

THESIS FOR THE DEGREE OF LICENTIATE OF PHILOSOPHY

Changing practices for public facilities management

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CHANGING PRACTICES FOR PUBLIC FACILITIES MANAGEMENT

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Abstract

Public facilities management organizations are currently facing several challenges both external and internal. New regulations regarding sustainability (including energy efficiency targets), a transition to a business-like approach/form of governance and changing demographical conditions are examples of outer challenges. At the same time, inner challenges such as need for new knowledge and competencies among the employees and buildings in bad shape, in urgent need of renovation, need to be managed. These aspects enforce public facilities management organizations and their pertaining institutions to change their way of working. The aim of the thesis is to increase the understanding of the change processes through which public facilities management organizations reconsider and revise their existing facilities management practices in order to support long-term goals and sustainable development.

The research presented in this thesis builds on a qualitative research design. The practice-oriented theoretical lenses of institutional work, institutional logics and sociomateriality are used in order to examine changing practices for public facilities management. The thesis is based on one main empirical case study, in one organizational context. Within this context, a strategy project was followed, where actors were developing new practices in relation to sustainable facilities management. When investigating the role of objects for public facilities management, the thesis is also informed by two other organizational contexts encompassing projects related to sustainable facilities management.

Three papers are included in this thesis. Relating to the aim to increase the understanding of the change processes that public facilities management organizations undergo, findings show that several actors are involved in the work to transform public facilities management organizations in order to meet current challenges. They reside at and travel between different organizational levels and develop practices related to different logics. These actors are not only human, they are also non-humans (objects). The actors are not perhaps “obvious” change agents, rather they are “ordinary” employees doing their jobs, albeit in a good manner. As such, this thesis adds to the body of practice-oriented literature on institutional work, institutional logics and sociomateriality. It also contributes to organizational research that investigates sustainable public facilities management.

Keywords: changing practices, institutional logics, institutional work, public facilities management, sociomateriality.

List of appended papers

Paper I: *On the nexus of changing public facilities management practices: purposive and co-creative actions across multiple levels*

Published in Construction Management and Economics (2018), 36(5), p. 259-275

An earlier version of this paper was included in Proceedings of the 32nd Annual ARCOM Conference, 5-7 September 2016, Manchester, UK. Vol. 2 (2016), p. 1141-1150.

Gluch and Svensson designed the study together. Svensson conducted all the interviews and did all but one of the observations, which was done by Gluch. The analysis was performed jointly by Gluch and Svensson. The paper was written jointly by Gluch and Svensson.

Paper II: *Logics and changing practices for public sustainable facilities management*

Working paper

The paper is written solely by Svensson.

Paper III: *The role of objects for institutional work in energy efficient renovation*

This paper was included in Proceedings of the 33rd Annual ARCOM Conference, 4-6 September 2017, Cambridge, UK, Association of Researchers in Construction Management, 461-470, p. 461-470

The paper won the Taylor and Francis award for “Most theoretically informed paper” at the 33rd Annual ARCOM Conference

The paper is joint effort of Svensson and Gluch with Svensson as lead author. Svensson came up with the idea for the paper and organized the structure of it.

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1 Introduction

“Swedish municipalities have surfed the waves of the million-house-program¹ for 50 years, but the waves are now about to end. There are no more waves to surf”
(Consultant within the building sector).

In 2016, I participated in a national conference on “Strategic planning for (public) premises”, hosting representatives from both academia and industry. At the conference, organizing challenges relating to the current and future building stock were portrayed as needing urgent attention. The existing public building stock in need of refurbishment measures was described as: “*A ticking bomb*” and the magnitude of the problem was emphasized by the conference participants by referring to the amount of buildings in question as “*a mountain of buildings*”. Swedish cities are growing rapidly and within 10 years some have gone from having a housing overcapacity to a shortage. There is a lack of new buildings² and, *at the same time*, as illustrated in the quote above, the premises built within the million-house-program have now reached their lifespan and consequently need to be renovated, or even replaced to meet current demands for, for example, indoor-environment and energy efficiency. To manage the aging buildings, new knowledge and different competencies are needed, including in construction but also in project management, since strategic planning and increased collaboration are crucial for meeting the new challenges. In Sweden, both within municipalities and the construction sector, increased labour mobility, and a growing construction sector, means the competition for the employees is hard. It is also hard to keep personnel over time, work strategically, and build up long-term competence.

An actor that has a central role to play in this transformation is public facilities management (FM) organizations. Public FM organizations act primarily as operators of public buildings and -facilities and thus responsible for tenants’ needs. In their role as public construction clients they are also responsible for supplying and maintaining public buildings (both public premises as well as housing). FM organizations are furthermore under increasing pressure to think through the longer-term implications of what they do; in order words, they need to plan for operations that are sustainable (Atkins and Brooks, 2017). The public sector is expected to lead by example and accomplish sustainable objectives set by the government. One central mean of accomplishing this is by more energy efficient buildings. Here the management (including renovation) of the existing building stock is considered to shave a key role in achieving the 2050 decarbonization goals for the construction sector in the EU (Mjörnell, *et al.* 2104; Nielsen *et al.* 2016). To build and manage public premises with less use of energy is considered as one of the most important challenges for public FM organizations (UFOS, 2013). Public FM organizations are stated to have a role model, and

¹ The million-program was the result of the Swedish parliament’s decision that a million new homes should be built in the period 1965 to 1974, a mission that was achieved (Hall and Vidén, 2005).

² In Sweden, many people are in childbearing ages and the young population is currently growing. At the same time, people live longer; in 2017, more than every fifth person was older than 65 (SCB, 2017).

be in the forefront when it comes to energy efficiency as well as other sustainability related practices (Eisma and Volker, 2014). According to UFOS (2013) technical solutions as well as tools and methods to meet the goals for 2050 exist. However, the large building stock in need of renovation, difficulties with long-term thinking, lack of personnel and financial resources, lack of political decisions favouring energy savings and short-sighted planning may hinder public FM organizations to reach the energy efficiency goals. Adding to the complexities facing public FM organizations is a new law was launched in 2011 that says that public housing companies should act according to commercial/business principles (Law 2010:879), which put pressure on public FM organizations to become more efficient and make decisions based on financial grounds.

In sum, public FM organizations face several external and internal challenges. New regulations regarding sustainability (including energy efficiency targets), a transition to a business-like approach/form of governance due to new laws and changing demographical conditions are examples of outer challenges. At the same time, inner challenges such as need for new knowledge and competencies, lack of experienced personnel, and buildings in bad shape need to be managed. All in all, these aspects enforce public FM organizations and the pertaining institutions to change their way of working. It is this change that is the focus of this thesis. In the next sections, a brief review of previous research on public FM leads the aim and research questions of the thesis.

1.1 Previous research on public FM

The public sector owns and manage about 90 million square meters in Sweden (UFOS, 2013). Local public buildings are among the most important parties in the production of local public goods and services, and vast resources are required to build and maintain them (Hopland, 2016). Inadequate maintenance is harmful as it leads to a backlog of costs that must be covered more expensively in the future, leading to more decay when they are not covered (ibid). Thus, public FM organizations play a vital role in municipalities, both by providing the possibility for a “good” life for people and by their role in the municipality’s economy. As all *public* organizations, FM operates within a political context (Kuipers *et al.*, 2014) that involves both aspects of democracy (politics and politicians) and the legal context of legislation, rules, and bureaucracy. Public organizations are often a combination of a network structure and a bureaucratic structure. They are increasingly characterized by complex webs of interaction, making it difficult to identify exactly what is meant by “one organization” within the public sector (ibid). Simultaneously, a divisional structure, with high walls between departments (“separate silos”) can make it difficult to share knowledge between organizational units (Mulgan, 2007).

With requirements that represent targets and ambitions of political bodies (Hartmann *et al.* 2008), public FM organizations are consequently confronted with governmental regulations and ethical codes (Galamba and Nielsen, 2016), which their private counterparts are not. The practices and ethics of public FM cannot be viewed in isolation from the development of a business ditto (ibid). Public FM organizations are placed within

a situation wherein political values and legitimacy criteria must be balanced with a professional code of conduct based on a coordination of relevant knowledge, together with meeting the customers' needs (ibid). These organizations must therefore consider a broader set of norms and values than their private counterparts, be accountable to citizens, and put greater emphasis on openness, equal treatment and transparency (Christensen *et al.*, 2007)

One such distinct challenge of these public FM organizations is sustainability. Most of the research on sustainable FM (both public and private) has mostly focused on barriers and drivers (Nielsen *et al.*, 2016; Elmualim, 2016), as is also the case for sustainable building research in general (see overviews in Crittenden, 2014; Andrew and Johnson, 2015). As a response to these findings, researchers have been engaged in developing and accessing decision-making tools for sustainable renovation (and FM) that are believed to help overcome barriers (Mjörnell *et al.*, 2014). Some authors have questioned the idea that barriers are fixed and hence that specific tools that are applicable in several contexts and situations can help overcome them (cf. Shove, 1998; Plam and Reind, 2017). Taking a processual approach, focusing on situated practices and acknowledging that energy-efficient renovation is not a linear process, Palm and Reindl (2017) studied barriers for energy-efficient renovation. By following a renovation project of public housing from the 1950's they found that barriers both appeared, disappeared and transformed during the course of time. Hence, they argued that researchers should be attentive to context and to study in detail how organizations adopt to demands on energy efficiency as well as other sustainable issues.

However, despite its central importance for the society and the environmental, research in general has not been attentive to the distinct context of public FM and its relating challenges (Nielsen *et al.*, 2016). Theories on evolving changes within the organizational settings of FM have to a large extent been foreseen and there has so far been a limited ability to link action to learning or to reflect upon practice (Campbell, 2017). In sum, there have been no in-depth investigations how (public) FM organizations adapt to changes and new requirements (Galamba *et al.*, 2012). Recent calls are therefore encouraging a turn to local practices and situated contexts (Palm and Reindl, 2016, 2017; Campbell, 2017). This thesis thus contributes to this agenda by exploring the practices and the work of those actors engaged in the ongoing transformation of public FM organizations.

1.2 Aim and research questions

The aim of the thesis is to increase the understanding of the change processes through which public FM organizations reconsider and revise their existing FM practices in order to support long-term goals and sustainable development. The underlying research is grounded in an empirical phenomenon (Van de Ven, 2016) that is reflected in the first research question:

- *RQ 1: How can the changing organizing practice for public FM be described and conceptualized?*

Faced with the task to simultaneously meet multiple new governmental sustainability driven targets, public FM organizations need to find new and innovative ways to renovate and manage their building stock. The changed practices are in turn proposed to be governed by new logics, i.e. logics encompassing a sustainable and long-term thinking. Aspects of sustainability thus forms a central part of the practices under exploration.

A second research question was developed during the research as findings showed that changing practices for sustainable FM encompassed several intertwined organizational levels/parts and actors across multiple levels, which involve multiple and sometimes competing institutional logics. This raises the question of how human agency is pursued and how change is made possible within the complex organizational setting of public FM, leading to the research question:

- *RQ 2: How do human actors perform agency in their everyday work in order to make change happen?*

The third research question also emerged during the studies, as tentative findings showed that not only humans, but also non-humans (objects) appeared to be (an active) part of the organizational nexus of changing practices for public sustainable FM. Therefore, in this thesis the concept of agency includes both human and non-human agents (Styhre, 2017 p. 37,) as captured within research question three:

- *RQ 3: How are objects partaking in the change processes through which public FM organizations reconsider and revise their existing FM practices?*

The research presented in this thesis will provide new insights into how public FM change their practices to support sustainable development. A practice-based approach (Gherardi, 2012), combined with the theoretical constructs of institutional work (Lawrence and Suddaby, 2006), institutional logics (Thornton and Ocasio, 1999) and sociomateriality (Orlikowski and Scott, 2009; Leonardi, 2013) are used to inform the exploration, focusing on processes rather than outcomes. Figure 1 shows the relation between the aim, the papers and the research questions.

