

## Developing a neighbourhood: exploring construction projects from a project ecology perspective

Susanna Hedborg & Tina Karrbom Gustavsson

To cite this article: Susanna Hedborg & Tina Karrbom Gustavsson (2020): Developing a neighbourhood: exploring construction projects from a project ecology perspective, Construction Management and Economics, DOI: [10.1080/01446193.2020.1805479](https://doi.org/10.1080/01446193.2020.1805479)

To link to this article: <https://doi.org/10.1080/01446193.2020.1805479>



© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 19 Aug 2020.



Submit your article to this journal [↗](#)



Article views: 128



View related articles [↗](#)



View Crossmark data [↗](#)

## Developing a neighbourhood: exploring construction projects from a project ecology perspective

Susanna Hedborg and Tina Karrbom Gustavsson

Real Estate and Construction Management, KTH Royal Institute of Technology, Stockholm, Sweden

### ABSTRACT

As a consequence of ongoing urbanisation, construction projects are likely to be performed in multi-project contexts. Zooming out from the single project and focussing on the context in which construction projects are performed is suggested as a way to broaden our understanding and develop new theory. The empirical case in focus here, which is studied as a project ecology, is the development of a major urban development district, where several interdependent construction projects have been initiated in sequence and in parallel in a limited geographical area. This case poses several challenges to the developers (construction clients) who are performing their projects simultaneously, and literally, as neighbours. Therefore, we zoom out from the single construction project and put the project in a wider context on a macro level, to increase the understanding of the context in which construction projects are performed. The theoretical lens of social capital helps us zoom in on the interdependencies that develop over time, going beyond traditional, contractual and vertical relationships. Based on empirical material, including interviews and meeting observations, the findings indicate that the developers have to coordinate horizontal interdependencies between projects. The findings also show that the construction client's role has been extended from initiating and delivering the project mission to also having a collaborator role between projects, where ambidexterity is required.

### ARTICLE HISTORY

Received 18 December 2019  
Accepted 23 July 2020

### KEYWORDS

Horizontal interdependencies; construction client's role; multi-project context; social capital; ambidexterity

### Introduction

To date, project ecologies have not been used to any significant extent to explain the complex project context of the construction industry and wider AEC industry. Geraldi and Söderlund (2018) suggest that, in order to extend our understanding of projects, we should zoom out from the single project, and explore projects from new perspectives at a macro level. As a consequence of ongoing urbanisation, construction projects are more likely to be performed in multi-project contexts. The temporary space that is created in multi-project contexts by the actors and their actions is understood as mediator of relationships – a space in which to build relationships between actors, actions and artefacts (Lefebvre 1991). One example of a multi-project context is urban development districts where different developers build side by side, as construction clients. Hence, an urban development district will involve and influence many different organisations and actors (Smith 2016), creating interdependencies

between construction projects. The notion of project ecology can be used to “*explore interdependencies between projects as well as the personal relations, localities and corporate networks on and around which projects are built*” (Grabher 2002, p. 246). In project ecologies, relationships other than the contractual and vertical stand out (Grabher 2004), for example a social perspective on the relationships between parallel and sequential projects. In project studies, several different notions to describe inter-organisational projects and multi-project contexts are used, such as *milieu* (Cova et al. 1996), *ecosystems* (Pulkka et al. 2016), *platforms* (Styhre and Gluch 2010) and *project networks* (Pryke et al. 2018; Steen et al. 2018), but not always with a social perspective taking a relationship approach (Pryke and Smyth 2012).

By answering Geraldi and Söderlund's (2018) call to explore projects from a macro perspective and zooming out using the notion of projects ecology, we are able to zoom in on the interdependencies that go

**CONTACT** Susanna Hedborg  [susben@kth.se](mailto:susben@kth.se)  Real Estate and Construction Management, KTH Royal Institute of Technology, Teknikringen 10b, 100 44 Stockholm, Sweden

© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

beyond the single project. We focus in detail on the interdependencies between developers that occur due to the need to coordinate and perform projects next to each other within a district, i.e. within a project ecology. In other words, we study them as temporary neighbours, immediately adjoining or relatively near one another during their projects' life cycle.

One way to study informal relationships is through the sociological lens of social capital, which describes the importance of networks of relationships as a source of competitive advantage (Bourdieu 1986). Social capital, contrary to economic and human capital, relies on the structure of relationships to other individuals or corporate actors (Portes 1998). Research on social capital in the construction industry has focussed mainly on social capital intra-organisationally, i.e. within a certain workforce (Bresnen *et al.* 2005; Styhre 2008) or in single projects (Di Vincenzo and Mascia 2012; Matinheikki *et al.* 2016). This work and the present study can be described as viewing the construction industry from a relationship perspective, as described by Pryke and Smyth (2012). Subramaniam and Youndt point out that social capital comes from "the interactions among individuals and their networks of interrelationships" (2005, p. 451). To a large extent, the project-based nature and often multi-project context of the construction industry create and rely on inter-organisational relationships, therefore the social capital in those relationships is important to understand (Matinheikki *et al.* 2016).

In the empirical case analysed here, a municipality has created interdependencies between land-allocated developers who are sharing a multi-project context by building next to each other in an urban development district. Using a qualitative study, this context is here explored as a project ecology and, using theory on social capital, the interdependencies between the neighbouring developers will be examined. The purpose is to zoom out from the single construction project perspective, put the project in a wider context (Geraldi and Söderlund 2018), and explore the client's role in this larger context. Adam and Lindahl (2017) suggest that the client's role in construction has been insufficiently studied in comparison to the contractor's role, despite the common understanding that clients have a key role in the construction industry by initiating, altering and delivering the project mission (Winch 2010). The paper will add to the discussion on understanding the client's role.

The three research questions of this study are: (1) By zooming out to a project ecology perspective, what interdependencies between projects must the

developers handle? (2) By zooming in on interdependencies, how can these interdependencies be understood from a social capital perspective? (3) How do these interdependencies influence the client's role in construction projects performed in multi-project contexts? These questions are explored by combining theory on social capital with a qualitative study of three developers performing their construction projects in parallel within the same urban development district.

