DOCTORAL THESIS

Continuous change through professionalization

Fragmentation, Digitalization and Sustainabilization in Construction from the Perspective of Swedish Architects

Mathilda Norell

CONSTRUCTION MANAGEMENT
AND BUILDING TECHNOLOGY

LULEÅ UNIVERSITY OF TECHNOLOGY

CONTINUOUS CHANGE THROUGH PROFESSIONALIZATION

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ABSTRACT

In this thesis I discuss how change in the construction sector affects and is affected by individuals' perceptions and actions. Previous research has shown that behavioral change at the individual level is needed to achieve change at the macro level. This thesis therefore highlights continuous change from a professional perspective. Specifically, it focuses on the change phenomena of fragmentation, digitalization, and sustainabilization, and is thus connected to ongoing debates in research on how to 'manage fragmentation' or 'achieve digitalization and sustainability'. Some previous studies in these areas rely on assumptions that are problematized and presented in a new light in this thesis. By focusing on professionalization, the thesis unveils the complex and reciprocal relationship between these change phenomena. Previous research has rarely analyzed fragmentation, digitalization, and sustainabilization together, especially from a professionalization perspective. The thesis therefore fills a research gap while simultaneously addressing highly relevant issues that are discussed daily at individual, organizational, and sectoral levels.

The thesis focuses particularly on the architectural profession. This is partly because increasing fragmentation has significantly altered the role of architects in construction projects, not least because they are seen as central actors in driving digitalization and sustainability efforts. However, the focus on architects is also motivated by their under-representation in existing research.

The theoretical points of departure are institutional theory (with a focus on agency) as well as sociological concepts related to professional identity and professional roles.

Methodologically, the thesis builds on interpretive qualitative studies at the individual level, where focus groups, interviews, and shadowing have

been used. In total, 41 architects participated in these studies, sharing their perceptions of themselves and their everyday practices in construction projects.

By focusing on the professionalization underpinning larger structural changes–fragmentation, digitalization, and the sustainability transition–the thesis explores new perspectives. It discusses: the nature of fragmentation (from static to dynamic); the impact of fragmentation on digital and sustainability change (from barrier to enabler); how fragmentation can be managed (from the architect's perspective); professional roles (from fixed to flexible); the profession (from uniformity to diversity); agency (from "cultural dopes" via entrepreneurs to implicit agents); professional identity (from partly unexplored to a central source of institutional change); as well as how digitalization and the sustainability transition can be understood as institutional movements.

The thesis contributes empirically to theoretical fields such as research on professions and institutional theory (especially concerning agency and institutional work). It also offers new perspectives on long-standing challenges within construction research. For example, the results show the significance of professional identity for achieving institutional change in the construction sector, as well as how professionals cope with, navigate, and adapt to continuous change–insights that are central for understanding and practically managing fragmentation.

Finally, with this thesis I hope to contribute to a renewed discussion about the development and future of the architectural profession, as well as the need to consider individual experiences to understand larger structural phenomena.

Keywords: Institutional Change, Professionals, Fragmentation, Digitalization, Sustainability, Role, Identity, Interpretation, Architect, Construction

SAMMANFATTNING

I denna avhandling berör jag hur förändring i byggsektorn både påverkar och påverkas av individers uppfattningar och handlingar. Tidigare forskning har visat att för att uppnå förändring på makronivå krävs beteendeförändringar på individnivå. Avhandlingen belyser därför kontinuerlig förändring ur ett professionsperspektiv.

De förändringsfenomen som står i fokus är fragmentering, digitalisering och hållbarhetsomställning och därmed ansluter den sig till pågående debatter i forskningen kring hur man ska *hantera fragmentering* eller *uppnå digitalisering och hållbarhe*t. Delar av den tidigare forskningen bygger på en rad antaganden som i denna avhandling problematiseras och sätts i nytt ljus. Tidigare forskning har sällan analyserat fragmentering, digitalisering och hållbarhetsomställning tillsammans och dessutom ur ett professionaliseringsperspektiv. Genom att fokusera på professionalisering visar avhandlingen på det komplexa och ömsesidiga förhållandet mellan dessa förändringar. Avhandlingen fyller därför ett forskningsgap samtidigt som den behandlar högaktuella frågor som diskuteras dagligen på individ-, organisations- och branschnivå.

Studien fokuserar särskilt på arkitektyrket. Detta dels eftersom arkitekters roll i byggprojekt förändrats kraftigt i samband med ökad fragmentering, dels eftersom de betraktas som en central aktör för att driva digitalisering och hållbarhetsarbete. Men också, för att arkitekten är en underrepresenterad aktör i den befintliga forskningen.

De teoretiska utgångspunkterna hämtas från institutionell teori (fokus på agency) samt sociologiska begrepp relaterade till professionell identitet och professionella roller.

Metodologiskt bygger avhandlingen på tolkande kvalitativa studier på individnivå, där fokusgrupper, intervjuer och skuggstudier har använts. Totalt

har 41 arkitekter deltagit och delat med sig av sin uppfattning av sig själva och deras vardagliga praktiker i byggprojekt.

Genom att fokusera på professionalisering bakom de större strukturella förändringarna – fragmentering, digitalisering och hållbarhetsomställning – utvecklar avhandlingen nya perspektiv. Den diskuterar bland annat: fragmenteringens natur (från statisk till dynamisk), fragmenteringens inverkan på digital och hållbarhetsförändring (från hinder till möjliggörare), hur fragmentering kan hanteras (utifrån arkitektens perspektiv), professionella roller (från fasta till flexibla), professionen (från uniformitet till mångfald),professionellt handlingsutrymme, agency (från "cultural dopes" via entreprenörer till implicita agenter), professionell identitet (från delvis outforskat i detta sammanhang till en central källa till institutionell förändring), samt hur digitalisering och hållbarhetsomställning kan förstås som institutionella rörelser.

Avhandlingen bidrar empiriskt till teoretiska fält såsom professionsforskning och institutionell teori (särskilt inom agency och institutional work). Den erbjuder också nya perspektiv på långvariga utmaningar inom byggforskning. Exempelvis visar resultaten betydelsen av professionell identitet för att åstadkomma institutionell förändring i byggsektorn, samt hur professionella hanterar och anpassar sig till kontinuerliga förändringar – insikter som är centrala för att förstå och praktiskt kunna hantera fragmentering.

Slutligen hoppas jag med denna avhandling att bidra till en ökad diskussion om arkitektyrkets utveckling och framtid samt behovet av att sätta sig in individuella upplevelser för att förstå större strukturella fenomen.

Nyckelord: Institutionell förändring, Professioner, Fragmentering, Digitalisering, Hållbarhet, Roll, Identitet, Tolkning, Arkitekt, Bygg

APPENDED PAPERS

Paper I **Norell, M.**, Stehn, L. (2025) Architects Coping with Continuous Fragmentation. Architectural Engineering and Design Management, 21(1), 1-16.

Mathilda Norell was the lead author who conducted the empirical material, developed the focus of the paper, the theoretical framework and analyzed the empirical material. The co-author contributed occasionally to the analysis work. Mathilda did the vast majority of the writing, while the co-author came with feedback and contributed to parts of the writing.

Paper II **Norell, M.**, Engström, S. (2025) Professionals navigating continuous movements: Interpreting architects' agency and legitimization of BIM and reuse roles. Architectural Engineering and Design Management, Published online March 2025.

Mathilda Norell was the lead author who conducted the empirical material, developed the focus of the paper and the theoretical framework. Both authors analyzed the empirical material. Mathilda did all the writing, while the co-author occasionally came with feedback.

Paper III **Norell, M.** Continuous Professional Adapting at the nexus of Fragmentation and Institutional Change: "Being an architect, it's not just a job, it's an identity". Submitted to Construction Management and Economics.

ADDITIONAL WORK

Research report	**Norell, M.** (2019). Arkitektonisk kvalitet. En state of the art-rapport inom forskningsprojektet Timber on Top.
Conference Paper	**Norell, M.**, Stehn, L., & Engström, D. (2020). Architectural design of vertical extensions of buildings: A risk perspective on complexity. In Proc., 36th Annual ARCOM Conf (pp. 625-634). Mathilda Norell was the lead author who conducted the empirical material, developed the focus of the paper, the theoretical framework and analyzed the empirical material. Mathilda did the majority of the writing, while the second co-author contributed to parts of the writing and the third co-author contributed with feedback.
Mid seminar report	**Norell, M.** (2021) Unpublished
Research report	**Norell, M.** (2022). Arkitektonisk kvalitet i svenska trä-påbyggnadsprojekt: Kontexten-Processen-Produkten.

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PREFACE

I began my PhD in March 2019 as a freshly graduated Architectural Engineer. At that time, I was young, ambitious, and very focused on achievement. It quickly became clear how challenging it can be to undertake a PhD with such high expectations of oneself. Over time, my motivation shifted–from performance to learning and curiosity. With this mindset, there were no failures, only opportunities to learn. This change in perspective, and the ability to separate myself from my achievements, strengthened my confidence in myself and in my capacity to embrace the challenges that a PhD entails.

Looking back on my research journey as I complete this thesis, I feel a deep sense of calm and pride. It has been a path marked by independence and exploration, where my curiosity often led me into uncharted territory. At times, my journey took me to places where my supervisors, as much as they wished to support me, could not provide the guidance I sought. This was a direct result of the freedom I was given to follow my instincts and allow the phenomena within the empirical context to shape my path. While this autonomy was empowering, it also brought moments of profound solitude. In those moments, I am proud to say I remained true to my instincts, even when the solitude was challenging. This journey, while demanding, has been profoundly rewarding, and I am thankful for the lessons it has imparted.

I am therefore deeply grateful to my head supervisor, Lars Stehn, who gave me the freedom to explore, challenge myself, and even challenge him. Your trust has allowed me to grow–not only as a researcher, but also as a person. To Susanne Engström, who became my co-supervisor in the second half of this journey: in many ways, we are alike–strong-willed, stubborn, and perfectionistic. You became the sparring partner I and my research needed. A special thank you for always caring about the person behind the achievements.

As mentioned, my curiosity often led me into uncharted territory, partly because of the many influences I encountered during courses I took during this journey. I had the opportunity to meet researchers from other disciplines, departments, and universities, each with their own research norms and traditions. Engaging in discussions with them challenged my perspectives, broadened my understanding of research, and encouraged me to reflect more deeply on the kind of researcher I aspire to be. A special thanks to them.

While the journey may have been solitary in some respects, I have been fortunate to have my closest colleagues and friends, Emilia and Henrik, by my side throughout. The days when we are all in the office together are, without a

doubt, the best ones. Sharing this journey with you has been the most fun, and I am deeply grateful for your constant encouragement and support. Emilia, always a step ahead of me in both life and work, being able to share your experiences of pregnancy, toddlers, publication and thesis word-formatting. You are like the big sister I never had, someone I can always trust to be there. Henrik, in many ways we share the understanding of how lonely the work of a PhD can sometimes be and sharing that experience with you has always made it a little easier. A special thank you for joining me at all kinds of training classes you would never have chosen yourself–that's the mark of a true friend.

A heartfelt thank you also goes to the rest of my colleagues at IHB, for good company during our fika-room conversations. Thank you for listening when I shared whatever was on my mind and for never making me feel I needed to hold back a thought. These informal meetings often gave me inspiration for my work–or simply made the day more fun.

When the work day was over I always had a varm home to arrive at. A very special thank you to Kalle, my boyfriend and father to my children (2,5 and 0,5 years old today) for first, making me see that I am more than my achievements, and second, for making life so much fun. I believe that this balance in life made me a better researcher. Even though our areas of research are completely different, your understanding of what the job entails have made a difference, being able to share daily struggles and celebrate small achievements at the dinner table. Also thank you for making time for me to work.

In a similar way, thanks to all my friends (both old and new) who made life outside work fun. And thanks to the children's grandparents (Pia, Jari, Malin and Mikael), aunts and uncles, especially aunt Linnéa for enriching the kids life with more adults who love them and taking good care of them while I need to work.

Lastly, but certainly not least, my deepest thanks go to my children. To Viljar, my wonderful, affectionate, helpful, and quick-witted boy, who made life outside work joyful. And to Truls –during the autumn of 2024 and the spring of 2025, not only did this thesis take shape, but something even more beautiful grew: you. In a very special way, we completed the final part of this journey together, and even though you made me feel sick all the way until week 32, you made every day a little more meaningful.

This thesis is the culmination of my journey–a navigation through the intersections of tradition and intuition, and the discovery of methods that resonate with the questions I find most meaningful. I hope it will inspire, be provocative and spark new debates in research.

Mathilda
Luleå, November 2025

DISPOSITION

For clarity, this section outlines the overall logic and structure of the thesis. The thesis is a compilation-thesis, consisting of a kappa and three appended papers together with some introductory material (preface and disposition) and a final section containing references and appendixes. The kappa is divided into eight chapters. First is the **Introduction**, which introduces the problem addressed in the thesis and specifies its scope and aim. This is followed by an extended background chapter detailing the **Context** of the construction industry, focusing on fragmentation and change. This chapter concludes with a summary of the assumptions examined in this thesis. The **Theory** chapter outlines the theoretical lens used in the thesis, tracing the evolution and definition of key concepts in my research as well as important knowledge gaps. This is followed by the **Related research** chapter, which summarizes relevant recent findings in construction management research, focusing on studies that applied similar theories and examined similar phenomena to those used and considered in this thesis. This is the research that I continue to build upon. The **Methodology** chapter outlines the research process and discusses the quality of the research methods that were used. In the **Summary of findings** chapter, I summarize the findings of the three included papers and provide a table that puts the findings from each paper in context to each other, the assumptions challenged in this thesis, and the broader aims of the thesis. To follow up on the promise of challenging assumptions, the **Discussion** chapter discusses how the findings from each of the three papers contribute to challenging key assumptions and relates them to literature results. To assess the extent to which this thesis achieved its overall aim and purpose, the **Conclusion** chapter summarizes the discussion from the previous chapter and places it in a broader context to outline the contributions that have been made and evaluate their applicability. I also review the limitations of this work and identify areas warranting further study.

The overall aim of the kappa is to synthesize the work presented in the three papers such that the sum of their content forms the "red thread" of the thesis. In other words, it does not introduce any new theoretical frameworks or similar elements to establish an overarching theme or "re-analyze" the papers.

one.

INTRODUCTION

Problem, scope, and aim

In this chapter I explain the relevance and scope of this thesis, concluding with a statement of its overall aim.

The construction industry is steeped in tradition, with preconceived notions about 'how things work' and 'how things are changed'. This extends to research, where taken-for-granted assumptions shape research questions, scope and methodologies, and a shared perspective on the nature of change. This thesis seeks to show how individual perspectives might address longstanding and emerging challenges in construction. It does this using three central strategies: addressing agency at the individual level, focusing on an underrepresented actor in research—the architect, and adopting an interpretative approach. The two 'longstanding and emerging challenges' in construction on which this thesis offers perspectives are managing fragmentation and achieving institutional change.

Fragmentation is a well-established concept in construction literature. It refers to the increasingly pronounced divisions between roles, tasks, and project phases, which stand in contrast to earlier more integrated processes involving fewer actors and less isolated stages (Jones

et al., 2022). Fragmentation is often traced back to the Industrial Revolution (Fellows & Liu, 2012) and is commonly highlighted as both a root cause of challenges in the construction industry and a reflection of its inherent complexity as a research context. Historically, fragmentation emerged as buildings and construction projects grew more complex, driven by technological advancements and the introduction of higher building standards and new regulations. This growing complexity created a need for specialized knowledge and the division of labor among various actors (Alashwal & Fong, 2015; Jones et al., 2022). Fragmentation has been studied extensively, with many studies examining its impact on project outcomes (e.g., Harty 2005; Riazi et al., 2020; Jones et al., 2022) or proposing integration strategies such as design for buildability (Hyde, 1995), design-build contracts (Mitropoulos & Tatum, 2000), and Building Information Modeling, BIM (Dossick & Neff, 2010). However, relatively little attention has been given to how individual construction professionals cope with fragmentation effects, or the implications of their coping (this is addressed in Paper I). Furthermore, while previous studies have explored ways of dealing with fragmentation as a static problem, there has been relatively little work on managing fragmentation from the perspective that it is a natural continuous change. This perspective is addressed in Paper III. A detailed review of fragmentation and how it is theorized in construction literature is provided in Paper I (and partly in Paper III) and in the Context chapter of this thesis.

If fragmentation is a 'longstanding challenge' in construction research, *institutional change* to accommodate digital and sustainable practices represents an 'emerging challenge'. There is a growing societal and industrial movement towards a circular economy, reflected in initiatives such as the introduction of new regulatory frameworks by policymakers, companies' efforts to strengthen their sustainability image and internal capabilities, and the development of professional networks offering individuals training to enhance their skills. These tendencies, and the widespread adoption of digital technologies in construction, represent a pertinent example of isomorphism (DiMaggio & Powell, 1983) in that they encourage organizations to converge in their technological or sustainable practices and approaches, increasing homogeneity within the sector. In this thesis and the included papers

(mostly Paper II), the individual-level dynamics of this institutional change—or isomorphism—are examined through the concepts of *agency* and *legitimacy*. For this purpose, it has been useful to highlight the *movement* behind this isomorphism or institutional change as an institutional level in its own right within the institutional context. The current understanding of a movement within institutional change is that it challenges taken-for-granted social prescriptions, including existing institutional norms, rules, and culture by acting as an extra-institutional force (Schneiberg & Lounsbury, 2017). This is similar to the way new practices related to digitalization and sustainability challenge established routines and practices.

Despite the ongoing movement toward digitalization and sustainability, it is commonly held both in research and the industry itself that the construction sector is slow to adapt to these changes. Several publications have related the challenges of implementing digital and sustainable innovations to the effects of fragmentation (e.g., Hartmann, 2006; Hughes & Stehn, 2019; Oke et al., 2024). Additionally, cultural and behavioral barriers to implementation are increasingly being highlighted (e.g., Ababio & Lu, 2023; Dowsett & Harty, 2019). Recent studies have shown that overcoming these cultural and behavioral barriers often requires incremental rather than radical change (Akintola., et al., 2020), involving the professionalization of existing competencies within the industry (Andersson & Eidenskog, 2023; Gerding et al., 2021; Van Uden et al., 2025). Papers II and III explore the ways in which architects navigate these trends (digitalization and sustainability) and adapt their profession in response.

While 'managing fragmentation' and 'archiving institutional change' are inherently complex phenomena, their relationship is even more intriguing. As previously noted, fragmentation is often highlighted as a major barrier to implementing digital and sustainable innovation. However, the impact of institutional change on fragmentation is rarely addressed. Paper III focuses on this reciprocal relationship, in part by examining the findings from Paper I (on fragmentation) in relation to those from Paper II (on institutional change). The paper poses an open question: "Fragmentation and institutional change – is it a paradox?"

Although fragmentation and institutional change are macro-level phenomena, it can be instructive to examine them at the micro level.

For example, Phua (2013) highlights the importance of individual-level research in construction management, emphasizing that behaviors, values, and perceptions significantly influence project outcomes and the broader field. This approach is used throughout the included papers and in the kappa. Several examples illustrate the value of focusing on individual perspectives when studying institutional change. Bévort and Suddaby (2016) showed that despite the pressure from macro-institutional (field-level) contexts, individual interpretation and subjectivity offer considerable agency and freedom to reinterpret and even change institutional templates, although this has largely been overlooked in institutional research. Understanding how individuals relate and respond to changes such as digitalization and sustainabilization though their *agency* might therefore be important for achieving institutional change. Moreover, to avoid isolating levels, critics advocate for theoretical frameworks that incorporate multiple levels of institutional context (e.g., Abdelnour et al., 2017; Alvesson & Spicer, 2019; Cloutier & Langley, 2013). Paper II uses a multi-level framework to examine how architects navigate institutional change and legitimacy across different institutional levels.

Individual-level analysis has received less attention than organization- or field-level studies in both construction research (Phua, 2013) and institutional and organization studies more broadly (Alvesson & Spicer, 2019). However, interest in such analyses has recently increased, particularly within construction management (e.g., Cohen et al., 2005; Gluch, 2009; Brown & Phua, 2011). Several recent studies have focused on how institutional changes related to digitalization and sustainability are shaped at the individual level (e.g., Shahruddin & Husain, 2024; Akintola et al., 2020; Sergeeva & Green, 2024), and some studies of this kind have examined the Swedish construction context (e.g., Bosch-Sijtsema & Gluch, 2021; Andersson & Eidenskog, 2023; Gluch & Hellsvik, 2023; Andersson & Buser, 2022). Research of this kind often indicates that professionals adapt their roles and identities in response to institutional change. As Liu and Walker (1998: 211) noted, understanding the adaptation of individual professionals is crucial because "the behavior of the project organization (at the macro-level) is the aggregate of the project participants' behavior (at the micro-level)". There is thus considerable value in applying a lens of professional

identity and roles in research on institutional change. This approach is taken in Paper III.

AIM

Understanding the underlying processes driving institutional change is critical for enhancing the construction industry's ability to manage change effectively, foster innovation, and ensure the long-term sustainability of construction practices. By focusing on a specific profession, namely architecture, this thesis provides perspectives on the longstanding and current challenges of 'managing fragmentation' and 'achieving digitalization and sustainability' in construction. More specifically, this thesis aims to enhance the understanding of how professional agency (including identity and roles) influences institutional change in the construction industry, particularly fragmentation, digitalization, and sustainability.

two.

CONTEXT

Fragmentation, digitalization, sustainability, and their relationship in construction

In this chapter, I provide a contextualized overview of the construction industry as an institutionalized field. I begin by tracing one evolutionary path of the construction industry, focusing on fragmentation, before exploring current notions regarding the challenges in the relationship between fragmentation and change in relation to digitalization and sustainability. Lastly, I draw out the assumptions that this thesis specifically addresses.

