Materiality in action: the role of objects in institutional work

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ABSTRACT

Public property owners currently face a great backlog of renovation work at the same time as there is a need to build new, increase cost-efficiency, and comply with new environmental regulations on energy efficiency. To manage these challenges many public property owners have initiated change processes to develop new strategic ways of working with their properties, often aligned with a project portfolio approach. This involves a quite radical shift of practices in these organizations, which requires individuals to engage in institutional work. Recent studies have highlighted how institutional work is shared between humans and objects. To increase understanding *of objects' role in institutional work through which public property owners develop new practices that support a holistic, long-term, and sustainable property management,* we analyzed observational data of strategy project meetings in three Swedish public property owner organizations. Findings show how objects have an active role in institutional work through acts of attacking, justifying, and/or safeguarding to maintain, create and/or disrupt institutions. Objects take on multiple roles and both unite and divide human actors as well as evoke emotions that guide actions. Three types of agency are highlighted: relational, discursive, and emotional. Increased knowledge on the role of objects in institutional work and how objects (can) influence human agency assists actors in making better-informed decisions in strategic change processes.

Introduction

Public property owners across Europe currently face similar challenges regarding their building stock. Studies raise concerns that many public buildings are in decay with a great backlog of renovation work (Uotila *et al.* 2020, Svensson 2018). Vague management processes and short-sighted policymaking are mentioned as causes, and a more systematic and less fragmented way to manage public buildings is sought for (Borge and Hopland 2017, Hopland and Kvamsdal 2019, Uotila *et al.* 2020). Research further indicates a need to increase the cost-efficiency of maintenance and renovation (Farahani *et al.* 2020) as well as to adapt it to sharpened environmental regulations (Nielsen *et al.* 2016). One such regulation, which is the empirical challenge inducing organizational change among the public property owners studied in this paper, concerns increased demands on energy efficiency. To cope with the need to manage the building stock in a holistic, long-term, and sustainable way, both researchers (Junghans 2013, Tucker and Masuri

2016, Bröchner *et al.* 2019) and practitioners advocate a strategic portfolio management approach. In Sweden, there is a field-level movement among public property owners to abandon previous practices carrying out maintenance and renovation as isolated, one-off, continuous, patch-and-mend activities or projects and instead adopt a portfolio approach that encompasses their total building stock (Svensson 2018). Thus many Swedish public property owners are currently undergoing change processes to adapt to new strategic ways of working.

Operating within a multi-organizational context with many different perspectives that need to co-exist in practice (Svensson and Löwstedt 2021), change processes must adapt to a large organizational complexity where actors driving change must work across and mediate between different stakeholder interests (Heiskanen *et al.* 2019). This is institutionalized in everyday practices; therefore, to understand such organizational change processes, it is important to get an in-depth insight into practices (Bresnen 2016).

Despite offering much potential to understand change processes in the built environment, institutional theory has been rather unusual in the literature related to the built environment (Bresnen 2017). If it has been present, in most cases the focus has been on why the construction industry does not change, often providing explanations why the industry is slow to innovate (Chan 2018). Thus, institutional theory has been used to understand stability rather than change. However, by focussing on the work of so-called mundane actors, i.e. not professional elites, *institutional work* is suggested as promising to examine change processes in the built environment since it offers a more processual and inclusive account of change (Chan 2018). The theoretical construct brings attention to the *institutional work* of actors, i.e. the action(s) that affect institutions by creating, maintaining, and/or disrupting them (Lawrence and Suddaby 2006). Spotlighting actions, *institutional work* has thus become a catalyst for the integration of a *practice perspective* on institutions (Hampel *et al.* 2017).

Research, taking a practice approach when studying (organizational) change processes in the built environment, has shown that objects serve as intermediaries for human action (Bosch-Sijtsema and Gluch 2019) and that objects influence change processes (Walter and Styhre 2013, Robinson *et al.* 2016, Våland and Georg 2019). To better understand *change processes*, it is important to understand the role of objects, since these conditions the human actors' work (Lindberg 2014).

Building on an emerging body of research on the role of materiality in *institutional work* (Lawrence and Suddaby 2006), in general organization studies (Raviola and Norbäck 2013, Monteiro and Nicolini 2015, Pemer and Skjølsvik 2018, Sajtos *et al.* 2018) and construction management research (e.g. Daudigeos 2013, Jones and Massa 2013, Bosch-Sijtsema and Gluch 2019), this paper aims to advance the understanding *of objects' role in institutional work through which public property owners develop new practices that support a holistic, long-term and sustainable property management*. Recent research on institutional work has shown that by including a material dimension in the analysis, the social reality is revealed as less malleable than previously assumed (Monteiro and Nicolini 2015, Raviola and Norbäck 2013, de Vaujany *et al.* 2019). The theoretical construct institutional work concerns the recursive relationship between actions and institutions and captures everyday practices and actions of individuals and collective actors in change processes (Lawrence and Suddaby 2006,

Zietsma and Lawrence 2010). The institutional setting in our paper is *management of public properties*. The work studied in this paper is done in three public property owner organizations, however, given the theoretical frame upon which this paper rests, the work is believed *to influence* and *be influenced* by the institution in which these organization are embedded.

Frame of reference

In this section, we first present the perspectives on materiality that have informed our study. Thereafter the theoretical construct *institutional work*, including a literature overview of studies on institutional work that have included materiality aspects in their analysis, is presented.

Perspectives on materiality

With the recent materiality turn in organizational studies, multiple perspectives have been developed to address the relationships between the material and the social (Leonardi 2011, Putnam 2015, Cooren 2020, Curchod *et al.* 2020). Below, we describe the perspectives on materiality that have informed our study.

Analogous to the notion that ordinary workers, with less-formalized power, can become active agents and perform institutional work (Powell and Colyvas 2013), it is assumed that any object could affect the human agency and institutional work. Thus, using an institutional work lens enables a focus on multiple types of materiality when investigating change processes (Hardy and Thomas 2015). This expands the view on materiality in construction management research that hitherto mainly has focussed on the actual object of change, i.e. a building (e.g. Jones and Massa 2013, Walter and Styhre 2013, Buser and Carlsson 2017, Våland and Georg 2019), a specific building material (Schweber and Harty 2010) or a specific technology (Morgan 2019).

