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## On project management - A semiotic approach to project-as-practice

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**ON PROJECT MANAGEMENT  
- A SEMIOTIC APPROACH TO  
PROJECT-AS-PRACTICE**

**BY  
ANNE KLITGAARD**

DISSERTATION SUBMITTED 2022



**AALBORG UNIVERSITY**  
DENMARK



# On project management - A semiotic approach to project-as-practice

by

Anne Klitgaard



**AALBORG UNIVERSITY**  
DENMARK

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# Summary

Project management is investigated with a project-as-practice approach by focusing on formal as well as informal mechanisms that regulate practitioners' actions within a project. Existing project management literature attempts to suggest how to 1) predict how mechanisms should *be*, 2) understand how the mechanisms might *evolve* and 3) understand how mechanisms *become* due to the practices of the practitioners.

The present research is practice-based. It is a common assumption within practice theory that it is the practice that gives meaning to actions (Nicolini 2013). This differs from the view of practices as seen in guidelines called "Best practice", as these guidelines prescribe an explicit best and desired way to behave, whereas the practice theoretical approach urges us to see actions during activities to understand the performed practice, as this will inform us of the meaning behind the actions.

The findings are empirically grounded in data collected by shadowing a contract manager on a building site enabling a focus on understanding the link between observed actions and mechanisms in a project. The focus on mechanisms thus emerged through working with data. Furthermore, the original intent of this thesis, which was to investigate collaboration, was abandoned as it proved difficult to directly link practitioners' actions to the concept of collaboration.

The empirical contributions identify practices in the project setting. The practices are shown to produce and reproduce the formal and informal mechanisms in the project. Furthermore, a methodological contribution is presented demonstrating how an awareness of stages and audiences can assist the researcher investigating human actions. A theoretical contribution to project management research is also provided as the project demonstrates the complexity of project management by showing how a project-as-practice approach can reveal new understandings about the connection between actions and mechanisms in the project.

The implications of this project are a proposal for a semiotic approach to practices, which should be considered as a method to see hidden mechanisms in a project. The

identification of a mechanism through its associated practice in a project cannot be used to predict what will happen next nor to understand the motives for practitioners' actions. However, familiarity with certain practices will allow practitioners to identify what is happening right now and reflect on the possible impact of their as well as other practitioners' actions.

In the conclusion of this project, it is argued how project management research can benefit from project-as-practice research as this approach allows for focus on the complex relationship between actions and formal as well as informal mechanisms in the project.



# Dansk Resume

Projektledelse bliver undersøgt med en ”projekt som praksis” tilgang (*project-as-practice*), hvor der fokuseres på mekanismer i et projekt. Igennem eksisterende forskning, bliver det belyst, hvordan projektledelsesforskning fokuserer på at 1) forudsige, hvordan mekanismer bør *være*, 2) forstå, hvordan mekanismer kan *udvikle sig* og 3) forstå, hvordan mekanismer bliver *skabt* af praktikernes handlinger.

Forskningen er praksisbaseret. Et kendetegn ved praksisteori er forståelse for, at det er praksis, som giver mening til handlinger. Dette syn på praksis er anderledes end det, som findes i guidelines kaldet ”Best practice”, da disse guidelines foreskriver en eksplicit og ønsket adfærd. Derimod vil en praksis teoretisk tilgang tilskynde os til at se handlinger, så vi kan forstå den udførte praksis, da dette vil informere os om meningen bag handlingerne.

Resultaterne er empirisk funderet i data, som er indsamlet ved den etnografiske metode, som kaldes ”at skygge”. En entrepriserleder på en byggeplads blev skygget, hvilket muliggjorde et fokus på sammenhængen mellem observerede handlinger og mekanismer i projektet. Fokuset på mekanismer opstod således gennem arbejdet med data. Den oprindelige hensigt med projektet, som var at undersøge samarbejde, blev fraviget, da det viste sig at være vanskeligt at direkte koble praktikernes handlinger med samarbejdsbegrebet.

De empiriske bidrag identificerer praksis i projektet. Praksis kan producere og reproducere de formelle såvel som de uformelle mekanismer i projektet. Det empiriske bidrag fokuserer på sammenhængen mellem praksis og mekanismer. Yderligere præsenteres der et metodologisk bidrag, der viser, hvordan en bevidsthed om scener og publikum kan hjælpe forskeren, der undersøger menneskelige handlinger. Projektet bidrager også med en teoretisk bidrag til projektledelse litteraturen ved at demonstrere kompleksiteten af projektledelse ved at vise, hvordan en *project-as-practice* tilgang kan anvendes til at opnå nye forståelser af forbindelsen mellem handlinger og mekanismer i projektet.

Implikationerne af dette projekt er et forslag til en semiotisk tilgang til praksis, hvilket skal forstås som en metode til at se skjulte mekanismer i et projekt. Her er det vigtigt at understrege, at identifikationen af en mekanisme gennem dens tilknyttede praksis ikke kan bruges til at forudsige, hvad der vil ske i fremtiden og heller ikke for at forstå motiverne bag praktikernes handlinger. Derimod vil kendskab til praksis give praktikere mulighed for at identificere, hvad der sker lige nu og reflektere over den mulige betydning af deres egne, såvel som andres praktikers handlinger.

I konklusionen argumenteres der for, hvordan projektledelsesforskning kan drage fordel af *project-as-practice* forskning, da denne tilgang giver mulighed for at fokusere på det komplekse forhold mellem handlinger og formelle såvel som uformelle mekanismer i projektet.

# Acknowledgements

This thesis is submitted in accordance with the requirements for the degree of PhD at Aalborg University (AAU). The PhD programme was commenced in June 2019 and finished in autumn 2022. During this period, I was enrolled at the Doctoral School of Engineering and Science in accordance with the regulations of Ministerial Order No. 1039 of August 27, 2013 on the PhD Programme at the Universities and Certain higher Artistic Educational Institutions.

The past three and a half years have allowed me to investigate actions, practices, and mechanisms in projects. After numerous crises, I am now able to provide insights into the importance of practices and their ability to produce and re-reproduce mechanisms and processes in a project. In suggesting a semiotic approach to practices, I hope to make this theoretical understanding of the world, easily accessible to practitioners and so empower the practitioners in their daily work.

I am deeply grateful to the University College of Northern Denmark (UCN) for believing in me when they awarded funding for this project, which is part of their strategy of performing research into real-life challenges.

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# Papers appended in the thesis

## Article 1:

Klitgaard, A., Gottlieb, S. C., & Svidt, K. (2021). The researcher as audience and storyteller: challenges and opportunities of impression management in ethnographic studies. *Construction Management and Economics*, 39(5), 383–397. <https://doi.org/10.1080/01446193.2021.1913286>

## Article 2:

Klitgaard, A. & Gottlieb, S.C. Helping as practice – An ethnographic study on reciprocity and the intricate relationship between formal and informal mechanisms within a project, *International Journal of Project Management*, submitted on the 16<sup>th</sup> of June 2022. The paper has been accepted for publication under the condition of a major review.

## Article 3:

Klitgaard, A., Gottlieb, S. C., & Buser, M. (to be submitted). “*On project management – understanding of dynamic social relationships in a project-as-practice perspective.*”

## Overview of other related work in the period

### ***Journal articles***

Klitgaard, A. & Gottlieb, S C (2021) Fremstillingen af samarbejde i byggeriet - en problematiseringsanalyse. *UCN Perspektiv*. 9, pp. 75-92. <https://doi.org/10.17896/UCN.perspektiv.n9.449>

### ***Peer-reviewed conference papers***

Klitgaard, A., Svidt, K. & Gottlieb, S. C. (2020) Ethnography, Impression Management and Shifting Practices. In: Scott, L. & Neilson, C. J.

(Eds.), *Proceedings 36th Annual ARCOM Conference*, 7-8 September 2020, UK, Association of Researchers in Construction Management, pp. 455-464.

## Previous Publications:

Buhl, H., Andersen, M. & Klitgaard, A., (2019). Boundary objects: Supporting better collaborative practice and research. In: Gorse, C. & Neilson, C.J. (Eds.), *Proceedings 35th Annual ARCOM Conference*, 2-4 September 2019, Leeds Beckett University, Leeds, UK Association of Researchers in Construction Management, 174-182.

Klitgaard, A & Gottlieb, S.C., (2019). Strategizing and Project Management in Construction Projects: An exploratory review. In: Lill, I.& Witt, E. (Eds.), *Proceedings 10<sup>th</sup> Nordic Conference on Construction Economics and Organization*. pp. 253-258.

Klitgaard, A., Beck, F. & Buhl, H. (2018). Facilitation of interorganizational teams: An exploratory literature review. In: Gorse, C and Neilson, C J (Eds.), *Proceedings 34th Annual ARCOM Conference*, 3-5 September 2018, Queen's University, Belfast, UK. Association of Researchers in Construction Management, 78–87

Klitgaard, A, Beck, F, Andersen, M, Jeppesen, R D, Nissen, S B and Buhl, H (2017) Towards The Use Of Knotworking For Increasing Innovation In Construction Projects . In: Chan, P W and Neilson, C J (Eds.), *Proceedings 33rd Annual ARCOM Conference*, 4-6 September 2017, Fitzwilliam College, Cambridge, UK. Association of Researchers in Construction Management, 420–429.

Klitgaard, A, Beck, F, Buhl, H, Jeppesen, R D and Nissen, S B (2016) Expansive Learning in Construction Projects: A Contradiction in Terms?. In: Chan, P W and Neilson, C J (Eds.), *Proceedings 32nd Annual ARCOM Conference*, 5-7 September 2016, Manchester UK. Association of Researchers in Construction Management, 709–717.

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# 1.0 Background

This first chapter will present the background for this project. First, I will explain how the focus of this PhD project became the relationships between actions, and mechanisms in projects as organisations. I understand formal mechanisms to have a clear purpose of governance as the project members are subjected to these by project management and the legislative framework, while informal mechanisms are not intentionally added to the project by the project management or the legislative framework. Furthermore, I will introduce the context in which the actions are happening. With the establishment of the focus for the investigations (namely actions and mechanisms in the project) and the context of the investigations, I can present the guiding research question and the objectives of the research. I will then briefly reflect on my role as a researcher of construction management. At the end of this chapter, I will present how the rest of the thesis is structured.

## ***1.1 Actions in projects performed under influence of mechanisms within a context***

To arrive at the guiding research questions for this research, I need to briefly explain how the original aim of this study was to investigate collaboration actions in projects. The intension was to provide insights, which could help managers in the construction industry to improve collaboration. Improved collaboration has been argued to be key to improving the construction industry (cf. the ‘Egan report’ (DETR, 1998), the McKinsey report (Barbosa, Woetzel, & Mischke, 2017), and specifically for Denmark (Orbesen, Koch & Schwartz, 2020)).

However, I was faced with the question “what is collaboration?”. Grove (2019) argues for a shift in understanding collaboration as a unique situation (collaboration as a noun) to an ongoing event (collaboration as a verb), while Gustavsson & Gohary (2012, p. 373) acknowledge that collaborating is part individual and part interaction and use the term “*collaborative project practices*”, which they suggest are “*the (inter)action between practitioners in their day-to-day work practices.*” During the

ethnographic fieldwork, the challenge of an unclear definition of collaboration made it difficult for me to establish whether I was observing practitioners performing collaboration or rather which actions do practitioners perform when they are collaborating? I did not know the signs (or semiotics) of collaboration. It was difficult for me to distinguish whether the practitioners were coordinating or collaborating or providing information or communicating. Consequently, I observed all actions and so followed the idea of collaborative project practices as suggested by Gustavsson & Gohary (2012) with the hopes of later being able to consider collaboration practice.

To further understand collaboration, I then focused on investigating how collaboration is represented in the contractual arrangement in Denmark. The starting point for this was an analysis of how collaboration was problematised in the recently developed agreed document AB18, a contractual arrangement between client and contractors, with the purpose of understanding hidden assumptions within the contract (see Bacchi & Goodwin (2016) for the analytical process). The analysis was later further developed into an article published in the Danish journal *UCN Perspektiv*. The result of the analysis was that collaboration is a context-dependent construct. Within the contract of the construction industry, the collaboration construct is built on an assumption of governing the practitioners' actions toward avoiding destructive and time-consuming conflicts, while the collaboration construct in a learning situation between learners and teachers calls for discussion and question-asking (Klitgaard & Gottlieb, 2021). A finding, which prompted further questions about the value of focusing on defining collaboration practice in this project. I also became increasingly aware of the risk of predefining collaboration practice before going into the field as this approach could lead to a reification of the understanding of collaboration; an issue which I explain in detail in chapter 3.

Consequently, I abandoned the focus on collaboration. Although, I continued to focus on observing events where practitioners were interacting with each other by focusing on the practitioner's actions. The focus on actions aligns with the practice-based approach behind this study. Practice theory will be described in chapter 3. For now, it is important to stress that actions during an activity can form a working practice as

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suggested by Gherardi's (2012, p. 202) broad understanding of a working practice as "*a collective activity undertaken in a particular place at a particular time*". The focus on actions in the field turned my attention to the context of where the actions were performed, which made me aware of formal and informal mechanisms within this context. Mechanisms, which impact the practitioners' actions. I then set out to investigate formal and informal mechanisms.

In the next chapter, I will argue how mechanisms can be viewed from a substantive ontology; a perspective that allows us to consider mechanisms as something that *is* and mechanisms as *being* in their nature. Mechanisms can also be considered to be *evolving*, although this view is still resting on a substantive ontology, so mechanisms evolve from something and retain some essence of the previous stage of development during the evolution. This definition of substantive ontology is inspired by Brunet, Fachin & Langley's (2021) definition of a substantive ontology of processes. Some of these substantive mechanisms will be of a formal nature and some of an informal nature. A third approach to the nature of mechanisms is found within research that is performed using practice theory as this theory allows for understanding how mechanisms are becoming as a result of the actions of the practitioners when they are performing their practice (Blomquist, Hällgren, Nilsson & Söderholm, 2010). They argue (ibid.) that by adopting the becoming view, it is possible to identify hidden mechanisms, which influence the project at the point in time when mechanisms are activated in the project. This type of research is named project-as-practice (Blomquist et al 2010). Mechanisms of a becoming nature can be both formal and informal in nature. I will address previous research on mechanisms in the next chapter as mechanisms are central to the performed research.

