_in_English/1253976860326

Norway in 2010. In 2017, the Research Council launched a distinct programme dedicated to increasing innovation in the regions and the municipalities in Norway.[6] At the European level, Horizon 2020 in the EU Framework Programme for Research and Innovation has emphasized the role of innovation in public services to solve future challenges. In this programme, the topic has been framed in its role of fostering innovation in the private sector, through the policy instruments of public–private partnerships and public procurement. Earlier framework programmes have also framed the topic as an independent phenomenon, and from broader angles. For example, PUBLIN[7] broke new ground for a broader approach to the topic in 2002, while ServPPIN[8] studied innovation in the interactive relationship of public–private networks, and the more recent LIPSE[9] has addressed aspects of social innovation and co-creation.

The scholarly debate has addressed many of these angles to the topic, and various disciplines and theoretical perspectives have contributed to the overall debate with conceptual discussions and empirical studies. Some scholarly literature has also provided policy advice, as a direct or indirect input to the debate. As a result, some of the literature is rather normative in content, although the purpose may have been to clarify and contribute to a better understanding of the phenomenon. Other literature has been produced as a result of the research programmes. These research programmes have resulted in a diversified literature, given the many themes targeted in scope and over time. These programmes have also invited in different disciplines and perspectives to the field. Furthermore, other literature has been written as a critique of the targeted themes, and with a consideration to other issues that the official research programmes have not addressed. This literature has brought in other angles to the topic and broadened the scope even further.

This thesis discusses how these many angles of debate – at the public, governmental, research policy and scholarly levels – have resulted in a broad approach to the topic of innovation in public services. I also draw attention to how these many debates have resulted in a diversified idea with few precise premises. I argue that although the various debates have placed the topic on the agenda, the many angles of the topic have meant that there are few concrete discussions about how innovation can solve what problems in the public sector. The public

---

[6] FORKOMMUNE, for more information see:
https://www.forskningsradet.no/en/Funding/FORKOMMUNE/1254026064195
[7] PUBLIN – Innovation in the Public Sector, EU 5th Framework Program, 2002–2005.
[8] ServPPIN –The Contribution of Public and Private Services to European Growth and Welfare, and the Role of Public–Private Innovation Networks, EU 7th Framework Program, 2008–2011.
[9] LIPSE – Learning from Innovation in Public Sector Environments, EU 7th Framework Program, 2013–2016.

debate has distributed a promising outlook to innovation in public services, pictured in lavish technical devices to complex problems. This side of the debate has paid scant attention to the modes for the new service delivery, its related organizational innovation, and its more complex aspects related to governmental policy and political processes. These complex aspects have been addressed in debates at the governmental, national and international levels. The many governmental research programmes have also contributed to concretize these viewpoints. However, these governmental efforts have also parted the phenomenon to other related areas, such as economic growth, information and communication technology, regional development, and public procurement. Besides, the governmental efforts have contributed by prioritising certain policy domains, such as health services for the elderly and digitalization of the public sector, whereas the debate has largely ignored other areas, such as transport services for lower climate emissions and public infrastructure for modern needs.

In light of this diversified agenda, I have found it interesting that all these debates are remarkably in agreement about the need to *foster innovation in public services*. This simplified receipt can be found in public debates, as well as at the governmental level, in research programmes, and in scholarly debates. In this overall idea, innovation in public services has become a universal tool to solve public sector problems and to improve public services. This receipt has left us with a broadly defined topic, which seems useful in pretty much any setting; that is, better services for the customers, provided at lower costs for the citizens, lower demand for workforce, and even solving the grand social challenges associated with an ageing population. The notion certainly has an appeal that it is hard to argue against. The problem is that this simplified idea has left us with a fragmented view that has basically been blended into a 'magic cure' for any kind of problem. This thesis questions this magic cure and helps create a better understanding of the topic by unpacking the mystery of innovation in public services. I help develop robust knowledge by exploring, in detail, how an authentic innovation unfolds over time and in its real setting.

This emerging innovation is the new public service for free recharging of electric vehicles (EVs) batteries in the city of Oslo from 2007–2014. In this period, the new public service developed from zero public charging stations for EVs to 701. In 2016, the number had increased to 1114. The concrete part of the charging stations developed in three generations of increasingly advanced technical solutions. At the outset, charging stations were not a ready-made product that could simply be procured off the shelf. They had to be developed by the Traffic Agency, the public entity given the new assignment. However, this agency had no

former services for EVs or special competence in recharging of EV batteries. This setting triggered my interest in the case and I wondered how the Traffic Agency managed to develop the new public service when it had no former competence of the subject matter.

When one looks at this new public service today, there is no doubt that the 1114 charging stations have made a difference for the EV owners. The new public service has provided them with the necessary infrastructure to recharge of EV batteries, making it possible to use EVs as a mean for transport in the city centre. The impact can also be considered at the aggregated level of society. The new public service of charging services may have stimulated for EVs as a mean for transport. In 2007, only 1457 EVs were registered in Norway;[10] by 2016, this number had increased to 97,532. An additional effect of the extreme growth of EVs is that they have helped lower the emissions caused by transport. The charging stations may have also had other possible side effects, in terms of the further growth of EVs and changes in travelling patterns.

However, this thesis does not calculate all these promising effects. Instead, I humbly attempt to contribute to our understanding of the key characteristics of the phenomenon of innovation in public services. Independent of its potential effects and side effects, the emerging innovation has been developed into the new public service we recognize today as charging services for EVs in the city of Oslo. Moreover, this phenomenon has emphasized the need to consider the innovation in view of the initial goal. Its real contribution can only be understood in regard to its preceding time and within its original context. When the Traffic Agency started to develop the new public service, there were no available technical solutions to procure, its competence on the issue was limited, and the market was small. Thus, the story of how this new public service developed over time can provide interesting insights into how the public entity managed to break out of these presumed barriers and develop the new public service.

---

[10] SSB 2017; for more information, see Table 3 in Paper 2 of this thesis.

1.2 Research Question

The general aim of the research in this PhD project is to contribute to a better understanding of the topic of innovation in public services. This aim is addressed in the overall research question:

> *How does innovation in public services develop over time?*

The research question is an open one, given my interest in exploring the nature of the phenomenon. I also considered the debates and the existing scholarly literature to hold too many and too fragmented views to arrive at a single research question that was clear and yet still general enough. Therefore, I felt that an open research question was necessary to avoid locking in the research project and guiding it in the wrong direction.

Still, it is also clear that the scholarly debate – but also the public, governmental and research policy debates – guided my research project. My PhD project was motivated by an intention to create understanding of the arguments in the debates and to consider how the arguments could contribute to build further understanding. This heuristic thinking process guided my research into a more refined focus. This thinking process is retold here in five fundamental debates. These should be seen as analytical categories that I developed to help me bring some order to the rather chaotic discussion of innovation in public services. Thus, I have labelled the five debates based on a review of the scholarly literature that addressed the topic of innovation in public services.

1.2.1 Five Debates specifying the Research Question

1) On the Dualism of the Public and Private Sectors

The first debate discusses the *dualism of the public and private sectors*. This debate has portrayed the public sector as rigid, inefficient and expensive, in contrast to the innovative, productive and competitive private sector (Altshuler and Zegans, 1990, Borins, 2001, Albury, 2005). On the other hand, opponents of this viewpoint have argued that there are *many examples of innovation in the public sector*, and that these many examples should have weakened and falsified the dichotomy (Halvorsen et al., 2005, Langergaard and Scheuer, 2012, Hartley, 2013). Still, the viewpoint has remained strong. Bozeman (Rainey and Bozeman, 2000) has emphasized the resilient view as a "a priori", which means that an idea remains "true" independent of knowhow that contrasts it. The emphasis of the opponents left me with a fundamental outlook: *One should not rely on predisposed dichotomies, but should*

learn from concrete empirical observations of how innovation in public services develop over time.

2) The Lack of Market Mechanisms

The second debate rests in an interlinked viewpoint, of the "the invisible hand" of the passive market and the related belief of *the lack of market mechanisms* in the public sector. According to the believers, the market mechanisms work as a symmetric incentive structure in private companies, in a stick of fear for decline and bankruptcy, and a reward of pay rise, bonus, and share ownership. The problem for the public sector is in a similar asymmetric incentive structure. It is a lack of reward, whereas innovation failure is eagerly punished by political opposition, media and other pundits (Borins, 2001, Kelly et al., 2002, Potts, 2009). Critics have highlighted the reductionism in this viewpoint and drawn attention to other drivers – and hindrances – in *the distinct governmental and political context* for innovation in public services. They have argued that the overall goals in the public sector cannot reduce to simplified ideas of market efficacy (Kalu, 2003, Hartley and Skelcher, 2008, Torfing, 2011). These critics have called for *the essential need to study the political processes and the governmental goals in order to understand innovation in the distinct context of public services.*

3) The Measurable Outcome of Innovation

The third debate has addressed the distinct contextual characteristics, in a search for clear criteria for defining, quantifying and evaluating 'what is' the phenomenon of innovation in public services at the level of *the measurable outcome of innovation* (Damanpour and Schneider, 2008, De Vries et al., 2016). However, others have argued that the phenomenon is *conflated when quantified at the level of the innovation*. According to these scholars, innovation typically develops as an outcome of several activities in many entities, which typically includes political processes, governmental decisions, public regulations, feedback from users, collaboration with private companies, etc. (Pollitt and Bouckaert, 2009, Fuglsang, 2010, Torfing, 2013). This debate has put the contextual characteristic on the agenda, but it has also shown *the need to investigate the many social mechanisms in the distinct context of the observable outcome of innovation in public services.*

4) Networks

The fourth debate relates to the third one and focuses on the challenges in defining these relevant social activities. On one hand, scholars have emphasized the role of *networked governance* in the need to evaluate innovation at the inter-organizational level of networks (Moore and Hartley, 2008, Sørensen and Torfing, 2011a, Ansell and Torfing, 2014). However, antagonists have *questioned the true nature of networks as a system for coordination* in the public sector (Pollitt, 2003, Agranoff, 2006, Christensen and Lægreid, 2007). These scholars have emphasized how the *existing activities structure the coordination* in the strong vertical organization in policy domains. The people in the governmental and public administration system simply do not have the time or resources needed to attend problems that are not organized into the existing structure. Moreover, the vertical organization has become strong over time and leaves little time left to deal with the problems in cross-cutting their assigned tasks. This debate demonstrates *how innovation in public services needs to be studied both at an inter-organizational and an organizational level in order to grasp its true essence.*

5) Mission-oriented Policy

The fifth debate unfolds in several related discussions of the distinct political processes and governmental goals, measurable outcome of innovation, and its challenges for defining the social activities of the phenomenon of innovation in networks. This debate has given attention to modern social challenges, such as climate change, social cohesion and ageing population. The discipline of innovation has attended these grand social challenges and how it calls for a need for a *mission-oriented policy*. This attention has emphasized the special role of public procurement as a policy instrument to enhance solutions, by fostering demand and interaction with private companies (Edler and Georghiou, 2007, Borrás and Edquist, 2013). Critically, the discipline of public administration has attended these social challenges and has emphasized it as *wicked problems* that cannot easily be solved with simple economical or technical solutions (Roberts, 2000, Weber and Khademian, 2008, Ferlie et al., 2011). These two parallel disciplinary discussions demonstrate the complex context for innovation in public services, and a need for *a more thorough analysis of the solutions to be fostered and of the problems to be solved.*

As shown here, these five debates relate to each other, but also differ in scale and scope. Still, in framing my thesis, these have all played distinct roles. The first debate addresses a

powerful myth and simply demonstrates the need for strong empirical studies to overcome the powerful belief. The second debate addresses a related problem, in the reductionism in the belief of the lack of market mechanisms. I explicitly address this second debate in Paper 1 in this thesis. The third debate highlights the social mechanisms underlying the observable outcome of innovation. Paper 2 gives attention to all these three debates, by attending the political dimension in the distinct context of innovation in public services. Paper 3 goes a step further in constructing explanations to the key drivers to innovation in public services. Paper 2 and Paper 3 also relate to the fourth debate, which emphasizes the need to focus on both the intra-organizational and the inter-organizational levels. Paper 3 contributes extensively to develop a multi-layered approach to innovation in public services. The fifth debate addresses the role of governmental policy in solving complex problems. This role has been explicitly addressed in Paper 2, via a distinct focus on the political dimension of wicked problems. In general, all of these debates demonstrate the lack of a solid theoretical funded knowledge to the phenomenon of innovation in public services, but also show how it sows the seeds of a robust theoretical framework.

1.3   Introducing a Theoretical Framework to Innovation in Public Services

Until the last decade, innovation in public services was an unknown concept (Becheikh et al., 2007, Langergaard and Scheuer, 2012). The sudden call for innovation may stand out as a modern catch-phrase, but the phenomenon is not new (Hartley, 2005, Pollitt and Bouckaert, 2009, Lynn, 2013); the notion can be found in classic studies of the public sector (e.g. March and Simon, 1958, Ostrom, 1965, Thompson, 1965). Moreover, reviews have recognized the phenomenon under other headings in the scholarly literature (Røste, 2005, Sørensen and Torfing, 2011b, Teigen et al., 2013). The present thesis argues for the need to build on this scholarly literature in developing new understanding in a cumulative way.

This PhD project is also motivated by my earlier research in the field, which started in the EU research project PUBLIN (Halvorsen et al., 2005, Røste, 2005, Røste, 2006, Røste, 2008, Røste and Godø, 2005). PUBLIN has been described as a ground-breaking project for "the new field" of innovation in public services (Howells, 2010, Osborne and Brown, 2011). It placed the topic on the agenda in the discipline of innovation but also in its explicit inter-disciplinary collaboration with scholars in the discipline of public administration.[11] Basically,

---

[11] This discipline is referred to by some as "public policy and administration".

PUBLIN started out with the myth of the dualism of public and private sector and the lack of market mechanisms, and how these viewpoints conflicted with core disciplinary ideas of innovation. The imminent role of market mechanisms had already questioned by Joseph Schumpeter (1934), who emphasized how innovation[12] evolves in *discontinuous and continuous combinations*, out of a circular flow in economic life. Modern innovation literature has developed rich insights into these evolutionary processes in private firms and industries. The possibilities for new combinations rely on routines in the firm and existing technological regimes (Nelson and Winter, 1982); that is, in interactive learning (Lundvall, 1992) and use of the knowledge of others (Håkansson and Waluszewski, 2007). Thus, innovation develops out of combinations of knowledge that are often beyond the control of the innovating firm, with partners and competitors in the market, customer demands, public laws and regulations, and existing public policy and policy instruments to enhance and define innovation in private sector companies (Fagerberg, 2005, Poole, 2004, Dierkes et al., 2001). The outcome of these determinants of innovation depends on the temporal situations in the distinct emerging innovation process (Van de Ven et al., 1999). Recently, the field of sustainability transition has also addressed the complex dynamic of continuity and change, converging and diverging an innovation over time and context (Geels et al., 2012). Thus, the evolutionary theory to innovation has drawn up a much more sophisticated view of drivers and hindrances to innovation than the simple market mechanism. Critically, however, insights in the discipline of innovation have mainly emanated from studies of private firms and industries. Innovation in public services has been largely disregarded.

This disregard was also an overall motivation for PUBLIN. PUBLIN aimed to combine knowledge in the discipline of innovation with knowledge in other disciplines, especially public administration (Halvorsen et al., 2005, Koch and Hauknes, 2005, Røste, 2005, Cunningham, 2005, Kemp and Weehuizen, 2005). PUBLIN addressed the potential of institutional theory to explain how action takes place within a context of established rules and routines and how this institutionalized context forms the behaviour in organizations (March and Olsen 1984). Still, recent literature has criticized PUBLIN for over-emphasizing the rational elements of innovation and for giving too little attention to the incremental processes (Fuglsang, 2010, Osborne and Brown, 2011). My thesis attempts to give a reply to some of this criticism by helping develop the theoretical framework further. In doing that, I recognize

---

[12] Schumpeter did not use the innovation concept as such, but framed the phenomenon in an overall contribution on economic and social change.

a need to return to the roots of institutional theory, which can help extend the existing knowledge in the discipline of innovation, in a combined understanding to more robust knowledge of the phenomenon of innovation in public services.

More concretely, this thesis discusses how Max Weber (1947) laid the groundwork for understanding the critical principles of rational-legal authority. Weber's fundamental ideas have been influential for a lasting discussion of the separation of pure administrative tasks from governmental goals and the decision-making thereof, captured in the two contrasting models of implementation as top-down (Pressman and Wildavsky, 1973) and bottom-up (Elmore, 1980, Barrett and Hill, 1984). The public administration discipline has developed rich insights into the constituting elements of public sector organization (Hill and Hupe, 2002). However, literature in this discipline has had little focus on *how* change happens and has instead been quite deterministic in its explanations (e.g. Scott, 2008, Kuipers et al., 2014). In understanding continuity and change, the literature has also been largely intra-organizational in scope. The recent debate of network governance represents a shift in focus to also include inter-organizational processes (Torfing, 2011). Within this field of literature, there has been a concrete interest for innovation in public services. This literature has attended the need to understand the distinct inter-organizational characteristic related to the value creation in public sector, in the role of the collective concerns of public values for innovation (Moore and Hartley, 2008). However, as pointed out above, the viewpoint of networks has also been debated in the discipline and has so far contributed few definite guidelines for a theoretical framework to innovation in public services.

Still, despite the absence of an adequately developed framework for studying the distinct phenomenon of innovation in public services, a lot of existing knowledge is useful for developing further conceptual understanding. This existing knowledge is important to shape an initial design, in giving directions to the theory building (Eisenhardt, 1989); however, as Pettigrew (1997, p. 344) has emphasized: *"(...) the deductive structuring is only a prelude to a more open-ended process of inductive reason and pattern recognition"*. The early identification of the theoretical constructs is only tentative and may not fit into the final theoretical framework. I will now introduce the distinct empirical study in this research project, and show how it has contributed to frame the focus in this thesis.

1.4   The New Public Service of Charging Stations for EVs

The first public charging stations for EVs in Oslo opened on June 19, 2008.[13] in the form of 20 places at an indoor parking house in the city centre. The first street-level charging stations were 10 places at a parking lot located in the city centre and opened on November 12, 2008.[14] Picture 1 shows the official opening by the political adviser for the Department of Environment and Transport in the City Government of Oslo.[15]

Picture 1: Official opening of the first charging stations on street level in Oslo

Source: Annual Report Traffic Agency 2008

By the end of 2008, 36 places had been built.[16] In April 2010, the largest parking lot for EVs at that time was opened, with 50 places in the middle of the city centre. Shortly thereafter, another large parking lot opened with 36 places. These two big parking lots boosted the numbers to 273 by the end of 2010. The other locations were mostly two or four single on-street parking places served by one or two charging stations. In 2011, the policy goal of the 400 was successfully reached. Then, in 2012, the building continued with a new governmental goal, specifying 100 more charging stations per year. In 2014, the governmental goal increased to 200 new charging stations per year. By the end of 2016, the total number was

---

[13] Located at SAGA parking house.

[14] Located at Kongens Gate.

[15] Lene Langemyr from the Progress Party.

[16] The numbers of charging stations reported here is the official numbers from the Annual Reports of the Traffic Agency 2008–2010 and the Agency for Urban Environment 2011–2016.

1014 at street level, as well as a large indoor parking lot with 100 more places. Table 1 gives an overview of the development in number of charging stations per year.

Table 1: The development in number of charging stations per year in the City of Oslo

Year	Number
2008	36
2009	114
2010	273
2011	400
2012	500
2013	543
2014	701
2015	900
2016	1114

The distinct service provided at the charging stations is rather plain, consisting simply of free recharging of EV batteries at specially designed charging stations. The service also implies reserved parking places for EVs and free parking, even though free parking for EVs at municipal parking places was established by law as early as 1993. Despite its simple appearances, this new public service has an interesting history to tell, which can contribute with critical insight to the phenomenon of innovation.

The public service was managed by the Traffic Agency, the public entity for road and traffic issues in the city of Oslo.[17] When the Traffic Agency started to develop the new public service, it did not have any existing services for recharging of EV batteries or for EVs in general. Its main activity was to monitor parking legislations through fines, for an efficient use of the public parking places. It had been delegated the task of enforcing the law of parking in pursuant to the Road Traffic Act of 1973. Throughout this time, the overall objective of the public parking policy had been to ensure safe and neat parking, efficient use of the public parking places, and properly passable streets for all groups of road users.

The new public service of charging stations for electric vehicles (EVs) in Oslo was initiated in a City Council decision, which stated that 400 charging stations for EVs were to be built in Oslo in 2008–2011. In Norway, parking, street, and transport are delegated policy areas to the municipal level. Broader plans for the regions are made at the county councils, whereas the

---

[17] In 2011, the public entity was reorganised into the larger unit of the Agency for Urban Environment, which also hold non-traffic issues.

Minister of Transport and Communications at the national governmental level has the overall responsibility for the public roads, rail transport infrastructure, and sea transport. In Oslo, the parking policy has been a central task to achieve the overall aim of a safe city with properly passable streets. In general, illegal parking of private vehicles has been a problem for the trams in the city centre, with heavy traffic and minimal available parking places in the city centre, as illustrated by Picture 2.[18]

Picture 2: Example of how incorrect parking creates problems for trams in Oslo

Source: Agency for Urban Environment 2013

Oslo is a small city by global standards. It has a population of 666,757 citizens[19] and a geographical size of 454 square kilometres.[20] Nevertheless, it has a well-developed public transport network comprised of buses, trams and a metro. Public transport has been a deliberate policy goal in the City of Oslo and it has resulted in several concrete improvements over the last decade, such as extending the metro lines to new stations, renovating existing stations and infrastructure, more frequent departures, and a new real-time-system prioritizing buses in traffic.[21] The last two years have seen a green shift in the local policy plans in Oslo, which prioritize public transport, at the costs of private cars, and in overall strategies to develop a sustainable city.[22] In Oslo, the shift has been enhanced by the new Green Party, which currently holds the position of vice-mayor of the Department of Environment and Transport. The Green Party's radical policy goal is to halve greenhouse gas emissions by 2020, as stated in the strategy below:[23]

---

[18] Oslo Now, nr. 2 March 2008, Newsletter from the City of Oslo; Annual Report Traffic Agency 2006.
[19] City of Oslo 2017: "Population and Changes". The number of citizens in Oslo is growing, and increased by 1.3 per cent from 2015 to 2016.
[20] The Big Norwegian Encyclopedia Store Norske Leksikon 2014.
[21] Oslo-packet 2, 2002-2008, and Oslo-packet 3 2008-today: overall policy plans for development and funding of road- and public transport in Oslo.
[22] The Institute of Transport Economics (TØI) 2017
[23] Climate and Energy Strategy for Oslo, City Council 2015

"People using public transport, pedestrians, and cyclists are to be prioritized above private cars. We shall become fossil free, offering inhabitants clean air that is safe to breathe while simultaneously increasing people's quality of life and contributing to green industry. We want Oslo to exhibit leadership, both to Norway and to Europe, in our work towards becoming a sustainable city".

This thesis will look at the overall policy goals for traffic and how these have changed over time in the City of Oslo, as part of the study of the context for the emerging new public service of charging stations. The overall focus is on innovation in public services.

1.5   Dissertation Outline

This thesis is structured in two parts. The first part presents and discusses the PhD project and the second part includes the three papers in the thesis.

This first chapter has introduced the topic and framed it in the research question. It has introduced a theoretical framework, in the roots of the evolutionary theory to innovation and the new institutional theory to public administration. It has also introduced the empirical study of the new public service of charging stations for EVs.

The second chapter provides an overview of the research design and the methods. It starts in the research design of process studies and discusses the selection of my process study of the emerging innovation of the charging services for EVs, before considering the data collection and the analysis in detail. The third chapter develops a theoretical framework with which to understand the phenomenon of innovation in public services. It clarifies the considerations I have made by examining the theoretical building blocks in two parts, separated by the scholarly discipline of innovation and public administration. A third part combines and extends the existing knowledge in the two disciplines. The fourth chapter provides an overview of the three papers and discusses how the main findings contribute to the overall research in this thesis. Finally, the fifth chapter concludes on the main findings and discusses the way forward for future research.

Chapter 2   Research Design and Methods

This chapter provides an overview of the research design and the methodological choices and challenges in this PhD project. I start with the research design of process studies and consider how it has contributed to the construction of this project. I then discuss the selection, the sampling, and the theorizing of my process study of the new public service of charging stations for EVs in Oslo. In the next section, I explain my process study in detail and outline the various methods for data collection and analysis. The final section discusses the implications of the research design for generating theory to innovation in public services.

2.1   Research Design

This section introduces the research design of process studies and discusses how it has impacted this PhD project. I start by considering the epistemology of process studies, continue with the logic of inference, and ends with the ontology of change and innovation.

2.1.1 Process Studies and Epistemology

Process studies make it possible to explore in detail how and why a phenomenon emerges, develops and terminates over time (Poole and Van de Ven, 2010, Pettigrew, 2012, Langley et al., 2013). It has grown as a research strategy since the end of the 1980s. Central among the scholars who have contributed to its development are Ann Langley, Andrew Pettigrew, and Andrew H. Van de Ven. These scholars have taken various angles to process studies but agree about the importance of paying attention to evolving phenomenon. They unite in their fundamental belief that innovation and change are too complex to be broken into independent and dependent variables, and that they are phenomena that need to be studied in detail. This idea corresponds well with the starting point for my research project. As I pointed at in Chapter 1, the ongoing debate of innovation in public services has left a fragmented view with few precise premises to derive at clear but still general enough research questions.

The research design places the evolving phenomenon in the centre as the unit of analysis and focuses on the *sequences of events over time* (Van de Ven, 2007, Pettigrew, 2012). The constructs are events of coded sets of incidents, the *action* of individual entities such as people, groups and organizations. *Incidents* are observable raw data, and a parallel to variables. In understanding how the sequences of events are linked over time, explanations must account for the complexity in the entities; that is, in the numerous activities operating at different levels and over time (Van de Ven and Poole, 1995, Langley, 1999).

It is an underlying premise in process studies that a phenomenon evolves in its distinct *context*. The focus is on the *action* of real people in their given social settings rather than on superfluous abstractions of society. In understanding how the phenomenon evolves, *time* is at the centre of analysis (Pettigrew, 1990, 1997). However, process studies are not historical in scope but instead aim to build theoretical insights into the recurrent patterns of how a phenomenon evolves in the given social context and over time (Pettigrew, 1997, Langley, 2009). These cannot be observed and must be explored in an analysis of possible theoretical explanations. This requires holistic, multifaceted and institutionalised reasoning, without modifying the real character of the evolving phenomenon (Poole and Van de Ven, 2010, Langley and Tsoukas, 2010).

Process scholars have outlined their attention to the complexity in their research design, in contrast to variance studies (Mohr, 1969, Van de Ven, 2007, Langley, 2009). Figure 1, by Poole and Van de Ven (2010, p. 545), illustrates the difference. In contrast, variance studies presume change using an "if-then" hypothesises: if a certain value in the causal variable *X*, then it always results in a certain effect in the variable *Y*. The causation operates across time and place, independent of contextual and temporal events. Pettigrew (1987, 1997) pinpointed the contrast by describing variance studies as "an exercise in comparative statistics", ignoring the importance of history.

Figure 1   Variance and Process Studies
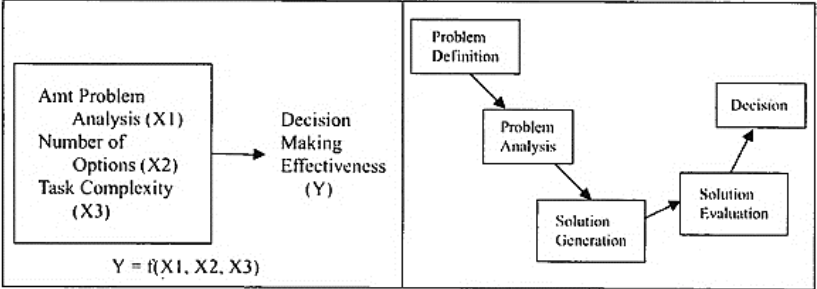
Source: Poole and Van de Ven (2010, p. 545).

2.1.2 Logic of Inference

In studying processes, one must first identify recurrent patterns in the empirical process and then search for the theoretical explanations that shape the observable patterns (Poole and Van de Ven, 1989, Langley, 1999). Reconstructing the empirical pattern is the first step in

developing process theory. The next step is to search for the theoretical explanations, which can explicate the sequences of events over time.

These steps follow the logical inference of *abduction*. The process scholars refer here to Charles Sanders Peirce (Van de Ven, 2007, Langley et al., 2013), who introduced the logic as part of the philosophy of pragmatism. At the end of the 19th century, induction was the widely held logic of inference. Peirce validated induction to test theory but disputed it as a way of initiating new ideas. He introduced abduction as an alternative logic of discovery, to describe the philosophical manoeuvre in the assessment of new ideas.

Van de Ven (2007, p. 207) highlighted this logic of inference as a "tight iterative cycle between abduction, deduction, and verification". He emphasized abduction as the mode for reasoning in process studies and explained how it corrects for the mistaken belief of induction as the underlying logic for *grounded theorizing*. Thus, Van de Ven drew attention to the fundamental contribution by Glaser and Strauss (1967) for generating theory in qualitative research. Their impact was to code the observed empirical patterns into *conceptual categories*. These conceptual categories build on initial assumptions that are based on existing theory and empirical observations and refined into new categories by processes of sense-making (Langley, 1999). Thus, the method has a certain deductive element. The assumptions work as an initial understanding, as *sensitising devices* in an iterative process (Weick, 1995, Charmaz, 2014).

In this PhD project, I have made many assumptions from reviewing the ongoing debate. These assumptions helped create an initial understanding of the characteristics of innovation in public services. Chapter 1 retold this iterative process in five fundamental debates and in how these debates resulted in a more focused research project specified in the three papers included in the thesis. As outlined, Paper 1 addresses the debate of the lack of market mechanisms and introduces the conceptual categories of "co-evolution" and "innovation in governance". Paper 2 pays explicit attention to the political dimension and the debate of the mission-oriented policy by applying the conceptual categories of "wicked problems" and "sustainability transitions". Paper 3 builds further on these findings by explicitly addressing the categories in the rival paradigms of "traditional public administration", "new public management" and "networked governance".

Pettigrew (1990, 1997) emphasized how researchers conducting process studies move back and forth on a *shifting cycle of deduction and induction*. He described the research process as

moving from the assessment of theoretical hypothesises in the beginning of the research project to the examination of new hypothesises identified from doing empirical observations, and to redefined theories in the end. In practice, the process is not this neat and linear, but rather complex and cyclical. In any case, it certainly contrasts from the research projects based on a purely deductive logic, where the researcher adopts to one or a few hypothesises, operationalizes, and then tests the match with existing theory. In process studies, many possible assumptions are considered and reasoned for when observing the empirical reality. The conceptual categories in the scholarly literature guide the research project in the collection and the analysis of data. In my research project, this logic has helped me identify the underlying explanations of drivers and hindrances of innovation in public services, and to test and extend the rival conceptions in the ongoing debate.

2.1.3 Ontology of Change and Continuity

Process studies have an explicit ontological view of change and continuity, viewing innovation as an evolving phenomenon. This ontological view has been heavily debated in recent decades. This debate pointed at some central issues that were important for the methodological choices made in this PhD project.

Tsoukas and Chia (2002) started the debate by arguing that *change is ontological prior to organizational structure*. Change is pervasive and indivisible, whereas an organization is just an effort to arrange human action. Their view is not novel, but the thinking of change and continuity in social science has been dominated by the discourse of the organization as a stable entity and change as a break in this stability. In fact, Tsoukas and Chia's idea has roots in the old Greek philosophy of Heraclitus and his doctrine of things being in *constant flux*. Heraclitus' philosophy has been explained using the metaphor of a flowing river: "It is impossible to step twice into the same floating river". Tsoukas and Chia also referred to cornerstones in the modern philosophy of science, such as Berger and Luckmann's (1966) social construction of reality and Weick's (1995) sense-making. For my research project, these contributions have built a fundamental ontological ground for studying innovation in public services as an evolving phenomenon.

Indeed, an ontology of an evolving phenomenon has its challenges as a research design in terms of defining the unit to be studied (Van de Ven and Poole, 2005). However, in my PhD project it was a challenge to define the unit before looking closer at the phenomenon, given the lack of solid knowledge to operationalize the entity of innovation in public services. Some debates have addressed the phenomenon at the level of new technical devices, whereas others

have attended the phenomenon as an outcome of complex underlying processes of, for example, governmental policy, economic growth, regional development, and information and communication technology. Despite these disagreements, I chose to define a unit of analysis, in the emerging innovation of the new public service of charging stations for EVs. It meant, that I did not study innovation from Tsoukas and Chia' pure viewpoint of processes in becoming. In fact, this emerging innovation was a concrete ongoing project in the public entity of the Traffic Agency. Picture 3 demonstrates the materiality of this emerging innovation labelled in the project symbol.

Picture 3: The project symbol for the charging stations for EVs

Source: Traffic Agency 2009

Still, I did study processes in becoming, by studying the emerging innovation of charging stations for EVs over time. According to process scholars, studying ongoing processes is elemental for understanding the social mechanisms that bring the actors together in the distinct events and the conjunctions of events and result in the change. Studying only the processes that have already resulted in change would risk missing the critical incidents that made the change – and those that did not. The *temporal predispositions* of these incidents can no longer be fully recognized after the change has attended its formal status (Van de Ven and Poole, 2005, Langley, 2009, Langley and Tsoukas, 2010).

This point is highly relevant for my choice of the research design. When looking at the charging services for EVs in 2017, it is no longer easy to distinguish the novelty in the making of this public service. The public service has become established as part of the official infrastructure for traffic in the city of Oslo. It is no longer considered novel; at least, the radical newness is no longer easily recognized. This means that, in attempting to understanding how the innovation emerged over time, the initial sensitising of the novelty can no longer be easily perceived; for example, in the reluctance to build the high number of 400 charging stations from 2008–2011. When studied in retrospect, such incidents would probably

have been regarded as too trivial to report or simply forgotten in view of the later success (Pettigrew, 1990, Langley and Tsoukas, 2010). Berger and Luckmann's (1966, p. 70) classic statement captures this constructive element of reality:

"As we remember the past, we reconstruct it in accordance with our present ideas,
of what is important and what is not."

Furthermore, if my empirical study had started in 2017 – for example, as a pure situation report – the research design would most likely be different from the one I chose in 2009. Now, a likely framing could have been to focus on the success of the public service, of the 1114 well-visited public charging stations for EVs in Oslo. Oslo was recently promoted as "the EV capital" by the Norwegian EV Association (NEF).[24] When I started the study, I did not know how successful this public service would become. It could well have stopped with the 58 charging stations built at the time I started the study, or, it could have ended in a fiasco, with huge budget overspending.

Pettigrew (1997, p. 338) stated that the overriding aspiration for a process analyst is *"to catch the reality in flight"*. By this, he emphasized that human actions emerge over time and can never be completely defined in stable entities. Physical materials can be defined as real things. Social science, on the other hand, aims to explain events that are created and acted upon by human agents; it always depends on the context it is a part of and the time it happens within. Context constrains action, but action also makes context. Thus, human action must always be explained in a holistic analysis, explored in an embedded interconnectedness of its special historical point of time (Pettigrew, 1987, Pettigrew et al., 2001).

2.2   The Process Study of the New Public Service of Charging Stations

This section considers the selection of the distinct process studied in this research project: the new public service of charging stations for EVs in the city of Oslo, the related choices and challenges for sampling, and for theorizing from the process data.

2.2.1 Selection

As pointed at in Chapter 1, the distinct new public service of charging stations for EVs was selected because it promised an interesting story. The history can contribute with critical insight to test and extend the ongoing debate of innovation in public service.

---

[24] Norwegian EV Association: "Oslo elected as the EV capital of Norway", August 20, 2017.

The criteria for selection followed the guidelines by Pettigrew (1990, p. 275), who advised the choice of *"extreme situation, critical incident, and social drama"*. According to Pettigrew, such circumstances bring to the ground processes of change and continuity, and displays transparently observable processes. Social dramas provide exiting glimpses into the current mechanisms of the social system, in how these evolve and transform over time. They provide data of a stream of change, of the events and the actors, in a real historical time and context. Regarded in this way, the emerging innovation of the charging stations for EVs is a "scene" for an evolving social drama.

The idea of charging stations was initiated in a City Council decision requesting: *"The City Government to build 400 charging stations for EVs in the period 2008 until 2011"*. The governmental goal was set in the budget negotiations for Oslo in 2008, which assigned the task to the Traffic Agency as the responsible public entity to carry the City Council decision into practice. From the outset, it was the role of the Traffic Agency that caught my interest. It did not have any former services for EVs. It was also preoccupied with a task that partly conflicted with the new governmental goal. Its dominant activity was enforcing the law of parking pursuant to the Road Traffic Act, by monitoring parking legislation through fines. The Traffic Agency had also been assigned with enforcing the veto against studded tyres since 1999, and the enforcement of the police law for Oslo regarding cleared pavements, littering and illegal posters since 2004.