FRAGMENTATION

The modern construction industry operates by bringing together varied specialists from different firms, who collaborate within a project to achieve the common goal of constructing a building with a specific purpose. While this way of working has become institutionalized, it has not always been the norm.

Architects and engineers first started distancing themselves from contracting at the beginning of the 20th century (Hall & Scott, 2019).

These developments mirrored wider societal trends that established a cognitive distinction between blue-collar (e.g., construction work) and white-collar jobs (e.g., architecture and engineering) (Hall & Scott, 2019). Before this emerging division, architects were master builders (Bruner, 2007), taking on a central role in building projects that encompassed both the design process and the execution of the construction (Burr and Jones, 2010). It was also in this environment during the 20th century that the "Design-Bid-Build" (DBB) began gaining prominence as contracting option to divide labor between the architect and the constructor. The DBB format was a highly effective way to break down complex projects into more manageable parts and because of its popularity it became the standard contracting method (Hall & Scott, 2019) institutionalizing the division between design and construction.

However, construction projects have become more complex over the last fifty years, revealing the limitations of the DBB approach (Hall and Scott, 2019). One critique is that DBB separates design and construction, which hinders innovation and collaboration (Erbil et al., 2013; Nawi et al., 2014). Architects have been encouraged to design for "buildability" (Figure 1) to manage the increasing fragmentation between design and construction. The fundamental idea behind buildability is that contractors could produce more cost-efficiently if architects designed buildings in ways that facilitate production (Hyde, 1995). Fellows and Liu (2012) suggested that this could be a key tool for managing fragmentation and bridging knowledge gaps between architects and contractors.

To further mitigate the fragmentation problem, Design-Build (DB) contracts have been introduced as an alternative to the DBB model. In a DB contract, the contractor is involved in completing the design. This has been suggested to represent an improvement over traditional procurement methods such as DBB contracts (Mitropoulos & Tatum, 2000) that restrict contractors' input into design decisions (Nawi et al., 2014). Mitropoulos and Tatum (2000, p.50) argued that "such participation [early involvement of contractors in projects] enables more informed decisions, better scope definition, design customization to meet construction needs and constraints, and selection of design alternatives that can optimize initial cost, as well as life cycle cost".

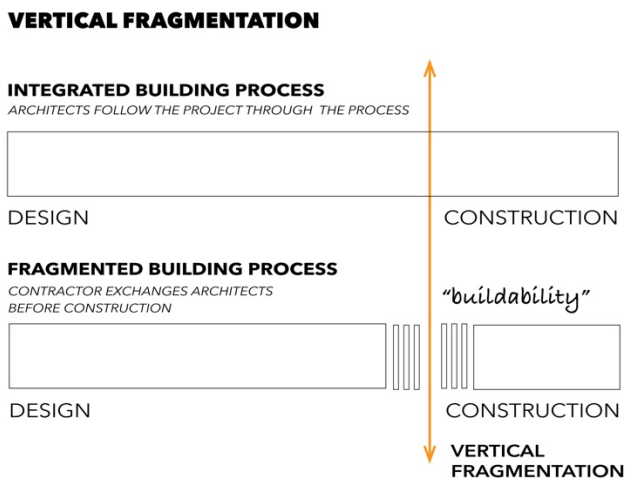

Figure 1: Illustration of fragmentation as a process. Vertical fragmentation has transformed a historically integrated process into one where design and construction execution are separated. (Developed from Figure 1, Paper I)

The DB approach gained prominence in the 1990s, but Hall and Scott (2019) argue that it involves only minor adjustments to existing legal and contractual practices, and thus fails to address problems arising from deeper normative and cultural elements entrenched within the construction industry's institutional culture.

Since the onset of fragmentation, when architects distanced themselves from construction (Hall & Scott, 2019), there has been further specialization driven by technological innovations and increasingly stringent building requirements and standards (Bruner, 2007). Early in the 21st century, Hughes and Murdoch (2001) argued that new professional roles in fields such as structural and services engineering have emerged because of increased demand for specialized knowledge. As buildings became more complex and more regulated, technical subdisciplines such as electrical, mechanical, structural, civil, and geotechnical engineering emerged (Bruner, 2007). This increasing complexity and the emergence of new specializations led to horizontal fragmentation (see Figure 2) that challenged the historical role of the architect as the most knowledgeable actor in the construction process

(Sapers, 2001 in Hall & Scott, 2019), causing further narrowing of the architect's role.

This new division of labor also created a greater need to manage integration (Jaffee, 2001): as specialization increased in the late 1900s and early 2000s, professionals became increasingly subject to managerial oversight (Cohen et al., 2002). As shown in Figure 2, this led to the emergence of new roles such as project managers (and later, design managers) tasked with overseeing the growing number of specialists (Emmitt, 1999; Emmitt et al., 2009).

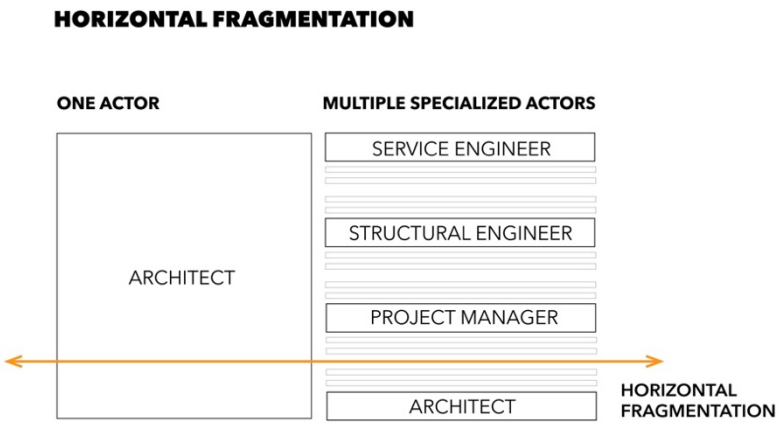

Figure 2: Illustration of fragmentation as a process. Horizontal fragmentation has divided a single actor –the historical architect – into multiple specialized actors. (Developed from Figure 1, Paper I)

As fragmentation became an institutionalized part of the construction sector it also became a defining aspect of the culture within the Swedish construction industry, closely tied to a concept often referred to as 'silo mentality' (Philipson, 2019). This term captures the tendency of specialized professions to operate in isolation as they lack the ambition or motivation to work together effectively even when they would ideally collaborate and coordinate with one-another (Philipson, 2019). The 'silo mentality' causes individuals to primarily focus on their specific tasks and goals, leading to the absence of a holistic perspective because no single actor assumes responsibility for overseeing the entire project.

Collectively, these factors form the background of the perception that today's construction industry is fragmented. Fragmentation *within* construction projects is commonly described in terms of two dimensions (e.g., Sheffer, 2011; Fellows & Liu, 2012; Alashwal and Fong, 2015): *vertical* fragmentation relates to the separation of building processes, while *horizontal* fragmentation relates to the separation of actors. Figures 1 and 2 (created for Paper I on the basis of a literature survey), illustrate vertical fragmentation between the design and construction phases and horizontal fragmentation by using the historically larger role of the architect to show how this profession's tasks have been divided into new specialized disciplines.

Fragmentation *between* projects is often described as *longitudinal*. Longitudinal fragmentation results from the construction industry's project-based nature and limits knowledge transfer between projects, which hinders continuous improvement (Fellows & Liu, 2012) and restricts opportunities to improve productivity. Paper I focuses solely on fragmentation within projects (Figure 1 and 2), while Paper III addresses fragmentation both within and between projects (Figure 3).

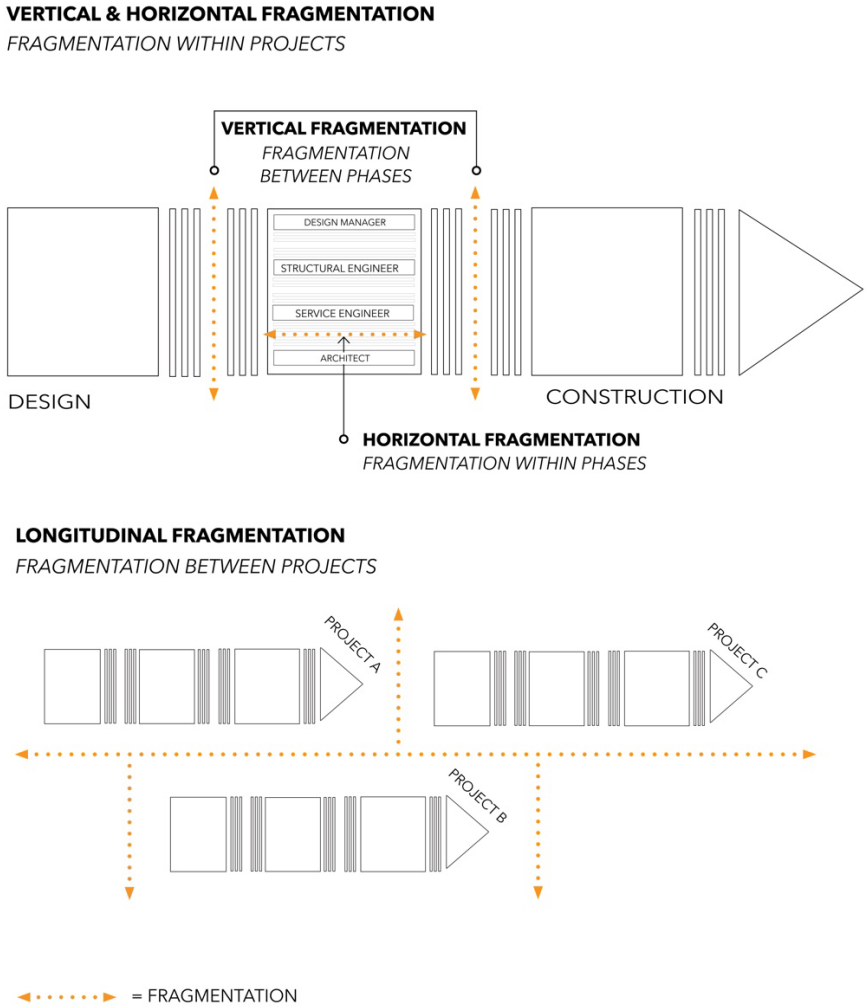

Figure 3: Fragmentation within projects (horizontal and vertical) and between projects (longitudinal). This figure was originally presented as Figure 1 in Paper III, which was developed from Figure 1 in Paper I.

FRAGMENTATION AND CHANGE

Researchers have treated the deeply institutionalized nature of the construction industry (Hall & Scott, 2019; Holti, 2011; Kadefors, 1995) as a problem that limits its development (e.g., Kadefors, 1995; Bresnen, 2016). Fragmentation has also been linked to reduced opportunities for innovation (Hartmann, 2006; Hughes & Stehn, 2019), although many authors acknowledge that Building Information Modeling, or BIM, (which can be seen as a digitalization innovation) has enabled the integration of fragmented processes.

In a study on the implementation of *digitalization* innovations, Elmualim and Gilder (2014) found that having a specific person or role pushing for innovation is key to fully exploiting the potential of BIM. However, fragmentation causes influence within a project to be spread across different people and roles, such as the project architect, design manager, and client, which is argued to make it harder to adopt BIM effectively (Elmualim & Gilder, 2014). Elmualim and Gilder (2014) further emphasize the need for a designated role to lead the implementation of BIM. Jasiński (2021) examined the implementation of BIM in architectural practice from the perspective of the various actors involved in the process and found that the fragmented attention of clients meant that they often did not fully engage with or understand the entire BIM implementation process, leading to significant delays or stagnation in BIM adoption. This suggests that the potential benefits of BIM cannot be fully realized without cohesive and focused involvement of clients throughout the BIM process, and that the absence of such client involvement will hinder effective BIM implementation.

Fragmentation has also been identified as a significant barrier in relation to *sustainability* and the shift towards a circular economy. Recent studies have highlighted a lack of vertical and horizontal collaboration as a key barrier to the implementation of sustainable practices (Hart et al. 2019, Tura et al. 2019; Ababio & Lu, 2023). Similarly, Charlotte et al. (2022) conclude new design processes that diverge from the current fragmented delivery approach are needed to enable circularity. They also argue that fragmentation in the construction value chain impedes the

transparent and traceable exchange of material information. Giorgi et al. (2022) also highlight fragmentation as a critical barrier to the effective implementation of circular business models.

Ababio and Lu (2023) reviewed and categorized barriers to change, identifying social and cultural aspects as one of the important barrier categories. Their discussion focused particularly on silo thinking (Hart, 2019) and resistance to change (Lines et al., 2015), concluding that the institutionalized nature of the construction industry presents a key challenge for the implementation of change.

The statement that the construction industry is institutionalized basically means that it has a set of shared values, norms and beliefs that give individuals in the field stability and meaning, making them resistant to change (Scott, 2014). These norms and values are reflected in things like routines and role expectations that are adhered to even when individuals act autonomously. For example, in a typical construction project there is an unquestioned expectation that the architects will do the design, the structural engineer will do calculations, and the project manager will deal with time and economy. These institutional norms are important for individuals and organizations to be effective, and are upheld because each individual adheres to them. However, as discussed above, the implementation of innovations such as digitalization and fostering a circular economy may challenge these taken-for-granted social prescriptions.

In summary, the rising influence of digitalization and sustainability on construction projects and firms is creating demand for expertise in these areas. To understand how new professions or roles can be brought into the institutionalized construction industry, this thesis engages with some common assumptions relating to the individual, social, and cultural dimensions of change. Many of these assumptions have been challenged by previous studies, as discussed in the 'Related Research' section.

ASSUMPTIONS TO ADDRESS

This section introduces some common assumptions relating to the longstanding challenges of 'managing fragmentation' and 'achieving digitalization and sustainability' in construction.

Managing fragmentation

Fragmentation in construction is often assumed to be a *static* issue—a past event that has created a fixed problem requiring resolution. This perspective aligns with broader assumptions in construction research, where change is frequently conceptualized as having a defined "endpoint" for practitioners and researchers. As Chan (2018, p.165) observes:

> *"In many accounts of organisational change within the construction management literature and wider organisational and management studies, change is usually concretised as an endpoint in sight for the researchers and practitioners to make sense of."*

Chia and King (1998) highlight how we are often drawn to understanding fixed, stable outcomes rather than the ongoing process of change. Consequently, much of the literature on fragmentation focuses on "fixing" existing problems rather than exploring the processes and ongoing nature of fragmentation as a continuous phenomenon.

Another common assumption concerns the outcome of fragmentation and its negative implications: fragmentation is typically presented as a *barrier* to systematic advances in innovation and the adoption of practices related to digitalization and sustainability.

Another underlying assumption is embedded in some proposed solutions for managing fragmentation, which often reflect the *perspectives* of specific actors. For instance, the concept of buildability was introduced to enhance contractors' cost efficiency (Hyde, 1995) and is still promoted today as a key strategy for managing fragmentation (Fellows & Liu, 2012). Similarly, design-build (DB) contracts were proposed to give contractors greater control over design decisions (Mitropoulos & Tatum, 2000; Nawi et al., 2014).

Achieving institutional change

Other important assumptions relate to the way change is achieved though agency in construction, specifically in relation to digitalization and sustainability. For example, perspectives such as those of Elmualim and Gilder (2014) emphasize the role of individual *"champions"* or

specific roles as primary drivers of innovation in processes such as promoting the use of BIM.

Another assumption prevalent in both industry and the construction management literature is that digital and sustainable innovations will naturally transform institutions once professionals recognize their potential, acquire knowledge, or adopt new standards (Oke et al., 2024). This perspective may oversimplify the complexity of institutional change by presuming *uniform* responses to innovations among professionals.

A final common assumption relates to the concept of 'roles', which are all too often treated as *fixed*, natural entities rather than socially constructed concepts shaped in time by cultural or historical contexts (Watson, 2002). This assumption is also present in construction research, where roles are sometimes seen as stable entities defined by contractual agreements or established cultural norms (Brown & Phua, 2011; Georg & Tryggestad, 2009).

three.

THEORY

Concepts and definitions of
Institutional Change and Professions

This chapter is divided into two parts. In part one, I provide an overview of institutional theory, highlighting its evolution, key developments, recent critiques, and current gaps. I also define central concepts in institution theory that are discussed throughout this thesis: agency, legitimacy, and institutional context (all of which are used and developed more in Paper II). In part two, I focus on the definitions and current understanding of professionals, roles, and identity, which are central to this thesis and are developed further in Papers I and III.

INSTITUTIONAL CHANGE

Institution theory addresses the "fundamental issues of social order and social change and the construction of shared meaning systems" (Scott, 2012: 29). Scott's (2014, p. 56) definition of an institution as the "regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" is commonly used and referred to, especially in construction

research (Chan, 2018). Put simply, institutions are social rules or norms that may guide how individuals make decisions and act (i.e., how they practice agency). Agency as a concept acknowledges the individual aspect of institutional change and is the focus of this thesis.

The evolution of 'agency' in institution research

Traditional institutional theory (Figure 4) primarily emphasized how individuals are shaped by institutions, often overlooking agency or addressing it only in passing (Lawrence et al., 2009). In this framework, individual actions were largely seen as reactions to institutional structures, reinforcing their dominance. However, by the late 1980s and early 1990s, this perspective on agency faced significant criticism (Lawrence et al., 2009).

An alternative perspective to these traditional views emerged in the form of *Institutional Entrepreneurship*, which shifted attention to how individuals actively challenge and transform institutional arrangements rather than merely adhering to them (Lawrence et al., 2009). The literature on institutional entrepreneurship (e.g., Battilana et al., 2006) highlighted actors' capacity to instigate change and reshape institutions. Most studies on institutional entrepreneurship have had a relatively strong focus on explaining institutional change, with human action being the primary explanatory factor rather than the object of study (Lawrence et al., 2009). However, research on institutional entrepreneurship has often been criticized for overstating individual agency—portraying actors as "powerful, heroic figures able to dramatically shape institutions"—while overlooking their institutional embeddedness (Lawrence et al., 2009, p. 3). Similarly, Abdelnour et al. (2017) note that such research tends to focus too heavily on individuals' capacity to drive change, giving relatively little attention to the roots of institutional theory and the capacity of institutions to constrain actions.

In response to the limitations of these two extremes (i.e., the traditional and entrepreneurship perspectives), Lawrence and Suddaby (2006) introduced the concept of *Institutional Work*. Research on champion roles and similar concepts within institutional entrepreneurship has tended to focus on actions that are specifically aimed at intentionally or proactively driving change. However, reactive

or adaptive role adjustments can also promote change even when they are not intended to do so (Gilstrap and Hart 2020a; Griffin et al., 2007), suggesting a need for a more nuanced perspective on agency. Lawrence et al. (2009, p. 1) state that in the institutional work perspective, intentional actions taken in relation to institutions can be "highly visible and dramatic" (as in the extreme cases of institutional entrepreneurs, change agents, innovation champions) but may also be "mundane, as in the day-to-day adjustments, adaptations and compromises attempting to maintain the institutional arrangements". Institutional work thus shares the strengths of traditional views, (without overdoing it, and with greater acknowledgement of agency) while also being related to (Lawrence et al., 2009) and rooted in institutional entrepreneurship (Hampel et al., 2017). Figure 4 summarizes the development of these institutional theories and the concept of agency.

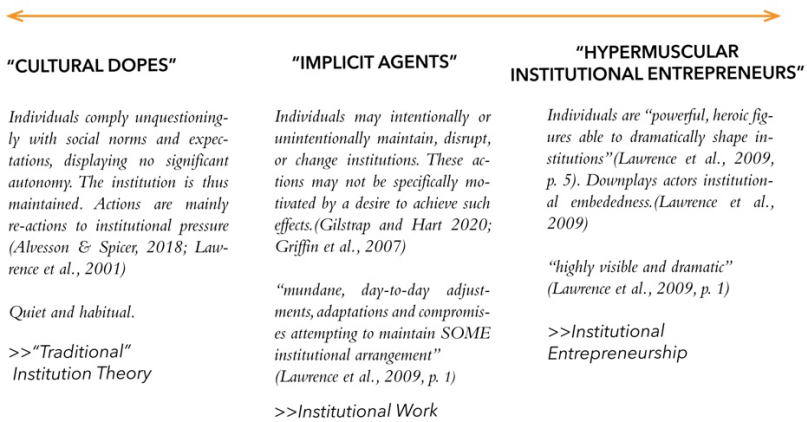

Figure 4: Summary of the spectrum of agency and the historical shift in perspective (From Figure 1, Paper II).

The aim, focus, and methodological approach of this thesis all align with this wider definition of agency used in the institutional work theory. This is largely because institutional work as a concept seeks to understand human behavior within institutions by focusing on individuals' motivations and interests (Lawrence et al., 2009). Institutional work examines how individuals create, maintain, or disrupt institutional arrangements gradually, over time. This aligns with the

thesis's overall perspective on change, where the change is "a pattern of endless modifications in work processes and social practice, driven by organizational instability and alert reactions to daily contingencies or shifting task authority" (Weick & Quinn, 1999, p. 366).

Papers II and III examine *roles* as objects of institutional work (Hampel et al., 2017). The focus on professional roles as objects of institutional work follows a longstanding tradition of analyzing professions as key sites of institutional change (Hampel et al., 2017). Research in this tradition has contributed to the field of institutional work by explaining how and why individuals practice agency to reject or adopt change (Hampel et al., 2017). Relatedly, Abdelnour et al. (2017) argue that agency is not merely an individual capacity but is shaped by institutional roles and social positions. These roles give actors resources, rights, and obligations that structure their agency, making it an "institutionally engineered" phenomenon rather than solely an individual attribute.