## Literature overview and theoretical framework

### Project ecologies

*Project ecologies* is a term that describes multi-project contexts that are inter-organisational with various professions working in different projects together over time (Söderlund 2004). It is used to understand different layers of interdependencies, which occur when inter-organisational actors perform projects in parallel and in sequence with each other. In Grabher's (2004) framework, these layers are *core team*, *firm*, *epistemic community* and *personal network*. The notion of project ecologies captures interdependencies and informal relationships built up over time, beyond what can be described through portfolio or programme management (Geraldi and Söderlund 2018). With the contextual view in focus (Grabher and Ibert 2011), studies of project ecologies can focus on various topics, including the sociology of projects and participants, organisational development and economics (Söderlund 2004). Project ecology in this study will be used to explore the multi-project context of urban development.

Henneberry and Parris (2013) look into property development as a project ecology, finding that the notion of project ecology is applicable to the empirical context. In a theoretical sense, learning and economic geography have been the focus of several studies on project ecologies (e.g. Grabher and Ibert 2011; Lobo and Whyte 2017). Söderlund's (2004) call to study project ecologies in project studies has not yet been fully answered. Studying social capital within project ecologies should, however, be interesting in order to capture the informal parts of the layers of project ecologies (Grabher 2004). Moreover, it is relevant as project ecologies emerge from social interactions where structure is absent (Newell *et al.* 2008) and where different cultures and social logics meet (Grabher 2004). Social capital can help understand the power shifts, relations and negotiations between inter-organisational actors (Newell *et al.* 2008).

### **Inter-organisational projects in the construction industry**

Activities in the project-based construction industry are structured around coordinating and information sharing (Styhre 2008), both intra- and inter-organisationally. Research on the inter-organisational aspects of the construction industry has mainly been from a transactional perspective focussed on contractual relationships. Three examples of this include vertical and adversarial relationships between developer (construction client) and contractor when studying project partnering (Eriksson 2015), the integration of vertical relationships between client, consultant, contractor and sub-contractor in supply chain management (Vrijhoef and Koskela 2000), and lastly stakeholder management (Olander 2007). Over the last decade, efficiency in the construction industry and learning in and between projects have been focal points for construction management research – one example being the discussion of short-term exploiting and long-term exploring capabilities (Liu *et al.* 2012; Eriksson and Szentes 2017). Scholars in organisational learning have presented an understanding of how exploitation and exploration of knowledge (March 1991; Andriopoulos and Lewis 2009) can be combined to create “ambidextrous” organisations (Andriopoulos and Lewis 2009). Here, ambidextrous refers to a simultaneous focus on both governing what exists and creating and adapting to the future. Bednarek *et al.* (2016) assert that ambidexterity could be extended from an intra-organisational perspective to explore relationships across organisations – especially across construction client organisations. Research exploring ambidexterity has mostly focussed on learning and capabilities (Bednarek *et al.* 2016) though, from an inter-organisational perspective, ambidexterity in maintaining and developing relationships could also help develop an understanding of how inter-organisational relationships are developed over project life cycles.

Megaprojects should be mentioned when discussing large inter-organisational projects in a construction context. Flyvbjerg (2014, p. 6) defines megaprojects as “large-scale, complex ventures that typically cost US\$1 billion or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people”. However, while megaprojects imply only one construction client initiating one construction project, a multi-project context described through project ecology consists of several smaller or larger construction projects that are interdependent and share space,

resources, actors etc. This could be explored through networks, for example, by using social network analysis (Pryke 2004; Pryke *et al.* 2018) or through the industrial marketing and purchasing school of thought (Ingemansson Havenvid *et al.* 2016). However, these perspectives focus on understanding how a network looks and what actors are included within it, but, with the notion of project ecologies, we can explore inter-dependencies between projects without formal ties.

Another related research area explores the meta-project context in service-led projects (e.g. Alderman and Ivory 2010), questioning the rational project management triad of time, cost and quality (Hodgson and Cicmil 2006; Winter *et al.* 2006). Service-led projects are a new type of engineering project that reflect “a shift in demand from the delivery of complex capital goods to the long-term delivery of a service based on those capital goods” (Alderman and Ivory 2010, p. 1131). By focussing on the meta-project level, their focus is “on the acquisition of knowledge or as a mechanism for learning” (*ibid.*, p. 1132). Relevant here is the argument that conventional contracting and hierarchal control, which are embodied in construction contracts and traditional project management approaches, are not effective for handling knowledge (compare with Adler 2001). Instead, it is the creation of networks, relationships and trust between the actors that is important (Powell 1990). Alderman and Ivory (2010) conclude that “building a meta-project requires integration across many domains of activity”, which “extends beyond the boundaries of contractual or market relationships to a wider network of related projects that the project manager has no jurisdiction over, but needs to influence through active enrolment into the meta-project vision” (Alderman and Ivory 2010, p. 1140).

Developers (construction clients) are bridging actors who aid coordination and collaboration in and between projects (Kulatunga *et al.* 2011; Ingemansson Havenvid *et al.* 2016). The inter-organisational network becomes important when coordinating moves from a single project to a project ecology (Bygballe and Ingemansson 2014). Such contexts often require tight communication (Eriksson and Szentes 2017) and negotiation of boundaries (Karrbom Gustavsson 2018). In a project ecology, this means communication between different developers to bridge the divide between different organisations and projects.

### **Social capital and neighbours**

Bourdieu (1986) uses social capital in combination with economic and cultural capital to understand the symbolic value of individuals or groups in society. The

term social capital evolved in community studies of networks developing over time in order for individuals and groups to survive and function in a neighbourhood (Nahapiet and Ghoshal 1998). In recent decades, many definitions and understandings of social capital have been developed, but they all share the view that the networks in which individuals and groups are embedded are important for competitive advantage (Bresnen *et al.* 2005). Unlike other types of capital, e.g. human or physical capital, social capital exists in the structure of relationships between actors, rather than within individuals or in tangible objects (Coleman 1988; Portes 1998). Social capital is not held within one actor, but is jointly held by the parties in the relationship (Burt 1997). Due to the focus on relationships, social capital both builds on and creates collaboration, trust and collective action (Nahapiet and Ghoshal 1998). Coleman (1988) suggests that a group can accomplish more if extensive trust exists within the group. Another aspect of social capital is the creation of norms, where the norm to act for the collective good rather than in one's self-interest is especially strong (Coleman 1988).

Social capital is, in this paper, seen as “*features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit*” (Putnam 1995, p. 67). This paper will apply Nahapiet and Ghoshal's (1998) division between the structural, relational and cognitive dimensions of social capital, which Bresnen *et al.* (2005) and Matinheikki *et al.* (2016) also use when exploring social capital in the construction industry. With these three dimensions, it is possible to follow how ties develop into relationships and how those are perceived by the actors.