In recent years, the scope of what is *material* has widened, and it is argued that researchers need to stop automatically associating the material with something *tangible* or *visible*, i.e. something that can be touched or seen, such as houses, rocks, tables, a computer (Cooren 2020). Research has shown how various entities, for example, a mission statement, a strategic plan, an organizational chart, or an algorithm, become materialized and apparent throughout space and time (Cooren 2020, Curchod *et al.* 2020) and therefore affect the human agency. In line with this, different types of objects are accounted for in this paper:

temporary buildings, an IT-based calculation model, an energy system, and a graph.

Treating the material and the social as ontologically inseparable (Leonardi 2013, Putnam 2015), the human and material agency is recognized as distinct phenomena that acquire meaning through being bound up in actions (Putnam 2015), for example in institutional work. This perspective on the interrelation between human agency (goals and intentions resulting from social practices, skills, and knowledge) and material agency (the physical and/or digital capability of an object made use of by humans) recognizes the entanglement of humans and objects and how they shape each other over time. Leonardi (2011) labelled this *imbrication*, which refers to a gradual overlapping and interlocking of material and human elements. The concept of imbrication emphasizes that while the material of an object, and thus its enduring form, can exist independent of humans, what humans normally pay attention to in their interaction with different objects are its qualities, such as affordances and constraints. These qualities are relational, i.e. depending on the perception and interpretation of the humans interacting with an object. Adding to this, a recent stream of literature has highlighted the relation between emotions and the material. Here, Stein *et al*. (2014) have elaborated on how emotions can stabilize around material assemblages and how these emotions in turn influence human actions. In their case, they studied how negative emotions associated with an object were making it difficult to change the practice in question.

Thus, the perceptions of what actions an object influences can change across different contexts, even though the object's actual properties do not (Leonardi 2011). Therefore, the main assumption made in the present paper is that if one focuses only on the role played by human actors or presumes that an object, for example, a tool, has an instrumental and predefined role, one fails to see how change is enabled in practice and how institutions are challenged through a socio-technical process involving both humans and objects as agents for institutional work (cf. Hampel *et al*. 2017).

Previous research on institutional work and materiality

With an institutional work lens, researchers focus on situated actions of coping with everyday demands (Lawrence and Suddaby 2006), which enables an understanding of the work inside change processes. This allows researchers to capture the act of producing institutions rather than the end-product itself (Lawrence and Suddaby 2006). *Institutions* are defined as "firmly rooted (in) taken-for-granted rules, norms, and routines" (Seo and Creed 2002, p. 222), creating a template for actors on how to perform activities, interact and collaborate with others within a specific institutional setting. *Agency* within institutional work is viewed as *embedded*, meaning that institutions shape, give meaning to, and hold together material and symbolic structures (Battilana and D'Aunno 2009), which in turn guide behaviour. This means accounting for the distributed agency of multiple actors directly involved in actions that affect the institutional environment they also belong to. This embeddedness, central to our study, means that actions related to (institutional) change are *situated* and *temporally oriented*, informed by the past, future, and present (Dawson and Sykes 2016).

To better comprehend institutional work and its role in change processes, it has been suggested to combine institutional work with materiality studies (Hampel *et al*. 2017). Following this call, Raviola and Norbäck (2013) studied the role of materiality in a business newspaper undergoing change related to digitalization. They showed how traditional material identity markers can become boundary objects in institutional work for new technology development. When establishing a new digital technology, the old material artefact (paper) was used to give meaning to new actions related to new technology (a website). The old technology became the object of reference in problematizing the current situation, functioning as a "lawbook" for new actions. In their study, van den Ende and van Marrewijk (2019) explored how buildings can become carriers of institutions. Studying the dynamic interplay between historical projects and the institutional environment, based on a study of Amsterdam's subway projects, they demonstrated how the present connects to the past. They found that community resistance evoked a need for actors to perform institutional work where they (re)constructed historical projects to ensure legitimacy among contemporary stakeholders. Thus, the local embeddedness of new urban development projects was legitimized and safeguarded by the positive connotation of past projects. Similarly, resistance and dislike were reasons for actors to engage in institutional disruption in Zietsma and Lawrence's (2010) study on the Canadian forest industry, due to dissatisfaction with existing practices. Both studies are examples of how the material emotionally underpins and sanctions particular ways of approaching institutions. These studies also have in common that they highlight

the connection between time and emotions and institutional work.

A broadly accepted definition of practice is the "embodied, materially mediated array of (human) activity centrally organized around shared practical understanding" (Schatzki 2001, p. 2). This definition entails that practice is both located within as well as shaped by specific material arrangements, which means that in institutional work, the agency is viewed as distributed between humans and the material (cf. Lawrence *et al.* 2010). This suggests that objects have an active role in institutional work and that research, besides capturing human action, also has to capture the agency that materiality affords to fully understand the interaction, practice, and social process of organizing (Pinch 2008). Here, interest lies in the reciprocity between humans and objects (Leonardi 2013).

Scholars have elaborated on the role of objects as *intermediaries* in institutional work. Building on a comparative study of church architecture, Jones and Massa (2013) showed how materiality plays a key role in embodying ideas. In their study, the institutional work included convincing church members to adhere to a more efficient, standardized design that used reinforced concrete instead of a traditional church architecture (ornate Gothic design). Here, materiality, particularly collective identity markers, such as a spire (or absence thereof), plans (cruciform, H-plan, or square design), and construction material (reinforced concrete or stone), was found to play a role in institutional work when framing what "church" means. Materiality united "ideas and social actors (across boundaries) through identification" (Jones and Massa 2013, p. 1127).