### **1.2 The project as the context for the practitioners' action**

The context in which actions are performed will impact the actions through mechanisms within the context, so context is a central element in this research, which will be revealed throughout this thesis. Presently, I will attempt to present a context or a background, which can be used to understand the conducted research. However,

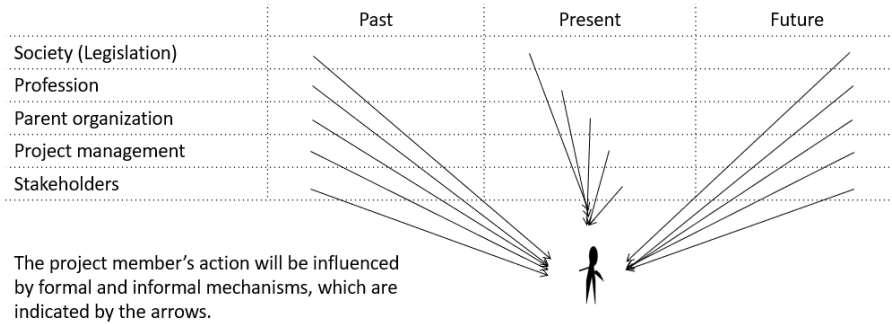
I am presented with the problem that I may select and focus on different elements in my attempt to provide a relevant context for the research than other researchers or practitioners would do. I recognise Silverman's (2014, p. 37) argument that "*apparent uniform institutions [...] take on a variety of different meanings in different contexts*". Similarly, Murray (2019, p. 191) argues that the role of researchers can be considered as "*boundary constructors*", who actively interpret and bind context through their analytical process. The understanding of context, which I employ throughout this project is based on Meier & Dopson's (2019, p. 3) definition:

*Context is a relational construct that specifies what is at any given point considered the background for understanding a phenomenon or an event. This background/foreground relationship is continually constructed by people, as they make sense of their experiences and the social worlds in which they engage.*

I have already foregrounded action with the project setting as the background. I will now foreground the project setting to provide an understanding of the project as a context. The context understanding, which I will employ, allows for an understanding of how the project member's action will be influenced by experiences/knowledge from the past, pressures from the context in the present as well as anticipations from the future: the influence happens through formal and informal mechanisms, see figure 1. In the figure, I have indicated the levels of space, which I find necessary to understand the present research. Although, I acknowledge that other researchers may choose other levels. As such, I attempt to reduce the complexities of the actualities of the project into something more tangible. Consequently, I will have provided a background for the practitioners' actions in a context of time and space (see further examples of context and space in Fitzgerald (2019) and Chambers (2019), and examples of context and time in Korica & Nicolini (2019)).

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*Figure 1 Visualisation of context as elements from time and space.*



In an actual setting and in a specific situation, the actors will perform their behaviour based on decisions in which they address how to show the most agreeable version of themselves (Goffman 1990). The choice of performance happens on the conscious as well as the unconscious level (ibid.). Furthermore, the decision about how to perform can be rational based on careful considerations (a logic of consequentiality) or based on a logic of appropriateness where organisational rules are highly influential (March, 1991). March (1991) argues how the idea of decisions often is often linked to an element of choice and suggests understanding some decisions as interpretation, so a decision can be understood as an artefact, a symbol for management to demonstrate how they manage their organisation. Consequently, to view actions in context as performances is also to accept that the choice of performance may not be based on a rational analytical consideration of the context. Therefore, I will not use the generated context to understand motivational issues, where anticipations of the future can act as motivation for choosing a particular performance. Examples of motivation theories that incorporate an anticipation of a future event can be found in the needs-based motivation theories like the theory of hierarchy of needs (Maslow, 1943) or two-factor theory (Herzberg, 1987) or in the process motivational theories about goal setting (see Locke & Latham (1994). Furthermore, I will not discuss context from a learning perspective, where events and knowledge from the past have allowed the individual to learn how to act. Examples of the importance of experiences and learning can be

found in Dewey's (2011) theory of learning by doing and Lave & Wenger's (2012) work on situated learning.

I will now briefly mention the different levels of the context (see figure 1), as each level represents a role in the project setting. Glaser (1978, p. 80) explains how *"a status is a position in a social structure, [while a role should be considered] the relationship between two statuses"*. My attempt is then based on a wish to provide some insights into the different roles in a project setting. In the next chapter, "Existing literature", it should become clear just how complicated the project is as a context for actions. The stakeholders in the project are many. They can be the end-user of the project, the developer, the society (e.g. sustainability, productivity, etc.), and all involved organisations in the execution of the projects (the value chain). As such, all the levels in figure 1 are stakeholders. I have chosen a few of these to mention in detail. Project management's role is to plan, manage and control the activities in the project. Project members' actions may thus be influenced by the project management as the project member may seek to align their actions with experience/knowledge from project management from the past, the pressures to align behaviour with the management wishes in the present as well as align their behaviour due to anticipation of future events with the project management. This view of context as past events, present pressure, and anticipated future events also applies to the parent organisation, which is the organisation where the project member is employed; the project member's profession, which can have certain codes of conduct, and the different types of legislation, which covers actions in a project setting. Examples of legislation are tender laws, health and safety laws as well as laws dealing with energy use.

In summary, the practitioners will be under influence of the context when they perform their practice. It is thus important to realise how the multiple elements or roles from the context can influence the practitioners' actions when actions are being investigated. Furthermore, Fitzgerald (2019) argues that context should not be considered as simply being there, as context is defined differently by different actors. This means that different project members construct their context and so are under influence of the context in different ways than other project members, as each member



## 1.0 Background

defines their context. This construction of the individual's context should not be considered to be based solely on a rational and consequential analysis.

### **1.3 Guiding research questions and objective**

The focus in this project is on mechanisms regulating the practitioners' actions in the projects and the relationship between the practitioners' actions and these mechanisms in the project. Both informal, as well as formal mechanisms in a project, will be considered, and the focus will be on how such mechanisms are produced and reproduced by the practitioners' actions during the duration of the project. The main idea presented in this thesis is that it is possible to consider the potential impact of this type of informal and formal mechanisms; a pre-requisite for this is the identification of the practices which produce informal and formal mechanisms. Therefore signs (semiotics) to enable identification of the practice are needed. The approach is inspired by Geertz's (2017) suggestion of a semiotic approach to culture as this approach allows for conversation with the culture's subject. Consequently, a semiotic approach to practices is suggested as this will allow for conversation or interaction with the practices. By supplying practitioners with signs, they can use to identify which practice is producing and reproducing informal mechanisms, they may become able to converse or interact with the practice and as such the produced and reproduced mechanism. It is a similar approach found in Salovaara, Savolainen & Ropo's (2020), suggestion that project management needs to be able to read the culture of the end-users of the project if they set out to create a process where the end-users participate in the process. The guiding research question for this thesis was changed due to the shift in focus and became the following:

*How can practitioners be enabled to reflect on the impact of their and other practitioners' actions as these actions can produce and reproduce formal and informal mechanisms?*

The objectives then became to provide practitioners with:

1. insights into how practices produce and reproduce formal and informal mechanisms in the project as the context for the practices,

2. semiotics of practices so it becomes possible to identify practices and
3. insights into how a semiotic approach to practices will allow practitioners to become able to identify and consider the potential impact of practice on the project.

## ***1.4 My role as a researcher within the construction industry***

At this point, I will introduce myself, so the reader can gain insights into my interest in the topic and how my previous knowledge and experience may have influenced the study. From an educational view, my background is within both the construction industry as well as traditional management, as I have a Bachelor's degree in building surveying and a Master's degree in business administration.

I have worked in the industry for approximately 4 years, where I was working for major manufacturers of goods, namely a manufacturer of brick-lintels and -beams and a manufacturer of acoustic gypsum solutions. The job functions involved price calculations as well as giving technical advice both to architects in the early stages of the project, to the tradesmen when they encountered a problem on-site as well as advice to the final maintenance team of the project.

However, I became increasingly curious about how the education of the practitioners of the industry could assist in improving the industry, so I applied for a position as a teacher. I have worked for over 10 years at the Architectural Technology and Construction Management bachelor programme at University College Northern (UCN), Denmark. I have taught mainly topics about the planning, managing, and controlling of a building project. During this time, I have had the opportunity to keep my interest in the industry up-to-date as well as gained insights into teaching and learning theories. Furthermore, the university colleges in Denmark have a duty to perform research. I was fortunate to become part of these research activities. I have thus in my work-life been involved in the industry as a practitioner, as a teacher, and as a novice researcher. In all these activities, I have focused on interactions between people. I have always been intrigued by how collaboration has been seen as a solution

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to many of the problems in the industry. At the same time, I have been involved in encouraging students to collaborate with each other. An endeavour, which is difficult to succeed in, as it proved quite complicated to teach the students how to collaborate and from the students' perspective, to learn how to collaborate.

In 2018, the University College of Northern Denmark (UCN) set up funding for PhD projects within their strategical area of interest. I approached Aalborg University in Denmark and with their collaboration, I applied for PhD funding from UCN and was awarded the funding. The original project had collaboration and project management as the main focus. The focus shifted to mechanisms and project management as explained above.

I have included this brief introduction of myself, as I recognise that my years in the industry will enable me to discover some issues as well as make me blind to other issues. Consequently, I have been especially careful to consider my role in the research throughout this project, which I hope will be clear throughout this thesis.

### ***1.5 Structure of the thesis***

In the next chapter, I will review existing literature about project management to frame my research, so it becomes apparent why I believe practice-based investigations can contribute with valuable insights to the construction industry. It will form the foundation for my suggestion that a semiotic approach to practices can enable practitioners in the construction industry to interact with the present practices in the industry. In chapter 3, the theoretical framework, which is at the core of this research, is presented. In chapter four, the methodology of the thesis is explained, while chapter five presents the outline of the three articles, which were written to disseminate the scientific outcome of this thesis. In the sixth and final chapter, the contributions and potential implications of the project will be presented.



## 2.0 Existing literature on mechanisms and project management

This chapter presents existing literature about mechanisms involving human action and mechanisms regulating action in projects. I will focus on the embedded assumptions of the context within the literature. The assumptions are either based on considering context as having a *being*, an *evolving*, or a *becoming* nature. Each segment provides a background to understand the theories within the segments and the view of mechanisms impacting actions within projects. The first segment to be presented is the one where the context is considered as being static, which means that mechanisms are considered static too, a *being* view. The next section presents reactions to this worldview based on literature from the segment containing research that has the context considered as *evolving*. Consequently, this segment of literature represents a view, which approaches mechanisms as *evolving* throughout the lifespan of the project. In the last segment of literature of the presented literature, context is considered to be *becoming*, so mechanisms are also considered to be *becoming* in nature. This is an approach that focuses on the interdependent relationship between actions, practices, and context including mechanisms within this context. This context view thus differs significantly from the belief found in the two other segments. This later belief in the interdependent relationship between actions and context can be found in the present research. A belief focused on actions and practices, which is essential to the suggestion of a semiotic approach to practices in project management developed through this thesis. I will begin the chapter by explaining how I have divided the existing literature into three different segments based on the embedded assumptions of the context within the literature. I will then present each segment. In the summary of this chapter, I will provide a table which summarises the three views on context. I will also argue for my belief in how the three approaches complement each other. A point, I will return to in the final chapter of this thesis, where I present how the present research complements the existing literature on project management.

## ***2.1 Categorising the existing literature using embedded assumptions about context as criteria.***

It is meaningful to consider the embedded assumptions of context within research literature as there is a strong connection between the phenomenon under investigation, applied/developed theory, and context (Turcan, 2017). The phenomenon under investigation in the present review of literature is informal and formal mechanisms influencing actions within the project. Upon reading previous literature reviews about project management, it becomes clear how authors have focused on the theoretical element of the interdependent relationship between context, theory, and phenomenon. Padalkar & Gopinath (2016) divide it into categories, which inform of the nature of the contributions e.g. deterministic, explanatory, and non-deterministic. Similarly, Blomquist et al. (2010) divide existing project management literature into the type of theory developed in their categories of traditional, process, and project-as-practice literature and discuss the ontological and epistemological implications of these categories. Pollack (2007) argues for a belief in a theory/context relationship, which produces theory within a hard paradigm or a soft paradigm, where the hard paradigm focuses on objectivity and the soft paradigm focuses on contextual relevance.

I will now focus on the context element of the phenomenon, theory, and context relationship. I will thus categorise them based on the embedded view of context within the literature. I use the relationship between context and phenomenon to match assumptions of context with the associated theoretical understanding to get an understanding of how the phenomenon is accounted for. Indeed, Flyvbjerg (2007, p. 47) argues that “*context defines the type of phenomenon which the theory encompasses*”. An understanding of the embedded view of context in research literature will thus inform us about how the literature views the phenomenon, e.g. formal and informal mechanisms within the project.

As mentioned in the previous chapter, authors of research literature construct the context for their research, so they can foreground/background their research based on their constructed context. I have identified three different basic assumptions of the

## 2.0 Existing literature on mechanisms and project management

context within the literature. An identification, which is limited by my ability to understand the often hidden and embedded assumptions of context. The embedded understanding of the three different approaches to contexts will be described next, which enables me to comment on the types of contributions found within each context setting. To illustrate how the context understanding impacts the understanding of the phenomena (mechanisms) within the contexts, I have focused on assumptions within the literature relating to the understanding of time and the recruitment and organisation of practitioners.

### ***2.2 A being view of context and mechanisms***

In this category of literature, I have chosen to include literature, which demonstrates a *being* view of context, where the project is implicit defined as having clear boundaries towards a clearly defined and stable context. I will begin by elaborating on this before I present research performed within this category. Finally, I will argue how this worldview influences the type of contribution and the connected implication, which research can produce.

The embedded understanding of the context in the segment of the literature, I have gathered here is that context should be considered as stable, so it becomes possible to predict what will happen next. The development of the project is considered predictive as it is protected from changes and relations in the surrounding environment or context. The understanding of time is linear. The project must progress through different phases, and the formal mechanisms will enable this process. The literature is thus based on a substantive ontology.

This substantive view of a static context allows for a view of mechanisms within the project as if they too are substantive. They are considered static. A strong belief in rational behaviour of the practitioners is often found within the literature (Pollack, 2007). Similarly, Sergi, Crevani & Aubry (2020, 3) find that “*project management is often understood as being about defining and implementing rational and predictable processes*”, while Pollack (2007) argues that this strand of literature can be considered as having a hard paradigm approach and describes it as mechanistic in its thinking.

The reference is to Morgan's (2006) metaphor of the machine, where the organisation is perceived as a machine; all parts fit together and all parts can be exchanged, and the manager thus has full control over the machine/organisation/project. The project manager can plan and organise the activities within the project, and as the project organisation is stable, the plans are stable. The plans are thus instrumental and can be followed in a step-by-step approach due to the linear time understanding and the substantive approach to the context. The assumption is that practitioners are recruited into action by the project manager, even in situations where they are employed and paid by different organisations.

Furthermore, the approach to management can be considered deterministic (Padalkar & Gopinath, 2016) with a focus on rational structures and how they can be managed (Blomquist et al 2010). It thus becomes possible to disregard informal mechanisms as it should be possible to consider all possibilities through the formal mechanisms.

The contribution of this type of research, which combines a static view of the context and a view of practitioners as acting rational, is often predictive in nature. Pollack (2007) describes how the suggested project management techniques are developed to be used at the outset of the project. The implication for practice is tangible tools and models which can be employed to ensure success.

### ***2.3 An evolving view of context and mechanisms***

In this next segment of literature, I have categorised literature, which regards the context as *evolving*. A world view, which influences the view of mechanisms, the type of contributions, and implications.