The *structural* dimension is the pattern of the network of actors, i.e. who can reach whom and how. This dimension describes the existence or lack of ties between actors, in terms like hierarchy, density and connectivity. The position in the network influences interactions and how power can be exercised (Matinheikki *et al.* 2016). The *relational* dimension is what kind of relationships individuals or groups develop through interactions. The focus here is on relations that influence behaviour and create assets such as identification, norms, trust and expectations. This can be viewed as a positive spiral, where ties can lead to interactions and trust can be developed. However, a balance between strong and weak ties is essential to broaden and deepen the network. The *cognitive* dimension describes the value that individuals and groups perceive in being part of the network.

It describes the resources from which the actors receive representations, interpretations and meaning. Matinheikki *et al.* (2016) also bring up common sense-making and forming of consensus, but stress that individual purposes can go against the common consensus.

Earlier research concludes that organisations can develop by using their social capital (Nahapiet and Ghoshal 1998) and that it is mobilised in innovative communities (Adler and Kwon 2002). Moreover, a focus on the social and organisational aspects of knowledge creation and sharing is important for understanding change processes (Brown and Duguid 2001). As Styhre (2008) points out, there is a relatively small number of studies on social capital focussing on the construction industry. The project-based context influences processes and relationships by being temporary and inter-organisational, which is why social capital in this context is interesting to explore further (Bresnen *et al.* 2005). Aaltonen and Turkulainen (2018) use socialisation mechanisms to describe how social relationships differ in different project phases. Some research suggests that it is more difficult to sustain social capital in a project-based context as groups and networks change continuously (Bresnen *et al.* 2005), but that this might make social capital even more relevant (Hansen 2002). Matinheikki *et al.* (2016) assert that actions that shape networks in project-based settings can lead to added value in the projects.

## Research approach

### Case description

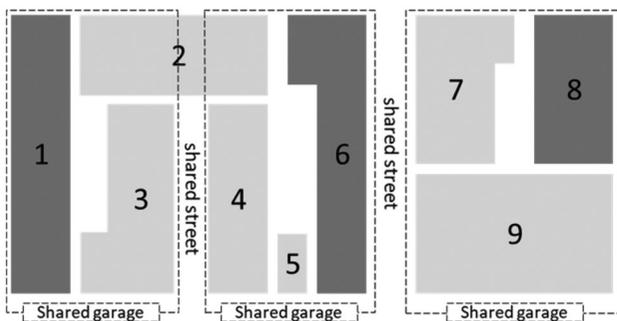
The empirical findings are based on a case study of the development of an urban district in Stockholm, Sweden. The district consists of several sequential stages – each stage including infrastructure and housing construction projects performed by different developers. This study focuses on one stage, following three developers of multi-family housing projects from planning and design to procurement, completion and hand over, over three years. The stage was characterised by a limited construction area where nine different developers built side by side in two different blocks, where each block shared streets, backyards and garages (see Figure 1). The developers differed in that some were building multi-family housing to sell as cooperatives, while others were building rental housing and planned to manage the buildings long-term. The three studied developers (developers 1, 6, 8) were spread out in these two blocks and were chosen in order to capture different issues of building in this

context. The chosen developers were also different in that Developer 8 was responsible for the facility management of the finished multi-family housing building, while developers 1 and 6 left this to the future residents in cooperatives.

The developers, in most cases, had had previous relationships with the municipality, and likely future relationships with the municipality in forthcoming projects. The number of contractors, suppliers and technical consultants were also likely to have worked with each other before. It was also possible that a contractor might be working on two different projects in the same stage, and that there could be potential future contracts to win for upcoming projects with the developers. These aspects created a complex project ecology in combination with the high level of sustainability requirements established by the municipality.

### Collecting empirical material

This empirical study conducted over three years gained an insight into the developers' social capital. The approach was abductive (Dubois and Gadde 2002) and qualitative methods were used in order to ensure rich explanations when studying actors' roles from practice (Silverman 2013). The empirical material was gathered from several sources to create a context-dependent understanding of the ongoing case (Flyvbjerg 2006). In March 2016, an early workshop with all nine developers' project managers was performed. This workshop handled procurement strategies and included both presentations and group discussions and served to gain contextual



**Figure 1.** Overview of the nine developers, including shared assets.

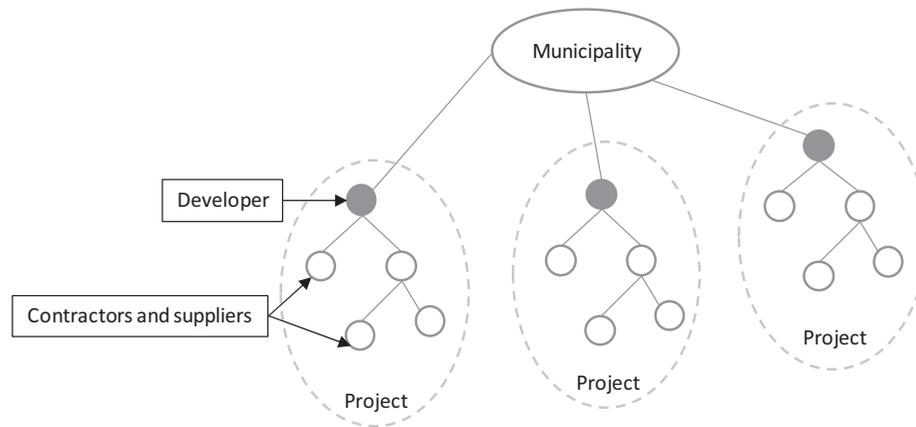
understanding of the particular stage and project specific understanding of the various projects. Between October 2016 and April 2018, six planning meetings between the municipality and the developers' project managers were observed to understand the context and how the actors interacted. These observations were used to develop the interview guides. The interviews were carried out with the three project managers (from developers 1, 6 and 8) in the early phases in March and April 2016. Follow-up interviews were conducted with two of the developers during production in May and June 2017, and with all three developers again during completion in March 2019. During the early phases and at completion, interviews were also done with the municipality's project manager and client support manager (see Table 1 for a summary of the interviews). In addition, context-dependent information was gathered from informal discussions and over forty interviews with developers, contractors, operators and representatives from the municipality in other stages of the district.