This intertwined relationship between human and material elements in institutional work is also demonstrated in a study by Monteiro and Nicolini (2015). They found that materiality, practices, and institutional work were merged and viewed as complex assemblages of humans and material elements that jointly performed institutional work when certain alignments were put in place. They concluded that a certain strategy, such as mimicry, was "the result of the alignment of the [physical] location of the awards ceremony, the presence of official supporters, and the use of language in line with the governmental agenda" (Monteiro and Nicolini 2015, p. 14). They also highlighted that just as humans do not always perform the same role, the same material may be involved in different types of (institutional) work depending on the context; in other words, the material's role is not static. Lieftink *et al.* (2019), based on a study of a new

inter-organizational project delivery model, found that the model advanced institutional ends through awareness creation, selective networking, and coalition-building across loosely coupled subfields.

Focussing both on time and on how tools and humans interact, while examining the implementation of an ICT tool (BIM), Bosch-Sijtsema and Gluch (2019) found that the tool laid the ground for a new professional role. Their study especially demonstrates the difficulty in separating a new, technology-driven professional role, a BIM actor, from the technology in itself, i.e. the actor not only served as a representation of the tool but was also both bound by and empowered by it. It was concluded that neither the technology, *per se*, nor the individual induces institutional change for developing a new professional role. Rather, the revised working practices formed reciprocally between the material and the human. Similar to Raviola and Norbäck's (2013) study, it was shown that the individuals could promote new practices, but they also maintained institutions by adapting to and defending traditional practices. Thus, the new was informed and shaped by the past.

Based on this research, institutional work is argued to be shared between humans and objects. Here, the imbrication of human and the material become important to consider, together with aspects of time and emotions as well as a different type of agency. Following recent calls of materiality studies, the interest lies in counting both intangible and tangible things as objects. For this paper, the interest lies in the implications for public property management practices related to the entanglement between humans and objects in and for institutional work.

Research methodology

Research approach

Adhering to the practice-oriented stream of studies, the research in this paper belongs to two major streams in the philosophy of science. The first is *critical realism*, which, based on analytical dualism, espouses that entities may exist irrespective of having been explicitly identified and/or acted upon (Reed 2009, Delbridge and Edwards 2013). The second is a *post-humanist* view (Monteiro and Nicolini 2015, Sage 2016), which assumes that the reality we live in is shaped by practices involving both humans and material (objects). Humans interpret this reality, and via certain methods, researchers can understand this interpretation. Thus, there are different valid perspectives of reality, and the research does not take an

interest in finding out exactly what the reality is, but rather how it is understood by the individuals who populate it. If this reality is understood differently by different people or at different points in time, that is what becomes interesting.

To understand objects' role in institutional work, we used methods that enabled us to observe the interaction between the material and the humans, together with methodologies that allow humans to reason around the role(s) of objects for different activities and outcomes. Here, a qualitative research approach was adopted with a focus on information-gathering activities, drawing on personal experiences through casual conversations, interviews, and group meetings, as well as direct observations (van de Ven 2016). Using a practice perspective to understand the role of objects for institutional work in public property organizations, we seek to not only unfold the entanglement of *materiality* and *human actions* but also to capture embedded dimensions of *distributed agency*, *time*, and *emotions* in these actions. An underlying assumption is that even if objects and humans before the analysis are seen as different entities with clear-cut boundaries, the awareness and focus on their entanglement and imbrication (Leonardi 2011) as these unfold in practice is possible and create a better understanding of an object's role for institutional work (Putnam 2015).

Empirical context and data collection methods

The findings are based on empirical studies in three Swedish public property owner organizations (Table 1), here given the pseudonyms *CityPrem*, *MedHouse*, and *Ahome*. Besides owning, operating, and/or managing public buildings in immediate need of renovation, all three organizations were chosen based on the criterion that they were developing long-term and strategic ways of working to increase the energy efficiency of their properties. This meant going beyond single buildings and renovation projects and seeing the building stock as a portfolio of projects managed in accordance with a holistic renovation strategy. Revising their work practices involved change processes in which the involved actors had to collaborate extensively, negotiate and cooperate with various actors and across organizational and professional groupings, as well as perform both intra-organizational and inter-organizational activities to develop new practices.

Using data from observations is suggested as useful for analyzing materiality in practice (Clegg *et al.* 2018). For the purpose of this paper, which is to capture the role of objects in institutional work in change processes, *observations* of strategy project meetings and analysis of related objects have been used as key information sources. For *CityPrem*, seven meetings concerning the development of a new strategy were observed. Further, 29 interviews were conducted with the members of a strategy project team and other involved actors from CityPrem and organizations they collaborated with closely. These actors were facilities managers, project managers, architects, and development managers. At MedHouse, 12 meetings focussing on the implementation of an energy efficiency strategy were observed. In addition, 16 interviews were conducted with the members involved in the strategy project, including the project manager, division managers, and external consultants. The analysis of Ahome builds on secondary data, where data was gathered from a monograph thesis (Thoresson 2015) that presents a detailed, 100+ page narrative based on meeting observations and interviews to describe how sustainability demands were enacted in practice through a renovation strategy. The monograph thesis was closely read several times, and the main ideas were summarized. To validate the findings, a 90-min interview with the thesis author was conducted, during which objects and their role for change were further scrutinized.

Data from interviews and case-related documents in all cases served as background for understanding

Table 1. Empirical context and data collection methods.

	Case 1: CityPrem	Case 2: MedHouse	Case 3: AHome
Type of buildings	Schools, pre-schools, and housing for the elderly built between 1950 and 1970	Healthcare premises built between 1950 and 1975	Rental apartments built between 1960 and 1970
Type of strategy work studied	Planning strategy	Energy efficiency strategy	Energy efficiency strategy
Observations	7 meetings (extensive field notes)	12 meetings (verbatim transcripts)	7 meeting observations[b]
Interviews	29 interviews	16 interviews	1 interview[a], 42 interviews[b]
Documents	The project directive, PowerPoint slides, policy documents	Project documents, meetings minutes, policy documents, guidelines	Ph.D. thesis (monograph)
Type of data	Primary	Primary	Secondary
Study period	2016	2011–2012	2012–2014

[a]Interview with the Ph.D. thesis writer.
[b]Secondary data: a narrative that builds on 42 interviews with individuals involved in the strategy project and seven meeting observations.

the strategy projects in their organizational and institutional setting.