According to its 2008 Annual Report,[25] the Traffic Agency's most important income was parking tickets and fines, which created 82 per cent of the total income for that year. Two-thirds of the employees in the agency worked as parking agents, and the rest administrated and planned the system.[26] The task is illustrated in Picture 4. In total, they administrated 5500 public parking places per year.[27] In 2008, the total number of parking fines was 226,834, of which 11,364 were for studded tyres and 2383 for the policy law. They transferred the surplus of the income from the fines to the Parking Foundation, which is an investment fund for larger projects administrated by the City Government of Oslo.

The new assignment of charging stations broke with this existing activity of regulation through charges and fines. It offered a free public service to a limited group of users. Besides,

---

[25] Traffic Agency, Annual Report 2008.
[26] Traffic Agency, Annual Report 2006.
[27] In addition, it had responsibility for 1750 free parking places at park-and-ride at recreation areas, train, and metro stations, and for 900 places reserved for disabled people.

the new service was to be developed with their money, with transfers from the Parking Foundation. The challenge was vigilantly captured in the following statement by a public manager in 2009:

> *"We are a parking agency. We do not have a great interest in charging stations for EVs, especially since we lose money for every station we build. For us, it is a reduction in income, as well as a spending of our capital in the Parking Foundation."*

Picture 4   "The Parking Agency"

Source: VG 2005

At the outset, the public managers at the Traffic Agency considered the number of 400 to be high, given that there were relatively few EVs on the market at that time. In 2007, only 311 EVs were registered in Oslo.[28] The public managers also soon faced practical challenges in developing the new service. Charging stations could not be bought off the shelf; existing products were only available as prototypes. These products were too expensive for budgetary limits and the high number to be built in total. The time limit was also too short, given that 100 charging stations were to be built within the first project year.

The study of the emerging innovation offered exciting glimpses into many of these social dramas, and into how these extreme situations changed over time; for example, in the elements of the three generations of charging stations, the extension of the numbers of charging stations to be built after 2011, and in the radical growth in the number of EVs in Norway.

2.2.2 Sampling

In process studies, the consideration of sampling is not the single case versus the comparative case, but *the number of temporal events* studied (Van de Ven, 2007, Langley et al., 2013). The idea is to confirm and disconfirm based on recurrent patterns across time and context.

---

[28] SSB 2015; see also Table 3 in Paper 2 in Part II of this thesis.

This design contrasts from statistical sampling, in which data is collected to make inferences about a universe on basis of data collected in a sample. A fatal flaw in qualitative research is to conceive statistical generalization as the method for sampling (George and Bennett, 2005, Charmaz, 2006, Langley, 2009). This is because human encounters and cases are not sampling units and should therefore not be chosen. Consequently, one should avoid thinking in terms of "the small size of cases"; rather, a case should be selected as a laboratory investigator selects the topic of a new experiment.

Initially, the plan for this PhD project was a comparative case study design of two innovations in public services. The second case considered – was the new public service of smart-house technology for frail elderly people in the neighbouring municipality – was also a radical new public service but in a different sector. My original idea was to elaborate on the patterns identified in the first case study, and confirm/disconfirm the findings. However, having made an early analysis of the first case, I realized that the planned comparative design had too many shortcomings. The two various innovation processes differed on too many aspects, including political context, delayed project, and the fact that the smart-house technology remained as a pilot project whereas the charging stations was an ongoing implementation process.

Besides, I found the patterns of the new public service of charging stations for EVs very enlightening, and inspiring to investigate further, whereas the consideration of this second case became reduced to a problematic question of: what was compared when bringing in this second case? Instead, I decided to do a "real" process study, to investigate in-depth the underlying explanations of the emerging innovation.

The innovation process was now followed in *real-time*, from February 2009 to December 2014. Data was also collected *retrospectively*, back to 2004, and has also been extended and updated in some critical incidents until 2017. Thus, the sampling has been longitudinal in character. It has also the character of parallel ongoing processes of data collection and analysis, in which data collected and analysed at one point of time has resulted in a need for more data. This sampling followed several main strategies for theorizing from process data, based on the iterative research process of the logic of abduction, and the shifting need for data and analysis required in the research project.

2.2.3 Theorizing
Various strategies can be selected for theorizing from process data. Langley (1999, 2009) reviewed seven major strategies and discussed the choices and challenges related to these in

the type of data needed for each strategy. I have applied three of these strategies in the present project: narratives, temporal bracketing, and grounded theorizing. In addition, the project started with the overall strategy of replication for case studies.

Pattern replication

Initially, the new public service of charging stations for EVs in Oslo was chosen by the strategy of *pattern replication* by a single case study. Studying a single unit makes it possible to evaluate and refine recurrent patterns of the theory through replication. In the present case, however, replication was far from Yin's (1994) deductive strategy for testing the theory. It followed the process-tracing method of George and Bennett (2005), in their tracing of empirical patterns of how a phenomenon emerges as an historical process. In contrast to the strict experimental logic of Yin, they underlined that the inductive element is not a threat to the research design; rather, it can help identify new variables in a step towards improving and refining the theoretical explanations. Process-tracing explores the theoretical implication in the hypothesized causality, not the empirical patterns of how the entity emerges.

The strategy is developed for analysing the hypothesized causality between an independent and a dependent variable, in order to deepen the knowledge of the circumstances for the causation. However, as I have already pointed at, the ongoing debate of innovation in public services has shown a phenomenon that is too complex to fit into dependent and independent variables. Therefore, another strategy was needed to explore the recurrent patterns in detail.

Narrative Strategy

The research project continued with a narrative strategy, with the aim of simply understanding – more inductively – how the emerging innovation of public charging services for EVs unfolded over time. A narrative strategy constructs data into detailed stories. These stories can contribute with *thick descriptions*, with rich in-depth data on meanings of how and why human actions unfold in the setting studied. Pettigrew (1987, 1990) is a spokesman of this kind of strategy in his attention to the context. According to him, narratives provide data on the contextual details of how events unfold over time in the specific context.

Langley (1999, p. 695) emphasized that while almost all process researchers apply this strategy, many do so only as a basis for identifying the chronology. The reason for this may lie in the challenges of the strategy. The problem is that one may end up with an idiosyncratic story, without any identified explanations. Given my research aim of identifying explanations of how innovation in public services develops over time, an additional strategy was needed.

Temporal Bracketing

Temporal bracketing is a strategy that helps reduce the complexity of rich data by grouping events into discrete, but connected time periods. Langley (1999) emphasized that bracketing data over time makes it possible to analyse when and how action in one period results in changed action in the next period. Data is sorted into phases. These phases are treated as stable decompositions, evolving in linear patterns. This linearity and the simplicity of the phases are just heuristic devices with which to analyse the complex dynamic of change over time.

I considered the temporal bracketing strategy to be useful in my project in order to reveal the recurrent patterns of how the emerging innovation developed over time. In studying the innovation, I found that it developed in many empirical phases over time, in which action in one period resulted in changed action in the next; examples include the lack of charging stations to procure, the development contract for the first charging stations, the emerging market, and the procurement of the second generation. However, Langley (1999) also emphasized that this strategy is limited for theorizing, in the accuracy of the temporal decomposition. The decomposition also has a moderate generality, given its inductive character.

Grounded Theory Strategy

I have already outlined grounded theory above. Corbin and Strauss (1990) developed a scheme for how it can be applied as a strategy for theorizing from process data: in highly structured steps of systematic comparison of incidents and conceptual categories. Langley (1999) argued that this strategy demands a vast number of comparable and richly described incidents. However, she also emphasized another way of applying this strategy, in a *drop of analysis to the social mechanisms at the micro-level*. According to Langley, this strategy has been very powerful when applied to explore the interpretations of individuals and groups.

This strategy proved to be very useful in the present project in my attempt to derive explanations of drivers and hindrances at the micro level of the emerging innovation. In this part of the analysis, I searched for theoretical explanations of the identified empirical sequences of events over time. I applied the empirical patterns identified with the strategies of narratives and temporal bracketing, and tested and extended them with the recurrent patterns identified from the ongoing debate of innovation in public services. Moreover, I applied various conceptual categories in the detailed analysis in the three papers included in the thesis.

I will now outline how I applied these various strategies for theorizing in the data collection and analysis.

2.3 Data Collection and Analysis

This section considers the data collection and analysis in three interlinked phases over time in my research project: pattern recognition, reconstruction of the chronology, and construction of explanations. At these various points of time, data has also been collected from various sources and by a variety of methods.

2.3.1 Pattern Recognition

The data collection started with a case study of public-private innovation networks in transport in the research project ServPPIN.[29] In February 2009, I read about the opening of the first public charging stations for EVs. My interest was in the role of the Traffic Agency, given its primary task of monitoring parking through fines. I collected data in a case study to confirm and extend theories of public–private innovation networks. I returned to these findings in November 2010, with a renewed interest in innovation in public services in an inter-organizational context. I re-examined the data material with this new theoretical framing.

Information Search

Data collection often starts in broad information searches, in order to obtain an overview of the empirical field (Andersen, 1990, Van de Ven, 2007). This was also the case here. I started with a search for *publicly available information* at the municipal website of the Traffic Agency, which led to various websites and media coverage, following the snowball technique. I also conducted open searches on the web. In this part of the information search, the searches applied a set of words that covered the spectre of: "public charging services", "charging points for EVs", "producers of charging stations", and "the Traffic Agency". Typical sources for information included the websites of the involved actors, the municipal newsletter *Oslo Now*, local newspapers, and the *Technical Weekly Magazine*.

Mapping the Actors

In 2010, the findings from the information search were systematized and supplied with new material in a mapping analysis of the actors. By focusing on the various actors, the analysis provided an overview of the key events at this early stage. The information search had

---

[29] *ServPPIN –The Contribution of Public and Private Services to European Growth and Welfare, and the Role of Public–Private Innovation Networks*, EU 7th Framework Program, 2008–2011.

identified who the actors were and how they got involved. The mapping analysis contributed by categorizing the actors and their activities over time into four types: *the public entity* in charge of the development, *the political actor and activities* that initiated the new public service, *the private companies* that developed the charging services, and *the third sector actors* who supported the development and contributed with their expertise. Table 2 gives an overview of the mapping analysis.

Table 2 Mapping the Actors

Type of actor	Event	Time	Incident	Detail actor
Political actor and activities	400 charging points for EVs to be built in 2008–2011	August 2007	"The City Government is to build 400 charging points for EVs in the period of 2008–2011." [30]	Private proposal from the Liberal Left Party, City Council of Oslo
	Earmarked budget to build charging stations	November 2007	"4 million NOK earmarked for building charging points." [31]	Oslo Budget for 2008. Politically negotiated.
	Finances allocated over the Parking Foundation	November 2007	"The finances are to be allocated over the Parking Foundation." [32]	The Parking Foundation has the surplus of income from the fines for illegal parking
Third-sector actor	Advice on policy for zero-emission transport	November 2007	"Complimenting the municipality of Oslo." [33]	Environmental foundation aimed at the zero-emission society. Advice to politicians, companies and society.
Private company	Charging stations delivered by GARO AS	June 2008	"GARO delivers charging stations to EVs in Oslo." [34]	Company specialized in electronic components, located in Drammen, [35] part of large concern, headquarters in Sweden.
	Charging stations delivered by DEFA AS	June 2008	"GARO AS and DEFA AS deliver charging stations to the project."	Norwegian company specialized in electronic components. Main office located at Sandvika. [36]
	Installed charging stations by Proxll AS	June 2008	"Proxll is to install EV stations in Oslo." [37]	Norwegian electricity company located in the heart of Oslo.
Third-sector actor	Enhancing the use of EVs	June 2008	"More information can be found at ZERO and NORSTART." [38]	EV association working for enhancing the use of EVs in Norway.
Public entity	Opening of the first charging points	November 2008	"10 charging points opened on street level in November 12, 2008." [39]	Traffic Agency, the public entity for road and traffic issues in the city of Oslo

Initial Meetings

The data collection from 2009 also held two initial meetings, one with the Traffic Agency and one with the leading private company delivering charging stations. The two meetings were more open in style than interviews, simply to explore the empirical field (Andersen, 1990, Silverman, 1993, Charmaz, 2006). The meeting with the Traffic Agency was a lengthy

---

[30] City Council of Oslo 2007: "Private Proposal of 400 charging stations in Oslo", August 3, 2007.
[31] ZERO 2009: "Thrilled with budget money", December 1, 2008.
[32] City of Oslo: *Oslo-budget 2008*, November 26, 2007.
[33] ZERO 2009: "Complimenting the municipality of Oslo", March 3, 2009.
[34] GARO 2009: "GARO delivers charging stations to EVs in Oslo", February 19, 2009.
[35] Medium-sized city located in neighbouring municipality to Oslo.
[36] Small city located in the neighbouring municipality to Oslo.
[37] TU 2009: "Proxll is to install EV-stations in Oslo", August 8, 2008.
[38] Traffic Agency 2009: "Parking of EVs", February 2, 2009.
[39] Traffic Agency 2008: "Official Opening 10 first charging stations on street level", November 12, 2008.

meeting with two people. It provided critical information of how these actors had worked so far and their experiences in developing the first generation of charging stations. The meeting had an interview guide, which served as an important preparation and a checklist during the meeting. The meeting with the private company took the form of a brief telephone meeting, which provided insights into the early stage of the market, their interaction with the Traffic Agency, and their further plans for their product of the charging station.

Narratives of the becoming of public charging services
In 2010, the data from the two initial meetings were analysed as *narratives* of the early beginning of the new public service of charging stations for EVs. Both meetings had identified statements that had not been reported in the public information. The private company emphasized the small market for charging stations, whereas the Traffic Agency stressed the practical challenges for implementing the City Council's decision of the high number of 400 charging points within the short period of 2008–2011. During the meeting, the Traffic Agency repeatedly referred to its core activity of monitoring of parking through fines, and the indispensable achievement of the City Council decision as the reason for initiating the new public service. The Traffic Agency presented its work in a slide show[40] displaying the development of the public charging services.

2.3.2 Reconstruction of the Chronology
The re-examination of the data material in 2010 revealed many interesting findings, which inspired further investigation. In 2011, I decided to further investigate how and why these patterns had developed, and eventually changed in the past two-year period, by reconstructing the chronology of the emerging innovation. Especially, I was interested in gaining a better understanding of the drivers and hindrances that I had identified during the evolution of the public service.

This round of data collection also started with a broad search of public available information. At this point in time, the number of charging stations had reached 260 and there were only six months left to reach the City Council's desired number of 400. The charging stations had developed into a second generation, procured from the private company Ensto in Finland.

Personal Interviews
I continued with the strategy of narratives and conducted personal interviews with all key actors involved to collect their stories of how the new public services had evolved. These

---

[40] "400 Charging Points in 4 years for EV-vehicles"; presentation in meeting, March 2009.

actors were the politician initiating the governmental goal of the 400 charging stations, the environmental organization lobbying for it, the project group at the Traffic Agency, the private companies delivering the charging stations, and the Norwegian EV Association (NEF) collaborating in developing the charging stations. Annex 1 provides an overview of the personal interviews, as well as the informal meeting, and the other personal encounters in this research project.

All interviews were personal and open in style. Each actor was asked to tell his or her story of how the public charging services for EVs had developed. As emphasized by Charmaz (2006), interviews are used to explore in depth, not to cross-examine. Still, an *interview guideline* was used in the preparation and as a check-list for the interviews. This guideline focused on the following main themes: the role of the actor in the project, the status of the project in their organization, how they got involved, their contribution, how they interacted with the other actors, the drivers and hindrances of the project, and the outcome of the project for them. In addition, all actors were asked to characterize the Traffic Agency along the conceptual categories of bureaucracy, market, and networks. However, I never asked all the questions in any of the interviews and I tried to keep the conversion as open and informal as possible, but still with a degree of focus. I used a tape recorder to give attention to the conversation, and made notes of key points, which I later followed-up with concrete questions. This was all in line with advice in the qualitative method literature (Charmaz, 2006, Corbin and Strauss, 2015). In my research project, these practical guidelines helped make the interviews exciting encounters, which allowed me to follow the actors in their stories.

Seven persons were interviewed in May–June 2011. Their information given was considered as saturated to reconstruct the innovation process. Later, the personal interviews were completed with three additional interviews, which resulted in a total of 10 personal interviews. This was in October 2013, when I had decided to go deeper into the empirical material. These interviews mainly followed the same interview guide, but some questions were changed and extended, due to the fact that they were conducted at another time and with a deeper insight in the empirical and theoretical phenomena. These persons were not included in the initial round of interviews, because two of them had left the project and the third had not entered a formal role in the project. I had worked intensively to involve one of them in 2011, but he was busy with the reorganization of the Traffic Agency.

There were also some actors that I did not interview. For example, I did not interview all the private producers of the charging stations. One of them was not contacted because I was told that he had little involvement. However, it could have been interesting to collect that person's viewpoints of why he was not more involved. Another company was not contacted because I was told that their action was coordinated through the installing company, Proxll AS. However, it could have been interesting to hear their personal stories and their further plans for their product of charging station. Notwithstanding, these considerations became interesting at a later stage, when the charging stations developed into a third generation. At the time of the first round of interviews, these considerations were not regarded as central. In my second round of interviews, the timing was certainly not right for collecting their perceptions of the relationship, since the City of Oslo had just replaced them with a new company, providing the third generation of the charging station.

Thick Descriptions and Initial Coding
Personal data provides the richest source of data (Corbin and Strauss, 2015). Interviews are considered a method for providing *direct control* of the data collection and analysis, in contrast to, for example, ethnographic studies (Charmaz, 2006). In my research project, the interview data resulted in thick descriptions, which allowed for a detailed analysis and a reconstruction of the chronological patterns. Still, the data collection also held some components of control in the *initial coding* ingrained in the interview guide.

Moreover, although, the interviews prescribed to be *open and communicative*, I was driven by a theoretical motivation for understanding the distinct context of innovation in public services. At this phase in the project, I was still driven by the theoretical framing of the inter-organizational context for innovation in public services. The attention was focused on collecting and analysing data on the conceptual categories of "innovation in governance" and "co-evolution", and the related categories of "inter-organizational", "public values", "shared interests", "collective action", etc. Thus, the data collection and analysis were not entirely inductive in character, but had several elements of deductive coding.

Focus Group Interviews
The reconstructed chronology was discussed in a *focus group interview* with the project group in the Traffic Agency.[41] I invited them to a group interview in June 2012. Before the interview, I sent them my draft version of the reconstructed chronology. My intention was to

---

[41] By this time, the Traffic Agency had been reorganized into the Agency for Urban Environment.

discuss the reconstructed chronology with them and identify any errors. I also intended to deepen the insight of the social mechanisms, of their individual and group perceptions of the new public service.

Focus group interviews are considered as a method to witness a *collective conversation.* It facilitates for in-depth discussions, by a small number of people, on a focused topic. Their discussion is an opportunity "to listen to local voices", and to get closer to the way people see their own reality, which may not emerge from the encounter of a personal interview. It also allows for discussions from their points of view more than the researcher (Silverman, 1993, Damgaard and Sørensen, 2007).

The project group at the Traffic Agency vigorously discussed their current challenges of developing and providing the public service of charging stations. They appeared to enjoy talking about the project and reflecting on how and why things had happened. The project group had not seen each other for a while, since the reorganization into the Agency for Urban Environment in 2011 had split them at various geographical locations in the city. The condition may have helped create the good atmosphere for the meeting; although it was still challenging to guide them into my interest of the accuracy of my reconstructed patterns. On the other hand, the focus group interview deepened my understanding of the reconstructed patterns and helped me to identify new patterns.

I arranged a similar focus group interview in November 2013. At this point in time I was simply interested in discussing my findings to a broad extent. Another reason was that I was in the middle of a new round of data collection and analysis, and simply contacted the Traffic Agency to update my data collection, and to keep them informed of my ongoing research.

2.3.3 Constructing Explanations

The reconstruction of the chronology was a useful step in understanding how the innovation emerged over time, but it also revealed a more complex dynamic. For instance, it identified many events that had initiated the innovation, the product of the charging stations changed over time, and the market for EVs had expanded greatly during the period I studied. Inspired by a new theoretical framing – the sustainability transition literature – I redefined the conceptual categories. This meant another round of re-examining of the existing data and the need to collect more data to explore the complexity of the explanations and how these operated in social mechanisms at the micro-level.

Technical Artefacts

In constructing these explanations, my data collection and analysis was deliberately inspired by the Science and Technology Studies (STS), in their influence on the growing literature of sustainability transitions. STS has emphasized the need to include the study of technical artefacts in social science. Callon (1980, 1987) even conducted a case study of an electric vehicle in France, focusing on how the existing technology and the technical changes formed the social system in which the innovation emerged over time. That study was a great inspiration in terms of my attention to the technical artefacts of the charging stations in its given social system. In my study, the new public service emerged in three visible generations of charging stations in Oslo; see Picture 5.

These three generations have been studied by *visual inspections* of the technical equipment. All three have been visited at various times and at various locations in the city of Oslo. The inspection has been purely visual, in order to help me understand how the public service works in practice. The inspections have looked at its design, location, visibility, access to power, potential dangers with electric cables on the ground, etc.

Picture 5: Three generations of charging stations in Oslo

Source: Personal collection.

The technical artefacts have also been studied in an *indirect way*, by data from *secondary sources*; that is, from written articles in newspapers and magazine about the three generations of charging stations, and about the broader aspects of recharging of EV batteries and charging technology. Here, various supplementary sources of data have been used. The website of the NEF has been valuable for understanding these technical aspects of the innovation. Pictures and videos have been a useful supplement to this part of the data collection.

Document Analysis

Data was collected and analysed from numerous documents throughout this research project. These were more systematically analysed in this phase of the research project. All these documents are existing texts, which means that I did not contribute to shape these data. These documents have been written for another purpose. Qualitative method literature emphasizes the importance of analysing texts in the context in which they were constructed, in attempts to understand the *initial intention of the authors*, in their social and cultural situation and historical time (Silverman, 1993, Charmaz, 2006, Corbin and Strauss, 2015). I will now consider the various types of documents applied in this research project, along this dimension. I start with a special class of documents "authored" by the Traffic Agency, before considering the archival material, and the policy documents.

Annual Reports

Annual reports were a critical source to understand the Traffic Agency as an organization. I read all the annual reports from 2004 until 2010, and for the reorganized Agency for Urban Environment from 2011 till 2016. The annual reports were easily available at the website of the agency. Charmaz (2006) emphasized that although annual reports may look like "reports of facts", it is important to remember that they are written by one or several persons, and represent the beliefs of the writer. The director has signed the annual reports of the Traffic Agency, and these have been analysed here as the communication from the top management in the public entity. The annual reports served as *background data* to provide an overview of the official organizational goals and strategies, and the details of structure, size and number of fines per year. The reports were also applied to *triangulate data* collected elsewhere; for example, the official statements were analysed in conjunction with the personal statements in the interviews and meetings. The annual reports had many pictures, which left me with images of how the Traffic Agency wanted to present itself; for instance, of its role in typical dangerous parking situations, smiling parking agents at work, and cleared and clean pavements. Interestingly, the official opening of the first charging points illustrated the front page of the 2008 annual report,[42] which gave the impression of a sense of pride or interest in flagging the new task.

Internal Notes and Records

I endeavoured to collect internal notes and records from the work in the project group in the Traffic Agency, but I ended up with little documentation of this type. I requested such

---

[42] See Picture 1 in this thesis.

documents when I made the interviews, but I was told that "we do not work like that". The interviewees told me that they did not take minutes from meetings or make notes of the status of the project. The most relevant internal documents collected were records of the numbers and various types of charging stations. This information provided detailed *primary data* about when, where, and how the charging points developed over time.

Project Reports

The Traffic Agency had a few project reports that provided interesting insights into their stories of the project. The Traffic Agency participated in the EU project "URBACT – Connecting Cities, Building Successes" from 2009–2011,[43] in which the project leader wrote an analytical report.[44] The presentation of their project at the first informal meeting in 2009 also served as a project report in my research project. The Traffic Agency also had an interactive map on its website showing the status and the plans for the project. All these documents were produced by the project team based on their information. However, these reports had another status, rather than just that in the internal notes, by being more official in style. In my research project, these reports offered useful sources of data to the perceptions of the project group, of how they saw the project at various times.

Tendering Documents

A fourth type of documents collected from the Traffic Agency was the tendering documents of the product of the charging stations. From the personal interviews, I learned that there had been two rounds of tendering. The first tender was in February 2008 and called for "coupling-houses with power supplies for EVs". The second round was in June 2009 and called for "technical equipment for charging of EVs". I later read about a third round, from October 2012, which called for "charging stations for EVs in the City of Oslo". The tendering documents were offered on written request to the Traffic Agency and to the Agency for Improvement and Development, which had offered juridical assistance to the Traffic Agency in the procurement processes in the first two rounds, and which managed the process in 2012. The tendering documents were analysed as critical incidents of how the ideas of the public charging service changed over time. These documents also contributed with technical and juridical data.

---

[43] URBACT is a network programme to foster sustainable and integrated solutions to common urban challenges.
[44] Traffic Agency (2011): "EV Charging Points in Oslo – 400 Public Charging Points in 4 Years. A City's Strategy to support the use of Electric Vehicles and become the world's leading Electric Vehicle Capital".

Reports and Folders

I also collected data from official reports and folders about the Traffic Agency. These documents were collected randomly; for example, during my many visits to the agency office building, at City Hall, and by browsing the web. I collected these data to obtain a general view of the Traffic Agency, but also to get an idea of the role of the project of the charging services for EVs related to other projects in the organization. I found it interesting that no reports or folders of their charging services for EVs were displayed at the office building at any time of my visits during 2009–2013. Nor did I find any at the City Hall or at the municipal websites. This gave me the impression that the charging services were a limited part of the Traffic Agency's activity, compared to its other activities that it presented in several reports and folders, such as ensuring safe and neat parking, and upgrading of city parks. I was surprised that the Traffic Agency had not presented more information about the charging services, especially because the project had been flagged in the 2008 annual report.

The general lack of documentation of their own project was one of the reasons why I decided to search further for other types of documented data. I decided to study the archives to see if I could find anything that supported, or undermined, my findings.

Archives

The choice of archives was made to get a better understanding of the status of the project in the Traffic Agency, and of how and why it developed over time. The other purpose was to obtain a better overview of the details, of what happened, when, and by whom. Besides, the material could triangulate the information collected with the other methods.

Access and Archival Keys

Again, I contacted the Traffic Agency, but this time the Archive Department. I was told to send an application for access, as my interest in searching the archives related to the charging services for EVs in the time of 2004 till 2013. I indicated that I would like to visit their archives. The assistant head of the Archives responded that the archive had many of the old documents from the Traffic Agency stored in boxes, after the reorganization in 2011. They had been busy establishing a new archive system for the reorganized agency and had not prioritized making these old documents available in publicly archival keys. I offered to visit them and search through the boxes, but she told me that the documents were stored in a way that made it impossible, according to the need to allow me access to all these documents. These documents were still too new to allow the general right to inspection, which in Norway is regulated by a quarantine period of 25–30 years. The assistant head offered to help but told

that she needed to find the time to handle my request. I sent her some general search terms, which resulted in a few documents. Then, after another round of detailed clarifications, and another round of requests for help on my part, she found several letters and notes and declared these for access. An important methodological issue here was that I, as a researcher, did not have any control over the collection of these archive material; that is, what actually may have existed and compared to what I was given access to.

The new archive at the Agency for Urban Environment was publicly available, as were the other public records for the City of Oslo. This was all conveniently accessible in a common public website. The ministries and agencies at the national level had a similar common system, which made it easy to search these public records. When I found an interesting document, I simply requested access to it by ticking the file and clicking "send", and the request was automatically forwarded to the right public entity. After a day or two, I received an e-mail with the document attached. In these searches, I applied many of the same search codes as the initial information search: charging services for EVs and charging stations. I also applied the names of the various actors involved; that is, the Traffic Agency, NEF and GARO. The finding resulted in a few notes and letters at the Ministries of Climate and Environment, Transport and Communications, and Finance. At the state agency level, documents were also identified at the Norwegian Public Roads Administration and TRANSNOVA.

Letters
Most of the documents I found were letters from the Traffic Agency to other public entities. Following the methodology applied by historians (Dahl, 1967, Kjeldstadli, 1992), I studied the *correspondence* to learn how these actors interacted, and as sources to their intentions at various points of time.

These letters typically contained information about the project provided by the Traffic Agency to the City Government and the City District Administration. These letters displayed the formal channels for communication. A set of letters showed how the Traffic Agency followed up on a political issue of mandatory charging when parked at the charging stations, and how the Traffic Agency reported to the Department of Environment and Transport, which further contacted the Standing Committee on Transport and Environmental Affairs. I found a similar set of letters requesting high-power charging stations, sent to the Department of Environment and Transport, and to the Traffic Agency.

Moreover, this part of the data collection resulted in a new and somewhat revolutionary finding for my research project. It was a set of letters dated June and July 2007 from the Traffic Agency to various public entities in the municipality; the Agency for Community, Parks and Recreation, the police, and various private parking companies, etc. In these letters, the agency requested these actors for help finding locations to build charging points. The important finding in in these letters was their dates, which were dated before the City Council decision had been made.

I did not identify any letters among the key actors directly involved in the process. This supported the information of the informal way for the work in the Traffic Agency.

Policy Documents

Governmental policy and political processes have a highly *formal character* in the documentation of the decision-making process (Kjellberg and Reitan, 1995, Bogason and Zølner, 2007). In the present research project, policy documents were central, given the initiation of the innovation in a City Council decision.

Meeting Procedures from the Political Decision-making Process

The City Council decision of the 400 charging stations for EVs was originally initiated in a private proposal by a member of the City Council, the parliament in Oslo, in August 2007. The meeting procedure for the City Council shows how the proposal was treated. It reports that the proposal was treated by the Committee for Transport and Environment at the end of August, and that the Committee decided to treat the proposal together with another related private proposal on a regional programme for reduced climate emission, in September 2007. The meeting procedure informed on how this proposal went through several rounds of political discussions, before it finally ended with the decision in January 2008. In the present PhD project, these documents are considered as *primary sources*, of parameters of what happened, when, and by whom in the decision-making process.

In addition, the governmental goal of the 400 charging stations was based on a budgetary decision. It was part of a political negotiated budgetary proposal between the ruling political parties in the City Government, the Liberal Left Party, and the Christian Democratic Party. The annual budget for Oslo was decided and made publicly available in November 2007. This document has also served as an important formal parameter in my research project. It has another form than the meeting procedure, in that it also communicates the policy of the City of Oslo to the citizens.

Related Policy Programmes

By studying the meeting procedures from the political decision-making process, I detected a broader ground for the politics of the charging stations, in existing policy programmes. Besides, as I have already shown, the initial proposal also became a part of a broader programme during the decision-making process, in the policy programme for reducing the emissions from greenhouse gases in the City of Oslo. Furthermore, this programme was related to other existing policy programmes; namely, "the Program for the Ecological City" from 1998; "the Strategy for Sustainable Development, from 1998; and "the Green City", from 2003. These policy programmes communicate the policy in broader strategies and well-defined measures for how to reach the policy goals. In my research project, these documents have served as *secondary sources* to understand how the City Council's decision regarding the charging stations for EVs was embedded in the broader policy.

Related Political Processes

In the data collection, I also identified several related political processes, in the debates in the City Council of Oslo; for example, permissions for hybrid vehicles, high-power charging stations, and mandatory charging when parked. The purpose of this exercise was not to perform a comprehensive analysis of all these related political processes, but to develop a general understanding of the broader positions of the issue among the parliamentarians in the political context of the City Council of Oslo.

Related Policy at the National Level

Critically, the initial proposal of the charging stations for EVs also related the proposition to existing policy for EVs at the national level, in existing legislation for free municipal parking, toll roads, VAT exemption, etc.[45] Besides, public charging stations for EVs also became a national policy goal in 2010. The decision was a policy programme for building 50,000 EVs and the establishment of a national unit, TRANSNOVA, to implement the policy. There was also another related ongoing political process, of a new law for cross-parking for small EVs, which started in 2009.

This part of the data collection placed the City Council decision in a broader context of national policy. It included an extensive study of the hearing round of the cross-parking, which provided an interesting overview of the variety in the statements of the many invited stakeholders. However, it is important to note that these various decision-making processes at

---

[45] For a full overview see Table 1 in Paper 2.

the national level were not systematically studied in this PhD project, although they did provide important supplementary information. Still, I had some general insight in this field from earlier studies of the EV policy in Norway (Røste, 2001, Røste, 2004, Røste, 2009, Røste, 2013, Hernes and Røste, 2007).

Supplementary Data
In addition to these three types of documents, other types of textual data were also collected as supplementary sources of data. An important type was the ongoing public debate. Some supplementary data took the form of visual data, and statistics, rather than just documents.

Public Debate
National and local newspapers and magazines offered critical sources to the public debate of the charging stations for EVs, and to the broader topic of EV policy and EVs in general. These public debates were identified by information searches at the media search base "Retriever", and in more general web-based searches.

The former municipal newsletter *Oslo Now* contained several interesting discussions of the role of the Traffic Agency, the parking situations in Oslo, and the special cross-parking of EVs. The newsletter was distributed to all households in Oslo until 2010, and was also available at the website of the City of Oslo until 2014.

The website of the NEF was another critical source. The website posted general information about EVs, the technicalities of recharging of EV batteries, the pros and cons of various types of charging stations, the growing EV market, and so on. Importantly, these web articles also hold many interesting analyses and narratives; for example, about the role of the governmental policy for EVs for the growing market. Central actors in the NEF also published a book on the history of EVs in Norway entitled "EVs on Norwegian" (Asphjell et al., 2013). The book and analyses on the website have been valuable secondary data in my research project. The website and the book also hold many pictures, documenting the national EV policy in Norway.

Visual data
In my PhD project, various types of visual data have been collected. As already pointed at, the website of NEF and their book contributed with many documentary types of pictures, showing incidents in the history of the charging stations, as well as the broader history of EVs, the growing market, and the EV policy. Their website has also been an important source for pictures and videos on the technical artefacts of the charging technology, such as the

differences between normal, semi-high, and high-power charging. The website was also a useful arena to tap into the new products of the charging stations, and the new EV models entering the market at various point of time in my study.

Statistics

Statistics have been another important supplementary data, particularly regarding the growing EV market; see Table 3 in Paper 2. The numbers were easily found at the national database at Statistics Norway, in a *primary database* of the number of EVs registered per year. Useful statistics were also found by other actors, who had provided statistical analyses that were useful in my case. These *secondary data* were collected at the website of NEF, and at the third-sector actors NOBIL and Green Vehicle. NOBIL offered an overview of all charging stations in Norway, and Green Vehicle analyses of the growing market of EVs.

2.4 Generating Theory from Process Data

This final section summarizes the chapter by focusing on the implication for generating theory from process data, by focusing on the implicit role of social mechanisms, and the implications it has for arriving at explanations for innovation in public services.

2.4.1 Explanations and Social Mechanisms

The research design of process studies is situated within a scientific tradition that pinpoints that "real" scientific laws are rare in the social science. Generalizations are always contingent and time-bound, and need to be further explained by mechanisms in order to understand the interrelation and the timeliness between *explanans* and *explanandum*; that is, the theoretical explanations and the sequences of events, respectively (Elster, 1989, Hedström and Swedberg, 1998). The concept of mechanism is often associated with the contribution of Jon Elster but, as I will show here, others have also emphasized the implicit role of social mechanisms in the social science.

Elster (1989) argued that it is not enough to state the cause of an event. Social science needs to explain how and why the event – and, with it, the fact – happens as an outcome of the cause. The explanation is an account of what happened, in the attempt to understand the effect of the exact event being studied. The challenge is that there are many possible theoretical explanations of why and how the event occurred. Therefore, an additional toolbox is required to explain the special events and the related facts. According to Elster (1989), this toolbox is an additional level of explanation, linking the independent and the dependent variables in the given events.

George and Bennett (2005, p. 137) took a different angle to the causal mechanism. They placed the mechanisms on the ontological level. Their definition is as follows:

> *"(...) we define causal mechanisms as ultimate unobservable physical, social, or psychological processes through which agents with causal capacities operate, but only in specific contexts or conditions, to transfer energy, information, or matter to other entities. In so doing, the causal agent changes the affected entity's characteristics, capacities, or propensities in ways that persist until subsequent causal mechanisms act upon it. If we are able to measure change in the entity being acted upon after the intervention of the causal mechanism and in temporal or spatial isolation from other mechanism, the causal mechanism may be said to have generated the observed change in this entity."*

In George and Bennett's view, the mechanisms are hypothesized models. In contrast to Elster, these models do not replace the theoretical models, and follow other principles for theorizing. In Elster's models, the explanations followed the principle of efficient causality, in theorizing from the predicted outcome. In George and Bennett's view, the causal mechanisms are believed to generate the outcome under certain conditions. This outcome depends on the interaction with other mechanisms in the context that the phenomenon is a part of, and with of other mechanisms happening at same time. Thus, George and Bennett's model emphasized the additional role of mechanisms. In their view, social mechanisms are a necessary but not always sufficient explanation. The mechanism holds detailed information about the implications of the causal relationship between the independent and the dependent variables. Still, it does not rule out theories at the macro level (Andersen, 1997, George and Bennett, 2005).