For each round of interviews, the interview guide was updated based on the analysis of earlier interviews in combination with additional literature. This process could be described as an abductive approach involving systematic combining, where empirical insights were combined with existing theory from different areas in a continuous back-and-forth manner (Dubois and Gadde 2002). The empirical work raised questions that the literature sought to explain, and vice versa.

Based on the initial research scope, which was to explore procurement for innovation and sustainability in urban development, the first interview round in 2016 focussed on complexity, uncertainty and innovation in construction projects from the developer's perspective. The initial analysis was based on literature on the construction client's role and change agents (Kulatunga *et al.* 2011; Ingemansson Havenvid *et al.* 2016) and resulted in an awareness of the need to take a process perspective since procurement decisions and sustainability requirements develop through interactions over time. Preliminary findings were presented at conferences and published (Hedborg Bengtsson *et al.*, 2018; Hedborg Bengtsson, 2019).

**Table 1.** Summary of the interviewed project managers and the municipality's personnel.

Actor	Design phase (2016)	Production phase (2017)	Completion (2019)
Developer 1	Project manager	Project manager	Project manager
Developer 6	Project manager	Project manager	Project manager
Developer 8	Project manager	–	Project manager and associate project manager
Municipality	Client support	–	Client support
Municipality	Project manager	–	Project manager



**Figure 2.** Contractual relationships between the main actors in the project ecology.

This insight developed the focus for the second round of interviews towards change processes, logistics and integration, communication and procurement. This time, the interview guide also included issues such as inter-organisational relations. With help from the literature on inter-organisational projects (Sydow and Braun 2018) and multi-project management (Geraldi and Söderlund 2018) the initial insights developed. During the analysis, it became apparent that inter-project relations were playing an important role and that traditional construction project management relationships and patterns of behaviour were being challenged. Preliminary findings were presented at conferences and published (Hedborg et al., 2020).

The guide for the third and last interview round in 2019 was updated based on the new understandings of inter-project relations to have more of an inter-project focus, with more questions on the relationships between developers, their relationships with the municipality, and the impact of procurement. The empirical insights were analysed based on the literature on project ecologies (Grabher 2004) and social capital (Bourdieu 1986; Nahapiet and Ghoshal 1998), which will be described in detail below. In a broad sense, the prerequisites and interdependencies between projects were in focus during the whole process.

### **Analysing empirical material**

The final step of the analysis was inspired by Nicolini's (2012) suggestion to "zoom in" to practice, i.e. what the developer does, and "zoom out" to context from the theoretical perspective of project ecologies. The analysis process could be compared to Langley's (1999) description of performing process studies. Horizontal interdependencies stood out when following the projects' processes and, from a "creative leap"

inspired by both sociology and general management studies, social capital was found as a theoretical lens to help understand these interdependencies. The empirical findings were analysed in detail using the three dimensions of social capital suggested by Nahapiet and Ghosal (1998).

After the three rounds of interviews had been transcribed and put in Nvivo, they were coded into the three dimensions of social capital (Nahapiet and Ghoshal 1998). The coding based on the understanding that the *structural* dimension entailed patterns and potential relationships. The *relational* dimension entailed interactions and creating relationships. The *cognitive* dimension was about value of relationships and forming consensus. The notion of project ecology and the relevant literature were then used to understand the overall context from the three dimensions of social capital and the interdependencies according to the first research question. By zooming in on each dimension, using illustrative examples and empirically driven constructs presented in the next section, we could see how the interdependencies over the three interview rounds had been handled and how the interdependencies influenced the developers' "client's role" according to the second and third research questions.

### **Findings**

As highlighted in the introduction, the project ecology of an urban development district consists of a large number of structural ties. The relationships in focus within the project ecology are between the developers in parallel projects and with their contractors and the municipality. Figure 2 illustrates the main contractual relationships within the project ecology. The normal contractual relationships existed within each of the

**Table 2.** Summary of findings of structural, relational and cognitive dimensions of social capital (Nahapiet & Ghoshal 1998).

Dimensions of social capital	Illustrative citations from interviewed developers' project managers	Empirically driven constructs
<b>Structural</b> Potential ties between actors	<p>"This is not a field where you can just set up your own stuff and start work." (PM, Developer 1)</p> <p>"It is rather complicated, a complicated registry of property. Which in turn creates a focus on collaboration. One needs to put a lot of time on the coordination with other developers." (PM, Developer 1)</p> <p>"There are many actors we must relate to." (PM, Developer 6)</p> <p>"Should all developers be responsible for their own part of a block, with no one having the full responsibility? This is what has been difficult during this process." (PM, Developer 6)</p> <p>"Organised chaos." (PM, Developer 8)</p> <p>"We are also neighbours with others, but not structurally." (PM, Developer 8)</p>	<p>Coordination</p> <p>Many actors</p> <p>Responsibilities</p> <p>Neighbours</p> <p>Complicated</p>
<b>Relational</b> Developed relationships through interactions	<p>"We have a joint project manager who runs the common projects, with everyone's interest in mind, including the city's." (PM, Developer 1)</p> <p>"Now we have strict working hours, not to disturb the residents that have moved in ... we affect others and they affect us." (PM, Developer 1)</p> <p>"We could just go to the other developers, or contractors, and say "please don't place your crane there" ... but for some reason we don't." (PM, Developer 1)</p> <p>"It's starting to pop-up contracts between developers, so we won't be able to let each other down ... it's good, I guess, to have something on paper even though you want to have faith in one another." (PM, Developer 6)</p> <p>"There might be more collaboration in early phases, not so much during production. During the design phase there is much more collaboration between the developers." (PM, Developer 8)</p> <p>"It is obvious that the purpose of the logistic centre is collaboration." (PM, Developer 8)</p> <p>"We found one contractor, it was not the cheapest for either one of us, but they felt stable ... in order to minimise the friction." (PM, Developer 8)</p>	<p>Joint project management</p> <p>Contracts</p> <p>Trust</p> <p>Friction</p>
<b>Cognitive</b> Perceived values of relationships	<p>"Colleagues ... we need to have respect for each other's businesses." (PM, Developer 1)</p> <p>"Our neighbours are two very skilled developers." (PM, Developer 1)</p> <p>"It is a luxury to have a city that does so much for the projects. In other districts you have to build your own roads, for example, here those things are served to you." (PM, Developer 1)</p> <p>"Very dependent on being perceived as an attractive client for the contractors." (PM, Developer 1)</p> <p>"If all developers were to do everything by themselves within the blocks with no one having a coordinating responsibility on-site, there would be material everywhere." (PM, Developer 6)</p> <p>"The industry has shown a large interest to be involved early." (PM, Developer 8)</p> <p>"You have to start earlier if you really want to collaborate." (PM, Developer 8)</p> <p>"We might share information between each other, but we don't have to ... if we notice that something is unclear, we tell each other to help out." (PM, Developer 8)</p>	<p>Colleagues</p> <p>Share information</p> <p>Respect</p>

construction projects, as well as land allocation between developer and municipality.