Following Flick (2009), the validity of this study was secured in several ways; data triangulations were obtained by integrating data across different sources, including people from different parts of the studied organizations and using three cases and four objects to illustrate the phenomenon studied, i.e. objects' role in institutional work. Further, the research method provided several opportunities to receive feedback on the results, e.g. through follow-up meetings with key informants and presentations of early results to both practitioners and researchers. To further increase the validity of the data we brought an initial analysis of data to a manager working at PublicPrem who confirmed the usefulness of the example for contemporary challenges in public property organizations.

Data analysis

Although the data analysis was not a linear process, it can be described in four overall steps. In the first step, we took an inductive stance towards the data. Originating from early findings from the CityPrem case, we identified actions of different actors in the process of developing a new practice, and we also saw that different types of objects had an active role in the change processes (Gluch and Svensson 2018). Thus, the focus on the relationship between objects and humans was in this study a result of an inductive approach to the material and not the focus at the outset of the study. After initial coding, we deepened the investigation of the role of objects for institutional work, especially since some objects seemed to be influential for the actions taken, appeared on multiple levels, and operated across organizational boundaries.

In step two, and to further validate the findings from the CityPrem case, two more cases, MedHouse and Ahome, with similar study focus, i.e. implementation of strategy projects related to the energy-efficient renovation of public buildings, were included in the data set and analyzed in-depth.

In step three, the data analysis became more abductive as we began a continuous movement between the empirical world and the theoretical world (Dubois and Gadde 2002). To further inform the study, and in addition to the institutional work literature (Lawrence and Suddaby 2006), we turned to recent literature on materiality (Leonardi 2011, Stein et al. 2014, Putnam 2015, Cooren 2020). In the analysis and to understand the role of objects in change processes in the public built environment, we focussed on practices as ingredients of change rather than institutional outcomes (Lawrence et al. 2013, Chan 2018). From an institutional work perspective, the key question was not whether certain objects were part of materialized processes that were "successful" in reconfiguring institutional arrangements, but rather through *what kind* of institutional work activities the (distributed) effort was organized.

In step four, based on the full data set from the three cases we selected objects that were considered as a representative, yet different, illustrations of objects' role in institutional work. Therefore, objects that were too similar were excluded from the analysis. The selection was also based on the richness of the data. Even if the objects were bound to a specific time and context, the relation between human agency and material was deemed independent of chronological time. Four objects were selected for a deeper analysis, two from PublicPrem and one each from MedHouse and Ahome.

Contributing to the further development of the institutional work framework, a fine-grained analysis of the four chosen objects was conducted. This analysis was informed by the theoretical construct of institutional work with a focus on the entanglement between *materiality* and *human actions*, including the dimensions of *distributed agency*, *temporality*, and *emotions*, together with theories on *materiality*. Then, building on each case, four narratives were created illustrating *materiality in action*.

Findings and analysis: the role of objects in institutional work

Building on each case captured in a short preamble, four illustrations of *materiality in action* are presented. They show how various objects have an active role in institutional work and how this affects management practices related to the renovation of public buildings.

CityPrem

Preamble

In 2015, CityPrem, together with stakeholders, initiated a strategy work to develop shared goals and new practices better aligned with energy and cost-efficiency directives when renovating pre-schools. Two sub-projects were started: a development project to develop a long-term planning strategy for CityPrem and a pilot project to test suggested new ways of working. A project coordinator selected members and led both project teams. The two teams involved key

actors from CityPrem, collaborators from other city departments, and an external consultant. For the strategy to be adopted and realized, the organization saw a need to increase stakeholder collaboration, develop new management practices and work in a more long-term way. According to the coordinator, before this plan, there was "*no long-term planning at all*". As a response, the organization initiated a thorough inventory of the entire stock of buildings, their current needs, and layouts. Grand plans were set up to solve what was considered a puzzle of the current and future needs of pre-schools. The prospective future envisioned a perfect match where larger renovation projects, step-by-step refurbishments, and the construction of new buildings were pieced together over a longer period in a project portfolio fashion. Renovation projects should not be carried out one by one. Instead, a comprehensive strategy based on population forecasts should be implemented, and prioritizations and choice of projects should follow this strategy. This suggested way of working was in sharp contrast to previous practice when renovation projects were chosen on an emergency basis without considering other projects. At one point, this lack of transparency led to an extensively renovated building being demolished shortly after the renovation and replaced by a new building serving other needs for the city. Thus, to complete the task set up for the strategy project, it was necessary to change well-established institutional norms and practices.

Materiality in action: the pavilions

An object that frequently appeared in meeting discussions and played a central role in the change process was the pavilions. Over the years, rented pavilions, which are modular and portable buildings, had been a common "quick fix" for the city to solve an increased need for public premises. Not including investment costs in the basis for decisions, it was rather appealing to choose this solution to deal with a shortage of public premises, even if the total rent in the long term would widely exceed the costs of building new or renovating existing buildings. Everyone in the pilot project team agreed that the pavilions should be avoided, creating a sense of coherence among participants. The team criticized the internal organization, "*The alternative that we must avoid, is pavilions*"; politicians, "*We need to present an alternative to pavilions that the politicians can't reject*"; and building users, "*We must persuade the users … [of the disadvantage of pavilions]*". The pavilions (both existing and presumed-planned) became a shared object that unified the team members in their change mission and shared endeavour to propose new practices. With its active role to legitimize the new strategy with other organizational units in the city, the team also took part in the process of breaking previous organizational silos, i.e. the pavilions were serving as boundary objects.