Hedström and Swedberg (1998) provided a third viewpoint of social mechanisms, which contrasts with the variable-centred focus in the other two contributions. Hedström and Swedberg argued that the existing literature had paid too little attention to the explanatory role of mechanisms and that social mechanisms are an *integral part* of explanations of human action, at all parts and all levels in social science.

Hedström and Swedberg emphasized how mechanisms play different roles for the social science analysis, at various parts and levels. First, it is essential for the explicit analysis of *human action*, which can only be observed in incidents, and which always depends on the context and the time within which it occurs. Second, action studied at one point of time is not necessarily an outcome of their intentions, desires, and wants expressed in another way at another point of time. Third, mechanisms are needed to create *abstraction*, which can be generalized beyond these mere empirical observations. As called for by Merton (1967), there

is a need to create a ground for understanding the mechanisms between the social laws and the description of practice, in middle-range theories. Fourth, mechanisms characterize the general *reductionist strategy* of the need for a fine-grained and a tight coupling between explanans and explanandum.

These discussions are highly relevant for this PhD project in attempting to contribute to a more solid knowledge of innovation in public services. The overall aim is to generate theory at an aggregated level, of the overall explanations of drivers and hindrances for innovation in public services. By the use of a process design, these drivers and hindrances are studied by an attention to the micro level of a single case, simply in order to obtain a better understanding of how the innovation emerges over time. By going into the emerging innovation in depth, the research design allows for explicit analysis of human action, which brings precise data of their concrete practice in the emerging innovation. Then, in next step, the analysis of the micro-level data can provide insights into the ongoing theoretical debate of drivers and hindrances for innovation in public services. The next chapter will show how my PhD project attempts to contribute to the overall development of a theoretical framework to innovation in public services.

Chapter 3   Theoretical Framework to Innovation in Public Services

The overall objective of this chapter is to develop a theoretical framework with which to understand the phenomenon of innovation in public services. Moreover, the chapter will clarify the considerations I have made in contributing to theory development. The main contribution can be summarized as a better understanding of how innovation in public services is developing over time and why it seems to do so in certain ways. Thus, a central research aim is to help conceptualize the underlying social mechanisms that result in the observable outcomes recognized as innovation in public services. As elaborated in Chapter 2 on theorizing from process data, these outcomes of innovation in public services are at the micro-level of the analysis, whereas the drivers and hindrances are at the aggregated level in the distinct social context. Thus, a central purpose is to understand the distinct contextual for innovation in public services.

The focus on context is grounded in the existing knowledge of innovation in public services. As introduced in Chapter 1, the recent debate of innovation in public services has addressed major theoretical dilemmas rooted in the two scholarly disciplines of innovation and public administration. Still, this debate has so far handled the theoretical constructs of these dilemmas in a somewhat cursory manner. A central problem is that this debate has also attributed certain myths and misinterpretations of these theoretical constructs. Given my overall motivation of contributing to a solid theoretical funded knowledge of the phenomenon of interest, I have had to go back to the theoretical roots of these constructs, to clarify these misbeliefs and to define a robust knowledge base. This chapter presents this clarification, in an extended examination of the constructs and how the existing knowledge can contribute to refine the understanding, as theoretical building blocks toward a theoretical framework for innovation in public services.

This chapter examines the theoretical building blocks in two parts, based on the two scholarly disciplines of innovation and public administration. The first part starts in the discipline of innovation. It shows the theoretical roots of Joseph Schumpeter and the fundamental breakthrough in the evolutionary theory of economic change, in the so-called neo-Schumpeterian approach. It discusses how their attention to the social component of innovation has provided a pivotal ground for understanding innovation in public services. The second part starts with a discussion of the discipline of public administration, in the tradition

of Max Weber. That part shows how his fundamental knowledge of the rational-legal authority was revitalized in the new institutional theory to political life, and how the neo-Weberian revival can provide a framework for explaining the contextual specificities of innovation in public services. The final third part summarizes the knowledge in the two disciplines and discusses how the combination can extend the knowledge towards a realized theoretical framework for innovation in public services.

3.1 Innovation

This first part starts in the theoretical roots of Schumpeter, in revisiting his fundamental view of *new combinations* and the social components of *creative destruction* and *creative accumulation*. Schumpeter has been called the "father" of innovation theory but the real breakthrough came with his evolutionary theory of economic change, in the critical building blocks of *routines* and *technological regime*. I then discuss the rebirth of the neo-Schumpeterian approach in the systems of innovation perspective, in its idea of *systems*, and specified further in *systems of innovation in services*, and *interactive learning*. I then explain how the process theory on innovation has helped further the understanding of the interactive aspect by introducing the element of time, which is a central element in the *innovation journey* and in the concept of *co-evolution*. Finally, I introduce the recent field of sustainability transition and its emphasis on the *socio-technical regime* and the *multi-level perspective*. I end this section by summing up the knowledge from these various perspectives and considering how this neo-Schumpeterian approach can contribute to theorizing on innovation in public services.

3.1.1 Schumpeterian Roots

The theoretical roots of innovation lie in Joseph Schumpeter's ground-breaking view of *new combinations* and the fundamental *social component*.

New Combinations

Innovation – or economic and social change, as Schumpeter (1937, p. 166) originally phrased it – is:

> *"A source of energy disrupting any equilibrium that might be attained, in the (…) discontinuous combinations of knowledge, resources, equipment and so on."*

His view was ground-breaking because it questioned the dominant view of the passive market mechanism of equilibrium. Schumpeter's contemporaries believed in the simple substitution of one market equilibrium with another, but Schumpeter (1934) claimed that there is no such

thing as equilibrium. Economic and social change is an ordinary part of economic life, evolving out of the circular flow, in *continuous* and *discontinuous combinations*.

Schumpeter placed technological competition as the centrepiece of the discontinuous combination. He was here influenced in this regard by Karl Marx and adapted Marx's argumentation on the technological competition between firms as the true nature of capital competition. Schumpeter (1943, p. 84) himself phrased it as follows:

> *"Economists are at long last emerging from the stage in which price competition was all they saw. But in capitalist reality as distinguished from its textbook picture, it is not that kind of competition that counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organisation, competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms, but at their foundations and their very lives."*

With this, Schumpeter extended the purely commodity-based argumentation of Marxian theory to include also other cases in various types of *new combinations* (Pavitt, 1984, Fagerberg, 2002). As Schumpeter (1934, p. 66) originally described it:

> *"Development in our sense is then defined by the carrying out of new combinations. This concept covers the following five cases:*
>
> *(1) the introduction of a new good or a new quality of a good,*
>
> *(2) the introduction of a new method of production,*
>
> *(3) the opening of a new market,*
>
> *(4) the conquest of a new source of supply of raw materials or half-manufactured goods,*
>
> *(5) the carrying out of the new organisation of any industry."*

Schumpeter's contribution of new combinations should have put an end to the dominant myth of market competition as the single driving force to economic growth when he launched his theory in the early 1900s. However, ground-breaking as it was, his contribution had little influence on economic thought in his own time. His views experienced a strong revival in the 1980s and the 1990s, in the evolutionary theory of economic change and in neo-Schumpeterian theory, which has helped develop his fundamental ideas further (Fagerberg, 2005, Fagerberg and Verspagen, 2009), as I will return to later in this chapter.

This revival has also been important in the recent debate of innovation in public services. The pioneering EU framework programme PUBLIN[46] used the Schumpeterian roots as a fundamental ground for understanding of innovation in public services. PUBLIN demonstrated that pure market-based innovation can seldom be found in the public sector, but that new combinations can be found that strike at the foundations of existing combinations (Cunningham, 2005, Kemp and Weehuizen, 2005, Koch and Hauknes, 2005, Røste, 2005). However, the conception of innovation has its challenges and there is a potential for mistaken beliefs when transferred to the context of the public sector. These mistaken beliefs have been a central motivation for the present thesis, driven by the overall aim of helping to build a robust knowledge that is grounded in the fundamental theoretical roots of innovation. I will here go further into the social component in Schumpeterian writings to show how his fundamental ideas can contribute to build a solid ground for theorizing on innovation in public services, and to clarify the potential fallacies.

Social Component

In his early work, Schumpeter (1934) attributed a central role to individual entrepreneurs as a critical source for the disruption of equilibrium. He pinned down their role in the notion of *creative destruction*. This source is embodied in new firms, but it is the individual entrepreneur who carries it out into new combination. These entrepreneurs are individuals who have a special talent for seeing new opportunities and combining the opportunities into new products and new firms, often alongside existing firms. Over time, their new form of production might eliminate the old firms.

Critically, the underlying source is not just about the individual capability of "seeing" new combinations. It also requires a strong motivation for carrying it out. Entrepreneurs often need to fight against established standards in order to succeed with a new firm. The fight is observable in the *forces of habits,* as Schumpeter (1934, p. 86) referred to it:

> *"(...) the reaction of the social environment against one who wishes to do something new."*

Thus, the entrepreneur must have a social talent in fighting against the vigorous existing structures.

---

[46] PUBLIN – Innovation in the Public Sector, EU 5th Framework Programme, 2002–2005; see: http://siresearch.eu/public-innovation/project/publin.

With this viewpoint, Schumpeter also stated that there is an important difference between an *invention* and an *innovation*. An invention is just a new idea, which can remain at the level of a drawing table. Innovation, on the other hand, is an invention carried out into a new practice. The neo-Schumpeterian approach has emphasized these elements of innovation as the *real* challenge for innovation in simply overcoming this distance. The distance is often hard to define, since there is a certain time lag, which may even last for several decades, before a new idea – that is, an invention – is carried out into an observable change; that is, an innovation (Fagerberg, 2002, Lazonick, 2005). This indefinable part of the innovation has been criticized for its minimal acknowledgement of the critical social component of how the entrepreneur struggles with the power of the existing, in an endless number of present ideas, products and production processes (Kemp et al., 1998, Garud and Karnøe, 2003, Hekkert et al., 2007).

Related to this, it is important to comprehend the radical shift in Schumpeter's writings. In his later writing he attributed the source of energy to *creative accumulation* (Schumpeter 1943). He highlighted the organized knowledge bases in large companies and the barriers these may represent for the entry of new business establishers. In so doing, he emphasized the social component of innovation in the challenges that already built-up structures represent for change in existing economic and social structures.

The neo-Schumpeterian approach has labelled this radical shift in Schumpeter's writing as "Mark I" and "Mark II", and has emphasized how those two "marks" demonstrate how Schumpeter himself was a part of the *social and historical realism* he tried to explain (Fagerberg, 2002, 2005). It was a historical period when large international corporations entered and changed the market. The present thesis argues for a similar contextual realism when transferring the conception of innovation to the distinct context of public services. I will now go into the Schumpeterian rebirth in the evolutionary theory and show how this brought us more knowledge on the social component of innovation, and how it may contribute to build knowledge of the subject of innovation in public services.

3.1.2 Evolutionary Theory
The breakthrough for the theoretical roots of Schumpeter came with the evolutionary theory of economic change, in the critical theoretical building blocks of *routines* and *technological regime*.

Routines

Richard R. Nelson and Sidney G. Winter (1982) developed the theory in their seminal contribution entitled *An Evolutionary Theory of Economic Change*. Like Schumpeter, their contribution was a reaction to mainstream neoclassical economic theory. Their main objection concerned what they saw as an overemphasis on the profit-maximizing firm. According to them, firms are not necessarily profit-oriented in the way they make choices. They approved profit as an important motivation, but questioned its importance for explaining how firms make choices.

Rather, they emphasized the importance of routines for how choices are made. Firms simply make choices based on existing routines. Thus, Nelson and Winter removed the central premise for profit-maximizing in the neo-classical economic theory, in the distinction between choices and choice sets. In their routinized way of making choices, firms do not consider the available choices or choice sets; these simply become secondary to routines.

Nelson and Winter identified routine as the most important organizational activity. In explaining the importance of routines, they adopted the basic principles from biology (Nelson and Winter, 1982, p. 14):

> *"In our evolutionary theory, routines play the role that genes play in biological evolutionary theory. They are persistent feature of the organism and determine its possible behaviour; they are heritable in the sense that tomorrow's organisms generated from today's have many of the same characteristics, and they are selectable in the sense that organism with certain routines may do better than others, and, if so, their relative importance in the population is augmented over time."*

Their attention to routines puts the focus on the interrelated aspects of continuity and change, in simply doing more of the same as long as it results in a satisfying outcome. This results in relatively stable units, of firms, preserved in repeated acts of self-maintenance.

Furthermore, they emphasized how routines are stored as genetics, in the organizational memory of the firm. The memories are primarily stored in the individual members. For the organization, however, these memories are only meaningful in their shared experiences of past and current action. These experiences are constituted in the organizational memory of firms. Still, we can only observe these memories in the organizational way of doing things. As Nelson and Winter (1982, p. 99) put it:

> *"Basically, we claim that organisations 'remember by doing'."*

They brought in *skills* to pinpoint the critical activity at the level of the firm. Like routines, skills are memorized behaviour, but at an individual level. The behaviour is just acted on, without any attention or awareness. It is analogous to a computer program; that is, as records that are simply acted on in an automatic way. Certainly, initially employing a skilful performance requires reflection but, over time, performances become repetitive in character. It is the situation that replicates the memorized skills. A common example is learning to ride a bicycle. Once the skill is learned, it is automatically repeated.

In their theorizing on routines, Nelson and Winter were strongly influenced by organizational behaviourists, particularly Simon and March (1958) and Cyert and March (1963). Organizational behaviourism criticized the idea of the economic man in neo-classical economic theory, and argued that behavioural choices can never be optimal or rational. They emphasized how choices are always made within a setting of given organizational premises. The organizational activity defines the boundaries for how individual actors are making decisions, and how this results in simply doing "more of the same", as long as it leads to a satisfying outcome.

Their emphasis on routines has been influential for understanding the social component of innovation at the level of the firm (for example, as developed by Nonaka and Child). In the neo-Schumpeterian approach, the micro-foundations have also been studied as a key to understanding innovation at the macro-economic level. Nelson and Winter's notion of *technological regime* is a critical theoretical building block for linking the micro-foundations at an aggregated level (e.g. Lundvall, 1992, Geels, 2004, Fagerberg, 2005). In the present thesis, the strong influence of the organizational behaviourists, and their linking of these core conceptions at the micro level with the aggregated level, have been at the core of my theoretical interest. Their ideas have contributed with fundamental theoretical building blocks for conceptualizing drivers and hindrances at an aggregated level, of the observable outcomes of innovation at the micro level. I will now elaborate on how their notion of technological regime contributes to this understanding.

Technological Regime
Nelson and Winter (1982, p. 258) introduced the notion of *technological regime* in order to emphasize the cognitive constraints for technological change:

> "(…) relating to technicians' beliefs of what is feasible or at least worth attempting."

In doing so, they focused on how the skills of individual technicians, such as engineers and scientists, are guided by a body of knowledge that is based on the given technology. More specifically, the technology has a set of broadly defined *natural trajectories*, in paths guiding the evolution. These paths are existing knowledge that guides the individual "choices" of the technicians. However, their choices are, to a certain extent, set in these natural trajectories. The trajectories have certain cognitive constraints for them as technicians. These cognitive constraints may also act on a social level, in technological regimes, since natural trajectories often cross various groups of technicians.

Nelson and Winter emphasized that some technologies are more promising than others. Still, over time, all natural trajectories bear the elements of an auspicious technology. The thing is that the existing trajectories constrain the cognition and restraining the consideration of alternative choices. Seen in this light, it is difficult for an individual technician to have a real overview of technological advantages. On the contrary, the persons involved do not have any overview at any point in time. In Nelson and Winter's (1982, p. 73) words:

> *"(…) the performer is not fully aware of the details of the performance and finds it difficult to articulate a full account of the details."*

There are many tools that can contribute to insight; for example, in studies of research and development (R&D) in firms. However, as Nelson and Winter (1982, p. 255-256) pointed out, such simple search procedures:

> *"(…) fails to explain the cumulative nature of technological advance (…). In many technological histories, the new is not just better than the old; in some sense the new evolves out of the old."*

Here, Nelson and Winter build on another critical pillar for their reasoning: the philosophical notion of knowledge by Michael Polanyi (1967). Polanyi characterized two dimensions of knowledge: *explicit* and *tacit*. Explicit knowledge can easily be verbalized and transferred to others, through books, formulas and manuals. Tacit knowledge, on the other hand, is difficult to communicate and hand over to others. In technological advances, knowledge is often tacit, stored in the knowledge of individual actors.

Giovanni Dosi (1982) also called attention to technological regimes in a contemporary contribution. Interestingly, Dosi lifted the discussion to a philosophical level by applying the concept of *technological paradigm*. By wrapping it in a Kuhn-style paradigm, he emphasized how our mental models are rooted in paradigms. We simply take existing technologies for granted. This result in a momentum of its own for the natural trajectories (Nelson, 2008,

Tunzelmann et al., 2008). As pointed out by Nelson and Winter (1982), the idea of the technological regime emphasized an important difference from the biological evolution. In biology, variations are blind. Organisms simply adopt to other organisms and their environment. In firms, variations are never blind. There are always expectations, and often resistances and reluctances.

I will now consider how the field of systems of innovation has contributed to expand the knowledge of such critical social elements at an aggregated level, and how the ideas of scholars in this field has contributed to further my theorizing of innovation in public services.

3.1.3 Systems of Innovation

The perspective of systems of innovation has stated the need for a holistic approach, by bringing in the concepts of *systems*, *interactive learning* and *innovation in services*.

Systems

The perspective of systems of innovation also emanated from a critique of the neo-classical economic theory. These scholars especially disapproved of the underlying premises in the science-push model, which they found postulated innovation as a simple linear sequence that starts with a scientific input and develops mechanically into the isolated unit of a firm[47].

It was Nathan Rosenberg (1982) who targeted this problem, by addressing the *black boxing* of the mechanical sequences. He "opened up" the black box of technological change and revealed many elements of change, in areas such as the nature of the technology, the speed of technological change, the learning processes, the rate of improvement, and governmental policy aimed at technological change. He elaborated on how the elements develop in complex chains of feedback, in the chain-linked model (Kline and Rosenberg, 1986). This model emphasizes how innovation seldom starts with one simple scientific input but arises from many recognized needs in the various chains for technological change; that is, producing, designing, marketing, etc.

---

[47] As for example postulated in the product model by Vernon and the dynamic model by Utterback and Abernathy.

The *national systems of innovation* perspective developed the idea further. Christopher Freeman (1987) who introduced the concept and Bengt-Åke Lundvall (1992) and Richard Nelson (1993) inaugurated the perspective as editors of two major books. Their contribution centred on the idea of the interacting firm (Edquist, 1997, p. 1-2):

> *"In the pursuit of innovation, firms interact with other organisations to gain, develop and exchange various kinds of knowledge, information, and other resources."*

Furthermore, they emphasized that not only firms are involved but also other types of organizations, such as research laboratories, universities, banks, funding institutions and governmental ministries. According to Lundvall and Nelson, a *holistic approach* is needed that includes these organizations and: "all economic, social, political, and other factors that influence the development, diffusion, and use of innovation" (Edquist, 1997, p. 14). Nonetheless, Lundvall and Nelson had different viewpoints regarding how to define and study these determinants of the system (e.g. Edquist, 2005). Nelson emphasized a need for comparative studies of national systems, whereas Lundvall was more theoretically oriented. Lundvall was broad in scope, focusing on the element of interactive learning, while Nelson focused more narrowly on R&D.

Although they had different viewpoints on the determinants, they both framed the nation state as a system. Since then, others have made other specifications of systems of innovation: in geographically placed regional systems (Saxenian, 1994); in industrial defined sectoral systems (Breschi and Malerba, 1997); and in specific technological systems (Carlsson and Stankiewicz, 1991). The various specifications of systems reflect the lack of a general accepted definition of "the system", and the boundaries to the overall social context it operates within (Edquist, 2005). Still, the perspective of the systems innovation has been influential in terms of its emphasis on the need to take in all factors (economical, social and political) in order to understand innovation (Fagerberg, 2005, Fagerberg and Verspagen, 2009).

Above all, this field of literature has brought attention to the role of policy and politics and the many determinants it represents in the diversity of public policies in systems of innovation; namely, industry, trade, education and research. Importantly, it also includes the role of the sectorial policies, such as energy, agriculture and defence (Lundvall, 2007, Fagerberg and Verspagen, 2009).

In the present thesis, attention given to the political dimension is regarded as particularly interesting. The debate of innovation in public services has brought to the foreground the role of governmental policy for fostering innovation (Kelly et al., 2002, Albury, 2005). However, this debate has been dominated by an instrumental view, regarding the public policy as a "tool" to improve public services and solve public sector problems (Hartley and Skelcher, 2008, Osborne and Brown, 2011, Sørensen and Torfing, 2011c). As I have shown, the perspective of systems of innovation literature demonstrates a much more complex view of the role of public policy for innovation. I will now look at the critical idea of *interactive learning* and consider how it can contribute to clarify and extend this complex role of the policy and politics and the other determinants in the system.

Interactive Learning

Lundvall (1992) emphasized *interactive learning* as the core element of innovation. According to him, innovation is a cumulative process of learning, in which knowledge is the most vital source and learning is its critical underlying process. Thus, Lundvall helped build a better understanding of "the circular flow", coming from the Schumpeterian thinking of continuous and discontinuous combinations (Fagerberg 2005; Lundvall 2007). He emphasized how firms learn from recognizing various kinds of knowledge as various sources of innovation. In this learning process, the observable outcome of innovation is only one part of an ongoing process (Lundvall 1992, p. 9):

> *"Innovation appears, not primarily as a single event, but rather as a process."*

Lundvall also addressed the central collective element of interactive learning in how the knowledge "out there" was combined into innovation. He drew attention to the individual entrepreneur and how he or she relates to the creative accumulation, in the organized knowledge in large firms. By this, Lundvall furthered the knowledge of the *collective entrepreneurship*, introduced in Schumpeter's Mark II (Fagerberg 2002, p. 24). This viewpoint has been useful in the present thesis for considering how and why innovation in public services develops over time, as such cumulative processes of interactive learning.

The concept of *absorptive capacity* is a useful related idea with which to understand how this cumulative process of interactive learning takes place at the level of the firm, and at the overall level of the social system (Fagerberg, 2005, Lam, 2005). It was Cohen and Levinthal (1990) who labelled this concept, in order to emphasize the organizational capabilities of firms, in their identification and exploitation of external sources of knowledge. They argued

that the capabilities depend on the cognitive structures, in the prior knowledge stored in the organizational memory of the firm. This prior knowledge includes basic skills and shared language, but also specific knowledge of scientific and technological developments. Thus, prior knowledge simply determines their possibilities for identifying and exploiting external sources of knowledge. The subsequent need for prior related knowledge also "locks out" firms with a low investment in absorptive capacity.

Cohen and Levinthal (1990) stressed the tacit dimension of knowledge and the difficulties it implies for organizational learning in identifying and exploiting external research and technical functions. Thus, the idea of absorptive capacity contributes with critical thinking for how learning takes place and why it does not automatically happen in all events of interaction. Still, an unanswered question in this field is what kind of prior knowledge is needed at the level of the firm to be able to absorb new knowledge at the level of the overall system.

Recent discussion of this indefinite character of the systems of innovation perspective has been discussed has highlighted the difficulty in deriving a complete theory holding these holistic explanations. The discussion culminated in an attempt by Edquist (2005) to define the key functions of systems of innovation in a holistic theory. His suggested key functions met strong criticism for not covering all the aspects of systems, for being too structural in nature and for not encompassing the policy problem to be solved (e.g. Lundvall, 2007, Hekkert et al., 2007, Bergek et al., 2008). Interestingly, Anna Bergek and colleagues (Bergek et al., 2008, Jacobsson and Bergek, 2011) developed an alternative approach in a practice-based scheme to innovation. In this scheme, they outlined *key procedures* for studying innovation. They pinpointed the need to define a precise unit of innovation before moving into the analysis. The next step is to map "what is going on", before starting to analyse the mechanisms driving and hindering innovation and its related policy issues. With this, they stated the need for an empirical entry to the systems of innovation. Their empirically grounded strategy has been considered useful in the present thesis for studying the distinct procedures of interactive learning in systems of innovations.

Moreover, their practice-based scheme has been considered a useful guideline with which to frame the distinct context of innovation in public services. My interest here has been how to connect the specificities of public services and the system of innovation perspective. This is also an ongoing debate (Koch and Hauknes, 2005, Windrum, 2008, Gallouj et al., 2013). This literature has pointed at how innovation in public services has been largely disregarded in

mainstream innovation studies. Some contributors have pointed at a dangerous pitfall in swiftly overemphasizing the differences to the private sector as the reason for the lack of attention (Halvorsen et al., 2005, Lundvall, 2011, Langergaard and Scheuer, 2012). Rather, this literature points at other reasons for the disregard; for example, in how the discipline of innovation has mainly emanated from studies of manufacturing, and how innovation in services in general has been neglected until recently. This thesis points at the usefulness of learning from these challenges when theorizing on innovation in public services, which may be regarded as having met similar challenges.

Innovation in Services
Basically, the neglect of services triggered a scholarly debate that aimed to include the *specificities* of services in the discipline of innovation. However, the debate spun around the differences and similarities of services and industries, placed in two contrasting approaches, the *demarcation* and the *assimilation* approaches, respectively (Miles, 2005, Gallouj and Savona, 2009). Some scholars in the field of systems of innovation have emphasized how this dualism trapped the understanding in an analytical impasse (Boden and Miles, 2000, Drejer, 2004). The solution was to try to overcome this impasse by combining the differing insights into a *synthesis approach* (Coombs and Miles, 2000, Gallouj and Weinstein, 1997). These writers valued clearly the richness of combining the insight of both sectors when developing a theoretical framework to innovation in services.

Importantly, the debate of innovation in public services has also coiled in similar perspectives on the differences *or* similarities between the private and the public sector (Altshuler and Zegans, 1990, Borins, 2001, Kalu, 2003), which can help explain the lack of attention. Recently, however, some contributors have pointed at a similar combined approach (Halvorsen et al., 2005, Fuglsang, 2010, Djellal et al., 2013), which may open the door for more deliberate discussions.

Moreover, in the service literature, the synthesis perspective has pointed at some distinct characteristics that could be relevant for these discussions when theorizing on the phenomenon of innovation in services. First and foremost, services have an *intangible character* (Hauknes, 1998, Boden and Miles, 2000, Sundbo and Gallouj, 2000), which can make it challenging to define a precise unit of service innovation. Sundbo (2008) pinned down the difficulty in his idea of after-innovation, explaining how an innovation in services is only detectable after it has been applied and put into practice. From this has been argued the

need to evaluate an innovation's value within its distinct social setting (Tether and Metcalfe, 2004, Gallouj and Savona, 2010, Sundbo and Toivonen, 2011).

The second characteristic is in the general discussion of the *role of the user*, which has been regarded as more directly involved in innovation in services than in innovation in physical goods. Here, the broader field of literature has pointed at various related forms of interactive relationships; for example, in the direct relation of co-creation (Edvardsson et al., 2011, Grönroos, 2011), in the value in use in a special service-dominant logic (Vargo and Lusch, 2008), and in the feedback loops from customer choices in co-production (Gallouj and Weinstein, 1997, Sundbo and Gallouj, 2000).

However, as pointed at by the systems of innovation scholars, the role of the user is not new for innovation in services (Miles, 2005, Sundbo and Toivonen, 2011). Von Hippel (2005) called attention to the importance of users as early as the 1970s, for the customizing of innovation in physical goods. In recent times, the IMP (International Marketing and Purchasing) Group (Håkansson and Waluszewski, 2007) has made a critical argument for how using resources cannot reduce to the mean of consuming it. It is *their interaction* that creates new resources, in *the use of the knowledge of others*. The use of knowledge attributes some aspects to the knowledge dimension; it transforms the knowledge, so to speak. With this, the IMP Group draw attention to the active processes of knowledge creation, in how the action at one point of time results in an outcome. When transferred to a setting, the knowledge cannot simply be relocated to another setting, as Håkansson and Waluszewski (2007, p. 7) explain:

> *"Over time, such interaction patterns create economic resources that carry the imprint of others' knowledge."*

Thus, the IMP Group has pinpointed how patterns of interaction create new combinations and hinder others. The IMP Group is not located within the systems of innovation perspective. Still, it is placed here, in my theoretical examination, because this distinct element deliberates on the role of the customer. In helping to develop theory on innovation in public services, this is an interesting contribution given the role attributed to the customer in the debate. On the other hand, the IMP Group has stressed that services, as well as innovation in general, must not be reduced to just the means of consumption, and that these kinds of interactive encounters are critical for all types of innovation. The interaction is the foundation of all innovation.

However, although the IMP Group's attention has been strictly firm-focused, its theoretical foundation has some interesting roots that inspired my theory development. I found inspiration in how they built on the process theory of innovation. The process theory has contributed with fundamental insights in interaction by emphasizing the temporal dimension. I will now show how the process theory has contributed with critical insight to the temporal dimension of the fundamental foundation of interaction, and how it has helped develop my theory on innovation in public services.

3.1.4 Process Theory of Innovation

The process theory of innovation has emphasized the temporal dimension, in the critical building blocks of the *innovation journey* and *co-evolution*.

The Innovation Journey

The process theory on innovation developed out of the Minnesota Innovation Research Program (MIRP), which was led by Andrew H. Van de Ven. In the same way as the system perspective, the MIRP emanated from disapproval of the linear model. The MIRP questioned the conventional belief of stable innovation projects, of the single entrepreneur who develops a brilliant idea into a successful product. Its focus was on the level of the firm, in the non-linear dynamic of innovation processes resulting out of the temporal dimension. According to Van de Ven and colleagues (1989, p. 32), innovation is a result of:

> *"(...) the temporal sequence of events that occur as people interact with others to develop and implement their innovation ideas within an institutional context."*

Van de Ven and colleagues sorted out such temporal sequences of events into five core conceptual categories: *ideas, outcomes*, *people*, *transactions* and *context* (Van de Ven, 1986, Van de Ven et al., 1989). These sequences of events were further synthesized into a general pattern of the "tour" that an organization tends to undertake each time it initiates, develops and implements innovations. In reality, none of the 14 longitudinal cases studied in the MIRP fully followed this simple – and rather linear – model, but it was a useful model to describe the main patterns. The model was further synthesized in the book entitled *Innovation Journey* (Van de Ven et al., 1999). The following main patterns describe the three phases in the model.

The *initiation* seldom starts off in a clearly defined idea carried out by a single and brilliant entrepreneur. There is usually an extended gestation period, in numerous ideas and activities linked over time, and which result in a ground for the innovation. The initiation is often triggered by shocks inside the firm and in the broader organizational field, such as losses of

market shares, radical new technology introducing new possibilities, and scarcities in the old technology.

In the second phase, the *development* is seldom a linear success story resulting in a neat outcome. Typically, the initial idea is often refined in several parallel processes that tend to converge and diverge over time and with other ongoing processes. In these parallel processes, setbacks and mistakes are common, which can result in changes of the criteria for success and failure to evaluate the outcome along the process. These changes also tend to be a result of the complex network of people involved and the broader setting of the organizational field. Most people are only partially involved, and for limited periods. They have various ideas, interests and motivations for why and how they are participating in the innovation.

The *implementation* phase is often a time-consuming process since it implies the removal of existing patterns and past practises. The innovation process often simply terminates before it results in any observable outcome because it runs out of resources.

In the overall discipline of innovation, these main patterns have served as a useful *road map* for understanding how innovation processes tend to unfold (e.g. Fagerberg, 2005, Håkansson and Waluszewski, 2007). In contributing to the theory development on innovation in public services, I considered this overall road map as a useful framework. In fact, some of the longitudinal cases in MIRP were also of innovation in the public sector, but the synthesized model omitted any specificities of sectors and industries. More recently, Van de Ven and colleagues (Hargrave and Van de Ven, 2006, Van de Ven et al., 2007) have developed their ideas further, in writings on the collective character of innovation processes. This contribution has strengthened their attention to the institutional element of innovation. In my research project, I considered this contribution as a possible broadening of their perspective to also include the distinct aspects of innovation processes in public services. I will now consider this theoretical building block by focusing on their seminal contribution of co-evolution.

Co-evolution
The concept of *co-evolution* was employed by Van de Ven and Garud (1994) in the MIRP, in their study of the cochlear implants programme. They employed the concept to understand how the innovation of the cochlear implant program at the micro-level of the firm was developing over an extended time and in a broader social setting.

They showed how this innovation developed in interrelated events of technical and institutional changes. Critically, these interrelated events occurred within an emerging industry. In this social setting, it was these interlinked activities of the firm that made the success. By applying the concept of co-evolution, Van de Ven and Garud demonstrated successful interrelation in how the firm activities placed within the broader setting of society. These events consist of the firm's resource endowments, technical activities, and institutional arrangements. In particular, Van de Ven and Garud (1993, 1994, 1987) emphasized the role of public authorities to build interest and trust in enhancing the institutional processes of legitimation, regulation, and standardization.

As I pointed out earlier, Van de Ven and colleagues (Hargrave and Van de Ven, 2006, Van de Ven et al., 2007) later elaborated on the institutional element for co-evolution, in the underlying idea of *collective action* of innovation processes. In these works, they emphasized how innovation is the result of an extended interaction over time by many dedicated people. This extended interaction relates the idea of co-evolution to the broader social context, explaining how many people and their overlapping processes contribute to develop innovation. In these writings, they point out how people identify a *shared interest* that brings them together. This identification leads to further collaboration, which results in even further recognition of corresponding issues. Over time, these people also typically start to share ideas about how things should be done. Their common interest becomes socially constructed in a shared value of interaction, which becomes structured into common beliefs.

Thus, their concept of co-evolution helps explain success at the micro level of the firm, with the many interrelated acts at the aggregated level of emerging industries and broader social setting. In my thesis, this viewpoint was considered interesting for theorizing on a similar dynamic, of how the observable outcome of innovation at the micro level of public services interact with events at the aggregated level of drivers and hindrances in a broader social setting. Moreover, Van de Ven and colleagues' later contribution on collective action has extended the conception to also include institutional processes. This viewpoint simply emphasizes the increased likelihood of succeeding when other people are sharing related interests.

Interestingly, the debate of innovation in public services has looked at similar institutional processes, for how innovation at the micro level interrelates to existing elements in the context of public services. This literature has given attention to both drivers and hindrances in

the existing structure (Pollitt, 2003, Christensen and Lægreid, 2007, Weber and Khademian, 2008). Furthermore, the debate has pointed at how the structure represents complex processes of institutionalization related to governmental goals and public policy, in the many interrelated activities embedded in the structures; that is, in the roles of politicians, citizens, and broader society (Hartley and Skelcher, 2008, Langergaard, 2011, Aarsæther, 2013). These many and highly complex processes are clearly beyond any control of a single (public) manager. This consideration brought me to the recent field of sustainability transitions, which has contributed with knowledge on how innovation evolves in such complex contexts.

3.1.5 Sustainability Transitions

The field of sustainability transition has revealed the complex nature of how innovation develops, in the concepts of the *socio-technical regime* and the *multi-level perspective*.

Socio-technical Regime

The field of sustainability transitions has grown in terms of attention paid to the need to solve grand societal challenges, such as climate change, food security, water management, social degradation, and rapidly aging societies (Bergh et al., 2011, Farla et al., 2012, Markard et al., 2012). This growing attention has started a debate over the need to endorse a fundamental shift towards a sustainable society. This debate is rooted in the broader perspective of systems of innovation, in giving attention to a need for a new and broader view of system failures, and replacing the old view of market failures. This attention has resulted in a call for a challenge-based innovation policy, replacing the prevailing focus of economic growth as the sole goal for innovation (Weber and Rohracher, 2012, Kuhlman and Rip, 2014).

The concept of *socio-technical regime* holds many of these central ideas and emphasizes the complexity of the grand societal challenges (Markard and Truffer, 2008, Markard et al., 2012). The concept is parallel to the technological regime in evolutionary theory (Rip and Kemp, 1998, Kemp et al., 1998). As an offspring of evolutionary theory, it pinpoints the challenges in changing the seemingly locked-in and deep-seated social structure. However, the field of sustainability transitions has introduced the concept to isolate the aspects that may change existing structures. Scholars in this field are mainly interested in identifying the aspects that are destabilizing existing regimes and constructing new ones (Elzen et al., 2004, Geels, 2004).

The idea of socio-technical regime is built on studies of historical transitions in societal functions; for example, in central functions in the area of transportation, from horse-drawn

carriages to automobiles, and from sailing ships to steamships (2002, Geels, 2005a). Recent literature has paid attention to patterns of sustainability transitions, such as those in electric vehicles (Kemp et al., 1998, Hoogma et al., 2002, Geels et al., 2012) and the role of governmental policy in fostering emerging technology (Lauber and Jacobsson, 2016, Raven et al., 2016b).