The view of context as *evolving* is often contrasted against the previously presented view of context and mechanism as *being* because researchers and practitioners found some inherent problems in considering the context for a project as stable and constant. Kreiner (1995) stresses that even though the future is made quite explicit in projects, the future will remain constructed. A plan does not predict the future, it is an anticipated future. And Suchmann (1987) stresses how the situatedness of actions challenges the use of clear step-by-step planning. Packendorff (1995) argues against



## 2.0 Existing literature on mechanisms and project management

the view of the project as detached from the environment, as it allows for regarding the project as a tool and something the user can control. Furthermore, Engwall (2003) warns against regarding the project as an island as even the interior processes of the project are influenced by its historical and organisational context.

Also, The Rethinking Project Management effort suggested a move away from the static view of the context as the assumptions behind the *being* view of context conflicted with the reality meeting the practitioners (Winter, Smith, Morris & Cicmil (2006), Jacobsson, Lundin & Söderholm (2016) and Walker & Lloyd-Walker (2016)). Within the Scandinavian approach to project management, this shift is also suggested and it was suggested to focus on the temporality of the projects and the project organisation as well as to consider the context as wider than the boundaries of the projects; an ever-evolving understanding of context was developed (Jacobsson et al, 2016). Both the rethinking project management agenda and the Scandinavian effort also suggest focusing on practices, see section 2.4 on context as *becoming*.

In the *evolving* view of context, the assumption of time is still linear. However, this view of context allows for considering how the context is not stable throughout the lifespan of the project. It is a view of time, which allows Kreiner (1995) to suggest a project manager should keep an eye on the surrounding environment during the lifespan of the project, as the environment can drift causing the project to lose its relevance. However, the view of mechanisms is still within the substantive ontology as mechanisms are considered *evolving* during the project, but it is considered that they retain some kind of essence throughout the project. A call for empirical research to understand actions and the actualities of the project is considered central to research which sets out to differentiate itself from the *being* view of projects (see Cicmil, Williams, Thomas, & Hodgson, 2006).

The context is thus assumed to be continuously *evolving*, moving on from where it was to a new place. An example can be found in Gottlieb, Frederiksen, Koch & Thuesen's (2020) investigation into how strategic partnerships evolved differently in response to how they managed different logics, which were part of the partnership's context, while Sydow & Braun (2018) argue how the implications of an inter-

organisational project organisation in an *evolving* context should be further investigated in terms of the nature of the relations created over time including after the project is terminated. Consequently, the context is considered dynamic and interacts with formal and informal mechanisms resulting in theory, which provides an evolving assumption of the nature of mechanisms.

It is also within this segment of literature that the work on the project as temporal organisations can be found. Indeed, Lundin & Söderholm (1995) suggest that the temporality of the project is central to understanding the social reality of the project. They (ibid.) focus on four t's: A *transition* needs to take place as a result of the *team* completing the *task* within the given *time*. And, so the project should be considered as part of a wider context, while the temporal organisation formed to execute the project is part of the context for action. Furthermore, actions should be investigated based on the four t's rather than focusing on the consequences of decisions as there may be actions, which cannot be explained by decisions. The view of plans differs from the one dominating in research, where the context is considered as stable, and the suggestion is that practitioners should view plans as "*actions generators*" rather than using them in an instrumental way (ibid, p. 448). Furthermore, the temporal organisation will evolve as the project progresses through different phases from idea to completion, where completion means the termination of the temporal organisation, which brings Lundin & Söderholm (1995) to introduce different sequencing concepts, which should be employed to understand the actions within the project. One of these sequencing concepts is "*planned isolation*", which can be employed to understand actions within the implementation phase of a project. Planned isolation illustrates how the temporal organisation is nearing its known termination date (the deadline for the project as a consequence of *time*) and so the organisation/*team* will attempt to isolate itself from any disturbances which can impact the successful completion of the *transition*, which is the purpose of their *task*. Consequently, it becomes possible to perform empirical research within the project, which focuses on explaining actions in an understanding of the project as going through phases based on its status as a temporal organisation.

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Project management should do more than plan and organise in this *evolving* world view, as the project manager is expected to be able to motivate the practitioners (Turner & Müller 2003). The practitioners are thus not naturally assumed to be recruited by the project manager; he/she is not the sole influencer on their actions. The practitioners may indeed be recruited by other organisations than the project manager, which brings Sydow & Braun (2018) to argue how the interorganisational project team is influenced by the relation to the *evolving* context, in which it operates through the relations between the practitioners and their organisations. Moreover, the project manager must continually employ formal mechanisms so he/she can plan and organise the practitioners' activities under considerations of these relationships at the outset and continuously consider how they can change through the lifespan of the project.

This *evolving* view of the project and its context maintains an element of the substantive belief in mechanism, a belief that mechanism has a kind of essence in them. It can be illustrated by London & Pablo's (2017, p. 274) work on collaboration, where they set out to define collaboration and become able to define nine collaborative practices, which they argue will help "*address the persistent issue of practitioners not knowing what collaboration means*". The recommendations incorporate a "*being*" element, which suggests they consider mechanisms as substantive, although they continue to suggest that some of these practices are foregrounded in some cases and not in others, suggesting an *evolving* view of context. Furthermore, London & Pablo (2017) also find that there is more than one 'convenor' in a collaboration effort and as such highlight how the project manager is not the sole convenor. The actions of human actors depend on multiple actors acting in the context around them (ibid.).

In another exploration considering mechanism guarding human action, Hällström, Bosch-Sijtsema, Poblete, Rempling & Karlsson (2021) investigated the role of social ties in a project between individuals. They (ibid.) suggest that these ties are relevant for the collaboration in the study. The social ties within the project "*starts to grow*" at the beginning of the project and can be nurtured by management (ibid., p. 12). The social tie is thus considered a mechanism within the project. The research has been

categorised with the *evolving* view of context due to the focus on progressions in the suggestions.

Much of the research within this category is based on social science, so it makes sense to quote Weick's (1989, p. 524) words about the nature of social science research:

*[T]he contribution of social science does not lie in validated knowledge but rather in the suggestions of relationships that had not previously been suspected, relationships that change actions and perspectives.*

The contribution of the research I have categorised within this segment focuses on the assumption of the context as *evolving* during the lifespan of the project. The research is thus able to contribute with knowledge of different types of relationships, so an increased understanding of the project's actualities can be generated. The relationships can be considered formal as well as informal mechanisms. Consequently, the implications of research within this segment focus on how mechanisms can change actions and perspectives. This knowledge can be used to understand and, in some instances, manage informal and formal mechanisms, which are *evolving* due to the relationships.

## **2.4 A becoming view of context and mechanisms**

In this last segment of literature, I have categorised research, which considers the social world to be *becoming* due to actions. I will proceed to demonstrate how this view influences the view of mechanisms influencing human action as well as the type of contribution and implications to be able to demonstrate how this approach to context allows for a different understanding of project management than the previous two segments of literature.

The worldview within this category assumes that the social reality is established and maintained by activities/practices; even for the world to stay the same, it must be "*accomplished continually through activity*" (Brunet et al. 2021, p. 839). It is an assumption which is known from process studies (Sergi et al. 2020) as well as from

## 2.0 Existing literature on mechanisms and project management

project-as-practice research (Blomquist et al. 2010, Brunet et al. 2021). The assumption is that actions in the present influence the future, as the future context *becomes* due to the actions. An argument, which is present in Marshall (2014, p. 113), who argues for a practice-based approach to project collaboration as it will understand collaboration as “*an ongoing accomplishment*”; an accomplishment, which needs to be “*continuously and actively constituted, with the implication that it is always potentially subject to renegotiation and revision.*”. In a strict practice theoretical view, it is important to note that social reality is neither static nor in a constant state of becoming, rather the practices are moving, influencing, and producing social life in “*a complex and developing mosaic of continuity and change*” (Schatzki 2016, p. 40). This means that the practitioners’ actions produce and reproduce the context, where the actions take place. Kokkonen & Vaagaasar (2018, p. 85) apply this approach to context when they suggest to “*take a closer look on the management of collaboration practices as it is actively produced in projects.*” In terms of recruitment, the practitioners are given (or denied) the power to perform actions by practice and “*practice give (or deny) the practitioner the power to think of themselves in certain ways*” (Nicolini 2013, p. 6). Furthermore, Brunet et al (2020, p. 840) argue that time is viewed as “*more organic than linear*” in studies with a focus on actions, practices, and activities.

This *becoming* view of context combined with the associated view of recruitment and time calls for another approach to project management. Brunet et al (2021) argue that the project manager must direct attention to the micro activities, which shape the project. And Buchan & Simpson (2020, p. 39) argue that project management scholars should focus on more than the “*routine, measurable practices*” in an effort to “*engage with those aspects of projects that are inherently relational, dynamic, and emergent.*” Furthermore, Boyd (2013, p. 1145) suggests a shift from research with a focus “*to think better about practice*” to one of “*supporting people to act better in practice*”. So, in this *becoming* view of context, the focus is on the practices, which produce and reproduce informal and formal mechanisms. Within management literature, one of the purposes of this type of research is often to identify and influence

these practices and the attributed mechanisms, so the practices can be shifted in accordance with the management's purpose.

The identification of practices often begins with identifying the events, where the practices are performed during an activity. In their attempt to identify and define activities, which shape future mechanisms, Çıdık & Boyd (2020, p. 18) develop the concept "shared sense of purposefulness", which describes the "*temporary and precarious organizational state of a design team in which each of the interacting team members has achieved a sense of purposefulness to resume individual action*". I consider this to be an informal mechanism working within the project. They (ibid.) are then able to argue how all activities are interacting parts of the organisational whole, as practices are constituting the organisational reality, which brings them to question the relevance of thinking of the design process as a fragmented or integrated process between the practitioners, but rather as an ongoing process of establishing and maintaining a sense of shared sense of purposefulness. It is thus a *becoming* view, where the shared sense of purposefulness must continually become present, so the practitioners are able to perform individual activities based on a shared purpose. Likewise, Swärd (2016) focuses on events and activities in an investigation into how trust develops between inter-organisational partners in a project. An investigation, which finds how events in the past and present can shape the expectation to the future and so operates with the organic sense of time, which is found in practice theory (ibid.). I consider trust to be an informal mechanism working within projects. A focus on events is also found in Packendorff, Crevani & Lindgren's (2014) study into how direction is *becoming* because of these events, where I consider direction to be an informal mechanism. They (ibid.) call for a focus on events, which they call 'nows' in time and space. This enables them to develop an understanding of the elements, which influence 'direction'. In other research, Kokkonen & Vaagaasar (2018, p. 92) investigate practices to find how it is possible to "*nurture*" and "*nudge*" the collaboration practices of individuals. They (ibid.) set out to investigate what was influencing the practices, where they focus on the space surrounding practitioners, which they find is a factor when a collaborative practice *becomes*. The space can thus act as an informal mechanism within projects, as it has an impact on the practitioners'

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actions within the project. Hoorn & Whitty (2017, p. 978) use the relationship between practice and mechanisms proactively in suggesting that the project manager through his actions can produce and reproduce 'alignment seeking', where 'alignment seeking' "*is the process of reaching agreement on what needs to be done and on the process that should be followed to complete the activity*". They (ibid.) suggest that the project manager should remember and acknowledge team members' birthdays as this will assist in building rapport and trust, which is a necessary element of alignment seeking activities.

In essence, the *becoming* view of mechanisms enables researchers to focus on how mechanisms become and to consider when they become. Boyd (2013, p. 1156) stresses this point in the suggestion to understand the importance of events: "*improvements cannot be the learning of successful propositions but must be the learning to act better in situations*". Furthermore, Sergi (2012) argues that theorising projects as happening in situation and action will inform the practitioners so they can increase their awareness of their practice and become reflexive about the consequences of their actions. The risk of reifications of recommendations from the research community by the practitioners may then be avoided as the practitioners should see the recommendations as guidelines to be adjusted to the specific situation and context (ibid.).

The implication of project-as-practice research is then linked to an understanding of mechanisms as *becoming*; mechanisms are produced and reproduced by the practitioners' actions. The importance of action can be found in Salovaara, Savolainen & Ropo's (2020, p. 59) suggestion of the value of an "*ethnographic toolkit*", which should enable the project management team to see and understand end-users' actions and culture and thereby enable the project management to involve the end-users in a participative process. I find that this ethnographic toolkit can be explained by using Geertz's (2021) metaphor of the diagnostician, who is not able to predict a patient will get measles, rather he/she can decide the patient has measles (or anticipate he/she is likely to get them). Therefore, I suggest that the project management literature should

provide the symptoms (actions) of several of these practices performed during events were mechanisms *become*, so the project management can diagnose what is going on.

In summary, the practitioners' actions are assumed to be able to produce and reproduce the context for the project. The context and project are *becoming as they* are continuously established and sustained or produced and reproduced as the practitioners perform practices. The understanding of context is that it *becomes*. Consequently, mechanisms within the projects are assumed to be *becoming* in nature.

## **2.5 Summary**

Context is constructed by the researchers by their assumptions about the world. The constructed contexts can roughly be divided into three different segments, which influences the view of time, recruitment, and organisation of practitioners. Also, the constructed context influences the view of informal and formal mechanisms as the investigated phenomenon. I present a summary of the above chapter in table 1, at the end of this chapter.

I have now coupled the three constructed contexts to an understanding of project management theory as being used to:

1. predict how mechanisms should **be**,
2. to understand how mechanisms might **evolve** under influence of an evolving context or
3. to understand how mechanisms **become** due to the practices of the practitioners.

It is important to stress that the practitioners working in the industry might not be concerned with how the context and mechanisms are viewed in literature. They may evaluate the suggestions provided by research based on how useful they seem in line with Mintzberg's (2017, p. 178) argument:

*It is important to realize, at the outset, that all theories are false. They are, after all, just words and symbols on pieces of paper, about the reality they purport to describe; they are not that*



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*reality. So they simplify it. This means we must choose our theories according to how useful they are, not how true they are.*

Consequently, the intention of this thesis is not to favour one approach to mechanisms (and thus one approach to project management) over the other as I agree with Morris (2002), who argues that there will never be an overall theory of project management. Rather, the argument here is that the practitioner needs to be aware of all approaches. I set out to contribute to knowledge within the segment of literature, which regards mechanisms as *becoming* due to practitioners' actions. In the next chapter, I will introduce the theoretical understanding, which allows me to identify a practice and the informal and formal mechanisms produced and reproduced by the practice. Such knowledge, I suggest, can be used by practitioners to begin reflecting on the potential impact of their and others' practice and through this reflection become able to interact with the performed practice.