When the project coordinator presented the planning strategy to stakeholders, whose approval he needed, the pilot project team joked and posed: "*One should quit one's job and become a person who rents out pavilions. That would create a much greater income [laughter]*". Moreover, while discussing the grounds for implementing the suggested project portfolio approach, based on population forecasts, the following conversation took place in which the pavilions represented doomsday:

> Financial officer: *How much can we rely on the population forecast?*
> Pilot project member: *Not at all; you can't even talk about forecasts anymore.*
> Financial officer: *That could make it difficult.*
> Pilot project member: *But the alternative is pavilions!*

Presenting the pilot project results to stakeholders, strong words were used by the project team, to emphasize the bad qualities of the pavilions as a negative future: "*Everything collapses if we chose pavilions.*" Moreover, when arguing for different alternatives in the new way of working, the project coordinator claimed, "*It is just important that we chose anything but pavilions*" and used financial arguments: "*If rented pavilions are avoided in one area of the city, this [the saving] can mean that another area will be able to build an entirely new pre-school*". As a result, the organization achieved a shared agreement that the city needed a new way to manage its construction and renovation projects, supporting the idea of "*planning to avoid pavilions*".

The project members actively attempted to establish new practices by "selling" the new project portfolio approach as the "good" and preferred way to go, in contrast to previous "bad" practices represented by the pavilions. Thus, by connecting rented pavilions with an outdated past, serving as examples of dysfunctional old practices, the pavilions came to represent an unwanted past and an *ad hoc* practice, and as such were part of actions to attack current institutionalized practices (disrupting institutions).

Materiality in action: the Simulation Tool

An important tool used to support the line of actions of avoiding rented pavilions and supporting a project portfolio approach, with all "*buildings being part of a*

puzzle", was the *Simulation Tool*. The Simulation Tool was an IT-based calculation model developed by an external consultant, often working with CityPrem, who was also part of the development project team. In the model, input data could be altered and show various future planning scenarios for renovation, with cost and time as the essential parameters. In the calculations, reliance on rented pavilions was displayed as the worst-case scenario. When first communicating the new planning strategy to the project department and other stakeholders, the consultant showed his calculations on PowerPoint slides. Representing a complex reality, the slides were loaded with graphs and numbers, and almost impossible to grasp due to their wealth of details and small text size. As an example of this, different bar colours signalled a lack of premises and/or a need for new premises. During these presentations, the project team referred to the consultant as the expert. Thus, the Simulation Tool and the consultant were closely entangled in a reciprocal interrelation where the expert legitimized the tool and vice versa.

The potential power of the Simulation Tool in relation to implementing the new planning strategy was frequently referred to in discussions, and sample calculations were used to illustrate future problems for the building stock that would arise if not acting according to the suggested strategy. The project coordinator referred to the Simulation Tool as solid and trustworthy since it "*builds on a lot of data*": "*This system calculates everything automatically with only a few clicks*". The system was seen as modern and forward-thinking, compared to the old practice, described as "*old Excel swirls*". The project manager was eager to show results since:

> The presentation based on the IT system makes our work tangible and concrete. This is very good to show! It is not a finished product, but it moves us away from the Excel swirls.

Therefore, the project manager urged project team members to use the tool to get figures to present as bullet points on presentation slides, even though basic data were missing (for example, data on building type). By translating the new planning practices into tangible bullet points, the Simulation Tool justified the new way of working and showed how easy it was to manage issues that were previously believed to be complicated and fuzzy. Thus, the tool made it possible to diffuse new ideas in a simple manner. The organization's reliance on the prediction power of the Simulation Tool, which was described as operating automatically, helped mediate and legitimize the project manager's grand plans. The Simulation Tool created an illusion that it was possible to plan for all

possible future demands on pre-schools over the next 30 years in terms of location, size, and building year. The simplicity in the way previously complicated problems were portrayed conveyed a sense of faith in a brighter future and an encouragement to keep on working, although the task seemed too complex at first. When problems arose, such as lack of time to produce needed reports, the project manager stated: "*With the Simulation Tool as our only option, we will still be able to manage, although we are short of time*". Thus, the Simulation Tool had an important role in the institutional work by both visualizing and legitimizing the prescribed route forward.

MedHouse

Preamble

At the time of our study, many of MedHouse's hospital buildings were reaching the end of their physical and technical lifespan and, accordingly, were in immediate need of renovation. MedHouse had previously set targets for the energy use of its buildings but not considered the energy use related to the healthcare activities in the buildings, which represented a significant share of the total energy use. In 2009 public building owners were confronted with a governmental ordinance to significantly cut the total energy use in their buildings. In line with this ordinance, the regional politicians set a new and more holistic energy target, which was seen as a gamechanger for MedHouse. However, the target was still very vaguely formulated and did not specify what should or should not be included, leaving room for multiple interpretations and uncertainty on how to work towards the target.

To make the task more tangible and create an action plan for how the organization should change its practices to meet the new target, MedHouse initiated a strategy project. The main goal was to develop a comprehensive energy strategy that could guide all renovation projects at Med House. A senior business developer with long expertise in energy-efficient building, who also had pushed for the necessity of the strategy project, led the project. To meet the energy target, there was a need to change established institutional norms and practices not only in MedHouse but also among other close stakeholders, such as the healthcare administration, extending the scope and pushing for a broader collaboration across organizational boundaries.

Materiality in action: the Blue Ball

The Blue Ball was a materialized construct that was repeatedly referred to in meeting discussions. It was

actually not a ball and did not even have the shape of a ball; it was merely a social construct continuously co-created by the actors involved in the strategy process. Originally, it was an area of a graph presented on a PowerPoint slide showing estimated additional investment costs needed to cut total energy use to half when renovating the current building stock. The graph showed that cutting use to half would give long-term energy savings that balanced the investment costs. The surface showing this saving was blue. This PowerPoint slide was repeatedly displayed on presentations to various stakeholders, both within and outside the strategy project group, when proposing the new way of approaching the renovation of MedHouse's hospital buildings.