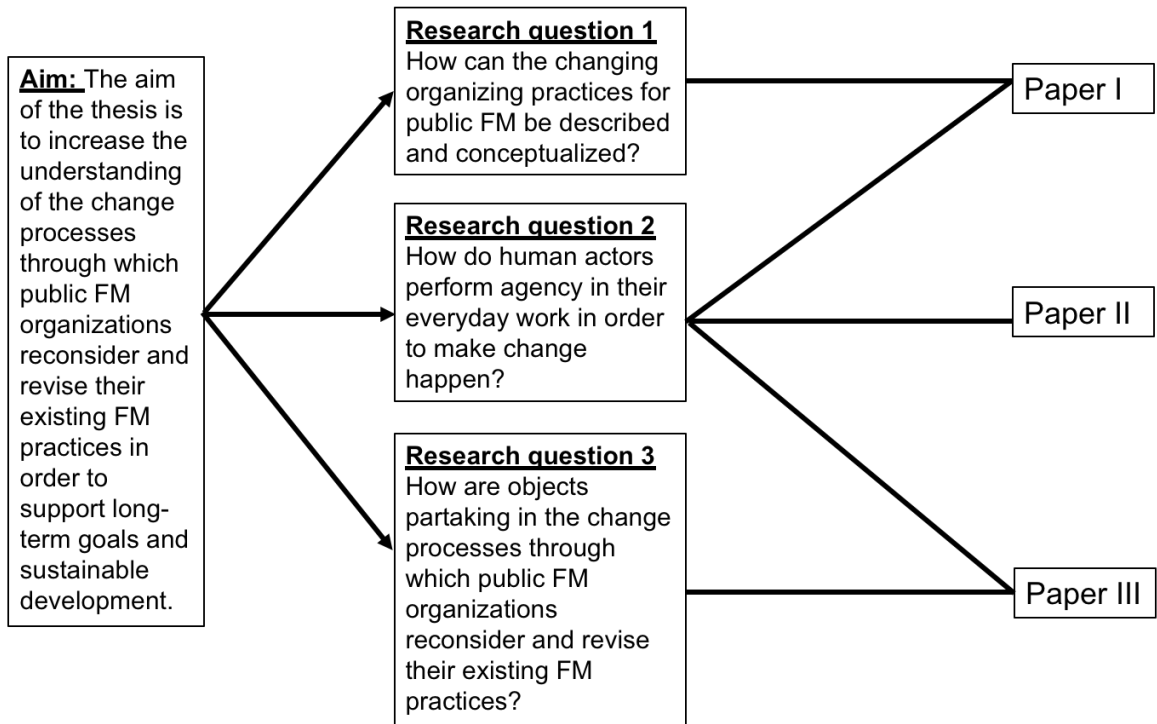


Figure 1 - The relations between the papers and the research questions

2 Theoretical frame of reference

An institution can be described as: “widely diffused practices, technologies, or rules that have become entrenched” in an institutional field (Lawrence *et al.*, 2002: 282). An institutional field can be an industry sector with its shared beliefs values and norms (Friedland and Alford, 1991). The institution in my research is public FM. This institution belongs to the highly institutionalized construction industry (Kadefors, 1995). As such, the construction industry, including public FM, is a suitable context for studying how actors are disrupting existing institutions, as well as creating new ones, as they adapt to internal and external changes (Bresnen, 2017; Gluch and Bosch-Sijtsema, 2016).

2.1 A practice approach to the study of institutional change

Institutional theory, and especially sub-theories such as practice-oriented institutional work and institutional logics, are suitable when studying changing practices on local levels but at the same time connecting them to a wider institutional context. Whereas previous research on institutional change has focused much attention on external shocks that promote institutional change, or on specific “heroic” individuals, recent research on institutional change, give ordinary individual actors, rather than macro forces, more attention (Powell and Colyvas 2013) and it is acknowledged that institutional change emerges from (everyday) practice (Lounsbury and Crumely, 2007).

Central to a practice lens is the notion that social life is an ongoing production and thus emerges through people’s recurrent actions and (Feldman and Orlikowski, 2011). Adopting this implies a focus on the activities of different actors, i.e. not solely the individual actors themselves (Nicolini, 2013). However, practice theories do more than just describe what people (or things) do; the actions of different actors are understood in relation to and within their social context (Feldman and Orlikowski, 2011). Practice theories support a view in which there is a recursive relationship between organizations as well as institutions and the actors who populate them (Nicolini, 2013). Practices are understood to be the primary building blocks of a social reality; the world is brought into being by everyday activity. The theoretical constructs of institutional work, institutional logics and sociomateriality take an interest in practices.

2.2 Institutional theory

Traditionally institutional theory has foregrounded “embeddedness” over “situatedness” (Smets *et al.*, 2017); in fact contemporary practice perspectives are in part a counter-point to previous institutionalist positions that held the notion that the social world is external to actors (Smets *et al.*, 2017). However, with an interest in institutional work and institutional logics a shift can be seen within institutional theory, which can be summarized in the notion that: “Change and stability are both effortful accomplishments of multiple actors engaged in a practice (Schatzki, 2012)”. Thus, by adopting to a contemporary (practice-based) institutional perspective, and especially focusing on institutional work and institutional

logics, the institutional field is not forgotten; however, the every-day practice is also recognized.

2.2.1 *Institutional logics*

The interest in institutional logics took off as a major research stream in the mid-2000s, after being put forth by Friedland and Alford in 1991. Through the concept of institutional logics, institutional theorists were beginning to acknowledge the mutual constitution of structure and agency and recognize societal orders as a potential source of agency and variation – rather than just stability (Smets *et al.*, 2017). The theoretical notion of institutional logics underscores the power of logics that govern the understandings and behaviours of individuals and collective actors within a particular institutional sector. Thornton and Ocasio (1999, p. 804) define institutional logics as “the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time, and space, and provide meaning to their social reality.” Moreover, with the concept of institutional logic, institutional theory also strive to combine the material with the symbolic, meaning it is interested in how logics are materialized in practice (Zilber, 2013; Lindberg 2014). This perspective also entails attention paid to historical contingency and how institutions and logics are translated at different levels of an organizational setting (Zilber, 2013).

Since institutional logics previously have been studied from the outside, from a “far distance” little is known about the ways institutional logics are worked out on the ground, in day-to-day behaviours and experiences of actors (Zilber, 2013) and as with the case of institutional work, researchers are encouraged to turn to practice in order to understand the emergence and adaptations of institutional logics (Smets *et al.*, 2017). For my research this means that I am interested in questions such as: How are logics materialized in peoples every day practice? However, when studying the everyday practices, the micro activities, it is important to connect them to their wider context. When practices are the lenses through which to look at organizations one sees the fine details of how people use resources available to them to accomplish intelligent actions and how they give those actions sense and meaning (Gherardi, 2012). Nevertheless, when studying the everyday practices, the micro activities, it is important to connect them to their wider context (cf. Smets *et al.*, 2017). Thus, studying practices together with institutional logics we can understand how specific actions are given meaning and consider the question; Why were those actions considered important?

2.2.2 *Institutional work*

Institutional work refers to: “the broad category of purposive action(s) aimed at creating, maintaining, and disrupting institutions (Lawrence and Suddaby, 2006)”. An institutional work perspective focuses on understanding how, why, and when human actors work to shape institutions. It also take an interest in factors that affect humans ability shape institutions, and the experience of those efforts for those involved (Hampel *et al.*, 2015). The institutional work perspective focus on the “ordinary” actor in their day-to-day work

and struggles (Lawrence et al., 2010), ordinary workers who are not always calculated and rational, but respond to unanticipated situations (Powell and Colyvas, 2013).

Institutions within the institutional work framework are defined as: “those (more or less) enduring elements of social life that affect the behaviour and beliefs of individuals and collective actors by providing templates for action, cognition, and emotion, nonconformity with which is associated with some kind of costs” (Lawrence, Suddaby and Leca, 2011, p. 53). Thus, taking an interest in institutional work entails an interest in both individual actors and their (institutional) context. Institutional work refers to work that is *aimed* at a certain effect. Whether or not this effect is reached, is not the issue of most interest for institutional work scholars. More; the efforts are *purposive*, meaning someone (or something?) is purposively doing something. This entails that just doing something, within an organization, that leads to something, is not to be labelled institutional work, according to the theory. The activities do not have to be grand and exceptional, they are part of the day-to-day work. This also entails that seemingly mundane actors can engage in institutional work, if they have the purpose to (in the end) either maintain, disrupt or create an institution, as defined by the institutional work perspective. Thus, institutional work is the *purposive* work conducted to maintain, create or disrupt institutions. This means that just doing something, within an organization, that leads to something, is not to be labelled institutional work (Lawrence and Suddaby, 2006). However, actors often lack intentionality when creating, maintaining and disrupting institutional structures, these are often outcomes of actors’ daily work (Smets and Jarzabkowski, 2013). Thus, institutions can be created, alerted and maintained both on purpose and by “accident”. In this thesis though, institutional work refer to purposive actions.

Within the institutional work framework, agency is viewed as embedded and relational, meaning that actors are not only shaped by the existing institutions, by engaging in institutional work, they may also shape them in turn. Institutional work reverses previously adopted views on causality (Hwang and Colyvas, 2011) by stating that actors are creators, maintenance workers and destroyers of institutions, making institutions the dependent variable. Moreover, agency is seen as a temporally embedded process of social engagement, informed by time (Battilana and d’Ánnuo, 2010). Consequently, in this thesis, agency is conceptualized neither as a fatalistic nor a heroic phenomenon. People and things are not locked in by unbreakable structures, but neither are they in total control of their destiny (Garud, *et al.*, 2010). As shown by Gluch and Bosch-Sijtsema (2016), in their study on environmental experts within the construction industry, having formal authority to change practices is not enough, as many of the experts studied were found to work in a context where they foremost were “allowed” to maintain institutions. The experts expressed the tension between prioritization of urgent and short termed work assignments to the expense of assignments with a longer time-approach, as for example the development of new institutions. In order for the industry to become “sustainable” or adopt to sustainable measures it *allows* these experts to pursue agency and perform institutional work to create institutions that support sustainability and/or disrupt non-sustainable institutions.

From an institutional work perspective, it is not likely that one actor alone can change an entire institution, rather the study of institutional work highlights the need to examine agency as a distributed phenomenon. Thus, agency from an institutional work perspective is something often accomplished through the coordinated and uncoordinated efforts of a potentially large number of actors (Suddaby and Greenwood, 2009). The focus on ‘distributed agency’ (Lawrence, Suddaby and Leca, 2010) has led to an interest in how several actors, together, contribute to institutional change (Lawrence, Suddaby & Leca 2011; Crittenden, 2014). For example; Jones and Massa have shown how the institutional work of many actors was vital to transform a novel practice (a new type of building/architecture) to consecrated (recognized) exemplar, deemed critical to a field and suitable for imitation. In this thesis, it is shown how several actors together are involved in the work with changing practices.

New practices, rules and/or technologies cannot be fully diffused and institutionalized immediately and during the time in which they are developed and re-defined, they can be referred to as proto-institutions that might become full-blown institutions (Lawrence *et al.*, 2002). Thus, proto-institutions are “institutions in the making”, and are created by different actors conducting parallel institutional work (Zietsma and McKnight, 2009). Through inter-organisational co-creation and collaboration, this institutional work may converge into one, fully institutionalized, coherent institution (*ibid.*).