	<b><i>A being</i> approach: The context exists as a stable background for the project</b>	<b><i>An evolving</i> approach: The context evolves over time in interaction with the project</b>	<b><i>A becoming</i> approach: The context is produced and reproduced by practices</b>
<b>Context</b>	Static context	A dynamic context evolving over time	Context as becoming as a result of practices
<b>Understanding of time</b>	Time is linear  The future can be planned	Time is linear  The future is unknown	Time as organic (non-linear)  Practices are seen to produce and reproduce the projects
<b>Recruitment of practitioners</b>	Practitioners are recruited by the project manager	Practitioners are recruited by their organisation	Practice enables the practitioners to act
<b>The organisation of human resources</b>	A static project organisation protected from the environment	A temporary organisation formed for a limited period with ties to the environment	The organisational reality is produced and reproduced under influence of practices
<b>Type of theories developed/employed</b>	Predictive theory	Social (explanatory) theory	Practice-based theory detailing the becoming of a project
<b>Understanding of governing mechanisms</b>	Mechanisms as <i>being</i> , a substantive ontology	Mechanisms as <i>evolving</i> in interaction with the context, a substantive ontology	Mechanisms as <i>becoming</i> through the practitioners' actions (practice), a becoming ontology
<b>Understanding of the project as phenomenon</b>	The project as a tool	The project as a temporary organisation	The project as produced and reproduced by practice

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	<i>A being</i> approach: The context exists as a stable background for the project	<i>An evolving</i> approach: The context evolves over time in interaction with the project	<i>A becoming</i> approach: The context is produced and reproduced by practices
<b>Hidden informal mechanisms</b>	To some degree neglected as they can be “planned” away if the planning is “correct”	Produced by internal and external relationships	Produced and reproduced through the practitioner’s actions
<b>Type of contribution to existing knowledge</b>	Developing new knowledge of how to predict the impact of formal mechanisms	Developing new knowledge of relationships working as formal and informal mechanisms influencing actions	Developing new knowledge of the events, which produce and reproduce mechanisms which influences the practitioners’ actions
<b>Implications for practice</b>	Suggesting employing formal mechanism in form of best practice and models, which should be employed to control action	Suggesting considering the impact of formal as well as informal mechanisms evolving throughout the lifespan of the project	Suggesting considering the impact of actions in project as actions produce and reproduce formal and informal mechanisms



## **3.0 A theoretical background within practice theory**

In this chapter, I will present the elements from practice theory, which have enabled me to perform the research. Practice theory has been chosen as the theoretical framework for the performed research as it allows for understanding the connection between actions and mechanisms, a *becoming* view of context. I will address this in the next section, where I explain how practice can be used as a unit of analysis. Next, I will briefly introduce the discussion about cognitivism action within practice theory and how I have chosen to address this. At the end of the chapter, I provide a summary of the theoretical understanding employed in the research as well as explain how the presented theoretical framework can be used to reach the objectives of this research.

### ***3.1 Practice as the unit of analysis***

In this project, the intention is to use practice theory to describe and understand practitioners' behaviour or actions, as the practitioners' actions can produce and reproduce informal and formal mechanisms influencing action in the project. This type of knowledge is important for the practitioner as knowledge about practices is obscured for its practitioners (Gherardi, 2012). Gherardi argues (*ibid.*, p. 210) how the representation of practices can be seen as "*a means to empower the practitioners*". Consequently, I will later in chapter 6 present the practices by their associated semiotics and the informal mechanisms they create, as it will enable the practitioners to reflect on their actions. I will proceed with this presentation of practice theory to illustrate how practice theory enables an understanding of the connection between actions, practices, and informal mechanisms.

It may seem odd to begin an introduction to practice theory without a definition of practice. However, there is no unified definition of practice or practice theory (Nicolini, 2013). Nicolini (*ibid.*, p. 9) elaborates: *Practice theories are fundamentally ontological projects in the sense that they attempt to provide a new vocabulary to describe the world and to populate the world with specific 'units of analysis'; that is,*

*practices*”. In this research, this ontology of practice theory is applied, as this ontology allows for understanding the connection between actions and formal as well as informal mechanisms in the project. I have already addressed how a practice theoretical perspective means considering that practices are moving, influencing, and producing social life in “*a complex and developing mosaic of continuity and change*” Schatzki (2016, p. 40). Hui, Schatzki & Shove (2017, p. 2) elaborate and explain how all social phenomena are “*aspects of, constellations of, or in some way rooted in the nexus of practice*”, where they list power, institutions, markets, change and more as examples of social phenomena. It then follows how practices can produce and reproduce formal and informal mechanisms within the project.

So, it may be possible to observe the influence or impact of practice, but the practice itself still needs some consideration. Gherardi (2012, p. 202) uses this very broad understanding of a working practice as “*a collective activity undertaken in a particular place at a particular time*’. The focus on the collective element of practice is important. Practices will be carried out by indefinitely many people and can thus be considered as social (Schatzki, 2016). So, even though an activity is happening at a particular place and at a particular time, the actions, which form the practice, will be recognised as a practice. Practice is thus linked to the actions that the practitioners perform; the actions will constitute an activity.

Another common feature within practice theory is the understanding that it is the practice which gives meaning to the activity and thus the individual actions (Nicolini, 2013). It is a view of practices, which differs from the view represented in “best practice” advice. The term “best practice” should be considered guidelines for specific and desirable actions, while the terms “social practice” or “collective practice” are used to describe how a practice consists of a set of actions, which are meaningful because they are part of the practice. Or in the words of Gherardi (2012, p. 206): *To work, therefore is not to know a series of practices; rather, it is to know-in-practice how a job or a profession is done*. Gherardi (2012) is here referring to the view of knowledge within practice theory; a very contextual, embodied, and situated view of

### 3.0 A theoretical background within practice theory

knowledge. In the present research, I use the term practice as it is viewed in this latter manner and not as in the view associated with “*best practice*”.

The complication of the lack of a unifying theory and clear definition of practice is facing the researcher, who set out to investigate practices, prompting several suggestions of how to do so:

Nicolini (2013) suggests zooming in and out on a practice to investigate the local and global producing and reproducing effect of the practice and understand why it has developed the way it has.

Orlikowski (2010) argues that practice can be researched in three different ways: 1. as a phenomenon (what does the actors do, which tools do they use, etc.), 2. as a perspective (by using a practice theory to understand an organisational phenomenon and see how practice shapes the organisational reality); and 3. as a philosophy (to discover how the practices produce the organisational reality, practice is part of reality).

Gherardi (2012) suggests studying practices as: 1. Containers with a focus on the activities which take place in the context of a practice, 2. Processes as they unfold over time or 3. As results of stabilisation, where the focus is on what the practices are producing and reproducing (which can be informal mechanism as mentioned in the previous chapter).

A common element within these suggestions is thus to consider how practices are producing and reproducing the social world. It is this ontological understanding of practices’ ability to produce and reproduce the social world, which is used in the present research, where the focus is on informal and formal mechanisms within the project. Formal and informal mechanisms are thus produced and reproduced by practices.

Still, which actions performed during activities constitute a practice, which produces and reproduces formal and informal mechanisms? How can the actions in activities be identified and represented to the practitioners? One approach would be to define the practice before going into the field. However, this approach can turn the practice into a reification. Wenger (2003) argues that reification refers both to the process which turns something into a reification and the reification itself. The result of reification is that it can project meaning, which no longer is connected to the practitioners (ibid.). Furthermore, Welch (2020) argues how the practice-based approach is sensitive to reification, which some types of concepts are at risk of becoming. Welch (ibid) continues to warn against the use of concepts, which captures large-scale configurations of discourse or practice and urges to study practices empirically. These insights about reification can explain the problem I encountered when I set out to identify collaboration practice in the ethnographic setting. The term collaboration practice has been turned into a reification. Furthermore, if I had set out to define a practice before I entered the field, I could have turned the practice into a reification and disconnected the practitioners from the practice.

### ***3.2 Practice theory and cognitivist actions***

Practice theory's view of knowledge, where knowledge is not considered as an object but rather as knowing in practice, means that practice-based investigations are unwilling to introduce concepts of a cognitivist nature (Marshall, 2014). An example of this view can be found in Schmidt's (2017) proposal to treat reflection and analysis as public and observable practices. In this way, Schmidt (2017) avoids centering the subject/individual and as such avoids introducing cognitivism in practice theory. Marshall (2014, p. 119) suggests a similar approach in the suggestion of distinguishing analytically between practices of thinking, saying, and doing as "*qualitatively different, yet interlinked practices*". Marshall (ibid.) thus acknowledges some cognitivist ideas of thinking within the individual.

I have introduced this discussion, as I will later argue how the contributions of this thesis will allow the practitioners to reflect on their actions before, while, and after they perform them. I base this argument on Schön's (2016) work on reflection-on-



### 3.0 A theoretical background within practice theory

action, which enables a practitioner to reflect on actions already performed and the impact of them. I will argue how the description of other practitioners' actions and their impact should enable practitioners to perform reflection-on-action. Furthermore, Schön (2016) also argues for reflection-in-action, which enables practitioners to perform reflexivity while they are performing the practice. Finally, Weick, Sutcliffe & Obstfeld (2005) argue how sensemaking allows the practitioners to make sense of events, which I understand as reflection of action. In Grosse's (2019) auto-ethnographic work, the focus is on reflexivity on, in, and of practice as a method to reflect on one's practice. The three types of reflexivity allowed Grosse to "*understand my practices more thoroughly and therefore to cope better with the managerial tasks I face*" (ibid., p. 495). I hope to provide contributions to the practitioners, so they become able to perform reflection-on-action, reflection-in-action, and reflection-of-action. As such, I set out to enable the practitioners to reflect on their and other practitioners' actions. I thus introduce an element of cognitivism when I later begin to discuss the implementation and implications of the contribution of this practice-based research.

### **3.3 Summary**

In summary, practice is useful as a unit of analysis when I set out to understand the impact that practice can have on formal and informal mechanisms, which in turn impact the practices (or actions) in the project; as such practice theory allows for understanding the interdependent relationship between actions and the context in which the actions are happening. Informal and formal mechanisms are part of the context in which the actions are happening and so mechanisms are produced and reproduced by practice. Furthermore, practice as the unit of analysis allows for creating a vocabulary, which enables the practitioners to cope with their tasks through reflexivity. Gherardi (2012, p. 13) stresses how practice theory should be used to "*explain organizational matters in terms of practices instead of simply registering them [practices]*". Similarly, Nicolini (2013, p. 180) warns against defining, registering, and listing practices as this will:

*“re-introduce structuralist and functionalist pre-occupations that practice theory had tried to eliminate...In other words, the attempt to bind the operational unit of analysis by drawing up lists of inclusion and exclusion criteria takes us outside practice theory and more towards a traditional functionalist and positivist paradigm”.*

Consequently, it would be meaningless to begin a practice-based investigation by defining the practice and, in particular, the boundaries of the practice under investigation. Apart from the before-mentioned associated risk of reification of the practice, it will also divert focus from the potential impact of the practice to the practice itself.

In summary, this theoretical framework allows me to pursue the objectives of this research. The first objective is to provide practitioners insight into how practices produce and reproduce formal and informal mechanisms in the project as the context for the practices. An objective, which can be reached by identifying practices and interpreting how these practices produce and reproduce the social reality as informal and formal mechanisms are part of this social reality. To reach this first objective, I will follow Orlikowski's (2010) suggestion of studying practices as philosophy. The second objective is to provide the practitioners with semiotics of practices, so it becomes possible to identify practices. This objective can be reached by identifying semiotics of a practice in an analytic and iterative process of going between data and theory, so the practice can be identified. In this manner, it becomes possible to identify how practitioners are performing specific practices (researching practice as a phenomenon Orlikowski (2010)). The insights gained by the contributed knowledge about formal and informal mechanisms coupled with the semiotics of the producing and reproducing practice may potentially enable the practitioners to identify and consider the potential impact of practice on the project, which is the third objective of this study.

## **4.0 The methodology of a practice-based ethnography**

### **4.1 Introduction**

In this chapter, I will explain my methodological choices for this project. In the previous chapter, I argued how the ontological position in the research is that practices can influence social reality. I will now present my epistemological choices to understand the world in this way. I begin by explaining why ethnography was chosen as the method to collect data followed by an explanation of the terms “site” and “cases”. I then proceed to describe the actual setting where the data was collected as well as the describe the dataset. The end of this chapter will describe how I have ensured scientific credibility.

### **4.2 Ethnography**

Ethnography was chosen as an appropriate method for data collection. The original inspiration for my choice aligns with Geertz’s (2017, p. 5) idea that if you want to understand what a science (collaboration) is “*you should look at what the practitioners of it do*”. So, the wish to understand the practitioners’ practice meant that I had to observe them performing the practice and so ethnography was chosen. Ethnography can thus be used to observe practitioners’ actions, which is data that is difficult to obtain in other ways (Oswald & Dainty 2020). It is an approach, which is also favoured by practice theorists. Nicolini (2013, p. 14) argues that observational methods of data collection should be used by researchers who set out to understand “*practice as it happens*”.

Consequently, the ethnographic method of shadowing was chosen. Shadowing allows the researcher to follow or shadow practitioners in their day-to-day work (Czarniawska 2013). Czarniawska (2013) lists four challenges within ethnography caused by: (1) time, (2) space, (3) level of participation, and (4) visibility. I set out to minimise the impact of the four challenges identified. Shadowing allows for being next to the shadowed person at certain times (1) and in certain spaces (2). In the

present research, the choice was to be present at the workspace of the shadowed person, see section 4.4.2 observations. The level of participation (3) was chosen to be limited to being present. Although, it became apparent that just being present could influence the practitioners. The visibility (4) of the researcher caused an element of participation in the actions, as my presence prompted the observed practitioners to perform impression management activities. My co-authors and I deal with the effect of visibility and how the researcher participates in the actions as an audience in the article "*The researcher as audience and storyteller: challenges and opportunities of impression management in ethnographic studies*" (Klitgaard et al., 2021), see section 5.1. In the article, we also discuss in detail the need for the ethnographic researcher to be extremely reflexive in their presentation and general treatment of data as it is important to remember how an observation is not reality; although it may establish the observed as real (Emerson, Fretz & Shaw, 2011).

Furthermore, ethnography should be understood as more than "*just a set of methods, but rather a particular mode of looking, listening, and thinking about social phenomenon*" (Hammersley & Atkinson 2007, p. 238). As such, I both listen and had informal talks during the shadowing period as well as treated my data in line with set standards (see section 4.5 for considerations regarding scientific credibility) and chapter 5 for how the analysis (or thinking) relating to social phenomenon was carried out.

No formal interviews were carried out. This is partly due to the high level of impression management activities encountered on the site. Impression management activities on behalf of the observed practitioners are thought to be reduced by a prolonged ethnographic stay on-site (Hammersley & Atkinson 2007; Czarniawska 2013). However, the practitioners seemed to be quite skilled in maintaining the impression management activities even as I stayed on-site for a prolonged period of time. Hence, it seemed that they would be able to perform the impression management activities during interviews too. Also, Nicolini (2013) suggests that practitioners can be selective in their answers if they are asked about their work, while Silverman (2014, p. 234) points to the advantages of ethnography over interviews in the comment that

#### 4.0 The methodology of a practice-based ethnography

an ethnographer should “*pursue what people actually do, leaving what people say they ‘think’ and ‘feel’ to the skills of the media interviewer*”. Finally, as addressed in Section 1.3, the practitioners may not make conscious decisions about how to perform their actions (see March (1991)), so it made little sense to ask them how or why they performed certain actions.