### **Structural, relational and cognitive dimensions between the projects**

Table 2 summaries the project managers', at the developers, view of their relationship with each other, using the three dimensions of social capital (Nahapiet and Ghoshal 1998). Apart from discussing how the structures of the projects look, it also shows how they have built relationships from the structural interdependencies over time. The citations in the first box illustrate their structure, their existence or the lack of ties between each other. The second box describes the relationships that they have built up, while the third box illustrates how they perceived these relationships.

From the *structural* dimension, the relationship between the developers was informal at the starting

point of the projects, when the project managers referred to the municipality as a coordinator between the developers. All interviewed developers highlighted the fact that these projects needed coordinating, especially as they had neighbours performing parallel projects. All developers had closer neighbours with whom they shared, for example, a backyard and garage – those sorts of tie were naturally more important. Even though some developers were closer to each other than others, they were all in the same context in the sense that they had the same responsibilities towards the municipality and existed in the same overall structure. For example, they all had to meet the same high sustainability requirements, use the construction logistics centre for all on-site coordination, and meet the coordinated timetables. The municipality arranged a meeting every month with all developers, informing them about the latest activities and encouraging the developers to share their progress. At the meetings it was visible that, for the

municipality, information-sharing was the focus, whereas the developers were rather quiet. However, after a few meetings, the developers started to discuss their projects informally during coffee break conversations before and after the meetings.

From the *relational* dimension, starting with the formal meetings arranged by the municipality, the project managers mentioned the meetings they initiated with their closest neighbours, when the projects moved from the early phases to design and procurement. The developers, over time, initiated different work groups, where they had overlapping interests. Moreover, they created joint sub-projects for their shared structures before production started and appointed external joint project manager consultants to lead those.

An example of the relational dimension was the development of a relationship between two developers who, when procuring their contractors, realised that they would need to coordinate extensively as they were sharing a basement with a garage. To handle this, they decided to procure the same contractor, to minimise friction. However, in the end, the project manager described several problems arising from sharing one contractor, such as having to delay their time plan to account for delayed deliveries in their neighbour's project. Moreover, despite plans to share site office and site personnel, they had to set up two separate site offices due to work overload. The project manager said that a conventional procurement strategy might have worked better. Their relationship changed over their projects' life cycle, from informal neighbours to collaborators and contract partners, albeit with some challenges of coordination.

From the *cognitive* dimension, a good example was when one project manager referred to his two closest neighbours. During the first interview, when discussing common building structure, i.e. garage and backyard, he described the situation as new and complex, but said happily that their two neighbours were "very skilled". The project manager believed this would help with the anticipated close collaboration. During the second interview round, the Project Manager described how the three developers had started to work together and created a sub-project to handle their common building structures. During the third interview round, the Project Manager referred to the two other developers as "colleagues", indicating that their relationship had been fruitful over their projects' life cycles. Moreover, the findings indicate that information sharing between projects was valued as a way to gain new insights to develop their own projects.

## **Vertical and horizontal interdependencies**

To understand the context, it is also important to see how the vertical relationships were influenced by the multi-project context. One relationship that all three project managers appreciated was the work that the municipality did for them. Even though they sometimes felt that the municipality was not helpful in coordinating between the developers, they identified many activities that the municipality did to help them. Apart from the relationship between developers and the municipality, the three project managers reflected a lot on their relationship with their appointed contractors. All of them perceived these relationships as being extra important for projects with complex sustainability requirements. Moreover, the developers felt that they could not just approach the contractors, who they perceived as knowledgeable and trustworthy, they must consider their own appearance in order to attract contractors. In the same spirit, the developers reflected on the importance of creating high-quality work for their end customers, i.e. the residents.

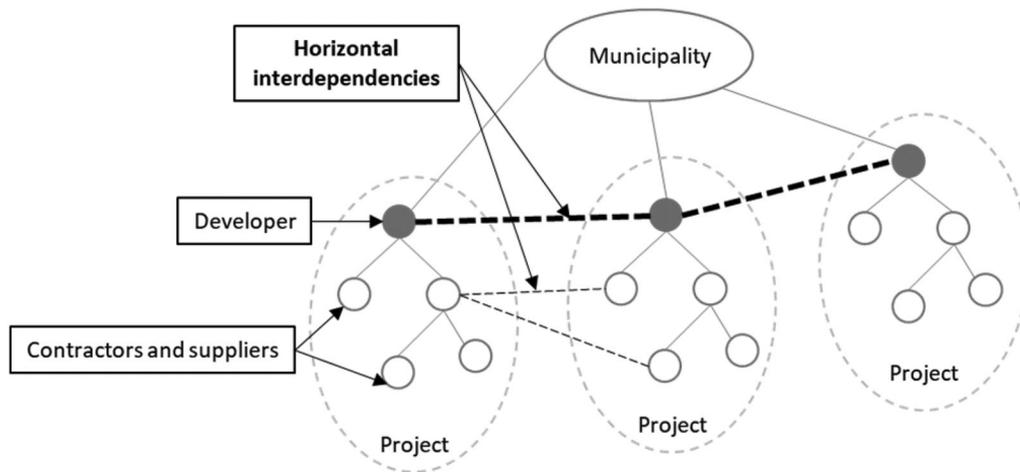
The developers seemed to have both a positive and negative perception of the ties and relationships with their neighbours. As illustrated in Table 2, on the one hand they felt that there was a great need for coordination, but on the other hand, they seemed to appreciate their neighbours' experiences. Developers with a long time horizon (e.g. public rental organisations) seemed to value their relationships more. On the other hand, the developers that sold their apartments in the form of a cooperative tended to be more focussed on being on-time and on-budget, whilst at the same time creating high-end apartments for their buyers. To summarise, the developers saw each other as both colleagues and competitors.