Such societal functions unfold over decades, developing out of the actions of many various actors. This extensive activity results in a tight interrelation, in a complex set of actions over time and across geographical space. The set of actions involve many various groups of people and stakeholders, such as technicians, managers, suppliers, consumers, pressure groups and politicians. The challenge in facing transitions occurs in these *incumbent systems*, in the nested relations of various groups of people. Moreover, sustainability transitions represent a major challenge since they involve a range of aligned changes. The problem is that these grand challenges are highly complex and that an innovation may offer solutions at one level at one point in time, and may represent problems at other times. The result is typically that the grand challenge remains unsolved (Bergek et al., 2008, Bergh et al., 2011).

Nonetheless, the field of sustainability transitions has stressed that social and technical change does occur. These changes co-evolve in similar ways as described by Van de Ven and colleagues, in a series of temporal innovations at various levels and over time. However, the field of sustainability transitions has emphasized the temporal element of these innovations; for example, in the time-based elements of new technologies, changed legislations, consumer patterns, and political trends and ideologies (Kemp et al., 1998, Geels, 2005b).

This field is still new in the discipline of innovation and has so far developed into two parallel but divergent perspectives. The perspective of technological innovation systems has focused on the system failures faced by specific technical functions and emerging industries (Bergek et al., 2008, Hekkert et al., 2007, Markard and Truffer, 2008). The multi-level perspective (MLP) has emphasized the complexity in three analytical levels of niches, socio-technical regime, and landscape (Geels, 2002, Geels, 2004, Geels and Schot, 2007). In my PhD project, I considered the MLP to be interesting as a framework when analysing the complex innovation processes. This consideration was anchored in the debate of the grand challenges, which has emphasized the role of public procurement (Edler and Georghiou, 2007, Rolfstam et al., 2011, Borrás and Edquist, 2013) and the challenges of existing structures to solve these complex problems with simple instrumental tools (Christensen and Lægreid, 2007, Weber and

Khademian, 2008, Ferlie et al., 2011). The perspective of the technological innovation system was considered less applicable to attend challenges located at the level of the system.

Multi-level Perspective

The MLP was developed by Frank Geels and colleagues (Geels, 2002, 2004, Geels and Schot, 2007) to explain the co-evolutionary processes of transitions. It provides three analytical levels – niche, socio-technical regime and landscape – to sort and frame this complex co-evolving dynamic. These analytical levels are comparable to the distinction of micro-meso-macro, but at the level of structuration in the degree of stability and continuity (Geels, 2005b, Smith and Raven, 2012). Figure 1 illustrates the levels of structuration and its dynamics of transitions.

Figure 2: The MLP: niches, socio-technical regimes, and landscape
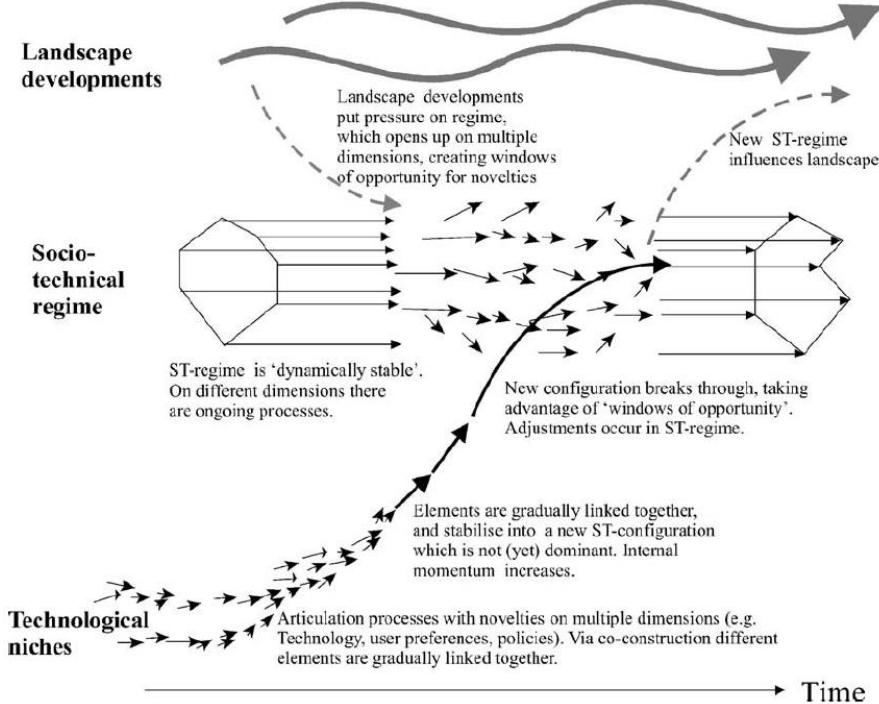
Niches are protected spaces for breeding novelties, such as in laboratories and demonstration projects (Geels, 2002, 2004). Such spaces give time and flexibility for the novelty to mature. Breeding is needed to improve technical deficits and to build new visions, beliefs, and social

networks for fighting against the existing socio-technical systems (Kemp et al. 1998; Hoogma et al. 2002; Smith and Raven 2012). This breeding can be distinguished in three key social processes (Geels, 2005b, Geels and Kemp, 2007). The first is experimenting and learning of shortcomings in the technical design. The second is creating visions of the promising nature of the novelty. The third is building a social network for enrolling supporters, partners and other actors, financially, technically and socially. This may sound neat but it is certainly not the case. Niches are always threatened by the existing socio-technical regimes. For a novelty to break through, many groups need to share the new vision (Rip and Kemp, 1998, Raven et al., 2016b).

Socio-technical regime is the deep structure of society, as in the general literature in the field of sustainability transition. The MLP has contributed with an additional component of stability in addressing a meta-coordination of the many sub-ordinated regimes of technological, science, policy, socio-cultural, and user-markets regimes (Geels, 2004, Geels and Schot, 2007); see Figure 2 for an illustration. Each of these regimes has its relative autonomy and distinct features. These features are defined in shared knowledge, language, and meeting places, which define a distinct rule-set of the various groups of actors in these regimes, such as technicians, suppliers, politicians, investors, pressure groups and customers. The regimes interlink in interrelated paths of current activities.

Figure 3: Meta-coordination of the socio-technical regime
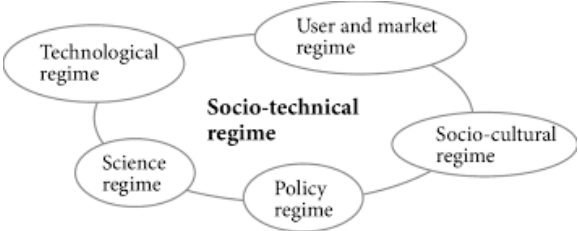
Source: Geels 2004, p. 905.

Landscape embeds these rule-sets at a higher order, in broader macro-economic trends and ideologies, infrastructure, geography and demography. These rule-sets reproduce the structuration of the contextual elements, but these contextual elements can also create pressure on the existing socio-technical regime and open windows for niches to break through. A relevant example is the pressure to solve the climate crisis and the related trends of sustainable transport, food security and water management.

The MLP has contributed to understand the complex dynamics of transition but has also been criticized for its abstractedness in terms of how these levels interact and create change in real life (Markard and Truffer, 2008, Geels, 2011, Bergh et al., 2011). However, these debates have contributed valuable viewpoints to my theorizing on innovation in public services. As already pointed out, it is at the core of my interest to identify explanations of drivers and hindrances at the aggregated level in the social context, on the observable outcome at the micro-level. The field of sustainability transition can extend the insight from the process theory of innovation with a framework for handling the complexity of innovation processes. As such, niches, socio-technical regimes and landscape are useful concepts.

Besides, there is a highly relevant debate going on in this field regarding the role of governmental policy and politics. The MLP has attributed a distinct role to governmental policy in breeding innovation at the level of niche. This perspective has also attributed a stabilizing element at the level of socio-technical regimes (Kemp et al., 1998, Geels, 2004). The MLP has been criticized for its supposedly limited understanding of policy and politics underlying long-term transitions (Smith et al., 2005, Avelino and Rotmans, 2009, Meadowcroft, 2011). Although this debate has not yet provided any clear-cut answers, it has drawn attention to critical elements of the political dimension to innovation, which can contribute to a better understanding of innovation in public services.

3.1.6 Providing a Pivotal Ground for Innovation in Public Services

The first part of this chapter has shown how the theory building in this thesis developed out of existing knowledge in the discipline of innovation. The chapter started by going back to the theoretical roots of Schumpeter (1937), in his questioning of the market mechanism, and his attention to the fundamental *social components* of innovation. Schumpeter explained how new products and new methods of production evolve out of *new combinations* in the circular flow of economic life.

I then showed how the real breakthrough for the theoretical roots of Schumpeter came with the seminal contribution in the *evolutionary theory* on economic change by Nelson and Winter (1982). Their contribution has laid the fundamental groundwork for neo-Schumpeterian thinking. They adopted the basic ideas from biology and claimed that *routines* generate behaviour in much the same way as genes. In theorizing on the micro-foundations of routines, they were strongly influenced by the organizational behaviourists. The idea of *technological regime* linked the micro-foundations at an aggregated level. For my theorizing on innovation in public services, the categorizing of the micro-foundation of routines and the

linking of it at the aggregated level of technological regime provided me with the basis for sorting the elements at the level of the organization (that is, the firm) and at the level of the distinct social context it is placed within.

Next, I focused on how the understanding of the aggregated level was developed further in the systems of innovation perspective. This perspective argued for a need for a holistic approach; that is, a need for *systems*. This broad approach also brought attention to new types of organizations and new elements. From my point of view, this contribution was particularly relevant in terms of the importance given to the role of politics and policy, and the many aspects these issues may play in the variety of public policies. Lundvall's critical dimension of interactive learning shows how these many elements are complexly interrelated in a cumulative process of combining knowledge. That section also showed how innovation in public services has been largely disregarded, and how the innovation literature has been dominated by studies of manufacturing. However, the discussion of *innovation in services* demonstrated how attention to *interaction* can help frame the phenomenon.

The chapter then focused on this interactive element by bringing in the process theory on innovation. This theory brought in the *innovation journey* as a useful road map to understand how innovation processes tend to unfold. In this perspective, the conception of *co-evolution* explains the non-linear dynamics in the interrelated acts of technical and institutional change. These interrelated acts operate at various levels. Technical advance unfolds at a micro-level of the innovation, and emerging industries at a broader aggregated level. This viewpoint is interesting given my interest in theorizing on a similar dynamic in public services.

The final part of the chapter introduced the field of sustainability transitions and showed how it has addressed the complex processes of innovation. This literature also focuses on co-evolution. However, the focus here has been on the lock-in as a result of the existing social structure, in *socio-technical regimes*. The *MLP* has helped frame the multifaceted dynamic of incumbent systems in the analytical levels of niches, socio-technical regimes, and landscape. However, the contribution of the MLP has also been heavily debated. In this research project, I believe that these debates have provided valuable viewpoints on the complexity of the processes at the micro level in niches and the underlying drivers and hindrances at the aggregated level of regimes and landscape. In particular, the debate of governmental policy and politics has been useful. Still, this strand of the innovation literature remains underdeveloped in its analysis of the political dimension.

Nevertheless, in contributing to developing theory on innovation in public services, knowledge on this political dimension is central. A pivotal consideration in this thesis is that public services are provided under the jurisdiction of the public sector. Being under the authority of the public sector implies that public services are managed and controlled by governmental decisions and public policy. This distinct social setting implicates a fundamental difference to innovation in the private sector, not only in the content and observable outcome at the level of a new public service, but also in the underlying dynamics, in the distinct context. Thus, to understand innovation in public services in full, it is necessary to have a fundamental understanding of governmental decisions and public policy. I now turn to the discipline of public administration and discuss how it can contribute to develop the theoretical framework to innovation in public services.

3.2   Public Administration

This second part of the chapter considers the theoretical building blocks from the scholarly discipline of public administration. This discipline does not have a "father", in the sense that Joseph Schumpeter was for innovation. However, the German sociologist Max Weber has played a central role for the discipline, in his component of the *ideal type of bureaucracy*, which resulted in the fundamental debate of implementation as *top-down* or *bottom-up*. I then shift my focus to the revival of the Weberian ideas by institutional theory, in the critical building blocks of *bounded rationality* and the *logic of appropriateness.* Next, I show how institutional theory has been applied as a framework to innovation in public services, in the three *paradigms to innovation* in public services, in *co-existing realities* of *bureaucracy*, *NPM* and *network*. The final section delves into the field of innovation in governance, in the emphasis given to the *inter-organizational level* of networks and the specificity of *public value*. This part ends in a summing up of existing knowledge from these various perspectives, and in considering how the neo-Weberian revival in institutional theory can contribute to a framework for explaining the distinct contextual specificities of innovation in public services.

3.2.1 Weberian Roots

The theoretical roots start here with Max Weber, in his concept of the *ideal type of bureaucracy*, and in the two models of implementation as *top-down* and *bottom-up,* which have their roots in his ideas.

Ideal type of Bureaucracy

Weber (1947) introduced the component of the *ideal type of bureaucracy*. His ideal type is a distinct organizational form, set in a bureau, and described in the following six main features:

1. *Formal hierarchical authority structure*
2. *Governed by official rules and regulations*
3. *Division of labour by functional speciality*
4. *Impersonal relationships separating the official position from the person*
5. *Employment by technical qualifications and formal examination*
6. *Full-time and career-oriented employees*

Weber emphasized the ideal type of bureaucracy as the purest form of rational-legal authority. The excellence is in the technical superiority and the procedural rationality of bureaucracy, in how it can coordinate by control, predictability, stability across governmental changes, precision, technical knowledge, separation of the office from the office-holder, and loyalty (Olsen, 2005, 2007, Scott, 1992).

In the discipline of public administration, as well as in the broader scholarly debate, the component of the ideal type of bureaucracy has had enormous influence. The scholarly debate has also regarded Weber's bureaucracy as a part of his broader contribution to the economic-cultural systems in society (Meyer and Rowan, 1977, Scott, 1992, Olsen, 2007). Critically, Weber (1947) designated rationality as a distinct trait of society in his own time. This was the early 1900s, a time of major changes, the growth of capitalism and the related centralization of the state. According to Weber, this transformation resulted in a predominance of the rational form for organizing. It was in this context that he saw bureaucracy as the exceptional form for organization compared to other modes for organizing that had dominated in earlier times. Weber (1968, p. 215) distinguished these various modes for organizing in *three types of authority*:

1. *Traditional authority is resting on an established belief in the sanctity of everyday routines, in the immemorial traditions, inherited or passed down by a higher authority, and the legitimacy of those exercising authority under rule.*

2. *Rational-legal authority is resting on a belief in the legality of enacted rules and the right of those elevated to poses authority under such rules to issue commands to authority under such rules to issue command*

3. *Charismatic authority is resting on a belief in an exceptional sanctity, heroism or exemplary character of an individual person and of the normative pattern or order revealed or ordained by him.*

Weber regarded only the traditional authority and the rational-legal authority types as stable enough for organizing in the modern capitalistic economic-cultural system. He argued that the charismatic authority type, on the other hand, operates only in shorter periods of crisis and war, in which an unstable situation makes room for exceptional leaders. When the situation becomes more stable, the authority type needs to adjust in the direction of the traditional or the rational-legal type; otherwise, it will fade and be replaced with a completely new social system. According to Weber, the rational-legal type is the most stable authority type, both in terms of its technical superiority and its procedural rationality. These structural elements are in sharp contrast to the other two authority types, in their strictly personal-based dominance.

With this, Weber made an important distinction between authority and power. *Authority* is when a person has a *legitimate use of power*, regardless of any resistance from others. Thus, the authority is legitimated in the structure of the formal hierarchical order of the bureaucracy. This definition of authority differs from Robert A. Dahl's (1961) definition of power as something that is strictly relational; for example, Person A has power over Person B if A has something B wants.

Weber's conception of the ideal type has served as a useful category of bureaucracy but it has also been debated. In the discipline of public administration, it has resulted in a lasting discussion of the distinction of the administrative tasks at the level of the bureaucracy, from the decision-making at the governmental level. I will now show how the fundamental models of implementation as either top-down or bottom-up have developed out of this debate, and consider how these two viewpoints of implementation can contribute as theoretical building blocks in a framework to innovation in public services.

Top-down and Bottom-up
The two models of implementation hold two contrasting ideas of the realization of a governmental goal established in the decision-making process.

The *top-down model* has been attributed to a classic study by Pressman and Wildavsky (1973). This study was of an implementation of a national governmental programme in Oakland, California. This national governmental programme was ambiguous and experimental in scope, and held several possibilities for the realization of the governmental goal. This resulted in conflicting ideas among the people who were assigned to the developmental programme at the local level in Oakland, who disagreed on central aspects described in the overall governmental goal. This resulted in further disagreements on the

means for implementing it. The result was that the programme was delayed due to the need for recurrent and extensive negotiations during the implementation phase. Based on these findings, Pressman and Wildavsky (1973) called for a precise definition of a governmental goal before it is rolled out into implementation phase.

The *bottom-up model* has been placed in a contrasting perspective, which has emphasized the continuous processes involved in implementation. According to some scholars, implementation cannot be separated into a clear start and a definite end (Elmore, 1980, Barrett and Hill, 1984). Implementation happens at all levels of the public administration system and at all points in the decision-making process. This model developed as a critique of the lack of attention to the decision-makers in the top-down model. In the bottom-up model, Barrett and Hill stressed how decision-makers operate at all levels of the public administration system. They described how decision-makers operate at the "top", at the national, regional, and local governmental level, but also in the related political processes; for example, in political parties, pressure groups, lobbyists, citizens, grass roots movements and networks. Importantly, decision makers also operate at the level of administrative entities, as units of expertise. Thus, to understand implementation, Elmore emphasized the use of *backward mapping*, instead of the traditional focus of the top-down implementation of a governmental goal.

Interestingly, these two models have been used in the debate on innovation in public services (Borins, 2002, Albury, 2005, Moore, 2005). However, most of the attention so far has been on normative assumptions, with little focus on the theoretical implications for *how* innovation in public services develops in these two distinct models. The debate has focused on the problematic democratic issues of a top-down model to innovation, in how a governmental goal is outlined at the national level, and forcing general objectives of innovation to the local level (Olsen, 2004, Osborne, 2006, Teigen et al., 2013). Within the same line of argument, the bottom-up model has been held as a preferred way of designing innovation in public services. The desirability has been outlined in the attention to local needs, but also in the consideration of experience-based learning in constant processes of implementation (Bartlett and Dibben, 2002, Moore, 2005, Roberts and Longley, 2013).

This thesis argues for how these two contrasting models can contribute to frame an important aspect as building blocks for innovation in public services. Given the contrasting characteristics of the two models, it is doubtful that we will find one clear-cut model for innovation in public services that fits all settings. This many-sided aspect of the phenomenon

of innovation in public services has also been pointed out by others (Pollitt, 2011, Lynn, 2013, Hartley et al., 2013). I will now go further into how institutional theory can provide a ground for developing a fundamental understanding of these many-sided aspects, and how this existing knowledge can help develop theory on these contextual specificities as theoretical building blocks to innovation in public services. This theoretical framework also displays how Weber's ideal type of bureaucracy is a critical pillar in the discipline.

3.2.2 Institutional Theory

The Weberian component of bureaucracy had a revival in institutional theory, explicated in the critical theoretical building blocks of *bounded rationality* and *logic of appropriateness*.

Bounded Rationality

Institutional theory has been influential in the discipline of public administration (Scott, 1992, 2008); Peters (2012) even described it as the "backbone" of political science. The influence has been in many different theoretical schools, including rational choice (Elster, Niskanen, Ostrom), historical institutionalism (Coase, North, Krasner) and sociological institutionalism (Selznick, Parsons, Mayo). These various schools differ on critical elements but all have their roots in *organizational behaviourism*.

Organizational behaviourism grew out of two branches: the Columbia school and the Carnegie school (Scott, 2004, Augier and March, 2008). While the former basically followed the sociological theory of Robert Merton, the latter has its roots in Weber but draws on insight from an amalgam of disciplines: economics, political science, psychology, and sociology. However, although the Carnegie school is neo-Weberian in roots, it clearly distances itself from his mechanical view of bureaucracy (March and Simon, 1958, Meyer and Rowan, 1977). Weber's ideas of authority, of legitimacy in the formal structure, have played a central part in this school of thought.

The core group at Carnegie were Herbert Simon, James March, and Richard Cyert and they focused on the capabilities of human behaviour in organizations. In so doing, they were strongly influenced by cognitive psychology in their attention to the limited capacities for human cognition and human's propensities for affective acts. The organizational behaviourists added to this the "problematic" setting of the organization. According to them, people in organizations are confronted with a constant flow of information, a vast number of choices to be made, and alternatives to be considered, evaluated and chosen. Herbert Simon's (1976, p. 79) notion of *bounded rationality* highlights the essence of their main points:

"It is impossible for the behaviour of a single, isolated individual to reach any high degree of rationality. The number of alternatives he must explore is too great, the information he would need to evaluate them so vast that even an approximation to objective rationality is hard to conceive. Individual choice takes place in an environment of 'givens' – premises that are accepted by the subject as bases for his choice; and behaviour is adaptive only within the limits set by these 'givens'."

The notion of bounded rationality emphasizes the constraints for making choices in organizations. According to March and Simon (1958), organizations are rational in intent but the pursuit of rationality does not guaranty that rational choices are made. Organizational goals can be well-defined and stable, but also ambiguous, inconsistent, and changing. There can be several goals, which can conflict. People in organizations also have personal goals that can differ from the official organizational goals. In this setting, choices are always constrained in rationality.

March and Simons also argued that choices involve human emotions, of affections, feelings and preferences. The emotions relate to their beliefs, meanings and aspirations. Their shared assumptions in the organization – that is, in existing ideas, beliefs, and routines – constrain the rationality. The emotions can vary with their position in the organization and with their situation in the larger social and historical context.

The attention of the organizational behaviourists was the firm, but their contributions have also had major influences outside of economics. In contributing to developing a theory on the contextual specificities for innovation in public services, Charles Lindblom's (1959) notion of *muddling through* can serve as a useful view, bridging the boundedness of politics to the context of governmental decisions and public policy. Lindblom argued that decision-makers only consider choices and alternatives that are directly occurring to them. Other choices and alternatives are simply constrained by the vast numbers to be considered. I will now look at the perspective of new institutionalism and show how the idea of the logic of appropriateness can help to further develop the understanding of these elements when theorizing on innovation in public services.

Logic of Appropriateness
James March was also one of the initiators here, together with the Norwegian public administration scholar Johan P. Olsen. In their seminal contribution naming the movement "The New Institutionalism: Organisational Factors in Political Life" (March and Olsen, 1984), they called for a need to bring back institutional aspects of political life into the study of political organization.

Their contribution developed as a reaction against the dominant thinking of rational choice. They found rational choice utterly reductionist, in the simple outline of collective action to governmental decisions. March and Olsen argued that policy studies cannot be reduced to attention solely on instrumental outcomes. They stressed that action in public organizations is also created by elements other than governmental decisions. Institutions also create critical elements of order; for example, in how authority and power constitute, legitimate and redistribute. March and Olsen (2006, p. 8) argued that:

> *"Institutions simplify political life by ensuring that things are taken as given. Institutions provide codes of appropriate behaviour, affective ties, and a belief in a legitimate order. Rules and practices specify what is normal, what must be expected, what can be relied upon, and what makes sense in the community; that is what a normal, reasonable, and responsible citizen, elected representative, administrator, or judge can be expected to do in various situations."*

They also distanced themselves from the pure contextual view of politics as just reflections of society. They stressed the need to understand the relative autonomy and the independent effect of political institutions. According to March and Olsen, there is a common perception of what makes sense and what is taken for granted in a certain organizational context. Rules are followed in *a logic of appropriateness* because rules are rightful, legitimate and natural. However, this does not mean that institutions are stable; on the contrary, change is an ongoing aspect. The organizational behaviour transforms through continual processes of interpretation and adaptation, in such a way that, as March and Olsen (1989, p. 24) put it:

> *"(...) future actions become more consistent with what was more sensible in the past."*

Still, they emphasized that history is inefficient; organizational learning is always constrained by *ambiguity*, of previous action, historical chosen paths, and shared assumptions. March and Olsen (1984, 2006) argued that one never knows what will be the best solution; people learn by trial and error and by doing more of what results in positive outcomes. However, a critical pillar of their perspective is that organizational choice is always made under conditions of *uncertainty*.

March and Olsen outlined the elements of ambiguity and uncertainty in their early writings, in their perspective of organizations as *garbage-cans* (March and Olsen, 1975, 1994). They argued that there are many elements of ambiguity and uncertainty for organizational choice. A decision is an outcome of several relatively independent streams in an organization. It depends on the problems, the solutions, the choice opportunities, and the participants. One never knows who will participate in a choice situation, and whose problems and solutions will

influence a given situation. They also stressed that the organizational choice does not solely depend of the given choice situation, but also of other parallel situations demanding the attention of the participants, their problems, the solutions, and the choice opportunities in the organization.

New institutionalism, as well as institutional theory in general, has left a well-studied field of change and continuity. Still, organizational scholars have focused little on *how* change happens (Scott, 2008, Kuipers et al., 2014). In the broader public administration discipline, their explanations have been described as deterministic, with most emphasis still on the institutional of givens (Van de Ven and Poole, 1995, Rashman et al., 2009). Still, institutional theory has been regarded an important framework in the debate of innovation in public services (Halvorsen et al., 2005, Sørensen and Torfing, 2011a, Fernandez and Rainey, 2006). I will now show how institutional theory has been applied in one recent perspective of the debate – namely, the three paradigms to innovation in public services (Hartley, 2005, Benington, 2011, Hartley et al., 2013) – and consider how this theoretical framing has contributed to the development of my theoretical framework to the phenomenon.

3.2.3 Three Paradigms to Innovation in Public Services

The recent debate on innovation in public services has framed three paradigms to innovation in public services as *co-existing realities* of *bureaucracy*, *NPM* and *network*.

Co-existing Realities

Jean Hartley (2005) introduced the perspective of the three paradigms to innovation in public services. She argued that the phenomenon of innovation has different connotations in three paradigms that have dominated in the public administration literatures of traditional public administration, new public management (NPM), and networked governance.

These paradigms have also been pointed at by others (Entwistle and Martin, 2005, Stoker, 2006, Bryson et al., 2015), although the headings differ to some extent in the literature. Hartley's three paradigms built on an earlier contribution of changing conceptions of governance and public administration, together with John Benington (Benington and Hartley, 2001). Benington (2011) has also contributed by framing the ideas of innovation in these paradigms. Their central point is that these three paradigms represent competing world views of how innovation develops. Simply put, innovation develops in the various roles of the key actors; that is, of politicians, public managers, and populations. These roles differ greatly

between these three paradigms. Figure 3 provides an overview of Hartley's paradigms. The next section will return to the details in the three paradigms.

Figure 4: Three paradigms to innovation in public services

	'Traditional' public administration	*'New' Public Management*	*Networked governance*
Innovation	Some large-scale, national and universal innovations	Innovations in organizational form more than content	Innovation at both central and local levels
Improvement	Large step-change improvements initially, but less capability for continuous improvement	Improvements in managerial processes and systems. Customer focus produces quality improvements in some services	Aiming for both transformational and continuous improvement in front-line services
Role of policy-makers	Commanders	Announcers/commissioners	Leaders and interpreters
Role of public managers	'Clerks and martyrs'	Efficiency and market maximizers	'Explorers'
Role of the population	Clients	Customers	Co-producers

Source: Hartley 2005, p. 29.

The paradigms link to distinct *historical periods* and to dominant *ideological outlooks* (Hartley, 2005, Benington, 2011, Hartley et al., 2013). Still, both Hartley and Benington have emphasized that these three paradigms are not absolute in time and space, but can co-exist and compete, as *layered realities*. As Hartley (2005, p. 29) put it:

> *"Each paradigm may be linked to a particular ideology and historical period. However, they can also be seen as competing, in that they co-exist as layered realities for politicians and managers, with particular circumstances or contexts calling forth behaviours and decisions related to one or the other conception of governance and service delivery."*

In this layered view, one situation calls for one type of behaviour related to one conception, and another situation calls for another type of behaviour related to another conception (Hartley, 2005, Hartley et al., 2013). Coule and Pathmore (2013) have made an interesting contribution, which can work as a supplement to understand the institutional character in this viewpoint. They referred to Hartley's layered realities as "competing institutional logics", as different reasoning represented in the organizational setting. Still, their contribution leaves the question of how the logics interlink with the reasoning at the micro-level of the innovation unanswered.

Hartley and colleagues have made some interesting attempts to characterize types of behaviour at the micro-level related to these three paradigms. Pedersen and Hartley (2008) characterized behaviour in three typical behavioural strategies: self-creation, competition and networking. Hartley, Sørensen and Torfing (2013) identified similar patterns: organizational entrepreneurship, management culture and multi-actor engagement. However, they also pointed out that there is limited understanding of when, where, and why these various behaviours are brought forward. They called for the need for a contingency theory to specify and explain these various strategies.

Hartley's (2005) three paradigms have been widely referred to in the debate of innovation in public services (Koch and Hauknes, 2005, Fuglsang, 2010, Osborne and Brown, 2011, Sørensen and Torfing, 2011a, Djellal et al., 2013, De Vries et al., 2016). From my perspective, this popularity demonstrates how the perspective has given critical insight to the phenomenon of innovation in public services. However, it also appears that their idea of co-existing realities has received little attention in the debate of innovation in public services. From my viewpoint, this idea pinpoints their contribution, in a nuanced view to the many outcomes that have been recognized as innovation in public services. This idea has also given emphasis to the various situations that call for one behaviour, and another situation that calls for another pattern. I will clarify their critical contribution by going into the three paradigms in detail. Given that the headings of these three paradigms differ in the literature, I have chosen to refer to these by the classic conceptions of *bureaucracy*, *NPM* and *network*.

Bureaucracy – NPM – Network
Bureaucracy, or traditional public administration as Hartley (2005) originally named it, is the paradigm with the longest historical roots. This paradigm dominated the public administration thinking throughout the post-war period until the early 1980s (Hartley, 2005, Benington, 2011, Coule and Patmore, 2013). In this paradigm, innovation develops as a result of *large-scale legislative decisions*. An example is the many governmental responses to rebuild countries after World War II. In these grand policy programmes, the politicians played the active roles as *commanders*. Public managers, on the other hand, were ascribed to the passive role of *clerks*. Their role was simply to carry out the governmental decisions as officials with no will of their own. The paradigm also indicates that they may act as *martyrs*, who carried out governmental instructions even though they may have had strongly contrasting perceptions. In this top-down viewpoint of implementation in the public administration

system, the population is not actively involved and has been assigned to the role of *clients* (Hartley, 2005, Pedersen and Hartley, 2008).

New public management (NPM), as it has been called in most contributions, entered as an alternative paradigm in the public administration literature at the end of the 1970s. It was brought forward by the neo-liberal economic thinking that entered the political agenda and the governmental offices at that time (Hartley, 2005, Benington, 2011, Coule and Patmore, 2013, Hartley et al., 2013). In this paradigm, innovation results from quasi-market models of *new types of organizational forms and managerial processes*. An example is the organizational form that separated the managerial processes of the role of the purchaser from the role of the provider. Such new organizational forms and managerial processes placed public managers in an active role; that of *efficiency and market-maximizing actor*. Their role became to search for improvements to meet the needs and the wants of the population. Here, the population is actively involved as *customers* who express their needs in their choices of public services. The role of politicians, on the other hand, has been reduced to *commissioners* of change. National politicians may act as commanders also in this paradigm, in the initiation of innovation through legislations. However, their authority is restricted at the local level by the obligations defined in the budget deliverables.

Network – or networked governance, as Benington and Hartley (Hartley, 2005, Benington, 2011) called it – is the current paradigm that entered the public administration literature in the mid-1990s. In this paradigm, innovation results from *transformational change* at an overall social level. Still, it has also been argued in this paradigm that innovation can be found in minor and continuous improvements at an operational level (Hartley 2005). In this paradigm, the role of politicians has been revitalized as *leaders*, who initiate innovation through governmental decisions. In addition, they have an important role as *interpreters* of existing ideas into new legislations. In this viewpoint, it is a central belief that ideas do not necessary initiate at the level of government. Ideas most often originate in the work of public managers. They result from their role as *explorers*, who continuously search for new ways to deliver and improve services. Besides, they explore the services in interaction with the population. Thus, the population has been assigned the role of *co-producers* in this paradigm. This idea differs from the belief of plain feedback from the choice of the individual customer, to the complex feedback loops of continuous improvement and changing needs of the population at an overall level.

From my perspective, these three paradigms demonstrate how innovation in public services cannot be reduced to simple definitions. More specifically, it cannot be reduced to the simplistic tools called for in the debate on the need to foster innovation in public services. Innovation in public services needs to be regarded in the distinct institutional setting it operates within, initiated and developed by the key actors of politicians, public managers and populations in their given roles in the context.

I will now delve further into the current paradigm of networks, in the perspective of innovation in governance, to consider how this perspective can help build further understanding of this nuanced view towards a robust knowledge to innovation in public services.

3.2.4 Innovation in Governance

The field of innovation in governance has focused on the *inter-organizational context of networks* and the notion of *public value*.

The Inter-Organizational Context of Networks

The last two decades have seen an ongoing debate of networks in the discipline of public administration (McGuire et al., 2010, Torfing, 2013). The debate has called on networks as a distinct mode for organization and its challenges as a mode for the public sector (Pollitt, 2003, Christensen and Lægreid, 2007, Agranoff, 2006). The newness of networks has been questioned since networks have also flourished in the paradigm of NPM (Alford and Hughes, 2008, Rhodes and Wanna, 2007, Pollitt, 2012). However, the advocates of the construct of "networked governance" have emphasized the relational aspect of the form, in contrast to the output focus in NPM (Stoker, 2006, Osborne, 2006). The attention of these advocates has been on the inter-organizational relationships and the governance of these processes. Still, there is little agreement about the distinct form and strength of this relational aspect of networks.

Moreover, the meaning of "governance" differs in the many contributions. Jakob Torfing and colleagues (2013, p. 2) have elaborated on this important aspect:

> *"At its most general, governance in the public sector is about steering and control of society and the economy through collective action that aims to achieve common goals. In most traditional writing about steering and control, the dominant assumption has been that such steering would occur through formal state actors and governmental procedures."*

They assumed that the traditional mode for steering and control continues in many settings, policy domains and country practices. In addition, other forms operate alongside, in combination with and in replacement of the traditional forms of organizing. As a result, the structure for steering and control has become many-sided and complex.

Critically, this thesis does not focus on whether network is an aspect that just has become or already was an existing organizational form. Instead, I have presumed that networks are an important aspect of the ongoing debate in the public administration literature. More importantly in this thesis, network is a critical aspect of the debate of innovation in public services. Nonetheless, I argue that the structure in the public sector has certainly become complex, which requires a comprehensive examination.

Jean Hartley (2011, Hartley and Skelcher, 2008, Hartley et al., 2015) has also been central in this perspective. In fact, her contribution of the three paradigms to innovation in public services (Hartley 2005) is a part of this broader perspective, although the argument was more extensive in this contribution in the co-existing realities of the paradigms. Hartley, together with Mark Moore explicitly defined the perspective of innovation in governance in a paper entitled "Innovation in Governance" (Moore and Hartley 2008). They argued for a need of a distinct approach to understand the specificities of the phenomenon. As Hartley (2005, p. 27) put it:

> *"Much of the innovation literature has derived from new product development, where an innovation in technology can be observed. Innovations in governance and services are more ambiguous. Here, innovation is usually not a physical artefact, but a change in the relationships between service providers and their users."*

According to Hartley, innovation in governance seldom develops in a "product manner", and it therefore differs from the aspects attended at in the general literature of innovation. Most importantly, the locus of change is often hard to define in the public sector. The innovation breaks with the organizational boundaries, as well as with the structural arrangements.

Moore and Hartley stressed that, given this characteristic, it is difficult to evaluate and justify an innovation in the public sector. In the private sector, successful innovation is often seen to be a virtue in itself; that is, as a mean to ensure competitiveness in new markets. In the public sector, on the other hand, innovation is justifiable only where it increases public value, in a qualitative judgment of its contribution to public value.

Hartley (Hartley, 2005, 2008) emphasized that innovation in governance is not a new type of innovation, in addition to already acknowledged types of innovation in products, processes, organizations, etc. More correctly, it is a new dimension of these types of innovations. In the public sector, these types are all parts of the overall governance system. These innovations can be top-down, bottom-up, sideways, and externally initiated.

Public Value

The notion of public value was originally introduced by Mark Moore (1995) as an analytical tool for public sector managers. The notion was introduced as a parallel to private values for strategic management in the private sector (Benington and Moore 2011). By introducing the idea, Moore (1995) called on the need to understand the attention of the public manager in parallel with, but also in contrast to, the simple aggregation of the interests of the customers. He stressed the collective responsibility in the public sphere and how it contrasts from the private responsibility, which can easily be singled out and handled over to the market, in a quantifiable entity.

