CIRCULAR DEMOLISHERS: TRANSITIONING FROM WASTEFUL TO RESOURCEFUL NEGOTIATIONS?

A master thesis about understanding how circular demolishers negotiate their transitioning role

Figure 1 "Circulair bouwen" (image retrieved on 15 January 2022 on https://www.clubrhijnhuizen.nl)

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Table of contents

INTRODUCTION

Tap, and sold! It felt good giving my vintage Danish design closet another life, waiting to be loved by a happy new owner. Now that I think about it, I have been surrounded by circularity my whole life. My grandfather was a 'strandjutter', meaning that he used to walk along the beach to collect garbage, which he would then display in the shed or reuse to build a piece of furniture with. My grandmother was also ahead of her time, as she solely bought her produce at the local eco-shop, carrying her own glass jar. Not to mention the fact that she rarely disposed of anything without re-using it first. Throughout my student years, I have unconsciously also been concerned with circularity, by using online platforms to buy and sell clothing and second-hand furniture. When decorating my home, I was proud that I had bought nearly all my furniture second-hand. What never struck my mind however, was using reclaimed materials to design my windows, windowsills, countertops or flooring (Vignette written on January 7th, based on personal experiences).

When reflecting my personal experience on the academic literature, it turns out that circular construction and design do not exactly go hand in hand. The traditional method of design as we know it is accustomed to the first-time use of raw materials, making it impossible to achieve both economic profitability, aesthetics and environmental harmony (Braungart et al., 2007; Pomponi & Moncaster, 2017). To complicate things, there seems to be a lack of willingness to design materials fit for easy disassembly with the prospect of reusing materials at the end of their life cycle (Adams et al., 2017). However, designing for permanence with virgin materials as the default setting has taken its toll on planet Earth (Ellen MacArthur Foundation, 2013).

Buildings constructed in the 90's covered over 40 percent of global material consumption. In 2016, the construction sector was crowned the number one consumer of raw materials worldwide (Pomponi & Moncaster, 2017, p. 710). While the global growth of the human population and their income is accompanied with increasing consumption of construction materials (Huang et al., 2020; Adams et al., 2017). From 2000 to 2017 the global consumption of construction materials has tripled in size from 6.7 billion tons to 17.5 billion

tons (Huang et al., 2020, p. 564). With the rising demand causing increasing shortages of construction materials as well as environmental threats for current and future generations, the need for resource efficient construction has become ever-more pressing (Hossain et al., 2020; Adams et al., 2017).

The linear economy system, dubbed as the 'take-make-dispose' economy is argued to be at the core of the issue. As the linear economy system facilitates the limitless consumption of raw materials, followed by mass production and waste production (MacArthur, 2013; Hossain et al., 2020). Alternatively, the circular economy system has gained ground in academic, industrial and governmental debate as it offers a solution to reduce the consumption of construction materials (Hossain et al., 2020; Pomponi et al., 2017; Adams et al., 2017).

The concept circular economy can be understood as: "an industrial system that is restorative or regenerative by intention and design" (MacArthur, 2013, p. 7). According to the Ellen MacArthur Foundation (2013) the circular economy system is based on three principles. Firstly, waste is redefined as a resource by designing products for the purpose of disassembly and re-entering the cycle for reuse (Ellen MacArthur Foundation, 2013, p. 7). Secondly, a distinction is made between consumables: elements of products that are natural and biodegradable, and durables: elements of products that are artificial and not biodegradable. Thirdly, the cycle should be made resilient by fueling it with naturally renewable energy (Ellen MacArthur Foundation, 2013, p. 7).

In 2016 the Dutch government kicked-off a program purposed for building a circular economy in The Netherlands by 2050, marking the start of the transition to a circular economy in the Netherlands (Government of the Netherlands, 2016; Rijksoverheid, 2021). As the circular economy system redefines waste as a resource, the transition to a circular economy requires us to rethink traditional demolition and waste production (Government of the Netherlands, 2016). Traditional demolition is making room for circular demolition: the activity of demolishing, dismantling, disassembling and reassembling a building in such a way that the resources released in the process can be upcycled and reused in different projects (VERAS, n.d.).

With a strengthening of requirements for circular construction projects as presented in the 'Bouwbesluit 2012', and with the contract requirements of circular demolition being set in stone in the 'Concrete agreement' (Rijksoverheid, 2021, p. 18-43), circular demolishers could contribute to the transition to a circular economy. It must be said, however, that the transition towards a circular economy cannot be achieved by circular demolishers alone. Demolishers do

not operate in a social vacuum as they are embedded in the construction supply chain (Platform CB'23, 2021, p. 7-15).

A supply chain can be broadly defined as: "the network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer" (Christopher, 1998 as cited in Akinade & Oyedele, 2019, p. 863). More specifically, the construction supply chain consists of: clients, architects, project managers, engineers, main contractors, subcontractors, suppliers, manufacturers, logistics organizations and stakeholders (Akinade & Oyedele, 2019; Badi & Murtagh, 2019). In the hierarchy of a construction supply chain, a demolisher is considered to be a subcontractor (Sezer & Bosch-Sijtsema, 2020, p.3), an example of which is depicted in Figure 2.
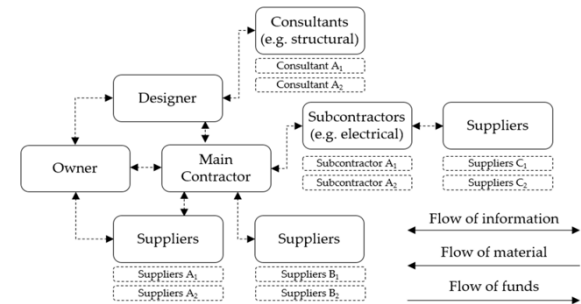

Figure 2: "A typical construction supply chain" Retrieved from Studer & De Brito Mello (2021)

With the construction supply chain programmed to serve the linear economy, the transition towards a circular economy requires the construction supply chain to move away from the linear model (Ellen MacArthur Foundation, 2013, p. 20-82). However, the construction supply chain forms an obstacle in achieving this goal, due to the fragmentation of actors and rigid structures lacking flexibility (Adams et al., 2017; Kooter et al., 2021; Platform CB'23, 2021).

To tackle this issue, various actors in the construction supply chain work together in inter-organizational circular construction projects in an attempt to contribute to the transition to a circular economy (Kooter et al., 2021, p. 1). Circular inter-organizational construction projects involve actors each fulfilling a certain role, including: clients, contractors, consultants, auditors and developers (Platform CB'23, 2021; Kooter et al., 2021).

The transition from a linear to a circular economy has created a new playing field within which actors take up new roles, transforming traditional roles and collaborative dynamics (Platform CB'23, 2021, p. 7). In traditional construction projects roles are connected via a linear chain, in which the initial phase of the project is decoupled from the demolition phase (Platform CB'23, 2021, p. 7-38). Whereas in circular construction projects roles exist in an ecosystem which connects all phases of the project in a never-ending cycle, thus changing existing ways of collaboration (Platform CB'23, 2021, p. 7-38).

Though it looks great on paper, collaboration in circular construction projects is difficult to realize in organizational practice. As it turns out, inter-organizational collaboration

in circular construction projects is embedded in power-struggles and is difficult to change, while actors continue holding on to traditional roles and ways of working (Kooter et al., 2021, p. 1-3). Simultaneously, competition over roles has increased due to a rising number of actors entering inter-organizational projects (Bos-De Vos et al., 2019, p. 131). This trend has added fuel to the fire by further reinforcing the negotiation of roles in inter-organizational projects, a constant clash between established actors defending their role boundaries, while new actors attempting to reshape them (Simpson & Carroll, 2008, p. 42).

Taking into account the challenges present in the supply chain and inter-organizational projects, my main research question is as follows: "How do demolishers negotiate their transition role as circular demolishers in the construction supply chain and how does the new role constellation play out in inter-organizational projects?". In order to answer my main research question, I have composed the following four sub questions:

1. *"How are roles, role negotiation and role transitions presented in academic debate?"*
2. "What is the traditional role of demolishers in the construction supply chain and how is it positioned in role constellations of traditional construction projects?*"*
3. *"What role are demolishers trying to move towards in the construction supply chain and how does the new role constellation play out in circular construction projects?"*
4. "What strategies do demolishers use to negotiate their transition role as circular demolishers in the construction supply chain and in circular construction projects?*"*

The abovementioned research questions will function as a means to achieve my underlying research objective, which is: to understand how demolishers negotiate their transition role as circular demolishers.

There are two ways in which my research offers a scientific contribution. Firstly, despite the fact that the transition to a circular economy is creating new roles, transforming traditional roles and ways of collaboration (Platform CB'23, 2021, p. 7). In combination with the fact that circular demolition is on the rise (VERAS, n.d.), there is little academic research about transitioning roles in the context of sustainability transitions (Wittmayer et al., 2017). Although scholars have studied the subjects of role change and role transition (Galvin, 2015; Turner, 1990; Ashforth, 2000), the idea that sustainability transitions may be triggering it has gone unnoticed (Wittmayer et al., 2017). By conducting this research, I have contributed knowledge of roles to transition literature.

Secondly, this research provides a scientific contribution, while existing literature on role negotiation lacks a frame of reference for negotiating transitioning roles. Existing studies on role negotiation in inter-organizational projects are either conducted from the viewpoint of

established professionals viewing emerging actors as a threat, or from the perspective of emerging professionals experiencing difficulties in establishing their role (Bos-De Vos et al., 2019; Gluch & Månsson, 2021). Having studied established professionals negotiating their transition role as circular demolishers in inter-organizational projects, I have contributed knowledge to the field of role negotiation.

Equally important is the contribution of my research to society. With regard to the increasing scarcity of raw materials, the new role of circular demolishers offers opportunities to reuse and upcycle materials (VERAS, n.d.). By keeping the materials released from demolition in the construction supply chain, circular demolition relieves some of the pressure currently placed the Earth's natural supply (VERAS, n.d.; Ellen MacArthur Foundation, 2013, p. 17). Taking this into account, research on the role of circular demolishers contributes to the transition to a circular economy, making it socially relevant to study the transitioning roles of circular demolishers. After having made you acquainted with the thesis subject, I will use the following paragraphs to elaborate its structure.

This thesis is divided into seven sections which I will briefly introduce, including: the theoretical framework, methodology, findings, discussion and conclusion. The theoretical framework is focused on presenting academic debate regarding the subjects of; role theory, perspectives on roles, role negotiation and role transitions. The methodology section is used to present the; qualitative nature of the research, issues of sampling and gaining access, data collection through semi-structured interviews, data collection through participant observation, case descriptions of two circular construction projects, and data analysis.

The first chapter of the findings concerns the traditional role of demolishers in the construction supply chain, and how it is positioned in role constellations of construction projects. The second chapter of the findings is focused on the role demolishers are moving towards in the construction supply chain and how the new role constellations play out in circular construction projects. The third chapter of the findings zooms in on the strategies used by demolishers to negotiate their transition role as circular demolishers in both the construction supply chain, and in circular construction projects.

The discussion section will be used to present five relevant contributions to the academic debate on role theory, role transitions, transition literature and role negotiation. Finally, the concluding section is focused on: answering the main research question, presenting limitations and suggestions for future research, and proposing policy and practical implications to the demolition industry.

THEORY ON ROLES, ROLE NEGOTIATION AND ROLE TRANSITIONS

The aim of this theoretical framework is to answer the first sub question: "How are roles, role negotiation and role transitions presented in academic debate?*"*. Keeping this in mind, this chapter is divided into four sections. In the first section, I will elaborate on the origin and disappearance of role theory. In the second section, I will present various perspectives on roles present in academic debate. In the third section, I will introduce the concept of role negotiation, its embeddedness to power-relations and how it plays out in inter-organizational projects. Finally, I will devote the last section to zoom in on the concepts of role change, role transitions and transition roles.

THE ORIGIN AND DISSAPEARANCE OF ROLE THEORY

The concepts used in role theory can be traced back to theatre, referring to the performance done by actors (Thomas & Biddle, 1966; Simpson & Carroll, 2008; Ashforth, 2000). The now well-known metaphor introduced by Goffman (1959) suggests that we as actors, perform multiple versions of ourselves depending on the environment and situation (Goffman, 1959, p. 50). Building on this metaphor, roles can be understood as "social masks" that actors can decide to put on (Strauss, 1959, p. 11).

Role theory originated between the 1920s and 1930s, after the concept of roles first made its debut in academic writings, and became increasingly popular in the field of social science (Ashforth, 2000, p. 3). In the late 1980s the concept of role theory had reached its absolute high when role theory was considered to be: "a vehicle, or perhaps the major or only vehicle, presently available for integrating the three core social sciences of anthropology, sociology, and psychology into a single discipline whose concern is the study of human behavior" (Biddle, 1979, p. 11).

Nowadays, role theory seems to have disappeared from the academic radar (Simpson & Carroll, 2008, p. 29). It seems as though role theory has paved the way for identity theory, a concept which scholars argue to cover a more "dynamic and multifaceted treatment of organizing" (Simpson & Carroll, 2008, p. 29). As the interest in role theory died down, scholars even started calling it an "old fashioned cliché" (Simpson & Carroll, 2008; Mangham, 1996). Despite its disappearance in academic literature, the concept of roles is still very much alive in organizational discourse calling for a renewed interest and reconceptualization of roles within identity theory (Simpson & Carroll, 2008; Sveningsson & Alvesson, 2003). As a small gesture

in this direction, I will devote the next section to presenting the various perspectives on roles, combining the fields of role theory and identity theory.

(ROLE)PLAYING WITH PERSPECTIVES

Throughout the history of role theory, a wide array of perspectives on roles have entered academic debate, accompanied with a lack of consensus on how to theorize and conceptualize roles (Wittmayer et al., 2017; Simpson & Carroll, 2008; Biddle, 1986; Gibson & Pennington-Gray, 2005). A distinction can be made between two traditional ontological schools of thought present in role theory: the functionalist school and the interactionalist school (Ashforth, 2000; Simpson & Carroll, 2008; Gibson & Pennington-Gray, 2005).