Agency

Agency, i.e., the capability to act, is a concept that acknowledges the individual aspect of institutional change and its capacity to enable the diffusion of innovations or new approaches. As such, it captures the nuanced interplay between individual agency and the institutional environments in which it is embedded (Lawrence et al., 2009). Scott (2014, p. 94) defines agency as "the actor's ability to have some effect on the social world, altering the rules, relational ties or distribution of resources". Agency can also be described as the result of a process of interpretation between the individual and the context that leads to a conscious choice to act in relation to the interpreted meaning (Scott, 2014). The relationship between the individual and the institutional context in relation to agency is illustrated in Figure 5 (from Paper II).

The most widely known definition of institutional work was provided by Lawrence and Suddaby (2006, p3): "the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions". However, Lawrence et al. (2009) subsequently identified limitations in this definition and argued for a shift of focus from accomplishments to activities as well as a greater emphasis on the

role of intentions. In particular, they concluded that their earlier formulation (Lawrence & Suddaby, 2006) could be interpreted to apply only to intentional actions. They therefore advocated for a focus on actions and intents rather than outcomes together with a broader interpretation of institutional work under which purposive actions can both intentionally and unintentionally change, disrupt, or maintain institutions. This shift is consistent with the arguments of researchers such as Smets et al. (2017), Hampel et al. (2017), Zilber (2013), and Smets and Jarzabkowski (2013), who all use similarly broad definitions of agency. There is thus growing support for the view that institutional change does not have to result from deliberate actions taken by individuals but can also emerge from mundane, context-specific adjustments made by multiple actors in response to everyday contingencies that may unintentionally alter institutions (Jarzabkowski, 2009; Smets et al., 2017). Hampel et al. (2017) emphasize that agency is rooted in reflexive engagement with institutional contexts, where both deliberate and non-deliberate actions can shape institutions, while Zilber (2013) argues that individuals do not simply comply with or resist institutions but interpret them though storytelling.

In this thesis, agency is treated as a bidirectional phenomenon (as shown in Figure 5), with institutions being both products of human agency (Berger & Luckmann, 1967) and entities that can influence or constrain individual agency (Scott, 2014).

Legitimacy is a foundational concept for understand the intent behind agency (Lawrence et al., 2009). Hardy & Maguire (2008) argue that individuals and organizations are not passive entities but active interpreters of the institutional field, shaping their actions and responses based on their interpretations of institutional rules and norms. This process of interpretation between the individual and the *institutional context* is incorporated into the analytical framework used in Paper II (see Figure 5). The following sections offer deeper discussion of institutional context and legitimacy.

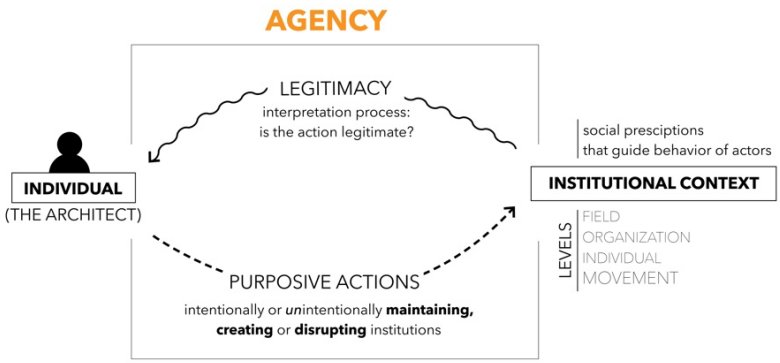

Figure 5: The individual process behind agency. (From Figure 2, Paper II).

Institutional Context

If institutions are overarching structures, *institutional context* (see Figure 5) refers to the environment within which those structures operate. In this thesis the overarching structure is building design and construction, i.e., the construction sector in general. Institutions (such as construction in this case) are always embedded in specific contexts that shape how institutional norms and practices are enacted. Institutional context is thus the specific context in which an institution is placed. The institutional context examined in this thesis is the unique environment of the Swedish construction industry, which is shaped by its cultural, regulatory, and historical norms.

Institutional contexts can exist on different levels (Scott, 2014) that interact: changes at one level may influence others Scott (2001, 2014). Theoretical analyses commonly distinguish between *field-level* (inter-organizational), *organizational level*, and *individual level* dynamics (Oliver, 1997; Scott, 2014). The levels have drawn differing levels of scholarly attention: early institutional theory focused mostly on macro-level (field) dynamics, and although scholars in the 1990s began studying organization- and micro-level processes, institutional theory still primarily emphasizes organizational and field-level analysis (Lawrence et al., 2013; Cloutier & Langley, 2013). There is thus a need for more research on the individual level within institution theory. For example, Lawrence et al. (2013) identify a gap in research on the reflexivity and

the moral and emotional complexities involved in institutional work, which plays a crucial role in shaping institutions.

In parallel to these calls for greater focus on individual-level agency, Abdelnour et al. (2017) highlight a failure to link individual agency to broader structures in a way that reflects multi-level complexity, emphasizing the need for frameworks that connect actions across levels. Moreover, Lawrence et al. (2013) suggest that legitimacy processes should be integrated into a comprehensive model to better capture these interactions, while Cloutier and Langley (2013) argue that institutional research should explore the bidirectional influence between individual actors and their broader institutional context. This perspective aligns with the idea that knowledge of micro-level routines and practices, when connected to the wider institutional context, could improve understanding of innovation and institutional change (Abdelnour et al., 2017).

Paper II uses a framework that captures how architects navigate legitimacy at the field, organization, individual, and movement levels (Figure 5). In this context, the 'field' institutional level is the Swedish construction industry (whose characteristics include being project-based and involving multiple specialized disciplines working in inter-organizational projects). The 'organization' level is the specific architectural firm, the 'individual' level is an architect working within the firm (including their self-perception and personal experiences), and the 'movement' level refers to the ongoing processes of sustainabilization and digitalization (particularly, reuse and BIM).

It is not common to treat movements as a level of institutional contexts, but there is growing interest in their role in institutional change research (e.g., Furusten, 2023; Micelotta et al., 2017). The current understanding of a movement in institutional change is that it challenges taken-for-granted social prescriptions, including institutional norms, rules, and culture, by acting as an extra-institutional force (Schneiberg & Lounsbury, 2017). According to Furusten (2023, p. 59), a movement must also reflect "a pattern in what organizations do that occurs more or less simultaneously in many places". This can be seen in digitalization

and sustainabilization[1]: many architectural firms are changing their practices or setting goals of being "in the digital frontline" or "the best at sustainability". See Paper II for a more detailed discussion of these levels, particularly the movement level.

Legitimacy

Sociological perspectives on institutional theory place particular emphasis on how institutional arrangements confer legitimacy (Garud et al., 2007). One of the first great social theorists to stress the importance of legitimacy was Max Weber (Ruef & Scott, 1998). According to Johnsson et al. (2006) legitimacy processes are a cornerstone of theories that attempt to explain group and organizational behavior. Legitimacy is central to institutional theory and institutional work because it captures the social acceptance that institutions and their actors actively seek to attain, maintain, and justify as they uphold existing norms (Lawrence et al., 2013). After comparing different definitions of legitimacy found in the organization literature, Johnsson et al. (2006) concluded that Suchman's definition (1995, p. 574) is the most widely known and used. This is also the definition used in this thesis (and in Paper II) because it explains how legitimacy influences the relationship between institutions and actions:

> *"Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.*
>
> *Legitimacy is a perception or assumption in that it represents a reaction of observers to the organization as they see it; thus, legitimacy is possessed objectively, yet created subjectively. Legitimacy is socially constructed in that it reflects a congruence between the behaviours of the legitimated entity and the shared (or assumedly shared) beliefs of some social group; thus, legitimacy is*

[1] This terminology is also used by Furusten (2023), e.g. when referring to marketization as a movement because the '-ization' suffix signifies the ongoing nature of change and thus captures the essence of an institutional movement.

> *dependent on a collective audience, yet independent of particular observers."*

The applicability of Suchman's (1995) definition to institutions means it aligns well with the position taken in this thesis because it emphasizes that legitimacy is, much like institutions, a social construction. As a result, an individual architect's perceptions of what actions are legitimate will impact their own actions and behavior.

The legitimization process is especially central to the micro-foundations of institutional change, as actors constantly interpret and redefine what is appropriate or acceptable within institutional contexts (Cloutier and Langley (2013). Individuals negotiate legitimacy in routine interactions, especially when managing conflicting institutional prescriptions (Cloutier and Langley, 2013). In the interpretation process, actors develop moral or normative arguments to support institutions or resist change efforts (Lawrence et al., 2013). Through these legitimization processes, actors actively manage perceptions of institutional practices as appropriate, desirable, or necessary. Legitimacy is a way of keeping institutions stable and accepted as individuals actively work to uphold it, even when things are changing or being challenged (Lawrence et al., 2013).

Alvesson and Jonsson's (2022) case study shows that even in homogenous groups, shared meanings may be absent or highly varied, making it possible for legitimacy to be experienced as illegitimacy. They propose counter-concepts such as illogic and illegitimacy to describe this phenomenon.

DEFINING PROFESSIONAL IDENTITY & ROLE

Professional Identity

Watson (2002) argues that the concept of *'professionals'* is all too often both reified and homogenized – treated as a fixed, natural entity rather than a socially constructed concept shaped in time by cultural or historical contexts. A profession can also be seen as an institution: drawing heavily on the work of Scott (2001), Hughes and Hughes

(2013) define professional institutions by the presence of four characteristics, namely bodies of knowledge, role definition and sense of identity, serving the public interest, and ethical conduct. While professional institutions provide individual professionals with role definition and give members a sense of identity, Hughes and Hughes (2013) argue that this is not the whole story and that identities are more personal things.

Professional identity as discussed in this thesis is the identity that individuals ascribe to themselves in the construction of who they are as a professional (specifically, in this work, as an architect). "Identity" loosely refers to the subjective meanings and experiences generated by an individual's ongoing efforts to answer the question 'Who am I?' and its implicit counterpart 'how should I act?' (Alvesson et al., 2008 p.6). It is important to note that professional identities do not simply exist - they are social constructs that are continuously shaped through ongoing interactions between individuals and the institutional context in which they are embedded (Brown and Phua 2011; Scott, 2014).

An institutional lens is specifically relevant when studying professional identity because it enhances understanding of the interplay and negotiation between individuals and the institutional context (Barbour & Lammers, 2015). Alvesson et al. (2008, p. 11) illustrates the relationship between professional identity and institutional contexts by saying "How we understand ourselves is shaped by larger cultural and historical formations, which supply much of our identity vocabularies … in indirect and subtle ways". Therefore, institutional changes at the macro level also impact individuals' professional identity (Bévort & Suddaby, 2016). Furthermore, while professionals might find definition in professional institutions, professionals are also 'the most influential, contemporary crafters of institutions' (Scott, 2008, p. 223).

Roles, identity and their interrelationship

Some argue that *role theory* is obsolete and represents the functionalist conception of a role as something static and non-contextual, making it inapplicable in the context of today's organizations (Simpson and Carroll, 2008). This is in part why *identity theory* has been developed during the last 30 years in studies on individuals in organizations

(Alvesson et al. 2008). Simpson and Carroll (2008) note that the notion of role is used naturally by many organizational members (practitioners) and therefore highlight the need to revisit the contemporary (non-functionalistic) meaning of role in the construction of identities in organizations.

Put simply, *roles* can be seen as functional scripts for task accomplishment or socially constructed templates for action (Abdelnour et al., 2017). Sociologically, a role refers to the behavior expected from a specific *social position* or social context (Scott, 2014; Biddle, 2013). Roles often have characteristic effects or *functions* in social settings that help maintain their structure (Biddle, 2013). In both everyday and scholarly contexts, the term "role" is often used to describe a social position (Biddle, 2013). This is problematic because a social position may encompass multiple roles to meet contextual *expectations*. For example, Turner (1956, p.317) notes that 'role' pertains to behavior, not the position itself; one can enact a role but not occupy it. In my research, the social position being studied is the occupation 'architect', while roles are the various behaviors architects adopt to fulfill occupational expectations (Biddle, 2013; Scott, 2014). Consequently, multiple roles may be inherent or constructed within any professional or social situation. The theoretical lens applied in Paper I uses a concept of role that encompasses social position, function, and expectation.

In this thesis, roles are positioned as "emergent" and "incomplete", which permits improvisation and testing of different types of roles (Simpson and Carroll, 2008 p.43). This approach aligns with Alvesson and Willmott's (2002, p.626) description of roles as being "improvised" rather than strictly following scripts. From an institutional perspective, role construction involves individuals interpreting role expectations—whether regulative, normative, or cultural-cognitive—at the field, organizational, or personal level to assess legitimacy. They then improvise, enact, and test the role, reevaluating its legitimacy in the social context. Through this dynamic process, individuals continually shape or shift between roles based on ongoing interpretation of their environment. The construction of roles is thus never complete: individuals continuously interpret and refine roles by testing them within social contexts. This process is also emergent, in the sense that it evolves in response to the continuous changes in both social context and

self-perception. Consequently, roles are dynamically shaped by external expectations and individual self-perceptions, often through experimentation (Ibarra, 1999). This means that role creation is a stepwise socialization process (Simpson & Carroll, 2008). Simpson and Carroll (2008) suggest that in this dynamic process, individuals can both become locked in a particular view of oneself and unlock the identity construction process by shifting between roles.

The *relationship between roles and identity* is that roles are both created (based on self-perception of one's identity or professional identity) and means of maintaining, creating, or disrupting one's own professional identity. Simpson and Carroll (2008, p. 43) describe how construction of roles and identity occur symbiotically in a "dynamic social process" and are therefore both vital for understanding a profession. Both identities and roles undergo constant change that is influenced by internal and external inputs from role models, experiences, and the individual's self-perception (Ashforth and Saks, 1995). While predefined roles may exist, individuals have the agency to choose the extent to which they adopt, modify, or reject a particular role (Simpson and Carroll 2008). Paper III uses this dynamic relationship between roles and identity as a theoretical lens to study professional adaptation.

Role and identity concepts in profession research

Within profession research, three concepts are frequently used when discussing professionalization and adaptation toward institutional change. These concepts vary in their ties to the moder organization, their flexibility, and their theoretical origin.

The first of these concepts is that of *hybrid professionals*—individuals integrating expertise across multiple disciplines—is becoming increasingly prominent in professional and organizational research. For example, in construction, a BIM coordinator may merge architectural, managerial, and technical skills. Blomgren and Waks (2015) describe hybridization as a coping mechanism for navigating conflicting institutional demands, while Nordegraaf (2015) highlights identity work as essential in merging institutional values into professional identity. Roles are central to this hybridization process, as individuals fluidly invoke various roles across life contexts (Abdelnour et al., 2017),

reflecting a dynamic social process (Simpson & Carroll, 2008). Goto (2021) explores how emerging technologies such as AI push professionals to adopt hybrid identities combining traditional expertise with digital competencies, further emphasizing the role of prospective sensemaking in adapting to digitalization (Goto, 2022).

Closely related are *boundary-spanning roles,* such as sustainability or project managers, which bridge gaps across organizations and departments, encouraging collaboration and knowledge flow (Mors et al., 2018; Hayes et al., 2023). These roles require identity flexibility to navigate diverse external and internal contexts.

The last of the three concepts is *modular individuals*. This concept originates in gig economy research and refers to professionals who adapt fluidly across multiple projects or institutional contexts without long-term embedding (Abdelnour et al., 2017). The rise of the modular individual reflects the growing importance of flexible, multi-contextual professional identity.

four.

RELATED RESEARCH

Institutional change through professionalization in construction research

In this chapter, I review research that is closely aligned with my work in that it focuses on professionals and institutional change in construction (particularly in relation to digitalization and sustainability). Particular attention is given to studies on roles and identity. This discussion situates my thesis within the broader academic discourse in construction research.

There has been relatively little construction management research focusing on 'managing fragmentation' with a social and cultural focus on professionals and their adaptation. However, there is a large body of research on 'achieving institutional change' with a focus on professionalization in digitalization and sustainability. Not least in the Swedish context, such research has made important contributions that this thesis aims to build upon.

Although Miraj et al., (2025) recently noted that existing literature often emphasizes technical considerations, studies aiming to understand

the implementation of digitalization and sustainability in construction projects and practice have started to address the social and cultural barriers to these changes. For example, Dowsett and Harty (2019) stressed the need to understand users' perceptions of new technologies' potential outcomes, while Andersson and Eidenskog (2023) and Lundberg et al. (2022) have examined the social and behavioral factors underpinning change. Similar trends exist in sustainability-related construction research. For example, in their review of circular economy (CE) adoption in construction, Ababio and Lu (2023) identify five types of barriers, one of which is 'social and cultural'. They further argue that because sustainability is a multileveled phenomenon, it requires research that addresses the interactions between individual agency, organizational strategies, and broader institutional influences.

INSTITUTIONAL CHANGE THROUGH PROFESSIONALIZATION

There is an established body of research on social and cultural barriers to change in construction. For example, Andersson and Eidenskog (2023) explored how BIM effects power dynamics in projects. Construction researchers have often adopted an institution perspective when focusing on social and cultural barriers rather than technological ones, as exemplified by Andersson and Buser's (2022) study on how institutionalized practices hinder sustainabilization in the Swedish construction sector.

A niche within this field of study comprises research focusing specifically on professionalization as part of 'achieving institutional change' within institutionalized construction. An important contribution resulting from these studies is that there may be misalignment between expectations of the BIM role, indicating a possible tension that may hinder the professional development of the role (Bosch-Sijtsema et al., 2019). Furthermore, in relation to digitalization, Bosch-Sijtsema et al. (2019) stressed that it is important for the BIM role to be accepted (i.e., for the industry to recognize its tasks and responsibilities) for it to become institutionalized. A subsequent study by the same authors highlighted the crucial function

of BIM roles (e.g. coordinators or strategists) in advancing BIM use in projects by acting as ambassadors (Bosch-Sijtsema et al., 2021). However, they also stressed the need for professionals to navigate both new and existing expectations (Bosch-Sijtsema et al., 2019).

Related arguments have been made in relation to sustainability. For example, Gluch and Bosch-Sijtsema (2016) concluded that environmental professionals must navigate being future-oriented and pursuing innovative goals alongside historical role expectations, causing them to experience stress. Similarly, Gluch and Månsson (2021) found that the success of sustainability managers navigating conflicting institutional demands depended on the ability to balance existing demands while continuously reshaping their profession in relation to industry trends.

The existing literature on professionalization in these domains (digitalization and sustainabilization) within Sweden thus clearly indicates that professional adaptation (and particularly, the ability to shift roles in different contexts) is vital for institutional change. This aligns with findings in other domains: Georg and Tryggestad (2009) observed that project managers did not follow rigid roles but actively adapted to the demands of each new construction project, highlighting an interplay between formal and informal role dynamics that may be universal among construction professionals.

Andersson and Buser (2022) examined the transition towards reuse (sustainability) by studying respondents' reactions to new regulations and highlighted that although change is currently occurring via the enactment of roles, these roles are not fully institutionalized. Leaning on the work of Karrbom Gustavsson (2018), this may be because professionals exist in a "liminal" state during change processes where their roles are fluid and never fully defined. She argues that such states are characterized by ambiguity and fluidity as they represent a shift away from an established situation toward a new, yet-to-be-defined status (Karrbom Gustavsson, 2018).

The current understanding of professionalization in relation to 'achieving institutional change' in Swedish construction research can thus be summarized as follows: professionalization involves navigating conflicting demands and practices by reshaping and adapting

professionals' roles to the current context. Here I expand on this understanding by adding the perspective of fragmentation.

IDENTITY AND ROLES IN CONSTRUCTION

The concept of identity in construction management has historically been underexplored, with most research adopting a psychological and positivist approach (Brown and Phua, 2011). Brown and Phua (2011) introduce a sociological and critical perspective, examining how construction managers' identities are constructed through personal beliefs, diverse practices, and role expectations. They argue that construction managers cannot be seen as a homogeneous group and should instead be seen as individual identities that often reflect varying beliefs and practices. These arguments challenge a common assumption in construction research that roles are stable and defined by contractual agreements or established cultural norms (Brown & Phua, 2011; Georg and Tryggestad, 2009). With a similar focus on professional identity, Löwstedt and Räisänen (2014) concluded that contractors typically embed the identity of someone 'who knows how to build' and show how self-definition at the individual and group levels profoundly affects performance and outcomes, suggesting that an identity lens may enhance understanding of change incentives in the construction industry.

Within research that acknowledges professionals' individual identities, there has been some debate about how professionals in the construction industry must often navigate multiple, sometimes conflicting, roles and identities. Troje and Gluch (2020) studied emerging roles relating to social procurement and suggest, with support from Edwards (2010), that professionals may have to compromise priorities between different roles, potentially weakening the original practices that define their primary identity. This tension is particularly evident in project-based work, where individuals frequently shift roles to fit specific project needs (Gluch, 2009). Similarly, Troje & Gluch (2020) argue that construction's project-based nature means that construction professionals working on diverse projects must be able to

adapt rhetorical arguments to specific contexts/projects, meaning that professional adaptation takes place on a daily basis, from hour to hour.

This adaptation may be enabled by the adoption of informal roles. In keeping with the conclusions of Gluch (2009) and Troje & Gluch (2020), Kabiri and Hughes (2018) found that informal roles arise in response to situational demands. They also suggested that there is institutional tension between informal roles and formal roles that are defined by contractual and organizational standards.

Informal roles may be specifically important in times of change, when professionals occupy the previously mentioned liminal states described by Karrbom Gustavsson (2018). The tension between formal and informal roles has been discussed in terms of an institutional push and pull between stability and adaptability, in which professionals in construction management balance rigid role expectations against the flexible and often informal roles needed to address project challenges in real time (Chan & Räisänen, 2009; Georg and Tryggestad, 2009).

Sergeeva and Green (2024) recently studied senior executives who describe themselves as champions of innovation. In accordance with the findings discussed above, these authors concluded that roles are fluid and temporal rather than fixed. They also found that individuals create legitimacy for themselves through their self-perception or the perception of their professional identity. It thus appears that legitimacy is an important aspect of professional adaptation.