2.3 Sociomateriality

In recent decades, the material is attributed a more active role in understanding interaction, practice, and the social process(es) of organizing. Thus, organizations are viewed as “socio-technological systems” in which humans set goals and use certain artefacts to accomplish them (Leonardi, 2013). Objects are thus not neutral material artefacts, but are inscribed with meaning and significance (Bresnen and Harty, 2010). If one focuses only on the role individuals play in a change process, or have a presumption that a tool necessarily has a certain role, one fails to see how change is enabled and how institutions are challenged through a socio-technical process involving both actors and artefacts as agents for institutional work (*cf.* Hampel *et al.*, 2015). Researchers have developed an array of perspectives that theorize about the relationship between the symbolic and the material world (Putnam 2015). One way of studying the material in organizing is through the lens of sociomateriality (Jones 2013).

Prior to the introduction of sociomateriality (a term that is, according to Jones (2013), firstly mentioned by Orlikowski and Scott in 2001), the relations between technologies and organizations have mostly been conceived as a two-sided dialectic process (Schuber and Bruni, 2017), much as was the relationship between institutions and actors (Lawrence *et al.*, 2010) was for a long time. Technology was seen as something that came from the outside of organizations, forcing the members either to comply, adapt or resist to the new artefacts or infrastructures (Schubert and Bruni, 2017). In the same vein, institutions were

thought to impact organizational structure and practice in a non-recursive manner (Lawrence *et al.*, 2010).

Seen from a sociomateriality perspective, agency is shared between humans and objects and is situated in practice (Orlikowski, 2009). As with scholars of institutional work, scholars of sociomateriality acknowledge that agency is more fluid than previously has been acknowledged in materiality studies. Leonardi *et al.* (2013) defined sociomateriality as: “the enactment of a particular set of activities that meld materiality with institutions, norms, discourses, and all other phenomena we typically define as “social” (p.42). According to Jones (2014), sociomateriality may be argued to extend practice-based approaches, “showing not just the entwinement of the social and material, but their mutual constitution, not just how practices are enacted, but how, in doing so, they serve to construct the phenomena they address” (p.92). According to Pentland and Singh (2013), in many cases when researchers try to understand the relationship between the social and the material (their entanglement, entwinedness, imbrication, etc.) the underlying distinctions between humans and objects are in fact reinforced. Rather, researchers are suggested to focus on the actions that stem from the relation between the material and the social.

Sociomateriality is a research stream (Jones 2013) that follows the materiality turn in organizational studies. Being a stream of research, the umbrella term sociomateriality offers different possibilities of how to study the relationship between the “social” and the “material” and there is an inconsistency in the terms associated with sociomateriality, with several concepts being used, sometimes meaning the same and sometimes not (Jones, 2014; Jones, 2013; Kallinikos *et al.*, 2013).

According to Jones (2014), two main ontological assumptions are underlying current sociomaterial research. These are by Jones (2014) labelled strong and weak sociomateriality, see Table 1 for a summary.

Table 1 – Overview of the strong and weak perspective according to Jones (2014)

Strong and Weak Sociomateriality compared					
	Materiality	Inseparability	Performativity	Relationality	Practices
Strong	Materialization of phenomena	Mutual constitution	Enactment of boundaries and relations	Form, attributes, and capabilities of entities emerge only through inter-penetration	Embodied, materially mediated arrays of human activity
Weak	Persistence of arrangement of materials across place and time	Mutual interdependency	Nonhuman agency	Form, attributes, and capabilities may preexist any relation	Activities and processes

In this thesis, the weak perspective is adopted which entails a focus on the *implications* of the sociomaterial intertwining for organizing. A focus on how social and material agencies are combined in shaping a specific process. The weak perspective takes a greater interest in the broader social context in which actions take place, than the strong ditto. Further, the weak perspective argues that there are objects that exist independently of our awareness of them, and they have properties that “exist” even if they are not being used.

Strong sociomateriality entails a fully relational ontology in which objects and entities *only* exist in their relationship to others. The term “mutual constitution” means that the social and the material build upon each other in an endless, ongoing cycle. It is not possible to distinguish the social and material at any point (Jones, 2014). Likewise, the concept of interpenetration refers to the idea that the social and material are not just intertwined, but rather they lack a self-contained existence (Leonardi, 2013). From this standpoint, it is not possible to distinguish between various forms of materiality, except as they are *enacted* in different practices. The weak perspective on the other hand emphasizes that different materialities create different conditions of possible enactments. Thus, weak sociomateriality attributes greater significance to the form of materiality, for example if it is physical or digital, and elaborate on what consequences this has for practice Jones, 2014).

According to Jones (2014) the weak sociomaterial perspective bears resemblance to the ontology of critical realism, while strong sociomateriality (more) adhere to the ontology of agentic realism. In strong sociomateriality, phenomena are materialized only in the instance of practice. This means that for example a patients’ blood pressure only exists when it is being measured (Jones *et al.*, 2014). In this thesis the weak perspective is adopted. It is argued from the ontological standpoint taken in this research that objects have existed prior to (or without) being discussed at meetings, it is through these discussions, through the entanglement of the social and the material, that we see their significance for the change process studied. Thus, the analysis follows Putnam’s (2015) reasoning that even if prior to the analysis the objects and humans have been seen as different entities, with clear cut boundaries, an awareness and focus on their entanglement in practice is still possible and foremost fruitful for a better understanding of how matter matters (in practice).

2.4 Materiality and institutional work

Taking an interest in institutional work entails attention to how individuals actively interpret roles and structures imposed by organizations (Lawrence *et al.*, 2010), thus a focus on *actors* (agents) *within an organization* (Lawrence *et al.*, 2010). The wider structures and institutions are not seen as fixed phenomena, but emergent (from the micro-level). Likewise, using a sociomateriality lens entails focus on and interest in *the entanglement* between the material and the social in practice (Orlikowski, 2010), thus organizations and the material are not two “fixed” entities, just like institutions and actors are not either.

Up to today, the role of materiality for institutional work has been explored only in a handful of studies (Hampel *et al.*, 2015) and the agentic role of objects has varied. In Thorseng and Grisot’s (2015) study, the individual actors are humans, who, through the

development of a new IT-device engage in several types of institutional work; inscribing self-reflection, inscribing legitimation and inscribing future usages in the device. However, in their study, the object in question was not proposed to be performing any institutional work itself. Other scholars have elaborated more on objects' *roles* for institutional work; Jones and Massa (2013) argue that materiality plays a key role in instantiating ideas and enabling objects (i.e. buildings) to become a boundary object that engages distinct audiences and diffuses novel practices.

In a study of the role and agency of the Building Information Modelling (BIM) coordinator, from an institutional work perspective, it was found that the implementation of new technology introduced a new role that became an actor that was expected to employ and diffuse agency to change the current institution through technology (Bosch-Sijtsema and Gluch, 2016). Findings from open-ended questionnaires and interviews with people that had experience with BIM projects, showed that it is sometimes difficult to separate the role of the BIM coordinator from technology. The agency of the BIM coordinators becomes intertwined with the development of digital practices that are needed to work with (the) new technology. It is not the technology per se that induces institutional change, rather revised working practices including the development of new professional roles. Hence, the relationship between new technology and the BIM coordinator role is intertwined.

Three studies, that have elaborated even further on the active role of objects for institutional work, are summarized below. Firstly, Raviola and Norbäck (2013), investigated what happened when the institution of business news was enacted through and with a new technology. They showed how the old technology (paperback edition of a newspaper) was used to give meaning to new actions related to a new technology (a website). The old technology became the object of reference in problematizing the current situation, functioning as a "lawbook" for new actions. Secondly, in a study by Monteiro and Nicolini (2015), materiality, practices and institutional work was merged and awards (as an empirical example) were viewed as complex assemblages of humans and material element that perform institutional work, such as mimicry, theorizing and educating when certain alignments are put in place. The study highlighted how the institutional work by awards/prizes depends on the joint work of human and material entities. A certain strategy, like mimicry; "is the result of the alignment of the location of the awards ceremony, the presence of official supporters, and the use of language in line with the governmental agenda" (Monteiro and Nicolini, 2012 p.14). Thirdly, in a study on housing for the "hard-to-house" (meaning for example drug-addicts), places (the interaction of locations, material forms, meanings and values) role for institutional work was investigated (Lawrence and Dover 2015). In two case organizations, places were found to play three key roles; they contained institutional work, by establishing and maintaining boundaries around institutions; they mediated institutional work by providing an interpretive lens through which people understand the institutions that actors are working to affect and they complicated institutional work. It was also suggested that places complicated institutional work through their "concreteness", meaning their materiality, association with day-today routines, and geographic locations.

Thus, a few previous studies have shown that not only humans, but also objects/materials need to be accounted for when investigating institutional work and changing practices. Together, these studies show that the study of the material offers much promise for a deeper and wider understanding of institutional work (Hampel *et al.*, 2015). In this thesis the suggestion for researchers to combine institutional work with perspectives from elsewhere in the social sciences, such as sociomateriality (ibid), is followed. This will enable an exploration of how actions and practices are performed and enacted by humans and objects together, as well as connect these actions to their wider institutional setting.

3 Organizational context of the thesis: Three public organizations

In this thesis a public FM organization in Gothenburg, the Premises Management Office (PMO) serves as the main organizational case. In paper III, data from two other case studies on public organizations are provided and serve as illustrative cases alongside the PMO. All three case organizations are presented below.

3.1 PMO

The PMO builds and manages municipal premises, including, schools, preschools, housing for elderly, and housing for people with special needs in the city of Gothenburg. The PMO provides premises for public administrations in 10 different City Areas (CA), each having a separate budget. The strategic planning of premises is the responsibility of the Premises Secretariat (PS). Also included in the organizational context of the PMO and the PS is the Municipal Facilities Board (MFB), which consists of laymen politicians. With a four-year budget horizon, the PS is given annual investment funding from the MFB, which is thereafter allocated to the PMO depending on investment needs. For reinvestments into existing buildings, the PMO gets funding directly from the MFB. For an overview of the different organizations and their responsibilities, see Table 2.

Table 2 - Overview of the studied organization within the city of Gothenburg and their responsibility areas

Organization	Responsibility areas
Premises Management Office (PMO)	Manages and amends municipal premises. Provides premises for public administration in 10 different City Areas (CA)
Premises Secretariat (PS)	Responsible for the strategic planning of municipal premises for the CAs, coordinates the need for premises and is responsible for optimal use of the premises
Municipal Facilities Board (MFB)	The MFB decides focus, goals, policies and directions that governs both PS and PMO's operations.
City Area CA's	Responsible for pre-school, primary school, special school, local leisure activities, the local library, people with special need and the elderly, child care and individual and family care within their own area.

The study object of focus was the process through which a way of working strategically with the premises from the 1950s to the 1970s was developed within the PMO. This was developed and tested in a pilot project in one City Area during the spring of 2016. The pilot project initially encompassed energy-efficient renovation of preschools, but later developed into a more comprehensive project, encompassing all types of premises throughout the city. The new way of working was called “strategic facilities planning”; in this thesis. it is called “the strategy project”. This project aimed to move the organization’s decision horizon from a short time perspective to a longer ditto. Picture 1 is an example of

the preschools in the initial pilot project (for a detailed description of the organization and the development of the strategy project, see paper I).



Picture 1 – Example of pre-school building built during the millennium program

3.2 GG

GG is a public housing company with 185 employees (Gävlekommun.se). The organization is owned by the municipality of Gävle and has a politically constituted board.

The study object is a change project in which GG was set to renovate a million-program multifamily housing area in eastern Gävle in an “energy efficient” and sustainable way. The aim of the project (which is still ongoing) is to create a sustainable living area in which the residents are part of the development of their own milieu. The project is divided into 12 phases, including, for example, isolation of roofs, change of windows, renovation of kitchen and changing of doors. The municipality of Gävle has stated that the energy consumption should decrease by 20 percent until 2020.