Firstly, the functionalist school views roles as taken-for-granted expectations determined by fixed positions in a social structure. In this sense, actors play a certain role in a social structure (Ashforth, 2000; Gibson & Pennington-Gray, 2005; Simpson & Carroll, 2008; Wittmayer et al., 2017). Secondly, the interactionist school lays the emphasis on role creation rather than role performance. In this view, individual actors construct their roles in interaction with others (Gibson & Pennington-Gray, 2005; Ashforth, 2000; Wittmayer et al., 2017). Over the last decades, these traditional schools of thought have been critiqued for their vague definitions and lacking elements of agency, structure and power in role conceptualizations (Gibson & Pennington-Gray, 2005, p. 445-447). Two more recent perspectives on roles have attempted to fill this gap, which seem to be dominating academic debate: roles as resources and roles as boundary objects.

From the perspective of roles as resources, roles are defined as cultural objects reflecting the socially constructed taken-for-granted assumptions of what is considered to be legitimate and normal (Collier and Callero, 2005, p. 47). In this view, roles are shaped by social structures, while at the same time reproduced by using them as a resource for identity construction and to get a hold of cultural, social or material resources (Wittmayer et al., 2017, p. 50).

From the perspective of roles as boundary objects, roles are defined as "a vehicle for mediating and negotiating meaning in interactions, while also being (re)constructed through them" (Wittmayer et al., 2017, p. 50). In this view, roles are considered to function as intermediaries in the process of identity construction (Simpson & Carroll, 2008; Wittmayer et al., 2017, p. 50). Rather than viewing roles as shaped by social structures, the perspective of

roles as boundary objects emphasizes agency, by allowing for improvisation and the emergence of meanings deviating from what is deemed to be 'normal' (Wittmayer et al., 2017, p. 50). From the perspective of roles a boundary objects, roles are ever-changing, as they are constantly (re)negotiated through interactions embedded in power struggles (Bos-De Vos et al., 2019; Wittmayer et al., 2017).

Rather than viewing roles as fixed and shaped by social structures, I am primarily interested in the agency potential of actors to challenge existing social structures by negotiating their role. Therefore, I believe that the perspective of roles as boundary objects is best suited for studying the transitioning role of demolishers. On that account, I will devote the next section to elaborate on the process of role negotiation, its position in academic literature and how it's linked to power-relations.

ROLE NEGOTIATION: A TUG-OF-WAR BETWEEN MEANING AND POWER

In academic debate, the process of role negotiation is presented by dividing actors into two diametrically opposed groups, with established professionals on the one end and emerging professionals on the other end of the boxing ring. This divide is best understood by highlighting two concepts often used in to illustrate role negotiation in theoretical and empirical writings, namely boundary work and power.

Firstly, role negotiation is often presented as an element of boundary work or identity work (Bos-De Vos et al., 2019; Köktener & Tunçalp, 2021; Sveningsson & Alvesson, 2003; Taminiau & Heusinkveld, 2020). This school supports the view of roles as boundary objects, considering boundary work as the process through which constant (re)negotiation of role boundaries takes place (Bos-De Vos et al., 2019, p. 130). Role boundaries can be defined as: "clear demarcations between dichotomous or mutually exclusive entities or 'permeable membranes' that allow some demarcation between one's situation and that of others" (Bos-de Vos et al., 2019, p. 130).

Traditionally, this negotiation of role boundaries takes place when actors attempt to create, protect or change role boundaries (Gieryn, 1983). More recent research on the negotiation of roles unraveled three forms of boundary work: reinstating, bending, and pioneering role boundaries (Bos-De Vos et al., 2019, p. 129). In organizational practice, boundary work is often accompanied with friction between actors, while it concerns: "struggles

over jurisdiction in which professionals claim authority over the tasks within their domains" (Bos-De Vos et al., 2019, p. 130).

Although the perspective of roles as boundary objects perceives roles as (re)negotiated through social interaction, thus enabling the emergence of new meanings (Wittmayer et al., 2017), research on boundary work seems to be rather one-sidedly aimed at the role negotiation of established professionals (Bos-De Vos et al., 2019). Consequently, the emergence of new roles is often presented as a threat to established role structures (Köktener & Tunçalp, 2021; Bos-De Vos et al., 2019; Gieryn, 1983; Gluch & Månsson, 2021). The embeddedness of boundary work in tension-ridden contexts brings me to power, the second concept used in tandem with role negation.

Role negotiation is thought to be closely tied to the distribution of power (Kirk, 2001, p. 593; Kim & Angouri, 2019, p. 175). Roles are embedded in role structures, understood as: "shared understanding of actors' roles and their respective expertise and responsibilities" (Bos-De Vos et al., 2019, p. 131). Role structures exist in the minds of actors can be used as an instrument to coordinate interaction (Bechky, 2006; Bos-De Vos et al., 2019).

To illustrate this, role boundaries can be viewed as an arena in which not only meaning, but also power is negotiated (Simpson & Carroll, 2008; Kirk, 2001; Kim & Angouri, 2019). As such, the negotiation of roles is a never-ending tug-of-war between existing role structures and the agency of empowered actors to reconstruct role structures, thereby constantly shifting power-relations (Simpson & Carroll, 2008, p. 42). Taking this into account, it doesn't come as a surprise that sustainability professionals emerging in the construction sector experience difficulties with negotiating their new role in existing role structures (Gluch & Månsson, 2021, p. 2).

The difficulty to negotiate a new role seems particularly prevalent when emerging professionals enter project-based settings (Gluch & Månsson, 2021, p. 2). In a study in the Swedish construction industry, emerging actors coped with this difficulty by constantly switching between formal and informal roles, depending on the established role structures of the construction project (Gluch, 2009). Not only did emerging sustainability professionals have a hard time establishing their new role, it also hindered the development of a sustainable practice in construction projects (Gluch & Månsson, 2021, p. 2).

According to Bos-De Vos et al. (2019) this can be explained by the fact that role negotiation is triggered when emerging professionals enter inter-organizational projects. These inter-organizational projects function as a temporary organization, with each actor enacting their own role in the existing role structures (Bechky, 2006; Bos-de Vos et al., 2019). However,

with an increasing number of actors entering these projects, competition over roles has increased. With a rising pressure among actors with established roles, role negotiation has intensified (Bos-de Vos et al., 2019, p. 131).

By now, it's clear that emerging professionals have difficulties with negotiating their role in inter-organizational projects, but what I'm particularly interested in is how established actors negotiate their role boundaries when boundaries are blurry, as they are transitioning into the role of a circular demolisher. For that reason, I will devote the next section to zoom in on the concepts of role change, role transitions and transition roles.

TRANSITION(ING) ROLES

Scholars engaged in academic debate on roles have made a clear demarcation between the concepts of role change and role transition (Galvin, 2015, p. 36). In order to understand the difference, I will start this section by elaborating on the concept of role change, after which I will discuss the concept of role transitions. On the one hand, role change can be understood as: "a change in the shared conception and execution of typical role performance and role boundaries" (Turner, 1990, p. 88). A distinction can be made between quantitative and qualitative role change. Quantitative role change concerns respectively the expansion or subtraction of a role by a gain or loss of responsibilities or power (Turner, 1990, p. 88). Whereas qualitative role change can be understood as a change in the relative prominence of existing elements, triggered when elements are replaced or reinterpreted (Turner, 1990, p. 88). Taking this into account, role change is thought to be behavioral and structural, concerning the addition and subtraction of tasks and elements of an existing role (Galvin, 2015; Turner, 1990).

On the other hand, a role transition does not equal the process of change, rather it concerns the cognitive process in which a single actor psychologically shifts towards a new role or towards a new orientation of a traditional or existing role (Galvin, 2015; Ashforth, 2000; Louis, 1980). Traditionally, role transitions can be divided into two types: intra-role transitions and inter-role transitions (Ashforth, 2000; Louis, 1980). Firstly, intra-role transitions take place when an actor shifts towards a new orientation within a traditional or existing role (Ashforth, 2000; Louis, 1980). Secondly, inter-role transitions occur when an actor shifts between roles, moving to a new or different role (Ashforth, 2000; Louis, 1980).

Subsequently, inter-role transitions can be divided into macro and micro role transitions (Ashforth, 2000, p. 7). Macro role transitions occur when an actor shifts between roles that are

sequentially held by an actor, concerning the exit of one role followed by the entry into another (Ashforth, 2000, p. 7). Micro role transitions occur when an actor shifts between multiple roles that are simultaneously held by an actor, mediated by the flexibility of a role boundary (Ashforth, 2000; Ashforth et al., 2000; Tempelaar & Rosenkranz, 2016).

As the abovementioned conceptualizations of role transitions derive from identity theory, it's important to note that roles don't exist in a social vacuum. Instead, roles are embedded in role constellations, which can be understood as: "webs of roles, which interact, interrelate and co-evolve with one another" (Wittmayer et al., 2017, p. 52). This concept is not to be confused with the concept of role structures, whereas role structures are used by actors as a mechanism to maintain the status quo (Bos-de Vos et al., 2019). On the contrary, a change in a single role inherently leads to a change in the role constellation (Turner, 1990; Wittmayer et al., 2017).

This rule seems to hold up when applied to the context of circular construction projects, where the transition to a circular economy has brought about new role constellations, triggering changes in traditional roles and ways of collaboration (Platform CB'23, 2021, p. 7). With the conceptualization of roles in transition literature is still in its infancy, transition literature has failed to consider that transitioning contexts may be accompanied by a change in the roles and relations of the actors involved (Wittmayer, 2017, p. 47). Wittmayer et al. (2017) attempted to fill this gap by applying role transitions to the context of sustainability transitions. They suggest that in the context of sustainability transitions actors occupy transition roles, which are defined as: "roles through which actors support or hinder a specific sustainability transition (e.g. frontrunner)." (Wittmayer et al., 2017, p. 47).

Bringing both the concepts of role negotiation and role transition together, these transition roles can be studied by investigating how these actors negotiate their role in organizational practice (Wittmayer et al., 2017, p. 50-51). Thus, studying transition roles does not only generate a better understanding of the role itself, as it also signals role change of other actors, thereby creating the possibility to gain insights on how to collectively cope with such transitions (Wittmayer et al., 2017, p. 46).

Reflecting on the existing literature presented in this theoretical framework, a research gap was found with regard to how actors negotiate their transition role in the context of sustainability transitions. Whereas studies on role negotiation in inter-organizational projects are solely focused on either established professionals or emerging professionals (Bos-De Vos et al., 2019; Gluch & Månsson, 2021; Gluch, 2009), negotiation strategies for roles subjected to change are unrepresented. Additionally, with the concept of transition roles having recently

made its debut in transition literature (Wittmayer et al., 2017) research on transition roles the context of sustainability transitions has yet to commence. In an attempt to fill this gap, the next section is aimed at explaining the methods used to study how demolishers negotiate their transition role as circular demolishers.

METHODOLOGY

The research I have conducted is qualitative of nature, which means that instead of testing an existing theory in the field, my findings are used to contribute to theory building from the ground up (Bryman, 2012, p. 380). Therefore, my main research objective was to understand how demolishers negotiated their transitioning role. To achieve this, the demolisher's transitioning role was explored on the level of the construction supply chain, and on the level of inter-organizational projects.

There are two reasons why I've chosen to do so. Firstly, role change occurs on two levels, while a change in the role of a single actor is accompanied by a change in the role constellation as a whole (Turner, 1990; Wittmayer et al., 2017). Secondly, while increased competition over roles has heightened role negotiation between actors in inter-organizational projects (Bos-De Vos et al., 2019, p. 131).

To prevent limiting the validity of my findings by solely using one research method, I applied the principle of *triangulation*, by using different research methods to study a single research subject from various angles (Clark & Bryman, 2019; Boeije, 2009). Primarily, I've chosen to use the qualitative method of semi-structured interviewing, which is suitable when a researcher wishes to study specific subjects from the viewpoint of the interviewee (Bryman, 2012, p. 471). As my research was focused on capturing various perspectives on the fairly specific topics of role transition and role negotiation from the viewpoint of demolishers, this method seemed to be the right fit.

Secondly, as an additional source of data, the method of participant observation was used to observe the verbal and non-verbal interaction between actors and how roles are negotiated in practice during inter-organizational meetings. As my identity was known among the actors the participant observation occurred *overt* and, while lacking professional expertise in the field of study, I took up the role of a non-participating observer (Bryman, 2012, p. 437-444). After having introduced my research approach, I will devote the next section to sampling methods and gaining access.

SAMPLING AND GAINING ACCESS

Two sampling strategies were used to select participants, namely theoretical sampling and snowball sampling (Glaser & Strauss, 1967; Bryman, 2012). As I wished to study the transitioning role of demolishers on both levels, the first sampling strategy used was the qualitative research method of *theoretical sampling*, meaning that participants were selected in

relation to the theoretical phenomena I wished to study for the purpose of providing theoretical insights (Glaser & Strauss, 1967).

During my fieldwork, theoretical sampling was used by deliberately selecting demolishers based on the following: the extent to which their role seemed to be transitioning, whether they worked in the construction supply chain and whether they worked in circular construction projects. Additionally, theoretical sampling was used by selecting other actors involved in circular construction projects until theoretical saturation was reached (Glaser & Strauss, 1967; Bryman, 2012). In this type of research, it is important to note the risk of selecting participants engaging in greenwashing. Taking this into account, this risk was turned around by considering greenwashing to be a potential finding.

The second sampling strategy used to select participants was snowball sampling, concerning the creation of a small sample of research participants, used to gain further access to the field (Bryman, 2012, p. 202). This method was applied by connecting with two gatekeepers working at the trade association who linked me to demolishers whose role was seemingly in transition. Additionally, snowball sampling was used by asking participants to connect me with colleagues working at their organization or other actors involved the circular construction project under study.

Although it seems easy on paper, the process of gaining access faced me with several challenges. The first challenge was to find organizations willing to participate in my research, as the initial plan was to study the transitioning role of demolishers in the construction supply chain at one organization. After weeks of waiting, my proposal was rejected due to busy schedules among employees. This forced me to rethink my strategy by contacting organizations for a single interview, after which I used the previously mentioned method of snowball sampling.