Ethnographic researchers can ask the observed to validate the collected data through participant validation, which gives the practitioners the possibility of providing additional information about the observed situation (Hammersley & Atkinson (2017)). Although, it remains a contested method to obtain validation as it requires the observed to make post-action reflections (Hammersley & Atkinson, 2017). In this present research, the shadowed practitioner was informed of the observations used in the articles without being encouraged to make said post-action reflection. This did not cause the observed practitioner to protest over the observations.

#### **4.3 Setting and cases**

In this section, I will address the setting and cases of this research. At the end of this chapter (section 4.5), I can then address my consideration regarding scientific credibility.

The setting for data collection is not the same as the cases studied as Hammersley & Atkinson (2007, p. 4) elaborate: “*Settings are contexts in which many of phenomena occur that might be studied from any number of angles; whereas a case is a set of phenomena viewed from one particular angle, this constituted by a set of research questions.*”. I have already addressed how the setting or context in this study is the project and will now turn the attention to the case in this study.

Lund (2014) emphasises how a case is constructed by researchers, so they become able to organise knowledge about reality in a manageable way. A case is not the empirical phenomenon; rather it is the researcher who by generalising, abstracting, and theorising makes a case of the phenomenon (ibid.). By combining Hammersley & Atkinson’s (2007) idea that a case is a set of phenomena with Lund’s (2014) idea of the need to construct a case, I can argue that my case is events, where I can identify

the practitioners' practice (the phenomenon). However, I did not know beforehand which practices would be performed at which events, so I needed to observe multiple events and then select the events to form the case based on the activities/practice performed in the event.

As the cases are constructed by the researcher, the process of how the case becomes a case should be addressed. In this research, the concrete and specific observations were noted in a little notebook, when I was in the setting. These notes were later transferred to Microsoft Word documents. The Word documents were read several times until repetition in the activities was recognised. This recognition was based on theoretical insights combined with an understanding of working practice as "*a collective activity undertaken in a particular place at a particular time*" (Gherardi, 2012, p. 202). The process has been explained in detail in sections 5.2 and 5.3. Consequently, I was able to select events, which could form the case in which to study the practitioners' practice. With the considerations about the types of cases, it is possible to address the issues of credibility with the use of cases, see section 4.5.

#### **4.4 Empirical setting and dataset**

This study sets out to investigate actions in the project setting. Consequently, considerations about which project to observe need to be addressed. I will present these considerations in section 4.4.1 as well as describe the specific and chosen setting. I will then proceed to describe the actual data set.

##### **4.4.1 The research setting**

The setting is not the case in this investigation, which is not an uncommon situation. Geertz (20017, p. 24, original emphasis) stresses: "*Anthropologists don't study villages (tribes, towns, neighborhoods...); they study **in** villages*", which I would like to paraphrase to "I don't study projects, I study **in** projects". However, I needed a project, which could provide a context like the one described in section 1.2 so it would be possible to investigate action in a project.

#### 4.0 The methodology of a practice-based ethnography

A large contractor in Denmark was approached and asked for access to such a project. This contractor suggested a relevant project and a contract manager, which I could shadow. It was also the contractor organisation, which contacted the client and obtained permission for my presence on-site. During a meeting, the other participants were informed of my presence. Furthermore, a poster was displayed in the meeting hut explaining my presence.

The suggested research setting was a refurbishment project. Several housing association dwellings were being demolished while others were almost completely refurbished. There were several stakeholders in this project. The client was a housing association, while the end-user was the tenants of the dwellings. The client had chosen a form of contract, where the project was designed first and then tendered for construction. During the tendering, the project had been split into four main contracts/projects. The four contracts were demolishing, concrete, carpentry, and installation (electricity and plumbing). I will call the managers of these contracts “contract managers”. Each contract manager belonged to a different organisation, and each contract manager had several sub-contractors. The contract manager dealing with demolition was not involved in the actions, which was observed. It was common for a representative for the electricity contract and a representative for the plumbing contract to participate in the meetings, although they formally belonged under the same contract. The organisation in charge of the project management had been hired by the client (this organisation changed during my time on-site). Consequently, the complications of the inter-organisational project could be present in the project. I will not mention any more stakeholders as they were not part of the day-to-day research site. The legislative framework regulating the project was the mandatory requirements for such a project, namely the agreed document “General Conditions for Building and Construction works and Supplies” (GC92).

The observed contract manager was an experienced project manager with over 10 years of experience. For ease of understanding, I will be calling the observed contract manager the gender-neutral name “Alex” for the rest of this thesis. Alex’s first

education was as a carpenter; an education Alex later topped up with a Bachelor's degree in architectural technology and construction management.

#### *4.4.2 Observations*

I began the observations on-site when the site was already established. The first dwellings were finished and ready to be handed over to the end-users. I needed to become familiar with the site and its practitioners, and they needed to become familiar with me. I was given a desk in the observed contract manager's office shed, so I spent considerable time here. I also went shopping with Alex after a high-visible coat as this is required to wear on-site, to a seminar with Alex's organisation and followed them on a visit to another building site. This process allowed Alex to get to know who I was. At times, Alex would be called to work on other sites, in which case I would remain at the building site so the other practitioners would get used to me and remain used to me. In this way, I was present in the office when different tradesmen, suppliers, contract managers, etc. came looking for the contract manager I observed, so I became able to observe their conversations. In March 2020, my employer Aalborg University asked all employees to work from home due to the escalating COVID-19 situation. In the period from 9 March 2020 to 8 June 2020, I worked from home. During this period, the building site was still operating, and the project progressed. I returned in June and followed the site until 14 September 2020, when the data collection was terminated, see also table 4.1.

*Table 2 Hours on site*

	2019		2020						
	Nov	Dec	Jan	Feb	Mar	Jun	Jul	Aug	Sep
Hours on site	28	36	44	34	21	39	20	46	15

During my days on-site, I had lunch in the lunchroom with Alex and Alex's closest colleagues; the manager in charge of 'own production' (the work to be performed by the contracted organisation rather than sub-contractors), and the different interns. Three different interns were present during my time on-site. Naturally, they spent the



#### 4.0 The methodology of a practice-based ethnography

lunch break asking lots of questions about their tasks, which allowed me to listen to their talk as well as ask questions myself.

The formal meetings on the building site took place on Monday afternoons. Consequently, I attempted to be on-site on Monday mornings so I could observe how the practitioners got ready for the meetings as well as attended the formal meetings. Furthermore, I tried to be on-site on Tuesdays to observe the evaluations of the meetings. Some weeks, this was not possible due to other obligations like PhD courses, meetings, and holidays. In table 4.2, an overview of the observed formal meetings is provided.

*Table 3 Overview of observed formal meetings*

Activities	2019		2020							Total
	Nov	Dec	Jan	Feb	Mar	Jun	Jul	Aug	Sep	
Health and Safety Meetings	1	1	2	1		1	1	3	1	11
Building Site Meetings	1	1	3	2	1	1	1	3	1	14
Progress Management Meetings		1	1			1		2	1	6

Furthermore, I often followed Alex and Alex's closest colleagues on walks on-site. This way I was able to attend different meetings between actors of different characters, see table 4.3. The walks also provided the opportunity for informal talks about the actions on-site.

*Table 4 Types of observed meetings*

<b>The day-to-day meetings on-site</b>
Meetings with another contract manager
Meetings with sub-contractors
Coordination meetings with own production and sub-contractors
Halfway evaluation and lunch with tradesmen on-site
Coordination meeting of suggested change around the pergola
Coordination meeting about the sheds
Meeting with colleagues from own organisation
Photo shooting with own organisation
Health and safety walk
Site walk in connection with new site layout

#### ***4.5 Considerations regarding scientific credibility***

In this section, the credibility of the research will be addressed. At this point, it becomes important to focus on the type of case investigated in the project. Previously, it has been argued how I regard a series of events where the same type of activity is performed to form the cases of this project. It is now time to address if the cases have been constructed with due focus on reliability and validity as these two concepts are central to evaluating if scientific research is credible (Silverman, 2014). I will apply these concepts to the research. Concepts, which Flyvbjerg (2007) also considers in the argument that it is possible to generalise from case studies. I will return to this argument at the end of this section.

Reliability is a concept that deals with whether another researcher performing the same research would reach the same result, although this concept can be difficult for qualitative researchers as they often are investigating a phenomenon under influence of a context (Silverman, 2014). Consequently, qualitative research can be associated with reliability claims by providing as concrete observations as possible (Silverman, 2014). The issue of reliability is dealt with by reflexivity on behalf of the ethnographer when they present their data (Emerson et al., 2011; Hammersley & Atkinson, 2007), so I have reflected on how to present my observations while remembering Alvesson,

#### 4.0 The methodology of a practice-based ethnography

Hardy & Harley's (2017) argument that prescriptive and systemised reflectivity is not really reflexivity.

Silverman (2014) suggests the methods employed to analyse the qualitative data can provide validity to the study and continues to add that two things should be considered: 1) The use of the constant comparative method and 2) the search for deviant cases. The first technique implies that the researcher should attempt to find other cases to test a provisional hypothesis. Again, it is essential to keep the focus on what the cases are. In sections 5.1, 5.2, and 5.3, I have described how by constantly comparing data and theory, I was able to discover a series of events, which forms the cases and allowed me to investigate the practice performed in the events/cases. The constant comparative method was thus employed to find the three different series of events, which form three different cases, even if the setting remained the same. A search for deviant cases was not meaningful as a practice cannot be deviant; it would then be another practice being performed in the events. Instead, I searched for examples where the practice was challenged.

Flyvbjerg (2007) argues that five misunderstandings about case studies should be considered. These misunderstandings are based on "oversimplifications" of the case studies (ibid., p. 66). I will address the simplifications regarding issues of generalisation: Flyvbjerg (2007) stresses that context-dependent knowledge is as valuable as context-independent knowledge. In this study, the project as context is the motivation for the study, and so context-dependent knowledge is actively sought after. Furthermore, Flyvbjerg (2007, p. 77) finds that "*one can often generalize on the basis of a single case[...] But formal generalization is overvalued as a source of scientific development, whereas the "power of the good example" [original author uses quotation marks] is underestimated.* Furthermore, Flyvbjerg (ibid.) continues to argue for the careful selection of cases, so it becomes possible to generalise. I will argue for the selection or rather how I discovered the pattern, which links the events, and turned them into the cases in the next chapter. This selection method should have eliminated any preconceived notions on my behalf. Preconceived notions are an important issue

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to address as case studies are often misunderstood as being used by researchers to confirm preconceived notions (Flyvbjerg, 2007).

## 5.0 Outline of the three papers

The scientific outcome of the project has been disseminated in three articles, which will be presented in this chapter. In hindsight, it is now clear how each article provides a piece to the semiotic understanding of practices, so I will attempt to connect the pieces here before I present the articles. I have already introduced the idea of a semiotic approach to practices, which may enable the practitioners to become able to identify and consider the potential impact of practice on the project.

The first article was developed as I was having difficulties understanding the actions that I observed as an ethnographer. As such, this article was the first step towards the semiotic approach, as it addresses the question of the performance of actions. The actions can be considered as signs (semiotics), which is needed to be able to identify the practice.

The second article provided another piece to the puzzle, as it was during the development of the article, it became clear how actions can produce and reproduce powerful informal mechanisms. Furthermore, it became clear that the relationship between informal and formal mechanisms can be challenging for project management.

The third and final article provided further insights into the connection between actions, practice, and existing challenges within the project. As a result, the idea of being able to identify the signs of a practice producing and reproducing established informal and formal mechanisms was developed further. The signs should prompt the practitioners to perform reflection-on-action, reflection-in-action, and reflection-of-action, so they become able to understand the potential impact of their and other practitioners' actions.

In the final chapter of this thesis, I will summarise the idea of a semiotic approach to practices within a project.

## **5.1 Action as being performed for an audience**

This paper entitled “*The researcher as audience and storyteller: challenges and opportunities of impression management in ethnographic studies*” was submitted to Construction Management and Economics on 20 December 2020 and accepted for publication on 31 March 2021. Find the accepted paper here: <https://doi-org.zorac.aub.aau.dk/10.1080/01446193.2021.1913286>

*The accepted manuscript is made available for the assessment committee in agreement with Taylor and Francis Group*

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### ***Abstract***

The use of ethnographic methods in construction management research is increasing as a means of revealing local and often unspoken ways of knowing and achieving new insights into the enduring challenges of the industry. Impression management activities, however, challenge the ethnographic researcher. Impression management happens when observees act in a different way than they would routinely, due to the presence of an audience. In the paper, we draw on data collected as a part of a wider ethnographic study to illustrate how the relationship between observer and observees can be understood through the lens of impression management. In particular, we show how the researcher assumes a dual role as both an audience and a storyteller in ethnographic studies. The researcher can thus be seen as an audience for the observees in their attempts to present themselves as agreeable and perform accordingly in front of the researcher as well as each other. This happens in part, as the observees attribute the researcher the role as storyteller, knowing that accounts of their practice and performance may be communicated to the research community and the industry in

## 5.0 Outline of the three papers

general. While impression management complicates the relationship between the observees and the observer, and can be seen as a potential source of bias, we also suggest that it presents an opportunity for increased empirical robustness of ethnographic findings if acknowledged

### *Background for the paper*

The initial idea for this paper came as I was experiencing trouble with my role as an ethnographer, which prompted me to reflect: how could I avoid influencing the observed action, how should I manage myself? It is a familiar issue within ethnography. However, this problem alerted me to the fact that it was not only me, who was careful of managing my impression; the practitioners that I observed were also performing.

A meeting on one of the first days of my time on-site prompted me to pay further attention to the relationship between my presence and the practitioner's behaviour. One of my former students happened to be the sub-contractor of the contractor that I observed. I observed the two of them during a meeting, so we were only three people in the room. The former student seemed overeager to demonstrate a transference from a student to a practitioner. The former student showed this by being extremely attentive to perform in a certain manner, so much so that Alex commented on this saying (this remark is also used in the article):

*“You don't have to sit so upright, just because Anne is here; you are not at an exam”.*

My first reaction was annoyance: Could the former student not see that I really did not want to attract attention to myself? Furthermore, I became worried that the observed contract manager might begin to think I wanted to evaluate him like a teacher evaluates a student during an exam. Also, why was the observed contract manager so keen to draw attention to the issue that it was me who caused the apparent change in behaviour in my previous student? Did Alex not want me to think that all of Alex's

sub-contractors were sitting upright in the presence of Alex? Was my presence causing the practices to be over-performed? To be performed in an overly correct manner? Or just the way, the practitioners thought looked most professional? Could an ethnographer cause practice to shift?

My supervisors and I decided to work further with some of these questions which resulted in this article.