To summarize, current research on identity and roles in construction highlights that identities and roles in the industry are fluid, context-dependent, and shaped through both formal structures and informal practices. There is also an increasing focus on how professionals navigate conflicting roles and build legitimacy through self-perception and adaptation. This thesis builds on these findings by focusing on the involvement of identity and roles in the process of agency as objects of professional adaptation and institutional change. The thesis also addresses identity and professional adaptation in the context of fragmentation, digitalization and sustainability, which has not previously been explored in construction research.

PROFESSIONALIZATION OF THE ARCHITECT

Among the various roles in construction, that of the architect has been one of the most scrutinized and has also undergone perhaps the greatest evolution (Cohen, 2005). However, architects have received relatively little attention in professional studies despite their integral role in construction and the sensitivity of architecture to political, economic, and social shifts (Cohen, 2005). Consequently, little is known about professional adaptation within the *architect profession*.

In studies that have examined changes in the architects' profession, identity is often either part of the theoretical focus (e.g., Ahuja et al., 2017; Ahuja et al., 2020; Ahuja, 2023; Cohen, et al., 2005; Shahruddin & Husain, 2024) or addressed as part of the study's findings (Bos-de Vos, 2019). Cohen (2005) explores the changing professional identity of architects, highlighting the tension between their roles as creative designers, business professionals, and public servants. Furthermore, in a study on architects' professional identity, Ahuja et al. (2020) argue that responsibilities and roles in the construction industry are transforming, which challenges the stability of coherent and stable professional identities. Later, Ahuja (2023) concluded that architects are affected by fragmentation of their work, which creates identity threats that they manage by differentiating themselves from other professionals and modifying their identity and practices. In contrast to earlier identity research, she suggests that this way of coping may lock architects into a professional identity rather than inducing identity transformation.

Similarly, Bos-de Vos et al. (2019) found that architects work actively to change the scope of their profession by performing boundary work. Legitimacy and professional identity play important roles in this process, and are therefore also important for institutional change in construction. Cohen et al., (2005), Ahuja, et al., (2017) and Shahruddin and Husain (2024) showed how the scope of the architect profession has been shifting to address growing economic, managerial, and regulatory pressures that challenge architects' creative autonomy. Similar, Thornton et al., (2005) describes how architects in the US balance professional duality by acting alternately under the logic of an artist and that of an engineer-manager.

Contemporary institutional change processes such as digitalization and sustainable development mean that professionalization of the architect's profession is expected. For example, the development of skills in architectural design for reuse is expected to meet industrial and societal needs for increased *sustainability* (VanUden et al., 2025). Similarly, Gerding et al. (2021) argue that professionalization towards sustainability competence is needed both for traditional roles (such as that of the architect) and new experts. Specifically, their findings showed that the implementation of reuse was most successful when actors with sustainability knowledge (such as architects) were engaged in the early stages of a project, when these actors can influence decision-making processes (Gerding et al., 2021).

Similar professionalization is expected in relation to the *digitalization* domain, although in this case it is expected to occur gradually and over time (Akintola et al., 2020). Part of this professionalization relates to the implementation of BIM, which Jasiński (2021) found to have imposed financial burdens on architects' firms because many clients fail to recognize BIM's value and resist its costs. Additionally, Shahruddin and Husain (2024) explored architects' perceptions of digital transformation through the lens of identity. As in earlier studies on BIM and sustainability professionals, they concluded that architects must adopt multiple identities to navigate the paradoxical nature of digital transformation, treading a fine line between specialization and generalization.

To summarize, previous studies have explored the identity work and professional adaptation of architects, with some specifically addressing fragmentation of work as an identity threat. Related studies have also highlighted the expected professionalization of the architect's role in response to digitalization and sustainability demands. However, the interplay between fragmentation, digitalization, and sustainability in shaping architects' professional identity remains underexplored. Additionally, while professionalization and institutional work within the Swedish construction industry have received considerable attention in relation so some professions (e.g., within management, BIM sustainability, and construction execution), the architect profession has not yet been studied in depth in this context.

five.

METHODOLOGY

Constructing understanding: Interpretative and abductive research process

This chapter is divided into two main sections: 'Research process' and 'Discussion of quality'. In the beginning of the first section, I provide a brief overview of my research journey along with an overview of the process (see Table 1). I then describe each phase of the research process in depth, beginning with my initiation as a PhD student and concluding with the final stages of writing the thesis. That section ends with a summary of the included studies (see Table 2). The second section focuses on the quality of the methods and approaches used throughout the research. Here, I reflect on critical aspects such as trustworthiness, my role as a researcher, limitations and ethical considerations, and alignment with the aim and purpose of my thesis. Finally, in Table 3 I summarize the aim, focus, empirical material, and analytical framework of three included papers to prepare the reader for the chapter 'Summary of findings'.

RESEARCH PROCESS

My research process was abductive in nature (Van Maanen et al., 2007), evolving through an ongoing interaction between empirical data and theoretical insights. I began with an exploratory study to understand the challenges architects face in vertical extension projects. Interviews and focus group workshops led to the emergence of a question about how architects perceive changes in their professional roles, leading me to shift focus toward how these roles are constructed and constrained. During this shift, the interpretative approach emerged naturally as a way of exploring the deeper meanings behind architects' perceptions and actions (Schwartz-Shea & Yanow, 2013; Gabriel, 2018). Throughout the research process, I iteratively refined my theoretical framework, leading to the adoption of an institutional theory lens focused on agency. Using this lens, the remaining phases of my research focused on how architects navigate the complexities of change, especially in relation to fragmentation, digitalization, and sustainability in construction. Each research phase (numbered 1-6 in Table 1) contributed to a more nuanced understanding of professional identity, agency, and institutional change. Table 1 provides an overview of the research process as a whole; its individual phases, actions, and outcomes are described in detail in the following sections.

Table 1: Summary of my research process, including shifts in methodological approach, theoretical understanding, empirical studies and papers. For details, see Table 2, Table 3, and Appendix A.

Phase	**Actions** See Table 2, and Appendix A	**Outcome** Details, See Table 3
(1) *Searching for a problem and purpose, Jan 2019-June 2020*	**(Study A)** Exploratory pre-study on vertical extension projects, **(Study B)** Case study	*Based on Study A:* Pre-study report [1], **Conference paper** [2] *Overall:* Identification of a problem for deeper study
(2) *Searching for understanding of the problem, Aug 2020-June 2022*	**(Study C)** Focus group and interview study	Findings related to the problem, **Paper I** [3], Mid-seminar report [4] and Research report [5]

(3) *A shift in methodological approach, 2020-2022*	Embracing the interpretative approach that emerged from the interviews & focus groups	Awareness and theoretical understanding of my methodological approach
(4) *Searching for a theoretical understanding, Aug 2022-Okt 2024*	**(Study D)** Interview study and theoretical framing of the phenomena of interest	Analytical framework (agency) and **Paper II** [6]
(5) *Searching for a practical understanding, Aug 2022-Okt 2022*	**(Study E)** Shadowing **s**tudy	Empirical material for Paper III
(June 2023-Aug 2024: Parental leave)		
(6) *Searching for a total contribution, Sept 2024-April 2025*	Synthesis of the papers; Writing the PhD Thesis and Paper III	**Paper III** [7] and the overall theme for the **PhD thesis**
(April 2025-December 2025: Parental leave)		

[1] (Norell, 2019) [2] (Norell et al., 2020) [3] (Norell & Stehn, 2025) [4] Unpublished
[5] (Norell, 2022) [6] (Norell & Engström, 2025), [7] Norell, Submitted 2025

(1) Searching for a problem and purpose

Studies A & B: Exploratory pre-study and Case Study, within VE projects

This work began in January 2019, when I graduated from LTU with a degree in Architectural Engineering. Just a few days later, I embarked on my PhD journey. The research project I joined sought to explore how urban densification could be achieved sustainably by building timber framed vertical extensions rather than exploiting additional land. Within the broader project framework, which comprised approximately ten work packages, my focus centered on architectural quality.

Given the initially undefined nature of the research problem, my first step was to conduct a six-month exploratory pre-study (*Study A*). During this phase, I interviewed eight architects who had experience with vertical extension projects. Rather than adhering strictly to a pre-structured interview protocol, I used a modified SWOT framework, guiding the conversation toward insights, challenges, opportunities, and barriers. This approach allowed me to probe their reflections on both specific projects and the broader systemic context of vertical extensions.

The findings from these interviews were synthesized in a pre-study report ([1] in Table 1) that summarized the architects' experiences and outlined what I saw as the next steps for the research project. The report emphasized that the primary challenges architects encountered in vertical extension projects were rarely linked to architectural quality or design itself. Instead, they often involved barriers to performing their profession effectively, such as insufficient information, a lack of relevant expertise early in the project, or uncertainties about project conditions. Based on this, I recommended further research on how such uncertainties could be addressed earlier in the process.

To pursue this, I conducted a study involving video- or sound-recorded interviews with architects from eight ongoing vertical extension projects and selected three of these projects as cases for closer observation during their project design meetings, where I took notes (*Study B*). For further details, see Appendix A.

In parallel to this, I wrote a conference paper based on the findings of my pre-study, Study A (Norell et al., 2020). Somewhere during this process, a question began emerging from the architects' narratives: how do architects perceive their ability to fulfill what they see as their professional role? This question was partly based on one of the conclusions in the conference paper: "*The research also points out that there is potentially a gap in the Swedish architects' authorized management responsibilities and those unofficially taken on*" (Norell et al., 2020, p. 632). This realization, uncovered through the article and the parallel Study B, steered my focus toward understanding barriers that may hinder architects from performing their professional *roles*, and relatedly, understanding how they *perceive* those roles.

(2) Searching for understanding of the problem

Study C: Focus group and interview-study

This emergent question prompted a shift in focus toward understanding how architects' roles are constructed and constrained. This shift occurred during an intense period of empirical exploration in which I left the previous study (Study B) un-analyzed to focus on the next step in the research project (which had already been planned): a series of *focus group* meetings (Study C). This shift in focus meant that Study B remained unanalyzed and its results were not used in subsequent papers because

of its heavy focus on issues relating to architectural quality in vertical extension projects rather than issues related to the architect's *role*. Despite this, the findings of Study B expanded my overall understanding of issues in vertical extension projects and therefore contributed to the final research report of the Timber on Top research project (Norell, 2022).

I took the opportunity to explore the emerging questions regarding the architect's role further in the focus group and interview study (Study C). These workshops thus served two purposes: to create value for the participants through knowledge-sharing and networking (and later by gaining access to the findings presented in the final report of the research project); and to provide a structured but open forum for studying their perceptions on how their professional roles were constructed and constrained.

Focus groups are valuable for exploring participant interactions (Morgan, 1996), and in this work they created a natural setting that encouraged the architects to reflect on and discuss the challenges of their roles. A significant positive effect of the focus group method was that participants asked each other follow-up questions, which facilitated a deeper exploration of the topic even without my direct intervention. This peer interaction helped bring out nuanced insights that may not have been captured otherwise. The group discussions also provided valuable insights into how participants validated or challenged each other's viewpoints. Participants either shared their own experiences or highlighted instances where they had different perspectives, leading to discussions about why these differences existed. This dynamic allowed for a richer understanding of the subject matter and enhanced the interpretative depth of the findings. The discussions about the lessons learned from VE projects offered a deeper understanding of the architect's role within the specific social context of building projects (Biddle, 1979; Scott, 2014). Importantly, these discussions also provided valuable contextual data to support broader generalizations to other projects, as they encompassed elements of both rebuilding and new construction.

The first focus group meeting (Occasion 0) was held face-to-face in Stockholm with representatives from all eight firms participating in the research project (Firm: B, C, D, F, I, J, L, M). Before that meeting I had interviewed representatives from all of these firms except firm D

during Study A and B (see Table 2 or Appendix A). The remaining five occasions involved meetings that were held online, once per month, with each one having one central theme. The core group of participants consisted of representatives (architects) from the eight architectural firms; other actors sometimes participated depending on the meeting's theme. These other participants included representatives of real estate owners, municipal planners, timber housing companies, and a building historian. For details of the themes and participants, see Appendix A.

A limitation of focus group studies, addressed by Reed and Payton (1997) is the risk of one participant dominating the discussion. Because I had met some of the participants in previous studies and spoken to them face-to-face during focus group occasion 0, I had prior knowledge of their personalities, which I could use to strategically plan the groups for the other occasions (1-5) and limit the likelihood of one participant dominating any given discussion. The fact that the participants were already acquainted with one another and with me before the online focus group meetings also likely helped them to feel more comfortable in the online setting.

I strategically planned the composition of the session groups—always organizing two or three groups in parallel—based on my knowledge of their expertise and potential to contribute meaningfully to the discussion. Participants were often switched between groups—for example, they were initially divided by discipline, with architects in one group and real estate owners (clients) in another, before being reorganized into heterogeneous groups to discuss other prepared questions. This enabled several beneficial interactions – for example, an architect in a heterogeneous group with clients could say, "We discussed this in our [earlier homogeneous] group," which helped to boost their confidence in bringing up that feeling or experience in mixed groups. Additionally, the topics discussed in the homogeneous groups were often later debated in the heterogeneous groups, allowing me to observe nuances in participants' perceptions. For each of the five occasions (which were scheduled as monthly half-day sessions), I carefully tailored the group compositions with these considerations in mind. The empirical material from the focus group study consisted of 23 video-recorded sessions. For more details about the participants, sessions, and themes for each occasion, see Appendix A.

In parallel with planning the focus group series, I began exploring literature on the concept of roles, and in particular how they are constructed and studied. Influential works by Biddle (2013), Kahn et al. (1964), and Rizzo et al. (1970) offered foundational insights into some central sociological concepts relating to roles, including expectations, functions, and social position. This theoretical grounding informed the design of the questions to discuss during the focus group sessions.

After analyzing the focus group sessions, an *interview study* was conducted to gain a deeper understanding of the patterns that emerged from the focus group study. These interviews became a key source of deeper insight into the participants' perspectives. During the interviews, and in the subsequent interview study (Study D) in Phase 4, I put significant effort into empathically understanding the person I was engaging with. At the same time, I allowed them the space to steer the discussion toward what felt most natural or relevant to them. I often focused on uncovering the intent or purpose behind what they narrated, especially the "why" behind their views and experiences. These follow-up questions usually arose organically as the conversation unfolded, often at moments when further clarification or insight felt necessary. For example, I might ask, "Earlier, you mentioned doing this or that—could you explain a bit more about why you approach it that way?" or "You mentioned feeling this way—can you expand on what led to that thought?" This approach required full engagement, using follow-up questions to build on earlier points and gain a deeper, layered understanding of their perceptions, intentions, and experiences.

Although the focus group study focused on the architect's role and related challenges associated with this role in general and in VE projects in particular, the paper that was ultimately written based on this study focused on fragmentation. This subject emerged as the dominant theme during the analytical process, which highlighted it as a common factor that was tightly connected to several other emerging themes. The focus on fragmentation in Paper I represented an important choice of path that influenced the direction of the rest of my research and ultimately shaped the focus of this thesis. This choice of path was reinforced when I was writing my mid-seminar report (unpublished but presented in a seminar with an external opponent in June 2021), where I discussed various possible paths for my future research.

Briefly, the analysis of the empirical material for Paper I involved an iterative spiral of learning and interpreting findings that included a discussion between me and my co-author. Detailed accounts of these analytical processes can be found in Paper I; the iterative spiral is illustrated in Figure 2 of that work.

(3) A shift in methodological approach

Embracing the emergent interpretative approach

The previous phase also marked a significant shift in my methodological approach. Coming from an engineering background, I had never considered that knowledge could mean different things to different people (epistemology) or that the ways knowledge is generated (methodology) could depend on one's perception of reality (ontology). As I delved into these methodological concepts during methodology courses and while reading the methodology literature, I realized I had shifted away from a more engineering-oriented approach that assumed the existence of a definitive truth to uncover. In its place was a more nuanced perspective in which truth is subjectively constructed and varies among individuals.

This change in perspective led me toward a more interpretative approach in my research. Interpretative research is grounded in qualitative methods and focuses on understanding human behavior and social phenomena through the subjective experiences of participants (Schwartz-Shea & Yanow, 2013; Suddaby & Greenwood, 2009). Unlike positivist research, which seeks to generalize from specific data points, interpretivism aims to uncover the deeper meanings behind actions, emotions, and intentions (Gabriel, 2018). This approach acknowledges that human behavior arises from the interplay between the individual and broader socio-cultural contexts (Darby et al., 2019). As I explored how architects navigate and make sense of their roles, interpretative methodology provided a natural framework for capturing the lived experiences and subjective realities of professionals in the construction industry.

This shift also influenced how I approached data collection and analysis. The focus group workshops, which were recorded, transcribed, and iteratively analyzed, became a trove of information for uncovering architects' perceptions of their professional roles. Follow-up interviews

with five of the focus group participants enabled deeper exploration of the patterns that emerged from the workshops, with a particular focus on understanding the architects' perceptions and reflections on their roles and broader fragmentation phenomena.

Engaging with literature on quality in interpretative research informed my approach to Study C, prompting me to incorporate collaborative elements during interviews. This collaboration with respondents was intended to enhance my understanding of their perceptions. Researcher triangulation also became a critical component of the analytical process to reinforce the credibility of the findings. Specifically, my co-author and I collaboratively analyzed the focus group sessions from Occasion 4, deliberating on interpretations before I analyzed the remaining data (Occasions 1, 2, 3, and 5). This was followed by additional discussions before I conducted the interviews and while I was drafting the findings of *Paper I*.

The new focus on the 'problem' or phenomenon of fragmentation and the emerging interpretive approach culminated in my first journal article (Norell & Stehn, 2025), which was submitted in its initial form in June 2022 and was ultimately accepted in September 2024 before being published in the beginning of 2025. While working on Paper I, I realized that examining architects' perceptions of their roles and challenges revealed macro-level patterns that provided valuable insights into fragmentation. Notably, some of my findings contradicted previous research. This became a pivotal moment in my PhD, as I recognized the value of exploring macro-level phenomena such as fragmentation from the level of the individual (i.e., the micro-level). The approach of 'exploring the grand through the granular' became a cornerstone of my research approach, shaping the following studies (D and E) and papers (II and III). For details of Paper I, see Table 3.

(4) Searching for a theoretical lens

Study D: Interview study and theoretical framing of the phenomena

From the accumulated understanding of the architect's perception of their role, gained through studies A-C, I began discerning patterns in how architects conceptualized their roles in relation to external pressures. Meanwhile, institutional theory had begun to appear more frequently in the articles I read on roles, professionals, and change. I

therefore started reading up on institution theory as a possible lens to describe this phenomenon. As I had no prior experience with institutional theory, I sought to familiarize myself with it by reading foundational works such as those of Scott (2014), DiMaggio & Powell (1983), Battilana (2006), and Suchman (1995). While reading, I found Scott's (2014) descriptions of institution theory particularly resonant with my own thoughts. As I continued exploring, it was as if a penny dropped: I became increasingly drawn to institutional theory, realizing it could provide the language I needed to articulate the phenomena I wanted to study. I also found institutional theory to resonate with my ontology and methodological approach.

Between 2020 and 2022, I had the opportunity to supervise six master's theses focused on either vertical extension projects or architects' roles. Two of these theses (2021, 2022) specifically explored architects' roles in the contexts of BIM and reuse. At that time, my understanding of how architects exercise agency in response to institutional change was primarily based on their coping strategies related to fragmentation (related to Study C and Paper I). However, by aggregating insights from earlier interviews, I began to see that broader changes such as digitalization and sustainability significantly influenced architects' perceptions of their professional roles and actions. I therefore saw an opportunity to position these 'trends'—BIM and reuse—as emerging macro-level phenomena, closely tied to digitalization and sustainability, that could be studied through the lens of individual experiences, continuing the 'grand through the granular' approach.

I related these trends (BIM and reuse) to digitalization and sustainability, seeing them as examples of institutional change. The focus of *Study D* thus became to deepen my understanding of how architects navigate institutional change in these specific cases. By collaborating with the master's students on this topic, I guided the design of their studies to capture architects' experiences of these trends, ensuring that the data collection and analysis adhered to ethical standards and interpretive principles.

When analyzing the 15 video- or audio-recorded interviews (7 on BIM and 8 on reuse) conducted by the master's thesis students as part of the background research for Study D, I observed that architects frequently cited an abstract sense of ongoing change as their rationale

for engaging with trends like reuse and BIM. The analysis of the background interviews, combined with institutional theory as a potential theoretical lens for describing and analyzing my empirical material, guided the theoretical direction and planning of the subsequent interviews in Study D. With this focus in mind, and drawing on key concepts from institutional theory such as agency and legitimacy, I planned the follow-up interviews.

The follow-up interviews (Study D) involved 7 of the 15 architects from the initial background interviews. These interviews aimed to delve deeper into their perceptions of legitimacy and agency in relation to digitalization (BIM) and sustainability efforts (reuse). In this case I framed digitalization and sustainabilization as 'an abstract stream of change' or 'a movement', based on my analysis of the first 15 background interviews. These interviews allowed me to ask follow-up questions based on observations from the background interviews and to let new questions emerge organically during the discussions. Like the interviews in Study C, these 7 interviews also involved elements of collaboration: I shared my interpretations directly with the respondents, allowing them to challenge my views or provide additional details that enhanced my understanding and the overall credibility of the findings (Lincoln et al., 1985).