In general, public value is more ambiguous in character than the economic value in private sector companies. Value creation in knowledge, welfare, health, and general improvement are not easily defined and measured (Benington and Moore, 2011b). The value creation is multi-faceted and often problem-oriented in nature. Moreover, the public value changes over time and context. It has a shifting character, also in the methods for evaluating it. The evaluation must go beyond the instrumental calculation of economic profit to also consider the broader concerns of society (Hartley, 2008, 2011, Hartley et al., 2015).

Benington (2011, p. 31) summarized the problem in the following twin dimension:

"What the public values and what adds value to the public sphere."

His twin dimension illustrates the main problem in the complexity and the shifting interests underlying in the public sphere. Problems in the public sector do not always have a straightforward solution; possible solutions need to be valued in the distinct context, to the relevant interests, the concrete stakeholders, and the social needs of the citizens and consumers of public services.

Benington and Moore (2011) pinpointed the challenge with *wicked problems*; these are complex problems that cut across existing structures, such as climate change, food security and ageing. Scholars in other perspectives have also highlighted the challenges in the need to

create higher-ordered processes that cut across the single-purpose organization (Weber and Khademian, 2008, Ferlie et al., 2011, Termeer and Noteboom, 2014). The literature of joined-up (Pollitt 2003) and whole-of-governance (Christensen and Lægreid, 2007) have addressed the need to create higher-order processes, but have also presented the difficulties in implementing such vertical initiatives. According to these scholars, the problem is in the existing structure, in the strong arrangements of horizontal coordination. The existing arrangements are organized in specialized policy domains and organizational divisions. The specialized divisions demand all of the resources and leave little for vertical activities.

The public value framework has also been questioned in a general sense, most directly by Rhodes and Wanna (2007), who attended the downgrading of politics in the framework. According to them, politics is ever-present and cannot be side-lined with the interests of various stakeholders. They proposed that public value can, at best, be regarded as a tool for public servants to identify and implement operational improvements at the workplace.

In this thesis, these discussions of public value and the idea of an inter-organizational context can be useful contributions with which to understand the specificity of innovation in public services. However, these discussions also demonstrate a new field, which has so far contributed little to the development of a theoretical framework to innovation in public services.

3.2.5 Specificities of Innovation in Public Services

This second part has shown how the theory building in this thesis has developed out of knowledge in the discipline of public administration. It started in the roots of Max Weber, in his *ideal type of bureaucracy,* and how this component has influenced the discipline. He regarded bureaucracy as the outermost form of rational-legal authority. It defines the authority in the structure, in the formal hierarchical order. With this, he differentiated authority from power.

The pure separation of legal authority from governmental decisions has been one of the most heavily discussed themes in the discipline. In the present thesis, it is certainly relevant in the discussion in the two models of implementation as *top-down* and *bottom-up*. These two models have been addressed in the ongoing debate of innovation in public services. However, most of the attention so far has been on normative assumptions, with little on the theoretical implications for *how* innovation in public services develops in the two distinct models. As discussed here, the top-down model may appear most related to Weber's bureaucracy, in its

positioning of the governmental decision at top, whereas the bottom up-model model has been held as a way to design innovation in public services. On the other hand, as Pressman and Wildavsky's (1973) classic study showed, the distinction between the two models is not that clear-cut. Notably, the bottom-up model implies that it is not a start or an end to the implementation. It means that the governmental goals and the practical policy are tightly interrelated but also complexly tangled. Nevertheless, given the contrasting discussion of the two models in the ongoing debate of innovation in public services, it is doubtful that we will find a single clear-cut model for innovation in public services that all of these scholars agree will fit all settings.

I then considered the contribution of the institutional theory, which has been influential in the discipline. The organizational behaviourists have problematized the difficult relation between the limited human capacity for storing and handling information, with the vast number of choices to be made and alternatives to be considered in the organization, conceptualized in the *bounded rationality*. The organizational behaviourists attended the firm but have also had major influence outside economics. March and Olsen made a seminal contribution to the discipline of public administration, in their perspective of new institutionalism. According to them, political choices are always made in a setting of institutionalized routines. The *logic of appropriateness* simplifies political life, in rules regarding what makes sense and what needs to be done in a certain situation. The institutional context can appear as a hinder for innovation, but it is central in this perspective that organizations change over time. However, it has contributed little to understand *how* change happens.

This thesis calls attention to its vital ground for understanding the phenomenon of change and continuity. The recent perspective to the three paradigms to innovation in public services has demonstrated the prospects but has provided little discussion of how the theoretical framework has contributed to develop the knowledge. Their contribution has been in framing the competing world views to how innovation develops, in *bureaucracy, NPM,* and *networks*. These world views *co-exist as layered realities*, where a certain situation calls forth a behaviour related to one conception, and another situation has another behaviour related to another conception. Regarded in this way, the perspective can contribute with a nuanced perspective to the many outcomes that have been recognized as innovations in public services.

The perspective of the three paradigms is placed within the field of innovation in governance, which has also emphasized other specificities of innovation in a public service context.

Innovation cannot be evaluated at the level of a single organization, but needs to be regarded at the level of an *inter-organizational context*. Also, innovation is only justifiable when it increases *public value*. The discussions of these two elements in the broader discipline of public administration show that there are many related and conflicting ideas. To date, however, few of these have been targeted at creating knowledge to the phenomenon of innovation.

Thus, literature in the discipline of public administration has addressed the phenomenon of innovation in public services, but it is still in its infancy; there is no clear theoretical framework, only many discussions, which partly relate and partly conflict, and little comprehensive understanding of how they relate. These discussions simply show that the thinking of innovation still lacks a definition in this discipline. More critically, the ongoing debate of innovation in public services has few references or conceptually oriented discussions related to these fundamental theoretical building blocks in the in the discipline of public administration. In other words, the debate has few discussions of how the existing constructs can contribute as building blocks to develop further understanding of the phenomenon of innovation in public services. As I have pointed at in this thesis, this lack of theoretical roots is problematic in the view of the myths and misinterpretations that have dominated in the debate.

3.3   Innovation in Public Services

So far, Chapter 3 has shown how my theoretical framework to innovation in public services has developed out of existing knowledge in the two scholarly disciplines of innovation and public administration. This third part of the chapter combines and extends this existing knowledge, discussing how it can help build a further understanding of the ongoing debate of innovation in public services. Moreover, I discuss how the combination of existing knowledge can help develop new knowledge on drivers and hindrances to innovation in public services, and which may contribute to the conceptualization of the underlying social mechanisms of the phenomenon. Again, the consideration of the theoretical framework starts in the theoretical roots of Schumpeter. I now discuss how his attention to the social component has grown into a *social dimension* in the evolutionary theory to innovation. I then turn to the discipline of public administration and consider how explicit attention to the theoretical roots of Weber can extend the knowledge of the specificities of innovation in public services, in a *dimension of legal authority*. Finally, I end the chapter by elaborating on the *layered dimension* pointed at

in both disciplines, on the observable outcome of innovation in public services at the micro-level, and the drivers and hindrances at the aggregated level in the distinct social setting.

3.3.1 The Social Dimension

The first part of Chapter 3 presented the theoretical building blocks from the scholarly discipline of innovation. It started in the theoretical roots of Schumpeter, in his questioning of the dominant view of the passive market mechanism of equilibrium. Schumpeter explained how new products and new methods of production evolve out of continuous and discontinuous combinations in the circular flow of economic life, simplified here are new combinations.

A critical motivation in this thesis has been to acknowledge the Schumpeterian roots. My motivation has grown out of an ongoing debate about innovation in public services, in which the market mechanism has attracted considerable attention. This mechanism has been promoted by believers of the "invisible hand" – that is, the passive mechanism of the market – who have argued that the mechanism is problematic for innovation in public services, in a related belief of *the lack of the market mechanisms* in the public sector (e.g. Altshuler and Zegans, 1990, Borins, 2001). According to this line of thought, the public sector faces a problem in that there is a lack of reward for motivating employees: no bonuses, pay rises, or share ownerships. By contrast, innovation failure is eagerly punished by the media, and the negative stories can be destructive for the careers of both politicians and public servants. The suggested solution has been to import principles from the private sector, to stimulate a pseudo market of competition and reward for successful innovation.

On the other hand, the overall belief in the market mechanism has been given attention by advocates of *the distinct governmental and political context*. They have emphasized the special characteristics of the governmental and political setting for innovation in public services, and how this special context conflicts with the view of the prevalence of the market to solve public sector problems (e.g. Kalu, 2003, Hartley, 2011, Torfing, 2013). According to this literature, even the attention given to the market mechanism in the debate can be a hindrance for innovation in public services (e.g. Olsen, 2004, Moore and Hartley, 2008, Teigen et al., 2013). The attention may leave a mistaken belief in the phenomenon, which can be problematic in light of the market thinking in the dominant ideological outlook of NPM over the last two decades (Røste, 2008, Langergaard and Scheuer, 2012).

Nonetheless, if one takes the viewpoint of Schumpeter's critical dismissal of the market mechanism as a starting point, this debate seems to have created unnecessary divergence. Following from his writings, the lack of market mechanism is not necessary problematic for innovation. Schumpeter's focus was on the drivers of various social components, framed in the creative destruction and the creative assimilation. Besides, the breakthrough in the evolutionary theory and the revival in the neo-Schumpeterian approach has demonstrated that the social dimension has directed the attention at mechanisms other than the passive market, such as routines, regimes, systems, interactive learning and co-evolution.

Another reason for returning to the theoretical roots of Schumpeter was to display the challenges he had in breaking ground. This knowledge can contribute with insights into the similar challenges for breaking ground for innovation in public services, as represented, for example, in the dominant thinking of *the dualism of public and private sector*. The perspective of systems of innovation has shown how the topic of innovation in services faced a similar issue in the dominance of studies of manufacturing, and how the dominance has resulted in an analytical impasse to innovation in services (Drejer, 2004, Miles, 2005, Gallouj and Savona, 2009). In grounding the knowledge of innovation in public services in the fundamental roots of Schumpeter, the present thesis underlines the need to avoid a similar impasse by over-emphasizing the differences between the public and the private sector.

Moreover, the growing field of sustainability transition has brought a new turn in the discipline of innovation, in *the need for a mission-oriented innovation policy* (Weber and Rohracher, 2012, Kuhlman and Rip, 2014). Their attention replaces the prevailing focus of economic growth as the sole goal for innovation policy. This literature has turned attention towards the grand challenges of climate change, food security, social degradation, and rapidly ageing societies, and how these are locked in within incumbent system failures in society, in existing legislations, norms, and beliefs.

These social challenges, and the wicket problems they have caused, have also been discussed in the discipline of public administration. This literature has focused on the major challenges for the policy planners given the many areas of interest involved. Consider the example of climate change, which involves many policy domains, including agriculture, international development, energy, transport and health. These many areas engage many actors. The problem is that these actors often hold different views about what are expedient solutions. Their solutions are partial and can generate new problems for other interest groups and at

other points in time (Roberts, 2000, Weber and Khademian, 2008, Ferlie et al., 2011). However, the public administration literature on *wicked problems* has only superficially addressed the potential solutions of innovation in public services, and the innovation literature on sustainability transition has only limitedly addressed the problem related to governmental policy and politics. Thus, in combining and extending on this social dimension, this part of the chapter has demonstrated a critical parallel in the two disciplines, and where there is a need for focused attention. The second dimension has grown out of this realization and attempts to further it.

3.3.2 The Dimension of Legal Authority

The second part of Chapter 3 presented the theoretical building blocks from the scholarly discipline of public administration. This part started in the theoretical roots of Max Weber, in his ideal type of bureaucracy. Moreover, my examination of the Weberian roots attempted to explain his idea of bureaucracy as part of his greater contribution to the economic-cultural system of society. Weber distinguished between three types of authority, in which he regarded bureaucracy as the most stable form for organizing one of the types: rational-legal authority.

Weber's view has served as an important pillar in the discipline of public administration; for example, for the fundamental debate of implementation as top down or bottom-up, and for the root of the influential institutional theory. In the debate of innovation in public services, on the other hand, it is my view that his fundamental ideas have received remarkably little attention. This thesis investigates explicitly how focused attention on the Weberian roots can contribute to develop a robust framework to the specificities of innovation in public services.

The need for grounding the knowledge in the Weberian roots also has its reasoning in the ongoing debate of innovation in public services. In this debate, Weber's fundamental contribution has been largely simplified and juxtaposed in *the mechanical idea of the top-down model* to innovation in public services (Borins, 2002, Albury, 2005, Borrás and Edquist, 2013). As already pointed out in the section on top-down and bottom-up implementation, this debate has centred around normative aspects, offering little about the theoretical implications of the two models. As shown here, the classical study of Pressman and Wildavsky (1973) demonstrated that it is difficult to implement ambiguous governmental goals. The ambiguous governmental goal did not result in efficient implementation, but resulted in serious delays at the local level.

Furthermore, the study of Pressman and Wildavsky showed how an ambiguous governmental goal opened a window for experimenting and learning at the local level. This finding is certainly interesting in my attempt to develop theory to innovation in public services. We tend to think of governmental policy as something that is final and clear. However, as indicated above, a governmental goal can be shaped into different forms also during the implementation process; that is, after it has been decided at the top level of national or regional and local government. This cascading aspect of the existing knowledge of implementation has received little attention in the debate of innovation in public services.

In order to develop further the existing knowledge of implementation, this thesis has explored the influential contribution of institutional theory in the discipline of public administration (e.g. Scott, 2008, Peters, 2012). As indicated above, this theory has left us with a well-studied field of change and continuity but has contributed little to understand how change happens (Van de Ven and Poole, 1995, Rashman et al., 2009, Kuipers et al., 2014). However, the recent perspective of the three paradigms to innovation in public services (Hartley, 2005, Benington, 2011, Hartley et al., 2013) has demonstrated how a critical understanding of the phenomenon can be developed. Besides, organizational behaviourism is also a critical pillar in the evolutionary theory in the discipline of innovation. In this thesis, I argue that there is potential to extend this knowledge by building on March and Olsen's (1984, 2006) seminal contribution on new institutionalism.

The need for an institutional framing has grown out of the debate of innovation in public services. In the debate, advocates of *the measurable outcome of innovation* have pointed at the need for clear criteria to quantify and evaluate the phenomenon in observable outcomes (Damanpour and Schneider, 2008, De Vries et al., 2016). On the other hand, opponents have argued that *the phenomenon is conflated when quantified* in measurable outcomes (Pollitt and Bouckaert, 2009, Fuglsang, 2010, Torfing, 2011). The field of innovation in governance has highlighted this issue by emphasizing the need for an overarching approach to evaluate and justify innovation in public services in an inter-organizational context and in a related issue of public value. Scholars in this field regard public values as collective, multifaceted, problem-oriented and changeable over time and context, in contrast to the simple measurable outcomes in private value creation (Moore and Hartley, 2008, Hartley, 2011, Ansell and Torfing, 2014). Their discussions of these complex elements show that there are many related and conflicting ideas. These many ideas also relate to other topics, which have objectives other than creating a robust knowledge of innovation in public services.

These broader discussions have attended *the role of networks*; for example, to overcome existing institutional boundaries of traditional single-purpose public organization in contributing to solve wicked problems (Pollitt, 2015b, Head and Alford, 2015). The complexity of wicked problems has pointed out the need for overarching solutions in order to handle the number of involved actors and cross-cutting areas of existing policy (Roberts, 2000, Weber and Khademian, 2008, Ferlie et al., 2011). However, as these scholars have stated, existing institutional arrangements also represent a main challenge for arriving at overarching solutions (Pollitt, 2003, Christensen and Lægreid, 2007, Lægreid and Rykkja, 2015).

As indicated above, the recent field of sustainability transition in the discipline of innovation has assigned a special role to governmental policy to endorse change, in *a mission-oriented innovation policy*. Still, the literature has largely neglected the underlying processes of governmental policy and politics (Smith et al., 2005, Meadowcroft, 2011, Raven et al., 2016a). The debates of this neglected issue have contributed to my understanding of innovation in public services, by emphasizing relevant aspects on the critical political dimension of *wicked problems*. However, it is important to note that it is only in combination with the existing knowledge in the discipline of public administration that my understanding has been developed, as demonstrated here in the legal dimension. Simply put, the debate in the field of sustainability transitions has identified important issues, and the existing knowledge of policy and politics in the neo-Weberian approach has contributed to develop it further. This reasoning of the legal dimension also leads to the third critical contribution, on a layered dimension.

3.3.3 The Layered Dimension

My realization of the layered dimension resulted from back-and-forth discussions of the existing knowledge in the two disciplines. To put it simply, it started in the perspective by Hartley and colleagues (Hartley, 2005, Benington, 2011, Hartley et al., 2013), in the three paradigms to innovation in public services. They explicitly pointed out that these three paradigms are distinct historical arrangements and ideological outlooks, but they also co-exist as layered realities. It means that certain situations call for certain types of behaviour related to conceptions in one of the paradigms. While they have made some attempts to characterize types of behaviour related to the three paradigms, these have so far resulted in little understanding of when, where, and why these various types of behaviour co-exist and are called forth.

The layered dimension has also been focused on in the discipline of innovation. The field of sustainability transition has emphasized a layered character in the multifaceted processes of innovation. In so doing, the sustainability transition literature has pinpointed the fundamental processes of stability and change underlying in the processes of transition. The MLP (Geels, 2002, 2004, Geels and Schot, 2007) has provided an analytical distinction to frame these multifaceted processes, in the levels of niches, socio-technical regime, and landscape. The MLP has been widely criticized, particularly for its abstractedness. Still, the broader field of sustainability transition literature has been remarkably united in the idea of socio-technical regime.

The idea of socio-technical regime rests on a belief of a seemingly stable deep-structural aspect. These structural aspects align at the level of society, in coordinated rule-sets that inform, guide and constrain social action. These interrelated processes involve a range of multi-dimensional interactions, in the elements of political trends, ideologies, changed legislations, user patterns, new technology, etc. Scholars have argued that these elements evolve together in series of temporal innovations at various levels and over time. The series of temporal innovations are multifaceted in character and can offer solutions at one level at one point in time and problems at others. The concept of niches has also been applied broadly to frame processes of generating of an innovation and how these processes happen in protected spaces. Thus, this multifaceted framing to innovation demonstrates the critical aspect of time in the layered dimension.

In this thesis, I have argued that this knowledge can be useful in combining and extending on the perspective of the three paradigms to innovation in public services. The layered dimensions of socio-technical regimes may work in parallel to the three paradigms of bureaucracies, NPM, and networks. As with the concept of socio-technical regime, the three paradigms hold certain institutional rules, norms, and sediments, which call forth certain behaviours (Coule and Patmore, 2013, Hartley et al., 2013). The two perspectives differ on some important dimensions. Socio-technical regimes are existing rule-sets in a historical context. Bureaucracies, NPM, and networks also exist in a historical context, but these are ideological viewpoints. In contrast, the socio-technical regime is an analytical tool. Despite these differences, the layered dimension can serve as a pivotal base, building a fundamental viewpoint for focusing attention on the inter-linkages of the related behaviour called forth at the micro-level of the innovation, and with the various paradigms of innovation.

The layered dimension has also received attention in the broader discipline of innovation (for example, as pointed at in the aspects of routines and technological regimes in the evolutionary theory), and the systems of innovation and interactive learning. Moreover, the notion of co-evolution is particularly useful for understanding the thinking of inter-linkage between the aggregated level of the distinct social context and the emerging innovation at the micro-level. As shown, the concept was introduced precisely to attend how an innovation in technical advancement at the micro-level co-evolved in a broader technical and social context over time.

However, useful as this knowledge can be to understand the critical inter-linkages of the layered dimension, it contributes little in terms of understanding the distinct context of innovation in public services. In this regard, I argue for the need to build on the neo-Weberian roots in institutional theory, and especially the perspective of new institutionalism. The perspective of the paradigms to innovation in public services demonstrates these prospects, of how the institutional approach can contribute to understanding of the multifaceted processes of change and continuity in the distinct context of innovation in public services. The emphasis to the inter-organizational context of networks and public values, in the field of innovation in governance, has displayed the potential for developing a further understanding, as well as in the broader neo-Weberian approached laid out here.

The purpose of this chapter has been to refine the knowledge of innovation in public services with an extended and cross-disciplinary examination of the constructs in the two disciplines of innovation and public administration. I have also sought to open up the discussion more than close it. I realize that I leave this discussion with a rather broad and ambiguous thinking of the phenomenon of innovation in public services. However, I think it is important to remember that it is doubtful that we can find a single clear-cut model for innovation in public services that fits all settings, given the many various and conflicting conceptions in the ongoing debate of the phenomenon. I will come back to this important lesson in my analysis, in the three papers included in this thesis, and as summarized and discussed in Chapter 4.

Chapter 4   Overview of the Papers: Findings and Discussions

This chapter provides an overview and discussion of the three papers in this thesis. The overview starts with a summary of each paper. The next section elaborates on the main findings in each paper and discusses how the findings in one paper relate to those of the other papers. The final section discusses how these main findings contribute to the overall research aim, which is to develop a theoretical framework of the phenomenon of innovation in public services.

4.1   Summary of the three papers

This section summarizes the three papers by outlining the contributions in each paper. Table 3 gives an overview of the three papers by summarizing each paper in terms of the targeted research aim, the objective of analysis, and the main findings.

4.1.1 Paper 1:   Co-evolution and Innovation in Governance

Paper 1 considers the distinct context for innovation in public services by studying how an innovation develops in inter-organizational processes of interaction in the setting of the public sector.

Paper 1 starts by outlining the debate of the role of market mechanisms, in terms of the attention given to the subject in the recent perspective of innovation in governance (Hartley, 2005, Moore and Hartley, 2008). According to this perspective, innovation in governance is a class of innovation that typically takes place at an inter-organizational level. An inter-organizational level is necessary given the special characteristics of the phenomenon in the public sector. In the public sector, organizational entities have economic aims, as they do in private companies, but their fundamental task is to contribute to public values. Public values go beyond economic profit, encompassing broader collective concerns, such as creating knowledge, welfare, health and better societies. Moore and Hartley argued that this characteristic contrasts with the approach in the discipline of innovation, which they felt was attributed at the organizational level and evaluated by means of instrumental calculation of profit.

However, as demonstrated in Paper 1, their belief regarding the innovation literature is incorrect. In that paper, I showed how Schumpeter (1934) questioned the market mechanism and framed innovation as an ordinary aspect evolving out of existing business life. Modern

innovation literature has developed rich insights into such evolutionary processes in private firms and industries (Fagerberg, 2005, Lundvall, 2007, Håkansson and Waluszewski, 2007). There is a general realization in this literature that firms do not innovate in isolation, but in collaboration and in indirect interplay with other firms, organizations, rules and norms. Paper 1 draws on knowledge from one theoretical tradition within this broader evolutionary approach; namely, the process theory of innovation (Van de Ven and Garud, 1994, Van de Ven et al., 1999). The process theory has criticized the conventional belief of the single entrepreneur who develops his or her idea, and has emphasized how technical advances at the micro-level of the firm is an outcome of an extended co-evolution in a broad social context and over time.

In Paper 1, I explore how the concept of co-evolution can help extend the understanding of the distinctive inter-organizational context for innovation in public services, as pointed out in the perspective of innovation in governance. The paper investigates the contribution through a case study of an innovation process: the new public service of charging stations for EVs in the city of Oslo. The case study focuses on how the innovation process at the micro-level of the public service emerges in the distinct social context, by studying inter-organizational processes of interaction at the micro-level of the emerging innovation.

The case study identified 10 central events at the micro-level of the innovation that were linked to events in the broader social setting. By coding these events at the five core conceptual categories in the process theory – idea, people, transaction, outcomes and context – the case study discussed how the events cultivated the emerging innovation, and how the emerging innovation structured the specific context. As an overall finding, this analysis showed how new public service was shaped by technical and institutional events at the micro-level of the innovation, and by political, governmental, and social events at the broader social level.

Paper 1 concludes that innovation in governance has made an important contribution in its emphasis on the need to study innovation in the distinct context of the public sector. The perspective has questioned the role of the market mechanisms, as a thought obstacle for innovation in public services. The process theory of innovation can help develop further understanding of the importance of context.

4.1.2 Paper 2: The Political Dimension of Wicked Problems

Paper 2 examines the role of governmental policy and politics to enhance innovation and change in the wicked problem context of pressing social challenges.

Paper 2 starts in the growing field of sustainability transitions in the discipline of innovation. The literature in this field has put at its forefront the need to induce a fundamental shift in socio-technical systems in order to confront the grand social challenges of our times, such as climate change, global warming, and modern transportation. In inducing this change, the scholars in this field have attributed a critical role to governmental policy to nurturing change and challenging the existing policy. However, they have also emphasized the need for improved knowledge of how these underlying processes of policy and politics can nurture change and create long-term transitions (Smith et al., 2005, Meadowcroft, 2011, Raven et al., 2016a). The recent attention given to a challenge-driven innovation policy in the broader discipline of innovation has boosted the debate (Weber and Rohracher, 2012, Kuhlman and Rip, 2014).

Paper 2 discusses how knowledge from the discipline of public administration can contribute to an improved understanding of the underlying processes of policy and politics related to sustainability transition. This discipline has a long tradition of studying decision-making processes and implementation of governmental policy (March and Olsen, 1984, Hill and Hupe, 2002). Lately, contributors have also stressed the special challenges related to the wicked problems of the modern social challenges (Roberts, 2000, Weber and Khademian, 2008, Pollitt, 2015c). According to this literature, these pressing problems typically cut across the existing policy domains and the single-purpose organization in the public administration system. This attention has resulted in a growing interest for networks to coordinate the complexity, but also in the difficulties faced in such attempts to coordinate policy (Pollitt, 2003, Christensen and Lægreid, 2007, Ferlie et al., 2011). However, the recent perspective of collaborative innovation in public services has emphasized how shared political interests may create a common ground for collaboration, in the practical problem-solving processes that comprise an innovation (Sørensen and Torfing, 2011a, Ansell and Torfing, 2014).

Paper 2 applies the notion of wicked problems to discuss the critical role assigned to governmental policy and politics in the literature related to the pressing social problems. In order to sort out the knowledge, the paper applies the multi-level perspective (MLP) (Geels, 2002, 2004) as an analytical tool, given that these two disciplines introduce various components of governmental policy and politics with a different degree of structuration.

Basically, these components can be categorized as governmental goals breeding for change at the level of the protected spaces of niche; existing policy hindering and coordinating deep-structural rule-sets at the level of the socio-technical regime; and political trends creating tensions at the level of the landscape. At a general level, this sorting also demonstrates the compounded nature of governmental policy and politics. Furthermore, these components show the fundamental element of time, in how this range of activities takes place at various phases in the policy cycle, at the stages of decision-making, implementation and evaluation.

The theoretical contribution builds on empirical findings from a process study of the emerging innovation in public charging services for EVs in the city of Oslo. In this paper, this emerging innovation is a selected case that provides insight into the theoretical outlooks to the political dimension of wicked problems. Most importantly, this new public service was initiated by a governmental goal that all of the involved actors considered critical to breed the innovation at the micro-level of the innovation process. It was precisely defined, in the number of 400 charging stations to be built in the definite period from 2008 until 2011, and the public entity of the Traffic Agency was assigned the mission as an outcome of the political decision-making process. Still, the implementation of the governmental goal met many hindrances. However, as shown in this paper, several of these constraints also acted as drivers as specific points in time. These drivers and hindrances are studied in detail in this paper by applying the analytical tool of the MLP and focusing on the detailed rule-sets in the policy regime for EVs, the technological regime for public charging, and the market regime for EV charging services.

Paper 2 concludes by reiterating the importance of including all the phases in the policy cycle to understand how governmental policy and politics can contribute to solve wicked problems in long-term transitions. The various components, of governmental goals, existing policy, and political trends demonstrate the compounded nature of the political dimension of wicked problems and emphasize the need to include all these components in order to understand the critical processes of institutionalization in the policy cycle for socio-technical change towards a sustainable society.

4.1.3 Paper 3:   Multi-layered Approach to Innovation in Public Services

Paper 3 aims to demystify innovation in public services by introducing a multi-layered approach to the fragmented and rivalling concepts in the public administration literature.

Paper 3 starts with the debate of the limited theoretical comprehension to the growing attention of innovation in public services in the public administration literature (Pollitt, 2012,

Osborne and Brown, 2013, De Vries et al., 2016). A range of concepts have acknowledged the phenomenon, but the diversity in the content of these concepts has also contributed to fragment the understanding. The problem is that innovation becomes a dangerous concept in this setting, in the many applications of the concept, and in light of the conceptual unstable understanding of the topic. Pollitt (2015a) has pinpointed the problem by addressing how innovation in public services becomes a "magic" concept that seems to be able to fix any problem. Innovation becomes equalized as something good, although the concept is applied in very different ways.

Paper 3 argues for a theoretically based understanding of the phenomenon of innovation in public services in order to demystify this topic. Here, I draw attention to a comprehensive contribution in the literature, in the perspective of Hartley and colleagues (Hartley, 2005, Benington, 2011, Hartley et al., 2013) of the three paradigms to innovation in public services. They identified three paradigms of bureaucracy, new public management and networked governance that are placed in three historical periods and ideological outlooks. They also emphasized that these paradigms co-exist in time, as layered realities. In this layered reality, some situations call forth behaviour related to one concept in one of the paradigms and another situation in another paradigm. Paper 3 furthers our understanding of these situations and the related behaviour that may result out of these paradigms by studying the courses of action that drive and hinder innovation in these social settings.

In order to extend on this insight, I bring in knowledge from the recent perspective of sustainability transition in the scholarly discipline of innovation. This perspective has emphasized the multifaceted nature for how innovation emerges, in temporal innovations evolving in a broader institutional context of ongoing processes of continuity and change. These temporal innovations have different degrees of stability and can vary over time and place; for example, in a new technology, a new user pattern, a changed legislation, and an overall political trend. When two or more of these temporal elements align and develop their own logic, this is known as a co-evolution. The sustainability transition literature has focused on the socio-technical character of co-evolution, by singling out explanations of how innovation emerges in "temporal events at the level of an innovation", and in interplay with the deep-structural elements in the "socio-technical regime" (Hoogma et al., 2002, Geels et al., 2012). In the present paper, I argue that this singling out of explanations at the level of an innovation and in interplay with the structural elements of society can contribute as an overall theoretical framework to understand and study the various settings and related types of

behaviour driving and hindering innovation, as outlined in the three paradigms to innovation in public services.

Paper 3 introduces a multi-layered approach to innovation in public services that builds on this combined insight from these two perspectives, as well as from the empirical findings in the process study of the emerging innovation in the new public charging stations for EVs. When looking at this combined knowledge, I was able to distinguish five empirical patterns of courses of action to innovation in public services, which I categorized into five key processes to innovation in public services: (1) bureaucratic coordination, (2) administrative responsibility, (3) performance management, (4) collaborative innovation, and (5) public value creation.

These key processes are rivals, from a theoretical point of view. They also explain courses of actions that result in different outcomes, recognized as: innovation in legislative decisions, political responsible changes, managerial processes, transformational changes and social improvements. Furthermore, all five key processes have a distinct legitimacy and generative mechanisms that drive and hinder these various processes over time and in social setting. The type of political responsible changes, for example, is driven by the logic of appropriateness, whereas social improvement is driven by a collective commitment. These various outcomes at the micro-level of the innovation are related to the perspective of the three paradigms to innovation in public services but also distinguished in other related perspectives. In any case, these five key processes demonstrate how temporal events act as drivers in various social settings, as a taxonomy to understand innovation in public services.

The taxonomy demonstrates the heterogeneity of the phenomenon of innovation in public services. The heterogeneity also demonstrates an important point when theorizing on innovation in public services. Innovation in public services cannot reduce to simplified ideas of one generic instrument, leaving out the many aspects and the complex processes in the phenomenon. It is not one generic instrument, but many underlying key processes that result in various types of innovation. The key processes differ, and even conflict, in terms of their legitimacies, and the generative mechanisms explaining these actions.

Table 3:   *Overview of the three papers*

Paper	Research Aim	Objective of Analysis	Main Findings
Paper 1: "Co-evolution and innovations in governance – a case study of the new public service system for electric vehicles in Oslo"	Paper 1 aims to understand the distinct context for innovation in public services, by studying inter-organizational processes of interaction.	Paper 1 is based in the recent debate of innovation in governance and draws on the knowledge of *co-evolution* in the process theory of innovation. The paper explores the combined insights through the case study of the new public charging services for EVs in the city of Oslo.	The case study identifies 10 key events in which the outcome at the micro-level of the new public service interlinks with the inter-organizational processes in the distinct context of public sector. These 10 events are both technical and institutional events at the micro-level of the innovation, and governmental, political and social processes initiated above the organizational level of the public entity that developed the new public service. The findings demonstrate how the process theory can extend the insight on the distinct inter-organizational context pointed out in the perspective of innovation in governance.
Paper 2: "The Political Dimension of Wicked Problems – a Process Study of the Emerging Innovation in Public Charging Services for EVs in Oslo"	Paper 2 aims to understand the role of governmental policy and politics to enhance innovation and change in the wicked problem context of pressing social challenges.	Paper 2 uses the notion of *wicked problems* to pinpoint the political dimension of the pressing problem characteristics of modern social challenges. The paper applies the MLP as an analytical tool to sort out the range of various activities of governmental policy and politics. The theoretical contribution builds on findings from the process study of the emerging innovation in public charging services for EVs.	By doing a process study, critical incidents were identified, of governmental policy and politics initiating, driving and hindering the emerging innovation over time. Basically, these incidents can be categorized as: governmental goals breeding for change at the level of a niche, existing policies that coordinate change at the level of socio-technical regime, and political trends that create tensions at the level of the landscape. These various components demonstrate the compounding nature of the political dimension of wicked problems, in the range of activities that take place at various phases in the policy cycle, and how these activities represent various elements of institutionalization for socio-technical change over time.
Paper 3: "Innovation in public services: a multi-layered approach"	Paper 3 aims to demystify the *wonder* of innovation in public services by examining the various and rival concepts in the public administration literature.	Paper 3 introduces a multi-layered approach to innovation in public services. The approach builds on the perspective of the three paradigms to innovation in public services, combined with insights on the multifaceted nature of innovation, in the perspective of sustainability transition. The theoretical contribution builds on findings from the process study of the emerging innovation in public charging services for EVs, by applying the methods of grounded theory.	Paper 3 categorizes five key processes to innovation in public services: (1) bureaucratic coordination, (2) administrative responsibility, (3) performance management, (4) collaborative innovation, and (5) public value creation. These processes differ theoretically but co-exist as temporal ordered explanations, as a taxonomy. The five key processes demonstrate an important finding: it is not one generic instrument, but many underlying processes with different legitimacies and generative mechanisms that result in various types of innovations. Given this, innovation cannot reduce to simplified ideas, of a single outcome at the level of the organization, leaving out the many underlying complex processes in the phenomenon.

4.2   **Findings and Contributions**

As outlined in the previous section, the targeted objective of analysis in each paper relates to the ongoing debate in the scholarly literature. However, the objectives also generate out of a heuristic process of thinking, from the observations of the phenomenon in the empirical study

of the new public service of charging stations for EVs. This section draws lines between the main findings in each of the three papers and elaborates on how the main findings in one paper contributed as a departure point to the objective of analysis in the next papers, and towards my overall research aim.

4.2.1 Inter-organizational Processes of Innovation in Public Service Context

Paper 1 explores how the concept of co-evolution in the process theory can help extend insights on the distinct context for the inter-organizational processes of interaction, as argued in the perspective of innovation in governance. By use of a case study, I explore the inter-organizational processes of the new public service system for free recharging of EV batteries in the city of Oslo. This case study revealed many incidents, which were recognized in 10 key events reconstructing a simplified chronological timeline. Table 4 provides an overview of these 10 events.

Table 4: Ten key events reconstructing the new public service of charging stations

1	**The idea of the charging stations for EVs was a City Council decision, which was assigned to the Traffic Agency to implement**. The innovation settled on the governmental goal of building 400 charging stations for EVs in the city of Oslo from 2008 till 2011, initiated in August 2007.
2	**The idea was initiated in a private proposal by a member of the City Council, and embedded in a policy programme for reducing greenhouse gas emissions in the city of Oslo**. The Regional Governmental Committee for Transport and Environment added the 400 charging stations for EVs as a measure in the policy programme.
3	**The idea born in interaction with an environmental organization.** The organization proposed charging stations for EVs as the most important measure for the environmental policy in Oslo, and estimated the number needed at 400.
4	**The environmental organization interacted in carrying out the policy**. The Traffic Agency had a dialogue meeting with the environmental organization because of the latter's expertise of EVs, and the environmental organization pushed for action at the governmental level.
5	**The governmental goal was not only set in the City Council decision, but also in the budget for Oslo.** The budget for Oslo in 2008 earmarked resources to build 400 charging stations.
6	**NEF was actively involved**. The Traffic Agency invited the NEF in because of its knowledge of EVs and recharging of EV batteries. It also had competence on the special needs of the users of EVs in Oslo.
7	**The Traffic Agency planned to buy the charging stations as ready-made products through public procurement processes but received no bids**. The Traffic Agency searched for companies, but the lack of a market for charging stations meant there were no suppliers to meet its demand.
8	**Given the lack of suppliers, the Traffic Agency was forced to reconsider how to develop the new public service.** In the renewing process, it thought of an existing product. Based on this related product, the agency sourced two industrial producers and invited them to draw up proposals for redesigning their products.
9	**Once the system for charging stations was operational, the number of industrial actors and products for charging stations developed rapidly**. The tender in 2011 had 15 qualified industrial actors. The new industrial awareness brought in new technical solutions and designs to the process.
10	**There was also a national policy awareness of the need for an infrastructure for EVs**. In 2009, the Minister of Transport and Communication in Norway declared that it was to be "the year of the EV". A public infrastructure was announced as a national public policy, with promised financial support for 5000 charging stations, and a founding of new public entity to implement the policy.