3.3 HP

The organization is part of a regional public organization governed by elected politicians. It owns, rents and administers the operation and maintenance of public buildings such as health-care buildings and other public premises. In 2011, the organization had 350 employees and an investment budget of 1 330 MSEK.

Since 1999, the organization has set energy targets for the buildings that have resulted in several efficiency initiatives. These targets only concerned energy use of the buildings, although that used for operations within the building, for example, by the healthcare units, represented a significant share of total for the premises. In this organization, the study

object was a strategic project done in response to a political directive to significantly cut the energy use in hospital buildings, several of which were built during 1950–1975, and were managed and operated by the HP public construction client organization. In 2010, a new energy target was set by the regional politicians: “By 2030, we will reduce the energy use in buildings by half”. The target was formulated in general terms and did not specify whether the energy use for operations within buildings was included or not. Consequently, an investigation project was initiated and carried out during 2010–2011. The investigation aimed to develop a strategy and action plan for how the organisation should meet the target.

4 Research approach and methodology

Practice-oriented driven research requires information-gathering activities drawing on personal experiences through casual conversations, interviews, and/or in group meetings, as well as direct observations (Van de Ven, 2016). Thus, the methods adopted in my research needed to be able to capture the experiences of the change process from the involved actors and their complex daily work life, that is. a milieu in which different goals and challenges co-exist and the work of the involved actors take place at different levels of the organizational nexus. In addition, the methods needed to capture the practices in every day context. Consequently, a qualitative research approach is adopted as it is especially suitable for studying processes and practices and delivering results that can be applied in everyday life (Flick, 2014).

4.1 The studies in this thesis

This thesis is foremost based on one empirical case study (study I), in the organizational context of PMO, in which data collection started in February 2016 and ended in September 2017. The study consisted of two phases, of which the first phase is presented in paper I. In paper II both phases of study I are included. In addition to the empirical case study, a second study was performed. This study focused on understanding (theoretically) how objects are involved in institutional work, and uses three organizational contexts (PMO, GG, and HP) to inform the reasoning. This study is labelled study II. The connection between the studies, papers and research questions are presented below in Table 3.

Table 3 – Overview of RQ's, studies and papers.

Research questions	Study	Paper
<u>Research question 1</u> How can the organizational nexus of changing practises for public sustainable FM be conceptualized and understood?	Study I – phase 1 PMO	Paper I
<u>Research question 2</u> How do human actors perform agency in their everyday work in order to make change happen?	Study I – phase 1 PMO Study I - phase 2 PMO Study II PMO, GG, HP	Paper I, II, III
<u>Research question 3</u> How are objects partaking in the change processes through which public FM organizations reconsider and revise their existing FM practices?	(Study I – phase 1 PMO) Study II PMO, GG, HP	Paper III

For capturing practices and emergent phenomena as they unfold within the institutional setting of public FM organizations, a case study research design was applied. The case of PMO was investigated in-depth by the author of this thesis and thus set the tone for the thesis. The data collection in the HP case was done prior to my beginning my doctoral studies, and was done by the co-author for paper III together with two other researchers (data from this case are presented in Ludvig, 2013; Ludvig *et al.*, 2015). The GG case build on an analysis of a monograph thesis (Thoresson, 2015). Findings from the PMO case study are included in all three papers, while the other two cases are only included in paper III. An overview of data collection methods for all the three papers can be seen in Table 4.

Table 4 - Overview of data collection methods for the three papers

Paper I – PMO	
Interviews	15 open-ended interviews, audio recorded, transcribed verbatim 1h / interview
Observations	7 observations of meetings and presentations
Organizational documents	The project directive, Power Point slides etc.
Informal conversations	During coffee-breaks at presentations and at the national conference.
Other documentation	Unpublished case report of PS (Ludvig, 2010) ³
Paper II– PMO	
Interviews	15 open-ended interviews, audio recorded, transcribed verbatim, 1h / interview + 7 interviews open-ended interviews, audio recorded, transcribed verbatim 1h / interview + 7 conversations with project leader
Observations	7 observations of meetings and presentations
Other data	During coffee-breaks at presentations and at the national conference.
Document	Unpublished case report of PS (Ludvig, 2010)
E-mail survey	Four questions via e-mail
Paper III – PMO+GG+HP (For PMO see above Paper-I PMO)	
Interviews	1 interview regarding the GG case
Other documentation	Verbatim transcripts of meetings and presentations from the HP case Monography thesis (results based on interviews, observations and organizational documents in GG)

³ The PS was established in 1999, prior to this the responsibility to provide the CAs with premises were the two facilities organizations; one larger unit responsible for property management and smaller construction projects (mainly school-premises) (LFF) and a unit responsible for housing for elderly (MH). Beginning in 2008, both the PMO and the PS have undergone significant reorganizations. The PMO as it looks today was established in 2011 through the merging of the LFF, MH and the “project department” at LS. The strategic planning unit remained at the PS.

4.2 Case study research design

Case studies are suitable for studying complex structures (Dubois and Gadde, 2014) such as the organizing of public FM. Moreover, to explore institutional change, case are needed to understand and explore how complex and nested activities occur over time (Maguire *et al.*, 2004). Using a case study research design allowed for the exploration of actors' intentions and their relationship with their context and the social dynamics within the PMO, which in turn enabled generating a conceptual framework (Dyer and Wilkins, 1991).

The public FM organizations in this research were selected because they are changing their practices regarding renovation and maintenance, including an aim to reduce energy use. Thus, in all three cases, sampling was purposive, which is common for qualitative case studies (Flick, 2014).

4.3 Data collection

In order to understand institutional logics and institutional work as operated and used in both the individual, organizational, and field level, a “conceptualization that...fully appreciates meanings (and materials) as socially constructed” was needed (Zilber, 2013, p.84). For this thesis, this understanding was achieved by using qualitative methods that allowed for analyzing social action (Jarzabkowski & Spee, 2009) and focusing on the “here and now” (Zilber, 2013). Several data collection methods, inspired from ethnography, including interviews, study of documents and participant observations, were used. The combination of both observations and interviews is particularly useful when studying work practices because the latter consists of both practitioners' beliefs and actions (Schatzki, 1996).

4.3.1 Interviews

According to Van de Ven (2016), in order to frame the focus, level, and scope of the phenomenon-driven research, it is important to know whose perspective is being addressed and engaging them in describing the phenomenon. In this thesis, people within the organizational nexus of changing FM practices have been involved in the research, as they have described their working reality and context. As their experiences, perspectives, and subjective viewpoints were of interest, a main part of data collection consisted of interviews (Kvale, 1997; Flick, 2014). Moreover, to get a deeper insight into the case of GG, an interview with the researcher that studied their change project regarding energy efficiency was performed.

4.3.1.1 Interviews at PMO

The interview data for Paper I were collected through 15 interviews with 12 persons. In Table 5, these are presented as “interview round 1”. Following this initial interview round, follow-up interviews were conducted, presented in Table 5. For round two, I targeted all people from the first round; however, not all were able to participate in the second round.

The reasons for this varied, and could be due to sick leave, change of workplace etc. The ones who were not interviewed in round two are marked with an “x”.

For both rounds, I used a semi-structured approach, so that the interviewees could talk openly about whatever came to mind related to my questions. The interview guide for the first round consisted of three main themes, corresponding to how new management practices emerged and the involvement of various actors in processes of change. These themes were the following: 1) The strategy project’s, and the included pilot project’s, development, implementation, goals, and interrelations; 2) The timing and enabling of the new way of working; and 3) The actors involved and their roles. In addition, each interview included questions that arose from the situation and were tailored to specific roles, both within the project and within the organizations(s). As such, these questions varied depending on the interviewee.

Table 5 - Description of interviewees in PMO and number of times interviewed

Interviewee	Organization	Number of times interviewed: round 1	Number of times interviewed: round 2
Development leader-sustainability	PMO	2	x
Project leader pilot project /Facilities manager	PMO	3	7 (5 telephone & 2 e-mail.)
Head of Premises Management Office	PMO	1	x
Development leader –facilities	One City Area	1	x
Planning-manager (premises)	PS	1	1
Consultant within the building sector	Consultant	1	1
Facilities manager	PMO	1	1
Facilities manager	PMO	x	1
Project manager 1	PMO	1	x
Project manager 2	PMO	1	x
Head of finance-department	PMO	1	x
Head of the Facilities managers	PMO	1	1
Improvement manager	PMO	1	1
Project manager 3	PMO	x	1

For the second round, the interview guide consisted of questions regarding the current status of the project such as: How has it gone? Is it where you thought it would be? Why or why not? Can you describe current changes in practices related to the project? The

questions were modified and adopted to each the interviewee. For this round, a less explorative approach was adopted.

4.3.1.2 Interviews in the case of GG

This interview lasted for about 1.5 hours and was divided into two main parts. The first was inductive with open-ended questions mainly about the case organization, the research process, and the theoretical foundations. The second part of the interview was theoretically informed by the frameworks of institutional work and sociomateriality. Both parts had a semi-structured layout, allowing the interviewee to reason and speak freely (Bryman and Bell, 2015).

4.3.2 Observations

As I was interested in investigating specific conceptual issues, rather than providing a holistic cultural analysis, I targeted specific significant episodes, thus using a so called “targeted ethnography method” (Sage and Dainty, 2012). My main contact at the PMO was the coordinator/project leader of the strategy project. I did not attend every meeting and presentation that he attended, rather he invited me to the meetings he thought would be of interest for my research. The meetings I attended concerned organizational- and planning issues. In the cases of HP and GG the researchers targeted specific actions (such as meeting, workshops etc) related to their research interest. Thus, they also used a targeted ethnographic method.

4.3.2.1 Non-participant observations at the PMO

In order to capture the process, through which the project developed in practice in the PMO, observations of meetings and presentations were conducted. In the beginning of meetings observed I introduced myself and my research project. At presentations, the presenter usually gave a short introduction about me and my reasons for being present. During meeting observations, I sat by the table, like everyone else, taking notes at my computer. I did not take part in discussions. Some meetings were audio recorded, but for most of the meetings I took extensive field notes. At presentations, I did not ask any questions or participated in discussions. An overview of the meetings and presentations that were attended can be seen in Table 6.

According to Czarniawska (2007), there is not yet a clear definition of “participant” or “non-participant” observations. All direct observations can be said to be participatory in some sense: where does one draw the line if you are asked to bring coffee for a participant at a meeting? Nevertheless, Czarniawska (2007) stated that a participant observation intends that “you do the same thing as the people you are observing”, which I was not. Further, non-participant observations can be divided into indirect and direct observations, with the latter divided into shadowing and stationary observation. I tried to be a “camera” (stationary observations) and capture everything going on, but at the same time, I am interacting with the people and constantly interpreting and analyzing.

Table 6 - Overview of meetings and presentations attended in the PMO case

Type of event observed	Date	Purpose of meeting/presentation/conference
Presentation	1/3 2016	To present the ideas for a new strategy on a division meeting at the PMO
Meeting	3/3 2016	To discuss the pilot-project with the pilot project team members (Representatives from the PMO, The PS and the consultant)
Meeting	24/3 2016	To continue to discuss the pilot-project with the pilot project team members and especially invite the members from the City Area in which the project will take place.
Meeting	4/5 2016	To continue to discuss the pilot-project with the pilot project team members. Discussion on how to involve other parts of the organizational nexus.
Meeting	10/6 2016	Bring up the pilot-project ideas in a regular meeting series (in which strategic issues are discussed)with the PS and the PMO.
Meeting	13/6 2016	Members of the pilot project team have a meeting with the director of Finance for the City of Gothenburg to discuss and present the strategy
National Conference (Stockholm)	30-31/6 2016	A national conference on strategic planning for (public) premises with speakers from both academia and industry. (Three representatives from the PMO attended the conference)
Presentation	30/9 2016	To present and inform on the new strategy for stakeholders

I label myself as a “neutral” observer (Walsham, 2006), meaning one who is perceived as not being aligned with a particular individual or group. This does not mean unbiased, however, and when studying humans who know that they are being observed, there are always reactivity issues—the fact that people act differently when they know they are being observed (Paterson, 1994). Thus, I cannot know for sure that I did not affect the meetings I attended or whether the meetings would have been different were I not there. I tried to make clear that I was not present in order to evaluate the work, only to observe. However, the project members were overall more positive than negative about their own ideas; perhaps, more negative aspects could have arisen, had I not been there to observe.