By analysing the findings using the three dimensions of social capital, it was apparent that the interdependencies beyond the vertical became important when construction projects were performed in a multi-project context. Those interdependencies were developed over time from the structural ties; they were informal at the start and, in this case, horizontal between the developers of each project. Figure 3 illustrates how these informal horizontal interdependencies influenced both the single projects and the large project ecology.

## **Discussion**

### **Horizontal interdependencies in project ecologies**

Zooming out from the single project to a project ecology perspective, the interdependencies between



**Figure 3.** Illustration of the relationships between the main actors in the project ecology, highlighting the informal horizontal interdependencies.

projects in a multi-project context become apparent. By analysing the empirical findings from the three dimensions of social capital (structural, relational and cognitive), it becomes clear that the developers acted as neighbours, albeit temporary ones. The findings show that the developers developed this over time, ending up seeing each other as colleagues. Comparing neighbouring developers to community neighbours, using social capital theory, seems effective as it can point not only towards what relationships developers actually have and build over time, but also how their interaction influences their project performance. Being a developer in an urban development project ecology, you know you will have neighbours, but you will not know who they are before the project starts. Your relationships will only develop when actions are taken in the project ecology. In a Swedish context, this is in most cases decided by a municipality.

Interdependencies between projects are regarded as difficult, especially if the projects are close neighbours and share some tangible structures such as a garage or backyard. To handle this, the developers created meeting forums and contracts to handle both the production and the long-term facility, compared with service-led projects in the study by Alderman and Ivory (2010). Two other interdependencies that influenced the production for the developers were identified, namely logistic issues regarding shared infrastructure and the need to coordinate their time plans as they built close to each other. All in all, the findings show that the developers had to coordinate over structures, contracts, logistics and timetables.

At first glance, any urban development district under construction could be seen as a megaproject

(Flyvbjerg 2014). If the municipality, the initiator of the district, had developed all buildings by itself, this term had been appropriate. In this case, in line with most similar initiatives in the Swedish context, the plots were divided between different developers. The developers thus became clients of their single construction project but only one out of many clients in the wider project ecology. Clients are key actors within the construction industry and as leaders of construction projects (Kulatunga *et al.* 2011). From Flyvbjerg (2014), we have learnt the importance of looking at megaprojects, which largely influence the built environment. Urban development districts and the creation of neighbourhoods are other types of complex construction project context that affect the built environment, and which have not just multiple contractors but also multiple clients. By using a project ecology perspective, we can identify the important interdependencies between projects and developers (clients), which a megaproject perspective would not see.

Another learning outcome from zooming out to project ecology, and zooming in on horizontal interdependencies, is that the long-term facility and maintenance perspective of the neighbourhood is also a common concern for developers in this type of context. Construction projects of this type of project ecology can be seen as a combination of traditional projects focussing on the production of capital goods (i.e. houses) and of service-led projects acknowledging the long-term delivery of a service (i.e. facility management) (compare with Alderman and Ivory 2010). Developers, as temporary neighbours, are partly responsible for creating the context for an urban district and community of residents, workers etc.

### **Social capital between developers in project ecologies**

The findings show that horizontal interdependencies largely influenced the developers' construction projects, which can be identified when the perspective is zoomed out to a project ecology. Compared to the much-discussed vertical relationships and contracts that developers create with contractors, suppliers and consultants (Vrijhoef and Koskela 2000; Eriksson 2015), in these horizontal interdependencies, they cannot ask for and decide on the options best suited for their own project; they have to trust the municipality to choose appropriate neighbours for them to collaborate with and informally develop relationships. This case study has shown that the developers approached this issue with varying strategies and with varying degrees of success; some initiatives were fruitful, whilst others further complicated their projects. What can be concluded from this is the importance of taking horizontal interdependencies into account and building relationships from these over the project's life cycle in order to successfully carry out the project. Matinheikki *et al.* (2016) show that building up social capital between organisations in a project can add value in the early phases. Here, we show that this is also relevant between projects, and over the whole life cycle of the project.

The findings of this study identify several activities regarding coordinating between the projects and the developers. Moving beyond coordinating, a few examples of collaborating between the developers was found. One example was when two developers decided to procure the same contractor, another was when the developers shared information even though they did not have to, and a third example was their collaboration on facility management and the long-term use and maintenance of the neighbourhood. From a social capital point of view, this can be understood as when the temporary neighbourhood is created, the developers act in the interests of the collective rather than only in their self-interest (Coleman 1988).

One potential challenge for collaborating between parallel construction projects performed by different developers in the same stage of an urban development district is the fact they to varying extent are competitors for the same end-customers, i.e. those who will buy or rent their apartments. Therefore, the developers have a balancing act to perform in that they must collaborate in order to carry out their respective projects, but at the same time, they must collaborate with their competitors for the interest of

the collective. In line with Coleman's (1988) findings that acting for the collective is stronger than self-interest, the developers did not express any difficulties in collaborating with their competitors. One reason for this could be their different business models; some were private developers who would sell the buildings to cooperatives, while others were public developers responsible for the facility's management and renting out the apartments on the controlled rental market. Another issue regarding time is that projects often have short timeframes, which influence collaboration as relationships and social capital take time to build (Hansen 2002). Even though construction projects take a long time to complete, participants often have a single project focus.

### **Ambidexterity in the client's role**

The horizontal interdependencies between developers in a project ecology influence the project managers' personal relationships, localities and their organisations' network (Grabher 2002). This study shows that the project manager of each project got an extended role when performing projects in a project ecology – a role that went beyond the tasks and responsibilities of the single project (Winch 2010; Adam and Lindahl 2017). The horizontal interdependencies created a great need for coordinating both between projects and between project managers, where they put a lot of effort into coordinating on-site logistics, timetables, contracts etc. As Geraldi and Söderlund (2018) highlight, when zooming out to a project ecology perspective, the context around the single project can be put into proper perspective. By following the project managers' practices (Nicolini 2012), coordinating within the project ecology is a significant part of project managers' work that has not been much discussed within the field of construction management. The findings here show that, in a project ecology with a complicated project structure, responsibilities within and between single construction projects must be handled, and these were indeed in the case presented here handled by the project managers.

In a project ecology, the client's role is not to change from a single project work focus, to a multi-project context work focus. Instead, the role is extended to include both, and to be able to combine and balance them. The developers, as clients, must still manage all the vertical relationships associated with the single project, but also the horizontal interdependencies between the projects, a split vision. Following March's (1991) suggestion to combine

exploitation and exploration, the developers must be ambidextrous (Andriopoulos and Lewis 2009) in their handling and building of relationships – not just in their single projects but across projects (Bednarek *et al.* 2016). The client's role is extended to include a collaborator role. The findings of this study indicate that the project managers developed collaborative tools, such as contracts and joint project management, to handle the friction between projects and ensure trust and respect for each other's businesses.