The second challenge concerned gaining access to a circular construction project, as e-mails requesting data collection were left unanswered. Eventually, by sending reminders, using gatekeepers and snowball sampling I managed to gain access to two circular construction projects. Gaining access to the field marked the beginning of the data collection phase.

The third challenge concerned gaining access to events for observation purposes, as I had no knowledge of events relevant to the subjects of study. It was especially difficult to gain access to one of the weekly multidisciplinary disassembly meetings, because the gatekeeper responsible for the organization cancelled the meeting twice and was on holiday during the data collection phase. Eventually, I managed to attend events by sending out reminders, contacting gatekeepers and using the snowball method. Taking into account that semi-

structured interviews form my primary source of data, I will devote the next section to zoom in on how this method was used to collect data.

INTERVIEWS

In total, twenty-three interviews were conducted with twenty-one people working at fifteen different organizations and lasted 55 minutes on average. Noticeably, two people were interviewed twice in order to capture the demolisher's perspective in both circular construction projects, as they were the only demolishers directly involved in each construction project. Out of all the interviews, twenty-two were conducted online. These interviews were held from the beginning of March 2022 until mid-May 2022. As I was interested in capturing: "not just what people say, but also the way they say it", all of the interviews were recorded (Bryman, 2012, 482). Recordings were made with the participant's verbal consent prior to starting the interview. In overview, background information of all interviews is summed up in the table below, including: dates, number, position and operational level (supply chain, project, industry) of the participants (see Table 1).

The topics used to guide the interview questions were related to my sub questions, as they reflected the key phenomena I wished to study: role transition, role constellations and role negotiation. For example, translating the topic of role transition I asked participants open questions such as: "How would you describe the traditional role of demolishers in traditional construction projects?" and "How do you see your role as a circular demolisher with regard to the transition to a circular economy?". Due to the multi-levelled nature of my research, three topic lists with varying interview questions were constructed to match the level I wished to study. Subsequently, this section is divided into three levels: the construction supply chain, circular construction projects and the demolition industry.

On the level of the construction supply chain, eight interviews were held with participants working at seven different demolishers, varying in size and location across the Netherlands. Three of these demolishers solely operate in the construction supply chain, engaging only in traditional construction projects. The other two demolishers operate on both levels. Additionally, one interview was conducted with a participant identified as an urban miner, operating on both levels as well.

On the level of inter-organizational projects, data was collected at two circular construction projects, hereafter circular construction project one and two Firstly, nine interviews were held with the following actors involved in circular construction project one: a

building contractor, a buying client, an architect, a construction project manager, a steel builder, a structural engineer and a demolisher. Secondly, three interviews were held with a demolisher and a building contractor involved in circular construction project two.

Additionally, data was collected on the level of the demolition industry. This data consists of two interviews held with participants employed at the demolishers' trade association in order to gain industry-wide knowledge about the transitioning role of demolishers on both the level of the construction supply chain and inter-organizational projects. In the next section, I will elaborate on the method of participant observation for data collection.

OVERVIEW INTERVIEWS				
Date (d/m/y)	Number	Organization	Position	Level (S/P/I)
7/03/2022	1.	Demolisher 1	Commercial director	Supply chain
9/03/2022	2.	Demolisher 2	CFO	Supply chain
10/03/2022	3.	Demolisher 3	Board advisor	Supply chain
10/03/2022	4.	Demolisher 4	Business manager	Supply chain
14/03/2022	5.	Demolisher 5	Circularity manager	Supply chain
16/03/2022	6.	Demolisher 3	Project manager circular demolition	Supply chain
18/03/2022	7.	Demolisher 3	General foreman	Supply chain
21/03/2022	8.	Demolisher 2	Circularity advisor	Supply chain
28/03/2022	9.	Demolisher 6	Circularity manager	Project 2
28/03/2022	10.	Demolisher 6	Circularity manager (same person)	Project 2
30/03/2022	11.	Building contractor 1	Sustainability manager	Project 1
4/04/2022	12.	Building contractor 2	Innovator and change maker	Project 2
19/04/2022	13.	Urban miner	Commercial director	Supply chain
21/04/2022	14.	Trade association	Advisor and project manager	Industry
21/04/2022	15.	Buying client	Project manager	Project 1
22/04/2022	16.	Trade association	Secretary	Industry
22/04/2022	17.	Architect	Architect	Project 1
22/04/2022	18.	Engineering firm	Construction project manager	Project 1
25/04/2022	19.	Steel builder	Project manager	Project 1
26/04/2022	20.	Structural engineer	Project manager	Project 1
29/04/2022	21.	Building contractor 1	Project manager	Project 1
11/05/2022	22.	Demolisher 2	Project manager	Project 1
12/05/2022	23.	Demolisher 2	Project manager (same person)	Project 1

Table 1: overview interviews

OBSERVATIONS

In total, four observations were conducted between mid-March 2022 and the end of April 2022. Background information of the observations including the date, number, event, organization and level (supply chain, project, industry) is depicted in the table below (see Table 2). Half of these observations took place in real life and the other half were conducted online. In both real-life observations, photographs and videos were used to capture the environment, people,

observation location and interesting subjects relevant to my research topic (Bryman, 2012). By conducting fieldwork as an ethnographer, several types of fieldnotes were used to write down my observations.

At the supply chain meeting, I made *jotted notes* on my phone in which I briefly wrote down in terms of environment, smells, cars and houses prior to arrival at the observation location. When arriving at the observation location, I made *mental notes* in terms of smells and conversations when interacting with others, which turned into *jotted notes* as soon as I could (Bryman, 2012, p. 450). During the event I was able to use my laptop, enabling me to write down extensive field notes describing the organizational features, such as the room, furniture and environment; the people in terms of their interaction, speech and behavior; and the dialogue between actors (Mulhall, 2003, p. 311). These field notes were combined and turned into *full field notes* directly on the way home (Bryman, 2012, p. 450).

At the disassembly location, *jotted notes* were made prior to arrival at the observation location in terms of environment, indication signs and buildings. During the observation, I was constantly accompanied by the observant who was giving me a tour through the disassembly location. For that reason, I used audio recordings to capture our conversations, and made *jotted notes* when not directly interacting with the observant (Bryman, 2012, Mulhall, 2003). These *jotted notes* were turned into *full field notes* at the end of the day (Bryman, 2012, p. 450).

During the two online observations, I made *jotted notes* on post-its in terms of dialogue, clothing and backdrop of the interviewees (Bryman, 2012, p. 450). Additionally, the meetings were recorded on my screen, allowing me to revisit the observation later. For that reason, the jotted notes were turned into *full field notes* several days later (Bryman, 2012, p. 450). In combination, these various fieldnotes allowed me to provide a detailed description of the research setting, the surroundings, the ones observed and interesting scenes that took place during my fieldwork that formed fruitful data for my research.

As my observations consist of various different events, allow me to briefly state the insights they contributed to my data. Firstly, the supply chain meeting contributed to my data in terms of providing an understanding about how other actors respond to the transitioning role of demolishers in the construction supply chain. Secondly, the digital tour contributed to the data in terms of role transition, as they reveal the emergence of a new profession as urban miners. Third, visiting the demolition location contributed to data by providing photographs of the disassembly location, providing information of the case description of circular project 1, and by providing data on role expansion of demolishers. Finally, the multidisciplinary meeting contributed to data by providing data on the communication between actors and transitioning

role constellations in circular construction project 1. After having discussed both research methods used for data collection, the following section zooms in on a case description of the first circular construction project I have studied.

OVERVIEW OBSERVATIONS					
Date (dd/mm/yyyy)	**Number**	**Event**	**Location**	**Organization**	**Level** (S/P/I)
17/03/2022	1.	Supply chain meeting	The Hague	-	Supply chain
19/04/2022	2.	Digital tour	Online	Demolisher 7	Supply chain
20/04/2022	3.	Visit demolition location	Confidential (in real life)	Demolisher 2	Project 1
26/04/2022	4.	Multidisciplinary disassembly meeting	Online	Demolisher 2	Project 1

Table 2: overview observations

Case description construction project 1

This section is aimed at covering background information of circular construction project one, concerning the nature of the project, the donor building, clients, the main contractor and the tendering procedure. The nature of the construction project is circular, with its main goal to build a new building elsewhere by using as much of the materials from the so-called 'donor' building as possible. This donor building was rather new, as it was built around ten years ago. Nonetheless, an agreement with the area developer and the selling client had determined that the donor building was only allowed to stay there for ten years. As the architect was aware of the donor building's early expiration date, some expensive parts of the building were designed for easy disassembly.

Despite the fact that the donor building was partially designed for disassembly, the selling client had no interest in investing in the disassembly of the donor building. On the condition of not having to pay for additional costs compared to demolition, the selling client agreed with the supervisor to the circular nature of the project. The buying client of the donor building was a municipality, looking for second-hand materials to supply a new circular building with upon request from city management. This new circular building is designed for easy disassembly using materials released from the donor building.

Next to the clients, the building contractor is co-owner of the donor building as it is located on their company property, which led them to become the main contractor of this project. Due to the selling client being negatively driven by money, a tender by price was set out to decide on the demolisher. With demolisher two being the cheapest option with a reasonable plan, they were selected to join the project. By now, I have provided the necessary

background information of the first case, the next section will be used to present a case description of the second circular construction project I have researched.

Case description construction project 2

In this section, background information is presented regarding circular construction project two concerning: the nature of the project, the donor building, its origin, the selection of actors, and planning. Similar to the previous case, the nature of the construction project is circular, by using a donor building to supply and reconstruct a new circular building elsewhere. This donor building was constructed six years ago, designed for easy disassembly.

The origin of the circular construction project can be traced back to an architectural conference, where demolisher six was asked to speak about disassembly. During the event an architect who happened to be the selling client, approached demolisher six requesting to find a new purpose for the donor building. After internal deliberation, demolisher six bought the donor building for the purpose of developing real estate.

As the real estate developer of the project, demolisher six was able to select the actors joining the project, such as the architect, the building contractor, the structural engineer and subcontractors. Other pre-determined actors involved were stakeholders such as a municipality and the buying client. The interviews were conducted during the disassembly phase, which started in September 2021. The donor building is planned to be removed this summer and the construction of the new building is aimed to be finished at the end of 2023. After having presented a description of both cases, the following section is focused on discussing the process of data analysis.

ANALYSIS

Prior to the analysis phase, transcription of the interview data was necessary, which occurred in tandem with collecting data. This task presented itself as the first challenge, because completing the task took me much longer than anticipated, namely six and a half weeks in total. Initially, I transcribed the interviews manually by typing every word from scratch. This challenge was handled by using external tools to partially transcribe interviews saving me time compared to manual transcription.

After having transcribed all of the interviews, the data analysis phase started, lasting from the beginning until the end of May. To facilitate data analysis, I coded my data using computer software (Bryman, 2012, p. 591). Two coding methods were used for data analysis:

open and *axial* coding (Bryman, 2012). Before starting to code, general themes were set up based on my research questions, namely: traditional role, role constellation, role change and role transition. The initial coding phase brought about the second challenge. As I experienced difficulties in combining codes, while considering each code to be important. This challenge was handled by zooming out and creating over-arching codes, enabling me to cut down my coding scheme in the process.

Once having finished coding, I started interpreting the data based on my coding scheme. The interpretation phase led to my third challenge, which occurred after generating an report of all my codes, consisting of over forty thousand pages. This situation was coped with by interpreting my codes by going through each code separately instead of having them combined in one document.

Finally, it is important to be reflexive of the fact that my biases, values, actions and research methods used may have impacted the course and outcome of my research (Bryman, 2012, p. 393). A potential bias could be an unconscious preference to study a certain phenomenon or organization. Other biases that could impact my research are the potential liking or disliking an interviewee (Bryman, 2012, p. 393). Although one cannot ensure the complete absence of biases, I tried my best to stay aware of these biases during my fieldwork. For example, by paying attention to phenomena emerging from the field and by paying attention to my social ques in response to interviewees. Now that we have arrived at the end of the methodology section, the next section will be used to present the findings.

FINDINGS

The findings section is divided into three chapters each aimed at answering a sub question. These chapters will be discussed in the following order; the traditional role of demolishers, transitioning roles and role constellations and role negotiation.

CHAPTER 1: THE TRADITIONAL ROLE OF DEMOLISHERS

In this chapter, I will present my findings regarding the traditional role of demolishers in order to answer the second sub question: "What is the traditional role of demolishers in the construction supply chain and how is it positioned in role constellations of traditional construction projects?". This chapter is structured as follows. The first section is used to introduce the findings related to the traditional role structure of demolishers including; their tasks, image, demolition culture and their position in the construction supply chain. The second section is used to showcase the findings related to the position of traditional demolishers in role constellations of traditional construction projects, by zooming in on their involvement, communication and collaboration.

1.1 TRADITIONAL ROLE IN THE CONSTRUCTION SUPPLY CHAIN

When it comes down to the traditional role of demolishers in the construction supply chain, interviewees were quite clear. Nearly all interviewees provided a similar description of the traditional role of a demolisher, namely being responsible for forcefully removing (parts of) a building and transporting all of the released materials as quickly as possible. All for the purpose of delivering a cleaned-out sandbox for the builder. Generally, interviewees mentioned that traditional demolishers have three responsibilities; making the demolition site ready for construction, transporting the released materials and complying with safety measures during the demolition process. Additionally, some interviewees mentioned that traditional demolishers are also responsible for the removal of asbestos.

According to the majority of the interviewees, the tasks of a traditional demolisher consist of; cutting or sawing a building away, and taking down walls. Unsurprisingly, demolition requires a rough way of working, which is achieved by using heavy machinery tools such as scissors, saws, cranes with hammers or wrecking balls attached to it. An exception is made for the removal of asbestos, which has to be done carefully. However, interviewees were divided about what happens afterwards, more specifically, what a traditional demolisher does with the released materials. Some interviewees noted that traditional demolishers use shovels

to push all the rubble and released materials onto one large pile into one container, which they then bring to a dump or waste incinerator.