4.3.2.2 Observations in the case of HP

For paper III, observation of nine working meetings with the strategic work group working with the organizational implications and implementation of energy efficiency at HP were analyzed.

4.3.3 Document studies

Organizational documents are not neutral, but must be viewed within their context (Flick, 2014). Since relying only on organizational documents will mostly overlook the micro-processes of meaning, this data collection method was supplemented with interviews (Zilber, 2013).

In the study of the PMO, organizational documents were used as data. These consisted mainly of documents concerning the strategy project, both those used by the project team to communicate with the politicians and the documents and PowerPoints that were used internally. Using written sources such as organizational documents, articles from Swedish newspapers, and national and regional policy documents complemented other data collection methods.

4.3.4 *Small e-mail survey*

A short questionnaire consisting of four follow-up questions was e-mailed to all 13 facilities managers at the PMO, with one reminder. In total, eight facilities managers answered the following questions: (1) Are you familiar with the term “strategic facilities planning”? (2) In short: what would you say it is about?; (3) Are you working according to “strategic facilities planning”? If you are, can you give some examples of what that means in practice? (and possibly how it is different from how you worked before?); (4) How long have you been working at PMO?

4.3.5 *Other documentation*

The PhD monograph thesis ”Omställning-Tillväxt-Effektivisering” (Thoresson, 2015) was chosen as one part of the empirical basis for this thesis due to its empirical setting and for its presentation. The thesis is a monograph which in details presents the case of GG, and how their work with energy efficiency issues was handled in practice. The theoretical foundation for the thesis is Actor Network Theory, which entails that both humans and non-humans (objects) are seen as being actively part of the processes studied. The empirical data in the thesis mainly consist of observations and interviews. For the purpose of using the thesis as an empirical case in paper III, the thesis was read through several times and the main ideas were summarized. Objects of interest were selected and during the interview with Thoresson (2015), these objects and their actions were scrutinized in more detail.

4.4 Data analysis

Data mainly consisted of words converted into text which was then used for data analysis (Flick, 2014). In addition, power-points slides and documents containing numbers and figures were included in the analysis. These slides and documents were not analyzed in terms of their content, rather the analysis took into account how this content was interpreted, understood and used by individuals. When analyzing the data, both explicit and implicit levels were included, as is common for qualitative data analysis (Flick, 2014). This meant as an example that both what was said during an interview or written in an organizational document as well as what was not said or written was of interest. The process of data collection and data analysis was iterative, meaning that data collection and analysis run simultaneously, i.e. the data analysis started before all interviews are finished. More, additional literature was added to the theoretical framework during the data analysis. Below I will present the data analysis for the different papers.

4.4.1 *Paper I and Paper II*

In paper I, notes from observations, interview transcripts, and organizational documents were subject to analysis. The analysis was an iterative process in which different aspects or parts of the process were more or less inductive. First, adopting a practice-based approach entails an empirical focus on different actors' activities (Nicolini, 2013) within their context. Therefore, when looking at the different textual data sources, actions of different actors were sought. Thereafter, these actions were coded (Braun and Clarke, 2006) and set in relation to three organizational levels that were not decided on beforehand and not specifically asked for; as such, they were unfolded inductively during the process of analysis.

In paper II, interviews from round two were the main data. According to Braun and Clarke (2006), themes, codes, or patterns within data can be identified in two primary ways: either top-down by theoretical thematic coding, or bottom-up by inductive thematic coding. The former is driven by the researcher's theoretical interest, while the latter is informed (almost) solely by the data itself.

Based on the description above, the analysis in paper I, from which the different organizational "levels" and their associated actions were derived, can be said to have started out as a theoretical thematic coding, where the latter part had a more inductive thematic coding approach. Analysing the data with an institutional work lens meant that this affected which actors were targeted. Thus, the presentation of human actors, described as agents for change or institutional workers in the conceptual framework, was a result of a theoretical thematic analysis. However, the objects discovered to be involved in change processes, coined "institutional implements", were not looked for initially. Thus, they are a result of an inductive thematic analysis. They were "discovered" since the researchers coded data without trying to fit it into a pre-existing coding frame.

In paper II, the first step in the data analysis was to read through the material, mindful of the four institutional logics as presented by Hill *et al.* (2013) (*energy efficiency, sustainability, project and economic*). Since language together with practices is crucial in the process of institutionalization (Phillips, Lawrence and Hardy, 2004), the interviewees' talk and verbal explanations were used as means to study the logics at play, together with their actions and practices. Thus, examples of expressions and practices relating to the four logics were highlighted and coded. However, just as in paper I, the analysis was not strictly inductive nor deductive. The analysis was not limited to these four logics, as the researcher also took an inductive approach to the material; therefore, other logics that emerged from the data and from the actors' sense making was "allowed". For three of the logics (project, energy efficiency, and economic), coding was quite evident. However, regarding the fourth logic, an alteration was made, due to findings from the interviews. The five logics presented are: project (short-term), financial/economic- strategic- and energy efficiency, and a professional logic. Thereafter, these actions and verbal expressions targeted were coded and set in relation to the organizational levels of the organizational nexus as presented by Gluch and Svensson (2018).

4.4.2 Paper III

The theoretical lens of institutional work, in combination with the theoretical concept of sociomateriality, was used when analyzing data from the three studied cases. The data were analyzed using thematic theoretical coding (Braun and Clarke, 2006). First, objects that were involved in processes of change in all three case organizations were identified. Within the sociomateriality stream, “the material” has often been equal to “technology” (Jones, 2013). However, following a call for research that focuses on multiple types of materiality (Putnam, 2015), a specific type of object was not targeted; rather, all kinds of objects possibly involved in the processes of energy-efficient renovation were sought. This included, for example, both tangible and non-tangible objects.

Following this, three illustrative stories were chosen, due to their ability to highlight the role of objects for institutional work. Objects were highlighted and their “journeys” within their respective organizations were followed in order to establish their interaction with the social world and the consequences from this “entanglement”, that is, what type of institutional work was conducted.

4.5 Research quality

The strengths of the methods I have used are mainly that they have allowed me to go in depth, expanding the understanding of a phenomenon in its context, which in turn has enabled me to develop a conceptual framework (Paper I). Further, using mainly an inductive approach in combination with a few cases has allowed me to use theory while, at the same time, letting the data surprise me, enabling me to further develop existing theory and to investigate the nascent field of change in public FM organizations. The methods adopted in this thesis mean I cannot claim that my description of the processes is the (exact) way they will unfold in other organizations; statistical generalization is not the aim of this project (Polit and Beck, 2010). Rather, the interpretivist approach together contributes to an under-studied area of in-depth research within sustainable construction, in which the goal is generalization about processes rather than outcomes (Schweber and Leiringer, 2012). It also answers the call for more in-depth empirical studies of the change process within various public contexts (Kupiers *et al.*, 2014). My overall aim has been to provide “successful” case studies/descriptions that enable the portrayal of general phenomena well enough that others have little difficulty seeing the same phenomena in their own setting (Dyer and Wilkins, 1991). According to Flyvbjerg (2006), generalizability of results from case studies depends on the selection of an “appropriate case”, for example, one that has “strategic importance in relation to the general problem” (p.229). As mentioned, the sampling was purposive, and thus the cases have been selected to fit the research problem area and objectives of the study.

Practical strengths of my methods include the ability to have an ongoing discussion with my informants, something harder to achieve when using for example questionnaires. Being in an ongoing relationship with informants can also be viewed as a weakness, if one adheres

to traditional views of validity (Flick, 2014). For example, if a researcher gets too involved with the person or context he or she is researching, it is hard to separate one’s own impact from what is being studied and what could have happened, had the researcher not been involved. However, these “traditional” views, developed for quantitative research have been developed and elaborated in order to fit qualitative research (Golafshani, 2003; Flick, 2014; Yin, 2009; Bryman and Bell, 201 ?) Table 7 describes how the issues of validity and reliability for qualitative research were handled in my research.

Table 7 - Means to ensure reliability and validity

Concept(s)	Measures taken in this thesis
Reliability in qualitative research (Flick 2014) / Dependability (Halldorsson and Aastrup, 2003)	<ul style="list-style-type: none"> • Thorough documentation of research process and data analysis and cross-checking the data between authors
Validity in qualitative research (Flick 2014)	<ul style="list-style-type: none"> • Data triangulation was obtained through; 1) Integrating data across different sources (interviews, observations and organizational documents) 2) including people from different parts of the organizations studied and 3) using three case organizations to illustrate a phenomenon. • The use of semi-structured interviews included room for flexibility and interviewees were asked to give feedback and reflect upon the interviewer’s assumptions. Likewise, after the meetings/presentations, if necessary, questions for clarification were asked to the participants. • During observations of meetings and presentations, the researches took a “silent” role, that is not actively interrupting the processes by speaking and/or asking questions.
External validity in qualitative research (Yin, 2014) /Transferability (Halldorsson and Aastrup, 2003)	<ul style="list-style-type: none"> • Use of theoretical frameworks as guidelines in data analysis. • Clear and rich description of empirical contexts • Use of E-mail survey to gain more perspectives • Follow up interviews
Internal validity (Yin, 2014) / Credibility (Halldorsson and Aastrup, 2003)	<ul style="list-style-type: none"> • Data collection of an actual and ongoing project to reduce recall bias and enhance the accuracy of the data

4.6 Reflection on the research process and overall research approach

The analysis of practice calls for an emergent and “bottom -up” research approach (Gherardi, 2012). As such, the overall research process and approach adopted in this thesis adheres to what Wiedner and Ansari (2017) call an “emergent research design”. This entails that during the research process, the researcher are willing to respond to emerging issues that have risen along the way, which entails a reflexive stance towards theories, empirical surroundings and methodologies.

I have not only searched for answers, but also for (new) questions. The ideas for both paper II and III, sprung from findings in paper I. As an example: finding that objects as well as humans take part as important agents within the organizational nexus of changing management practices for sustainable FM led to new questions that, prior to this, were not

possible to consider. This corroborates the acknowledgement that in the context of qualitative research, an awareness of unpredictable opportunities is important (Wiedner and Ansasi, 2017). This corroborates to the acknowledgement that in the context of qualitative research, an awareness of unpredictable opportunities is important as such research entails exploration and confronting the unknown (Wiedner and Ansasi, 2017).

Adopting an emergent research approach has not been without hesitancy, such an exploratory method meant I did not know what I would find and/or where I would end up. However, in the end, it enabled me to explore new theories and questions, as well as, I believe, gave me a deeper and richer understanding of the empirical phenomenon than if had I used a problem-driven research approach (Wiedner and Ansasi, 2017) or searched for gaps in the literature (Sandberg and Alvesson, 2011).

However, the research process was not solely inductive. It was taken for granted from the outset that institutions exist. When conducting the interviews and participating in the meetings at the PMO, I already had an idea that the practices I was studying were placed in a specific context, a certain institutional setting. I wanted to study practices and individuals and their actions *within* this institutional setting. Likewise, the readings of the texts from GG and HP together with the interview of Thoresson was coloured by theoretical understandings. This entails that if I would have used other theoretical glasses, other findings might have surfaced during the analyses.