When planning the interview study, I had read up on literature regarding interviews as a research method within interpretative research and taken a PhD course on reflexive and creative methodology. This made me aware of a key challenge in interview studies; the dynamic between the identity the interviewer attributes to the respondent and the identity the respondent assumes during the interview (Alvesson, 2003). Alvesson (2003) illustrates this by noting that an individual will provide different answers to questions about work satisfaction depending on whether they primarily see themselves as a mother or as a manager in that interview setting. This was especially challenging in this interview study, where I aimed to understand how the architects perceived themselves as architects and to separate this from how they perceived the *institution* of "architect". Alvesson (2003) also emphasizes that the interview itself can serve as a site for identity work, with respondents actively constructing their identity during the interview, rather than simply 'revealing' it. To deal with this, many of my interview

questions were designed to guide respondents in this direction. For example, I would ask, "In your professional role as an architect, how do you...?" This approach not only helps clarify what I, as the researcher, am seeking but also helps the respondent to feel more at ease, hopefully avoiding the tendency described by Alvesson (2003) for interviews to involve a silent process in which respondents try to discern what the interviewer wants from them.

After analyzing all 22 interviews, including the 15 background interviews and the 7 follow-up interviews, I developed a stricter analytical framework through an iterative process of analysis and discussion with my co-author (researcher triangulation). In line with the principles of interpretative research, the goal was to move beyond surface-level observations and uncover deeper meanings in participants' narratives (Prasad, 2017). The analytical methods were iterative, reflecting the recursive nature of interpretative inquiry, and following the two-step framework of Darby et al. (2019), which involves first analyzing individual perceptions (intratextual analysis), then synthesizing these narratives to identify patterns and shared meanings (intertextual analysis).

Once the analytical framework was established, it guided the creation of empirical material by generating seven narratives based on the individuals who participated in both the background and follow-up interviews. This abductive process ultimately informed my second journal article (Norell & Engström, 2025), which explores how architects adapt (or reject adapting) their professional roles in response to emerging demands such as digitalization and sustainability, placing a theoretical focus on legitimacy and agency. For details of *Paper II*, see Table 3.

(5) Searching for a practical understanding

Study E: Shadowing study

During the fall of 2022, in parallel to conducting the follow-up interviews in study D and starting to write Paper II, I also conducted a shadowing study (Study E). At that time, the theoretical framing of Paper II, which focused on agency, had not yet been fully developed, and the findings had not been analyzed. As a result, the shadowing study was not influenced by these aspects and remained more open, allowing

events related to fragmentation, digitalization and sustainability to be captured with fewer preconceptions. However, had Paper II been finalized beforehand, study E might have provided a more detailed and deep account of agency in practice.

According to McDonald (2005), shadowing involves the researcher closely following individuals within their organizational context to observe their actions, decisions, and interactions in real time. I chose this method because it complemented my earlier studies. While interviews and observations revealed intentions and perceptions, they did not capture actual behaviors, which I saw as a limitation of my previous research.

During the study, I shadowed a senior architect (Architect N2) across various contexts including formal and informal meetings, as well as work between meetings, for 10 days at their firm and another 10 days online. This individual holds a unique position with significant informal status within their firm, which made them an ideal choice for the shadowing study as it meant I had access to project meetings and key internal discussions. For instance, Architect N2 participated as a moderator in the Leaders' Conference on the firm's reorganization, despite not officially being a leader. His familiarity with me (I had conducted a study at the firm before starting my PhD) facilitated trust and openness, helping to secure the necessary access.

Two strands of empirical material were constructed during the Shadowing study. The first comprised 67 pages of continuous writing, which included notes from spontaneous "interviews" conducted to clarify specific events and gain insights into motives and intentions, along with my own reflections on particular events or the day as a whole. The second comprised two video-recorded interviews, conducted after analyzing periods of observation. A detailed description of the study's planning, execution, and analysis is provided in Paper III, while Appendix A describes details behind the empirical material.

This immersive method allowed me to observe actions as they unfolded within the organizational context (McDonald, 2005), deepening my understanding of how individuals navigate and make sense of their environments. It also illuminated micro-level interactions, which, when aggregated, reveal broader organizational dynamics. Importantly, shadowing aligned with my interpretative approach by

capturing participants' subjective experiences (Quinlan, 2008), providing critical insights into how individuals interact with and interpret their institutional contexts.

(6) Searching for a total contribution

Synthesis of the papers; Writing the PhD Thesis and Paper III

As I completed the writing of Paper II, I began to see patterns linking Paper I, which focused on fragmentation, and Paper II, which examined institutional change in the context of digitalization and sustainability. I recognized how fragmentation, digitalization and sustainability influence each other in the case of architects. This realization led me to design *Paper III* to explore this relationship more directly. Knowing that Study C (Paper I) had generated empirical material on digitalization and sustainability that had been excluded from earlier analyses, and that Study D could offer valuable insights into fragmentation, I revisited both datasets. I also analyzed the shadowing study (Study E) with a focus on fragmentation, digitalization, and sustainability. During the analysis of Study E and the reanalysis of empirical material from Studies C and D, I aimed to deepen the understanding of the relationship between fragmentation and institutional change. In parallel, I explored related literature that linked fragmentation to digitalization or sustainability in various ways.

Furthermore, while Papers I and II had touched on identity, Paper III provided an opportunity for a more focused analysis of how professional identity and roles influence architects' agency within fragmented, digitalized, and sustainability-driven contexts. To this end, I reviewed publications on professional adaptation that focused on professional identity and roles, specifically seeking publications from the literature on professions, construction, and the Swedish construction context.

While synthesizing my contributions in all three papers, I realized that the experiences described by the architects in my studies contributed with perspectives on existing literature on fragmentation and institutional change (digitalization and sustainability). This highlighted the potential of my research to contribute to construction research based on both its scope (the architect) and its approach

(individual level, interpretative, using a multi-leveled framework for agency). With this understanding, a central objective of my thesis began to crystallize: to provide perspectives on the longstanding and emerging challenges of 'managing fragmentation' and 'achieving institutional change' in construction. Importantly, the findings presented in Paper III highlight that these challenges should not be seen as isolated phenomena but as one, possibly paradoxical, phenomenon. For details of Paper III, see Table 3.

This thesis synthesizes insights from all three of the included papers to show how architects perceive their continuously evolving institutional context (which is characterized by fragmentation, digitalization, and sustainability) and exercise agency through coping, navigation, and adaptation. It also addresses how these intents and actions influence broader challenges in construction such as 'managing fragmentation' and 'achieving institutional change'. An overview of studies A-E is provided in Table A.

Table 2: Summary of the studies A-E. For more details of the participants and data, see Appendix A.

Study	Empirical Material	Participants	Time of study	Phenomena in focus (VE=Vertical Extensions)	Related to Paper
Study A *(Exploratory Pre-study, Interviews)*	8 Interviews, video/sound-recorded	B1, C1, E1, F1+F2, G1, H1, I1, K1,	March-April 2019	Architectural Quality, VE of Buildings	**Conference Paper**
Study B *(Interviews and Meeting observations)*	8 Interviews, ongoing VE projects, video/sound-recorded Meeting observations in 3 of the projects, notes	F3, F5, F5, I2, I3, J1, L1+L2, M1 I4, L1, M1,	Oct-Dec 2019	Architectural Quality, VE of Buildings	-
Study C *(Focus group and interview-study)*	23 Focus Group sessions 5 Interviews All video-recorded	*Varied representatives from firm:* B, C, D, F, I, J, L, M,	Oct 2019, Aug2020 -Jan2021	Issues relating to the architect's role both in VE projects and in general.	**Paper I**
Study D *(Interview study in two iterations)*	22 video/sound-recorded Interviews with 15 unique architects	A1, B2, B3, B5, C1, C2, D2, D3, D4, D5, N1, N2, P1, P2, Q1	Nov 2021, March 2022, Sept 2022, Nov 2022	How architects relate to, and legitimize their actions related to BIM and reuse	**Paper II**
Study E *(Shadowing; Interviews and observations)*	Shadowing study. 2 video-recorded interviews 67 pages of field notes	The shadowed: N2 (Among the colleagues: N1)	Aug-Oct 2022	How fragmentation, digitalization and sustainability play out in practice.	**Paper III**

DISCUSSION OF QUALITY

This subchapter presents a reflexive discussion of the methods used to construct, analyze, and reconstruct the empirical material in my thesis and the included papers. Its first part addresses four concepts relating to 'trustworthiness' or quality within qualitative research (originally developed by Lincoln et al. 1985): Credibility, Transferability, Dependability and Confirmability. The following two parts discuss 1) the strengths of my methods, and how they align with the aim and purpose of the thesis, and 2) the limitations of the chosen methods and the ethical considerations that arose during the studies.

Credibility

Credibility refers to how well the researcher's findings and interpretations align with the participants' experiences and realities. It is often regarded as the qualitative counterpart to **internal validity** in quantitative research (Lincoln et al., 1985). One inherent challenge in interpretative analysis is empathically understanding participants' perceptions, which introduces the risk of misinterpretation. To address this, I prioritized transparency and collaborative engagement during interviews. As I formed interpretations in real-time, I shared them openly with participants, inviting their feedback to refine or challenge my understanding. This approach was used particularly heavily during the in-depth follow-up interviews in Studies C and D, and the spontaneous interviews conducted during the shadowing study, Study E.

The success of this strategy relied heavily on pre-established relationships and prolonged engagement to foster trust and openness. This was especially evident in Study C, where all participating architectural firms were formally involved in the *Timber on Top* project. Before conducting the follow-up interviews, I had come to know five key participants—Architects C1, D1, M1, I4, and L1—more extensively, as they were the most actively engaged contributors to the focus group sessions: C1 was active in 3/6 sessions, D1 in 5/6, and M1, I4, and L1 in 4/6 each. Additionally, some of these individuals had been interviewed in prior studies: Architect C1 in Study A, and Architects L1 and M1 in Study B. During these interviews, both the participants and

I appeared at ease, facilitating open and honest exchanges. I felt comfortable sharing my interpretations of earlier focus group discussions with them, and they responded with candor, expressing not only their frustrations but also their aspirations and hopes for the future. This mutual trust contributed to the depth and authenticity of the data collected.

In Study D, I encountered the respondents for the first time during the interviews so there was no pre-existing relationship between us. Although I had gained some familiarity with the participants through the background interviews conducted by the Master's thesis students I supervised, the participants had not met me personally before. Despite this, the interviews were open and yielded valuable insights, suggesting that trust could be established even within a short timeframe.

In Study E, the shadowing study, I brought significant contextual knowledge to the research setting, having previously completed a project in collaboration with the firm. My contact during that time was also the individual I shadowed, Architect N2. This familiarity allowed me to navigate the workplace easily—I knew where departments were located, where the fika room was, and the layout of the organization. While this familiarity was generally advantageous, the pre-established relationship with my shadowee, Architect N2, and their colleagues posed challenges in informal settings. During lunches and casual interactions, there was an expectation for me to actively participate in conversations rather than remain an observer, making it difficult to maintain a professional boundary. While navigating dual roles required careful management, the overall benefits outweighed the drawbacks, as the established relationship made the shadowing study both possible and highly insightful.

The credibility of the findings was also enhanced through a systematic approach to interpretation. Recognizing the influence of my pre-understandings, I employed collaborative analysis in Papers I and II. My co-authors and I independently analyzed the material before engaging in discussions to challenge and refine each other's interpretations. This process of researcher triangulation not only strengthened the validity of our findings but also facilitated theoretical triangulation, as each researcher contributed with unique perspectives to the analysis (Stake, 1995). This collaborative engagement enriched the

interpretative process, yielding a more nuanced understanding of the context while mitigating confirmation biases.

Moreover, empirical material was generated through diverse methods, including interviews and observations, enabling data triangulation. Study E, the shadowing study, was particularly significant in this regard: by observing architects in their natural context, I could capture not only their perceptions but also their actions, bridging the gap between what they said and what they did. This substantially enhanced the overall credibility of the findings, providing a more comprehensive and grounded understanding of the architects' work.

Transferability

Transferability refers to the extent to which the findings of a qualitative study can be applied to other contexts or settings. It is the qualitative equivalent of (external) **validity** or **generalizability** in quantitative research. According to Lincoln et al., (1985), transferability is not about making general claims but about providing sufficient detailed context for others to assess whether the findings are relevant to their own situations.

The aim of my research was not to select individuals who best represent the entire population. Instead, the focus was on highlighting diversity through the narratives of a few individuals (Schwartz-Shea & Yanow, 2013). This approach challenges the assumption that professionals act uniformly, with stable roles and predictable behaviors (Darby et al., 2019). By offering just a few counter-examples, I demonstrate the limitations of this assumption. This approach can be likened to a "black swan test", in which the observation of a single black swan disproves the belief that all swans are white: by presenting even a few examples that deviate from expected norms, my research exposes the limitations of generalized assumptions about professional behavior.

Importantly, my findings are not intended for statistical generalization, which seeks to apply results from a sample to a larger population using numerical methods (Yin, 2018). Instead, the aim is to provide a richer, more nuanced understanding of the diversity of experiences and actions within the field, aligning with the goals of interpretative research, which explores meaning and context rather

than drawing broad quantitative conclusions (Schwartz-Shea & Yanow, 2013). The focus is on deepening the understanding of how individuals navigate and make sense of their roles and environments, challenging the assumption of uniformity across contexts. While a small sample cannot represent an entire population, these examples are valuable for analytical generalization, which enables the extension of findings to similar contexts based on shared features or conditions (Stake, 1995; Darby et al., 2019). Additionally, the research contributes to theoretical generalization, offering conceptual insights that inform broader theories of professional practice in other settings (Van Maanen et al., 2007). The research thus emphasizes diversity and complexity in professional behaviors, refining our theoretical understanding rather than simplifying it into generalized statistical terms. This aligns with the methodological fit advocated by Edmondson and McManus (2007), who advocate for the use of methods that align with the research objectives and context rather than focusing solely on generalization.

Interpretative research places a strong emphasis on providing rich descriptions of the studied context, enabling others to situate the findings within their contextual settings (Schwartz-Shea & Yanow, 2013; Darby et al., 2019). This aligns with the emphasis that Lincoln et al. (1985) place on *thick descriptions* for enhancing transferability. However, the constraints of academic publishing—particularly word limits—pose a significant challenge to this ideal. This limitation is evident in the included papers. For example, the initial draft of Paper I was submitted to a journal with no word limit and included detailed descriptions of architects' narratives regarding their roles and associated challenges. These rich descriptions provided valuable contextual insights but were substantially condensed in the final published version, which was resubmitted to another journal with an 8,000-word limit due to an extended review process and subsequent rejection. This led to a somewhat fragmented presentation of the narratives in Paper I.

To enhance the analytical and theoretical generalizability of this thesis, I have included the full narrative from the original draft of Paper I in Appendix B. This narrative compiles citations from all of the respondents' accounts into a cohesive voice. While this approach is inconsistent with the interpretative research goal of highlighting individual narratives, it enables the identification of patterns across their

stories, corresponding to the results of an intertextual analysis. To maintain awareness of diverging perspectives, I have included phrases such as "another perspective on this is..." to signal the diversity of views. Thus, while the text is presented as "the voice of the architects" it still captures nuances in the ambiguities and differing perspectives that are presented in the text.

During the writing of Paper II, I aimed to prioritize individual narratives when constructing the findings, reflecting the intratextual phase of the analysis. The findings thus relied heavily on follow-up interviews, focusing on personal intentions and motives, whereas the earlier background interviews primarily informed the study's theoretical framing. The subsequent intertextual analysis synthesized these narratives to identify shared themes for discussion. This way of illustrating individuals' narratives also contributes to contextual understanding, enhancing the transferability of the findings by providing rich individual accounts.

Dependability

Dependability in qualitative research corresponds to **reliability** in quantitative research (Lincoln et al., 1985) but has a broader perspective, emphasizing the need to thoroughly document the chosen methodology and the dynamic research process. This includes detailing how data were collected and analyzed, and providing clear rationales for methodological decisions. Dependability also necessitates illustrating the iterative nature of learning (Darby et al., 2019; Schwartz-Shea & Yanow, 2013), showing how new understandings emerged from the data over time.

In this thesis, the research process is described in detail in the 'Research design' chapter. This description includes explanations of shifts in focus, the emergence of research questions, and the interplay between theory and methodology. The aim was to provide transparency about the research journey, capturing how the study evolved in response to insights gained along the way. Since dependability is closely tied to rigorous documentation, it also benefits from strategies that enhance the study's overall quality, including triangulation, member checking, and other validation methods discussed in the 'Credibility' section.

Confirmability (my role as researcher)

In quantitative research, **objectivity** refers to maintaining neutrality. However, subjectivity is inherent to qualitative interpretative research because a researcher's preunderstandings are central to interpretation. Lincoln et al. (1985) therefore suggest replacing objectivity with confirmability, stressing that findings must be grounded in data rather than the researcher's biases. Since preunderstandings are tacit and difficult to fully articulate, reflexivity becomes essential in this process. As noted by Alvesson and Sköldberg (2017), reflexivity involves critically interrogating one's assumptions and reasoning. Therefore, the following discussion reviews my preunderstandings, my role as a researcher, and how data and interpretations were kept separate during data capture, analysis, and the construction of findings for the three papers.

When I began this PhD, I had some familiarity with the construction field that was shaped by both my architectural engineering education and my brief experience (1.5 years) in practice at a design/project management firm and a structural engineering firm. While this background could have limited my ability to challenge certain assumptions, I believe I remained curious and critical of everything I observed. My education as an engineer within architecture—rather than as a "traditional architect"— might have helped me stay somewhat neutral towards the institutional norms of the architectural profession. Although I am engineer "on paper", I do not quite identify myself as such. For example, during my time working in structural design, I felt disconnected from the field's values and discourse. If anything, I felt more comfortable in the culture of the design and project management firm, possibly because it was the first work culture I encountered after years of study. Although I felt comfortable in the culture of that firm, I still questioned many things that happened, for example during interorganizational meetings. After my 7 months there, I remember feeling ambiguous about the idea of merely participating in the culture instead of changing it. It may have been this critical mindset that later led me to academia, and perhaps my role in this research is best described as that of a critical and curious researcher.

My initial understanding of 'theory' going into the PhD was limited. The findings presented in my master's thesis were based solely on empirical data and were generated using a methodological approach

akin to a design study: solutions were created, tested, and refined collaboratively with architects and HVAC engineers in a real-world context. Specifically, we developed a meeting checklist for early-stage collaboration between architects and HVAC engineers to improve communication and reduce the risk of redesigning solutions later in the process. At that time, I remember it being important for me that the findings were quantitatively grounded. This may say something about how the emerging questions and findings from the studies in this PhD thesis (A-E) have influenced and changed my methodological approach.

To enhance confirmability, it is also crucial to distinguish interpretations from raw data, rather than merely acknowledging the potential subjectivity introduced by my role as a researcher. In the shadowing study, for instance, I meticulously documented my own interpretations separately from the actual events. Furthermore, to ensure that my interpretations are firmly grounded in the data, I have provided access to the raw material from which they are drawn. This is reflected in Papers I-III, with additional support offered in Appendix B, where key citations and detailed empirical material are presented.

Strengths and alignment with aim and purpose

Each of the methods employed in the included studies—focus groups, interviews, and shadowing—was chosen for its ability to provide insights into the subjects of each paper, collectively contributing to a comprehensive understanding of the overarching purpose of this thesis. *Focus groups* were selected for their ability to provide easy access to individuals' perceptions of role expectations and to place these perceptions within the context of previous and ongoing projects. The focus group setting, aimed at sharing experiences and lessons learned, fostered rich discussions that were directly tied to the context of participants' work. Conversely, *interviews* allowed for follow-up questions that facilitated a deeper exploration of individual experiences, perspectives, and motivations. This enabled me to gain a nuanced understanding of personal intentions and how they shape professional actions within the broader institutional context (Schwartz-Shea & Yanow, 2013; Schwandt, 1994). Additionally, *shadowing* was employed to obtain real-time, contextualized data on individuals' behaviors and

interactions within their natural work environments. Unlike the other methods, shadowing provided a first-hand view of how individuals navigate the complexities of their institutional contexts, offering insights into micro-level interactions that often go unnoticed in interviews or focus groups (Quinlan, 2008). Together, these methods offer a nuanced understanding of professionals' roles and behaviors, with each method complementing the others by focusing on different aspects—perceptions of role expectations based on prior experiences, personal motivations and intentions, and real-time actions within an institutional setting (McDonald, 2005; Darby et al., 2019). An overview of studies A-E is provided in Table 2.

Limitations of the methods and Ethical considerations

Focus group as a research method

One key advantage of focus groups, compared to methods such as interviews or shadowing, is their efficiency at capturing rich data in a short amount of time with relatively minimal effort by the researcher (Morgan, 1996). A disadvantage in comparison to interviews is that the researcher has limited control over the flow of discussions and comparatively few opportunities to pose follow-up questions. Paradoxically, this absence of control may have contributed to a more relaxed environment. For example, participants mentioned that they often forgot that I was present, particularly in the online format. This sense of researcher invisibility may have encouraged participants to express themselves more freely, highlighting a unique advantage of online focus groups. Another benefit of the online format was the ability to easily record video interactions, which provided a richer dataset compared to the audio-only recordings that are typically used in face-to-face settings. However, while my reduced presence as a researcher fostered openness, it also posed ethical challenges, particularly regarding the participants' awareness of being observed. These dynamics underscore the potential and ethical complexity of online focus group methods.

A limitation of not holding sessions face-to-face was, of course, the potential of failing to capture body language and the overall "vibe" in

the room. Another deficiency was the inability to capture informal conversations between sessions, which could have enhanced the experience. However, such interactions could also create ethical dilemmas, as consent may have been granted specifically for the recorded interview rather than for the whole meeting including discussions before and after the formal interview.

Interviews as a research method

The interview is a complex research method that requires the researcher to adopt a reflexive approach (Alvesson, 2003). One way to practice reflexivity is for the researcher to reflect on what the interview means for them as a researcher. I did this before conducting the interviews that form the basis of Paper II, allowing me to identify some pitfalls (particularly relating to identity) in advance.