Other interviewees note that (they themselves as) traditional demolishers already separated some of the released materials, for the purpose of receiving an additional source of income. From this view, traditional demolishers separated materials such as: rubble, concrete, wood, glass and steel. Afterwards, these materials are put in separate containers, to be transported and sold to recycling locations or third parties. In addition, several interviewees note that as a traditional demolisher, they always salvaged valuable materials from demolition they believed would generate additional income.

The majority of the demolishers explain this by emphasizing the interwovenness of circularity with their identity, and history as demolishers. Some interviewees note that during the reconstruction period after World War II, the scarcity of new building materials forced the construction supply chain to reuse materials released from demolition, meaning that demolishers already salvaged or cleaned materials fit for reuse. However, one could argue whether circularity can be ascribed to separating waste streams, and selling small amounts of valuable materials salvaged from demolition.

Contrary to how positively demolishers perceive their traditional identity as linked to circularity, they describe the traditional image of demolishers rather negatively. According to interviewees, other actors perceive traditional demolishers as; harsh, sloppy, shady, cowboys and unintelligent. In the following paragraphs, I will briefly elaborate on each of these perceptions.

Firstly, the perception of traditional demolishers as harsh can be traced back to their traditional way of working. As the majority of the interviewees note that traditional demolishers are viewed as people who are harsh, raw and rough around the edges.

Secondly, interviewees describe traditional demolishers are viewed as improvisational and sloppy when it comes down to business. This was illustrated by one of the interviewees, considering traditional demolishers to write down the costs of demolition on the back of a cigar box.

Thirdly, the perception of traditional demolishers as shady struck me the most. Several interviewees described traditional demolishers as shady, as is highlighted in the following fragment:

> Well, the idea is and that's not only my idea, but that of many other developers I think, is that it always costs the same amount. It doesn't matter how big or how small your building is, but it always costs €300.000, so there's that… That doesn't seem right and it also has to do with the traditional way of trading. It's just like if you collect steel or copper right now and bring it to 'the camp' to sell it there at the old steel manufacturer. Yeah, that's always been a grey area and the same goes for the demolishers, the traditional demolishers. You're can't see what they really earn from the building, what you want to have removed, so to speak, because that's the problem of course. (Interviewee seventeen, architect).

As illustrated in the abovementioned quote, traditional demolishers are put away as shady, the reason being that they always charge the same price whilst untransparent about the profit made from selling materials released from demolition.

Fourthly, the perception of traditional demolishers as cowboys is described by interviewees in the context of removing asbestos. As explained by one of my interviewees, the protocol concerning asbestos removal states that a demolisher needs to make an inventory of the asbestos prior to determining the costs of removal. Some demolishers make a living by immediately shutting down all operations when discovering unforeseen asbestos. Meanwhile, leaving the client with the obligation to continue paying staff while operations are suspended, adding up to about €10,000 per day. Finally, interviewees note that traditional demolishers are viewed as unintelligent by other actors. This perception can be traced back to a lack of education among work floor demolishers, which discuss in the next chapter (see 2.5).

Considering the fact that traditional demolishers are viewed as harsh, sloppy, shady and as cowboys, it goes without saying that several interviewees share the opinion that the traditional image of demolishers casts a shadow over all demolishers, which is crystallized in the following statement: "One issue is that in the demolition sector the image of it [the demolition sector] isn't that great, you know? So… so… you can… well even when you're fired from jail, you can still become an asbestos remover" (interviewee 18, construction project manager).

This negative image of traditional demolishers stands in stark contrast with the so-called demolition culture, described by some demolishers as humble people who are down to earth and fulfil a serving role in the background. The fact that demolishers traditionally place themselves in the background doesn't come as a surprise once you understand the position of traditional demolishers in the construction supply chain.

Interviewees positioned traditional demolishers at the periphery of the construction supply chain. The reason being, that traditional demolishers are responsible for ending the life cycle of a building, and none of the other actors in the construction supply chain hold them accountable for the materials released from demolition. However, it must be said that this observation is based on a small number of interviewees who specifically mentioned the construction supply chain when describing their position. In the next section I will elaborate on how the traditional role of demolishers plays out in role constellations of traditional construction projects.

1.2 TRADITIONAL ROLE IN CONSTRUCTION PROJECTS

As determined by law, demolishers are required to undergo the selection process of tendering before being able to join a construction project. Interviewees mentioned that traditionally, the selection procedure of demolishers occurs via a process called competition through tendering. This process is often initiated by a publication of the demolition specifications, after which demolishers compete for the tender. The demolisher charging the lowest price for the demolition specifications, wins the tender and is chosen to join the construction project in question.
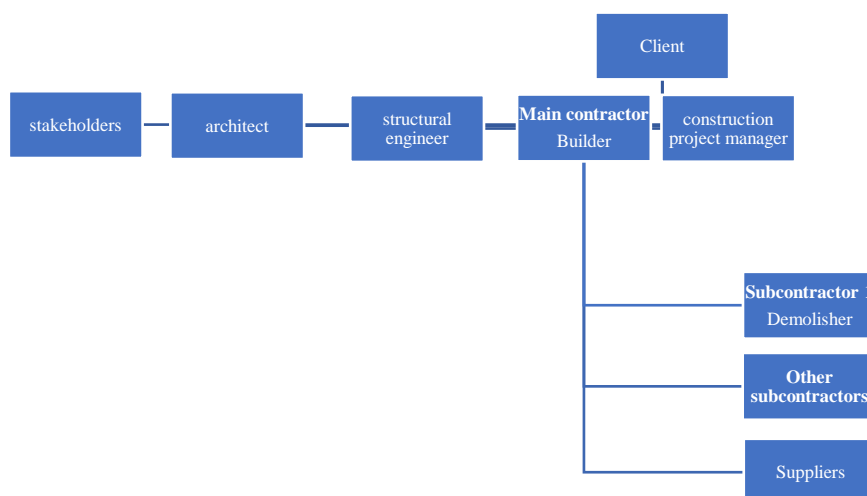

Figure 3: "A traditional role constellation" (Based on interviews).

When it comes down to the actors involved in a traditional construction project, interviewees described that a role constellation of a traditional construction project consists of the following actors; a client, an architect, a structural engineer, a construction project manager, a building contractor, suppliers, subcontractors, stakeholders and a demolisher. An example of a traditional role constellation based on the interviews, is depicted above (see Figure 3).

Similar to the position in the construction supply chain, interviewees place traditional demolishers at the periphery of traditional construction projects, described as an insignificant position. When asked to elaborate, several interviewees sketch a similar situation in which the demolisher is forgotten, which is illustrated as follows:

> From a traditional view, it's simple uhh… when a project starts, and this is kind of my perspective but it's also mentioned by clients. They have a building that needs to be removed for the purpose of new construction. Then a building contractor is called in, an architect and the client of course uhh… and with that little club of people they'll take a look at the new construction. Then when one and a half to two years have passed, one smartass at the table says: But guys, that apartment building still needs to go, right? Oh right, company A, will you make a bid within three weeks, the demolition phase will start in two months by the way. So that's kind of the traditional way… (Interviewee one, demolisher).

The scenario as sketched above tells us two things: the first one being the fact that traditional demolishers are the last party to be involved in a construction process, and the second one being that the communication towards demolishers is demanding of nature.

Firstly, zooming in on the demolishers' involvement, not only do the majority of the interviewees describe traditional demolishers as the last party to be involved in the construction process, but traditional demolishers are also only involved for a short period of time. Interviewees note that the reason behind receiving so little time to complete demolition, is the clients' cost of ownership, meaning that the client wishes to rent out the new building as soon as possible. The limited involvement of traditional demolishers was also made tangible by several interviewees calling it a separate 'demolition project', rather than a part of the traditional construction project, as traditional demolishers were not involved in the construction phase.

Secondly, the demanding nature of communication reflects the skewed power-relations between the demolisher and other parties involved in a traditional construction project. As reported by interviewees, the demolisher is traditionally considered to be one of the subcontractors working in service of the building contractor, who is considered to be the main contractor. Accordingly, communication traditionally moves top-down in the form of instructions from the building contractor or construction project manager destined for the demolisher. In a traditional role constellation, the building contractor is described by the interviewees as a gatekeeper for communication, preventing other actors involved to have direct communication with the demolisher.

Not only is the communication between the building contractor and the demolisher described by interviewees as demanding of nature, there also seems to be little of it. This came forward in an example mentioned by one of the demolishers about speaking time in meetings of traditional construction projects, which is illustrated in the following fragment:

> Your speaking time! Let me put it this way, if we have one hour and we are sitting with four contractors […] formerly, it was so very important that the main contractor had half an hour to talk about how he was going to construct the new building and the demolisher was allowed five minutes to talk about how he would take down the building. (interviewee one, demolisher).

As described in the abovementioned quote, this little communication was quantified as the main contractor was granted half an hour to share his plans for constructing of the new building, whereas the demolisher was merely allowed five minutes to share his demolition plans.

The little communication can be understood in tandem with the lack of collaboration between the actors involved in a traditional construction project. Several interviewees described a division of labor in which work processes occur separately, each one followed-up by the next. This division of labor can be traced back to the linear approach of traditional construction projects, because the actors involved do not depend on the demolisher for acquiring building materials, thus enabling work processes to occur independently from one another.

As we are nearing the end of the first chapter, allow me to provide a brief summary of the findings with regard to the second sub question: "What is the traditional role of demolishers in the construction supply chain and how is it positioned in role constellations of traditional construction projects?".

The traditional role of demolishers in the construction supply chain can be understood as the destructive removal of a building including the released materials from the demolition site while abiding the obliged safety regulations. Additionally, traditional demolishers are positioned at the periphery of the construction supply chain, as demolition is considered to be the last chain in a building's life cycle.

Similarly, the traditional role of demolishers takes up a peripheral position in traditional construction projects and is the last party to be involved. These role constellations of traditional construction projects are characterized by skewed power-relations between the traditional demolishers and other actors, little communication, and little collaboration between the demolisher and other actors involved. After having discussed the traditional role of demolishers, the next chapter is used to demonstrate the findings regarding transitioning roles and constellations.

CHAPTER 2: TRANSITIONING ROLES AND CONSTELLATIONS

This chapter intends to answer my third sub question, which reads as follows: "What role are demolishers trying to move towards in the construction supply chain and how does the new role constellation play out in circular construction projects?". This chapter is divided into four sections. In the first section, I will present my findings related to the concept of role change, including a new way of working, role expansion and the professionalization of demolishers. In the second section, I will present my findings related to transition(ing) roles in the construction supply chain. In the third section, I will show how transition roles of demolishers and new role constellations play out in inter-organizational projects by presenting two cases of circular construction projects. In the final section, I will distinguish several accelerators and obstacles for (role) transition that strongly came forward in my data.

2.1 ROLE CHANGE IN THE CONSTRUCTION SUPPPLY CHAIN

Based on the interviews, two types of role change came forward in the data: a new way of working and role expansion. Firstly, nearly all demolishers noticed role change as a change in their way of working compared to the traditional approach: instead of demolition, demolishers spoke of disassembly. Whereas demolition requires a forceful approach, using heavy machinery to remove a building, disassembly requires a more careful approach. Instead, disassembly is aimed at preserving rather than damaging materials. Unsurprisingly, different tools are necessary to perform disassembly, using hand-drills to manually detach second-hand materials. Additionally, one interviewee even mentioned using robotic saws and scanning equipment. Aside from their new way of working, it's important to note that the second type of role change among demolishers is not linear.

The demolishers I interviewed expanded their role in several directions. A distinction can be made between seven ways of role expansion: to advise, employ and construct, trade, supply, storage and transport, recycle and upcycle and design (see Figure 4). These ways of role expansion cannot be understood as either the one or the other, as several demolishers I interviewed expanded their role in multiple directions. The following paragraphs will be used to individually present the findings related to each type of role expansion in the abovementioned sequence.
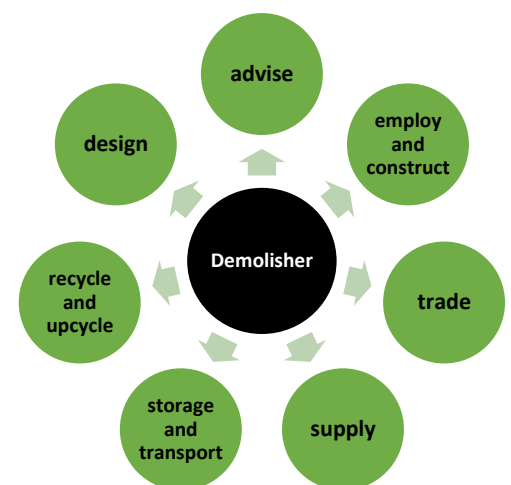

Figure 4: seven ways of role expansion

Advise

First of all, demolishers expanded their role in terms of advising (see Figure 4). Some demolishers I interviewed mentioned that due to their new area of expertise, namely disassembly, they are asked to give advice to clients, architects or building contractors, which is explained in the following fragment:

> Since two or three years, we have employed a circular advisor, so that is really someone who brainstorms with our clients: which elements in your building are fit for reuse? Also within your own project, by contributing ideas to the architect […] and building to disassemble, uhm if you ask me, we should do that more! But increasingly more often we receive the question: you take down so many buildings… Can I pick your brain with the uhm… about how this new building needs to be put together in such a way that it can easily be disassembled in an X amount of years. So for that matter, our role expands from just an actors who only executes the removal to uhm… yeah we are now even thinking about employing fulltime advisors (interviewee two, demolisher).

The illustration sketched above shows us two things, not only are demolishers asked to provide advice on which second-hand materials released from buildings are fit for reuse, but also on how to construct a building in such a way that it becomes easy to disassemble. This is a surprising outcome, while the demolisher is asked to provide advice concerning other areas of expertise, such as the design and construction of a new building. The involvement of demolishers in the decision-making also came forward considering the role expansion of demolishers to employ and construct, which I will discuss next.