4.7 Reflection on ontology and epistemology underlying the research

The theoretical frame of reference and the theoretical lenses used for this research come with assumptions regarding the nature of the world and the nature of science and research. They bring along assumptions that have implications for data analysis and for the results presented, as well as the formulation of the aim and the research questions.

Adhering to the practice-oriented stream of institutional studies (institutional work and institutional logics), together with the acknowledgement of objects as possible agents (sociomateriality) for institutional work, the research presented in this thesis can be said to belong to two major current streams in the philosophy of science; firstly, a form of realism in which the duality between structure and agents is acknowledged. Secondly, a view that the reality we live in is shaped by practices. In this latter reality, both objects and humans have agency (post-humanism) (Mol, 1999). The ontologies underlying the two theoretical lenses presented in this thesis (practice-based institutionalism and sociomateriality) are compatible, but depart from slightly different premises.

4.7.1 *Practice-based institutional theory*

Practice based institutionalism, adhere to the notions of critical realism (Delbridge and Edwards, 2013). According to a critical realist standpoint, it exists a, of the conscious mind independent, reality (Bhaskar, 2008; Archer, 1995). Humans interpret this reality, and via certain methods (such as discourse theories) we as researchers can in turn interpret this

interpretation. There are different valid perspectives of reality – which is not the same as to say that there are multiple realities. Thus, critical realism turns the interest to research ontology, and the methods and research epistemology adopted in this thesis do align with its ontological assumptions. Practice-based institutionalism acknowledges that institutions (structures) exist, and they also believe that these can be altered by the humans and objects that populate them. Thus, in terms of institutions, in this thesis, it is acknowledged that institutions are made up and can be altered if the practices within them differ, i.e. if people (and objects) do and say differently. However, they exist “on their own”, and can be analyzed separated from the actors within them. At a given point in time it can be decided to investigate and analyze an institution, due to the assumption that this institution exist as an own entity. Notably, simultaneously as I recognize that institutions shape the actors within them and the actors in turn shape the institutions which they populate (cf. Battilana, 2006), I have acted as if the institution “stood still” when I investigated it. I think this is inevitable when you do an institutional analysis of any kind; however, I have tried to capture the ongoing change process, especially in paper I in the development of the conceptual framework.

Thus, in this thesis it is acknowledged that there is a reality that can be investigated through theories. It is acknowledged that the people within an organization views this organization in a certain way, which can lead to the creation of a conceptual framework of this organization, influenced by theoretical lenses. However, this is not to say that the organization *is* in this way. It could be viewed differently, with other theoretical lenses. Likewise, institutions exist because many people view things in a similar way, however if this view change, so do the institutions. The research does not take an interest in finding out exactly how and what the reality is, but rather how it is understood by the individuals who populate it. The nature of knowledge which is put forward in my research is thus that there are two factors available: the reality and the interpretation of the reality, in which the latter is emphasized in this thesis.

4.7.2 *Sociomateriality*

Sociomateriality, being a research stream and umbrella term, is harder to categorize ontology-wise than practice-based institutionalism. According to Jones (2014), “...none of the notions (strong or weak) of sociomateriality are wholly consistent with critical realism” (920). Rather, sociomateriality adheres to a research stream in organizational studies that takes less interest in the dualism debate (structure/agency) and is more interested in the understanding of how “culture”/“the social” is formed in specific contextual situations (agential realism), as put forward by, for example, Barad (2003). Nevertheless, taking the weak sociomateriality perspective presented previously in this thesis enables an investigation of the objects *within* their institutionalized environments; thus, the weak is proposed to be closer to a critical realist standpoint than the strong ditto (Jones, 2014). Also, Leonardi (2013) proposed that sociomateriality research can be built on either agential realism or critical realism. Both approaches have their advantages and disadvantages. For example: scholars who treat objects and humans as distinct (weak

sociomateriality) tend to privilege one over the other (Putnam, 2015). Using what Jones (2014) would call a strong process perspective, and what Putnam (2015) refers to as performativity would avoid this tendency.⁴ Moreover, Leonardi (2013) has pointed to the benefit for practice of using critical realism as basis for sociomateriality studies rather than agential realism. According to him, since actors in the real world do not act as if agential realism is “true”, this philosophical stance presents empirical problems.

The differences between the weak and strong accounts of sociomateriality have practical consequences, in terms of the questions asked by the researchers (Leonardi, 2013), and in terms of the research’s practical use (Leonardi, 2013). Taking a weak perspective entails a focus on how social and material agencies combine in shaping a certain practice. The researchers are thus searching for mechanisms that link the social and the material over time, and that can help explain how organizations develop and change (Jones, 2014, Leonardi, 2013). In sum, both institutional work and sociomateriality are compatible with the critical realist world view.

⁴ Both Jones (2014) and Putnam (2015) refer to Orlikowski and Scott (2001; 2009; 2015) when contrasting different forms of materiality studies, and they both agree that Orlikowski and Scott’s perspective is ontologically different than that of other scholars. Putnam, for example, highlights five different ways in which discourse and materiality are elaborated on in materiality studies, of which four have another ontological grounding than Orlikowski and Scott (2015). These four resemble the weak perspective as presented by Jones (2014).

5 Summary of papers

5.1 Paper I

Title: On the nexus of changing public FM practices: Purposive and co-creative actions across multiple levels

This paper uses the agentic- and practice-oriented perspective of *institutional work* to conceptualize the organizational nexus of changing practices. The aim of the paper is to build a conceptual framework that envisions purposive actions of various actors in change processes towards more sustainable public FM practices. Changing management practices are illustrated with the help of real-life experiences that were captured, through interviews and field observations, in a case study of a strategy project in a Swedish public facilities management organization with the goal of developing *a strategic facilities plan*. Organizational documents are also used to support data analysis. The framework envisions projective agencies of various actors, both human and objects, in change processes. These humans included, among others, the project leader, a facilities manager and the top manager. The objects included a IT-system and pavilions, among others. The findings show how, through collaborative co-creation processes, key actors adopt different complementary roles, such as a space provider, stage-setter, expert, role model, and reality-checker, when promoting new practices into a specific organizational setting. They create proto-institutions by jointly promoting a set of preferred arrangements. In addition, various objects were attributed rhetorical agency to support new public FM practices; these served as purposeful non-human actors, triggering and legitimizing actions taken. We call these objects “*institutional implements*”. With focus on emerging institutions in the making and especially projective agencies for institutional change, this research contributes to furthered layered understandings on *institutional work* related to changing practices in construction in general, and in public sustainable FM specifically. Further, it provides a framework that takes into account various levels of the organizational nexus, ranging from macro (national) to micro (project level and individual level).

Main findings and contributions:

- The study links individuals’ actions on the *project level* with *organizational* actions and *field organizational* movements and showed how actors worked together to create new practices
- The agentic-practice view of *institutional work* together with a narrative inquiry approach helped to identify the key actors (which were sometimes not obviously targeted) within the organizational nexus of changed FM practices.
- Both human and non-human actors were found to engage in institutional work related to changing FM practices.

- The findings show how different levels of the organizational nexus are *constantly* connected and how actors' and objects' purposive actions “travel” through this nexus, moving back and forth rather than from top to bottom or from bottom to top.
- Despite being one of the major challenges for public FM organization, and the one of the reasons why the strategy project was initiated, our study revealed that sustainability became a silent issue in the strategy project.
- When promoting new planning practices the actors studied took on different roles.

Findings from Paper I are further developed in Papers II and III. These also include the findings that shifting institutional logics might take place as a result of the change (Paper II), and the finding that objects (“institutional implements”) have an active part on the change process studied (Paper III).

5.2 Paper II

Title: Logics and changing practices for public sustainable facilities management

This working paper expands on findings presented in Paper I, focusing on institutional logics involved in energy efficient renovation and their connected practices. The aim is to increase the understanding of the organizational implications for changing public FM practices. The paper builds on research that has recognized the occurrence of multiple institutional logics in energy efficient renovation, together with research that has acknowledged the occurrence of multiple logics in processes of institutional change. The paper also adheres to a research stream that focuses on how logics are represented in practice.

A case study approach is adopted. A Swedish Public facilities management organization's work with adapting to governmental energy directives and simultaneously managing a large building stock, mostly built during the millennium program era, now in need of renovation is investigated. The data consist of interviews, observations, and organizational documents.

In the organization, the main existing way of working had been to “patch and mend” and put out fires, which meant there was a lack of long-term thinking within the organization. In reaction to this, a project team launched a new way of working. This project team had been given directives to incorporate energy efficiency measures into renovation. However, the new way of working that was launched not only encompassed energy efficient measures; it was a whole package of “strategic planning for premises” that included not only renovation but also building new premises when needed. With this way of working, a new logic entered the organization, a logic based on long-term thinking and strategic planning. This logic can be seen as a reaction to the previous “patch and mend” logic and also corroborates to the professional logics of those people working “hands on” with the buildings. These people had been frustrated that they could not use their professional knowledge properly. In order to have the new way of working legitimized, the project

group needed to adhere to a financial logic and frame its ideas so that they were believed to be the best thing for the city's economy. The energy efficiency logic diminished during the course of time and the project was, in the latter stages, referred to as an economic or strategic project.

Findings show how practices during the process of developing a new way of working through a strategic project were connected to four logics: a short-term, project practice perspective called "Patch and mend"; a professional logic; a strategic and long-term logic; and a financial logic. A fifth logic or idea – an energy-efficient logic – was introduced by top management but findings suggests that the practices developed were not connected to this logic.

Paper II further discusses the practices that were developed in relation to the strategy project, which mostly revolved around two areas: ideas on how to handle all the buildings within the city in a computer system, and included in this theme; how to assess these buildings; and how to manage evacuation between buildings when one building was being renovated. Secondly, practices were developed in connection to the legitimatization of the new way of working, one aspect of which was to promote the project as a financial project.

Main findings and contributions:

- The study recognizes that (public) energy-efficient renovation is situated in a multiple logics context.
- The logics of public energy efficient renovation are not equally strong throughout the organizational nexus (as presented in Gluch and Svensson, 2018).
- Actors had to adjust their practices depending on where they were and with whom they were talking, in order to align to the legitimate logic at that particular place.
- The introduction of energy efficiency targets and directives, gave rise to new practices relating to several logics. As such, the energy efficiency "idea" needed to be negotiated (back) upwards to the politicians that first gave the directives.
- Paper II is a working paper and will be further developed. The (theoretical) connection between practices and logics will be especially investigated more in-depth.

5.3 Paper III

Title: The role of objects for institutional work in energy efficient renovation

Paper III expands on Paper I, focusing on objects – the "institutional implements". The purpose is twofold: to introduce objects and their agentic roles in institutional work through the lens of institutional work in combination with sociomateriality, and also to understand the role of objects in and for institutional work in processes of change, with the specific case of energy-efficient renovation. During analysis, the researchers were interested in the interaction between the objects and the social world and the consequences from this "entanglement"; namely, what situated outcomes and what type of institutional work was enacted?

The paper is informed by three empirical cases concerning energy efficient renovation of public buildings. In case one, an example of a project to renovate pre-schools in an energy-efficient way is used as illustration of the role of objects for institutional work. Within this project, several objects served as references for shaping new practices such as IT systems and houses. These objects were tangible and intangible, as well as present or desired. In the second case it was shown how an old existing object (a district heating system) and a not-yet-existing object (solar panels) were active in the project encompassing energy efficient renovation of a block of flats. In the third case, in the process of energy efficient renovation of hospital buildings, it was shown how a construct named “the blue ball” took an active part. This object was tangible, in the sense that it was shown in power-point presentations, but also non-tangible since it was a loosely defined construct that could be redefined to serve different individual’s agendas.