### *Development of the paper and my role*

An earlier version of this article was presented at the online ARCOM (Association of Researchers in Construction Management) Conference 2020. The conference article received one of two “The Chair’s Award for the Best Paper Presentation”, and we were asked to further develop the article into a journal article for “Construction Management and Economics”. The data used in the article was collected by me during the ethnographic study on the building site. In the development of both the conference paper and the journal article, I wrote full drafts. These drafts were used for extensive discussions between me and my co-authors. The co-authors also provided written feedback on the manuscripts. In the final versions, Stefan re-wrote some paragraphs as well as changed the sequence of paragraphs to ensure a logical flow of the presented argument. Meanwhile, Kjeld continued to ask questions about specific paragraphs prompting the issues to be presented much clearer. Although I was formally the contact person to the editor, Stefan was kind enough to help me with feedback on both the cover letter and the responses to reviewers. In the review process, we all discussed the reviewers’ suggestions.

### *Data processing and analysis*

The overall approach to data in this thesis is inspired by Hammersley and Atkinson’s (2007) advice that data is material to think with. It means that it is important to move between data and ideas. It became clear that the performance could be explained by



## 5.0 Outline of the three papers

Goffman's (1990) ideas of impression management. Goffman (1990) argues that a person always will manage his impression in accordance with the audience to his/her behaviour. We selected events from the data, where the practitioners performed impression management. These events are the case for this article. We were then able to discuss the concepts of teams, stages, and audiences in our meetings. Goffman (1990) suggests that all individuals are members of a team; in some circumstances, this may be a one-man team. Stages can be frontstage or backstage and refer to whether the audience can be considered as the performers' team, or the audience should be considered as part of another team (ibid.). Through multiple discussions, we addressed the different stages, teams, and audiences which were impacting the observed events until I was ready to write the draft for the article.

### *Results*

The contribution of this paper is that we showed how practitioners perform impression management activities. It is impossible to evaluate the degree to which impression management performance is taking place. However, the researcher can pay attention to teams, stages, and audiences, which can add robustness to the data. The researcher can use these concepts to begin their reflection on their data while remembering Alvesson's et al. (2017) warning against prescriptive and systemised reflectivity as this is not really reflexivity.

Furthermore, we demonstrated how the double social life of methods applies to ethnographic studies on the building site. Law (2010, p. 1) argues that "*methods are social because they are shaped by the social world in which they are located, and they are also social because they in turn help to shape that social world.*" A finding, which answers the initial questions that gave rise to this article.

Another important take-away from this study is how practitioners always perform impression management for their anticipated audience whether it is a researcher or another practitioner. The audience can be present in the room, or it can be an anticipated audience as is the case when the researcher's findings later are communicated to the research community as well as the industry. The practitioners

will perform as expected by their organisation; they change from Mr. or Mrs. to Organisation X (Moeran, 2006). So, it explains how the practitioners seek to adjust their performance in accordance with their team, which is their organisation rather than the project.

*Results for the semiotic approach to practices in projects*

At the end of this project, I see how this article provided the first piece to the idea of a semiotic approach to practices in projects. Signs of impression management activities like “sitting up straight” are then signs of impression-management-as-practice. “Sitting up straight” could then be added to the ethnographic toolbox, so a practitioner spotting this behaviour should address if impression-management-as-practice is being performed. This will aid practitioners to begin reflecting on who is the audience and the impact of their actions. I will return to the idea of the ethnographic toolkit in section 6.3.

***5.2 The understanding of how actions produce powerful informal mechanisms***

This manuscript entitled “*Helping as practice – An ethnographic study on reciprocity and the intricate relationship between formal and informal mechanisms within a project*” was submitted to International Journal of Project Management on 16 June 2022. The manuscript has been accepted for publication under the condition of a major review.

The ‘Accepted Manuscript’ has been made available for the assessment committee in agreement with Sabine Till c/c International Journal of Project Management per mail of 22<sup>nd</sup> of September 2022.

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*Abstract of the submitted manuscript*

## 5.0 Outline of the three papers

It has long been acknowledged in project management research that both formal and informal mechanisms influence project performance and processes. Extant research has however treated such mechanisms as substantive in nature and contributed with knowledge on how they should function or evolve during the lifespan of a project. Recent practice-theoretical studies have challenged these understandings by focusing on how mechanisms are continually produced and reproduced in practice. This ‘project-as-practice’ approach is important as it allow us to probe reasons behind what project practitioners do, which may help us to understand projects better. Drawing on an ethnographic study, we contribute to this research by examining how project practitioners, when engaged in a practice we identify as ‘helping’, produce an informal mechanism that establishes a reciprocal relationship between practitioners based on their role performances as respectively giver and receiver of help. These role performances differ from role performances required by formal mechanisms with important implications for the project manager. In conclusion, it is argued that a focus on the relationship between formal and informal mechanisms, combined with an understanding of their transient nature contributes to a more comprehensive understanding of the intricacies of management in interorganizational projects.

### *Background for the paper*

The work on this paper began when the data collection was still on-going. The lacking definition of collaboration made it difficult to understand the data, as I did not have any concepts, which I felt could explain the data. Hammersley & Atkinson (2007) suggest the use of a grounded theoretical approach to data in these situations, so I attended a workshop on the topic in connection with ARCOM2020. It prompted further interest in the topic, and I attended a PhD course “The Process of Theorizing and Theory Building in Management Research”, which involves an element of

grounded theory. I then felt that this approach could help me understand the data and I began the process of analysing the data based on the principles of grounded theory.

#### *Development of the paper and my role*

The development of the paper was an iterative process between data analysis, writing, and discussions. I wrote drafts for discussion, which Stefan and I discussed. My role in this paper was thus to collect the data and the data analysis. During the analysis stage, I talked frequently with Stefan as I was attempting to understand the data. I wrote full drafts for several introductions, where Stefan acted as a Devil's Advocate until the framing of the article became clear as part of the iterative writing/discussion development of the article. In the final version, Stefan wrote several paragraphs as well as assisted in logically organising the paper. I was responsible for communication with the editor.

#### *Data processing and analysis*

The data for this article was analysed using an inductive approach inspired by Glaser's (1978) classical grounded theory. Researchers using grounded theory as the approach to their data should not base their initial decisions on a preconceived theoretical framework. Glaser (1998) stresses that actors will continually attempt to solve their main concern, which will cause a pattern of behaviour to emerge. The grounded theory approach aims to find this pattern of behaviour. By using pre-defined theoretical codes (they belong to different theoretical families), it becomes possible to find this pattern of behaviour (Glaser, 1978, Glaser, 2001, Holton & Walsh, 2017, Walsh, Holton & Mourmant, 2020). The theoretical code will conceptualise how concepts relate to each other and become part of the basis for the emergent theory (Glaser, 1978).

The coding begins by coding all incidents in the data from an early stage in the data collection stage; the incidents can be coded in gerunds to allow the researcher to keep the focus on behaviour and/or the incidents can be coded with emerging or existing concepts and each incident can be coded with more than one code (Holton & Walsh, 2017). In this case, I coded the data after I finished data collection. The data was coded

## 5.0 Outline of the three papers

in an incident-by-incident process, where the data was spilt/fractured into incidents and coded with gerunds.

During the coding process, it is essential to write down the thoughts behind the coding. This is done in memos where the thoughts that led to using the gerunds or other codes should be noted as well as any other thoughts, which occur during the process (Glaser, 1998; Holton & Walsh, 2017). Over time, categories explaining the data will emerge in the memos. Consequently, it is important to read the memos for emerging categories (Holton & Walsh, 2017). The memos are then sorted into categories, while new memos were written. This creates the need to sort the memos again while constantly checking the categories developed based on the memos to fit with the actual data. It is an iterative process going between data, incident-by-incident coding, memo-writing, and memo-sorting.

I performed these steps of the analysis until Alex's main concern became clear. It was to "get the job done without incurring unnecessary risk and responsibilities". I also noticed an element of helping in the data, a concept I knew from previous studies. Schein (2011, p. 7) defines helping as; *'the action of one person that enables another person to solve a problem, to accomplish something, or to make something easier.'* There were also elements of reciprocity in the data, which I was unable to explain at the time. I had not yet found the core category, which could explain how the practitioners (Alex) managed their main concern.

In the search for this core category, the researcher should use theoretical families (Glaser, 1978). The theoretical families are used as a prompt to search for the theoretical codes (which provide a code/model for the main concern) in the data. The theoretical codes will highlight the relationship between concepts (Holton & Walsh, 2017). At this point, I had the concept of reciprocity and the concept of helping. I knew the main concern, so I set about reading the theoretical families to find how the concepts were related to each other. Glaser (1998) suggests talking about the connections between the concepts in the data while thinking in the different models presented in the theoretical families. I have chosen to include a brief illustration of how to think of theoretical families.

A popular theoretical code can be found within the basic process family (Glaser, 2005). A process consists of minimum two stages in Glaser's (1978) definition. The process family may explain how the helping concept discovered in the data can be found in different stages, as helping can be considered in three stages: 1) the stage where the need for help is emerging, 2) the stage where helping is performed and 3) the final stage after the helping has occurred. Although the stages may be able to explain how the reciprocal element between the actors was developed, it seemed as though a full explanation of the data was not provided by thinking in a basic process, as the ideas of clearly defined stages were difficult to match with the data.

I then turned my attention to the cutting point theoretical family, which allows for understanding behaviour on either side of a cutting point (Glaser, 1978). In the present data, this type of model offers some possibilities. The act of helping provides a cutting point with a clear before and after situation.

Another theoretical code is the structural functional family, which includes the role-set way of connecting concepts (Glaser, 1978). The role-set would allow for looking into the activities associated with a role or position like a contract manager; this can be furthered into the status-set to investigate how status is achieved by a person. As such, this family can explain some of the concept of 'reciprocity', but it is difficult to relate the roles to the helping concept.

The dimension family provides a method to consider how the data can be divided into parts. It breaks the data into segments (Glaser, 1978). This code allows for discovering how the practitioners performed the same practice during incidents, which were situated within three different segments: (1) incidents related to getting the tendered contract done, (2) incidents related to extra work, and (3) incidents relating to non-contractual work. The three segments are seemingly unconnected but the concepts of helping and reciprocity occur in all three segments and so form the connection between the segments. The experience of helping and reciprocity in one segments of the practice will influence the behaviour in the other segments of the practice.

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Consequently, the theoretical family with an emergent fit to the data was the dimension family. It is used to explain how the incidents in the data can be divided into three different categories, where the concepts of helping and reciprocity are connecting them.

If the traditional approach to grounded theory is to be followed, the researchers should base their choices of where to go to collect more data on the emerging categories. The researcher will then enter and re-enter the field until a category is fully understood by comparing new data with existing data (Glaser, 1998; Holton & Walsh, 2017). This constant comparison method means that theoretical saturation can be reached (Glaser, 1998). As the choice of using classical grounded theory came late in the process in this present article, the steps of theoretical saturation, where the researcher searches for more data to understand a category, were not completed. However, sufficient data was collected to allow for full understanding without having to collect more.

I did the memo-writing and sorting by hand. However, after I had discovered the relevant categories, I used the Nvivo software to go through all incidents yet again and allocated them to the appropriate segments. This meant that I could establish that the segments covered most of the data. The software now provides an archive of the coded incidents in the data. Finally, I want to stress that the contribution developed here applies to the substantive area, where the data is collected, i.e. the project setting. No attempt has been made to develop the ideas further to a full formal theory. Walsh et al (2020) explain how it is common for grounded theorists to produce a substantive grounded theory, which is a theory that applies locally to the area being investigated. A substantive theory can later be developed into a formal grounded theory, which applies to other populations.

### *Results*

In this paper, we identify helping-as-practice. The practitioners performed helping-as-practice in three types of incidents: (1) incidents related to getting the tendered contract done, (2) incidents related to extra work, and (3) incidents relating to non-contractual work. The presence of helping-as-practice indicates that formal project

management is not sufficient to progress the project toward completion. The practitioners perform the practice even when they are not contracted to do so. Their parent organisation will not be paid for the actions, and the parent organisation may incur opportunity costs. Opportunity costs are costs incurred by the organisation when their resources are used to perform other actions than planned (Atkinson, Kaplan, Matsumura & Young, 2007). The organisation will still have to pay for the resource use even though the resource is used on actions that the organisation is not contracted to perform and so will not be paid for. Furthermore, the performance of helping-as-practice also produces a reciprocal relationship between the giver and receiver of help, as Gouldner (1960, p. 171) finds that *(1) people should help those who have helped them, and (2) people should not injure those who have helped them*". We argue that this reciprocal balance is an informal mechanism that is hidden from the project manager, although it can have an impact on the practitioners in the project. The balance creates a relationship between two practitioners and the balance creates extra roles of giver and receiver in the project. The reciprocal balance cannot be identified by the formal organisational structure, although formal project management often focusses on the transparency of roles. The reciprocal balance is an example of the importance of actions and their ability to produce and reproduce informal mechanisms. Project-as-practice research emphasises this point and can be used to supplement existing project management literature, although project-as-practice research cannot predict the future (Song et al., 2022).

### *Results for the semiotic approach to practices in projects*

In terms of the piece to the puzzle for the semiotics approach to project-as-practice research, the paper demonstrates how powerful mechanisms are produced and reproduced by practices. A way to converse with this mechanism is to interact with helping-as-practice when this practice is observed. This means that the semiotics of the practice (giving or receiving help) can enable the practitioners to identify and interact with the practice and through the practice, they can interact with the informal mechanism. I will return to the matter of the ethnographic toolkit in chapter 6 of this thesis.



### ***5.3 The understanding of how actions reproduce formal project management***

This manuscript is yet to be submitted. It is entitled: “On project management – understanding of dynamic social relationships in a project-as-practice perspective”

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#### ***Abstract***

Project management literature contains different assumptions about the relationship between the practitioners’ actions and the setting in which the actions are performed. Some project management literature set out to become able to predict practitioners’ actions, while the project-as-practice approach provides knowledge about actions performed under influence of social phenomena in a setting as well as how these actions produce and reproduce the social phenomena. We report from an ethnographic study, where the data was collected in an interorganizational project in the implementation phase, namely a construction site. We focus on activities, where the practitioners are met with a request for change. Our observations present us with conflicting actions. The practitioners are observed to be able to detach themselves from the project’s setting while also reproducing the setting through their actions. We can argue, how project-as-practice research provides insights into dynamic social phenomena like the one between action and setting. The insights can potentially enable the practitioners to understand the impact of their and others’ actions. We suggest that by supplying the practitioners with semiotics of practice, they become able to identify practice, which may enable them to interact with the practice.

#### ***Background for the paper***

This paper is developed as part of my external stay at the department of Architecture and Civil Engineering at Chalmers university of Technology, Gothenburg, Sweden. My contact person was Associate Professor Martine Buser, who is also a co-author of this paper. Stefan is also co-authoring.