Using interviews as a method for enhancing my understanding of respondents' perceptions and intentions proved to be highly efficient. I often find that respondents open up and share freely without hesitation. The challenge, therefore, was not encouraging them to speak openly, but rather finding the right timing to pose follow-up questions and gently steer the conversation. As a result, many of the interviews were lengthy (see Appendix A) but exceptionally insightful.

Another challenge and potential limitation of interviews is the absence of a shared context and mutual understanding of a phenomenon between the researcher and the interviewee. This was less of an issue in Paper I, where the focus group discussions centered on real project experiences that provided context, and in Paper III, where the interviews followed up on observed events, making the context clearer. However, it was more of a challenge in Paper II, where I aimed to capture architects' perceptions within the evolving context of movements like digitalization and sustainability. Both the definitions and boundaries of these movements were uncertain, making it difficult for both me and the respondents to establish a clear context. For example, in Paper II, architects' relationships to digitalization varied, with some focusing on BIM while others emphasized AI.

One challenge encountered during the background interviews in Paper II, which I did not personally conduct, was that I approached the study more as an observer of the interviews rather than an active

participant. This created a difficulty because I observed the interview sessions post facto, with a slightly different objective to the interviewers themselves. This type of observational setting is less than ideal. Despite these challenges, the interviews (which focused on BIM and reuse practices) contributed significantly to my study in three ways. First, because the discussions were highly practical in nature, they complemented my follow-up interviews, which had a broader focus on participants' overall perceptions, such as their views on digitalization (including BIM) and the changes it brings. Second, although the interviews did not directly address participants' perceptions of their roles as architects, such insights emerged naturally from the data, rather than as explicit responses to my questions, thereby enriching the study. Third, while the seven narratives that underpin the findings in Paper II are based exclusively on citations from the follow-up interviews I conducted, the focus of these interviews, the questions that were asked in them, and the initial conceptualization of agency, institutional movements, and legitimacy as integral components of the analytical framework all emerged from the interpretation of the observed interviews. These interviews thus played a pivotal role in shaping the interview questions, which were closely aligned with the theoretical concepts guiding the study.

It could be considered a limitation that this study generated only seven narratives. However, with regard to saturation, it should be noted that these seven narratives were rich in detail and provided compelling examples that challenged previous assumptions. An important aspect of saturation is the emergence of a discernible pattern. While additional narratives could potentially have added more nuance to individual stories, the patterns identified through the intertextual analysis are likely to remain consistent. Specifically, the patterns revealed that architects navigated legitimacy on multiple levels; that their perception of institutional contexts largely influenced whether their actions were seen as maintaining, disrupting, or creating institutions; and that their self-perception as architects, along with their personal values, shaped their priorities relating to legitimacy.

Shadowing as a research method

A primary challenge in shadowing is the potential influence of the researcher's presence on participants' behavior, which generally diminishes over time as the researcher becomes less noticeable (McDonald, 2005). In my study, however, this process of becoming "invisible" raised significant ethical concerns. Although I obtained consent from all relevant individuals, I felt it was crucial to ensure that my presence in meetings was explicitly acknowledged. This concern was particularly evident in online meetings, where my presence was sometimes invisible to other participants, presenting complex ethical considerations. The shift to virtual work environments creates a growing ethical issue in that digital platforms make the researcher's involvement less obvious. Additionally, Quinlan (2008) points out that even with prior consent, it is impossible to predict all the individuals the shadowed person will interact with. This unpredictability forced me to make real-time ethical decisions, especially when the shadowee occasionally encouraged me to remain silent or not identify myself during online meetings, raising questions about transparency and informed consent. These moments required careful reflection, as I had to balance my responsibility to participants with maintaining the integrity of the research.

Another challenge in conducting the shadowing study—perhaps influenced by my prior relationship with some of the architects—was maintaining professionalism. For instance, during lunch, they might have expected me to interact as a friend or former colleague, even though lunches were part of the informal interactions that required my observation. This forced me to make decisions about what to include in my study and what to "forget" from our conversations. This difficulty, along with the ethical dilemmas it presents, is part of what makes shadowing particularly challenging.

AI-assistance and final proofreading

When writing this thesis, I used artificial intelligence (AI) tools to enhance linguistic clarity, refine sentence structure, and ensure grammatical accuracy. For instance, I used ChatGPT to generate alternative sentence formulations while preserving the original meaning,

thereby improving readability and coherence. I critically assessed all AI-generated suggestions to ensure their appropriateness and adherence to disciplinary conventions.

Beyond language editing, I used ChatGPT as a brainstorming partner in selecting titles for both individual papers and the thesis, refining suggestions iteratively through discussion and evaluation. I also used ChatGPT to improve the translation of respondents' citations from Swedish to English. This was an iterative process where preserving the original tone and meaning was of utmost importance.

While the use of AI tools contributed significantly to reducing errors and enhancing coherence, they had limitations including occasional misinterpretation of context and a lack of subject-specific knowledge, which required my careful oversight. I thus employed AI as a supplementary tool to support rather than replace my critical thinking and academic integrity throughout the writing process.

After completing the full draft and conducting an AI-assisted spell check, I also submitted the entire thesis for professional editing and proofreading to further enhance linguistic precision and clarity.

An overview of the three papers; aim, focus, empirical material and analytical framework are provided in Table 3.

Table 3: Summary of the papers: aim, focus, empirical material, analytical framework.

Paper	Title	Aim	Contextual focus	Empirical material	Analytical framework	Status (Authors)
I	Architects coping with continuous fragmentation	Understand how architects perceive their professional role, and analyze this alongside fragmentation to answer the question: *how are architects coping with the effects of fragmentation?*	Fragmentation	**Study C:** 23 video-recorded Focus group sessions, 5 video-recorded interviews	Coping though socialization, the concepts behind **role**: expectation, function, social position etc.	**Published** (Norell & Stehn, 2025)
II	Professionals navigating continuous movements: interpreting architects' agency and legitimization of BIM and reuse roles	Understand how architects perceive their institutional context including the movements *(digitalization and sustainabilization)* and legitimize their purposive actions relating to BIM and Reuse.	Digitalization, Sustainabilization	**Study D:** 22 video or sound-recorded interviews with 15 unique architects	Institutional work: **agency** and **legitimacy**. Professionals navigating institutional contexts at multiple levels are captured in a cross level analytical framework that includes movements.	**Published online** (Norell & Engström, 2025)
III	Continuous Professional Adapting at the nexus of Fragmentation and Institutional Change: "Being an architect, it's not just a job, it's an identity".	Understanding of the reciprocal relationship between fragmentation and institutional change (*within digitalization and sustainability*), with a specific focus on the professional adaptation within the architectural profession.	Fragmentation, Digitalization, Sustainabilization	**Study C, D,** and **Study E:** Shadowing study. 2 video-recorded interviews 67 pages of field notes	Professional adaptation; focusing on the dynamic process between professional **identity** and roles.	**Submitted** Dec2025 (Norell)

SIX.

SUMMARY OF FINDINGS

Summary of each of the included papers' contributions to this thesis

In this chapter, I summarize the findings from each of the three papers and position their contribution in relation to the assumptions under consideration. The contributions of each paper are compiled in Table 4, at the end of this chapter. The following 'Discussion' chapter explains how these findings challenge the framed assumptions and collectively provide new insight into the longstanding and ongoing challenges of (1) managing fragmentation and (2) achieving institutional change within digitalization and sustainability.

PAPER I

Architects coping with continuous fragmentation

In this paper, we set out to study **fragmentation** from a new point of view by looking at how architects cope with this phenomenon from an

individual level of analysis, with the hope of shedding new light on an old but still widely prevailing problem. We showed how previously suggested solutions to the problems of vertical fragmentation, such as adopting DB contracts, actually increased fragmentation from the *architect's perspective*, and caused it to occur earlier in the design phase (see Figure 3 in Paper I). We also linked this design fragmentation to the division between design and construction, and suggested that it might be desirable to focus more attention on designability issues as a counterpart to buildability issues.

In the paper we positioned fragmentation as a continuous and evolving phenomenon, with the discovery of design fragmentation reinforcing the argument that fragmentation is an ongoing problem. The paper therefore contributes to the understanding that fragmentation is *dynamic* rather than a static problem.

We also discovered that architects are coping with fragmentation through a dynamic social process, making small but often significant adjustments (taking on informal roles). This adaptive behavior was partly motivated by a desire to maintain the role they associated with their professional identity – that of the architect as a generalist with strong obligations to the client and the building's future occupants that must be met by finalizing the design intention and ensuring project success. This coping clearly illustrates how historically rigid and fixed expectations about social positions (or a profession) are dissolved in the dynamic social process that is in play. These findings strongly support the perspective that roles are *flexible* rather than fixed, and the conclusion that *identity* has a strong effect in the adaptation process.

The paper also shows that the architect coped and adapted to vertical fragmentation by undergoing fragmentation themselves, specializing in specific project phases in a manner that could fuel horizontal fragmentation (see Figure 4 in Paper I). This again indicates a need to treat fragmentation as a dynamic problem.

We also discussed the possible effects of continuous fragmentation on project outcomes if specific objectives sought by architects are challenged or become lost in the process. For example, the architects stated that initial ideas and design intentions often became lost in the process when the original architect who 'guarded' those ideas was

replaced. Fragmentation could thus hinder the full implementation of new technological and sustainable innovations in a project.

PAPER II

Professionals navigating continuous movements: interpreting architects' agency and legitimization of BIM and reuse roles

In Paper II, we adopted an institutional work perspective on agency to study how architects perceive their institutional context (including the twin movements of **digitalization and sustainabilization**) and legitimize their purposive actions relating to BIM and reuse. By including multiple institutional contexts (the construction industry, the firm, the profession architect and the movement) in our theoretical framework rather than focusing on one isolated level, we found that some institutional levels can legitimize purposeful actions to maintain, disrupt, or create practices at other levels. Cross-level interactions thus dynamically shape practices and norms by providing legitimacy.

We also discussed that the extent to which architects' agency maintains, creates, or disrupts institutions does not depend on their purposive actions as such. Instead, it depends on how they perceive the institution i.e., the process of interpretation between the individual and the institutional context. This indicates that agency is highly personal because every individual act has its own underlying interpretation and sense of legitimacy. As such, *professionals* belonging to the same professional institution may have widely differing perceptions of that institution and may thus act in different ways.

Our use of a broad perspective on *agency* also revealed how adaptive role adjustments can lead to change within digitalization and sustainability, even when not explicitly intended to do so. This stands in contrast to the view that change is driven by 'entrepreneurs'. Our intertextual analysis revealed that while firm and industry norms and regulations provide legitimacy for adopting or rejecting BIM or reuse roles, architects also prioritize preserving their perception of the professional *identity*. Consequently, personal values, self-perception, and experiences strongly influence the legitimization process. Relatedly, we

observed that architects' perceptions of their professional identity varied, with each one justifying their actions using language that reflects these perceptions. In two of the narratives, architects used the absence of institutional norms, rules, and culture (illegitimacy) as a reason to avoid taking on additional BIM roles even though one of them had been encouraged to take such a role by their firm and both had relevant expertise as they had previously held such a role.

In the paper, we also position digitalization and sustainabilization as *institutional movements* and integrate them into the analytical framework as levels of institutions providing social prescriptions. Such movements need not be formally organized but can emerge from shared values or ideologies. This perspective stems from the analysis of the first 15 interviews, where architects referenced these movements and used their predicted future impact as motivation to adapt their professional roles.

Another implication of the paper was that the hybrid role of BIM coordinator and architect has yet to been institutionalized within projects. The architects' narratives illustrate a recurring pattern in which individuals often fall into a BIM role rather than functioning as architects with integrated BIM responsibilities. This tendency may create reluctance to embrace the BIM role and broaden the scope of the architect's profession to encompass emerging digital coordination competencies.

Prior research underscored the need for individuals advocating for sustainability in projects to be involved at an early stage and to occupy a central position. Accordingly, we found that architects frequently endeavor to integrate reuse into projects. However, given the increasing fragmentation of design and marginalization of architects identified in Paper I, we note that the findings of Paper II indicate that architects may have limited agency to sustain such initiatives across a project's lifecycle. This observation highlights the potential of contractual arrangements to either enable or constrain the architect's capacity to influence sustainability outcomes.

PAPER III

Continuous Professional Adapting at the nexus of Fragmentation and Institutional Change: "Being an architect, it's not just a job, it's an identity".

The purpose of this paper was to deepen the understanding of the relationship between **fragmentation** and institutional change (specifically digitalization and sustainable change), with a specific focus on professional adaptation within the architectural profession. While fragmentation and its effects on **digitalization and sustainability** are often addressed in research, this paper addresses the reciprocal relationship, including how institutional change within digitalization and sustainability may impact continuous fragmentation.

The architects' narratives suggest that implementing BIM may create knowledge gaps and collaboration issues (horizontal fragmentation) both within an architectural team and between professionals from different disciplines. The former may create inefficiencies in the internal handling of BIM models in the architectural firm, missed opportunities for BIM usage, and negative impacts on the resulting architecture. The latter may make sustainability professionals and others hesitant to contribute to BIM models, harming the institutional shift towards sustainability. This discovery that BIM can drive fragmentation reinforces the argument that fragmentation should be seen as an continuous and *dynamic* process rather than a fixed problem to solve. Adopting such a perspective could enable interesting future research on how to 'manage fragmentation'.

While many publications have highlighted fragmentation as a major barrier to the implementation of digital and sustainable innovation, I show in this paper that fragmentation can also be an *enabler* of institutional change towards digitalization and sustainability. Specifically, I describe how aspects of fragmentation can profoundly change the architect's professional scope, creating incentives and space for architects to flexibly undertake tasks and roles related to digitalization and sustainability while recreating their perception of their professional identity. Two such identities are discussed with particular emphasis on their agency to undertake roles relating to digitalization and sustainability in projects. The first such identity is 'the generalist', which

is invoked to explain why architects undertake managerial or coordinating roles in projects, for example by acting as a BIM-coordinator or as an informal project or design manager. The second of these identities is that of 'the samhällsbyggare', which is invoked to explain why architects choose to actively drive change, for example by promoting sustainability in projects. These examples showcase ways in which architects can positively impact institutional change within digitalization and sustainability by adapting and reshaping their profession to align with their perceptions of their professional identity. This also illustrates the *flexibility* of roles and the impact of *identity* on processes of professional adaptation (and by extension, on institutional change).

SYNTHESIS & SUMMARIZING TABLE

As you may have noticed, all three papers share a central theme of continuous change. Paper I focuses on continuous fragmentation, Paper II explores ongoing changes related to digitalization and sustainability, while Paper III examines the continuous process of professional adaptation and particularly how individuals adapt their roles and identities in response to the changes resulting from fragmentation, digitalization, and sustainability. Each paper investigates how individuals actively cope with, navigate, and adapt their practices in response to broader macro-level shifts. In other words, all three papers delve into the agency of professionals as they adjust to and influence these larger institutional changes.

I. Architects **Coping** with Continuous Fragmentation
II. Professionals **Navigating** Continuous Movements: Interpreting architects' agency and legitimization of BIM and reuse roles
III. Continuous Professional **Adapting** at the nexus of Fragmentation and Institutional Change: "Being an architect, it's not just a job, it's an identity"

The categories listed under the heading "focus areas" in Table 4 emerged from the synthesis of the contributions made in each paper as

well as their interactions and areas of overlap. By clarifying the understanding of continuous change in construction in terms of professionalization, they contribute to perspectives on two contemporary challenges in construction, namely 'managing fragmentation' and 'achieving' institutional change within digitalization and sustainability.

Table 4: Summary of the included papers' findings and their relationships to the purpose/aim of this thesis and the assumptions that it questions.

AIM	PERSPECTIVES ON CONTINOUS CHANGE	FOCUS AREAS	PAPERS (I, II, III)		
By focusing on the profession of architect, this thesis provides perspectives on the longstanding and current challenges of 'managing fragmentation' and 'achieving digitalization and sustainability' in construction. More specifically, this thesis *aims* to enhance the understanding of how professional agency (including identity and roles) influences institutional change in the construction industry, particularly fragmentation, digitalization, and sustainability.	Managing fragmentation in construction	The *nature* of fragmentation: From static to dynamic	√		√
		The *outcome* of fragmentation: From barrier to enabler	√	√	√
		How to *manage* fragmentation: Adding the architect's perspective	√		√
	Achieving institutional change (Digitalization, Sustainability) in Construction	*Roles*: From fixed to flexible	√	√	√
		Professionals: From uniformity to diversity	√	√	√
		Agency: From 'Cultural Dopes', through 'Entrepreneurs', to 'Implicit Agents'		√	√
		Identity in Construction: From underexplored phenomenon to an important source of institutional change	√	√	√
		Digitalization and Sustainabilization as an *Institutional Movement*		√	√

√= Contributes, but not in focus in the paper, √= Key contributions of the paper

seven.

DISCUSSION

Perspectives on 'managing fragmentation' and 'achieving institutional change'

In this chapter, I discuss the implications of the findings presented in Papers I-III in relation to relevant research and explain how they contribute to the longstanding and current challenges of 'managing fragmentation' and 'achieving digitalization and sustainability' by specifically focusing on architects' perceptions, motives, and intents. The chapter is divided into two sections: 'managing fragmentation' and 'achieving institutional change', with subchapters addressing each of the focus areas listed in Table 4.

PERSPECTIVES ON: MANAGING FRAGMENTATION

The nature of fragmentation: From static to dynamic

Fragmentation in construction is often viewed as a fixed problem to be resolved, overlooking its *dynamic* and continuous nature (Chan, 2018).

In Paper I, the architects' narratives revealed that they coped with fragmentation partly by adapting their roles, for example to specialize in specific phases of a project (*Conceptual and Delivery architect*) or by taking on an integrative role as an *Architectural Quality Manager*. This paradoxically increases fragmentation, both horizontally by adding more actors to the project ecosystem and vertically by encouraging narrow specialization, leading to knowledge gaps. This response to fragmentation thus inadvertently reinforces the systemic issues it seeks to address and suggests that fragmentation is a continuous and dynamic process rather than a static phenomenon.

Furthermore, Paper III showed that contemporary attempts to achieve institutional change within digitalization and sustainability may drive increased fragmentation. For example, the paper's findings suggested that BIM created knowledge gaps within architectural firms and potentially between actors within projects, which could increase isolation between professionals rather than 'solving' communication and collaboration issues.

These findings suggest a need to treat fragmentation not as a residual problem resulting from past decisions but as an active and continuous process. As suggested by Weick and Quinn (1999), fragmentation reflects deeper structural and organizational dynamics; it is shaped by constant shifts in work processes, social practices, and authority structures. This perspective on fragmentation as a continuous and *dynamic* organizational phenomenon implies a need for a shift in how fragmentation is conceptualized and addressed in construction research and practice.

The impact of fragmentation: from barrier to enabler

An assumption in both practice and literature is that fragmentation has negative connotations and is a persistent barrier to advancements in innovation (Hartmann, 2006; Hughes & Stehn, 2019) and the adoption of practices such as digitalization and circular economy models (Charlotte et al., 2022; Elmualim & Gilder, 2014; Giorgi et al., 2022; Jasiński, 2021). However, this perspective risks oversimplifying a complex phenomenon. As demonstrated in Paper III, the process of fragmentation, particularly when professionals navigate it through adaptation, can also serve as an *enabler* of innovation. Through processes

of professional adaptation, fragmentation compels architects to reevaluate, redefine, and reconfigure their roles in response to evolving project needs (e.g., demands for greater digitalization and sustainability).

Increasing project fragmentation may expand opportunities for flexibility and role adaptation within the architect profession, creating space for architects to undertake roles that drive and implement innovation.

Paper I lays the groundwork for understanding the significant change that the architect's profession has undergone due to fragmentation and how this development creates a need to change the scope of the role to align with architects' perceptions of what an architects is. Similarly, while Paper II does not explicitly address fragmentation, it underscores the need for architects to adopt diverse roles in advancing the movements of digitalization and sustainability to ensure alignment with their prevailing norms and values. Paper III links these implications to show how architects see the industry's trends towards digitalization and sustainability as opportunities to retake a more central and important role in projects - a role that had been marginalized by fragmentation.

In this sense, fragmentation serves not only as a challenge to be managed but also as a mechanism for professional development and the reimagining of practices. In this light, fragmentation can be reframed not only as a barrier but as an *enabler* of organizational and professional innovation, contingent on the capacity of individuals and teams to creatively engage with its effects. Consequently, an environment that facilitates the role diversification created by continuous fragmentation can potentially contribute to the successful implementation of innovations related to both digitalization and sustainability.

Managing fragmentation: Adding Architects' perspectives

One assumption underlying the discourse on fragmentation lies in the proposed solutions, which often reflect the perspectives of specific actors. Design-Bid-Build (DBB) contracts have been criticized for deepening fragmentation by separating design and construction (Erbil et al., 2013; Nawi et al., 2014), whereas Design-Build (DB) contracts,

which involve contractors earlier in the design process, are promoted as a remedy for fragmentation (Mitropoulos & Tatum, 2000). However, as shown in Paper I DB contracts can generate new challenges earlier in the construction process (design fragmentation), revealing the unintended consequences and limitations of addressing fragmentation from narrow, actor-specific perspectives. Fragmentation is a multifaceted and dynamic phenomenon that cannot be resolved by simplistic solutions. Effective understanding and management of fragmentation therefore requires a holistic approach based on multiple micro-level perspectives from different actors. Studies on how to manage fragmentation must explicitly state the perspective that they adopt, rather than presuming that a solution arising from one perspective will represent a universal improvement. This thesis contributes to meeting the need to account for diverse perspectives on fragmentation by offering insights from the architect's viewpoint.