Over time, the project participants filled the Blue Ball construct with content and meaning that widely exceeded the original cost estimate graph and, as such, it obtained a discursive role in the institutional work related to proposing a new energy strategy. It was referred to as an eye-opener for the strategic workgroup, helping them to shift focus from funding costs: "*Discovering the Blue Ball helped us establish that this might very well be about money, but not as costs (only)*". Discovering the Blue Ball gave a sense of relief, and the project members were thrilled. They used it extensively for different purposes and saw it as a solution to several (previously complicated) problems. It became the focus of attention as it, often without deeper explanation, came to represent funding as a multi-dimensional problem that needed to be mastered: "*The Blue Ball is the hindrance that needs to be managed*". This could include questioning others' engagement: "*(The question is) whether they are committed – to find the Blue Ball*", or merely emphasizing the financial dimension of the problem: "*Well, it's (simply) the Blue Ball*". It was also be used to distinguish the new way of thinking from the traditional way: "*The Blue Ball is outside the [traditional] box*". The Blue Ball construct thus served as a reference when proposing new management practices, introducing a new way of thinking and acting, inducing change, and disrupting old practices. As such, the illusion of advancing beyond the Blue Ball illustrated a desired *future* state and encapsulated the *past* from which the organization should distance itself. For the strategy group, the Blue Ball, as a loosely defined construct, served various self-centred purposes in various conversations with enough flexibility in its interpretation to be attractive for multiple stakeholders; it succeeded in translating a complicated reality into something simple. The Blue Ball construct thus materialized a

complex issue into an easily approached object, a ball, which embodied a vaguely defined and multi-dimensional idea giving it clear-cut boundaries.

Besides providing the strategy with distinct boundaries, the Blue Ball became a rhetorical instrument that helped the strategy group justify actions, push fast forward, and move beyond nitty grittiness since these details were captured in "the Ball". As such, the Blue Ball was not purely a metaphor but rather materiality in flux that could take the shape of both a tangible object (the graph) and an intangible object (a complex idea). Simplifying a messy reality by the act of translating a complex issue and making that issue easy to talk about, the Blue Ball counteracted (attacked) old institutions and created (justified) new ones. By using a simple phrase: "*What about the Blue Ball?*", a shared interpretive lens was provided, and everybody knew what they were talking about (at least they thought so); therefore, this perceived-as-simple issue suddenly seemed easy to handle. The Blue Ball example illustrates how materiality may serve as a non-human agent that plays a central role in institutional work and change processes.

Ahome

Preamble

Initially, the focus of Ahome was to refurbish its properties in a specific housing area to improve the living conditions for current and future residents and make the area more attractive. However, a group of employees at Ahome, mainly those who worked strategically with operations and construction, such as project managers, the environment and quality manager, and a couple of construction project managers, saw an extra opportunity and actively promoted the inclusion of energy-saving measures in the renovation. They stated that such measures were politically, socially, and financially important to consider in all renovation projects Ahome would undertake.

However, it was not as an isolated idea that Ahome started to work with energy issues. At the time, it frequently occurred in the public debate, and several employees regarded the energy use of buildings as a major issue for public housing. Ahome also had requirements stating a need to reduce energy use. Working with energy measures during the renovation was thus seen as inevitable; a strategy concerning measures that would guide all of Ahome's projects towards increased energy efficiency was taking form. One major decision point for the implementation of the strategy was the choice of a heating system.

Employees at Ahome also identified a need to include several stakeholders in the renovation process. These were senior officials and politicians in the municipal administration, the municipal energy company owning the city's energy system, and the tenants.

Materiality in action: the heating system

Ahome and the municipal energy supplier had different views of what heating system was the best choice. The municipal energy supplier wanted to extend the existing district heating system, whereas Ahome wanted to combine different types of energy sources, with solar panels as one solution. The Ahome project team suggested that solar panels would provide not only energy but also other additional values to the city, such as good publicity and reputation. It was also argued that a small-scale infrastructure system would empower the residents, decentralize decision-making and create more environmental awareness. On the contrary, the municipal energy supplier argued that a large-scale district heating system was expandable, providing stability over time. The energy supplier further argued for local impact as a result of Ahome's solar panel suggestion. As such, the energy supplier set boundaries in accordance with the district heating system (equal to the city limits), whereas Ahome had a holistic perspective and argued for a better climate on a global level.

The energy supplier proposed the district heating system as an enabler for economic growth and population increase and claimed that the city "*needs to save our system*" for "*the future of the entire city*". Further, the energy supplier claimed that Ahome lacked the knowledge to fully comprehend the benefits from the district heating system since its embeddedness in the city's infrastructure made it difficult for anyone outside its organization to truly understand its complexity, as one representative from the energy supplier expressed:

> It is very difficult, if you are not familiar with our energy system, to understand it … Even our own staff do not fully understand how we produce and deliver energy. So it's a complex situation really (Energy supplier quoted in Thoresson 2015, p. 132).

This black-boxing of the current system made it impossible for people outside the municipal energy supplier to either understand or criticize it. Further, there was no willingness to introduce Ahome's employees to the realities of the district heating system, as they should: "*focus on their core business, the properties*" (Head of business, Energy supplier, quoted in Thoresson 2015, p. 136).

In the end, solar panels were ruled out in favour of keeping the current district heating system. This decision was based on a fear of implications from the solar panels on the larger heating supply infrastructure. By black boxing and overcomplicating, the development and implementation of new practices were hindered, and current institutions were actively maintained. Over time, the district heating system, being a weather-independent and physically stable entity, was found to serve different roles depending on the context in which it was embedded. On the one hand, it functioned as the counter alternative (to the future solar panels), and thus part of an act to attack and disrupt old practices. On the other hand, the current features of the district heating system were associated with the energy supplier's actions to safeguard and maintain current practices. This was largely due to the material aspects of the district heating system being already embedded in the city infrastructure with a presumed stable performance.