The initial idea for the paper is initiated by curiosity over the approach to requests for change, which I observed during my ethnographic stay at the building site. At the point, where work on the manuscript began, I was at a stage in my research, where I had written down my observations and read and re-read them many times, so I was very familiar with the events in the data. I had noticed, how the practitioners addressed requests for change to the established plan, while they simultaneously seemed to avoid changing the established and agreed plan. As such, I considered their actions to have conflicting meanings, and I wanted to explore this further.

#### *Development of the paper and my role*

I had already finished the data collection when we began writing this article. I proceeded to find the illustrations in the data which could form the case for the article and so was responsible for the selection of empirical illustrations. During our discussions, we determined the theoretical framework. We addressed the analysis jointly, and I wrote drafts for discussion, which we discussed together. Furthermore, Stefan and Martine contributed with suggestions on how to secure a logical structure in the paper.

#### *Data processing and analysis*

In the data, I selected observations of activities, where the practitioners were introduced to proposed changes to the project. I presented them to my co-authors. Through multiple discussions, we addressed, how we could understand the actions in the data. The inductive nature of the analysis prompted us to ask questions repeatedly to determine whether to focus on the project setting, the temporality of the project, or the practitioners' practice. In the end, we agreed that the interorganisational project provided the context, while actions were the studied phenomenon. To understand the

## 5.0 Outline of the three papers

actions, we applied Lundin and Söderholm's (1995) theory of temporary organisation and practice theory.

Consequently, the manuscript considers how the practitioners' actions perform their actions in an interorganisational project setting. The focus is on the connection between actions and setting in activities where a request for change was raised. This is done by using Lundin & Söderholm's (1995) theory for the temporary organisation (see also section 2.3 in this thesis). Lundin and Söderholm (1995) argue how time is used in a linear manner by practitioners in a temporary organisation due to the presence of the upcoming termination date for the organisation, which also can prompt the temporary organisation to isolate itself from its' parent organisation. Furthermore, we used practice theory to provide insights into how actions can produce and reproduce social phenomena.

### *Results*

The contribution of this paper is to show the connection between the practitioners' actions and the setting. We show how the practitioners during activities, where a request for change is raised, perform actions, which shows they can anticipate other futures than the one predicted in the time schedule. As such, the practitioners are able to detach themselves from the project setting. Furthermore, we show how the practitioners demonstrate a linear perception of time. We can then argue how the upcoming termination date is influencing the practitioners' actions. The upcoming termination date prompts the practitioners to isolate their segment of the project from the rest of the project. They do so by reproducing the established plan even during activities where a request for change is being made. We find that the practitioners' actions are influenced by the project setting due to the upcoming termination date as well as their actions are influencing the setting by reproducing the established plan. We suggest that project management research should focus on actions and the dynamic social relationship which is produced and reproduced by practice. Furthermore, we argue how project-as-practice research should supply practitioners with the semiotics of different practices together with knowledge of which part of the social reality the practices can produce and reproduce. In this manner, the practitioners

may become able to identify the practice in their workday and so consider the potential impact of their and others' actions.

*Results for the semiotic approach to practices in projects*

In terms of the piece of the puzzle for the semiotics approach to project-as-practice, the paper demonstrates how practice is able to produce and reproduce formal mechanisms, as the practitioners reproduced the established time schedule and division of roles, tasks, and responsibilities in their actions, which has been introduced to the project setting by the project management. Furthermore, the manuscript highlights the importance of understanding how practice can be recognised by semiotics. As such, the use of linear time may a sign of a practice that is reproducing the formal mechanisms.

## 6.0 Conclusion, contributions, and implications

In this final chapter, I will present the conclusions of the thesis, before I present the empirical, methodological, and theoretical contributions of the research and move onto the implications. In the implications section, the practical implication of the semiotic approach to project-as-practice is described.

### 6.1 Conclusion

The guiding research question of this research was:

*How can practitioners be enabled to reflect on the impact of their and other practitioners' actions as these actions can produce and reproduce formal and informal mechanisms?*

The understanding of mechanisms within this thesis is that formal mechanisms are introduced to the project setting by the project manager, while informal mechanisms are not intentionally added to the project by the project management or the legislative framework. The research question focuses on the impact of actions as they can produce and re-produce formal and informal mechanisms. The theoretical argument for this can be found in chapter 3, while section 5.2 and 5.3 describe empirical research carried out in connection with this project about actions and mechanisms. I will return further to these contributions later in this chapter.

Furthermore, in chapter 2, I described how the view of mechanisms is different within project management. I have coupled three constructed contexts to an understanding of project management theory as being used to

1. predict, how mechanisms should *be*,
2. to understand, how mechanisms might *evolve* under influence of an evolving context,

3. or to understand, how mechanisms *become* due to the practices of the practitioners.

The view of theory and mechanisms presented in this thesis fits within the third category. This view differs significantly from the view presented in the other two segments. In the first segment of project management literature, the contributions often enable the practitioners with tangible tools and models, which can be used to manage the project's progression. These tools and models can provide the project manager with mechanisms to be deployed in the project setting from the beginning of the project (Pollack 2007). The view in the second category assumes that the mechanisms will not remain stable throughout the projects' lifespan, although the approach to mechanisms is still somewhat substantive as they are considered to maintain an essence within them throughout the lifespan of the project. In the third view, the mechanisms are continuously thought to be produced and re-reproduced by the practitioners' actions. Consequently, within this view on mechanisms, attention to actions is important as actions has an impact on informal and formal mechanisms in the project, although the actions are performed under impact from the same mechanisms.

I will in section, 6.2 discuss, how the contribution of this research confirms the importance of actions as well as the connection between actions and mechanisms. The contributions enable me to suggest that the objectives of this project can be met, as the objectives were to enable the practitioners by providing:

1. insights into how practices produce and reproduce formal and informal mechanisms in the project,
2. semiotics of practices so practitioners can identify practices, and
3. insights about how a semiotic approach to practices will allow practitioners to become able to identify and consider the potential impact of practice on the project

In section 6.3, I will address the practical implications of this research as I explain how an ethnographic toolkit will provide the practitioners with the semiotics of

## 6.0 Conclusion, contributions, and implications

practices (objective 2) so they can observe, which practice is reproducing, which part of the social reality (objective 1) and so reflect on their and others' actions (objective 3). In section 6.4, I will end the thesis with a few concluding remarks.

### **6.2 Research contributions**

I have chosen to divide the contributions into three segments; empirical contributions, which is the study's contribution to the phenomenon of practices in a project setting, methodological contributions, which is the study's contribution to studies of practices, and theoretical contributions which is the study's contribution to the literature on project-as-practice and project management.

#### *6.2.1 Empirical contribution*

The study contributes to the phenomena practices and mechanisms in project management. Practice has first been researched as a phenomenon, so the focus has been on what the practitioners do when they perform their practice. The empirical data has thus been used to identify specific practices. The practices have been identified through the semiotics of the practice. The semiotics have been discovered through an iterative process of going between data and theory, rather than through a predefined set of semiotics. Secondly, practice was considered as a philosophy, so it becomes possible to suggest how the identified practice will produce and reproduce the organisational reality.

During the work with article two, the connection between helping-as-practice and a reciprocal balance was discovered. Helping-as-practice was found to be able to produce and reproduce an informal mechanism in form of a reciprocal balance, which can impact on the actions in the project. Practitioners observing helping-as-practice being performed should consider whether a reciprocal is being produced and reproduced. Helping-as-practice can be identified if the practitioners are performing the actions of helping-as-practice. These actions can be considered semiotics of helping-as-practice. The semiotics of helping-as-practice is 'giving' and 'receiving' help. Furthermore, during the work with article three it became clear how practice also produce and reproduce formal mechanisms like the established plan.

Consequently, the contributions provide insights into the connection between actions and mechanisms. This research does not predict what the practitioners do next. Indeed, Song, Song, Liu, Feng & Muller (2022) emphasise that project-as-practice cannot predict the practitioners' actions nor provide clear solutions to problems. However, the rationale of project-as-practice research should not be to provide firm recommendations, rather it should be to provide knowledge about the connection between certain actions, practices, and the project's informal and formal mechanisms. I will return to the practical implications of this in section 6.3.

### *6.2.2 Methodological contribution*

The methodological contribution of this study is focused on the challenges of observing practices, namely how the performances will be influenced by impression management activities. It has been demonstrated how an awareness of stages and audiences can assist researchers, how investigate human actions. Furthermore, the research brings insights into the relationship between the researcher and the studied phenomenon through Law's (2010) idea about the double life of social methods. The argument is that the researcher's choice of method is influenced by the social world, while the social world at the same time is shaped by the researcher's methods (Law, 2010). Awareness of this methodological contribution can aid the researchers in their reflexivity and through this add robustness to studies of social phenomena.

### *6.2.3 Theoretical contribution*

This study contributes theoretically both to project-as-practice research and to the larger body of knowledge of project management research.

The research should be considered to belong to the category of project management research called project-as-practice. It has focused on the producing and reproducing ability of practices, and how this means that mechanisms are produced and reproduced during the project's lifespan. As such, the study contributes to the understanding of the hidden and becoming mechanisms. This research confirms Blomquist's et al (2010) suggestion that practice-based research is able to discover hidden mechanisms.



## 6.0 Conclusion, contributions, and implications

Furthermore, the research also addresses how practice can reproduce formal mechanisms.

The study highlights the need for practitioners to be provided by the research community with an ethnographic toolkit of the semiotics of practices, so practitioners can interact with the practices. The practitioners may not be able to recognise practices themselves, as the practices can seem too mundane for the practitioners, so they do not identify them as strategic for their work (Jarzabkowski, Kavas & Kull, 2021). This study's contribution suggests that future project-as-practice research should disseminate the semiotics of identified practices as a tool for project practitioners. The semiotics of practices can assist the practitioners to identify practice, consider produced mechanisms, and so reflect on the potential impact of own and others' actions, which may enable the practitioners to interact with practice.

### ***6.3 Practical implications of a semiotic approach to project-as-practice***

I will now return to the objectives of this research. The first objective was to supply the practitioners with insights into how practices produce and reproduce formal and informal mechanisms in the project. The research has shown how practice can produce and reproduce informal mechanisms, as the contribution of article two show how the practitioners' practice can produce and reproduce an informal mechanism in form of a reciprocal balance. Moreover, in article three the practitioners practice was shown to reproduce the established plan.

Objective number two was to provide practitioners with the semiotics of practice, so the practitioners can identify practices. The identification of the semiotics of a practice will assist practitioners to identify observed practice, so they can interact with the practice. The semiotics of practice is thus part of the ethnographic toolkit, which this research suggest is valuable for a project manager, who wants to turn their attention to, how formal and informal mechanisms in the project are produced and reproduced in the project. Semiotics has been discovered for the helping-as-practice as well as for a practice, which reproduces the established plan.

The third objective of this research is to provide practitioners with insights into how a semiotic approach to practices will allow practitioners to become able to identify and consider the potential impact of practice on the project. The focus on action and practice should thus enable the practitioners to identify and consider, how practice influences the project. The focus on actions is aided by awareness of impression management's activities, stages, and teams, as this will aid the practitioner to understand the performances or actions, they observe.

The objectives of this project can be met as the needed contributions have been achieved, although the dissemination of the knowledge to the practitioners is ongoing.

In summary, the practical implication of this research is linked to the semiotic approach to project-as-practice. The idea behind this approach is to enable the practitioners to identify and consider the potential impact of the practice on the project. I mentioned earlier (section, 3.2), how I consider that the practitioners can reflect in-action as well as on-action. By providing practitioners with the semiotics of practice as well as knowledge of how practice can produce and reproduce the social reality, the practitioners are provided with a starting point for reflection-in-action and reflection-on-action on the potential impact of their and others' actions.

## ***6.4 Concluding remarks***

It seems timely to return to the starting point of this study, which was to investigate collaboration practice with the hope of being able to make suggestions on how to improve collaboration in the industry. I have already explained how difficult it was to determine, which actions were part of a collaboration practice as well as the dangers of reification by defining a collaboration practice. Instead, the approach of this study became to study actions in the project context. The focus remained on the practitioners' actions, rather than the project managers' actions, and the contribution is hopefully of relevance for all practitioners in the industry. The chosen approach emphasises the importance of actions, practice, and the context in which they are performed as well as emphasises the interconnectedness of actions, practice, and context. The research question was:

## 6.0 Conclusion, contributions, and implications

*How can practitioners be enabled to reflect on the impact of their and other practitioners' actions as these actions can produce and reproduce formal and informal mechanisms?*

In response to the research question, the investigation has been performed with an understanding of the project-as-practice, where practice is considered to be able to produce and reproduce informal and formal mechanisms. Mechanisms, which can impact actions within the project. It has been demonstrated how the practitioners' actions impact the project's mechanisms.

As such, the present research focuses attention on the importance of practice. The identification of a practice and its associated mechanism in a project cannot be used to predict, what will happen next, nor to understand the motives for practitioners' actions. However, familiarity with certain practices will allow practitioners to identify what is happening right now and reflect on the possible impact of their as well as other practitioners' actions.

Project-as-practice is an approach to the social reality in the project, which demands that the practitioners understand the context as in a state of becoming. I recognise that the luxury of limiting the view of mechanisms to have either a *being*, *evolving*, or *becoming* nature is entirely the research community's. Practitioners are faced with a complex context so they will need to employ research from all three views when they are performing their work. Consequently, the semiotic approach to practice in a project cannot stand alone as the only approach to project management. As I mentioned in section 2.5, this approach should be considered a supplement to existing project management methods and tools from both the *being* as well as the *evolving* approach to mechanisms and context.



## 7.0 References

- Alvesson, M., Hardy, C., & Harley, B. (2008). Reflecting on Reflexivity: Reflexive Textual Practices in Organization and Management Theory. *Journal of Management Studies*, 45(3), 480–501. <https://doi.org/10.1111/j.1467-6486.2007.00765.x>
- Atkinson, A. A., Kaplan, R. S., Matsumura, E. M. & Young, S. M., (2007). *Management Accounting*. (5th ed). Pearson Education International.
- Bacchi, C. & Goodwin, S. (2016). *Poststructural Policy Analyses - guide to praktice*. Palgrave Macmillan.
- Barbosa, F., Woetzel, J. & Mischke, J. (2017). *Reinventing construction: A route of higher productivity*. McKinsey Global Institute.
- Blomquist, T., Hällgren, M., Nilsson, A., & Söderholm, A. (2010). Project-as-practice: In search of project management research that matters. *Project Management Journal*, 41(1), 5–16. <https://doi.org/10.1002/pmj.20141>
- Boyd, D. (2013). Using events to connect thinking and doing in knowledge management. *Construction Management and Economics*, 31(11), 1144 -1159. <https://doi.org/10.1080/01446193.2013.866260>
- Buchan, L., & Simpson, B. (2020). Projects-as-Practice: A Deweyan Perspective. *Project Management Journal*, 51(1), 38-48. [https://doi.org/10.1177\\_8756972819891277](https://doi.org/10.1177_8756972819891277)
- Brunet, M., Fachin, F., & Langley, A. (2021). Studying Projects Processually. *International Journal of Project Management*, 39(8), 834-848. <https://doi.org/10.1016/j.ijproman.2021.10.006>
- Chambers, D. A. (2019). Context of health Policies and the Impact on Implementation of Health Care and Health Intervention. In Meier, N. & Dopson, S. (eds.): *Context in Action and How to Study It*. Oxford University Press. 86-104. <https://doi.org/10.1093/oso/9780198805304.003.0005>

Cicmil, S., Williams, T., Thomas, J., & Hodgson, D. (2006). Rethinking Project Management: Researching the actuality of projects. *International Journal of Project Management*, 24(8), 675–686. <https://doi.org/10.1016/j.ijproman.2006.08.006>

Çıdık, M. S. & Boyd, D. (2020). “Shared sense of purposefulness”: a new concept to understand the practice of coordinating design in construction. *Construction Management and Economics*, 38(1), 18–31. <https://doi.org/10.1080/01446193.2019.1593471>

Czarniawska, B. (2013) *Shadowing - and other techniques for doing fieldwork in modern societies*. Copenhagen Business School Press, Universitetsforlaget.