PERSPECTIVES ON: ACHIVING INSTITUTIONAL CHANGE

Roles: From fixed to flexible

In the early 2010s, researchers noted that 'roles' and 'professionals' are often assumed to be stable and fixed in the construction literature (Brown & Phua, 2011; Georg & Tryggestad, 2009). Many subsequent studies in construction management have made important contributions showing that roles can in fact be flexible (e.g., Karrbom Gustavsson, 2018; Kabiri & Hughes, 2018; Sergeeva & Green, 2024; Troje & Gluch, 2020). However, the assumption of fixed roles remains prevalent in construction research and practice, especially among communities less focused on management. The findings and implications presented in this thesis that reinforce this flexibility therefore contribute to a deeper understanding of roles, identity, and professionalization within construction management, and also in other domains where these perspectives have a lesser focus.

The findings of Papers, I-III showed that the professional roles that the architects enacted (or wanted to enact) were strongly shaped and

influenced by their personal values and self-perception rather than being determined solely by contractual arrangements. In line with the conclusions of Gluch (2009) and Troje and Gluch (2020), the architects' narratives also show how the project-based nature of construction enables such flexibility. Neglecting these personal aspects means missing an opportunity to understand how professionals contribute to change.

Across all three papers in this thesis, the narratives of individuals demonstrate how the fragmented nature of construction creates conditions that allow individuals to more fluidly adapt their roles to varying contexts. As noted in the interview study in Paper II and further explored in Paper III, the idea that an architect can take on any role within a project provides opportunities for flexibility. One architect said that their role as an architect often naturally expands as the project progresses. Similarly, in the study behind Paper I, an architect noted that learning a particular role in one project gave them confidence, enabling them to enact that role more effectively in subsequent projects. These findings resonate with current debates in organization and profession studies (e.g., Abdelnour et al., 2017; Blomgren & Waks, 2015; Nordegraaf, 2015), where it is argued that "individuals engage in different roles simultaneously, enabling them to invoke roles as they see fit while moving between different life situations" (Abdelnour et al., 2017, p. 1787).

However, when the architects shared their perceptions of their role during the follow-up interviews presented in Paper I, one expressed concern about the flexibility of their role, highlighting the risk that expectations around what an architect's role entails could become vague and unclear. Another architect in the same study shared a similar concern, based on their experience from previous projects, noting that clients and other professionals often lack a clear understanding of what an architect can or is expected to do. This uncertainty may be a result of the high variability of the architect's role between projects and could also depend on the project phase in which they are involved.

Given the project-based and fragmented nature of construction, the experiences of the architects who participated in my studies align well with the concept of "modular individuals" who perform roles flexibly and adapt their behavior across different contexts. Such individuals do not function as unitary agents of change but rather as agents who both

intentionally and unintentionally shape institutions by enacting multiple roles (Abdelnour et al., 2017). This perspective, influenced by the gig economy, offers valuable insights into how professionals in fragmented contexts cope with ongoing changes. It suggests that the view of professionals must evolve towards a more flexible understanding rather than seeing them as fixed entities, in much the same way as fragmentation should be seen as dynamic rather than as a static phenomenon. To enable such a flexible perspective, it is helpful to embrace the idea that the term 'role' pertains to behavior rather than a position (Turner, 1956; Biddle, 2013).

Professionals: From uniformity to diversity

It is commonly assumed that professionals are a homogeneous group of individuals with uniform perceptions and actions. This is questioned by Brown and Phua (2011) who argue that construction managers should not be viewed as a homogeneous group but as individuals with distinct identities, reflecting diverse beliefs and practices. My research supports this argument by demonstrating how the perception of architects (or any profession) as a homogenous group of individuals is both limiting and unrepresentative. Such assumptions overlook the complexity of individual agency and presume uniform, unilateral action among professionals, disregarding the nuanced and often divergent ways individuals engage with institutional change.

Across all three papers, it becomes clear that individuals do not act homogeneously within the social position of architect; rather, they enact the roles they deem appropriate, shaped by their personal perceptions of both the social position and the specific social context. For example, in Paper II the seven narratives provide diverse examples showing that the purposive actions of architects responding to BIM and reuse can be unilateral (acting based on one's own perceptions and values) or multilateral (taking action based on input from others, e.g., based on firms or industry norms), and may be directed towards maintaining, disrupting, or creating new institutional norms. The interpretation process is highly personal rather than professional.

The example of Emerson presented in the summary underscores how individuals' self-concepts are shaped not only by the institutional

context but also by their personal histories (Ibarra, 1999; Alvesson et al., 2008). The Emerson example also reflects a process of interpretation, whereby individuals navigate conflicting institutional demands through day-to-day adjustments and interactions (Cloutier & Langley, 2013) and develop moral or normative arguments to support or resist institutional pressures (Lawrence et al., 2013). These findings complement previous work, notably that of Alvesson and Jonsson (2022), who studied meanings in a supposedly homogeneous group and challenged the assumption that institutions are defined by a high degree of *shared* meaning.

It is commonly assumed that new digital and sustainable innovations will naturally transform current institutions in beneficial ways as individuals recognize their potential, increase their knowledge, or adopt new standards (Oke et al., 2024). In Paper II, we empirically demonstrate that some individuals who recognized BIM's benefits and potential, and also possessed the knowledge to use it or take on the role of BIM-coordinator, nevertheless chose to reject it for personal reasons. In line with some streams of research (e.g., Troje and Gluch, 2020), this thesis therefore shows that individuals can act in highly varied and unpredictable ways. Thus, challenging the assumption that relies on the premise that all individuals act uniformly.

Acknowledging both the diversity and uniformity among individuals within the same profession enhances our understanding of how institutional change is shaped by individual actions. It also creates opportunities to explore alternative approaches to driving change, recognizing that individuals may respond to institutional pressures and roles in varied and sometimes unexpected ways.

Agency: from 'Cultural Dopes', through 'Entrepreneurs', to 'Implicit Agents'

Building on the previous discussion, the assumption that individuals act homogenously or that their roles are fixed by rigid norms also represents a limited understanding of *agency*. This perspective aligns with the view of individuals as "cultural dopes" who comply with social expectations without significant autonomy (Alvesson & Spicer, 2019). Such assumptions reflect outdated perspectives in institutional theory, which,

before the 1990s, largely viewed individuals as passive recipients of institutional forces. The subsequent shift in institutional theory recognized individuals as reflexive, purposeful agents capable of shaping, challenging, and even creating institutional structures by taking on the role of 'entrepreneurs' (Lawrence et al., 2009).

Much current research in construction continues to emphasize the role of entrepreneurs or innovation champions as key drivers of change. For example, perspectives such as those of Elmualim and Gilder (2014) focus on the role of individual "champions" and specific roles such as those promoting BIM. While studies on such change agents have provided important insights into fostering innovation (e.g., Battilana 2006; Battilana & Casciaro 2012; Leick 2020), focusing exclusively on such behavior risks overlooking the broader spectrum of agency and the diverse ways individuals can contribute to institutional change. To truly understand how individuals influence change through their agency, it is essential to consider all actions that contribute (intentionally or not) to altering institutional dynamics.

For example, the narratives in Paper II demonstrate how architects' desire to enhance their social position within projects led them to adopt the BIM role. This adoption was not done with the explicit intention of advancing digitalization through BIM specialization, but rather as a way of achieving alignment with their self-perception as architects. Another example provided in Paper II is that of Devin, who seeks to redefine the architect's role by incorporating more sustainability coordination. Devin's primary motivation for pursuing sustainability coordination is not to advance sustainability per se, but to align the role with a more traditional conception of the architect's identity.

These examples, along with others provided in the papers, show how agency can lead to 'achieving institutional change' within digitalization or sustainability, even when the individuals exercising agency do not explicitly seek to do so. The use of a broader concept of agency made it possible to capture these findings. Based on these architects' narratives, this thesis demonstrates that behaviors and "day-to-day adjustments" (Lawrence, 2009) like these can contribute to meaningful change (Gilstrap & Hart, 2020a; Griffin et al., 2007) despite being comparatively inconspicuous.

A broader perspective on agency also made it possible to examine actions that resist change, as seen in the cases of Cim and Blake. These examples shed light on the barriers to change, offering valuable insights into how to achieve institutional change or why change does not proceed as anticipated. Incorporating both actions that promote and resist change into a framework for agency therefore greatly enhances the ability to understand the complexities of institutional change. A framework that confines agency to entrepreneurial behaviours—such as driving, promoting, or encouraging change—would overlook actions of this type.

Identity in Construction: from underexplored to an important source of institutional change

The concept of identity in construction management has historically been underexplored (Brown & Phua, 2011), yet emerging studies (e.g., Ahuja et al., 2017, 2020, 2023; Gluch, 2009; Brown & Phua, 2011; Troje & Gluch, 2020) have begun to highlight its relevance. The findings of Papers I-III relating to identity contribute to this growing body of research by demonstrating the significant role of professional identity in shaping agency and influencing institutional change.

While Papers I and II address the relevance of studying identity, Paper III sheds light on two specific identities ('the generalist' and 'the samhällsbyggare') that seem to recur in architects' professional self-perceptions and that they invoke to legitimize their actions. The thesis thus highlights how self-perception and professional identity—how the architects views both themselves as an architect and the profession as a whole—play a crucial role in shaping the interpretation process and influencing agency.

In Paper II, I also showed how an organization's identity or image can impact individual agency. Some architects aligned their personal understanding of their role with the image projected by their organizations, supporting Nordegraaf's (2015) conclusions about the influence of organizational identity on professional behavior. However, it remains challenging to determine whether institutional alignment precedes personal self-perception or vice versa. This interplay between

personal identity and organizational image emphasizes the reciprocal relationship between individual and institutional identities.

The findings in the three papers highlight that perceptions of professional identity can vary significantly among architects, which in turn may impact agency towards diverse rather than uniform responses to insertional change. This aligns with Hughes and Hughes' (2013) assertion that while professional institutions give individuals role definitions and a sense of identity, the concept of identity extends beyond institutional frameworks; it is inherently personal. The variability in professional identities among architects emphasizes the complexity of agency within construction.

Paper III also specifically discusses how roles (flexible, rather than fixed) are used by architects to align their profession with their own perception of professional identity. This illustrates an interplay between identity and roles that is important for professionalization in construction, and therefore also important for achieving institutional change or managing fragmentation.

Digitalization and Sustainabilization as an movement

Paper II explores the possibility that digitalization and sustainabilization can be understood as institutional movements (Furusten, 2023). Viewing these 'trends' as institutional movements enables exploration of how professionals anticipate, interpret, and respond to the expectations that such movements introduce. Some narratives in Paper II reflect architects adapting their roles proactively, driven by their expectations of future institutional change such as increased digitalization. This aligns with the findings of Goto (2022), who highlights how professionals' sensemaking about the future guides their actions toward institutional trends like digitalization. By framing digitalization and sustainabilization as abstract institutional movements, it was possible to identify how individuals relate to these trends—either using them as frames of reference for action or as sources of legitimacy.

Paper II shows that individual architects interpret the implications of digitalization in diverse ways despite (partly) being embedded in the same institutional context. Moreover, their narratives show that these differing interpretations influence the architects' actions. For instance,

one architect perceived digitalization as a threat to the traditional architectural profession and sought to redefine the role of the architect in response. This reflects the arguments of Simpson and Carroll (2008), who emphasize how external influences—such as the trends of digitalization or sustainability—shape the roles professionals choose to enact.

While institutional contexts at other levels (field, organization, and individual) provide norms, values, and regulations that shape professional behavior, these movements also offer individuals additional resources and justifications for agency. In accordance with the arguments of Schneiberg and Lounsbury (2017), digitalization and sustainabilization create an "extra-institutional" force that grants legitimacy to professionals who seek to innovate or redefine their roles. In this way, these trends not only prompt role adaptation but also provide a rationale for individuals to challenge and reshape their institutional environments.

At the same time, these movements create tension between future-oriented goals and the preservation of historical roles. Gluch and Bosch-Sijtsema (2016) suggest that professionals often navigate a delicate balance between innovation and maintaining their established professional identity. Similarly, the findings in Paper II indicate that while many architects use these movements to maintain their perception of professional identity, digitalization and sustainabilization also open pathways for redefining that identity entirely. This dynamic interplay of continuity and change underscores the complex role of institutional movements in shaping professional agency and institutional transformation.

eight.

CONCLUSION

Contributions, limitations and further research

In this chapter I address the extent to which the thesis has fulfilled its primary purpose. Focusing on how individual agency influences fragmentation and institutional change in construction, the chapter situates the findings from the previous chapter within a broader context, addresses the applicability and limitations of the work, and proposes areas for future research.

CONTRIBUTIONS

The overall purpose of this research is to provide perspectives on common assumptions related to the longstanding and current challenges of 'managing fragmentation' and 'achieving digitalization and sustainability' in construction. More specifically, this thesis aims to enhance the understanding of how professional, individual-level agency shapes institutional change in the construction industry, particularly fragmentation, digitalization, and sustainability.

The purpose of this thesis has been achieved by bringing forward the perspectives and narratives of architects, thereby offering new insights into the enduring challenges of 'managing fragmentation' and 'achieving digitalization and sustainability' in construction. The chosen methodological and theoretical approaches were instrumental in enabling these perspectives to emerge. First, the interpretative methodology and the use of individual-level analysis enabled deep exploration of individual motives and intentions. Second, the application of a multi-level institutional framework made it possible to explore the dynamic interplay between institutional contexts and individual agency (Barbour & Lammers, 2015), while the broader application of agency (within institutional work) revealed moral dilemmas, personal experiences and values to be vital decision-making processes underpinning agency (Cloutier & Langley, 2013; Lawrence et al., 2013). This led to a nuanced understanding of how agency and institutional change are enacted in practice.

More specifically, this thesis discusses several perspectives: it shows that fragmentation can be seen as something that is dynamic rather than static, and that can be an enabler of institutional change rather than just a barrier. It also offers new perspectives on how fragmentation can be managed (by adding the architect's perspective), professional roles (seeing them as flexible rather than fixed), professions (which are seen as diverse rather than uniform), and professional agency (from 'cultural dopes', though 'entrepreneurs' to 'implicit agents'). Finally, it reveals professional identity to be an important source of institutional change that was previously unexplored in this context, and offers a new perspective on 'contemporary trends' by positioning digitalization and sustainabilization as institutional movements.

Theoretical contributions

This thesis contributes to *construction research* by providing perspectives on fragmentation and institutional change, and specifically on assumptions relating to managing and achieving such institutional change. For example, by applying a broadened definition of agency, the thesis demonstrates the importance of studying actors' *unintended* actions as well as their purposive actions when seeking to understand

institutional change in construction. In this way, the thesis aligns with the work of authors such as Gilstrap and Hart (2020b). The thesis also illustrates the importance of identity and roles for understanding institutional change, notably by acknowledging that professionals are not homogenous agents who act as such; instead, their agency is influenced by their personal values and self-perception.

Several examples of personal values and perceptions that shape individuals' agency are presented in the thesis. For example, Paper I shows that fragmentation at the micro level may be experienced as an identity threat, Paper II demonstrates how individuals' perceptions of professional identity influence legitimacy processes and thereby agency, and Paper III shows how the idea of a professional identity along with the perceived marginalization caused by fragmentation can incentivize a dynamic process where roles within digitalization and sustainability are used as tools to align with an individual's sense of professional identity. Identity (and the roles used in the process of identity construction) can thus be seen as an instrument for achieving institutional change in construction. Moreover, as discussed in the preceding chapter, the identity threats created by continuous fragmentation may create space for such processes, making fragmentation an enabler of digital and sustainable change.

Zooming out from the micro perspective, this thesis contributes to the understanding of the relationship between fragmentation, digitalization, and sustainability by showing how micro-level processes impact change via professionalization. This contribution will be of particular relevance to scholars in the construction research community whose work deals with the challenges of 'how to manage fragmentation' and 'achieving institutional change'.

The thesis also contributes to the theoretical field of *professionals* in general by adding examples of professionals exercising agency in the empirical context of construction, complementing existing knowledge. For example, the thesis builds on the preceding work of Ahuja et al., (2017, 2020, 2023) and Bos-de Vos (2019) on professional identity within the architecture profession by extending the understanding of the architect's identity struggles. In the same research domain, where institutional theory and identity theory are common theoretical frames, the thesis contributes by providing an extended perspective on agency

and by demonstrating the use of a multi-leveled institutional framework in an individual-level analysis. This is notable because Abdelnour et al., (2017) highlighted a lack of studies using such approaches in the current organization and professions literature.

The emerging debate about individual-level research in institutional theory reflects a growing recognition of the role of individuals in shaping and transforming institutions. In that sense, this thesis makes an empirical contribution to institutional theory.

Practical contributions

Understanding the pivotal role of individual agency in achieving institutional change or managing fragmentation also has practical implications.

An increased understanding of individual behavior can inform strategies for fostering innovation and *achieving institutional change*. For example, my findings emphasize the importance of organizational identity and regulatory frameworks as legitimizers for architects to engage in transformative roles. Architectural firms seeking to remain competitive in areas such as sustainability and digital competence could benefit from cultivating a clear sustainability image, establishing predefined protocols (e.g., for sustainability discussions during client start meetings), and articulating explicit organizational goals. These elements not only attract motivated and skilled professionals but also legitimize employees to take on roles aligned with digitalization and sustainabilization within inter-organizational projects.

However, this thesis reveals that such strategies are not universally applicable to all individuals. An essential practical contribution lies in the diverse, individual-level narratives presented in the research, which illustrate how agency is deeply personal and context-dependent. For instance, architectural firms may encounter professionals who are knowledgeable in digitalization but resist adopting roles related to these domains within projects, despite organizational legitimacy. The findings suggest that such resistance is often linked to how individuals navigate and interpret multiple institutional contexts. While one context (e.g., the firm's sustainability vision) may confer legitimacy, competing institutional pressures may create feelings of illegitimacy elsewhere.

From a more practice-oriented perspective, this means that architectural firms cannot rely solely on formal strategies or overarching goals to achieve change; it is also necessary to understand the individual experiences, motivations, and interpretive frameworks that shape how employees engage with and act in relation to these goals. Concretely, this may involve creating forums where different views and concerns can be expressed, offering support in role management rather than just pointing to areas of responsibility, and being attentive to tensions that may arise between project demands, professional identity, and organizational strategies.

This research also contributes to understanding of how to *manage fragmentation*. First, it sheds light on the limitations of current design-build (DB) contracts and specifically how architects are replaced late in the design phase under DB contracts, leading to short-term reductions in architectural quality and, over time, diminished professional growth as architects lose valuable learning opportunities. These insights underscore the importance of re-evaluating contractual practices to mitigate such impacts.

Secondly, this thesis highlights the complex relationship between fragmentation and institutional change within sustainability and digitalization. For example, it shows that BIM may create knowledge gaps that reinforce horizontal fragmentation and isolation between professionals, which in turn may hinder implementation of sustainability innovation or generally harm project outcomes. The growing awareness of such problems, as exemplified by this thesis and the work of authors such as Jacobsson and Linderoth (2021), suggests that architectural firms and other professional firms in construction may need to create strategies to manage that continuous fragmentation due to digitalization.

In addition, the findings presented here show that it is important to consider the opposite relationship by acknowledging that fragmentation can create space for professional adaptation.

In sum, this thesis makes practical contributions by increasing awareness of these potential consequences and their relevance to strategies for managing continuous fragmentation or leveraging its opportunities.

LIMITATIONS AND FURTHER RESEARCH

We researchers often talk about theories as 'glasses though which we filter reality' or similar. I also like to think of them as a way of making sense of reality. Therefore, one obvious limitation of this thesis is the use of theory itself. While the theory used in this work was carefully selected for methodological fit and relevance to the phenomena in focus, these glasses are a *filter* through which reality is viewed and structured, meaning that different outcomes may have been obtained if other glasses were chosen. Therefore, to enrich the understanding of continuous change in construction though professionalization, I encourage other researchers to study the same phenomena with different theoretical glasses.

This thesis focuses on the profession of architects. While this was a natural choice given my involvement in a research project centered on architectural quality, it also proved valuable due to the limited amount of prior research on this profession's perspectives on fragmentation and institutional change. Architects provide a relevant and insightful lens for exploring these phenomena, but the perspectives of other construction professionals are equally vital for a comprehensive understanding of institutional change. To build a more holistic understanding of macro-level phenomena in construction (such as managing fragmentation or achieving digitalization or sustainability), future studies could therefore extend similar methodologies to other construction professions. To capture small role adjustments at the individual level, such research is helped by methods that enhance the empathic understanding of intents and motives as well as the actual actions that take place. For example, though deep interviews in combination with field studies (e.g., shadowing or ethnographies).

While the shadowing approach used in this thesis yielded valuable insights, a notable limitation was its relatively short duration. This constrained the ability to observe long-term agency and evolving role adaptations. Future studies should have a longer period in the field to better capture the complexities of sustained agency over time.

Another limitation of this thesis is its focus on digitalization and sustainability, explored specifically through BIM and reuse. While these technologies are significant components of their respective movements,

they comprise only small parts of the broader initiatives within digitalization and sustainabilization. The narrow focus on BIM and reuse thus limited the capacity of this work to capture the entirety of these complex and multifaceted institutional movements. Future studies could therefore explore how architects and other professionals perceive and adapt their roles in response to other digitalization or sustainability innovations such as anticipated advancements in artificial intelligence (AI) or automation, which are emerging as key aspects of digitalization. Similarly, the architects interviewed in this work hinted at new potential roles in sustainabilization, such as driving change processes, which may represent future trends. By embracing a broader scope that includes more varied aspects of digitalization and sustainabilization, future studies could provide a more nuanced and complete picture of how institutional change related to digitalization and sustainabilization unfolds across the construction industry.

In keeping with the way this work challenges previous perspectives, the architects' viewpoints presented here will probably be contested by other perspectives from different individuals or professionals. While this can be seen as a limitation, the findings presented herein can also be regarded as a contribution to an ongoing debate. The phenomena addressed in this work are of contemporary relevance as they can have direct impacts on project outcomes and the professional development of architects. I therefore encourage other researchers to adopt a similar mindset and challenge existing perspectives (including this one) on 'managing fragmentation' and 'achieving institutional change'.