Employ and construct

Secondly, role expansion of demolishers occurred with regard to employ and construct (see Figure 4). It is important to note that this role expansion is only based on the account of one interviewee. However, due to the fact that this role expansion was accompanied by a radical shift in the demolisher's ability to negotiate their position in role constellations of circular construction projects, I consider it to be an interesting addition. The role expansion to employ and construct occurred after one of the demolishers I interviewed (demolisher six) bought real estate and became a real estate developer. As a real estate developer, the demolisher was able

to employ desired parties and coordinated both the demolition and the construction phase in circular construction projects. Consequently, the demolisher took over some of the responsibilities from a building contractor, such as organizing and leading construction meetings, overseeing the construction project and supplying the new building with construction materials. This role expansion was deemed logistically useful in circular construction projects, while demolisher six was able to supply the new building with second-hand materials they themselves had disassembled from the demolition site. In the next section I will zoom in on the most common role expansion among demolishers, namely to trade.

Trade

Thirdly, demolishers expanded their role by trading second-hand materials released from demolition (see Figure 4). The majority of demolishers I interviewed mentioned that rather than dumping materials, they decided to trade as much of the materials released from demolition as possible. In terms of trading, they sell the released materials to suppliers, manufacturers, wholesalers and private sellers. In this sense, demolishers function as a broker by selling the materials second-hand materials to actors who, in turn, supply construction projects and other customers. Before I continue, it's important to understand the distinction I made between the role expansion of trading and the role expansion of supplying. The reason behind this is the historical embeddedness of the role expansion to trade in the traditional identity of demolishers (see chapter 1.1), fulfilling the role of a middle-man. Additionally, in some cases interviewees who performed trading were unclear whether they acquired the released materials from demolition or from disassembly. Contrary to this, the role expansion of demolishers with regard to supplying concerns the supply of construction projects with second-hand materials released from disassembly, is labeled by interviewees as a new development.

Supply

Fourthly, demolishers mentioned expanding their role with regard to supplying (see Figure 4). The role expansion of demolishers to supply occurred in two ways; by joining construction projects fulfilling both the role of a demolisher and a supplier, as well as solely fulfilling the role of a supplier. Firstly, interviewees who noted simultaneously fulfilling both the role of a supplier and a demolisher, participated in a circular construction project in which the disassembled materials at a so-called 'donor' building are directly reused to supply a new building.

Secondly, interviewees mentioned that this role expansion took place when a demolisher was asked to run errands for architects or building contractors, which is illustrated in the following fragment:

> We also receive a lot of errand lists, you know? So for example an architect or a building contractor who uhm… who is due to uhm… let's say due to start the construction in around three months, after which we receive an errand list, at least that's what I always call it, with uhm we can use this and this and this, gosh uhm… could you, do you have that? Well yeah we do and then uhm, then we actually draw up a price or a proposal of what we can do and after that we deliver it… and after that our job is done. (interviewee eight, demolisher).

As made clear in the scenario sketched above, the demolisher joined a construction project solely fulfilling the role of a supplier, by supplying the project with specific second-hand materials requested by the architect. In order to make this happen, demolishers made use of their inventory of second-hand materials, which brings me to the next role expansion of demolishers, which is to storage and transport.

Storage and transport

Fifthly, demolishers expanded their role with regard to storage and transport (see Figure 4). There are several ways in which this role expansion came forward in the interviews. Primarily, this role expansion can be traced back to circular construction projects where demolishers have become responsible for the packaging, labelling and clustering the second-hand materials released from the demolition site prior to transport, to make sure they are traceable and arrive in one piece. Additionally, this role expansion took place as demolishers by means of transporting second-hand materials to building sites or (potential) buyers. Another event in which this role expansion took place, was when demolishers started a so-called circular hub, often located on property of the demolisher, which can be understood as a storage space where the demolisher keeps stock of second-hand materials released from various construction projects. The idea of using the company grounds for other purposes, also came forward in the next role expansion, namely recycle and upcycle.

Recycle and upcycle

Sixthly, demolishers mentioned expanding their role in terms of recycling and upcycling (see Figure 4). This role expansion was materialized as interviewees from two demolition organizations noted that they had set-up a recycling department within their organization, where they would bring materials released from demolition to be turned into raw materials. Other demolishers mentioned minimizing waste by bringing materials released from demolition to a recycling location rather than bringing them to a waste dump. In terms of upcycling, interviewees expanded their role by chemically cleaning materials such as toilets or gravel. Remarkably, one interviewee even mentioned setting up a sawmill on company property, where they upcycled second-hand wood by sawing wooden planks to the required length after removing them of nails.

Design

Finally, role expansion of demolishers occurred with regard to design (see Figure 4). Similar to the role expansion to employ and construct, it is important to note that only demolisher six managed to expand their role in this direction. However, due to the fact that this role expansion seemed to be decoupled from their renewed power position, my decision was to discuss it separately from the role expansion to employ and construct. Taking this into account, the role expansion of this demolisher in terms of designing is visualized as follows:

> So what we then do is, before we lay our hands on the hall in [name place], we completely digitalize it so we just completely turn it into a 3D model in the BIM environment in REVIT, in a software tool. Then we decorate it with cladding, so with… what is the façade going to look like, well in this case it was a green façade full of glass uhm and a load of solar panels on the roof. Well, is that even possible huh? Because it doesn't have solar panels in [name place]. If you put a lot of solar panels on top and it snows a little, doesn't everything come down at once? So the structural engineer will have something to say about it, you'll need to be able to justify that. (interviewee nine, demolisher).

The fragment above shows us that the demolisher has taken up some of the tasks of a designer by digitally visualizing what the new building would look like when re-using materials and adding new features to it, prior to the demolition phase. This seems to be even more the case,

while the design has to be checked by a structural engineer, just like with a regular design made by an architect. In another interview, their role expansion to design was materialized as this demolisher mentioned having their own so-called BIM-department, where employees work on the digitalization of such buildings using 3D visualizations.

Professionalization of demolishers

When placed into the larger context of the construction supply chain, circular demolishers have expanded their role into the jurisdiction of other actors in the construction supply chain, such as an advisor, a building contractor, suppliers, a trade intermediary, a logistics company and a recycling company. Remarkably, one demolisher didn't notice any form of role expansion, except from their new way of working, disassembly that is. In total, there were two demolishers who expressed having no ambition for (further) role expansion in the construction supply chain, which came to light in the following fragment:

> Well, we don't have uhm, we're not going to build big halls to uhm, to uhm build a hub
>
> or a sawmill or an uhm.. yeah just a storage in general. We are definitely not going to
>
> transport it to one location. We just make sure that from wherever we're working, we
>
> make sure that our partners come to our environment, from where we will sell the items
>
> and that kind of stuff and we look for locals so to speak. We always think of it this way:
>
> well yeah, why would I start a business in selling second-hand doors if there's someone
>
> else that's been doing it for forty years already? I won't start to uhm… basically, we
>
> remain the… the disassemblers or demolishers, or however you want to call it. We
>
> support the idea of well, we… we… this is our specialty (interviewee five, demolisher).

As illustrated above, the interviewee clearly states their unwillingness to expand their role in terms of storage and transport or supplying, although the demolisher in question did mention having expanded their role in terms of trading. The argument he used to explain this, was also used by the other demolisher with no interest in role expansion, namely that they don't wish to move away from their jurisdiction or profession as a demolisher.

Speaking of the professionalization of demolishers, interviewees were also divided about whether the image of circular demolishers was different than that of a traditional demolisher. Surprisingly, the group of interviewees who believed that the image of circular demolishers had changed positively, consisted almost entirely of other actors involved in

circular construction projects and the two members of the trade association. These interviewees described circular demolishers as: a professional organization, working neatly, having expertise, specialized in disassembly and demolition and as sophisticated. Another group of interviewees used similar words to describe the circular demolishers, only with the connotation that they feel underestimated due to the fact that other actors judge them according to the traditional image of demolishers. Finally, there is a group of interviewees who note that the image of circular demolishers hasn't changed at all compared to the image of traditional demolishers.

Now that I have covered the subject of role change through ways of working, role expansion and image, the following section is devoted to presenting my findings related to the subject of role transitions and transitioning roles.

2.2 TRANSITION(ING) ROLES

Before I zoom in on my findings regarding role transitions, I wish to elaborate on an interesting finding regarding the emergence of a new role. This came forward during an observation with a so-called urban miner, after I asked him about the difference between the role of a circular demolisher and his role as urban miner. In response, he said that circular demolishers or disassemblers perform circular activities by changing their existing work practices. Instead, the interviewee notes that their urban mining organization is relatively new and was set up specifically for the sole purpose of what he called harvesting materials in order to upcycle and supply them in construction projects. In this case, the interviewee suggests the emergence of a new profession, as the urban mining organization never started out as a demolisher. Among the majority of my interviewees who did start out as a demolisher, I have discovered three type of role transitions in my data: exiting the role of a demolisher, playing two roles at the same time and an alternative performance of transition roles.

Exiting the role of a demolisher

The first type of role transition that came forward in my interviews is illustrated in the following fragment:

> What we say is, we're going to do something completely different, we're going to… as… as… uhmm… we're not even a demolisher, we are material experts and buildings are nothing more than a material depot. It's no different than a collection of construction materials […] So in the entire process, there's only one constant factor and that's what we now call the demolisher, but to what I say, I always call it the remolition company. We perform remolition you know, so demolition and reconstruct. We are actually the experts on material depots, that's kind of how you should see it (Interviewee nine, demolisher).

The abovementioned statement suggests that this demolisher has become detached from the role of a demolisher, as he criticized using the word demolisher to describe their role. Instead, this demolisher seems to have entered into a new role, namely that of a remolisher, meaning that they use their expertise in materials to perform both the demolition and reconstruction of a building. In line with this, another demolisher mentioned moving away from the activity of demolition. Instead, he uses the words harvesting and mining, while they sell them to third parties who reuse them rather than bringing them to a waste dump. Remarkably, several other actors I interviewed mentioned that a demolisher is no longer the right word to describe their role. These actors claim that due to their new way of working, they have become disassemblers. Contrary to this, other interviewees criticized the use of words such as disassembler, harvester or miner to describe their role, as they said it was just used for marketing purposes.

Playing two roles at the same time

The second type of role transition that appeared in my data, can best be understood as switching between multiple roles simultaneously held by the actor. Several demolishers I interviewed mentioned two scenarios in which they reported moving back and forth between the role of a traditional demolisher and that of a disassembler depending on the extent to which the building is easy to disassemble and the clients' drive for circularity.

The first scenario took place when demolishers switched between multiple roles within one project, as made clear in the following quote:

> Then you really become a disassembly organization […] you are actually disassembling it, you know? And eventually, just like in construction project 1, all there's left is a concrete structure. Well that is actually done according to the… yeah the existing method using a big demolition crane with a large hammer attached to it and uhm… yeah that breaks down the concrete floor, really. Yeah, that's actually just according to the existing methods. (interviewee 23, demolisher).

The situation sketched above shows us that the demolisher in question moved from the role of a disassembler to that of a demolisher within one circular construction project, as the concrete structure was not designed to easily be disassembled. The second scenario in which the demolisher reportedly switched roles occurred within as well as between projects in response to the clients' drive for circularity, which I will return to later on (see chapter 3.3).

Alternative performance of transition roles

The third type of role transitions that came forward in my interviews concerned the concept of a transition role. In line with the existing theoretical notion of a transition role, nearly all demolishers I interviewed explained their role change or lack of role change through their stance towards the transition towards a circular economy. However, several interviewees criticized my use of the term circular demolition, as they stated that the extent to which a demolisher performs circular activities is not black and white and that it cannot be understood as an on or off button (circular/traditional). Rather, several interviewees suggest viewing circularity as a spectrum moving from traditional to circular. Additionally, interviewees found it difficult to place their transition role to separate categories such as a frontrunner or a follower.

When describing the transition role of demolishers, interviewees emphasized the complexity of it, which is illustrated in the following fragment:

> Yeah, well, you know uhm… I think it's funny how you approach it like uhm frontrunners and uhm more traditional organizations so the real frontrunners or no, what you should say about that is… That's where the client is really involved in the uhm… both the demolition and the construction huh? So then you have the category of well the progressive demolishers who completely disassemble a building and release all of the materials in the building and makes it available for reuse. Then there's a group of demolishers who says well, we are just going to see what's available in the market, what the client wants to do uhm, we demolish a building and if a client says: well, yeah the uh… I want a specific kind of material to be fit for reuse, that they'll do it for the client and we know all three [groups of demolishers]. Only the first group is very small. The second group is a little bigger and the last group is the biggest. (interviewee fourteen, trade association).

The abovementioned quote reflects that various transition roles are explained by combining knowledge about the role expansions of the demolisher, the nature of the construction project they are involved in, and the clients' drive for circularity which I will discuss later (see section 3.1). After having showcased the findings regarding role transitions, the next section zooms in on the findings regarding transitioning role constellations in circular construction projects.

2.3 TRANSITIONING ROLE CONSTELLATIONS

In this section, I will separately present two cases of how new role constellations play out in circular construction projects. Both cases are divided into themes that were prominently present in my data, namely: the demolishers' position, involvement, power-relations, transition role, communication, collaboration and transitioning role constellation.

2.3A – CASE 1: The new role constellation of circular construction project 1
As I have already provided a case description in my methodology, I will start by introducing the actors involved in the circular construction project: a selling client, a construction project

manager, a buying client, an architect, a structural engineer, building contractor one, demolisher two and a steel builder. From this moment onward, I will refer to building contractor one and demolisher two without using numbers. As previously stated, I will present the findings of this case by separately discussing each theme in the following order: the demolishers' position, involvement, power-relations, communication, collaboration and transitioning role constellation.

Demolisher's position

The first theme that came forward in my interviews was the demolishers position. Based on the interviews with the actors involved, the demolisher's position in the circular construction project was different compared to a traditional construction project, which is illustrated in the following fragment:

> The previous step was that they [demolishers] would disassemble something which they would sell. If it's reused somewhere else, that person [customer] knows, they see it lying there, well they can decide for themselves whether they want to buy it or not. But in this setting, we already bought, well bought is a strong word, but reserved. So, we can't come and visit to say well okay, I want to buy these items, or not. We have to… we have to make it work as much as possible with the items that are released (interviewee 21, building contractor).