Dewey, J. (2011). *How we think*. Online: The Project Gutenberg Ebook, <https://www.gutenberg.org/files/37423/37423-h/37423-h.htm>

DETR (1998) *Rethinking Construction*. Department of the Environment, Transport and the Regions, London.

Engwall, M. (2003). No project is an island: linking projects to history and context. *Research Policy*, 32(5), 789–808. [https://doi.org/10.1016/S0048-7333\(02\)00088-4](https://doi.org/10.1016/S0048-7333(02)00088-4)

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic notes*. (2<sup>nd</sup> ed.). The University of Chicago Press.

Fitzgerald, L. (2019) ‘Enacted Context’, In Meier, N & Dopson, S (eds.): *Context in Action and How to Study It*. Oxford University Press.71-85. <https://doi.org/10.1093/oso/9780198805304.003.0004>

Flyvbjerg, B. (2007). *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge University Press.

GC92, The Danish Ministry of Housing (1992). General Conditions for the provision of works and supplies within the building and engineering.

Geertz, C. (2017), *The Interpretation of Cultures*. Basic Books.

## 6.0 Conclusion, contributions, and implications

Gherardi, S. (2012). *How to conduct a practice-based study - problems and methods*. Edward Elgar.

Glaser, B. G. (1978). *Theoretical Sensitivity: Advances in the methodology of Grounded Theory*. Sociology Press.

Glaser, B. G. (1998.) *Doing grounded Theory: Issues and Discussions*. Sociology Press.

Glaser, B. G., (2005). *The Grounded Theory Perspective III: Theoretical Coding*. Sociology Press.

Goffman, E., (1990). *The presentation of self in everyday life*. Penguin Books. London.

Gottlieb, S. C., Frederiksen, N., Koch, C., & Thuesen, C. (2020). Hybrid organisations as trading zones: responses to institutional complexity in the shaping of strategic partnerships. *Construction Management and Economics*, 38(7), 603–622. <https://doi.org/10.1080/01446193.2020.1738514>

Gouldner, A. W. 1960. The Norm of Reciprocity: A preliminary Statement. *American Sociological Review*. 25 (2), pp. 161-176. <https://doi.org/10.2307/2092623>

Grosse, H. (2019). An insider's point of view: autoethnography in the construction industry. *Construction Management and Economics*, 37(9), 481–498. <https://doi.org/10.1080/01446193.2018.1501156>

Grove, E. (2019). *Becoming collaborative : enhancing the understanding of intra-organisational relational dynamics*. Loughborough University. <https://doi.org/10.26174/thesis.lboro.8343467.v1>.

Gustavsson, T. K. & Gohary, H., (2012). Boundary action in construction projects: new collaborative project practices. *International Journal of Managing Projects in Business*, 5(3), 364–376. <https://doi.org/10.1108/17538371211235272>

- Hällström, A., Bosch-Sijtsema, P., Poblete, L., Rempling, R., & Karlsson, M. (2021). The role of social ties in collaborative project networks: A tale of two construction cases. *Construction Management and Economics*, 39(9), 723–738. <https://doi.org/10.1080/01446193.2021.1949740>
- Hammersley, M. & Atkinson, P., 2019. *Ethnography: Principles in Practice*. (4<sup>th</sup> ed.). Routledge.
- Herzberg, F. (1987). One more time - how do you motivate employees? *Harvard Business Review*, 65(5), 109–120.
- Holton, J. A. & Walsh, I. (2017) *Classic grounded theory: applications with qualitative and quantitative data*. SAGE Publications (online).
- Hoorn van der, B., & Whitty, S. J. (2017). The praxis of ‘alignment seeking’ in project work. *International Journal of Project Management*, 35(6), 978-993. <https://doi.org/10.1016/j.ijproman.2017.04.011>
- Hui, A., Schatzki, T. & Shove, E. (2017). Introduction. In Hui, A., Schatzki, T. & Shove, E. (eds.): *The Nexus of Practices Connections, constellations, practitioners*, Abington: Routledge.
- Jarzabkowski, P, Kavas, M & Kull, E. (2021). It’s Practice. But is it Strategy? Reinvigorating strategy-as-practice by rethinking consequentiality. *Organization Theory*, 2 (3), 1-13. <https://doi.org/10.1177/26317877211029665>
- Jacobsson, M. Lundin, R. A., & Söderholm, A. (2016). Towards a multi-perspective research program on projects and temporary organizations: Analyzing the Scandinavian turn and the rethinking effort. *International Journal of Managing Projects in Business*, 9(4), 752–766. <https://doi.org/10.1108/IJMPB-10-2015-0100>
- Klitgaard, A. & Gottlieb, S. C. (2021) Fremstillingen af samarbejde i byggeriet - en problematiseringsanalyse. *UCN Perspektiv*. 9, 75-92. <https://doi.org/10.17896/UCN.perspektiv.n9.449>



## 6.0 Conclusion, contributions, and implications

Kokkonen, A. & Vaagaasar, A. L. (2018). Managing collaborative space in multi-partner projects. *Construction Management and Economics*, 36(2), 83–95. <https://doi.org/10.1080/01446193.2017.1347268>

Korica, M. & Nicolini, D. (2019) Tracing Context as Relational, Discursive Accomplishment, In Meier, N & Dopson, S (eds.): *Context in Action and How to Study It*. Oxford University Press. 123-137. <https://doi.org/10.1093/oso/9780198805304.003.0007>

Kreiner, K. (1995). In search of relevance: Project management in drifting environments. *Scandinavian Journal of Management*, 11(4), 335–346. [https://doi.org/10.1016/0956-5221\(95\)00029-U](https://doi.org/10.1016/0956-5221(95)00029-U)

Lave, J. & Wenger, E. (2012). *Situated learning: legitimate peripheral participation*. (Reprinted.). Cambridge University Press.

Law, J. (2010). The double social life of methods. In: *Sixth Annual CRESC Conference on the Social Life of Method*. Oxford: St Hugh's College, 1–10.

Locke, E. A. & Latham, G. P. (1994) Goal Setting Theory. In O'Neil, H. F., and Drillings, M. (eds) *Motivation: Theory and Research*. Online: Routledge. <https://doi.org/10.4324/9780203052686>

London, K. & Pablo, Z. (2017). An actor-network theory approach to developing an expanded conceptualization of collaboration in industrialized building housing construction. *Construction Management and Economics*, 35(8-9), 553–577. <https://doi.org/10.1080/01446193.2017.1339361>

Lund, C. (2014). Of What is This a Case?: Analytical Movements in Qualitative Social Science Research. *Human Organization*, 73(3), 224–234. <https://doi.org/10.17730/humo.73.3.e35q482014x03314>

Lundin, R. A. & Söderholm, A. (1995). A theory of the temporary organization. *Scandinavian Journal of Management*, 11(4), 437–455. [https://doi.org/10.1016/0956-5221\(95\)00036-U](https://doi.org/10.1016/0956-5221(95)00036-U)

March, J. G. (1991). How Decisions Happen in Organizations, *Human-computer interaction*, 6, 95-117.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396. <https://doi.org/10.1037/h0054346>

Marshall, N. (2014). Thinking, saying and doing in collaborative projects: What can we learn from theories of practice? *Engineering Project Organization Journal*, 4(2-3), 107–122. <https://doi.org/10.1080/21573727.2014.916689>

Meier, N. & Dopson, S. (2019) Foregrounding Context in Action. In: Meier, N & Dopson, S. *Context in Action and How to Study It - Illustrations from Healthcare*. Oxford University Press. <https://doi.org/10.1093/oso/9780198805304.003.0001>

Mintzberg, H. (2017). Developing theory about the development of theory. In *Handbook of Middle Management Strategy Process Research*. 177–196. Elgaronline. <https://doi.org/10.4337/9781783473250.00017>

Moeran, B., (2006). *Ethnography at work*. (Online) Routledge, Taylor and Francis Group. <https://doi.org/10.4324/9781003085324>

Morgan, G. (2006). *Images of Organization*. Sage Publications.

Morris, P. W. G. (2002). Science, objective knowledge, and the theory of project management, *ICE James Forrest Lecture*.

Murray, E. (2019). How researchers Understand, Construct, and Bound Context: Liminality and Integration Space, In: Meier, N & Dopson, S. *Context in Action and How to Study It - Illustrations from Healthcare*. Oxford University Press. <https://doi.org/10.1093/oso/9780198805304.003.0011>

Nicolini, D. (2013) *Practice Theory, Work, & Organization*. Oxford University Press.

Orbesen, J., Koch, C. and Schwartz, M. (2020) *Sammen om fremtidens byggeri*. DI Byg

## 6.0 Conclusion, contributions, and implications

Orlikowski, W. J. (2010). Practice in research: phenomenon, perspective and philosophy. In *Cambridge Handbook of Strategy as Practice*, 23–33. Cambridge University Press. <https://doi.org/10.1017/CBO9780511777882.002>

Oswald, D. & Dainty, A., 2020. Ethnographic research in the construction industry: a critical review. *Journal of construction engineering and management*, 146(10). [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001917](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001917)

Packendorff, J. (1995). Inquiring into the temporary organization: New directions for project management research. *Scandinavian Journal of Management*, 11(4), 319–333. [https://doi.org/10.1016/0956-5221\(95\)00018-Q](https://doi.org/10.1016/0956-5221(95)00018-Q)

Packendorff, J., Crevani, L. & Lindgren, M. (2014). Project Leadership in Becoming: A Process Study of an Organizational Change Project. *Project Management Journal*, 45(3), 5–20. <https://doi.org/10.1002/pmj.21418>

Padalkar, M. & Gopinath, S. (2016). Six decades of project management research: Thematic trends and future opportunities. *International Journal of Project Management*, 34(7), 1305–1321. <https://doi.org/10.1016/j.ijproman.2016.06.006>

Pollack, J. (2007). The changing paradigms of project management. *International Journal of Project Management*, 25(3), 266–274. <https://doi.org/10.1016/j.ijproman.2006.08.002>

Salovaara, P., Savolainen, J., & Ropo, A. (2020). Project Is as Project Does: Emerging Microactivities and Play Ontology. *Project Management Journal*, 51(1), 49–61. <https://doi.org/10.1177/8756972819894101>

Schatzki, T. (2016). Practice theory as flat ontology, in: Spaargaren, G, Weenink, D & Lamers, M (Eds.) *Practice Theory and Research*. (Online) Routledge, 28-42.

Schein, E. H. (2011). *Helping: How to offer, give and receive help*. Berrett-Koehler Publishers.

Schmidt, R. (2017). Reflexive knowledge in practices. In Hui, A., Schatzki, T. & Shove, E. (eds.): *The Nexus of Practices Connections, constellations, practitioners*, Routledge.

Schön, D. A. (2016). *The Reflective Practitioner: How professionals think in action*. Routledge. <https://doi.org/10.4324/9781315237473>

Sergi, V., Crevani, L. & Aubry, M. (2020). Process Studies of Project Organizing. *Project Management Journal*, 51(1), 3-10. <https://doi.org/10.1177/8756972819896482>

Sergi, V. (2012). Bounded becoming: insights from understanding projects in situation. *International Journal of Managing Projects in Business*, 5(3), 345–363. <https://doi.org/10.1108/17538371211235263>

Silverman, D. (2014). *Interpreting Qualitative data*. (5<sup>th</sup> ed.). Sage Publication.

Suchman, L. A.. (1990). *Plans and situated actions: the problem of human-machine communication*. Cambridge University Press.

Song, J. Song, L, Liu, H, Feng, Z & Müller, R. (2022) Rethinking project governance: Incorporating contextual and practice-based views. *International Journal of Project Management*. 40(4), 332-346. <https://doi.org/10.1016/j.ijproman.2022.04.004>

Swärd, A. (2016). Trust, Reciprocity, and Actions: The Development of Trust in Temporary Inter-organizational Relations. *Organization Studies*, 37(12), 1841–1860. <https://doi.org/10.1177/0170840616655488>

Sydow, J. & Braun, T. (2018). Projects as temporary organizations: An agenda for further theorizing the interorganizational dimension. *International Journal of Project Management*, 36(1), 4–11. <https://doi.org/10.1016/j.ijproman.2017.04.012>

Turcan, R. (2017). Becoming Context-free: Towards a Research Programme in Sociology of Knowledge, Inaugural lecture, Aalborg, 20 September

## 6.0 Conclusion, contributions, and implications

Turner, J. R. & Müller, R. (2003). On the nature of the project as a temporary organization. *International Journal of Project Management*, **21**(1), 1–8. [https://doi.org/10.1016/S0263-7863\(02\)00020-0](https://doi.org/10.1016/S0263-7863(02)00020-0)

Walsh, I., Holton, J. A. & Mourmant, G. (2020). *Conducting Classic Grounded Theory for business and management students*. Sage

Walker, D. & Lloyd-Walker, B. (2016). Rethinking project management: Its influence on papers published in the international journal of managing projects in business. *International Journal of Managing Projects in Business*, **9**(4), 716–743. <https://doi.org/10.1108/IJMPB-12-2015-0121>

Weick, K. E. (1989). Theory Construction as Disciplined Imagination. *The Academy of Management Review*, **14**(4), 516–531. <https://doi.org/10.2307/258556>

Weick, K. E., Sutcliffe, K. M. and Obstfeld, D. (2005). Organizing and the Process of Sensemaking. *Organization Science* (Providence, R.I.), **16**(4), 409–421. <https://doi.org/10.1287/orsc.1050.0133>

Welch, D. (2020). Consumption and teleoaffective formations: Consumer culture and commercial communications. *Journal of Consumer Culture*, **20**(1), 61–82. <https://doi.org/10.1177/1469540517729008>

Wenger, E. (2003). *Communities of Practice – Learning, Meaning and Identity*, Cambridge University Press

Winter, M. Smith, C., Morris, P. & Cicmil, S. (2006). Directions for future research in project management: The main findings of a UK government-funded research network. *International Journal of Project Management*, **24**(8), 638–649. <https://doi.org/10.1016/j.ijproman.2006.08.009>

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