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APPENDIX A

STUDY A: ***Exploratory Pre-study***

Purpose: To explore what problems are related to within architectural quality in Vertical Extensions (VE)projects.

Method	Participant	Firm	Duration	Settings/Recoding	Date
Interview	Architect E1	E	123 min	*Face-to-face/Sound*	2019-04-19
Interview	Architect F1, F2	F	97 min	*Face-to-face/Sound*	2019-04-15
Interview	Architect G1	G	176 min	*Online/Video*	2019-05-03
Interview	Architect H1	H	70 min	*Face-to-face/Sound*	2019-03-07
Interview	Architect C1	C	67 min	*Face-to-face/Sound*	2019-03-19
Interview	Architect I1, I2	I	89 min	*Face-to-face/Sound*	2019-03-08
Interview	Architect K1	K	70 min	*Face-to-face/Sound*	2019-03-21
Interview	Architect B1	B	133 min	*Face-to-face/Sound*	2019-03-08

STUDY B: ***Interviews and Meeting observations***

Purpose: To extend my understanding of the problems within architectural quality in VE projects.

Method	Participant	Firm	Duration	Settings/Recoding	Date
Interview	Architect F3	F	34 min	*Face-to-face/Sound*	2019-11-07
Interview	Architect F4	F	62 min	*Face-to-face/Sound*	2019-11-07
Interview	Architect F5	F	45 min	*Face-to-face/Sound*	2019-11-07
Interview	Architect I3	I	52 min	*Face-to-face/Sound*	2019-10-03
Interview	Architect J1	J	48 min	*Face-to-face/Sound*	2019-10-02
Interview Observations	Architect L1, Architect L2	L	51 min	*Face-to-face/Sound* *Online/No*	2019-10-04
Interview Observations	Architect M1	M	63 min	*Face-to-face/Sound* *Online & F-t-F/No*	2019-11-08
Interview Observations	Architect I4	I	63 min	*Face-to-face/Sound* *Online/No*	2019-12-05

STUDY C: ***Focus Group Workshop (23 sessions)***

Purpose: Deepen my understanding of issues relating to the architect's role both within and beyond VE projects.
Focus Occasion 0: Risks and problems in VE projects, relating to architectural quality. (Only Architects)
Focus Occasion 1: Cultural Heritage in VE projects. (Guest: 1 Building Historian★)
Focus Occasion 2: Value & client-perspective in VE projects. (Guests: 4 Real estate Owner representants★)
Focus Occasion 3: Urbanism & planning in VE-p. (Guests: 3 Real estate Owners★, 3 Municipal planners★)
Focus Occasion 4: The architect's role, in VE projects and in general. (Only Architects)
Focus Occasion 5: Timber construction systems for VE. (Guests: 3 Timber housing companies★)

Occasion	Session	Participants	Duration	Settings/ Recoding	Date
0	Whole group	F1, I2, I5, J1, M1, L1, C3, D1, B1	11.00-17.00	*Face-to-face/No*	2019-10-01
1	WS1-Gr. A	M1, D1	57 min	*Online/Video*	2020-08-20
1	WS1-Gr. B	J1, C1	68 min	*Online/Video*	2020-08-20
1	WS1-Gr.C	I2, I4	51 min	*Online/Video*	2020-08-20
2	WS2-Gr.A	B4, L1, F2	34 min	*Online/Video*	2020-09-17
2	WS2-Gr.B	*Real estate owners★*	34 min	*Online/Video*	2020-09-17
2	WS2-Gr.C	I4, D1, C1	29 min	*Online/Video*	2020-09-17
2	WS2-Gr.1	C1, D1, F2, ★	35 min	*Online/Video*	2020-09-17
2	WS2-Gr.2	F6, L1, ★X2	30 min	*Online/Video*	2020-09-17
2	WS2-Gr.3	J1, I4, B4, ★	37 min	*Online/Video*	2020-09-17
3	WS3-Gr.A	M1, D1, I2, I4	45 min	*Online/Video*	2020-10-15
3	WS3-Gr.B	*Real estate owners★*	46 min	*Online/Video*	2020-10-15
3	WS3-Gr.C	*Municipal planners★*	30 min	*Online/Video*	2020-10-15
3	WS3-Gr.1	I2, J1, ★	47 min	*Online/Video*	2020-10-15
3	WS3-Gr.2	M1, D1, I4, ★	37 min	*Online/Video*	2020-10-15
4	WS4-Gr.A	M1, I4	56 min	*Online/Video*	2020-11-14
4	WS4-Gr.B	L1, D1	44 min	*Online/Video*	2020-11-14
4	WS4-Gr.C	F7, I2, C1	33 min	*Online/Video*	2020-11-14
4	WS4-Gr.1	I2, L1, M1,	58 min	*Online/Video*	2020-11-14
4	WS4-Gr.2	D1, I4, C1	48 min	*Online/Video*	2020-11-14
5	WS5-Gr.A	J2, I5, ★	57 min	*Online/Video*	2021-01-28
5	WS5-Gr.B	F7, L1, ★	59 min	*Online/Video*	2021-01-28
5	WS5-Gr.C	M1, D1, ★ X2	52 min	*Online/Video*	2021-01-28

STUDY C: ***Interview-study***

Purpose: To deepen my understanding of issues relating to the architect's role, based on the Focus Group findings, without specific focus on VE projects.

Method	Participant	Firm	Duration	Settings/Recoding	Date
Interview	Architect C1	C	56 min	*Online/Video*	2021-04-06
Interview	Architect D1	D	73 min	*Online/Video*	2021-04-08
Interview	Architect M1	M	92 min	*Online/Video*	2021-04-16
Interview	Architect I4	I	64 min	*Online/Video*	2021-04-21
Interview	Architect L1	L	69 min	*Online/Video*	2021-04-26

STUDY D: ***Interview-study in two iterations***

Purpose: To deepen my understanding of how architects relate to and legitimize their agency relating to BIM and reuse (i.e. how they adjust to meet the digitalization and sustainability 'trend'/movement).
Interviews marked with ⋆1/⋆2 is the background interviews held by my thesis students (1/2) and planned with my supervision. Interviews without ⋆ are following up interviews, held myself.
Heavy-marked in the background interviews = Also in the follow up interviews

Method	Participant	Firm	Duration	Settings/Recoding	Date
Interview⋆1	Architect N1	N	58 min	*Online/Video*	2021-11-01
Interview⋆1	**Architect B3**	B	74 min	*Online/Video*	2021-11-01
Interview⋆1	Architect N2	N	54 min	*Online/Video*	2021-11-04
Interview⋆1	Architect O1	O	56 min	*Online/Video*	2021-04-08
Interview⋆1	**Architect B2**	B	48 min	*Online/Video*	2021-11-22
Interview⋆1	**Architect D2**	D	62 min	*Online/Video*	2021-11-25
Interview⋆1	**Architect A1**	A	65 min	*Online/Video*	2021-11-26
Interview⋆1	Architect B5	B	45 min	*Online/Video*	2021-11-28
Interview⋆2	Architect P1	P	70 min	*Online/Sound*	2022-03-07
Interview⋆2	**Architect C2**	C	70 min	*Online/Sound*	2022-03-09
Interview⋆2	Architect P2	P	40 min	*Online/Sound*	2022-03-16
Interview⋆2	**Architect D3**	D	65 min	*Online/Sound*	2022-03-16
Interview⋆2	Architect Q1	Q	65 min	*Online/Sound*	2022-03-18
Interview⋆2	**Architect D4**	D	45 min	*Online/Sound*	2022-03-21
Interview⋆2	Architect D5	D	60 min	*Online/Sound*	2022-03-23
Interview	Architect C2	C	64 min	*Online/Video*	2022-09-15
Interview	Architect D4	D	53 min	*Online/Video*	2022-09-16
Interview	Architect B2	B	44 min	*Online/Video*	2022-11-14
Interview	Architect B3	B	84 min	*Online/Video*	2022-11-18
Interview	Architect A1	A	52 min	*Online/Video*	2022-11-22
Interview	Architect D2	D	62 min	*Online/Video*	2022-11-25
Interview	Architect D3	D	57 min	*Online/Video*	2022-11-25

STUDY E: ***Shadowing study; Interviews and Observations***

Purpose: To deepen my understanding of issues relating to the architect's role, with focus on fragmentation, digitalization and sustainability, how previous identified phenomena play out in practice.
In total the study included 10 days of online observing (4 days only partial) and10 days at the firm/in Stockholm. Architect N2 was the target individual and N1 was one of the colleagues at the firm. None of the observations where recorded, the study in total resulted in 67 pages of notes and two following up interviews.

Method	Participant	Firm	Duration	Settings/ Recording	Date
Shadowing	Architect N2	N	Whole day	*Online*	2022-08-22
Shadowing	Architect N2	N	Whole day	*Online*	2022-08-24
Shadowing	Architect N2	N	Whole day	*Online*	2022-08-25
Shadowing	Architect N2	N	Whole day	*Online*	2022-08-26
Shadowing	Architect N2	N	Whole day	*Online*	2022-08-29
Shadowing	Architect N2	N	Whole day	*Online*	2022-09-02
Shadowing	Architect N2	N	Whole day	*At a conference*	2022-09-05
Shadowing	Architect N2	N	Whole day	*At a conference*	2022-09-06
Shadowing	Architect N2	N	Parts of the day	*Online*	2022-09-07
Shadowing	Architect N2	N	Parts of the day	*Online*	2022-09-08
Shadowing	Architect N2	N	Parts of the day	*Online*	2022-09-09
Shadowing	Architect N2	N	Parts of the day	*Online*	2022-09-12
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-20
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-21
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-22
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-23
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-27
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-28
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-29
Shadowing	Architect N2	N	Whole day	*At the firm*	2022-09-30
Interview	Architect N2	N	62 min	*Online/Video*	2022-10-07
Interview	Architect N2	N	48 min	*Online/Video*	2022-10-07

APPENDIX B

The following text is an empirically rich description of *the architect*. This is the first version of the empirical material for Paper I, before it was shortened to fit the journal's word limit by extracting selected quotes. It is created entirely of quotations from interviews with architects, organized according to themes identified in the analysis of the empirical material presented in Paper I. The excerpts capture the architects' own perceptions of their profession and the issues they encounter in their daily work.

To preserve the personal tone, the narrative is written in the first person ("I" and "we"). In cases where perspectives differed, clarifying insertions have been added (e.g., *"However, I have ambivalent feelings about …"*). This approach does not present a single, continuous personal story but a contextualized account—an assembled narrative shaped by the voices of multiple architects—of what it means to *be an architect*.

Generalist and/or Specialist

I see the architect's role as having changed, becoming weaker or worth less. "The million program" may be the starting point of the most significant change ["the million program" was a governmental initiative in Sweden between 1965 and 1974 with the aim of building one million new homes]. Because common building designs were reused, there was little need for us architects, so only a few architects survived. During this era, the contractor's position strengthened, and a few big contractors emerged as the main winners. These companies are still dominating today. After the million-program, more diverse architecture was asked for and produced, and architects gained a more central role than they had during the million program. However, constantly increasing building standards, new sustainability requirements and society/customer demands, and technological innovations caused a continuous change in our role. These latter changes have caused us to lose functions and tasks in building projects to new disciplines; as a result, we are seen more as specialists in the art of architecture. One problem is that these tasks that are now undertaken by other technical consultants

such as fire or accessibility consultants hold much of the measurable value that we could use in discussions in the design group. The consequence is that we are left with only soft value arguments to convince others of the advantages of our proposed designs.

Another role lost is that of managing. There are several reasons for this; among others, more coordination has become necessary as the number of specialists has increased, power has shifted towards the building companies, clients have lost the ability to drive processes, and architects have become seen mainly as specialists in the art of architecture. This has led to the emergence of design management as a new specialized discipline, separating us from formal managerial responsibility. Even though it is clear that the design manager has formal responsibility for project coordination, we sometimes take on an unofficial coordinating role. The design manager's engagement in the project can vary greatly depending on their personality and knowledge and on whether they work for the client or the contractor. The design managers' coordinating work strongly affects our function.

I see myself as a generalist for several reasons - because we are responsible for the end user's experience of the built environment, because we are the first professionals to enter a building project and we develop its initial vision together with the client, and because architectural designs require us to provide acceptable technical solutions while satisfying regulations. To exercise general control, we can informally coordinate with other professionals to act as informal project managers. This kind of informal coordination is also often expected (but not explicitly so) by the client; it is as though our power has disappeared but the expectations remain. A consequence of taking on an informal role as the design manager is that we may get less time for our core work because budgets very rarely include any specific allocations for this kind of coordination. Furthermore, time is always a problem for us architects. This issue – taking on a bigger role than is authorized – has almost become normalized and is what others in the design group often expect of an architect. It is also an expectation we put on ourselves, with the motive of ensuring that what is ultimately built conforms to the intended design.

Besides taking on a design managing role, we can also shoulder other tasks outside our core responsibility and sometimes even beyond the

limits of our knowledge. In the early stages of a building project, we are often the only professionals present and thus lack access to the expertise of important specialists. We are therefore forced to make assumptions outside our field of knowledge. This can also occur later in the process, e.g., when we seek to promote a specific technical solution that benefits our intended architectural design. We understand that this presents risks for the client, the project, and ourselves. However, the risk of project failure or not conforming to the intended design is considered to be of greater concern.

If we successfully undertake a larger responsibility, we can gain control over the process and thus maybe attain more power over design decisions, making it easier to manage and fulfill the intended design. This might also improve our relationship with the client and maybe also the overall reputation of architects. The alternative option of ignoring the need to coordinate and manage projects unofficially can have two main negative consequences. First, it reduces our ability to control the use of different design solutions and thus reduces our control over design intentions. Second, we might be accused of not doing enough coordinating work.

I believe that the purpose of these specialist roles, new sustainability requirements, and building standards is to optimize individual aspects of a building, which could result in excessive optimization towards single objectives and a sub-optimal overall solution if nobody takes holistic responsibility. Sometimes two requirements are in conflict; dealing with these situations and striking a balance between different optimization objectives is one of our challenges.

Design Intention

Our role as architects is multifaceted: we are the client's advisors, the voice of the public or user, and carriers of innovation and sustainability. Our capacity for humanity, visualization, and adopting a holistic perspective are unique attributes that distinguish us from other more technically-oriented consultants. As a result, our objectives include realizing the client's vision and, even more importantly, providing the experience desired by the user. Our ability to visualize final designs is a valuable tool in this context. A strong determination to represent the

user and their well-being is essential in our profession, and we are taught this during our architectural education.

However, I have ambivalent feelings about the current content of architectural education. On the one hand, education is too strongly related to art, and there is not enough education about technical aspects of building such as on-site construction, structural engineering, and other technical or physical aspects such as HVAC engineering, acoustics, and fire engineering. Consequently, we architects have difficulties communicating design solutions with technical consultants. On the other hand, I believe that it is best for education to focus on the art of architecture, and I value the ideological focus of architectural education. I believe that education as is - artistic, ideological, and humanistic - should stay focused on the art of architecture rather than the architect's role. Education on the role of the architects would need to address issues such as finance and the building process, and I think that skills in these areas are better acquired through experience on real building projects. Additionally, communication skills are lacking – architects should be better at communicating their design intentions to strengthen their voice in decision-making and to more effectively communicate the "soft aspects" of design. If architects learn too much about the technical aspects of building, they may become less idealistic and therefore too pragmatic in problem-solving. No matter how I look at education, communication remains an important issue to address.

Responsivity and Knowledge Dependency

Architects join projects at an early stage, which allows us to influence our position informally. Furthermore, our role is partly based on the client's expectations and the nature of the project; as a result, it differs between projects. We architects must therefore adapt our actions to the nature of the project. It is also important for us to be responsive and adaptable, and to be willing to compromise or even give up our own ideas in favor of the client's. Responsiveness is an essential attribute in all roles we undertake in construction projects, in part because it is necessary for cooperation. To cooperate, invite, and listen, we need to adapt socially to the context of the project. This requires self-confidence and confidence in our role, which is built through experience; by learning a role or task in one project, we can more easily take on a similar

role in the next project. We also depend on knowledge when making arguments for our design intentions. Building knowledge through experience is something that I, as an employer at an architectural firm, expect both of my architects and myself.

Power of Intentions

Our design intentions encompass delivering on the client's vision, being the end user's spokesperson, and acting as ambassadors of sustainability. We bear a responsibility to the public to ensure that the client considers the needs of end users and society, and that our design possesses certain architectural qualities. However, we also recognize that this intention and the role we want to take (as the voice of society) is sometimes unappreciated or misunderstood by clients. Moreover, the client's intentions do not always align with what we as architects see as the needs of the user or society. Partly I believe that what clients value in a building project is an economically viable product that is completed in a smooth and untroubled project.

Economical Exclusion

More insight into the client's business model and the project's finances can give us better information so that we can assign the correct priority to architectural quality while still satisfying the client's needs and intentions. However, clients rarely invite us to participate in budget setting, so we are initially excluded from economic insight; to obtain it, we must actively request it. Another way to better understand a client's priorities is to establish a long-term relationship, which allows us to learn the clients' business model through experience.

Having economic influence over a project gives us better chances to undertake a role with more power. I recognize that few architects want to or dare to undertake an economic role, partly because of a lack of knowledge and experience. However, taking economic responsibility is essential if we want a stronger position and the ability to influence design decisions.

Design Exclusion

The most urgent issue for us architects is the tendency for us to be replaced by other architects somewhere between the conceptual and detailed design phases, which prevents us from managing the intended design throughout the design process. For example, in cases where Design-Build Contracts are used, the project organization changes somewhere between conceptual and detailed design because the contractor can introduce new actors into the design group. I think that contractors see us as lacking skills in finance and production, and that they therefore do not value our services in the later stages of design. Here, I feel that the contractors habitually tar every architect with the same brush. Moreover, I think that contractors prioritize minimizing costs and complying with schedules in building projects. I believe that the contractors see us as being too strongly engaged with our design intentions and feel that this stands in the way of the contractor's aim of cutting costs in the later phases of the project. If we get cut out of the project, we have no or little opportunity to manage our intended design. This can also happen if contractors bring in an architect they are used to working with and with whom they have established a relationship. A third reason could be that they want an architect who has no obligations to the original client, since part of our design intention is to achieve both our vision for the project and that of the client.

If the architect who holds the intention of the design and works on the project's conceptual phase (the *conceptual architect*) is exchanged for one whose mission is more to operate and complete the previous drawings (the *operative architect*), there is a risk of losing the original design intention. In some projects, this issue is addressed by allowing the conceptual architect to take on a role supporting the client in reviewing the operative architect's work, acting as a sort of reviewer of the architectural quality of the operative architect's work (an architectural quality manager). This includes helping to prioritize between different economic optimizations while protecting as much as possible of the intended design, i.e., managing architectural quality. It is often up to us to claim such a role by demonstrating its advantage to the client and justifying the extra cost in the later stages of design.

Cutting us architects out of a project's finalization also has higher-level consequences for the architectural sector in general. These are

tendencies we see and have seen for a while now - some architects only work in the early stages and some finish others' work. Moreover, some architectural firms seem to specialize as either conceptual architects (focusing on the early stages of design) or operative architects (finishing others' work). Operative architectural work accounts for approximately 80% of the total architectural design budget, whereas conceptual architecture is only allocated 20% or so. Consequently, some firms are forced to only undertake operative architectural jobs for financial reasons. However, finishing other people's designs is not the kind of work that we as architects (or our firms) pride ourselves on.

The first consequence of this design exclusion that I see is that parts of the built environment will lack architectural quality if the initial design intention cannot be upheld throughout a project. I have seen this tendency with residential buildings, which face the greatest risk of deteriorating architectural quality because the sustained high demand for apartments is driving an increasing rate of construction.

The second consequence of design exclusion is that I, as a conceptual architect, get no feedback on the buildability of my design. Without experiencing my design's effect on finances and production, or being able to observe how the design is operationalized in the detailed design phase, I lose opportunities to learn from each project. If I never get feedback on my designs, I may continue making the same mistakes. The lack of feedback from previous projects creates an increased risk that some solutions I suggest in my conceptual design work will need to be re-designed later on when the operative architect enters the picture. This in turn can waste time and lead to hasty design decisions late in a project; such decisions are often made 'by default' to solve problems using well-established solutions. This creates a risk that the original design intention will be degraded or even lost entirely due to attempts to control costs.

As an architect, I depend on my ability to gain knowledge and learn continuously from each of my projects. Seeing how my designs are managed over a project's course is therefore important. In addition, finalizing projects is important for my firm's portfolio and finances. This can drive architectural firms to practice price dumping in public and private procurements, meaning that when tendering they reduce their predicted fee for completing the architectural design in the hope of

winning the tender. If they win, they get the desired feedback and learn by overseeing the design throughout the process, while architectural quality is managed without them needing to act as an architectural quality manager for the client. However, the downside is that architectural firms cannot charge appropriately for the time they have to spend to complete the project.

Another outcome of design exclusion is that some architectural firms only undertake projects that they know that they can follow to completion. This limits the market because it means that large firms following such business models are often the only ones that can survive.

Power in Design

The alternative to design exclusion is for me, as an architect, to continue working on the project by signing a contract (e.g., a design-build contract) in which the contractor becomes the new client. My experience is that this creates tension between the initial client, the architects, and the contractors. As a consequence, I experience ambiguity about which client's vision to fulfill. Our new client is now formally the contractor, but we are still expected to manage the original design intention and deliver on the initial client's vision. In this situation, I feel that I am expected to act on behalf of the original client, defending the project's initial architectural values when the new client/contractor wants to cut costs, but I lack a mandate from the original client when doing so. This creates a situation that is almost like a drama about who has power over design decisions, in which the original client expects us to play a policing role as defenders of their vision.

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