In sum, the findings show the multitude of types of objects that are involved in energy efficiency and how they are part of institutional work that create, maintain, and disrupt institutions. The findings also highlight how, just like humans, a single object can perform different forms of agency and be part of different kind of institutional work. In Paper III it is proposed that objects do pursue agency in processes of energy-efficient renovation, that agency is thus distributed in a network of human and non-human entities that act, and that the institutional work performed by objects depends on the joint work of humans and material entities.

Main findings and contributions:

- Objects, *together with the roles and attributes they are given*, have an effect on the changing organizational practices related to energy efficient renovation. Thus, humans and objects together perform institutional work in energy-efficient renovation.
- Both tangible and non-tangible objects served as reference for shaping new practices, destroying old practices, and maintaining current practices.
- The same object was involved in different types of institutional work depending on the *context* in which it was embedded.

6 Discussion

Based on the three appended papers and the summary presented in this thesis, this chapter discusses the findings and their implications and relations to theory and practice. Firstly, the three research questions will be discussed, followed by a reflection on the theoretical frameworks chosen for analysis and how these choices have affected the results.

6.1 How can the organizing of changing practices for public FM be described and conceptualized?

The conceptual framework in Paper I (figure 4, page 271) was developed through the process in which the researchers sought to understand changing practices for public FM theoretically and conceptually by identifying patterns, connections and underlying properties (for an overview of conceptual contributions in research, see, for example, McInnis, 2011). The framework is based both on theory and previous knowledge regarding (sustainable) public FM and on the stories from the people who had first-hand experience of the change process.

The conceptual framework encompasses the different levels of the organizational nexus of sustainable public FM as derived from the empirical data from the PMO. The developed conceptual framework helps to visualize the complex web of interaction that characterize public organizations in general (Christensen *et al.*, 2007; Hartmann *et al.*, 2008) and especially public FM. Previous studies have shown how both public FM organizations and public facilities managers must translate and interpret political directives and align those with their professional knowledge, as well as develop practices that are in line with what is deemed as legitimate in the institutional setting of their specific organizations (Due, 2007; Galamba *et al.*, 2012; Galamba and Nielsen, 2016). In the case of PMO, as shown in Papers I and II, this process involved “travelling” back and forth through the multi-layered organizational nexus and involved several actors. The framework visualizes the actors within this organizational nexus who actively participated in the process of changing practices for sustainable FM. The framework further visualizes how the different levels were constantly connected and intertwined and how the actors traveled through this nexus performing purposive actions.

The study of institutional work highlights the need to examine agency as a distributed phenomenon (Lawrence and Suddaby, 2006) and entails an interest in both individual actors and their (institutional) context. The conceptual framework views how several actors were engaged in the change work at hand. Among these actors were so-called “ordinary” actors (Lawrence *et al.*, 2010), including people who were basically doing their job, such as the facilities managers who were part of the pilot project group. The concept of distributed agency (Lawrence and Suddaby, 2010) in this thesis also applies to objects, labeled in the framework as “institutional implements”. When researching the construction industry, it is almost impossible to avoid relating to physical objects. As in the case of current challenges for public FM organizations, the buildings in need of measures are the

core element that the organizations have to relate to, and it is also the logics and practices surrounding these buildings that are changing. However, it is not just the buildings that influence public FM. Findings from my research discussed both in Papers I and III, show that in the case of changing practices for public FM, several objects served as purposeful non-human actors, triggering and legitimizing actions. Acknowledging the intentionality and active part-taking of objects requires knowledge of which objects to “be aware” of. In this thesis, the objects presented are not (only) the ones around which the change process was developed. This complement previous studies where the objects in focus have usually been those that were also the main reason why a change happened; for example, a collapsed bridge’s part in the rebuilding of a new bridge (Walter and Sthyre, 2016) and the agentic role of a house that was going to be renovated (Buser and Carlsson, 2018). By using an institutional work lens, together with the theoretical notion of sociomateriality, the focus is not only on buildings or “obvious” objects, but also on more ordinary material affects, both physical and non-physical.

Even though the enabling conditions for change are located at different (separated) levels within the organizational nexus, the space for institutional work does not include such levels. Here, the actions of the actors are viewed as intertwined, so instead of talking about specific barriers, the importance of knowledge of the processes within the organizational nexus of changing practices for sustainable public FM is emphasized. The research leading up to the development of the conceptual framework follows the call for researchers to adapt a processual view of energy-efficient renovation (as one aspect of public sustainable FM) (cf. Palm and Reindl, 2017).

6.2 How do human actors perform agency in their everyday work in order to make change happen?

As shown in paper Papers I and II, new practices were developed through the development of the pilot project and later the strategic project, such as ideas on how to manage evacuation in a strategic and consequently (arguably) more sustainable way. The organizations also developed practices related to the possibility of obtaining a clearer picture of the building stock by developing assessment criteria and having the facilities manager enter information into a computer system. How was this possible, given the institutional context that has previously been shown to make change difficult?

The story presented in Paper I provides multiple enabling conditions as to why the change work was started. The explanations encompass all levels of the organizational nexus of changing FM practices. The paper shows that national and local sustainability and energy goals and directives played important roles, as did a general discourse and discussion on the field organizational level regarding challenges related to the 1960s–’70s-era buildings and their extensive renovation needs. Within the studied organization, and driven by previous relationships, organizational readiness and timing, as well as a frustration regarding current strategic planning and renovation practices, triggered various purposive actions. However, the new ideas did not arise (only) because new logics entered from

“above” as has been previously suggested in studies on institutional change (cf. Smets *et al.*, 2012). Rather, frustration on the operational level, organizational conditions that enabled development work, together with new directives from government and local politicians, led to the change work beginning and thereafter being developed. By translating and modifying politicians directives, together with the ideas from the project level and from the people working “on the ground”, the institutional work of creating proto-institution was done. Thus, in the case of PMO, adapting to the financial logic was a strategic move (cf. Venkataraman *et al.*, 2016) in order to further develop new practices.

The concept of distributed agency (Lawrence, Suddaby and Leca, 2010) has helped to shed light on the number of actors who had to be involved in order for change to take place in the PMO. Several human actors within the PMO showed a great deal of agency while working with the strategy project. Paper I discusses how space and place are created to give direction for and legitimize taken routes. Herein lies the creation of different project teams directly associated with the strategic facilities plan, notably the pilot team and the key team. The pilot team included people from different parts and levels of the organizational nexus. This aspect seems to be important when the ideas from the pilot project, applied within one CA, were to be transferred to other type of buildings and CAs. What could be seen in Paper I was that the actors developed so-called proto-institutions, for example through the pilot project in which the idea was to test a new way of working. The pilot project set-up was such that the organizational nexus of changing practices for public sustainable FM was present on a small scale. These proto-institutions consisted of elements such as IT systems and meeting routines that were used to “pave the way” and show early results. When promoting the new way of working, it was argued that these proto-institutions and the practices within them could be transferred to other areas and the facility managers’ way of working according to the new ideas within the pilot project was later transferred to the other CAs. In the process of promoting their ideas – that is, making change happen – the members of the project team took on different (complementary) roles. This further emphasizes how the actors worked together to promote their ideas and how they needed support from all levels of the organizational nexus. For example, one member of the pilot project team took on the role of an ‘expert’, showing his ideas with the help of complex/complicated PowerPoint presentations filled with numbers and figures. The pilot project leader worked with simpler PowerPoint presentations that were easier for everyone, including the facilities managers who work “hands-on” with the buildings, to understand. The project leader could be described as a bridge from the top management, the managerial/organizational level, to the operational level. Alongside the human actors within these proto-institutions were the objects being actively part taking in the process of developing new practices, which was further discussed in Section 6.2.

As discussed in Paper II, even though new practices were developed these were not perhaps connected directly to the ideas and logics associate with the reasons for starting the pilot (and strategy) project. Within the pilot project group, despite differing interests and agendas, the main message outward was that they were a unified group with a joint view and direction. Nonetheless, it was seen that some interests were silenced due to a lack of

representation in the strategy project. Thus, somewhat similar to the findings by Gluch and Bosch-Sijtsema (2016), in the case of PMO, the sustainability managers were not given space for institutional work. As shown in Papers I and II, other aspects of the project took over; for example, a financial logic was highly favored. This also impacted who was given power and space to pursue his/her ideas. Thus, actors other than the sustainability manager, such as the financial director or others with financial responsibilities, were given space for institutional work and were allowed to develop new practices, as shown in Papers I and II. (This again emphasizes the number of people involved in the work of developing new practices.) With regard to being one of the initial objectives of the new strategic facilities plan, it may seem surprising that sustainability became a “silent” issue in the strategy project. However, in relation to previous studies on sustainable public FM (Thoreson, 2015; Galamba and Nilesen 2016) it is less surprising given that public FM organizations are increasingly adopting a financial logic.

To possess agency, it is suggested that actors must be able to reflect on their own institutional embeddedness (Battilana, 2006). Papers I and II show how the involved actors adopted to different logics (and practices) depending on where they were in the organizational nexus of public FM. The actors did not speak in terms of “logics”, levels, or “organizational nexus”, but they appeared to have a sense of what could be said where and to whom in order to get attention. As Paper II shows, to get the ears of politicians and political laymen, the project group members needed to develop their communicative skills and “understand” which logic they should adapt their proposed practices and ideas to. This corroborates findings from Ludvig *et al.* (2015) on the need to have communicative abilities while translating political directives regarding sustainability into practice.

6.3 How are objects partaking in the change processes through which public FM organizations reconsider and revise their existing practices?

As described in the previous section and in the same vein as Monteiro and Nicolini (2015) and Raviola and Norbäck (2013), I argue that institutional work is shared between human and material entities and that objects can be seen as complex assemblages of humans and material elements that perform institutional work when certain alignments are put in place. As discussed in Paper III, the role of objects in the studied change processes varied depending not just on the object itself, but also on how these *together with humans* enacted an outcome. This way of viewing objects in relation to institutional work corroborates other researchers’ findings, such as Bosch-Sijtsema and Gluch’s (2016) study of the role of the BIM coordinator. It was shown how the BIM coordinator and technology became intertwined i.e. it was not the technology alone that made change happen neither was it the BIM coordinator. In the same vein, Raviola and Norbäck (2014) showed how old and new types of newspaper served as references for shaping new practices, although it was the newspapers’ interaction with humans, not the newspapers alone, that effected change. More, in line with Palm and Reindl (2016) old technology influenced the content of current and future technologies. For example, the pavilion in the PMO were an example of an object that were viewed as belonging to the past (old) – that is, it was not wanted – and was

used as examples of how old practices had worked badly and were thus used to “attack” the taken-for-granted nature of an old institution (disrupting institutions). The district heating system in the case of GG was another example of an old object that influenced the development of new practices. Past (old) objects have previously been investigated in relation to institutional work. Raviola and Norbäck (2013) showed how an old technology became the object of reference in problematizing the current situation. In their case, the old technology served as a map of how to build new practices. This deviates from the findings from PMO. Here, the new practices seem to be more of a reaction and a contrast to previous practices. The district heating system on the other hand was found to serve different roles, according to the context in which it was embedded. It was found both to be functioning as the counter-alternative towards change (as a contrast to the future solar panels) and was also seen as the “safe choice” in the institutional work of maintaining practices. The district heating system was also associated with different types of agency, directed towards the past, present, and future. This is in line with Lawrence and Dover (2015), who stated that: “a physical object, can ‘become’ distinctly different things in the world as actors’ efforts connect it to different institutional domains” (p. 403).