The reconstruction of a chronology had its fundamental theoretical basis in the process theory of Van de Ven and colleagues (1989, 1999). Their process theory holds a road map for how innovations typically unfold in patterns over time. My initial purpose was to extend their theory by developing a road map of typical patterns for how innovation tends to unfold in the distinct context of innovation in public services.

However, the reconstruction of the 10 key events in my case study did not result in a simple route of innovation. As shown in Table 4, my studied innovation developed in many co-existing events, which resulted in converging and diverging processes of innovation over time, in inter-organizational processes of interaction. These inter-organizational processes fit well in the view of the process theory, but did not elaborate on the distinct context of innovation in public services, which was my initial purpose in this paper.

The process theory framed the study in the co-evolving process of innovation. This meant that the focus was placed on the emerging innovation and how it interlinked with the social, political and governmental context. However, it also implied that the study did not include the governmental and political activities that were not directly interrelated with the emerging innovation. As Table 4 shows, it was several governmental and political events that interlinked with the emerging innovation. Still, these greater governmental and political processes were not a part of the analysis in this paper. Given these identified empirical patterns in my case, I considered it pertinent to create a better understanding of these governmental and political processes, and how these processes were related to the studied phenomenon of innovation in public services.

4.2.2 The Magnitude of Governmental and Political Processes

Paper 2 goes into depth in studying these governmental and political processes for innovation in public services. In this study, I have simply extended the case study of the new public service of charging stations for EVs to a process study of the emerging innovation. The case study had already identified the magnitude of the governmental and political processes. The empirical study now extended the insight on these processes by collecting longitudinal and contextual data in order to be able go deeper into the underlying social mechanisms of the distinct political dimension of innovation in public services.

At this stage in the PhD project, the research was also inspired by another theoretical framework. This framework contrasted from the neat idea of the process theory of innovation, to a more complex framework, in the attention given to the grand social challenges from the perspective of sustainability transitions and the parallel attention to the wicked problems in recent public administration literature. This framework involves many components of governmental policy and politics. In seeing that these components were too complex to be broken up and explained in independent and dependent variables, a process design was suitable for studying in detail how the observable outcomes relate to possible theoretical explanations. I applied the MLP as an analytical tool to sort and combine these empirical patterns. This meant that I looked at the rich process data through the analytical tools of niches, socio-technical regimes and landscape, but also from the views of the challenge-driven innovation policy and the wicked problems in the recent literature.

As already pointed out, the lens of a niche called attention to the governmental goal of the 400 charging stations for EVs in the defined period of four years, and how the new public service was developed in practical problem-solving processes that comprise an innovation.

The focus on the policy regime shed light on how the new public service was interlinked with an existing national policy for EVs in Norway. Free municipal parking for EVs was the first lawful right, established in 1993, followed by free toll roads, reduced road tax, purchase and VAT exemption, and access to bus lanes. However, at the local level, of the city of Oslo, there was no prior policy. Then, during the period studied, the policy for the charging stations became embedded in the local governmental programme for reducing emissions from greenhouse gases and in several related discussions of EV charging. An important outcome of these related discussions was the governmental decision to extend the number of charging stations after the end of four years, with 100 and later with 200 charging stations per year.

The focus on the technological regime showed how the Traffic Agency was contributing actively to the creation of a new market. In 2008, charging stations were not a ready-made product that could be bought off the shelves. As a public entity, their tool was development through public procurement. At the outset, this setting was a challenge for the public entity. Their first tender did not result in any bidders, and they were forced to find new instruments for developing the charging stations.

The focus on the market regime shows how the EV market went through enormous changes in the time studied. In 2007, when the charging stations became a governmental goal, there were only 1457 EVs registered in Norway. In 2010 and 2011, the market started to grow. In 2012, the number had reached a total of 8031 EVs registered in Norway. The growth has continued to the point where there were 97,532 EVs by the end of 2016. Considering this enormous growth, it is easy to forget that Norway also had an early EV market in the beginning of the 1990s. This market was dominated by the two EV models Think and Buddy, which were developed in Norway. These early models were small city vehicles and shared some rule-set, noticeable in a unique cross-parking style.

In 2007, the Traffic Agency suddenly started to fine the cross-parking practice because it evaluated it as dangerous in some places. The EV owners were indignant about having their lawful right removed by a public entity and contacted their representative, the Norwegian EV Association (NEF). These events also tell us how the public service was initiated. The NEF discussed the situation with the City Council. The local newspaper picked up on the case, and the environmental organizations got engaged. These critical events also show how the emerging innovation was located within a setting of existing multi-actor engagement for EVs. Their engagement was embedded in the long-term transition; of political trends of climate

change creating pressure for a need for modern transport, existing policy for EVs, a strong association in the NEF, and supporters of their case. This engagement was a result of EVs having been in the Norwegian market for 15 years before the City Council's decision to implement the charging services.

These findings demonstrate how the governmental and political processes are interlinked with ongoing and long-term processes of policy and politics. Paper 2 revealed how these processes interrelate in multifaceted ways, in broader social and technical processes of change and continuity over time. However, as I have demonstrated here, the problem is that these many and ongoing processes left a complexity that is difficult to detangle into clear-cut findings that can contribute with accurate explanations of how innovation in public services develop over time. This led me to further research in the hunt for possible explanations of this observed complexity.

4.2.3 A Taxonomy of Key Processes to Innovation in Public Services

Paper 3 goes one step further in attaining the explanations of how innovation develops over time. The paper reconstructs the findings of the main processes identified in Paper 1 and Paper 2 and goes into depth in unfolding these processes of innovation. It meant another round of collecting and analysing data, and of recoding the findings. In this round, I was guided by grounded theory (Glaser and Strauss, 1967, Corbin and Strauss, 2015), which meant that conceptual categories were applied as guidelines in the data collection and the data analysis. My initial categories were based on three distinct paradigms of innovation in public services – bureaucracies, NPM and networked governance – which I applied to organize the collection and the analysis of data into three sets of explanations.

Guided by these three sets, I recognized some patterns and detected alternative categories to explain the observed courses of action. These three paradigms make sense of how some situations recognized as, for example, bureaucracy, call forth certain courses of action, recognized as, for example, top-down innovation. I studied the patterns empirically and explored alternative categories of the observed courses of action. These patterns were further refined into preliminary findings, which were considered in a new round of literature review to explain observed courses of actions. These alternative categories resulted in a further need for empirical data. Finally, this shifting cycle of induction and deduction was refined into the five categories, in a taxonomy of key processes to innovation in public services: bureaucratic coordination, administrative responsibility, performance management, collaborative innovation, and public value creation.

4.3 Theory Development of Innovation in Public Services

All three papers have been written to contribute to the overall research aim of the thesis, which is to create understanding by developing more robust theoretical knowledge to of innovation in public service. As this chapter has shown, each of the three papers targets parts of the research aim, which develop out of a heuristic process of thinking from the revealed empirical patterns and existing theoretical knowledge. This section discusses how the findings in the three papers help develop theory on innovation in public services.

4.3.1 Co-evolution

Paper 1 sets the stage for the theory building by introducing the concept of co-evolution from the process theory to innovation. The case study explores how the process theory can create insight on patterns of co-evolution for innovation in public services, focusing on the five core categories in the process theory: idea, people, transaction, outcome and context.

Ideas initiated in Governmental and Political Processes over extend Time

According to the process theory, an idea is typically initiated over an extended time, and seldom tracked down to one definitive idea by a single entrepreneur (Van de Ven et al., 1999). This was very much the case in the present study. The public entity that developed the public service did not initiate the original idea. The idea was initiated as an outcome of several ongoing political debates and governmental decision-making processes. These processes were above the organizational level of the public entity, and temporally interconnected with other ideas in the broader governmental context, as Moore and Hartley (2008) identified as a typical aspect of innovation in governance.

Many People from various Types of Organizations

Process theory has stressed how most innovations are too complex for one person to develop and how there is a need for various roles (Van de Ven et al., 1999). In the case of the new public system for EVs in the city of Oslo, many people from various types of organizations were involved. These people had various roles and temporal interconnections to the innovation. These were the people in the public entity managing the innovation process. There were also political and governmental actors, as the members of the parliament and the related policy programmes. The private companies, developing charging stations and the social actors supporting the initiation were represented by the environmental organization and the NEF.

Transactions became bearer of Commitment

The process theory has explained how interaction between people develops in transactions, becoming bearer of commitment to the innovation process (Van de Ven et al., 1999, 2007).

My case study shows how the new public service developed in the overlap of interests among various people, and how these encounters created inter-organizational events between ideas and people. Enhancing sustainable transport was a critical bearer of commitment, in a joint effort of charging stations. Another transactional item was the politically negotiated budget. It allocated resources to develop the new public service, and assigned the task to the Traffic Agency. A third important transaction was the involvement of NEF, in their strong mutual interest in building an infrastructure for the electric vehicles.

Few Criteria for Success and Failure
The process theory has also emphasized how innovation develops in outcomes of success and failure. However, these are by-products that create the innovation process over time, rather than bottom-line results (Van de Ven et al., 1999). In this case, the innovation started with few criteria for assessing success and failure. There was no similar development project that could provide a ground for evaluation of outcomes. The Traffic Agency was a first mover. Also, there was no established industry for charging stations, which could have provided a ground for assessing the technical solutions. The case showed how the new public service was shaped along the process. Their action created a new industry, of producers and services related to the product of the charging stations.

Supportive Context
The process theory has a broad category of the context, in simply emphasizing the need to regard co-evolution within the broader society (Van de Ven et al., 1999). The case study demonstrated several events that were important from this viewpoint. In general, these broader social processes contributed to strengthening the innovation. These findings demonstrated how several political actors and governmental actions were involved at the regional level of Oslo. At national level, building an infrastructure for EVs also became a national goal. These governmental activities co-evolved over time and structured a stronger context.

4.3.2 The Range of the Political Dimension of Wicked Problems
Paper 2 develops an understanding of the distinct political dimension of the problems to be solved by innovation in public services, by attending the special problem characteristics of 'wicked problems'. Wicked problems are the main suspect in the growing perspective of sustainability transition, and have also been attended in the discipline of public administration. Paper 2 contributes to these scholarly discussions by sorting the range of activities of the political dimension related to wicked problems into various components.

These components are further elaborated here in the findings of wicked problems, governmental goals, existing policy, public procurement, political trends and politics for long-term transition.

Wicked Problems

In Paper 2, I started with the original coining of the concept of *wicked problems* by Rittel and Webber (1973), who put forward the concept to emphasize the tricky nature of social problems. The recent literature in the discipline of public administration has adopted the concept to explicate the major challenges for the policy planners, given the need for cross-cutting solutions and the many policy domains involved (Roberts, 2000, Weber and Khademian, 2008, Ferlie et al., 2011). The scholarly discipline of innovation has also acknowledged the wicked problem characteristics, in the nested relations of various groups of actors in the incumbent systems (Farla et al., 2012, Markard et al., 2012). Paper 2 addressed an important difference in these viewpoints; namely, how the public administration literature has emphasized the component of existing policy locking-out the attention to new problems, and the innovation literature has emphasized the incumbent system locking-in the enduring system failures. Paper 2 discusses these differences in the conceptualization via an empirical investigation of the problem characteristic, in the study of pressing problems of climate change, global warming and emissions from transport, related in the emerging innovation of public charging services for EVs. This study revealed the many problems faced in meeting with existing policy locking-out the attention (for example, in the Traffic Agency's existing parking policy), and the incumbent system locking-in problems (for example, in the lack of existing charging technology and the small EV market).

Governmental Goals

The perspective of sustainability transition has attributed a critical role to governmental policy for nurturing change and challenging the existing policy, in a challenge-driven innovation policy towards a sustainable society (Weber and Rohracher, 2012, Kuhlman and Rip, 2014). Paper 2 shows how the new public charging services for EVs was bred by a governmental goal, in the City Council decision to build 400 charging stations for EVs in the period from 2008 until 2011. This governmental goal was included as part of the annual budget for Oslo in 2008, which meant that it was politically negotiated for in the City of Oslo. The 400 charging stations were also included in a policy programme for reducing greenhouse gases in the city. As discussed in Paper 2, this governmental goal had some distinct characteristics. It was well-defined in the numerical quantity of the 400 charging stations and the precisely defined period

of 2008 till 2011. Thus, this governmental goal satisfied the need for clearness, as pointed at as a distinct characteristic in the public administration literature (Benington, 2011, Hartley, 2011). However, as also discussed in Paper 2, the problem was not solved in the need for an established structure for generating the governmental goal. Paper 2 demonstrates the challenge in the existing policy locking-out the attention, in the existing belief in the Traffic Agency of itself as a 'parking agency'.

Existing Policy

Paper 2 shows how the Traffic Agency went through processes of change in the period studied. The change was forced upon them in the assignment of the new charging stations. However, Paper 2 also discusses how the changes were related to other existing policies and ongoing processes of change. By applying the analytical tool of the MLP, Paper 2 studied in detail the existing rule-sets in the policy regime. From this angle, the study recognized how the changed belief of themselves interlinked with an existing national policy for EVs in Norway, in a set of public benefits for EV owners. The change also related to several ongoing debates about related proposals on EVs discussed in the City Council of Oslo between 2007 and 2014. These findings conflict with the fundamental idea of the deep-seated structure of socio-technical regime in the MLP (Geels, 2004). On the other hand, the findings correspond with the emphasize in the new institutional perspective (March and Olsen, 1984), describing change as an ongoing aspect in organizational structures. However, recent contributors in the new institutional tradition has pointed out the challenges in the need for creating higher-ordered vertical processes that cut across the established horizontal structures. Paper 2 concludes on the importance of developing a better theoretical understanding of this critical institutional aspect of policy for understanding the role of governmental policy for long-term transitions.

Public Procurement

Paper 2 also gives insight to the policy instrument of public procurement. Public procurement has been given special attention in the scholarly discipline of innovation, as a promising policy instrument to foster innovative demand and interaction with private companies (Edler and Georghiou, 2007, Borrás and Edquist, 2013). However, Paper 2 shows that public procurement is not that simple to apply as a tool for fostering innovation in public services. This part of the paper looked at how the Traffic Agency needed to actively search for the technical equipment to develop the new public services. As a public entity, their mean to search for the technical equipment is through processes of public procurement. The problem

was that the first tender did not result in any bidders. The companies that were enrolled at a later point reported that they had not paid any attention to the tender because they were not noticed by the headline of the tender. The firms were well situated in another industry regime and paid little attention to new market possibilities. By applying the analytical tool of MLP (Geels, 2002, 2004), Paper 2 highlighted two important aspects. First, there was no existing technological regime for charging stations. Second, the market for recharging of EV batteries was small. The Traffic Agency was in front and the existing systems were locking out the attention.

Political Trends

Paper 2 also drew attention to the component of political trends, in tensions created at the level of the landscape. The component was addressed by focusing on the market regime, in the normative and cognitive rule-set for EVs. Here, the paper drew attention to the two Norwegian EV models Think and Buddy, which created early interest for EVs in Norway. When the City Council launched the governmental goal of the charging stations, these EVs had been in the Norwegian market for over 15 years. Furthermore, these two models have some distinct characteristics, which resulted in a unique style of cross-parking. Paper 2 emphasized how this unique practice can be regarded as essential for the initiation of the new public service. When the Traffic Agency threatened this norm, the EV users had a network of champions supporting their case. There existed a multi-actor engagement fighting for EVs, represented by the NEF, national and local politicians and environmental organizations.

Politics for Long-term Transition

In studying the emerging innovation process, it was difficult to isolate incidents in the separate analytical dimensions of niches and socio-technical regimes. In real life, all the incidents were tangled processes, operating on various levels and co-evolving over time. This complexity was revealed in, for example, the prehistory of how the NEF lobbied to save the parking rights of cross-parking, of how the lobbying resulted in the initiation of the private proposal of the charging stations, of how the proposal by the politician in the City Council embedded the proposition in the national policy for EVs, and in how the two Norwegian EV models have played a central role in developing a market for EVs in Norway. These tangled processes show how the new governmental goal was generated over time, in a policy cycle, driven by a multi-actor engagement for EVs. The engagement has resulted in politics for long-term transition towards more sustainable transport in Norway. However, as pointed out in Paper 2, these long-term political processes also involve a danger in the unknown outcomes of

politics over time. Paper 2 draws attention to this challenging issue, by showing how the growth in the EV market has resulted in protests and critics of the policy. The growth is the successful outcome of the policy over time. However, other actors have other interests that conflict with the successful outcome.

4.3.3 Drivers and Hinders to Innovation in Public Services

Paper 3 sorts out various aspects of the phenomenon addressed in the recent literature on innovation in public services in the public administration literature, and introduces a multi-layered approach that categorizes the following five key processes: bureaucratic coordination, administrative responsibility, performance management, collaborative innovation, and public value creation. This section outlines how these categories can help develop theory on the drivers to innovation in public services.

Bureaucratic Coordination

The new public charging service for EVs started in a traditional bureaucratic fashion, with a top-down implementation of the legislative decision of the charging stations for EVs. Starting in the classic paradigm of bureaucracy, I looked closer at the courses of action called forth in the paradigm of bureaucracy, and categorized these in the category of bureaucratic coordination. This category builds on the ideal type of bureaucracy by Weber (1947), acknowledged in the rational-legal authority and the constitutional rule of law. These major bureaucratic principles are recognized in recent literature on innovation in public services addressing a typical top-down innovation, in which the public manager is passively implementing what the politicians have decided. These aspects have received little attention so far as drivers in the scholarly literature.

Administrative Responsibility

Paper 3 identified an additional category in the paradigm of bureaucracy: administrative responsibility. In the implementation of the legislative decision, the Traffic Agency certainly did not act as a passive clerk, blindly implementing governmental will. It acted in an administratively responsible manner with regard to its functional specialization in its delegated authority to manage traffic in the city of Oslo. This additional category is within the paradigm of the bureaucracy, but its underlying courses of action contrast with the belief in the ideal type. This category brings in the related thinking in the theoretical school of the new institutionalism (March and Olsen, 1984), in its rationale in the logic of appropriateness. The recent literature of innovation in public services has attended such drivers, in the attention to

the dual role for public managers, in their regard for the law but also for their political responsibility in carrying out governmental goals.

Performance Management

Performance management can help explain how the Traffic Agency escaped inaction and embarked on the new task. The agency's self-constituted authority as a 'parking agency' was an outcome of its organizational form, in which monitoring through fines was defined as an estimated number of fines per year. This budgetary goal contributed with a simple quantification of the agency's activity. In the new assignment of the charging stations, a similar output measure was designed in the budget, in the quantification of 400 charging stations between 2008 and 2011. Performance management has been attended in the recent literature on innovation in public services, and in the model conceptualized in the paradigm of NPM. In Paper 3, I developed this knowledge by emphasizing the special legitimacy of competition, which contrasts at large with Weber's rational-legal authority. In these key processes, the public manager plays a leading role and the population are involved as customers in their choices in a free market for public services.

Collaborative Innovation

The fourth category is borrowed from Sørensen and Torfing (2011a, 2012, Ansell and Torfing, 2014) under their heading of collaborative innovation. According to them, collaboration spurs innovation through circulating, challenging, transforming and expanding with others. However, recent literature of innovation in public services has also emphasized that bringing actors together is not enough (Agranoff, 2006, Mandell and Keast, 2013). As pointed, the Traffic Agency had some initial challenges in involving a private producer of the needed technical equipment of charging stations. However, as shown, the new public service was driven by an extended collaboration. The national EV industry, environmental organizations, and EV users had been pushing for a publicly supported infrastructure in Oslo since the beginning of the 2000s. In fact, this collaboration had resulted in a similar legislative decision for charging stations in 2004 but this decision did not lead to anything. In 2008, however, the various actors became aligned in the mutual goal of the charging stations for EVs.

Public Value Creation

The fifth category was recognized in the related literature on public values, which was originally introduced by Moore (1995). Moore emphasized the need to consider social improvements in the public sector, which is difficult to calculate in clear results and to

evaluate in success and failure in areas such as welfare, health, knowledge, and better societies. The consideration of improvement includes an evaluation of collective commitments at an overall social level (Benington and Moore, 2011a). However, critics have also pointed at the challenges in creating a higher order in the established structure of horizontal coordination (Pollitt, 2003, Christensen and Lægreid, 2007). Paper 3 can help extend this understanding by showing how arranging for EVs is becoming a public value in Norway, in a collective commitment that has evolved in broader social and technical processes over an extended period. In these processes, the national EV policy has played a central role, in legislation establishing public benefits for EV users. The two Norwegian EV-producing companies, Think and Buddy, also played a role. Their founding of the NEF was critical in the role this organization has played for the charging stations, as well as for the EV policy in general.

A Multi-layered Composite of Drivers to Innovation in Public Services
Paper 3 outlines a critical dimension in the multi-layered composite of how these five categories relate to each other and to the phenomenon of innovation in public services. Here, Table 5 summarizes this multi-layered composite as five drivers to innovation in public services, distinguished as: type of innovation, paradigm, legitimacy, and generative mechanism.

Table 5:   *Five drivers to innovation in public services*

Category	Bureaucratic Coordination	Administrative Responsibility	Performance Management	Collaborative Innovation	Public Value Creation
Innovation type	Legislative decisions	Political responsible changes	Organizational forms and managerial processes	Transformational changes	Social improvements
Paradigm	Weberian Bureaucracy	New Institutionalism	NPM	Networked Governance	Public Value
Legitimacy	Rational-legal	Logic of appropriateness	Competition	Collaboration	Collective commitment
Mechanism	Formal hierarchical authority Top-down implementation	Self-constituted authority Public Entrepreneurships	Output control Customer demand	Circulating, challenging, transforming, and expanding with others Conveners, mediators, catalysts	Higher-ordered values Problem-driven

The table highlights two important aspects. First, the five drivers demonstrate the heterogeneity of the phenomenon of innovation in public services. Second, it displays a taxonomy that can explain various courses action related to the phenomenon of innovation in public services. In sum, it demonstrates a critical issue. Paper 3 also points out a third aspect that cannot be read out from this table. These drivers also have a temporal element. In my study, the new public service of the charging stations started in a bureaucratic fashion, but was trapped in a tension between realizing the governmental goal and its administrative responsibility to be a public entity. The Traffic Agency was pushed out of this inaction by the output control designed in the budgetary output of the 400 charging stations. After failing to procure the necessary technical equipment of the charging stations, the agency followed a simple trial-and-error strategy, which resulted in tight collaboration with actors. Critically, a collective interest was already there, in an early interest for EVs in Norway in the early 1990s.

In sum, Paper 3 demonstrates a critical issue for theorizing of innovation in public services. In defining innovation in the simple outcome of a new public service, innovation runs the danger of being reduced to a simple question of innovation for whom. Such a reduction excludes the many aspects and the complex processes underlying the true nature of the phenomenon.

Chapter 5   Conclusions

The overall research aim of this thesis has been to contribute to a better understanding of the topic of innovation in public services. The research has explored how innovation in public services develops over time and has been motivated by ongoing debates in the scholarly literature, on the public agenda, at the governmental level and by research policy. This final chapter summarizes and concludes regarding the contributions to these debates, and draws some lines for how these conclusions can outline the way forward for further research.

5.1   Contributions to the Debates of Innovation in Public Services

In Chapter 1, I reviewed the ongoing debates and categorized them into five different debates. The categorization was a first useful step to guide me through the jungle of viewpoints. Then, throughout my PhD project, these five debates have helped me to develop the project into a more specified and focused research project. This section summarizes and concludes regarding how my main findings can help extend these five debates, both as a step towards a better understanding of the topic and as a contribution to the development of a theoretical framework to innovation in public services.

5.1.1 On the Dualism of the Public and Private Sectors

The first debate was *on the dualism of the public and private sectors*. This debate has portrayed a dichotomy, of the public sector as rigid, ineffective and expensive, in contrast to the innovative, competitive and productive private sector (Borins, 2001, Albury, 2005). The dichotomy has been powerful and has remained strong independent of contrasting knowledge (Rainey and Bozeman, 2000). This resilient view has been an important motivation for this PhD project. As I argued in Chapter 1, the fact that many examples of innovation have been identified in the public sector should have weakened and falsified the dichotomy (Halvorsen et al., 2005, Langergaard and Scheuer, 2012). Therefore, a fundamental stance of my research project was to study concrete examples of innovation in public services to reveal empirical patterns of how innovation in public services develops over time.

By studying an authentic innovation process, this thesis has revealed many drivers for how innovation develops over time in public services. In particular, my research has identified and categorized several drivers in the distinct governmental and political context of public services. The concrete innovation process studied were initiated by a governmental goal. This governmental goal was the City Council decision, which stated that 400 charging stations for EVs were to be built in between 2008 and 2011 in the city of Oslo. Thus, this innovation can

be regarded in a traditional bureaucratic fashion, as a *bureaucratic coordination of a governmental goal*. However, my findings certainly contrast with the belief of the rigid bureaucratic coordination inherent in the dualistic view. On the contrary, I have shown how bureaucratic processes can drive innovation, distinguished by the application of the ideal-type of bureaucracy in the theoretical roots of Max Weber.

As pointed at in Chapter 3, the Weberian roots have received remarkably little attention in the debate around innovation in public services, considering the central role that Weber played in the discipline of public administration. My thesis has attempted to vitalize Weber's his fundamental ideas by emphasizing *the legal authority* as a unique dimension for innovation in public services. I have recognized this dimension's key processes in the conceptual category of bureaucratic coordination and in the generative mechanisms of formal hierarchical authority and top-down implementation. In this traditional fashion of bureaucracy, innovation develops in *legislative* decisions. For the new public service of the charging stations for EVs, these key processes were particularly important for the initiation of the new public service, in delegating the authority to the public entity of the Traffic Agency. The bureaucratic coordination was also an important driver throughout the process, for how the public managers acted to carry out the governmental goal in the Traffic Agency. The importance of the legislative decision signals that politics actually work, at least sometimes, and that concrete political decisions can be important for innovation to occur.

As a more general point, the belief in the dualism of public and private sector demonstrates a fatal methodological flaw in comparing human actions at various levels. It portrays the public sector as an overall homogenous entity that is rigid, in contrast to the private sector company, which is believed to be competitive. This thesis has revealed findings that certainly contrast with this simplified thinking of public sector as a homogeneous entity. I have shown that inter-organizational interaction, of various types and over time, is critical. I have identified various components on the political dimension of wicked problems and developed a multi-layered approach with which to explain this heterogeneity of innovation in public services.

5.1.2 The Lack of Market Mechanisms

The second debate relates to the first, in an interlinked viewpoint of a perceived obstacle to innovations in the public sector, in *the lack of market mechanisms*. According to proponents of this viewpoint, the public sector faces a problem in an asymmetric incentive structure, in a lack of reward for motivating the employees (Borins, 2001, Potts, 2009). Innovation appears, but strictly as an 'in spite of' phenomenon. For example, Altshuler and Zegan (1990, p. 19)

stated: "What is remarkable in this context is that so many public employees do strive to innovate". This statement led me to a main reflection guiding my research: If innovation is observed, does it imply the presence of market mechanisms in the public sector? Or is the innovation basically an outcome of other mechanisms explaining the 'in spite of' phenomenon?

This reflection also led me to an overall methodological question: How was I to identify empirical patterns inferred from a premise that was believed to be non-existent in the social setting studied? I found it utterly problematic to search for explanations by focusing on what was presumed to be lacking. In contrast, I found it far more stimulating to study innovation in public services on its own premises and in its real context.

Besides, the recent perspective of innovation in governance has attended a similar subject (Moore and Hartley, 2008). They have pointed out the need to study the distinct context of innovation in governance, which they found to contrast from the attention to firms and private values in the discipline of innovation. I found their considerations useful, but also problematic in outline. From my angle, their attention also introduced other related myths of the phenomenon. Most alarmingly, they attributed the viewpoint of the profit-driven firm to the discipline of innovation. They also assigned the idea of public value as a driver of innovation in public services, as I will return to in the next section. As I have repeatedly stated in this thesis, Schumpeter questioned the simple explanation of the market mechanism as the only driver for innovation,[48] and emphasized how innovation evolves out of existing business life. In Chapter 3, I provided an extensive outline of how the modern innovation literature has developed rich insight into the evolutionary aspect on innovation in private firms and industries. I even argued that the so-called neo-Schumpeterian approach to evolutionary theory has helped replace the simplistic belief in the market mechanism with a broader viewpoint of a *social dimension* to innovation.

This thesis has developed further knowledge on this viewpoint by applying the concept of *co-evolution* in the new setting of innovation in public services. The concept of co-evolution represents an alternative approach to the belief of innovation as merely driven by profit maximization. The concept was employed by Van de Ven and Garud (1994) to explain how an innovation process interlinks with changes in a broader social and technical context.

---

[48] Schumpeter did not use the innovation concept as such, but framed the phenomenon in an overall contribution on economic and social change

Originally, it was Nelson and Winter (1982) who adopted the evolutionary theory of Darwin, of how two or more organisms evolve together over time, to understand economic change in firms. Recently, the growing perspective of sustainability transition has offered insights into the multifaceted nature of how innovation evolves in multiple processes of continuity and change at various levels and over time (Farla et al., 2012, Markard et al., 2012). The present thesis has proposed co-evolution as a way of thinking about innovation in public services.

My empirical study demonstrated how the studied innovation co-evolved, in an inter-organizational setting of *ideas initiated in governmental and political processes over an extended time*, which involved *many people from various types of organizations*, where *transactions became bearer of commitment*, in a generally *supportive context* and with *few criteria for success and failure*.

By applying a broader co-evolutionary framework, I also identified a driver that is typically described to the market in *the performance management by output control*. This finding demonstrated the presence of market mechanisms in the setting of the public sector, recognized in the ideas of NPM. In my study, these key processes helped explain how the Traffic Agency got out of an initial state of inaction, and embarked on the new project. They were driven by an overall idea of *competition*, pushed by the high number of 400 charging stations within the period of four years.

I also identified a driver related to the thinking of bureaucracies that represented generative mechanisms other than those in Weber's ideal-type of bureaucracy. Although the Traffic Agency was assigned to its new task, the public managers involved did not act as passive clerks blindly implementing the City Council decision. They acted in an *administratively responsible* manner with regard to their functional specialization for managing traffic in the city of Oslo. These courses of action can be explained by the logic of appropriateness, driven by the generative mechanisms of the *self-constituted authority* and *public entrepreneurships*.

Thus, the framework of co-evolution does not replace the existing paradigms of bureaucracies and markets, but rather highlights the multiple drivers of innovation in public services, also representing other and more complex legitimacies.

5.1.3 The Measurable Outcome of Innovation

The third debate concerns the criteria for defining innovation in public services. This debate started in a discussion of 'what is the phenomenon', but has turned into a search for criteria for evaluating and quantifying innovation at the level of *the measurable outcome*. Opponents

of this view have argued that the phenomenon of innovation is *conflated when quantified at the level of the innovation.* According to these scholars, innovation typically develops as an outcome of several interlinked activities in many entities (Pollitt and Bouckaert, 2009, Fuglsang, 2010, Torfing, 2013).

The present thesis has attended this 'what is the phenomenon' by exploring in detail how an authentic innovation unfolds over time in its real setting. It has defined the phenomenon in the concrete ongoing project for the charging stations for EVs in the city of Oslo from 2007 until 2014. At the same time, by studying this concrete innovation process, the thesis has studied many ordinary and ongoing activities of continuity and change in the social context of the emerging innovation. These ordinary and ongoing activities have been studied as critical incidents that formed the innovation in numerous processes over time.

Based on the real identification of these empirical patterns of the numerous processes, I concluded that innovation cannot be limited to one measurable outcome; for instance, in a radical new technical device or a managerial success. On the contrary, I identified innovation in many forms that are not clearly measurable. I distinguished this multiplicity of the phenomenon in my taxonomy displaying five different types of innovation: *legislative decisions*, *political responsible changes*, *organizational forms and managerial processes*, *transformational changes* and *social improvements*. These different types of innovation demonstrate how the recognized outcomes of innovation differ depending on the social setting in which the innovation developed. Thus, the innovation can be said to be situated and a matter of contingency, at least to some degree. More correctly, what the innovation is depends on *when* and *where* you look. These findings certainly contrast with the simplified idea of one generic instrument to innovation in public services.

Moreover, these various types of innovation display the critical *temporal aspect* for how innovation processes develop in sequences of events over time, driven and hindered by distinct social mechanisms in the given context. This temporal aspect is a main issue in my research project and was deliberately addressed in the choice of a research of a process study. By designing the research as a process study (Pettigrew, 1997, Langley et al., 2013), I have focused on critical aspects that break with the simplistic view of innovation as a measurable outcome. The design was chosen because of my theoretical motivation, that of co-evolution. Based on this theoretical framework, my angle to the phenomenon was that innovation is not a constant. Technologies evolve over time and in interaction with the existing social systems.

In my empirical study, the new public service emerged in three visible generations of charging stations in Oslo. This empirical finding brings me to a fundamental methodological issue discussed in Chapter 2 in this thesis. All three generations of charging stations are observable outcomes of innovation in public services, defined in their particular time and place. All three demonstrate *temporal events* that have made critical steps toward the technical and institutional evolution for what we recognize today as the new public service of charging stations for EVs in the city of Oslo. However, in retrospect, we do not necessarily recall them as innovations.

This finding clarifies my initial argument in the need to evaluate innovation in view of its original goal, and within its preceding time. In understanding the phenomenon of innovation, it is important to note that the initial idea for the innovation is always launched in a time other than that to which the innovation contributes in the end. From this angle, the measurable effects of an innovation need to be evaluated in regard to this original idea. Unfortunately, this side of the topic has received little attention in the debate of innovation in public services. My thesis attempts to enhance the knowledge of this temporal aspect by introducing the framing of *co-evolution*. My contribution is also motivated by another ongoing debate of innovation in public services: the debate on networks.

5.1.4 Networks

This fourth debate has also focused on the challenges for defining innovation by emphasizing to the complex inter-organizational level of networks. The debate has been headed by the perspective of networked governance, and the antagonists who have *questioned the true nature of networks as a system for coordination* in the public sector (Pollitt, 2003, Christensen and Lægreid, 2007). Their perspectives of "whole-of-governance" and "joined-up governance" have addressed the need to create higher-ordered processes, but have also demonstrated how the creation of such vertical initiatives is difficult given the existing structure in the horizontal coordination in public administration systems.

In fact, this debate does not literally address the topic of innovation in public services. Still, it addresses several related issues, which have been shown to be of direct relevance for understanding innovation in public services in this thesis. The growing interest for networks in the discipline of public administration has also directed attention to the inter-organizational level for evaluating the outcomes of innovation in public services. Within this broader field, some scholars have emphasized the complex character of modern social problems cutting across the existing structure in policy domains, in so-called *wicked problems* (Roberts, 2000,

Weber and Khademian, 2008, Ferlie et al., 2011). Moreover, the inter-organizational aspect of innovation has been a main pillar in the neo-Schumpeterian approach in the discipline of innovation, pointed out by the systems of innovation perspective (Lundvall, 1992), in the innovation journey (Van de Ven et al., 1999), and in the recent sustainability transition (Farla et al., 2012, Markard et al., 2012).

In my thesis, I categorized two key processes for how innovation in public services initiates and develops in this setting. I referred to these drivers as *collaborative innovation* and *public value creation*. Here, I borrowed the category of collaborative innovation from Sørensen and Torfing's (2011a) idea of how collaboration spurs innovation through circulating, challenging, transforming and expanding of their ideas with others. In my thesis, I applied their concept to pinpoint the network-based legitimacy of collaboration. I combined and extended this insight with the ongoing debate of public values in the broader field of innovation in governance. These debates have raised the dimension of networks to a higher level, in a legitimacy of *collective commitment*. As outlined in my taxonomy, this key process is driven by generative mechanisms that are often *problem-driven* in scope.

These two processes differ considerable from the product-oriented thinking in the measurable outcome of innovation. Collaborative innovation and public value creation cannot be observed and measured at the level of the innovation, but can help explain the social mechanisms for innovation in public services. The outcomes are in the innovation types of *transformational change* and *social improvements*. These two key processes certainly do contrast with the intra-organizational logics categorized in the bureaucratic coordination, the administrative responsibility, and the performance management. These types of innovations explicitly address the inter-organizational context of networks.