The abovementioned statement reveals two reasons why the demolisher's position has changed in this project. Firstly, the changed position of the demolisher seems to be connected to the circular nature of the project, due to the fact that the released materials are planned to be reused to construct a new building. Consequently, the demolisher becomes responsible for disassembling the materials in the donor building. Secondly, the changed position of the demolisher is reflected in the dependency of other actors involved in the project on the demolisher for the careful disassembly of the materials, as they will be reused to supply the new building. As the demolisher is now responsible for ending the life cycle of the donor building, as well as starting the life-cycle of the new building, I interpreted the demolisher's position as central in this circular construction project.

Involvement

Ironically, despite their central position in the circular construction project the demolisher was one of the last parties to be involved in it. Based on the interviews, the construction project manager was involved at the end of December 2020, the design phase was somewhere between May and June 2021, and that the demolisher was involved at the end of December 2021. Strikingly, two actors expressed their discontent regarding the late involvement of the demolisher, as made explicit by the architect in the next fragment:

> Actually, you would have wanted that [name selling client] would have given the job to the demolisher perhaps directly at that moment, you know? And actually, that they had already laid out all the materials for us and that we could start immediately, so to speak. But that's not the way it works of course, that is the most ideal model. However, I do think that if that were already the case, perhaps we could have guided them better and we would have been able to make different design choices during the process, right? Because some things, such as steel that's stuck in concrete? Yeah well you don't know in advance that it's that difficult to take apart and that it turns out to be too expensive, so to speak. So that knowledge regarding the demolition and disassembly of materials is actually needed sooner. (interviewee seventeen, architect)

This statement tells us that the architect would have preferred earlier involvement of the demolisher, as their expertise on demolition and disassembly would be beneficial to the design and the project as a whole. More specifically, the architect wished he had received advice from the demolisher on what materials are difficult to disassemble, making them inconvenient to incorporate in their design. Nonetheless, the demolisher was involved late in this circular construction project, just like in a traditional construction project, which brings us to the next theme: power-relations.

Power-relations

Another theme that came forward while studying this circular construction project, are the power-relations between the demolisher and some of the other actors involved. Interestingly, the power-relations in this circular construction project seem to be ambiguous.

One the one hand, one could argue that the power-relations have become more leveled due to the dependency of other actors in relation to the demolisher. This came forward in interviewees with several actors who mentioned needing the demolisher for the careful disassembly of the materials in the donor building. The steel builder even mentioned that he considers the power-relations between the demolisher, steel builder and the building contractor to be levelled, while they operate in a construction team, which I will discuss later on (see subsection collaboration).

On the other hand, one could argue that the power-relations remain skewed, due to similarities with a traditional construction project. Both the building contractor and the construction project manager describe their relation with the demolisher as traditional, respectively as a main contractor-subcontractor relationship and as a client-supplier relationship. According to the construction project manager, nothing has changed except for the services demanded from the demolisher, which he elaborates as follows:

> If I draw up a contract which states that the [demolition] contractor needs to make sure
>
> that there's a cream cake at work every day, I can even indicate how thick it has to be,
>
> how tall it has to be, at what time it needs to be here. If the client or… if I as the client
>
> want to pay for that, the [demolition] contractor will obviously be able to deliver that,
>
> and that's of course…. in this case it's no different actually (interviewee eighteen,
>
> construction project manager).

Using the abovementioned example of the cream cake as a lens to look at the services of the demolisher, the construction project manager believes that all that has changed is the recipe. More specifically, he has increased the demands the demolisher is expected to deliver in a construction project, including their new way of working and their accountability for the materials released from the donor building.

According to the building contractor power-relations also remain skewed, while the demolisher supposedly holds on to the traditional division of roles. From the perspective of the building contractor, they have made room for the demolisher to pick up a more coordinating role in the circular construction project. Simultaneously, the building contractor mentioned feeling responsible for coordinating the disassembly of the donor building due to a lack of trust in the demolisher's capacity to disassemble. He explained that this lack of trust was grounded in the fact that it is the demolisher's first time disassembling an entire building in a circular construction project and the demolisher is developing their disassembly skills. So, even though

the building contractor says it is the demolisher holding on to the traditional power-relations, it seems as though the building contractor is doing the exact same thing. Similar to the power-relations, the theme of communication also seems to carry ambiguity, which I will discuss in the next section.

Communication

In terms of communication in this circular construction project, it seems as though it has partly changed compared to a traditional construction project. What has changed is the amount of communication, as interviewees note an increase in communication with the demolisher. For example, the buying client noted having more (indirect) communication with the demolisher as a supplier of second-hand materials than with a traditional demolisher or a traditional supplier. The architect also mentioned having more communication with the demolisher, regarding the potential supply of extra materials released from the donor building and about strategies for disassembly.

Despite the fact that several actors reported having more communication and knowledge sharing with the demolisher, the way of communicating seems to have remained largely traditional. Firstly, similar to a in a traditional construction project, most of the communication between actors involved and the demolisher remained indirect, with the building contractor functioning as a gatekeeper for communication. Secondly, the weekly construction meeting has been replaced by a weekly disassembly meeting, although still organized and led by the building contractor.

Third, the construction project manager mentions the communication with the demolisher has become more detailed, yet it still runs via contracts. Finally, although both the building contractor and the construction project manager speak of an increase in communication, they describe their communication with the demolisher as demanding by nature, with questions and information flowing mostly top-down.

Surprisingly, the demolisher experienced the increased top-down communication positively, as a sign of their collective involvement in the project and that the demolisher is being looked after. In line with this, both the steel builder and the demolisher described their communication with each other as conversational, sharing knowledge and expertise through dialogue. Closely tied to the theme of communication is the theme of collaboration, which I will discuss in the next section.

Collaboration

The collaboration in this circular construction project seems to have radically changed in comparison to a traditional construction project. Contrary to a traditional role constellation, the role constellation in this project is designed to stimulate collaboration. As interviewees mention that they work in a so-called construction team, meaning that all actors work together in a team collectively carrying the responsibility for its success. Nearly all actors showcased increased integral collaboration, as explained by the steel builder:

> I told the demolisher you know to keep the attachment fittings, so that I kind of know
>
> what new fittings to buy and well, that's an example of an agreement we made there.
>
> Yeah, we communicated about planning, when do you start demolition? So when do we
>
> start numbering? How is the demolisher uhm… there was also a situation in which the
>
> steel bearings were poured into a floor. So we made agreements how the demolisher was
>
> going to saw those out while keeping in mind that we need that steel bearing for the new
>
> design (interviewee nineteen, steel builder).

This scene described by the steel builder shows that labor processes have become intertwined and occur simultaneously. Due to the circular nature of the project, the steel builder depends on the demolisher for its success, as the materials released from a donor building are reused in a new building. However, interviewees also noted the challenges of this co-dependency, as actors are adjusting to the transitioning role constellation, which I will discuss in the next section.

Transitioning role constellation

The opinion that the demolisher is still transitioning into their new role is broadly shared among nearly all actors involved in the project, including the demolisher. In this case, the transitioning role is ascribed to work floor demolishers, as interviewees described a discrepancy between the new responsibilities of the demolition organization and the capacity of work floor demolishers to meet these expectations.

This was materialized as the majority of the actors gave examples of what went wrong due to the transitioning role of work floor demolishers, one of which I have highlighted in the next fragment:

> Yeah well, some guys who walk around there, they know, they don't know what… That's perhaps due to the communication in the process, but they don't always see why they need to disassemble things and storing them neatly, or something. So, for example the glass was leaning against the outside façade and there was a separate transportation company. That is [name transportation company] who is involved, but they had to deliver stillages the glass would be placed on. Yeah, well they weren't on time, as a result the glass is just put somewhere else. But yeah, the risk of damage is of course enormous, because people are driving and demolishing around it. So the risk might be so high that you might be able to buy 20% of the materials new, purely because it's not stored in the right way. (interviewee seventeen, architect).

The abovementioned scenario tells us that work floor demolishers are transitioning into their new role, as they are still learning how to disassemble and to take on their new responsibilities accompanied by their role change such as carefully storing materials. As pointed out by the architect, the transitioning role of the demolisher can lead to risk of damaging materials. Unfortunately, the transition role of the demolisher also formed a safety hazard for employees, as the disassembly of an overhead door turned into a serious accident hazard on the demolition site. However, it must be mentioned that demolishers were not the only one transitioning into their new role.

Based on both interviews and observations, it came to light that other actors involved in the project were also getting used to their changing role. For example, several interviewees used the same phrase to describe how they feel about the way of communicating and collaborating in a circular construction project, namely that it is not only new for the demolisher, but also new for them.

Especially the building contractor mentioned having to get used to his changing role, which came forward in the following fragment:

> Well half of the time it is correcting, because for us it is also new, so you see something getting disassembled. You think yes, that is of no use anymore. So you cannot stay away for three weeks, because then you have a whole stack of items lying there only to go directly into the container. So the first thing is the… at the beginning it is correcting and afterwards it is coaching and correcting in the form of… that the demolisher also does not know how a technician wishes to receive the materials. So there have been conversations back and forth and you name it, but that is still a challenge (interviewee 21, building contractor).

As depicted in the abovementioned quote, the building contractor finds it challenging to handle his new responsibility of correcting, coaching and performing quality checks on disassembled materials. This can be traced back to the building contractor's linear expectations, while later in the interview the building contractor explains that instead of ordering new materials which come in a box with an instruction manual, he now has to supply a new building with reused and often incomplete materials.

Thus, after having discussed the findings regarding the key themes of construction project one, I will devote the next section to present the findings I discovered the second case I studied.

2.3B – CASE 2: The new role constellation of circular construction project 2

Similar to the previous case, I have provided a case description of this circular construction project in the methodology section. Therefore, I will start by briefly summarizing the actors interviewees mentioned to be involved as mentioned by the interviewees: a selling client, demolisher six (hereafter: demolisher), an architect, building contractor two (hereafter, building contractor), a structural engineer, subcontractors, stakeholders and a buying client. It is, however important to note that these findings are based on the account of two actors, namely the demolisher and the building contractor. As previously mentioned, I will present this case by covering the following subjects: the demolishers' position, involvement, power-relations, communication, collaboration and transitioning role constellation.

Demolisher's position

In this circular construction project, the demolishers' position is central, which came forward in interviews with both the building contractor and the demolisher. The demolisher emphasized this by mentioning that they have become the only constant factor throughout the project, playing an integral role from the start to finish. The demolisher's central position in this project can be ascribed to two reasons. Primarily, due to the fact that the demolisher is responsible for coordinating both the disassembly and reconstruction phase. Secondly, due to the circular nature of the project the actors involved depend on the demolisher for providing materials released from disassembly. What struck me is that the demolisher's central position was literally made visible in this project, as mentioned in the next fragment:

> All of a sudden, you have a disassembly team that has been removing items for six months and counting and then… that's where you notice a permanent site hut. We often have very rudimentary facilities at the demolition site, a porter-potty, some bells and that's it. Whereas now we have a normal site hut, a site hut for the management to attend meetings with room for fifteen people and a video connection and uhm… […] So all of that has… under the regime of circularity that has really changed. So the culture has changed a little. (Interviewee ten, demolisher).

In the abovementioned quote the central position of the demolisher is materialized through the increased number of facilities at the demolition site, but also because of the permanent nature of their 'site hut' compared to a traditional construction project. Their central position of the demolisher can partially be traced back to their involvement in this project, which I will discuss next.

Involvement

The involvement of the demolisher in this project is radically different than in traditional construction projects. Due to the fact that the demolisher got the opportunity to buy the 'donor building' from the selling client, they were the first actor to be involved in the construction project. As the demolisher had taken up the role of a real estate developer, they were responsible for involving the rest of the actors in the project, namely the architect, the building contractor, the structural engineer, subcontractors and a buying client. Their new role as a real

estate developer was accompanied by a certain power position, which brings me to the subject of power relations.

Power-relations

Based on the interviews, I would argue that the power-relations have become ambiguous in this construction project. On the one hand, one could argue that the power-relations are skewed, while the building contractor and the demolisher seem to have switched power-positions. Both interviewees mention that the demolisher was in charge of the project as the building contractor worked as a subcontractor for the demolisher, now the main contractor. The demolisher carried out their role as a main contractor by organizing and leading the weekly multidisciplinary meetings. On the other hand, one could argue that the power-relations have become more equal compared to a traditional construction project due to an exchange of roles. As the building contractor, now the subcontractor provided the general foreman who carries the final responsibility on the building site, just like in a traditional construction project. Additionally, role boundaries in this circular construction project seem rather flexible, which is illustrated in the following fragment:

> It didn't take long before we found out that…. uhm through practice, well if I do this as a general foreman, that's not convenient, that needs to be done by the demolisher, because he has many more contacts in the industry to make sure that materials are released from a building. So, there you go, you can arrange that […] So traditional roles move back and forth between people. (interviewee twelve, building contractor).

The situation sketched above present two arguments in favor of a more equal power-relations between the two actors. Initially, the situation reflects both an exchange of responsibilities between the roles of the main contractor and the subcontractor. Additionally, the situation reflects a sense of mutual trust in each other's capabilities regardless of their power-position. Next in line is another subject that has become radically different compared to a traditional construction project, namely communication.

Communication

In this circular construction project, much has changed in terms of communication. According to the demolisher this was due to the fact that they organized and led the meetings, as they initiated communication by asking questions to other actors involved. Not only did the

demolisher send out more communication, their constant presence during meetings inherently led to the demolisher receiving more communication from other actors involved compared to a traditional construction project. The building contractor noted that during the first few months of the project they had weekly and sometimes daily contact on how to tackle issues concerning packaging. Based on the interviews, it seems as though the communication between the building contractor and the demolisher occurred in dialogue form. Of course, the increased communication can't be fully isolated from the subject of collaboration in a circular construction project, which will be the next subject to discuss.