Discussion

The findings corroborate previous research (Leonardi 2013, Monteiro and Nicolini 2015, Bosch-Sijtsema and Gluch 2019) by demonstrating how objects and the human agency may become intertwined and perform joint institutional work; institutional work is not a product of only humans, nor is it a standalone work of non-humans. The findings also show how objects in public property owner organizations are more than just obedient "tools" (cf. Styhre 2017, Clegg *et al.* 2018), and the narratives present details on how objects are deeply involved in actions to *attack*, *justify* and/or *safeguard* to either maintain, create and/or disrupt institutions. A summary of the findings is presented in Table 2.

The purpose of this paper is to advance the understanding *of objects' role in institutional work through which public property owners develop new practices that support a holistic, long-term, and sustainable property management*. In the next section three types of agency connected to objects' role in institutional work are discussed; relational, discursive, and emotional agency.

Relational agency through acts of attacking

Through an intermediating role, objects had relational agency (cf. Leonardi 2013) that united actors and inscribed meaning and significance to proposed actions. Therefore, depending on the actor, the same

Table 2. Summarizing the role of objects in institutional work and implications for property management.

Object	Materiality in action	Forms of institutional work	Implications
THE PAVILIONS (CASE 1) *Rented temporary modular buildings*	The pavilions were used as a bad example, *attacking* temporary short-term planning practices. Manifested in a *present* need, it represented an outdated *past* and an unwanted *future*. A shared *dislike* spurred the involved project team members to develop new management practices and *justified* their actions.	*Disrupting institutions* by enabling new practices through an aggressive rhetoric of the disadvantages of modular buildings. *Creating institutions* by being a shared object that unified stakeholders so old practices could be attacked and questioned.	New property management practices were established due to a unified view on future practices driven by a shared dislike of an object.
THE SIMULATION TOOL (CASE 1) *IT-based calculation model for planning and forecasting*	The Simulation Tool *justified* new management practice by its power to simplify a complex reality. The tool was associated with a modern practice, and its simplicity conveyed a sense of *faith* for a brighter future and encouraged further development work. It also opposed current practices associated with lack of long-term planning.	*Creating institutions* by being an object whose features justified new ways of working new practices were promoted.	A new property management approach was established, where each renovation project was shown as a piece of a bigger puzzle, opposing a previous short-termed patch-and-mend maintenance practice.
THE BLUE BALL (CASE 2) *Image of a surface on a graph*	The loosely defined Blue Ball construct encapsulated the complexity of the problem in a simple image. It illustrated both what was to be avoided from the *past,* supporting acts to *attack* current practices, and what was sought for in the *future,* in acts to *justify* new practices. It contained enough flexibility in project communication to become a powerful rhetorical instrument which helped the strategy group *justify* the creation of new practices. The discovery of the Blue Ball gave a sense of *relief* and *trust* in finding a way forward.	*Creating institutions* by introducing a new way of thinking that justified new practices to be enacted.	New property management approach was introduced that propose a new long term project practice where initial investment as primary decision criterion is challenged. Shifted focus to what is important in decisions on renovation, raising a total cost view and including long-term energy savings.
THE DISTRICT HEATING SYSTEM (CASE 3) *Energy system*	The object was embedded in the current infrastructure of the city, making it hard to change and thus *safeguarding* established institutions. The current system was defended on the basis of its usefulness in the *future,* given an important role for the development of the city. Choosing the district heating system was to a large extent based on a projected *fear* of the solar panels and their possible (negative) implications.	*Maintaining institutions* by hindering and complicating the development and implementation of new practices. The current system was black boxed, making it impossible for people outside a specific organization to understand it. Thereby, the object did not unite different stakeholders to enable new arrangements.	Practices related to current property management approach was kept and new innovative practices were not introduced. The presumed stable, weather-independent and traditional alternative was kept which affected all decisions in large renovation programs and thus manifested the solution for the organization's total building stock and the city's energy supply.

object had a role in both disrupting old practices and creating new ones as well as agency to maintain current practices, such as the double roles of the pavilions.

Similar to how an old object was functioning as a blueprint in Raviola and Norbäck (2013) study, the objects presented in this study were part of processes in which humans purposefully tried to steer strategic change processes in a preferred direction. However, objects not only guided towards creating a new practice, but they were also part of processes to steer away from an unwanted practice. The empirical examples show how objects were part of processes in which actors purposefully use objects to *attack* established institutions to pave the way for their actions. For example, by labelling an object as something to avoid, the strategy project teams created a shared interface towards external stakeholders to promote

new management practices on a broader ground. So what we saw was that even if an object did not act as a blueprint, the object could still embody an idea and shape how norms of practices can be inscribed in future practices (Leonardi 2011). As a result, the study shows, similar to what was found in the study by Lieftink *et al.* (2019), that coalition-building across loosely coupled organizational units sharing tasks, e.g. a strategy project, was stimulated through the means of materiality.

Discursive agency through acts of justification and safeguarding

Through acts of *justification*, the objects played an important role in institutional work to promote a preferred route forward (cf. Raviola and Norbäck 2013). Here, objects with a high explanation power served as rhetorical instruments to translate abstract and complex realities to something more easily approached. By showing an easily understood picture of the problem at hand, objects supported the new management practices by translating fuzzy ideas to a conceptualized "reality". Showing how easy, previously or believed-to-be-complicated things can be managed in the *future*, objects were given a discursive role and agency in institutional work. Similar to what Monteiro and Nicolini (2015) found, this is an example of humans and materiality merging into an assemblage and performing institutional work together.

In acts of *safeguarding* to maintain institutions, objects also played a part in actions of black boxing messy information to make it unapproachable for outsiders. While previous research has shown how it is possible to introduce new materials and, by that, new conceptions of what an already established type of object means (Jones and Massa 2013), we found that through the aspects of the material, humans could actively work to avoid new technical solutions and thus *maintain* institutions. Objects were also used to "hide" information in simplified versions of the reality and safeguard the strategy project. For organizations in the built environment, which are often accused of being non-innovative and conservative, it is important to recognize acts of safeguarding and the role of objects in this act since it may hamper development.