I also attend the issue of networks from the debate on the role of governmental policy and politics in the growing perspective of sustainability transition. This perspective has emphasized the challenges for change in the incumbent systems. The MLP (Geels, 2002, 2004) has explained the challenge, by proving a framework to sort the elements of change at the level of the emerging innovation, in *niches*, and the challenges faced in existing structures in so-called *socio-technical regimes*. My main findings demonstrated how the emerging innovation of the charging stations for EVs was driven by a governmental policy and generated over time in a network of actors. In fact, this network of actors was also generated out of governmental policy over time, which resulted in an existing policy for EVs at a

national level. This multi-actor engagement resulted in critical political processes for EVs over time, as part of a collective interest in arranging for EVs in an overall long-term transition towards a more sustainable society. The next section extends on this main finding.

5.1.5 Mission-oriented Policy

This fifth debate unfolds in several discussions related to the debates of measurable outcome of innovation and networks. This debate has attended the problematic side of innovation in public services, related to *grand social challenges* such as climate change, social cohesion and an ageing population. In the discipline of innovation, these challenges have brought a new turn in the call for a *mission-oriented innovation policy* (Weber and Rohracher, 2012, Kuhlman and Rip, 2014). Their attention has emphasized the role of policy and politics for innovation. In particular, the debate has prescribed a central role to public procurement in its potential as a policy instrument specially designed to enhance solutions by fostering demand and interaction with private companies.

In my thesis, I study a concrete example of an innovation driven by a mission-oriented policy, in the City Council decision of the 400 charging stations for EVs. I showed how the innovation emerged over time from various range of activities on the policy cycle, from governmental policy breeding for change at the level of the niche, existing policy hindering and coordinating change, and political trends creating tensions at the level of the landscape.

However, by focusing on *how* the policy was implemented, my study has shown that, in practice, mission-oriented policy was not that simple. The implementation of this goal met many obstacles, not least in the existing policy for transport, the lack of technology for building the charging stations, and the small market for the new service. In fact, my study also demonstrated how the application of the policy instrument of public procurement had its challenges in this novel context. The first tender did not result in any bidders. As informed by the companies that were later enrolled, they were not noticed by the headline of the tender. They had their ongoing activities in other existing industries, and were not oriented towards identifying new markets.

Scholars in the discipline of public administration have also discussed these social challenges by focusing on the *wicked problems* caused by these modern social challenges (Ferlie et al., 2011, Termeer and Noteboom, 2014, Lægreid and Rykkja, 2015). However, according to them, the problem is in the vast problem nature of modern social challenges. These social problems are causing major challenges given their *cross-cutting* characteristics. The vast

problem nature engages policy-makers from many different policy domains. The problem is that these actors only hold partial solutions to the overall problem complex. Their partial solutions often generate new problems in other policy domains and for other stakeholders. From this, the real problem is in the pillarization in the established public administration system.

In my longitudinal study of the implementation of the charging stations for EVs, I followed the mission-oriented policy over time. From this research design, I was able to reveal how the mission of the 400 charging stations for EVs became interlinked with other related legislations for EV charging in 2007–2014. Importantly, this interlinking of policy resulted in the number of charging stations growing to 1114 by 2016. My main findings also showed how the City Council decision was embedded in the existing policy for EVs at a national level. From this angle, my study demonstrated how constraints at one point in time acted as drivers at another point in time, in the policy regime for EVs, the technological regime of EV charging, and the market for EVs in Oslo.

The discipline of public administration has a long tradition of studying such challenges, in the obstacles for new policies in existing policy and how it breaks through. This thinking has its roots in the new institutional theory (March and Olsen, 1984), in the fundamental belief that political choices are always made in a setting of institutionalized routines of the political life. In the discipline of innovation, on the other hand, the role of policy has so far been dominated by overly instrumental ideas of what policy-makers should do, giving little attention to the critical policy-making processes and the fundamental governmental and political processes involved in long-term transitions. As demonstrated in my thesis, modern social problems are often complex and cross-cutting in nature, as displayed in the concept of wicked problems. Moreover, my findings also show how the problem are defined in a political setting that changes over time and place and may act as drivers at another point of time.

5.2 Drawing Lines for Further Research

This thesis has shown how the phenomenon of innovation in public services has been defined broadly, as "novelty in action" (Albury, 2005, Hartley, 2013), and in a range of concepts, such as top-down innovation (Borins, 2002, Damanpour and Schneider, 2008), bottom-up innovation (Moore, 2005, Roberts and Longley, 2013), public entrepreneurship (Bellone and Goerl, 1992, Bernier and Hafsi, 2007), political entrepreneurs (Bartlett and Dibben, 2002, Zerbinati and Souitaris, 2005), innovation in governance (Moore and Hartley, 2008,

Benington, 2011), and collaborative innovation (Bommert, 2010). These concepts indicate that the phenomenon of innovation in public services has been acknowledged in the scholarly literature. However, the thesis has also attended the diversity in these distinctive concepts as a challenge, given the lack of an adequately developed framework. The problem is in the lack of a robust knowledge for considering and evaluating innovation (e.g. Hartley, 2011, Osborne and Brown, 2011, Djellal et al., 2013).

My thesis builds here on the argument made by Pollitt (2015a, Pollitt and Hupe, 2011) that the lack of a clear definition of innovation in public services has resulted in a fragmentation that has left a dangerous 'magic concept', of a normative loaded belief that can be used in pretty much any setting. As pointed at in the five debates above, this thesis has addressed the utterly problematic cure offered in the simplistic and overly optimistic view, given the fragmented and poorly defined conceptual idea of innovation in public services. The problem is that the topic of fostering of improvement and change is not without bearings in the public sector, as the five debates in the previous section have shown.

Seen against this background, this thesis questions the simple cure for fostering of innovation in public services and discusses whether the treatment provided so far has been wrongly prescribed. I argue for the need for a thorough examination of the real phenomenon of innovation in public services, rather than simply prescribing the magic formula of innovation to all faults in the public sector. The five debates have displayed some line for further research on these critical issues. In particular, the debates illuminate the complexity of the phenomenon, in contrast to the simplified ideas of the dualism of public and private sectors and the lack of market mechanisms. The main findings show that innovation in public services is driven by complex processes in the distinctive governmental and political context. These processes are also set in the broader social context, and in the technical characteristics of the relevant innovation. My main findings demonstrate a need for further studies of innovation in real settings in order to test and extend my findings and provide further in-depth understanding of these complex processes. In particular, it calls for studies of the distinctive governmental and political context.

Furthermore, my thesis calls for further longitudinal studies to develop a better understanding of the complexity of the temporal aspects of how innovation develops over time. My conclusions show how innovation is an observable outcome at a given point in time and, at any of these points in time, only shows a limited aspect of the phenomenon of innovation in

public services. In particular, my conclusions show a need to study the critical political dimension of the phenomenon over time, in contributing to a better understanding of how the different aspects of governmental goals, existing policy, and politics contribute to the phenomenon of innovation in public services in a wicked problem context.

At a more general level, I have argued in this thesis that the dualism of the public and private sectors, and the related idea of the market mechanisms, demonstrate how the thinking of public sector has remained remarkably stable in the long era of the NPM. The dominance belief in this paradigm has even spilled over to the recent thinking of innovation in public services (Røste, 2008, Langergaard and Scheuer, 2012). The spill-over may have contributed to scepticism and myths for innovation, as a continuation of the discussions of the reform agenda of NPM. Reading policy plans and research programmes may have contributed to the anxieties, in how these documents simply apply the concept as a tool to increase an inherent potential for improving existing service and solving grand social challenges (Kelly et al., 2002, Olsen, 2004, Pollitt, 2011, Lynn, 2013). However, this thesis has pointed at several findings that may indicate that the dominant paradigm of the NPM has been challenged by new ideas. This is especially the case in the growing interest for networks in the discipline of public administration, which have introduced a third paradigm to the existing dichotomy of bureaucracy and market. Moreover, the thesis has recognized more complex mechanisms related to the problems to be solved by innovation, as seen in the recent attention given to grand social challenges in the discipline of innovation and to wicked problems in the discipline of public administration.

In the discipline of innovation, the attention to grand challenges has resulted in a growing interest for a mission-oriented policy (Weber and Rohracher, 2012, Kuhlman and Rip, 2014). The attention has resulted in attention to the need for a fundamental shift towards a sustainable society, replacing the prevailing focus of market failures to solve the problems. In the discipline of public administration, the attention to wicked problems has pointed at a similar need to solve these social problems. Both disciplines have pointed at similar challenges in how these complex social problems cannot be easily solved with simple economic or technical solutions.

The popular debate is full of examples of how these grand challenges create wicked problems that need to be solved. Still, only one of these problem complexities has received real attention in the debate of innovation in public services, in the grand challenges created by the

ageing population and their instant pressure in an un-saturated need for services. However, this challenge is quite simply in terms of how it demands for health- and social care workers, an increase in economic costs, and a need for strategic prioritization of patients. Climate change, on the other hand, presents a far more complex and severe problem. Although solutions may again be somewhat obvious, in terms of the need to cut waste and emissions, these are far more extensive in scope. The primary challenge is to come together in joint solutions, given the different viewpoints of the actors involved. Transport, as studied in this thesis, has been identified as one of the main suspects, in emissions from motorized road transportation, shipping, and airplanes. However, there is strong disagreement about how much one activity in one setting adds to the overall problem complexity compared to another related problem; for instance, in the various policy domains of industry, agriculture and transport. Yet, this tricky aspect also shows how innovation in public services can be one of the partial solutions that may actually help solve the grander problem. At least, that was the case in the innovation in public services studied in this thesis. Further studies on this wicked aspect of innovation in public services are critical in order to contribute to this important dimension of a theoretical framework to innovation in public services. Further knowledge is also critical to solve the serious pressing problems for the public sector as well as for society as a whole.

REFERENCES

AARSÆTHER, N. 2013. Frå flyplass til ny budel. Fornebu som innovasjonsarena. *In:* RINGHOLM, T., TEIGEN, H. & AARSÆTHER, N. (eds.) *Innovative kommuner.* Oslo: Cappelen Damm Akademisk.

AGRANOFF, R. 2006. Inside Collaborative Networks: Ten Lessons for Public Managers. *Public Administration Review,* December 2006**,** 56-65.

ALBURY, D. 2005. Fostering innovation in public services. *Public Money & Management,* 25**,** 51-56.

ALFORD, J. & HUGHES, O. 2008. Public Value Pragmatism as the next phase of Public Management. *American Review of Public Administration,* 38**,** 130-148.

ALTSHULER, A. & ZEGANS, M. 1990. Innovation and creativity. Comparisons between public management and private enterprise. *Cities,* 7**,** 16-24.

ANDERSEN, I. (ed.) 1990. *Valg af organisations-sociologiske metoder - et kombinationsperspektiv,* København: Blue Print.

ANDERSEN, S. S. 1997. *Case-studier og generalisering. Forskningsstrategi og design,* Bergen, Fagbokforlaget.

ANSELL, C. & TORFING, J. 2014. Collaboration and desing: new tools for public innovation. *In:* ANSELL, C. & TORFING, J. (eds.) *Public Innovation Through Collaboration and Design.* New York: Routledge, Taylor & Francis Group.

ASPHJELL, A., ASPHJELL, Ø. & KVISLE, H. H. 2013. *Elbil på norsk,* Trondheim, TRANSNOVA.

AUGIER, M. & MARCH, J. G. 2008. A retrospective look at A Behavioral Theory of the Firm. *Journal of Economic Behavior & Organization,* 66**,** 1-6.

AVELINO, F. & ROTMANS, J. 2009. Power in Transition: An Interdisciplinary Framework to Study Power in Relation to Structural Change. *European Journal of Social Theory,* 12**,** 543-560.

BARRETT, S. & HILL, M. 1984. Policy, Bargaining and Structure in Implementation Theory: Towards an Integrated Perspective. *Policy and Politics,* 12**,** 219-240.

BARTLETT, D. & DIBBEN, P. 2002. Public sector innovation and entrepreneurship: Case studies from local government. *Local Government Studies,* 28**,** 107-121.

BECHEIKH, N., HALILEM, N., JBILOU, J. & MOSCONI, E. 2007. Conceptualiztion and Determinants of Innovation in the Public Sector: A Systematic Revue. *RESER: New Horizons for the Role and Production of Services.* Tampere, Finland.

BELLONE, C. J. & GOERL, G. F. 1992. Reconciling public entrepreneurship and democracy. *Public Administration Review,* 52**,** 130-134.

BENINGTON, J. 2011. From private choice to public value. *In:* BENINGTON, J. & MOORE, M. H. (eds.) *Public Value. Theory and Practice.* Hampshire: Palgrave Macmillan.

BENINGTON, J. & HARTLEY, J. 2001. Pilots, paradigms and paradoxes: Changes in public sector governance and management in the UK. . *International Research Symposium on Public Secotr Management (Barcelona).*

BENINGTON, J. & MOORE, M. H. 2011a. Public Value in Complex and Changing Times. *In:* BENINGTON, J. & MOORE, M. H. (eds.) *Public Value. Theory and Practice.* Hampshire: Palgrave Macmillan.

BENINGTON, J. & MOORE, M. H. 2011b. *Public Value. Theory and Practice,* Hampshire, Palgrave Macmillan.

BERGEK, A., JACOBSSON, S., CARLSSON, B., LINDMARK, S. & RICKNE, A. 2008. Analyzing the functional dynamics of technological innovation systems: A scheme of analysis. *Research Policy,* 37**,** 407-429.

BERGER, P. L. & LUCKMANN, T. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge,* New York, Anchor Books.

BERGH, J. C. J. M., TRUFFER, B. & KALLIS, G. 2011. Environmental innovation and societal transitions: Introduction and overview. *Environmental Innovation and Societal Transitions,* 1**,** 1-23.

BERNIER, L. & HAFSI, T. 2007. The Changing Nature of Public Entrepreneurship. *Public Administration Review,* May/June 2007**,** 488-503.

BODEN, M. & MILES, I. 2000. *Services and the knowledge-based economy,* London, Continuum.

BOGASON, P. & ZØLNER, M. 2007. Methods for Network Governance Research: An Introduction. *In:* BOGASON, P. & ZØLNER, M. (eds.) *Methods in Democratic Network Governance.* Hampshire: Palgrave Macmillan.

BOMMERT, B. 2010. Collaborative Innovation in the Public Sector. *International Public Management Review,* 11**,** 15-32.

BORINS, S. 2001. Encouraging innovation in the public sector. *Journal of Intellectual Capital,* 2**,** 310-319.

BORINS, S. 2002. Leadership and innovation in the public sector. *Leadership and Organization Development Journal,* 23**,** 467-476.

BORRÁS, S. & EDQUIST, C. 2013. The choice of innovation policy instruments. *Technological Forecasting and Social Change,* 80**,** 1513-1522.

BRESCHI, S. & MALERBA, F. 1997. Sectoral Innovation Systems: Technological Regimes, Schumpeterian Dynamics and Spatial Boundaries. *In:* EDQUIST, C. (ed.) *Systems of Innovation. Technologies, Institutions and Organizations.* London: PINTER.

BRYSON, J. M., CROSBY, B. & BLOOMBERG, L. 2015. Public Value Governance: Moving beyond Traditional Public Administration and the New Public Management. *Public Administration Review,* 74**,** 445-456.

CALLON, M. 1980. The state and technical innovation: a case study of the electrical vehicle in France. *Research Policy,* 9**,** 358-376.

CALLON, M. 1987. Society in the Making: The Study of Technology as a Tool for Sociological Analysis. *In:* BIJKER, W. (ed.) *The Social Construction of Technical Systems: New Directions in the Sociology and History of Technology.* London: MIT Press.

CARLSSON, B. & STANKIEWICZ, R. 1991. On the nature, function and composition of technological systems. *Journal of Evolutionary Economics,* 1**,** 93-118.

CHARMAZ, K. 2006. *Constructing Grounded Theory. A Practical Guide Through Qualitative Analysis,* London, SAGE Publications Ltd.

CHARMAZ, K. 2014. *Constructing Grounded Theory. 2nd Edition,* London, SAGE Publications Inc.

CHRISTENSEN, T. & LÆGREID, P. 2007. The Whole-of-Government Approach to Public Sector Reform. *Public Administration Review,* 67**,** 1059-1066.

COHEN, W. M. & LEVINTHAL, A. L. 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly,* 35**,** 128-152.

COOMBS, R. & MILES, I. 2000. Innovation, measurement and services: the new problematic. *In:* METCALFE, J. S. & MILES, I. (eds.) *Innovation Systems in the Service Economy. Measurement and Case Study Analysis.* Boston: Kluwer Acedemic Publishers.

CORBIN, J. & STRAUSS, A. 1990. Grounded Theory Research: Procedures, Canons, and Evaluative Criteria. *Qualitative Sociology,* 13**,** 3-22.

CORBIN, J. & STRAUSS, A. 2015. *Basics of Qualitative Research. Techniques and Procedures for Developing Grounded Theory,* Thousand Oaks, SAGE Publications, Inc.

COULE, T. & PATMORE, B. 2013. Institutional Logics, Institutional Work, and Public Service Innovation in Non-Profit Organizations. *Public Administration,* 91**,** 980-997.

CUNNINGHAM, P. 2005. Innovation in the health sector - case study analysis. *PUBLIN, Innovation in the public sector, EU 5th framework programme.* Manchester: University of Manchester.

CYERT, R. M. & MARCH, J. G. 1963. *A behavioral theory of the firm,* Englewood Cliffs, N.J., Prentice-Hall.

DAHL, O. 1967. *Grunntrekk i historieforskningens metodelære,* Oslo, Universitetsforlaget.

DAHL, R. A. 1961. *Who governs? Democracy and power in American City,* New Haven, Yale University Press.

DAMANPOUR, F. & SCHNEIDER, M. 2008. Characteristics of Innovation and Innovation Adoption in Public Organizations: Assessing the Role of Managers. *Journal of Public Administration Research & Theory,* November**,** 495-522.

DAMGAARD, B. & SØRENSEN, E. 2007. Interactive Focus Group Interviewing in Studies of Network Governance. *In:* BOGASON, P. & ZØLNER, M. (eds.) *Methods in Democratic Network Governance.* Hampshire: Palgrave Macmillan.

DE VRIES, H., BEKKERS, V. & TUMMERS, L. 2016. Innovation in the Public Sector: A Systematic Review and Future Research Agenda. *Public Administration,* 94**,** 146-166.

DIERKES, M., BERTHOIN ANTAL, A., CHILD, J. & NONAKA, I. 2001. Organizational Learning and Knowledge: Reflections on the Dynamics of the Field and Challenges for the Future. *In:* DIERKES, M., BERTHOIN ANTAL, A., CHILD, J. & NONAKA, I. (eds.) *Handbook of Organizational Learning and Knowledge.* Oxford: Oxford University Press.

DJELLAL, F., GALLOUJ, F. & MILES, I. 2013. Two decades of research on innovation in services: Which place for public services? *Structural Change and Economic Dynamics,* 27**,** 98-117.

DOSI, G. 1982. Technological paradigms and technological trajectories : A suggested interpretation of the determinants and directions of technical change. *Research Policy,* 11**,** 147-162.

DREJER, I. 2004. Identifying innovation in surveys of services: a Schumpeterian perspective. *Research Policy,* 33**,** 551-562.

EDLER, J. & GEORGHIOU, L. 2007. Public procurement and innovation - Resurrecting the demand side. *Research Policy,* 36**,** 949-963.

EDQUIST, C. 1997. Introduction. *In:* EDQUIST, C. (ed.) *Systems of Innovation. Technologies, Institutions and Organizations.* London: Pinter.

EDQUIST, C. 2005. Systems of Innovation: Perspectives and Challenges. *In:* FAGERBERG, J., MOWERY, D. C. & NELSON, R. (eds.) *The Oxford Handbook of Innovation.* Oxford: Oxford University Press.

EDVARDSSON, B., GUSTAFSSON, A., KRISTENSSON, P. & WITELL, L. 2011. Customer integration in service innovation. *In:* GALLOUJ, F. & DJELLAL, F. (eds.) *The Handbook of Innovation and Services. A Multi-disciplinary Perspective.* Chelthenham: Edvard Elgar.

EISENHARDT, K. M. 1989. Building Theories from Case Study Research. *Academy of Management Review,* 14**,** 532-550.

ELMORE, R. 1980. Backward Mapping: Implementation Research and Policy Decisions. *Political Science Quarterly,* Vol. 94**,** 601-616.

ELSTER, J. 1989. *Nuts and bolts for the social sciences,* Cambridge, Cambridge University Press.

ELZEN, B., GEELS, F. W. & GREEN, K. 2004. *System Innovation and the Transition to Sustainability. Theory, Evidence and Policy.,* Cheltenham, UK., Edward Elgar.

ENTWISTLE, T. & MARTIN, S. 2005. From Competition to Collaboration in Public Service Delivery: A New Agenda for Research. *Public Administration,* 83**,** 233-242.

FAGERBERG, J. 2002. A Layman's Guide to Evolutionary Economics. *Industrial R&D and Innovation Policy Learning - Evoltuionary Perspectives and New Methods for Impact Assessment.* Leangkollen, Asker, April 18-19 2002.

FAGERBERG, J. 2005. Innovation: A Guide to the Literature. *In:* FAGERBERG, J., MOWERY, D. C. & NELSON, R. (eds.) *The Oxford Handbook of Innovation.* Oxford: Oxford University Press.

FAGERBERG, J. & VERSPAGEN, B. 2009. Innovation studies - The emerging structure of a new scientific field. *Research Policy,* 38**,** pp. 218-233.

FARLA, J., MARKARD, J., RAVEN, R. & COENEN, L. 2012. Sustainability transitions in the making: A closer look at actors, strategies and resources. *Technological Forecasting and Social Change,* 79**,** 991-998.

FERLIE, E., FITZGERALD, L., MCGIVERN, G., DOPSON, S. U. E. & BENNETT, C. 2011. Public Policy Networks and 'Wicked Problems': A Nascent Solution? *Public Administration,* 89**,** 307-324.

FERNANDEZ, S. & RAINEY, H. G. 2006. Managing Successful Organizational Change in the Public Sector. *Public Administration Review,* 66**,** 168-176.

FREEMAN, C. 1987. *Technology Policy and Economic Performance: Lessons from Japan.,* London, Pinter.

FUGLSANG, L. 2010. Bricolage and invisible innovation in public service innovation. *Journal of Innovation Economics,* 1**,** 67-87.

GALLOUJ, F., RUBALCABA, L. & WINDRUM, P. 2013. *Public-Private Innovation Networks in Services: the dynamics of cooperation in service innovation,* Cheltenham, Elgar.

GALLOUJ, F. & SAVONA, M. 2009. Innovation in services: a review of the debate and a research agenda. *Journal of Evolutionary Economics,* 19**,** 149-172.

GALLOUJ, F. & SAVONA, M. 2010. Towards a theory of innovation in services: a state of the art. *In:* GALLOUJ, F. & DJELLAL, F. (eds.) *The Handbook of Innovation and Services.* Cheltenham: Edward Elgar Publishing Ltd.

GALLOUJ, F. & WEINSTEIN, O. 1997. Innovation in services. *Research Policy,* 26**,** 537.

GARUD, R. & KARNØE, P. 2003. Bricolage versus breakthrough: distributed and embedded agency in technology entrepreneurship. *Research Policy,* 32**,** 277-300.

GARUD, R. & VAN DE VEN, A. H. 1987. Innovation and the Emergence of Industries. *Academy of Management Proceedings,* Vol. 1987**,** 318-322.

GEELS, F. W. 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy,* 31**,** 1257-1274.

GEELS, F. W. 2004. From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy,* 33**,** 897-920.

GEELS, F. W. 2005a. The Dynamics of Transitions in Socio-technical Systems: A Multi-level Analysis of the Transition Pathway from Horse-drawn Carriages to Automobiles (1860-1930). *Technology Analysis & Strategic Management,* 17**,** 445-476.

GEELS, F. W. 2005b. Processes and patterns in transitions and system innovations: Refining the co-evolutionary multi-level perspective. *Technological Forecasting and Social Change,* 72**,** 681-696.

GEELS, F. W. 2011. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions,* 1**,** 24-40.

GEELS, F. W. & KEMP, R. 2007. Dynamics in socio-technical systems: Typology of change processes and contrasting case studies. *Technology in Society,* 29**,** 441-455.

GEELS, F. W., KEMP, R., DUDLEY, G. & LYONS, G. 2012. *Automobility in transition? A socio-technical analysis of Sustainable transport,* London, Routledge Taylor & Francis Group.

GEELS, F. W. & SCHOT, J. 2007. Typology of sociotechnical transition pathways. *Research Policy,* 36**,** 399-417.

GEORGE, A. & BENNETT, A. 2005. *Case studies and theory development in the social sciences,* Cambridge, Mass., MIT Press.

GLASER, B. G. & STRAUSS, A. L. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research,* New Jersey, Aldine Transaction.

GRÖNROOS, C. 2011. Value co-creation in service logic: A critical analysis. *Marketing Theory,* 11**,** 279-301.

HALVORSEN, T., HAUKNES, J., MILES, I. & RØSTE, R. 2005. On the differences between public and private sector innovation. *PUBLIN, Innovation in the public sector, EU 5th framework programme.* Oslo: NIFU STEP.

HARGRAVE, T. J. & VAN DE VEN, A. H. 2006. A collective action model of institutional innovation. *Academy of Management Review,* 31**,** 864-888.

HARTLEY, J. 2005. Innovation in governance and public services: Past and present. *Public Money & Management,* 25**,** 27-34.

HARTLEY, J. 2008. The Innovation Landscape for Public Service Organizations. *In:* HARTLEY, J., DONALDSON, C., SKELCHER, C. & WALLACE, M. (eds.) *Managing to Improve Public Services.* Cambridge: Cambridge University Press.

HARTLEY, J. 2011. Public Value Through Innovation and Improvement. *In:* BENINGTON, J. & MOORE, M. (eds.) *Public Value. Theory and Practice.* Basingstoke, Hampshire: Palgrave Macmillan.

HARTLEY, J. 2013. Public and private features of innovation. *In:* OSBORNE, S. P. & BROWN, L. (eds.) *Handbook of innovation in public services.* Cheltenham: Ewdard Elgar.

HARTLEY, J., ALFORD, J., HUGHES, O. & YATES, S. 2015. Public Value and Political Astuteness in the Work of Public Managers: the Art of the Possible. *Public Administration,* 93**,** 195-211.

HARTLEY, J. & SKELCHER, C. 2008. The Agenda for Public Service Improvement. *In:* HARTLEY, J., DONALDSON, C., SKELCHER, C. & WALLACE, M. (eds.) *Managing to Improve Public Services* Cambridge: Cambridge University Press.

HARTLEY, J., SØRENSEN, E. & TORFING, J. 2013. Collaborative Innovation: A Viable Alternative to Market Competition and Organizational Entrepreneurship. *Public Administration Review,* 73**,** 821-830.

HAUKNES, J. 1998. Services in innovation - Innovation in services. *Services in Innovation, Innovation In Services - Services in European Innovation Systems (SI45). The Targeted Socio-Economic Research Programme (TSER), EU Commission.* Oslo: STEP group.

HEAD, B. W. & ALFORD, J. 2015. Wicked Problems: Implications for Public Policy and Management. *Administration & Society,* 47**,** 711-739.

HEDSTRÖM, P. & SWEDBERG, R. 1998. *Social Mechanisms. An Analytical Approach to Social Theory,* New York, Cambridge University Press.

HEKKERT, M., SUURS, R., NEGRO, S., KUHLMANN, S. & SMITHS, R. 2007. Functions of innovation systems: a new approach for analysing technological change. *Technological Forecasting and Social Change,* 74**,** 413-432.

HERNES, T. & RØSTE, R. 2007. Innovasjonsprosessers utfordringer og behovet for å arbeide strategisk relasjonelt. *In:* HERNES, T. & KOEFOED, A. L. (eds.) *Innovasjonsprosesser. Om innovasjoners odyssé.* Bergen: Fagbokforlaget.

HILL, M. & HUPE, P. 2002. *Implementing Public Policy: Governance in Theory and in Practice,* London, SAGE Publications.

HOOGMA, R., R., K., SCHOT, J. & TRUFFER, B. 2002. *Experimenting for Sustainable Transport: the Approach of Strategic Niche Management,* London, Spoon Press.

HOWELLS, J. 2010. Services and Innovation and Service Innovation: New Theoretical Directions. *In:* GALLOUJ, F. & DJELLAL, F. (eds.) *The Handbook of Innovation and Services.* Cheltenham: Edward Elgar.

HÅKANSSON, H. & WALUSZEWSKI, A. 2007. Interaction. The only Means to Create Use. *In:* HÅKANSSON, H. & WALUSZEWSKI, A. (eds.) *Knowledge and Innovation in Business and Industry. The Importance of Using Others.* London: Routledge, Taylor and Francis Group.

JACOBSSON, S. & BERGEK, A. 2011. Innovation system analyses and sustainability transitions: Contributions and suggestions for research. *Environmental Innovation and Societal Transitions,* 1**,** 41-57.

KALU, K. N. 2003. Entrepreneurs or Conservators? Contractarian Principles of Bureaucratic Performance. *Administration & Society,* 35**,** 539- 563.

KELLY, G., MULGAN, G. & MUERS, S. 2002. Creating Public Value: An Analytical Framework for Public Service Reform. London: Cabinet Office.

KEMP, R., SCHOT, J. & HOOGMA, R. 1998. Regime shifts to sustainability through processes of niche formation: the approach of strategic niche management. *Technology Analysis & Strategic Management,* 10**,** 175-195.

KEMP, R. & WEEHUIZEN, R. 2005. Policy learning, what does it mean and how can we study it? *PUBLIN, Innovation in the public sector, EU 5th framework programme.* Maastricht: MERIT.

KJELDSTADLI, K. 1992. *Fortida er ikke hva den en gang var. En innføring i historiefaget,* Oslo, Universitetsforlaget.

KJELLBERG, F. & REITAN, M. 1995. *Studiet av offentlig politikk. En innføring,* Otta, TANO.

KLINE, S. J. & ROSENBERG, N. 1986. An Overview of Innovation. *In:* LANDAU, R. & ROSENBERG, N. (eds.) *The Positive Sum Strategy - Harnessing Technology for Economic Growth.* Washington DC: National Academy Press.

KOCH, P. & HAUKNES, J. 2005. On innovation in the public sector. *PUBLIN, Innovation in the public sector, EU 5th framework programme.* Oslo: NIFU STEP.

KUHLMAN, S. & RIP, A. 2014. The challenge of addressing Grand Challenges. A think piece on how innovation can be driven towards the "Grand Challenges" as defined under the European Union Framework Programme Horizon 2020. *Report to ERIAB.*

KUIPERS, B. S., HIGGS, M., KICKERT, W., TUMMERS, L., GRANDIA, J. & VAN DER VOET, J. 2014. THE MANAGEMENT OF CHANGE IN PUBLIC ORGANIZATIONS: A LITERATURE REVIEW. *Public Administration,* 92**,** 1-20.

LAM, A. 2005. Organizational Innovation. *The Oxford Handbook of Innovation.* Oxford: Oxford University Press.

LANGERGAARD, L. L. 2011. Understandings of 'users' and 'innovation' in a public sector context. *In:* SUNBO, J. & TOIVONEN, M. (eds.) *User-based Innovation in Services.* Cheltenham, Uk: Edward Elgar.

LANGERGAARD, L. L. & SCHEUER, J. D. 2012. Towards a deeper understanding of public sector innovation. *In:* MACAULAY, L., MILES, I., WILBY, J., TAN, Y. L., ZHAO, L. & THEODOULIDIS, B. (eds.) *Case studies in service innovation.* Dordrecht London: Springer.

LANGLEY, A. 1999. Strategies for Theorising from Process Data. *Academy of Management Review,* 24**,** 691-710.

LANGLEY, A. 2009. Studying processes in and around organizations. *In:* BUCHANAN, D. & BRYMAN, A. (eds.) *The SAGE handbook of organizational research methods.* London: SAGE Publications Ltd.

LANGLEY, A., SMALLMAN, C., TSOUKAS, H. & VAN DE VEN, A. H. 2013. Process studies of change in organization and management: unveiling temporality, activity and flow. *Academy of Management Journal,* 56**,** 1-13.

LANGLEY, A. & TSOUKAS, H. 2010. Introducing "Perspectives on Process Organization Studies". *In:* HERNES, T. & MAITLIS, S. (eds.) *Process, Sensemaking and Organizing.* Oxford: Oxford University Press.

LAUBER, V. & JACOBSSON, S. 2016. The politics and economics of constructing, contesting and restricting socio-political space for renewables – The German Renewable Energy Act. *Environmental Innovation and Societal Transitions,* 18**,** 147-163.

LAZONICK, W. 2005. The Innovative Firm. *In:* FAGERBERG, J., MOWERY, D. C. & NELSON, R. R. (eds.) *The Oxford Handbook of Innovation.* Oxford: Oxford University Press.

LINDBLOM, C. E. 1959. The Science of Muddling Through. *Public Administration Review,* Vol. 19**,** pp. 79-88.

LUNDVALL, B.-Å. 1992. *National Systems of Innovation. Towards a Theory of Innovation and Interactive Learning.,* London, Pinter.

LUNDVALL, B.-Å. 2007. National Innovation Systems—Analytical Concept and Development Tool. *Industry & Innovation,* 14**,** 95-119.

LUNDVALL, B.-Å. 2011. Økonomisk innovationsteori: Fra iværksættere til innovationssystemer. *In:* SØRENSEN, E. & TORFING, J. (eds.) *Samarbejdsdrevet innovation i den offentlige sektor.* København: Jurist- og Økonomforbundets Forlag.

LYNN, L. E. J. 2013. Innovation and reform in public administration: one subject or two. *In:* OSBORNE, S. P. & BROWN, L. (eds.) *Handbook of innovation in public services.* Cheltenham: Edward Elgar.

LÆGREID, P. & RYKKJA, L. H. 2015. Organizing for "wicked problems" – analyzing coordination arrangements in two policy areas: Internal security and the welfare administration. *International Journal of Public Sector Management,* 28**,** 475-493.

MANDELL, M. & KEAST, R. 2013. Innovation, networks and leadership. *In:* OSBORNE, S. P. & BROWN, L. (eds.) *Handbook of Innovation in Public Services.* Cheltenham: Edward Elgar.

MARCH, J. G. & OLSEN, J. O. 1994. *Ambiguity and Choice in Organizations.,* Oslo, Scandinavian University Press.

MARCH, J. G. & OLSEN, J. P. 1975. Uncertainty of Past - Organizational Learning under Ambiguity. *European Journal of Political Research,* 3**,** 147-171.

MARCH, J. G. & OLSEN, J. P. 1984. The New Institutionalism: Organizational Factors in Political Life. *American Political Science Review,* 78**,** 734-749.

MARCH, J. G. & OLSEN, J. P. 1989. *Rediscovering institutions: the organizational basis of politics,* New York, Free Press.

MARCH, J. G. & OLSEN, J. P. 2006. Elaborating the "New Institutionalism". *In:* RHODES, R. A. W., BINDER, S. & ROCKMAN, B. A. (eds.) *The Oxford Handbook of Political Institutions.* Oxford: Oxford University Press.

MARCH, J. G. & SIMON, H. 1958. *Organizations,* Cambridge, Mass., Blackwell Publishers.

MARKARD, J., RAVEN, R. & TRUFFER, B. 2012. Sustainability transitions: An emerging field of research and its prospects. *Research Policy,* 41**,** 955-967.

MARKARD, J. & TRUFFER, B. 2008. Technological innovation systems and the multi-level perspective: Towards an integrated framework. *Research Policy,* 37**,** 596-615.

MCGUIRE, M., AGRANOFF, R. & SILVIA, C. 2010. Collaborative Public Administration. *Public Administration Review,* The Foundations of Public Administration Series.

MEADOWCROFT, J. 2011. Engaging with the politics of sustainability transitions. *Environmental Innovation and Societal Transitions,* 1**,** 70-75.

MERTON, R. 1967. On Sociological Theories of the Middle Range. *In:* MERTON, R. (ed.) *On Theoretical Sociology: Five Essays, Old and New.* New York: The Free Press.

MEYER, J. W. & ROWAN, B. 1977. Institutionalized Organizations: Formal Structure as Myth and Ceremony. *The American Journal of Sociology,* 83**,** 340-360.

MILES, I. 2005. Innovation in Services. *In:* FAGERBERG, J., MOWERY, D. C., NELSON, RICHARD (ed.) *The Oxford Handbook of Innovation.* Oxford: Oxford University Press.

MOHR, L. R. 1969. Determinants of innovation in organizations. *American Political Science Review,* 63**,** 111-126.

MOORE, M. 1995. *Creating Public Value: Strategic Management in Government,* Cambridge, Mass., Harvard University Press.

MOORE, M. & HARTLEY, J. 2008. Innovations in governance. *Public Management Review,* 10**,** 3-20.

MOORE, M. H. 2005. Break-through innovations and continuous improvement: Two different models of innovative processes in the public sector. *Public Money & Management,* 25**,** 43-50.