To sum up, in addition to zooming out to a project ecology, new understandings can be found by switching focus from the more common economic and transactional focus on construction management to zooming in on interdependencies and social aspects using social capital theory. In line with Geraldi and Söderlund's (2018) suggestion to change both the level of analysis and perspective to gain new insights into project studies, and in this case construction management, the findings presented in this paper can help to extend the understanding of the client's role in construction projects performed in multi-project contexts.

## Conclusions

The purpose of this paper has not only been to zoom out from the single construction project in order to put it in a larger context and more fully understand the context in which construction projects are performed, but also to zoom in on the interdependencies within that context to shed light on the client's role. This has been done by using the notion of project ecologies and exploring the interdependencies between developers acting as clients in parallel construction projects, with social capital as the theoretical lens. This case study of three developers performing construction projects in an urban development district shows that, when different clients perform projects as neighbours, i.e. build close-by to each other in a limited area, they become interdependent structurally, contractually, logistically and time wise.

With the ongoing discussion about urbanisation and sustainability in mind, the findings contribute to the construction management literature by highlighting the importance of considering horizontal interdependencies when exploring coordinating between inter-organisational actors and projects. Rather than just focussing on formal, contractual relationships, horizontal interdependencies are a main issue in multi-project contexts. The findings show that the developers used their social capital to coordinate and, to some extent, collaborate with each other. The paper also contributes an

understanding of developers' ambidexterity in both exploiting existing project relationships and exploring new horizontal inter-project relationships. In project ecologies, the client's role is extended to include a collaborator role and the project manager's tasks and responsibilities are extended beyond their single project.

This study explores construction management beyond the single project, and the notion of project ecologies is shown to be effective in explaining the complex project structure of the construction industry and broader AEC industry. Thereby, the findings also contribute to the project ecology literature by presenting a novel empirical project ecology context. For project studies, this paper can broaden the understanding of large-scale projects beyond the current discussion of megaprojects, to an understanding of context with multiple clients performing projects as neighbours.

The implication of this study for construction management, both developers and governmental actors, is that, when performing parallel and sequential construction projects in a project ecology, the horizontal interdependencies must be planned for and resources allocated to handle the required coordination and collaboration. However, the horizontal interdependencies have the potential to enable the integration of sustainable development in terms of, for example, facility management and the maintenance of both buildings and neighbourhoods. Through the lens of social capital, developers can benefit and view each other as neighbours with mutual interests.

The main limitation of this study is the single case study setting. The findings should therefore be viewed as tentative where comparative studies of similar project ecologies are suggested. Moreover, to extend the knowledge of how parallel developers handle horizontal interdependencies from a practice perspective, future research should consider horizontal interdependencies within project ecologies over several sequential project life cycles to capture the learning process between them. Another limitation of this study was to follow only one project cycle. An aspect to explore further is moving beyond interdependencies to further explore how and when developers (clients) coordinate and collaborate with each other, i.e. moving beyond their self-interest in their own projects. How much are they willing to invest in a neighbourhood they soon leave to others to occupy and maintain? How do they view their role in sustainable urban development?