Collaboration

In this circular construction project, it seems as though collaboration has increased compared to a traditional construction project. Partially, this increased collaboration can be ascribed to the circular nature of the project, as reflected in the following fragment:

> An example is that after disassembly, you need somewhere to… Normally, you unpack something from a package or a pallet of a… you name it, from a box or something. Well, we didn't have that of course! And well, maybe we didn't think that through very well. So we had to- haha.. Lots of pallets needed to be transported to the demolition site to store the materials in a convenient way so that they would leave the building to be brought to the depot, so that they could be reused later. (interviewee twelve, building contractor).

The situation sketched by the building contractor insinuates that integral collaboration occurred due to the reuse the materials released from the donor building to construct the new building, as the labour processes have become interwoven. In line with this, integral collaboration seems to be reflected in communication about the coding, numbering, packaging, transportation and storage of the released materials, in order to be able to reconstruct the building elsewhere in the same order.

For the other part, the integral collaboration in this circular construction project can also be ascribed to the demolisher's position in the project. From this view, the demolisher functioned as a 'broker' between the demolition and construction processes by combining the knowledge of these areas of expertise. This came forward as the building contractor was already involved in the disassembly phase to understand how to re-assemble the released

materials in the construction phase, thereby preventing a division of labor. Until now, I have discussed several ways in which this circular construction project differed from a traditional construction project, in the next section I will zoom in on how this brings about changes in the role constellation.

Transitioning role constellation

With regard to the transitioning role of the demolisher in this construction project, it seemed as though the demolisher had nearly finished transitioning. This was made clear as the building contractor pointed out that by expanding their role as a real estate developer combined with their expertise in disassembly, they have acquired competencies essential for the transition towards a circular economy. As this perception is based on the account of one actor, one could argue whether this perception is shared by other actors in this construction project. There was one case however, in which the building contractor described a situation where the demolisher was still getting used to their responsibilities, as illustrated in the following fragment:

> Well, in my line of work it happens to be the case that the world of the demolisher is about tomorrow and the world of a traditional demolisher is about tomorrow, and demolisher six has definitely shown improvement. But the world of a building contractor is about the day after tomorrow, you know? […] Sometimes you run into things, when you think: yeah, well today you decide you want to use that façade in a project and tomorrow it can be different. You know, sometimes that doesn't work. That's when you really need to have a conversation with each other about, hey some things take a certain path and can't be changed anymore. Well that's the short term, long term tension we have at the moment. (interviewee twelve, building contractor).

The abovementioned statement shows us that the demolisher is also transitioning into their new role, as their role expansion to employ and construct requires to plan further ahead compared to their current approach.

Similarly, the building contractor mentioned that they themselves were also experiencing role changes. As previously mentioned, when describing the power-relations the building contractor noticed an exchange of responsibilities between their own role and that of the demolisher, adjusting the existing responsibilities of the building contractor. Again, we must not lose sight of the fact that this perception is not only based on the account of one actor,

but also on one interviewee. This was emphasized when the building contractor mentioned that several colleagues are still getting used the new division of roles in this circular construction project, due to the shift in power-relations compared to a traditional construction project.

Now that I have presented how the new role constellation plays out in two different circular construction projects, I will use the next section to uncover various external factors that either accelerate or hinder role transition.

2.5 ACCELERATORS AND OBSTACLES FOR (ROLE) TRANSITION

This section is divided into two parts, I will start by presenting the accelerating factors for role transition, after which I will discuss the hindering factors for role transition. Based on the findings, I have identified five accelerators for role transition, which I will discuss in the following order: applying a linear standard to second-hand materials, climate laws and regulations, circular construction, design for disassembly, scarcity of raw materials and construction materials.

Firstly, the role transition of demolishers can be accelerated by applying a linear standard to second-hand materials, through standardizing trade sizes, standardized production and by including second-hand materials in material databases, the use of second-hand materials is made more attractive for customers.

Secondly, the role transition of demolishers can be accelerated through climate laws and regulations. The majority of the interviewees suggest that climate laws and regulations stimulate money-driven clients to participate in the transition towards a circular economy, thereby creating opportunities for the role transition of demolishers. Additionally, mandatory certifications for circular demolition makes it more difficult for demolishers to practice greenwashing.

Thirdly, interviewees note that circular construction functions as an accelerator for the role transition of demolishers, while the perspective of a building as a depot for materials creates the condition for a demolisher to perform disassembly instead of demolition, thus attributing to role transition.

Fourthly, a design for disassembly makes the choice for a circular construction project financially attractive and it obviously makes it easier for the demolisher to disassemble.

Finally, the recent scarcity of raw and construction materials that resulted from the COVID-19 pandemic and the war in Ukraine was accompanied by rising prices of new raw and construction materials. Consequently, making it cheaper to buy second-hand materials than

new materials. The scarcity of raw and construction materials thus makes it easier for demolishers to expand their role as a supplier and encourages money-driven actors to do circular construction projects.

On the negative side, the findings revealed seven obstacles for role transition, which I will discuss sequentially: linear expectations, aesthetics, construction laws, construction culture, time-consuming circular practices, design for permanence, undereducated work floor demolishers.

Firstly, the inability to satisfy linear expectations hinders the role transition of demolishers. Interviewees mentioned that the flow of second-hand materials do not live up to linear expectations of a continuous flow of supply, making the demolisher merely an addition to a traditional supplier. In addition, second-hand materials fail to live up to linear standards of uniformity, traceability, price and quality. As previously mentioned, materials disassembled from a donor building often lack components and do not come in a neat package with an instruction manual (see 2.3A).

Secondly, aesthetics formed an obstacle for the role transition of demolishers. As interviewees spoke of the idea that new materials are more beautiful and aesthetically pleasing to design with. In contrast, second-hand materials are described as dirty and difficult to incorporate.

Thirdly, construction laws form an obstacle for role transition, concerning the inability to reuse second hand materials due to mandatory trade sizes, insurability and warranty. Fourthly, construction culture forms an obstacle for the role transition of demolishers. The majority of the demolishers mentioned that the conservative, bureaucratic and inflexible nature of the construction culture hinders demolishers in their role transition, as it requires flexibility and innovative practices.

Fifthly, the fact that circular practices are more time-consuming hinders demolishers in their transition role, as circular practices become more expensive and thus less attractive for money-oriented clients. Sixthly, designing (parts of) a building for permanence makes it more difficult for demolishers to disassemble, thereby hindering demolishers in their role transition.

Finally, undereducated work floor demolishers form an obstacle for the role transition of demolishers, while it makes it more difficult to teach them how to disassemble. All in all, I've devoted this chapter to presenting my findings on how transitioning roles and role constellations play out in circular construction project. As we have reached the end of chapter two, I will briefly recap the findings with respect to the third sub question: "What role are

demolishers trying to move towards in the construction supply chain and how does the new role constellation play out in circular construction projects?*".*

The role demolishers are trying to move towards in the construction supply chain seems to be ambiguous regarding the subjects of role change, role transitions and transition roles. Firstly, there is ambiguity with respect to the direction of role change. Despite the majority of demolishers having implemented disassembly as their new way of working, role expansion occurred into the direction of six different actors in the construction supply chain. Adding to that, some demolishers even stated having no ambition for further role expansion. Secondly, there is a lack of consensus regarding the way of role transition. Although some interviewees spoke of exiting their current role and entering that of a remolisher, harvester or miner, others criticized the emergence of new terms to describe their role. Thirdly, the transition roles of demolishers reflect diversity and complexity, while one's transition role is determined by combining insights of one's role expansion, the nature of the project and the client's drive for circularity.

The new role constellation plays out differently in the two circular construction projects under study. Both role constellations revealed the demolisher's central position, integral collaboration and transitioning role constellations. However, the role constellations presented differences in terms of involvement, power-relations and communication. In the first case, the disassembly skills of the demolisher were not yet fully developed, causing safety hazards, while power-relations and ways of communication remain traditional. In the second case, the demolisher has already expanded their role in terms of employ and construct, shifting power-relations and communication after becoming a real estate developer. After having discussed the findings on transitioning roles and role constellations, the next chapter is focused on the subject of role negotiation.

CHAPTER 3: ROLE-NEGOTIATION

In this chapter, I will unravel my findings regarding the concept of role-negotiation, aimed at answering my fourth and final sub question: "What strategies do demolishers use to negotiate their transition role as circular demolishers in the construction supply chain and in circular construction projects?". Accordingly, this chapter is divided into four sections; firstly, I will identify several conditions for role negotiation present in my findings. Secondly, I will present my findings by showcasing strategies used by demolishers to role negotiation in the construction supply chain. Thirdly, I will present my findings by showcasing strategies used by demolishers to negotiate their role in circular construction projects. Finally, the last section will be used to present the findings regarding the use of roles as resources.

3.1 CONDITIONS FOR ROLE-NEGOTIATION

In the process of identifying the various strategies used by demolishers to negotiate their role, I found out that there are certain conditions that moderate the ability of demolishers to negotiate their transition role. This has to do with the powerful position of the client, while the client is able to decide the nature of the project. As it turns out, the nature of the project seems to be determined by the clients' drive for circularity which can be distinguished into three categories: negatively driven by money, positively driven by money and driven by CO_2 reduction. In turn, the clients' drivers for circularity bring about three conditions for role negotiation.

Firstly, when negatively driven by money, the client doesn't allow time for circular activities, because it costs money. Interviewees note that clients who are negatively driven by money, tend to choose for traditional construction projects, which is illustrated in the following quote:

> There are project developers and those project developers have only one… uhm… yeah they have dollar signs in their eyes. I'm exaggerating, you know and that is uhm… they want to… they buy a building, that old building has to go and be replaced by a new building. They have a bag of money which has to make profit as soon as possible and there's only one way to do that: take it down as fast as possible and construct the new building as fast as possible and that way, your money will generate return effectively […] Yeah… the longer you take to uhm…. A demolition so uhm… by harvesting

construction materials, the longer it takes before a customer is able to live in the rental

home. (interviewee three, demolisher).

The situation described above shows us that the client perceives time is money, as he is eager to rent out homes as soon as possible due to the cost of ownership. This client's drive for circularity seems to create constraining conditions for the demolisher to negotiate their transition role, as the client is unwilling to allow for circular activities while disassembly is more time-consuming than demolition.

Secondly, when positively driven by money, the client allows time for circular activities if it generates money, yet is unwilling to make investments. Interviewees note that clients who are positively driven by money, tend to choose for either traditional projects with a circular ambition or circular construction projects. In this scenario, the clients' drive for circularity seems to create mixed conditions for the demolisher to negotiate their transition role, as the client makes time for disassembly, but he does not want to pay for additional costs. For example, one of the demolishers resorted to demolition when they came across elements that were designed for permanence and thus difficult and costly to disassemble.

Finally, when driven by CO_2 reduction, the client allows time for circular activities if it reduces CO_2 emissions. Interviewees note that clients whose drive for circularity is CO_2 reduction tend to choose circular construction projects, which is illustrated as follows:

The municipality of Amsterdam will introduce a uhm beautiful invitation to tender for

a consortium. […] They [municipality] wants to improve, build, circular as many school

buildings as possible and well, they want something. Uhm and a consortium is allowed

to fill that in. A beautiful question! Well, the question was asked very differently, very

differently. We want circularity, we want this, we want that. (interviewee twelve,

building contractor).

The situation sketched above shows us that the client aims to reduce CO_2 emissions, by sending out an invitation to tender purposed at using circular construction to build as many schools as possible. In this scenario, the client's drive for circularity seems to create enabling conditions for the demolisher to negotiate their role change, by encouraging disassembly and role expansion for the purpose of CO_2 reduction. However, one could also question whether the need for the demolisher to negotiate their transition role is still necessary, as this type of client no longer needs persuasion to allow for circular activities. Keeping these conditions for role

negotiation in mind, I'll use the next section present the strategies demolishers used to negotiate their role in the construction supply chain.

3.2 ROLE-NEGOTIATION IN THE CONSTRUCTION SUPPLY CHAIN

On the level of the construction supply chain, interviewees mentioned few situations in which role negotiation took place. This could be explained by the fact that some demolishers were able to expand their role individually of other actors in the supply chain. For example, by setting up a sawmill (recycle and upcycle) or a circular hub (storage and transport) on company property, used to sell second-hand materials released from demolition (trade).

Based on my analysis of the interviews, one strategy was used by demolishers to negotiate their transition role in the construction supply chain, namely to engage in new collaborations. This strategy was implemented to negotiate their role with potential competing actors, when demolishers had expanded their role in terms of trading, recycling and upcycling. After having expanded their role into the jurisdiction of suppliers and manufacturers, demolishers negotiated their transition role by engaging in new collaborations instead of competing with them, which is made explicit in the following fragment:

> Mainly just with the manufacturer himself. And uhm, after that you can always say: well yes basically if I, of course with the amount of materials released from demolition I can almost become his biggest competitor if I set it up myself. That is how I always try to say it, like: Well yes if I, if I do it myself and I set up a line with your materials, but then refurbished and put up for sale, I can do it for half the price than you do, I will say: I am also your biggest competitor! So that is, well yeah that I when, that is when you always see them thinking, you know like: Well yeah, you are right about that and they will be released, we need to do something with the materials at some point (interviewee five, demolisher).

The abovementioned scene tells us that the demolisher used the strategy engaging in new collaborations to negotiate their transition role, by using their role expansion as leverage. In turn, the manufacturer responded to this strategy by pioneering role boundaries, by agreeing to start collaboration with the demolisher. This outcome was shared by other demolishers, who

mentioned engaging in new collaborations through collective experiments, and by supplying second-hand materials to suppliers and manufacturers.

However, the extent to which this outcome can fully be ascribed to the demolisher's strategy is questionable. As some interviewees noted that the demolisher is currently not perceived as a threat by suppliers and manufacturers, due to their inability to provide a continuous flow of second-hand materials (see 2.5). Unlike in the construction supply chain, demolishers used a several strategies to negotiate their role in construction projects, which I will present in the following section.