Emotional agency

Adding to previous theories on emotions and institutional work, which have primarily focussed on how humans use emotions to pursue an end (cf. Voronov and Vince 2012, van den Ende and van Marrewijk 2019), we noted that emotions that were closely associated with an object had an impact on actions even if the emotions were not explicitly used by humans (cf. Schein *et al.* 2014). However, while Stein *et al.* (2014) focussed on negative emotions, our study also shows the effect of positive emotions. Highlighting different types of emotions, it is shown how *negative emotions*, such as dislike and fear, as well as *positive emotions*, such as relief, trust, and faith, influence actions taken. This contrasts with previous researchers who have elaborated on the role of intentionally using emotions, such as resistance and dislike, as an asset for institutional work when dissatisfied with existing practices (Zietsma and Lawrence 2010). Moreover, our findings also show how emotions attached to objects can guide actions even if the objects are still only on a conceptual level (typically in an early planning stage) and not yet materialized. As a result, new objects associated with uncertain performance were rejected in favour of old familiar objects, as shown with the solar panels in the Ahome case. This exemplifies how material entities bring meaning and value to everyday work life, and the decision to go for something new and unknown would mean letting go of not only the familiar but also various practices and roles connected to it (Bosch-Sijtsema and Gluch 2019). Thus, new practices could threaten established institutions and create a feeling that the survival of existing material entities is under threat.

Objects that had a role in decreasing uncertainty brought positive emotions of relief with them. These feelings were manifested in how these objects were treated and as an answer to a multitude of problems, all of which seemed complex and difficult before the "discovery" of an object. Moreover, although the objects in their original sense had been dematerialized, the feelings associated with them continued to spur the human actors to create new ideas beyond the origin and purpose (Leonardi 2011). Adding an emotional dimension to the understanding of objects' role for institutional work in public property-owning organizations, objects in this study were found to serve as political tools to exercise power, which further underpinned and sanctioned institutional work.

Conclusions and future research

Increased knowledge of the nature of objects' participation in institutional work and a better understanding of how objects (can) influence human action and the messy realities of change processes helps actors

involved in change processes, in relation to newly raised demands in public property organizations, to make better-informed decisions. Also highlighted is that objects cannot be seen as objective; rather, their subjective features can be interpreted and used differently between different actors. Therefore, depending on the actor, the same object could have a role in both disrupting old practices and creating new ones as well as agency to maintain current practices. Objects can be part of activities to inscribe meaning and significance to a proposed action, making actions understandable but also black box messy information, making it unapproachable for outsiders.

Three types of agencies associated with the objects were highlighted: relational, discursive, and emotional and it can be concluded that objects have an active role in institutional work among public property owners through acts of attacking, justifying, and/or safeguarding to maintain, create and/or disrupt institutions. An object can take on multiple roles and be involved in different actions that may vary over time. Objects' different characteristics make them suitable for different purposes. They serve as political tools for humans to exercise power by illustrating control over complex issues. Objects both unite and divide human actors and evoke both positive and negative emotions that guide actions.

Managers often treat objects, such as technology, as having specific properties or clear-cut boundaries that determine organizational behaviours (Putnam 2015). Acknowledging the different aspects connected to objects and their involvement in change processes prepares managers for the fact that material is unpredictable; it can "bite back" and cannot be fully controlled. This is useful for managers in public property-owning organizations since they continuously need to collaborate with a range of actors on both intra- and inter-organizational levels (Hampel et al. 2017). Thus, they are constantly in complex institutional settings where several change processes are ongoing.

Reflecting on *why* and *how* materiality may affect future practices and realizing that practices associated with various objects will persist over time, regardless of whether a particular object is still present, will create a deeper understanding of the norms of current management practices that are inscribed in future practices. This is especially useful knowledge for actors in a process of introducing new practices and who have a practice that is strongly associated with permanent types of objects, such as buildings or a district heating system.

We have shown that institutional work is not as effortless as often portrayed in previous research on institutional work (de Vaujany et al. 2019). The stories illustrate how objects over time can play multiple roles in institutional work and be involved in different actions. Moreover, past relationships between humans and objects predict how they may be intertwined in the future (Leonardi 2011, Putnam 2015). This is especially interesting for the built environment since objects and institutions within this context are often seen as stable and rather passive (cf. Buser and Carlsson 2017, Chan 2018). Hence, how materiality affects institutional work in public property owners, characterized by multiple professions (Hampel et al. 2017), seems to be as multifarious as the environment studied.

The present study has taken inspiration from previous studies on materiality, including ideas on imbrication (Leonardi 2011), having a multi-object perspective (Hardy and Thomas 2015), and noticing how a discourse-materiality relationship unfolds in practice (Putnam 2015). Adding the inclusion of intangible objects in the analysis (Cooren 2020) and a focus on emotions (Stein et al. 2014) have together provided a mix of theoretical standpoints that has made it possible to advance the understanding of institutional work in the public built environment, specifically targeting public property owners. By that, the study expands the view on materiality in construction management research that mainly has focussed on the actual object of change (e.g. Schweber and Harty 2010, Jones and Massa 2013, Walter and Styhre 2013, Buser and Carlsson 2017, Våland and Georg 2019) or on the role of a specific tool (Morgan 2019) and less on the role of objects in the actual change process which is the focus here.

Suggestions for future research include investigating various forms of objects involved in institutional work and classifying them based on their idiosyncratic type of agency (following the dictum that the agency of a hammer is different from the agency of a financial market trading algorithm). Furthermore, the concept of imbrication (Leonardi 2011) could be applied in a built environment context, making it possible to study how material and human elements are gradually overlapped and interlocked into a durable infrastructure of routines and technology. Whereas we have focussed on institutional work and processes rather than institutional outcomes, future studies could investigate the endpoint and trace the human and material elements that made a new or developed institution of management possible. In addition, this study builds on

strategy work in three Swedish public organizations. For a broader understanding of objects' role in institutional work, additional in-depth studies in other organizational settings as well as an international outlook would strengthen the field of research.

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