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## References

- Aaltonen, K., and Turkulainen, V., 2018. Creating relational capital through socialization in project alliances. *International journal of operations & production management*, 38 (6), 1387–1421.
- Adam, A., and Lindahl, G., 2017. Applying the dynamic capabilities framework in the case of a large public construction client. *Construction management and economics*, 35 (7), 420–431.
- Adler, P.S., 2001. Market, hierarchy, and trust: The knowledge economy and the future of capitalism. *Organization science*, 12 (2), 215–234.
- Adler, P.S., and Kwon, S.-W., 2002. Social capital: prospects for a new concept. *Academy of management review*, 27 (1), 17–40.
- Alderman, N., and Ivory, C., 2010. Service-led projects: understanding the meta-project context. *Construction management and economics*, 28 (11), 1131–1143.
- Andriopoulos, C., and Lewis, M.W., 2009. Exploitation-exploration tensions and organizational ambidexterity: managing paradoxes of innovation. *Organization science*, 20 (4), 696–717.
- Bednarek, R., et al., 2016. Dynamic client portfolios as sources of ambidexterity: exploration and exploitation within and across client relationships. *Long range planning*, 49 (3), 324–341.
- Bourdieu, P., 1986. The forms of capital. In M. Granovetter & R. Swedberg (Eds.), *The sociology of economic life*. New York, NY: Routledge.
- Bresnen, M., et al., 2005. Exploring social capital in the construction firm. *Building research & information*, 33 (3), 235–244.
- Brown, J.S., and Duguid, P., 2001. Knowledge and organization: a social-practice perspective. *Organization science*, 12 (2), 198–213.
- Burt, R.S., 1997. The contingent value of social capital. *Administrative science quarterly*, 42 (2), 339–365.
- Bygballe, L.E., and Ingemansson, M., 2014. The logic of innovation in construction. *Industrial marketing management*, 43 (3), 512–524.
- Coleman, J.S., 1988. Social capital in the creation of human capital. *American journal of sociology*, 94, S95–S120.
- Cova, B., Mazet, F., and Salle, R., 1996. Milieu as a pertinent unit of analysis in project marketing. *International business review*, 5 (6), 647–664.
- Di Vincenzo, F., and Mascia, D., 2012. Social capital in project-based organizations: Its role, structure, and impact on project performance. *International journal of project management*, 30 (1), 5–14.
- Dubois, A., and Gadde, L.-E., 2002. Systematic combining: an abductive approach to case research. *Journal of business research*, 55 (7), 553–560.
- Eriksson, P.E., 2015. Partnering in engineering projects: four dimensions of supply chain integration. *Journal of purchasing and supply management*, 21 (1), 38–50.
- Eriksson, P.E., and Szentes, H., 2017. Managing the tensions between exploration and exploitation in large construction projects. *Construction innovation*, 17 (4), 492–510.
- Flyvbjerg, B., 2006. Five misunderstandings about case-study research. *Qualitative inquiry*, 12 (2), 219–245.
- Flyvbjerg, B., 2014. What you should know about megaprojects and why: an overview. *Project management journal*, 45 (2), 6–19.
- Geraldi, J., and Söderlund, J., 2018. Project studies: what it is, where it is going. *International journal of project management*, 36 (1), 55–70.
- Gabher, G., 2002. The project ecology of advertising: tasks, talents and teams. *Regional studies*, 36 (3), 245–262.
- Gabher, G., 2004. Temporary architectures of learning: knowledge governance in project ecologies. *Organization studies*, 25 (9), 1491–1514.
- Gabher, G., and Ibert, O., 2011. Project ecologies: a contextual view on temporary organizations. In P. W.G. Morris, J. Pinto, and J. Söderlund, eds. *The Oxford handbook of project management*. Oxford: Oxford University Press.
- Hansen, M.T., 2002. Knowledge networks: explaining effective knowledge sharing in multiunit companies. *Organization science*, 13 (3), 232–248.
- Hedborg Bengtsson, S., Karrbom Gustavsson, T., and Eriksson, P.E. 2018. Users' influence on inter-organizational innovation: mapping the receptive context, *Construction Innovation*, 18 (4), 488–504.
- Hedborg Bengtsson, S. (2019). Coordinated construction logistics: an innovation perspective. *Construction Management and Economics*, 37(5), 294–307.
- Hedborg, S., Eriksson, P.-E., Karrbom Gustavsson, T. 2020. Organisational routines in multi-project contexts: Coordinating in an urban development project ecology. *International Journal of Project Management*. <https://doi.org/10.1016/j.ijproman.2020.01.003>
- Henneberry, J., and Parris, S., 2013. The embedded developer: using project ecologies to analyse local property development networks. *Town planning review*, 84 (2), 227–249.
- Hodgson, D., and Cicmil, S., 2006. *Making projects critical*. New York, NY: Palgrave Macmillan.
- Ingemansson Havenvik, M., et al., 2016. Renewal in construction projects: tracing effects of client requirements. *Construction management and economics*, 34 (11), 790–807.
- Karrbom Gustavsson, T., 2018. Liminal roles in construction project practice: exploring change through the roles of partnering manager, building logistic specialist and BIM coordinator. *Construction management and economics*, 36 (11), 599–610.
- Kulatunga, K., et al., 2011. Client's championing characteristics that promote construction innovation. *Construction innovation*, 11 (4), 380–398.
- Langley, A., 1999. Strategies for theorizing from process data. *Academy of management review*, 24 (4), 691–710.
- Lefebvre, H., 1991. *The production of space* (D. Nicholson-Smith, Trans. Vol. 142). Oxford, UK: Oxford Blackwell.
- Liu, L., Wang, X., and Sheng, Z., 2012. Achieving ambidexterity in large, complex engineering projects: a case study of the Sutong Bridge project. *Construction management and economics*, 30 (5), 399–409.
- Lobo, S., and Whyte, J., 2017. Aligning and Reconciling: Building project capabilities for digital delivery. *Research policy*, 46 (1), 93–107.
- March, J.G., 1991. Exploration and exploitation in organizational learning. *Organization science*, 2 (1), 71–87.

- Matinheikki, J., et al., 2016. Managing inter-organizational networks for value creation in the front-end of projects. *International journal of project management*, 34 (7), 1226–1241.
- Nahapiet, J., and Ghoshal, S., 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of management review*, 23 (2), 242–266.
- Newell, S., et al., 2008. Interdependencies in complex project ecologies: the case of biomedical innovation. *Long range planning*, 41 (1), 33–54.
- Nicolini, D., 2012. *Practice theory, work, and organization: An introduction*. Oxford: Oxford university press.
- Olander, S., 2007. Stakeholder impact analysis in construction project management. *Construction management and economics*, 25 (3), 277–287.
- Portes, A., 1998. Social capital: Its origins and applications in modern sociology. *Annual review of sociology*, 24 (1), 1–24.
- Powell, W.W., 1990. Neither markets nor hierarchy: network forms of organizing. *Research in organizational behaviour*, 12, 295–336.
- Pryke, S., et al., 2018. Self-organizing networks in complex infrastructure projects. *Project management journal*, 49 (2), 18–41.
- Pryke, S., and Smyth, H., 2012. *The management of complex projects: a relationship approach*. Oxford, UK: John Wiley & Sons.
- Pryke, S.D., 2004. Analysing construction project coalitions: exploring the application of social network analysis. *Construction management and economics*, 22 (8), 787–797.
- Pulkka, L., et al., 2016. Applicability and benefits of the ecosystem concept in the construction industry. *Construction management and economics*, 34 (2), 129–144.
- Putnam, R.D., 1995. Bowling alone: America's declining social capital. *Journal of democracy*, 6 (1), 65–78.
- Silverman, D., 2013. *Doing qualitative research: A practical handbook* (4th ed.). London: Sage Publications.
- Smith, P., 2016. Boundary emergence in inter-organizational innovation the influence of strategizing, identification and sensemaking. *European journal of innovation management*, 19 (1), 47–71.
- Steen, J., et al., 2018. Projects and networks: understanding resource flows and governance of temporary organizations with quantitative and qualitative research methods. *Project management journal*, 49 (2), 3–17.
- Styhre, A., 2008. The role of social capital in knowledge sharing: the case of a specialist rock construction company. *Construction management and economics*, 26 (9), 941–951.
- Styhre, A., and Gluch, P., 2010. Managing knowledge in platforms: boundary objects and stocks and flows of knowledge. *Construction management and economics*, 28 (6), 589–599.
- Subramaniam, M., and Youndt, M.A., 2005. The influence of intellectual capital on the types of innovative capabilities. *Academy of management journal*, 48 (3), 450–463.
- Sydow, J., and Braun, T., 2018. Projects as temporary organizations: an agenda for further theorizing the interorganizational dimension. *International journal of project management*, 36 (1), 4–11.
- Söderlund, J., 2004. On the broadening scope of the research on projects: a review and a model for analysis. *International journal of project management*, 22 (8), 655–667.
- Winch, G., 2010. *Managing Construction Projects*. West Sussex, UK: John Wiley and Sons.
- Winter, M., et al., 2006. Directions for future research in project management: the main findings of a UK government-funded research network. *International journal of project management*, 24 (8), 638–649.
- Vrijhoef, R., and Koskela, L., 2000. The four roles of supply chain management in construction. *European journal of purchasing and supply management*, 6 (3), 169–178.