NELSON, R. 1993. *National Systems of Innovation: A Comparative Analysis,* Oxford, Oxford University Press.

NELSON, R. R. 2008. Factors affecting the power of technological paradigms. *Industrial and Corporate Change,* Volume 17**,** pp. 485-497.

NELSON, R. R. & WINTER, S. G. 1982. *An evolutionary theory of economic change,* Cambridge, Mass., The Belknap Press of Harvard University Press.

OLSEN, J. P. 2004. Innovasjon, politikk og institusjonell dynamikk. *ARENA Working Papers.* Arena, Centre for European Studies, University of Oslo.

OLSEN, J. P. 2005. Maybe It Is Time to Rediscover Bureaucracy. *Journal of Public Administration Research and Theory,* 16**,** 1-24.

OLSEN, J. P. 2007. Organization theory, public administration, democratic governance. *Nordise Organisasjonsstudier,* 9**,** 93-110.

OSBORNE, S. P. 2006. Editorial. The New Public Governance? *Public Management Review,* 8**,** 377-387.

OSBORNE, S. P. & BROWN, L. 2011. Innovation, Public Policy and Public Services Delivery in the UK. The Word that would be King? *Public Administration,* 89**,** 1335-1350.

OSBORNE, S. P. & BROWN, L. 2013. Introduction: Innovation in public services. *In:* OSBORNE, S. P. & BROWN, L. (eds.) *Handbook of innovation in public services.* Cheltenham: Edward Elgar.

OSTROM, E. 1965. University of California-Los Angeles, Department of Political Science.

PAVITT, K. 1984. Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy,* 13**,** 343-373.

PEDERSEN, D. & HARTLEY, J. 2008. The changing context of public leadership and management. Implications for roles and dynamics. *International Journal of Public Sector Management,* 21**,** 327-339.

PETERS, B. G. 2012. *Institutional Theory in Political Science. The New Institutionalism,* New York, The Continuum International Publishing Group.

PETTIGREW, A. M. 1987. Context and Action in the Transformation of the Firm. *Journal of Management Studies,* 24**,** 649-670.

PETTIGREW, A. M. 1990. Longitudinal Field Research on Change: Theory and Practice. *Organization Science,* 1**,** 267-292.

PETTIGREW, A. M. 1997. What is a processual analysis? *Scandinavian Journal of Management,* 13**,** 337-348.

PETTIGREW, A. M. 2012. Context and Action in the Transformation of the Firm: A Reprise. *Journal of Management Studies,* 49**,** 1304-1328.

PETTIGREW, A. M., WOODMAN, R. W. & CAMERON, K. S. 2001. Studying Organizational Change and Development: Challenges for Future Research. *Academy of Management,* 44**,** 697-713.

POLANYI, M. 1967. *The tacit dimension,* London, Routledge & Kegan Paul.

POLLITT, C. 2003. Joined-up Government: A Survey. *Political Studies Review,* 1**,** 34-49.

POLLITT, C. 2011. Innovation in the Public Sector: An Introductory Overview. *In:* BEKKERS, V., EDELENBOS, J. & STEIJN, B. (eds.) *Innovation in the Public Sector. Linking Capacity and Leadership.* Hampshire: Palgrave Macmillan.

POLLITT, C. 2012. *New Perspectives on Public Services,* Oxford, Oxford University Press.

POLLITT, C. 2015a. Innovation and LIPSE: An Interim Assessment of an Innovative Research Project. *Speech to LIPSE Conference: Royal Flemish Academy of Belgium, Brussels, 3 February 2015.*

POLLITT, C. 2015b. Wickedness will not wait. Climate change and public management research. *Public Money & Management,* 35.

POLLITT, C. 2015c. Wickedness will not wait: Climate Change and Public Management Research. *Public Money and Management,* 35**,** 181-186.

POLLITT, C. & BOUCKAERT, G. 2009. *Continuity and Change in Public Policy and Management,* Cheltenham, Edward Elgar.

POLLITT, C. & HUPE, P. 2011. Talking About Government. *Public Management Review,* 13**,** 641-658.

POOLE, M. S. 2004. Central Issues in the Study of Change and Innovation. *In:* POOLE, M. S. & VAN DE VEN, A. H. (eds.) *Handbook of Organizational Change and Innovation.* Oxford, NY: Oxford University Press.

POOLE, M. S. & VAN DE VEN, A. H. 1989. Methods for Studying Innovation Processes. *In:* VAN DE VEN, A. H., ANGLE, H. L. & POOLE, M. S. (eds.) *Research on the Management of Innovation. The Minnesota Studies.* New York: Oxford University Press.

POOLE, M. S. & VAN DE VEN, A. H. 2010. Empirical Methods for Research on Organizational Decision-Making Processes. *In:* NUTT, P. C. & WILSON, D. C. (eds.) *Handbook of Decision Making.* John Wiley & Sons, Ltd.

POTTS, J. 2009. The innovation deficit in public services: The curious problem of too much efficiency and not enough waste and failure. *Innovation: management, policy and practice,* 11**,** 34-43.

PRESSMAN, J. L. & WILDAVSKY, A. 1973. *Implementation,* Berkley, California University Press.

RAINEY, H. G. & BOZEMAN, B. 2000. Comparing Public and Private Organizations: Empirical Research and the Power of the A Priori. *Journal of Public Administration Research & Theory,* 10**,** 447.

RASHMAN, L., WITHERS, E. & HARTLEY, J. 2009. Organizational learning and knowledge in public service organizations: A systematic review of the literature. *International Journal of Management Reviews,* 11**,** 463-494.

RAVEN, R., KERN, F., SMITH, A., JACOBSSON, S. & VERHEES, B. 2016a. The politics of innovation spaces for low-carbon energy: Introduction to the special issue. *Environmental Innovation and Societal Transitions,* 18**,** 101-110.

RAVEN, R., KERN, F., VERHEES, B. & SMITH, A. 2016b. Niche construction and empowerment through socio-political work. A meta-analysis of six low-carbon technology cases. *Environmental Innovation and Societal Transitions,* 18**,** 164-180.

RHODES, R. A. W. & WANNA, J. 2007. The Limits to Public Value, or Rescuing Responsible Goverment from the Platonic Guardians. *The Australian Journal of Public Administration,* 66**,** 406-421.

RIP, A. & KEMP, R. 1998. Technological change.

RITTEL, H. W. J. & WEBBER, M. M. 1973. Dilemmas in a general theory of planning. *Policy Science,* 4**,** 155-169.

ROBERTS, N. C. 2000. Wicked Problems and Network Approaches to Resolution. *International Public Management Review,* 1**,** 1-19.

ROBERTS, N. C. & LONGLEY, C. 2013. Against all odds: bottom-up entrepreneurship and innovation in the Department of Defence. *In:* OSBORNE, S. P. & BROWN, L. (eds.) *Handbook of Innovation in Public Services.* Cheltenham: Edward Elgar.

ROLFSTAM, M., PHILLIPS, W. & BAKKER, E. 2011. Public procurement of innovation, diffusion and endogenous institutions. *International Journal of Public Sector Management,* 24**,** 452-468.

ROSENBERG, N. 1982. *Inside the black box. Technology and economics.,* Cambridge, Cambridge University Press.

RØSTE, R. 2001. *Næringspolitikk for konkurransedyktige nyetableringer - en casestudie av den elektriske bilen Think fra idé til marked,* Oslo, Universitetet i Oslo, Hovedoppgave statsvitenskap.

RØSTE, R. 2004. The innovation process of the Norwegian electric car Think – a case study. *MONIT, Monitoring and implementing horizontal innovation policy, OECD.* Oslo: STEP.

RØSTE, R. 2005. Studies of innovation in the public sector, a theoretical framework. *PUBLIN, Innovation in the public sector, EU 5th framework programme.* Oslo: NIFU STEP.

RØSTE, R. 2006. Systems and Dynamics of Innovation in the Public Sector - a Case Study of the Public Care for Elderly in Norway. *The International ProAct Conference: Innovation Pressure - Rethinking Competitiveness, Policy and Society in a Globalised Economy. .* Tampere, Finland.

RØSTE, R. 2008. Innovation in the public sector - identifying the concept and the systems of innovations. *In:* GODØ, H., GULBRANDSEN, M. & HERSTAD, S. (eds.) *Innovation systems, innovation modes and processes of commercialization.* Oslo: NIFU STEP.

RØSTE, R. 2009. Public-Private Innovation Networks - a case study of the battery charging points for electric vehicles in Oslo. *WP 6: Case studies in transport services, Contribution to ServPPIN, Public and Private Services to European Growth and Welfare and the Role of Public-Private Innovation Networks, Research project in the EU 7th Framework Programme.* Oslo: NIFU STEP.

RØSTE, R. 2013. Value chain analysis of the Norwegian electric vehicle market – Think a first mover. *Report TOP NEST-project.* Oslo: NIFU.

RØSTE, R. & GODØ, H. 2005. Notat om innovasjon i offentlig sektor - til utvikling av kompetansegrunnlaget for VIOS. Oslo: NIFU STEP.

SAXENIAN, A. 1994. *Regional Advantage. Culture and Competition in Silicon Valley and Route 128.,* Cambridge, Cambridge University Press.

SCHUMPETER, J. 1934. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and Business Cycle.,* Cambridge, Harvard University Press.

SCHUMPETER, J. 1937. *Preface to the Japanese Edition of "Theorie der Wirtschaftlichen Entwicklung",* New Brunswick, N.J., Transaction Publishers.

SCHUMPETER, J. 1943. *Capitalism, Socialism and Democracy.,* New York, Harper.

SCOTT, R. W. 1992. *Organizations. Rational, Natural, and Open Systems,* Englewood Cliffs, N.J., Prentice-Hall, Inc.

SCOTT, R. W. 2004. Reflections on a Half-Century of Organizational Sociology. *Annual Review of Sociology,* 30**,** 1-21.

SCOTT, R. W. 2008. *Institutions and Organizations. Ideas and Interests,* Los Angeles, SAGE Publications.

SILVERMAN, D. 1993. *Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction*, SAGE

SIMON, H. A. 1976. *Administrative behavior: a study of decision-making processes in administrative organization,* New York, The Macmillan Company.

SMITH, A. & RAVEN, R. 2012. What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy,* 41**,** 1025-1036.

SMITH, A., STIRLING, A. & BERKHOUT, F. 2005. The governance of sustainable socio-technical transitions. *Research Policy,* 34**,** 1491-1510.

STOKER, G. 2006. Public Value Management: A New Narrative for Networked Governance. *The American Review of Public Administration,* 36**,** 41-57.

SUNDBO, J. 2008. Customer-based innovation of knowledge e-services: the importance of after-innovation. *International Journal of Services Technology & Management,* 9**,** 218-233.

SUNDBO, J. & GALLOUJ, F. 2000. Innovation as a loosely coupled system in services. *In:* METCALFE, J. S. & MILES, I. (eds.) *Innovation Systems in the Service Economy: Measurement and Case Study Analysis.* Boston, Dordrecht and London: Kluwer Academic Publishers.

SUNDBO, J. & TOIVONEN, M. 2011. Introduction. *In:* SUNDBO, J. & TOIVONEN, M. (eds.) *User-based Innovation in Services.* Cheltenham, UK: Edvard Elgar.

SØRENSEN, E. & TORFING, J. 2011a. Enhancing Collaborative Innovation in the Public Sector. *Administration & Society,* 43**,** 842-868.

SØRENSEN, E. & TORFING, J. 2011b. Samarbejdsdrevet innovation i den offentlige sektor. *In:* SØRENSEN, E. & TORFING, J. (eds.) *Samarbejdsdrevet innovation i den offentlige sektor.* København: Jurist- og økonomforbundets forlag.

SØRENSEN, E. & TORFING, J. 2011c. *Samarbejdsdrevet innovation i den offentlige sektor,* København, Jurist- og Økonomforbundets Forlag.

SØRENSEN, E. & TORFING, J. 2012. Introduction Collaborative Innovation in the Public Sector. *Innovation Journal,* 17**,** 1-14.

TEIGEN, H., RINGHOLM, T. & AARSÆTHER, N. 2013. Innovatører frå alders tid. *In:* RINGHOLM, T., TEIGEN, H. & AARSÆTHER, N. (eds.) *Innovative kommuner.* Oslo: Cappelen Damm Akademisk.

TERMEER, C. & NOTEBOOM, S. 2014. Innovative leadership through networks. *In:* ANSELL, C. & TORFING, J. (eds.) *Public Innovation Through Collaboration and Design.* New York: Routledge. Taylor & Francis Group.

TETHER, B. & METCALFE, J. S. 2004. Services and systems of innovation. *In:* MALERBA, F. (ed.) *Sectoral Systems of Innovation. Concepts, issues and analysis of six major sectors in Europe.* Cambridge: Cambridge University Press.

THOMPSON, V. A. 1965. Bureaucracy and Innovation. *Administrative Science Quarterly,* 10**,** 1-20.

TORFING, J. 2011. Teorier om offentlig administration og styring: Fra stillestående byråkrati til samarbejdsdrevet innovation. *In:* SØRENSEN, E. & TORFING, J. (eds.) *Samarbejdsdrevet innovation i den offentlige sektor.* København: Jurist- og Økonomforbundets Forlag.

TORFING, J. 2013. Collaborative innovation in the public sector. *In:* OSBORNE, S. P. & BROWN, L. (eds.) *Handbook of Innovation in Public services.* Cheltenham: Edward Elgar.

TORFING, J., PETERS, B. G., PIERRE, J. & SØRENSEN, E. 2013. *Interactive Governance. Advancing the Paradigm,* Oxford, Oxford University Press.

TSOUKAS, H. & CHIA, R. 2002. On Organizational Becoming: Rethinking Organizational Change. *Organization Science,* 13**,** 567-585.

TUNZELMANN, N. V., MALERBA, F., NIGHTINGALE, P. & METCALFE, S. 2008. Technological paradigms: past, presemt and future. *Industrial and Corporate Change,* Volume 17**,** 467-484.

VAN DE VEN, A. H. 1986. Central Problems in the Management of Innovation. *Management Science,* 32**,** 590-607.

VAN DE VEN, A. H. 2007. *Engaged Scholarship. A guide for organizational and social research,* Oxford, Oxford University Press.

VAN DE VEN, A. H., ANGLE, H. L. & POOLE, M. S. 1989. *Research on the management of innovation: the Minnesota studies,* New York, Harper & Row.

VAN DE VEN, A. H. & GARUD, R. 1993. Innovation and Industry Development: The Case of Cochlear Implants. *Research on Technological Innovation, Management and Policy,* 5**,** 1-46.

VAN DE VEN, A. H. & GARUD, R. 1994. The Coevolution of Technical and Institutional Events in the Development of an Innovation. *In:* BAUM, J. A. C. & SINGH, J. V. (eds.) *Evolutionary Dynamics of Organizations.* New York: Oxford University Press.

VAN DE VEN, A. H., POLLEY, D. E., RAGHU, G. & SANKARAN, V. 1999. *The Innovation journey,* Oxford, Oxford University Press.

VAN DE VEN, A. H. & POOLE, M. S. 1995. Explaining Development and Change in Organizations. *Academy of Management Review,* 20**,** 510-540.

VAN DE VEN, A. H. & POOLE, M. S. 2005. Alternative Approaches for Studying Organizational Change. *Organization Studies,* 26(9)**,** 1377-1404.

VAN DE VEN, A. H., SAPIENZA, H. J. & VILLANUEVA, J. 2007. Entrepreneurial pursuits of self- and collective interests. *Strategic Entrepreneurship Journal,* Vol. 1**,** 353-370.

VARGO, S. L. & LUSCH, R. F. 2008. Service-dominant logic: continuing the evolution. *Journal of the Academy of Marketing Science,* 36**,** 1-10.

VON HIPPEL, E. 2005. *Democratizing Innovation,* Cambridge, MA, MIT Press.

WEBER, E. P. & KHADEMIAN, A. M. 2008. Wicked Problems, Knowledge Challenges, and Collaborative Capacity Builders in Network Settings. *Public Administration Review,* 68**,** 334-349.

WEBER, K. M. & ROHRACHER, H. 2012. Legitimizing research, technology and innovation policies for transformative change: Combining insights from innovation

systems and multi-level perspective in a comprehensive 'failures' framework. *Research Policy,* 41**,** 1037-1047.

WEBER, M. 1947. *The Theory of Social and Economic Organization,* Glencoe, Ill, The Free Press.

WEBER, M. 1968. *Economy and Society: An Interpretive Sociology,* New York, Bedminister Press.

WEICK, K. E. 1995. *Sensemaking in organizations,* Thousand Oaks, SAGE Publications.

WINDRUM, P. 2008. Innovation and entrepreneurship in public services. *In:* WINDRUM, P. & KOCH, P. (eds.) *Innovation in Public Sector Services. Entrepreneurship, Creativity and Management.* Cheltenham: Edward Elgar.

YIN, R. K. 1994. *Case study research. Design and methods.,* Thousand Oaks, SAGE Publications.

ZERBINATI, S. & SOUITARIS, V. 2005. Entrepreneurship in the public sector: a framework of analysis in European local govenments. *Entrepreneurship & Regional Development,* 17**,** 43-64.

ANNEX

Annex 1   List informal meetings, personal interviews, and focus group interviews

Actors	Date and location	Comments
Informal Meeting Traffic Agency Two people: Project leader/head of Planning Section and Administrator Support Scheme	March 17, 2009 1.5 hours Traffic Agency, Oslo	Presentation sent after the meeting. The project leader retired in April 2011.
Telephone interview Private company GARO: Manager	June 25, 2009 20 minutes Telephone	
Personal Interview Traffic Agency Project leader/acting head of Planning Section	May 9, 2011 1 hour Traffic Agency, Oslo	New project leader. Guided tour to a room with the attained charging stations.
Personal interview Private company Proxll: Project leader	May 13, 2011 1 hour Proxll, Oslo	Hand-outs and brochures about the company.
Personal interview Third-sector actor Norwegian EV Association (NEF): General secretary	May 18, 2011 1 hour Coffee shop, Oslo	
Personal interview Private company GARO: Manager	May 19, 2011 1 hour GARO, Drammen	Guided tour to the companies charging stations. Hand-outs and brochures about the company.
Personal interview Third-sector actor ZERO: Head of transport	May 23, 2011 1 hour ZERO, Oslo	
Personal interview Traffic Agency: Technician/operating section	May 30, 2011 1 hour Traffic Agency, Oslo	
Personal interview Politician Liberal Left Party, leader of Party Group in the City Council	June 24, 2011 40 minutes City Hall, Oslo	Party secretary supplemented with information and documents on the political process.
Focus group interview Traffic Agency The Project Group: three people: Project leader, technician, and Administrator support scheme	June 29, 2012 1.5 hour Agency for Urban Environment, Oslo	Draft of the chronology sent to the participants before the meeting.
Personal interview Traffic Agency Former director, 2005–2010	September 18, 2013 1 hour City Hall, Oslo	Current position: head of Section for Transport Affairs, Department of Environment and Transport, City Government Administration.
Personal interview Traffic Agency Former project leader/head of Technical Division, 2009–2010 and acting director, 2010–2011	September 23, 2013 1 hour Agency for Urban Environment, Oslo	Current position: head of Customer Department, Agency for Urban Environment.
Personal interview Third-sector actor NEF, executive member	September 26, 2013 1.5 hours NEF, Oslo	Documentation on the history of the charging stations in Oslo sent after the meeting.
Informal meeting Traffic Agency Two people: head of Traffic Department and technology and project leader/senior executive officer	November 13, 2013 1.5 hours Agency for Urban Environment, Oslo	The former project leader in a new position after the reorganization to the Agency for Urban Environment.

PART II: THE PAPERS

The papers of this dissertation (pages 148-212) are not available open access, due to copyright matters.

Paper 1
Coevolution and innovations in governance: A case study of the new public service system for electric vehicles in Oslo
Røste, Rannveig
https://www.taylorfrancis.com/books/e/9781134628414/chapters/10.4324%2F9781315885612-17

Paper 2
The political dimension of wicked problems: A process study of the emerging innovation in public charging services for EVs in Oslo
Røste, Rannveig

Paper 3
Innovation in public services: a multi-layered approach
Røste, Rannveig

Series of Dissertations

5/2017   *Elizabeth Solberg*
Adapting to Changing Job Demands**:** A Broadcast Approach to Understanding Self-Regulated Adaptive Performance and Cultivating it in Situated Work Settings

4/2017   *Natalia Bodrug*
Essays on economic choices and cultural values

3/2017   *Vegard Høghaug Larsen*
Drivers of the business cycle: Oil, news and uncertainty

2/2017   *Nikolay Georgiev*
Use of Word Categories with Psychological Relevance Predicts Prominence in Online Social Networks

1/2017   *Sigmund Valaker*
Breakdown of Team Cognition and Team Performance: Examining the influence of media and overconfidence on mutual understanding, shared situation awareness and contextualization

2016

12/2016   *Xiaobei Wang*
Strategizing in Logistics Networks: The role of Logistics Service Providers as mediators and network facilitators

11/2016   *Prosper Ameh Kwei-Narh*
A mid-range theory of monitoring behaviors, shared task mental models, and team performance within dynamic settings

10/2016   *Anton Diachenko*
Ownership type, performance, and context: Study of institutional and industrial owners

9/2016   *Ranvir S. Rai*
Innovation in Practice: A Practice-Theoretical Exploration of Discontinuous Service Innovations

8/2016   *Gordana Abramovic*
Effective Diversity Management on the Line - Who and How? On the role of line managers in organisations with a diverse workforce

7/2016   *Mohammad Ejaz*
Why do some service innovations succeed while others fail? A comparative case study of managing innovation processes of two internet-based aggregation financial services at Finn.no (Penger.no)

6/2016   *Asmund Rygh*
Corporate governance and international business: Essays on multinational enterprises, ownership, finance and institutions

5/2016   *Chen Qu*
Three Essays on Game Theory and Patent-Pool Formation

4/2016   *Arash Aloosh*
Three Essays in International Finance

3/2016 *John-Erik Mathisen*
Elaborating and Implemental Mindsets in Business-related Behavior: An Investigation of the Interface between Cognition and Action. How goals and plans emerge and relate to cognition and action in business.

2/2016 *Øyvind Nilsen Aas*
Essays in industrial organization and search theory

1/2016 *Dominque Kost*
Understanding Transactive Memory Systems in Virtual Teams: The role of integration and differentiation, task dependencies and routines

2015

8/2015 *Andreea Mitrache*
Macroeconomic Factors and Asset Prices – An Empirical Investigation

7/2015 *Lene Pettersen*
Working in Tandem: A Longitudinal Study of the Interplay of Working Practices and Social Enterprise Platforms in the Multinational Workplace

6/2015 *Di Cui*
Three Essays on Investor Recognition and Mergers & Acquisitions

5/2015 *Katja Maria Hydle*
Cross border practices: Transnational Practices in Professional Service Firms

4/2014 *Ieva Martinkenaitė-Pujanauskienė*
Evolutionary and power perspectives on headquarters-subsidiary knowledge transfer: The role of disseminative and absorptive capacities

3/2015 *Tarje Gaustad*
The Perils of Self-Brand Connections: Consumer Response to Changes in Brand Image

2/2015 *Jakob Utgård*
Organizational form, local market structure and corporate social performance in retail

1/2015 *Drago Bergholt*
Shocks and Transmission Channels in Multi-Sector Small Open Economies

2014

13/2014 *Nam Huong Dau*
Asset Pricing with Heterogeneous Beliefs and Portfolio Constraints

12/2014 *Vegard Kolbjørnsrud*
On governance in collaborative communities

11/2014 *Ignacio García de Olalla López*
Essays in Corporate Finance

10/2014 *Sebastiano Lombardo*
Client-consultant interaction practices: Sources of ingenuity, value creation and strategizing

9/2014 *Leif Anders Thorsrud*
International business cycles and oil market dynamics

8/2014   *Ide Katrine Birkeland*
Fire Walk with Me: Exploring the Role of Harmonious and Obsessive Passion in Well-being and Performance at Work

7/2014   *Sinem Acar-Burkay*
Essays on relational outcomes in mixed-motive situations

6/2014   *Susanne H.G. Poulsson*
On Experiences as Economic Offerings

5/2014   *Eric Lawrence Wiik*
Functional Method as a Heuristic and Research Perspective: A Study in Systems Theory

4/2014   *Christian Enger Gimsø*
Narcissus and Leadership Potential - The measurement and implications of narcissism in leadership selection processes

3/2014   *Mehrad Moeini-Jazani*
When Power Has Its Pants Down: Social Power Increases Sensitivity to Internal Desires

2/2014   *Yuriy Zhovtobryukh*
The role of technology, ownership and origin in M&A performance

1/2014   *Siv Staubo*
Regulation and Corporate Board Composition

2013
9/2013   *Bjørn Tallak Bakken*
Intuition and analysis in decision making: On the relationships between cognitive style, cognitive processing, decision behaviour, and task performance in a simulated crisis management context

8/2013   *Karl Joachim Breunig*
Realizing Reticulation: A Comparative Study of Capability Dynamics in two International Professional Service Firms over 10 years

7/2013   *Junhua Zhong*
Three Essays on Empirical Asset Pricing

6/2013   *Ren Lu*
Cluster Networks and Cluster Innovations: An Empirical Study of Norwegian Centres of Expertise

5/2013   *Therese Dille*
Inter-institutional projects in time: a conceptual framework and empirical investigation

4/2013   *Thai Binh Phan*
Network Service Innovations: Users' Benefits from Improving Network Structure

3/2013   *Terje Gaustad*
Creating the Image: A Transaction Cost Analysis of Joint Value Creation in the Motion Picture Industry

2/2013   *Anna Swärd*
Trust processes in fixed-duration alliances: A multi-level, multi-dimensional, and temporal view on trust

1/2013   *Sut I Wong Humborstad*
Congruence in empowerment expectations: On subordinates' responses to disconfirmed experiences and to leaders' unawareness of their empowerment expectations

2012
9/2012   *Robert Buch*
Interdependent Social Exchange Relationships: Exploring the socially embedded nature of social exchange relationships in organizations

8/2012   *Ali Faraji-Rad*
When the message feels right: Investigating how source similarity enhances message persuasiveness

7/2012   *Marit Anti*
Commercial friendship from a customer perspective: Exploring social norm of altruism in consumer relationships and self-interest-seeking behavior

6/2012   *Birgit Helene Jevnaker*
Vestiges of Design-Creation: An inquiry into the advent of designer and enterprise relations

5/2012   *Erik Aadland*
Status decoupling and signaling boundaries: Rival market category emergence in the Norwegian advertising field, 2000-2010

4/2012   *Ulaş Burkay*
The Rise of Mediating Firms: The Adoption of Digital Mediating Technologies and the Consequent Re-organization of Industries

3/2012   *Tale Skjølsvik*
Beyond the 'trusted advisor': The impact of client-professional relationships on the client's selection of professional service firms

2/2012   *Karoline Hofslett Kopperud*
Well-Being at Work: On concepts, measurement, and leadership influence

1/2012   *Christina G. L. Nerstad*
In Pursuit of Success at Work: An Empirical Examination of the Perceived Motivational Climate, Its Outcomes and Antecedents

2011
12/2011   *Kjell Jørgensen*
Three Articles on Market Microstructure at the Oslo Stock Exchange (OSE)

11/2011   *Siri Valseth*
Essays on the information content in bond market order flow

10/2011   *Elisabet Sørfjorddal Hauge*
How do metal musicians become entrepreneurial? A phenomenological investigation on opportunity recognition

9/2011   *Sturla Lyngnes Fjesme*
Initial Public Offering Allocations

8/2011   *Gard Paulsen*
Betwixt and between: Software in telecommunications and the programming language Chill, 1974-1999

7/2011   *Morten G. Josefsen*
Three essays on corporate control

6/2011   *Christopher Wales*
Demands, designs and decisions about evaluation: On the evaluation of postgraduate programmes for school leadership development in Norway and England

5/2011   *Limei Che*
Investors' performance and trading behavior on the Norwegian stock market

4/2011   *Caroline D Ditlev-Simonsen*
Five Perspectives on Corporate Social Responsibility (CSR): Aan empirical analysis

3/2011   *Atle Raa*
Fra instrumentell rasjonalitet til tvetydighet: En analyse av utviklingen av Statskonsults tilnærming til standarden Mål- og resultatstyring (MRS) 1987-2004

2/2011   *Anne Louise Koefoed*
Hydrogen in the making - how an energy company organises under uncertainty

1/2011   *Lars Erling Olsen*
Broad vs. Narrow Brand Strategies: The Effects of Association Accessibility on Brand Performance

2010
8/2010   *Anne Berit Swanberg*
Learning with Style: The relationships among approaches to learning, personality, group climate and academic performance

7/2010   *Asle Fagerstrøm*
Implications of motivating operations for understanding the point-of-online-purchase: Using functional analysis to predict and control consumer purchasing behavior

6/2010   *Carl J. Hatteland*
Ports as Actors in Industrial Networks

5/2010   *Radu-Mihai Dimitriu*
Extending where? How consumers' perception of the extension category affects brand extension evaluation

4/2010   *Svanhild E. Haugnes*
Consumers in Industrial Networks: a study of the Norwegian-Portuguese bacalhau network

3/2010   *Stine Ludvigsen*
State Ownership and Corporate Governance: Empirical Evidence from Norway and Sweden

2/2010   *Anders Dysvik*
An inside story – is self-determination the key? Intrinsic motivation as mediator and moderator between work and individual motivational sources and employee outcomes. Four essays

1/2010   *Etty Ragnhild Nilsen*
Opportunities for learning and knowledge creation in practice

2009

8/2009   *Erna Senkina Engebrethsen*
Transportation Mode Selection in Supply Chain Planning

7/2009   *Stein Bjørnstad*
Shipshaped: Kongsberg industry and innovations in deepwater technology, 1975-2007

6/2009   *Thomas Hoholm*
The Contrary Forces of Innovation*: An Ethnography of Innovation Processes *in the Food Industry*.

5/2009   *Christian Heyerdahl-Larsen*
Asset Pricing with Multiple Assets and Goods

4/2009   *Leif-Magnus Jensen*
The Role of Intermediaries in Evolving Distribution Contexts: A Study of Car Distribution

3/2009   *Andreas Brekke*
A Bumper? An Empirical Investigation of the Relationship between the Economy and the Environment

2/2009   *Monica Skjøld Johansen*
Mellom profesjon og reform: Om fremveksten og implementeringen av enhetlig ledelse i norsk sykehusvesen

1/2009
        Mona Kristin Solvoll
Televised sport: Exploring the structuration of producing change and stability in a public service institution

2008

7/2008   *Helene Loe Colman*
Organizational Identity and Value Creation in Post-Acquisition Integration: The Spiralling Interaction of the Target's Contributive and the Acquirer's Absorptive Capacities

6/2008   *Fahad Awaleh*
Interacting Strategically within Dyadic Business Relationships: A case study from the Norwegian Electronics Industry

5/2008   *Dijana Tiplic*
Managing Organizational Change during Institutional Upheaval: Bosnia-Herzegovina's Higher Education in Transition

4/2008   *Jan Merok Paulsen*
Managing Adaptive Learning from the Middle

3/2008   *Pingying Zhang Wenstøp*
Effective Board Task Performance. Searching for Understanding into Board Failure and Success

2/2008   *Gunhild J. Ecklund*
Creating a new role for an old central bank: The Bank of Norway 1945-1954

1/2008   *Øystein Strøm*
Three essays on corporate boards

2007

6/2007   *Martha Kold Bakkevig*
The Capability to Commercialize Network Products in Telecommunication

5/2007   *Siw Marita Fosstenløkken*
Enhancing Intangible Resources in Professional Service Firms. A Comparative Study of
How Competence Development Takes Place in Four Firms

4/2007   *Gro Alteren*
Does Cultural Sensitivity Matter to the Maintaining of Business Relationships in the Export
Markets? An empirical investigation in the Norwegian seafood industry

3/2007   *Lars C. Monkerud*
Organizing Local Democracy: The Norwegian Experience

2/2007   *Siv Marina Flø Karlsen*
The Born Global – Redefined. On the Determinants of SMEs Pace of Internationalization

1/2007   *Per Engelseth*
The Role of the Package as an Information Resource in the Supply Chain. A case study of
distributing fresh foods to retailers in Norway

2006
10/2006   *Anne Live Vaagaasar*
From Tool to Actor - How a project came to orchestrate its own life and that of others

9/2006   *Kjell Brynjulf Hjertø*
The Relationship Between Intragroup Conflict, Group Size and Work Effectiveness

8/2006   *Taran Thune*
Formation of research collaborations between universities and firms: Towards an
integrated framework of tie formation motives, processes and experiences

7/2006   *Lena E. Bygballe*
Learning Across Firm Boundaries. The Role of Organisational Routines

6/2006   *Hans Solli-Sæther*
Transplants' role stress and work performance in IT outsourcing relationships

5/2006   *Bjørn Hansen*
Facility based competition in telecommunications – Three essays on two-way access and
one essay on three-way access

4/2006   *Knut Boge*
Votes Count but the Number of Seats Decides: A comparative historical case study of
20th century Danish, Swedish and Norwegian road policy

3/2006   *Birgitte Grøgaard*
Strategy, structure and the environment. Essays on international strategies and subsidiary
roles

2/2006   *Sverre A. Christensen*
Switching Relations - The rise and fall of the Norwegian telecom industry

1/2006   *Nina Veflen Olsen*
Incremental Product Development. Four essays on activities, resources, and actors

2005

6/2005   *Jon Erland Bonde Lervik*
Managing Matters:Transferring Organizational Practices within Multinational Companies

5/2005   *Tore Mysen*
Balancing Controls When Governing Agents in Established Relationships: The Influence of Performance Ambiguity

4/2005   *Anne Flagstad*
How Reforms Influence Organisational Practices: The Cases of Public Roads and Electricity Supply Organisations in Norway

3/2005   *Erlend Kvaal*
Topics in accounting for impairment of fixed asset

2/2005   *Amir Sasson*
On Mediation and Affiliation. A Study of Information Mediated Network Effects in The Banking Industry

1/2005   *Elin Kubberød*
Not just a Matter of Taste – Disgust in the Food Domain

2004

10/2004   *Sverre Tomassen*
The Effects of Transaction Costs on the Performance of Foreign Direct Investments - An empirical investigation

9/2004   *Catherine Børve Monsen:*
Regulation, Ownership and Company Strategies. The Case of European Incumbent Telecommunications Operators

8/2004   *Johannes A. Skjeltorp*
Trading in Equity Markets: A study of Individual, Institutional and Corporate Trading Decision.

7/2004   *Frank Elter*
Strategizing in Complex Contexts

6/2004   *Qinglei Dai*
Essays on International Banking and Tax-Motivated Trading

5/2004   *Arne Morten Ulvnes*
Communication Strategies and the Costs of Adapting to Opportunism in an Interfirm Marketing System

4/2004   *Gisle Henden*
Intuition and its Role in Strategic Thinking

3/2004   *Haakon O. Aa. Solheim*
Essays on volatility in the foreign exchange market

2/2004   *Xiaoling Yao*
From Village Election to National Democratisation. An Economic-Political Microcosm Approach to Chinese Transformation

1/2004   *Ragnhild Silkoset*
Collective Market Orientation in Co-producing Networks

2003
2/2003   *Egil Marstein*
The influence of stakeholder groups on organizational decision-making in public hospitals

1/2003   *Joyce Hartog McHenry*
Management of Knowledge in Practice. Learning to visualise competence

2002
6/2002   *Gay Bjercke*
Business Landscapes and Mindscapes in People's Republic of China. A Study of a Sino-Scandinavian Joint Venture

5/2002   *Thorvald Hærem*
Task Complexity and Expertise as Determinants of Task Perceptions and Performance:
Why Technology-Structure Research has been unreliable and inconclusive

4/2002   *Norman T. Sheehan*
Reputation as a Driver in Knowledge-Intensive Service Firms:
An exploratory study of the relationship between reputation and value creation in
petroleum exploration units

3/2002   *Line Lervik Olsen*
Modeling Equity, Satisfaction and Loyalty in Business-to-Consumer Markets

2/2002   *Fred H. Strønen*
Strategy Formation from a Loosely Coupled System Perspective. The Case of Fjordland

1/2002   *Terje I. Våland*
Emergence of conflicts in complex projects. The role of informal versus formal governance
mechanisms in understanding interorganizational conflicts in the oil industry

2001
6/2001   *Kenneth H. Wathne*
Relationship Governance in a Vertical Network Context

5/2001   *Ming Li*
Value-Focused Data Envelopment Analysis

4/2001   *Lin Jiang*
An Integrated Methodology for Environmental Policy Analysis

3/2001   *Geir Høidal Bjønnes*
Four Essays on the Market Microstructure of Financial Markets

2/2001   *Dagfinn Rime*
Trading in Foreign Exchange Markets. Four Essays on the Microstructure of Foreign
Exchange

1/2001   *Ragnhild Kvålshaugen*
The Antecedents of Management Competence. The Role of Educational Background and
Type of Work Experience

2000