To sum up, in this thesis non-humans (objects) are considered to be actively participating in organizational processes, and have therefore not viewed them as fixed, finite, and/or stabilized (cf. Leonardi, 2013). In most previous research, the actors engaged in institutional work have, with a few exceptions (e.g., Raviola and Norbäck 2013; Monteiro and Nicolini, 2015; Lawrence and Dover, 2015; Jones and Massa, 2013), been human. Researchers have scarcely focused on the objects’ role in institutional work, either in construction management research or elsewhere (Hampel *et al.*, 2015). However, objects can be viewed as more than just obedient “tools”; they may have agency (cf. Styhre, 2017) and make a difference to social relations (cf. Sage and Dainty, 2012). In the process of creating new institutions, objects were found to be both part of processes in which they facilitated (cf. Raviola and Norbäck, 2013), complicated and hindered (cf. Lawrence and Dover 2015) the institutional work of creating new institutions.

6.4 Reflections on the choice of theoretical frame

The theoretical framework used in this thesis provide analytical perspectives that have made it possible to discuss a change process and generalize findings from a specific case (cf. Van de Ven, 2016). The framework has also made it possible to make sense of what has been studied empirically. It also bring assumptions about the nature of the world, and have affected what have been in focus for the analysis. Below, the choice to use the constructs of institutional work and sociomateriality will be discussed together with the implications for the choices made.

6.4.1 *Institutional work*

According to Janda and Topouzi (2015), there is a need for an increase of research where sustainability protagonists are seen as ‘normal’ employees who need to respond to changes in sustainable building policies. Taking the perspective of institutional work, I have not

looked for or presented “outstanding” or heroic actors (humans or objects). Instead, I have taken an interest in the “ordinary”, including several different actors, at different levels within the organizational nexus. By taking another lens, perhaps the institutional entrepreneur lens, I could have arguably found some heroes and thus presented a different story. Energy research (including research on energy efficient improvements), like research on change in general, mainly tells “hero stories”. However, these stories seldom represent the practical reality and there is a gap between what energy-efficiency theory promises to deliver and what happens in practice (Janda and Topouzi, 2015). In a typical hero story, some parts of the story are often told in a normal but separate world. The same is true for energy-hero stories: “The energy hero story has some recognizable elements of the traditional structure...most of the heroic acts occur in the special world of the future, or the imaginary world of technical potential” (Janda and Topouzi, 2015 p. 519). Papers I and III showed that future objects presented hope and collaboration; for example, a lot of time was spent on discussing a future (not yet existing) IT system that was believed to be able to solve several (real) problems, including issues regarding collaboration, which were argued to slow down the current work. Presenting a hero story, the IT system could have been put forward as the “solution”. However, as presented in this thesis, the real world is messy and will inevitably challenge the predicted order of the imaginary world. What are needed, according to Janda and Topouzi (2015), are so-called learning stories, stories that do not include heroes, but instead ordinary people who carry out their work. In such stories, the actions take place in the real world as it looks today, and that is how the results have been presented in this thesis.

6.4.2 *Combining institutional work and sociomateriality*

The theoretical construct of weak sociomateriality adopted in this thesis entails that the relations between humans and objects are not given; instead, they are *enacted*. In research, the term sociomaterial has most often been associated with technology (Jones, 2013). In the present thesis, neither the term nor the features of “technology” were sufficient to encompass the non-humans that actively took part in the change process studied. Some examples of such non-humans were pavilions, IT systems, PowerPoint presentations, and concepts/illustrations/metaphors (such as “the blue ball”, a concept that was developed from a graph on a PowerPoint slide). These examples are technologies (Carlile *et al.*, 2013), non-material illustrations (Burrell, 2013), as well as physical things (Fayard, 2013). In the present thesis I have decided to use the term “objects”, which may be both tangible and non-tangible (that is, both a computer and an IT system are objects). I acknowledge that calling them objects may signal their distinctiveness from humans; however, adopting to the weak stance of sociomateriality also entails that they are in fact distinct, until they become entangled in practice and for the purpose of analyses. This is highlighted in Section 6.3, which emphasizes how humans and objects together perform institutional work.

Taking a weak perspective on sociomateriality entails a focus on how social and material agencies combine to shape a certain practice. Thus, the researcher is searching for mechanisms that link the social and the material over time, that can help explain how

organizations develop and change (Jones, 2014; Leornardi, 2013). In the same vein, institutional work scholars are trying to link structures with individual actors' practices and actions. As an example from my research, actions in connection to the pavilions within the PMO served to destroy old practices and institutions and to create something new (proto-institutions). In terms of the actions connected to the district heating system in Paper III, taking an institutional work lens enabled an exploration of how the old system was preserved, and consequently how it contributed to the institutionalized way of working. d

Using the theoretical construct of institutional work when investigating the role of objects in change processes brings an obvious question: Are the objects, such as the pavilions and the blue ball performing institutional work; that is, performing purposive actions? I have already established that they do it together with humans. Nevertheless, in Papers I and III, the objects were proposed to perform institutional work, thus performing *purposive* actions. This can be debated, and another way of presenting their actions could have been through "institutional doing", in which we just look at the actions; thus, the actions and outcomes would have been the same, it is the intentionality that differ. Why and how does it matter if we acknowledge the intention of objects? I argue that acknowledging the intentionality of objects make individuals prepared for the fact that materia is unpredictable, it is able to "bite back" and cannot be controlled (cf. Putnam, 2015) and this assumption creates new opportunities to understand change processes. This is illustrated in Paper III with the case of the "blue ball", a concept that was developed from a graph on a PowerPoint slide. This concept was loosely defined and was used for different purposes and agendas over the course of time; as such, it began to have a "life of its own", deviating from the original idea. Can we know for sure that an object is performing purposive action(s), and if so, how? The answer is that we cannot know for sure, although we cannot know for sure if a human is doing that either. We as researchers must make assumptions (Bunge, 1997), albeit ones that are based on previous research and knowledge

7 Concluding remarks

The aim of this thesis has been to increase the understanding of the change processes through which public FM organizations reconsider and revise their existing FM practices in order to support long-term goals and sustainable development. Three research questions were developed in order to fulfil this aim.

7.1 Conclusions

The first question concerned the conceptualization of the organizational nexus of changing practices for public FM: *How can the changing organizing practice for public FM be described and conceptualized?* The conceptual framework developed in Paper I shows the different levels of the organizational nexus and how they are constantly connected to make space for changing practices, it shows the different actors within this nexus and how their movements and also where enabling conditions for change are located. With an increased knowledge of the organizational nexus of changing practices for public FM, including how national and local practices and directives are interacting and who is involved in this process, it is argued that practitioners can make more informed decisions regarding sustainable measures focusing not only on hard issues but also on softer ones such as a knowledge of how, by whom, where and which practices that are created, used, developed, and implemented. Conceptualizing the organizational nexus of changing practices for public FM helps both managers and employees to clarify the “workings of their world”. This in turn lead them to better understand how to arrange and navigate within their organizational environments in order to get desired outcomes. The conceptual framework developed could enable more actors, possibly also in other public FM organizations, to pursue agency, since it offers a visualization of the institutional embeddedness and opens up a possibility to discuss where, how and when new practices can be developed.

The second question concerned *how human actors perform agency in their everyday work in order to make change happen?* Findings from all three papers were synthesized and together they show how space and place for changing practices are created and how actors navigate through a complex organizational nexus involving multiple logics in order to pursue agency and make change happen. In order to make change happen, the actors were, shown to develop proto-institutions, to adjust their practices to different logics and to strategically make use of objects.

The third question revolved around one of the type of actors, namely the objects: *How are objects partaking in the change processes through which public FM organizations reconsider and revise their existing FM practices?* The findings show that objects were together with humans, be involved in actions that both maintained, created and disrupted FM practices. Thus, within processes of change for public FM, it is important to be aware of the fact that humans and objects interact, and that objects are not just passive things; rather they take actively part and shape organizational processes.

The research presented in this thesis contributes to the emerging body of literature on materiality and institutional work as it has examined empirically how materials enter into the accomplishment of different types of institutional work in a setting which to my knowledge has not been investigated with regards to institutional work and materiality. More, it contributes to the under-developed research that investigates institutional work among different parts of an organizational nexus (cf. Crittenden, 2014). Further, it adds to the emerging body of literature on sustainable public FM that takes an organizational research approach on changing practices.

There appears to be both technical solutions and innovative ideas available that enable practices to support a sustainable and long-term development of public FM (c.f UFOS, 2013). In order for these to be implemented increased knowledge among public FM organizations about organizational change is needed – both general knowledge and specific, linked to change towards a more sustainable FM. This include who is involved in change processes, why and how change is enabled and where it takes place.

As new targets and goals are introduced in public FM organizations, in practice what happens can be summarized as follows:

- Reduced energy use / "green" goals stemming from “above” are not enough in themselves - financial logic and economic goals "take over".
- The work of sustainable practices takes place within a complex organizational "nexus" - work is done at several levels, from national level through municipal, organizational, project and finally individual level and these levels are constantly connected
- The work to transform a public FM organization in order to meet current challenges involve several human actors. These humans are not perhaps “obvious” change agents, rather they are “ordinary” employees that reside at and travel between different organizational levels.
- In addition to human actors, several non-human actors (such as computer systems, power-point presentations and certain types of buildings) have proved to be part of the organizational nexus as well as being “institutional implements” and agents for change. Practical implications include the awareness of how humans and objects interact, and that objects are not just passive things; rather they take actively part and shape organizational processes.

7.2 Suggestions for future research

Moving forward, I would like to strengthen the connection to practice, that is to work more closely together with public FM organizations in order to see how my suggestions are considered to be valuable in practice. For example I would like to validate the conceptual framework and perhaps developed it together with stakeholders.

One other suggestion for future research is a quantitative study, in order to include several municipalities in Sweden and investigate whether they are experiencing changing practices

and how these processes play out, and who are involved. According to Suddaby and Greenwood (2009) serious contributions to understanding institutional change arise from the theorization of institutions as complex phenomena which in turns implies a use of both quantitate (multivariate) and qualitative methods.

Through the thesis and the three appended papers it has been possible to discuss how and when change can occur in order for sustainable FM to be realized. However, the question still remains *why* actors engage in such work. Thus, another possible route to take could be to study the key institutional workers involved with the implementation of sustainable FM practices, and dig deeper into the question of what motivates them? The questions asked could be as follows: Who will become "project managers"? Why are they involved? What skills do they have for driving energy and climate issues? What drives and motivates them in the change work? Do their drivers and motivation affect their work in practice? How? One aspect of this investigation could be to use previous studies on motivation and job performance within the public sector together with motivational studies in general. This is interesting because research has suggested that sustainable change may be especially difficult to deliver, and the processes be in line with those of radical innovations (Lozano, 2005). Tentative findings from my studies suggest that it may not only be sustainability related motives underlying key institutional workers in public FM.

More, I would like to deepen the understanding of the objects involved in the change processes, and how the different human actors relate to them. Questions of interest could be; How are the energy and climate issues *materialized* in the change process?? Within this line of thought, it would be interesting to connect to current ideas on emotions and institutional work. Tentative findings from paper III, showed that objects were associated with different feelings, such as fear and happiness. To further increase the understandings of institutional work and sociomateriality in relation to changing practices for public FM, questions of interest could be; which type of institutional work that are connected to certain emotions? How are people's emotions affected (by the objects?) Do different type of objects provide different emotions among individuals?

Public FM organizations are faced in a situation in which it is no longer possible to "*surf the waves of the million program*". As such, they must find new ways to manage their building stock, a way that is sustainable both for current and future generations. The quote in the beginning of this thesis has an ending that was not included in the introduction: "*...now comes hell*". It remains to be seen what will happen, how this "hell" will be managed, and if it comes. The suggested areas for future research, together with the findings presented in this thesis, will help to increase the understandings of changing practices in public FM organizations. Possibly, no hell will come, but rather innovative and constructive ideas developed by humans and objects together.

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