3.3 ROLE-NEGOTIATION IN CONSTRUCTION PROJECTS

Grounded in data collected from my interviews, I have discovered three strategies demolishers used to negotiate the enactment of their role change in construction projects: persuade and enthuse, strengthen existing collaborations, and establish new role boundaries.

Persuade and enthuse

The first strategy used by demolishers to negotiate their role in circular construction projects is to persuade and enthuse, which had mixed results depending on the client's drive for circularity.

Primarily, demolishers mentioned using this strategy to encourage architects to design with their second-hand materials and to persuade clients to make room for disassembly. This resulted in several architects handing out errand lists to demolishers to supply circular construction projects, thereby enabling demolishers to enact their role expansion in terms of supplying (see chapter 3.1). Thus, actors who were driven by CO_2 reduction, seemed to respond to this strategy by pioneering role boundaries.

Additionally, demolishers described using this strategy to persuade money driven clients by explaining them the financial perks of disassembly. When actors were negatively driven by money, this strategy was deemed unsuccessful, after which demolishers would resort to two coping mechanisms: role switching and maximize circular activities, which I will briefly elaborate.

Role switching was a popular coping mechanism among demolishers to deal with clients negatively driven by money, which is illustrated in the following fragment:

> No, because if we say to a…. a client that didn't put out a circular tender like we are going to do it circular. Yeah but it can't cost more […] And then you explain what we're doing and that the… it just costs us 30 percent more hours so to say and then you explain that. In that case, we are just going to do it traditionally, so there's no incentive, huh? (interviewee four, demolisher).

The scene above shows us that if the client was negatively driven by money, the client would reinstate traditional role boundaries by refusing to provide extra money or time for disassembly. As a result, the demolisher would switch to a traditional role and perform traditional demolition instead.

Instead of switching roles, other demolishers maximized circular activities as a coping mechanism for actors who reinstated traditional role boundaries. Interviewees mentioned when coming across inflexible money-driven clients who did not allow extra time for disassembly, they handled the situation by doing the maximum number of circular activities as possible within the given time frame of a traditional construction project.

The last two strategies used by a demolisher to negotiate its transition role, were strengthening existing collaborations and establishing new role boundaries. Even though these strategies were only used one demolisher (demolisher six), I believe they are still interesting to take into account.

Strengthening existing collaborations and establishing new role boundaries

The second strategy of strengthening existing collaboration was used by demolisher six after they had a hard time finding a new building contractor willing to collaborate with. As noted by the demolisher, the building contractors were afraid to take the financial risk by joining a circular construction project. The demolisher negotiated its transition role by starting a so-called consortium, a partnership with building contractor 2, whom they already worked with in the past.

The third strategy used by demolisher six to negotiate their role in construction projects was establishing new role boundaries, which occurred during a conflict with another building contractor.

The conflict concerned a different approach to the circular ambition of a circular construction project, which came forward in a meeting with the building contractor:

> To which I responded like, well yeah it's nicely made up by the province and the municipality, but we're now doing an R5, a refurbished, while we are actually in favor of doing things in an R3, in a reuse, that's how we apply it. Well and then everyone got a little pissed-off. (interviewee ten, demolisher).

The snippet of a heated conversation sketched above, shows us that by reminding the building contractor of the circular ambition of the circular construction project, the demolisher used the strategy establishing new role boundaries to negotiate their role as an employer. However, this strategy turned out to be unsuccessful, as the building contractor reinstated traditional role boundaries by sticking to their own circular ambition. Aside from demolishers using strategies to negotiate their transitioning role, I have devoted the next section to present findings revealing demolishers using the role of circular demolishers as a stepping stone for gaining resources.

3.4 ROLES AS RESOURCES

Surprisingly, there was one scenario in which the findings reflected the perspective of roles as resources. This came forward as several interviewees mentioned obtaining certifications for circular demolition, which is made explicit in the following fragment:

> Establishing your information even more closely with a circular job. At least, a job that is registered as a circular job at a certification institute […] Your customers, or your clients, they find that interesting! They are looking for parties who have the same mindset. So, if you anticipate on that, you will find each other. And I always think that if you join these kinds of affairs, you also get the clients who are interested in it and have a stake in it. And then you also get the parties and clients you would prefer to have. (interviewee six, demolisher).

As pointed out in the statement above, this demolisher explained using circular certificates as a vehicle to attract clients interested in circularity. Taking this into account, obtaining certifications can be understood as using the role of circular demolishers as a tool for achieving resources. Whereas the label of circular demolition is used to attract clients driven by CO_2 reduction, creating possibilities for demolishers to enact their role expansion (see 3.1). After

having presented the findings regarding the subject of role negotiation, allow me to briefly revisit the fourth sub question: "What strategies do demolishers use to negotiate their (transition) role as circular demolishers in the construction supply chain and in circular construction projects?".

On the level of the construction supply chain, only one strategy was used by demolishers to negotiate their transition role as circular demolishers in the construction supply chain. This strategy was used by demolishers who expanded their role in terms of trading, recycling and upcycling. Instead of competing with manufacturers and suppliers in the construction supply chain, they negotiated with them to engage in new collaborations, securing the enactment of the demolisher's role expansion.

On the level of circular construction projects, three strategies were used by demolishers to negotiate their transition role as circular demolishers, namely to: persuade and enthuse, strengthen existing collaborations and establishing new role boundaries. Firstly, the strategy to persuade and enthuse was used by encouraging architects to design with disassembly and by explaining money the financial perks of disassembly. Secondly, the strategy of strengthening existing collaborations was applied by starting a consortium with a known building contractor after facing rejections with new parties. Finally, the strategy of establishing new role boundaries was exercised by lecturing the building contractor on their way of working. Marking not only the end of this chapter, but the findings section as a whole, I will use the discussion by means of holding a mirror to reflect my findings to the existing literature, by means of adding learnings to existing fields of knowledge.

DISCUSSION

The following paragraphs will be used to present the ways in which the findings contribute the academic debate on role theory, role change, role transitions, transition literature and role negotiation.

Firstly, my findings contribute to the academic debate on role theory by providing knowledge on the agency potential of roles. Currently, scholars are divided about two perspectives used to study roles. On the one hand, roles are viewed as resources, considered as fixed entities formed by social structures whilst simultaneously reconstructed by using them as a tool for identity building and acquiring resources (Wittmayer et al., 2017, p. 50). On the other hand, roles are compared to boundary objects, considered as changing entities shaped by actors through a continuous (re)negotiation of roles submerged power-play (Bos-De Vos et al., 2019; Wittmayer et al., 2017).

In reflection, the data provides evidence for the perspective of roles as resources, as demolishers use certificates labelling them as circular demolishers, in order to attract clients driven by CO2 reduction. Additionally, the data supports the perspective of roles as boundary objects, as demolishers negotiated the enactment of their role change, accompanied by a negotiation of power. Thus, instead of studying roles as either fully fixed by social structures or fully negotiated through agency, my suggestion would be to reconsider roles as shaped through both social structures and individual agents.

Secondly, my findings are relevant to the academic debate on role transitions by providing relevant insights on the conceptualization of role change in the context of sustainability transitions. According to Turner (1990) the concept of role change can be distinguished into quantitative and qualitative role change. With quantitative role change concerning the role expansion or subtraction by an increase or decrease in responsibilities (Turner, 1990, p. 88). Respectively, qualitative role change was presented as change in the proportion of the elements in a role due to a replacement or reinterpretation of existing elements (Turner, 1990, p. 88). In line with Turner (1990) my data showed that role change occurred quantitatively, as demolishers had expanded their role through an increase in responsibilities. Additionally, my data supports Turner's (1990) notion of qualitative role change, as demolishers partially replaced demolition, their traditional way of working with their new way of working, namely disassembly.

However, when applied to the context of transitions the existing conceptualization of role change as presented by Turner (1990) shows two shortcomings. Primarily, it excludes the fact that quantitative role change is not linear, as my data identified six different ways of role

expansion, occurring in different combinations among demolishers. Additionally, it fails to specify whether role change occurred within or outside of the actor's jurisdiction, as my data showed that demolishers expanded their role into the jurisdiction of other actors. Keeping this in mind, further research on role change in transitions could explore the reconceptualization of quantitative role change considering the ways in which an actor performs role expansion(s) or subtraction(s) by an increase or decrease in responsibilities towards the jurisdiction of other actors.

Thirdly, my findings contribute to the academic debate on role transitions, by adding knowledge to the conceptualization of role transitions in the context of sustainability transitions. In existing literature, role transition is divided into two categories: intra-role transitions, referring to the movement to a new orientation within a traditional role, and inter-role transitions concerning the movement between a traditional and a new or different role (Ashforth, 2000; Louis, 1980). In turn, inter-role transitions can be categorized into two subcategories: macro and micro role transitions (Ashforth, 2000). Whereas macro-role transitions concern the exiting of one role and the entering of another, micro-role transitions refer to the process of switching between multiple simultaneously held roles (Ashforth, 2000; Ashforth et al., 2000; Tempelaar & Rozenkranz, 2016).

Contrary to Ashforth (2000), the data suggests that micro and macro role transitions took place regardless of the lack of consensus around the presence of inter or intra-role transitions. Primarily, my data revealed the occurrence of macro role transitions, as demolishers mentioned decoupling themselves from the role of a demolishers and entering that of a remolisher, disassembler, harvester or miner. In contrast, other demolishers suggest the occurrence of intra-role transitions by criticizing the emergence of new words to describe their role. Nonetheless, the data showed the performance of micro-role transitions, as demolishers mentioned switching back and forth between the traditional role of a demolisher and that of a disassembler within as well as between projects. Taking this into account, further research is necessary to investigate a reconceptualization in which micro and macro role transitions are considered to occur in intra as well as inter-role transitions.

Fourthly, my findings contribute to the field of transition literature, by adding knowledge of role change to the context of sustainability transitions, an area that is currently understudied (Wittmayer et al., 2017). These insights are divided into the level of single roles and role constellations, which I will discuss sequentially. On the first level, Wittmayer et al. (2017) were the first to claim that sustainability transitions generate changes in a single role by introducing the concept of transition roles, entailing: "roles through which actors support or

hinder a specific sustainability transition (e.g. frontrunner)" (Wittmayer et al., 2017, p. 47). In line with existing literature, my data supports that role change is triggered by transitional settings, while demolishers ascribed their (lack of) role change to their stance regarding the transition to a circular economy. Thereby, my data acknowledges the existence of a transition role (Wittmayer et al., 2017).

Nonetheless, the data challenges the current conceptualization of transition roles. Primarily, the data suggests considering circularity as a spectrum reaching from traditional to circular, while labelling activities as either traditional or circular was criticized. Additionally, the data showed demolishers experiencing difficulties in positioning themselves into separate categories such as frontrunners or followers. Alternatively, the data proposed determining a demolisher's transition role by merging knowledge of role expansion(s), the nature of the project and the client's drive for circularity. Taking both insights into account, an interesting subject of study would be whether the transition role of other actors in the construction supply chain can be determined by plotting their ways of role change on a spectrum from traditional to circular, and the extent to which this is mediated by client's drive for circularity.

On the second level, Wittmayer et al. (2017) state that roles are interconnected in role constellations, defined as: "webs of roles, which interact, interrelate and co-evolve with one another" (Wittmayer et al., 2017, p. 52). In existing literature, a change in a single role automatically sparks a change in the role constellation as a whole (Turner, 1990; Wittmayer et al., 2017). According to Wittmayer et al. (2017), these changes in roles and role constellations are provoked by transitional settings. In line with existing literature, the data of both construction projects showed that role change occurred in roles of other actors involved, as actors in both projects noticed changes in their responsibilities and the role constellation as a whole. In addition, the data revealed that the extent to which the role constellation changed was dependent of the extent to which the demolisher expanded their role.

In contrast with existing literature, the data showed that changes in the role constellation cannot be fully ascribed to changes in a single role (Turner, 1990; Wittmayer et al. 2017). Instead, the data provides evidence for the claim that transitioning contexts form the source of changes in roles and relations between actors (Wittmayer et al, 2017). Whereas actors in both construction projects partially attributed these changes to the circular nature of the construction project, by securing the demolisher's central position and entangling labour processes. Therefore, I believe it would be fruitful to merge these insights by further investigating the extent to which changes in the role constellation are mediated by an actor's transition role and the nature of the construction project.

Fifthly, the findings are relevant to the academic debate of role negotiation by providing insights on strategies used by actors to negotiate transition roles in inter-organizational projects. There are two ways in which the data contributes to the field of role negotiation: strategies of role negotiation and the negotiation of power, which I will discuss accordingly.

According to Bos-De Vos et al. (2019), established professionals use three strategies to negotiate their role: reinstating, bending and pioneering role boundaries. Additionally, when applied to inter-organizational projects Gluch (2009) revealed that emerging actors perceive difficulties in negotiating their role, using the coping mechanism of switching between multiple roles, depending on established role structures in the project (Gluch, 2009).

Contrary to existing literature, the data does not indicate that demolishers used strategies such as reinstating, bending and pioneering to negotiate their role as established professionals (Bos-De Vos et al., 2019). Instead, the data reflected demolishers using strategies to negotiate the enactment of their transition role, moving towards the jurisdiction of other actors. Similar to Gluch (2009), demolishers switched back and forth between their traditional and transition role to handle differences in the client's role structures in the project. Thus, the data suggests that in the context of sustainability transitions, demolishers negotiate the enactment of their role change as emerging professionals, instead of established professionals. In order to find out whether sustainability transitions brought about new professions, role negotiation strategies of other actors occupying transition roles would be an interesting subject of study.

Additionally, existing literature considers role negotiation to be closely tied to power-relations (Kirk, 2001; Kim & Angouri, 2019). Revisiting, role structures are thought to be vehicle to negotiate power, defined as: "shared understandings of actor's roles and their respective expertise and responsibilities" (Bos-De Vos et al., 2019, p. 131). Scholars note that not only roles, but also power is negotiated through a constant conflict between existing role structures and the agency of actors to reshape role structures (Kirk, 2001; Kim & Angouri, 2019; Simpson & Carroll, 2008).

In line with existing literature, the data revealed that role-negotiation concerned the negotiation of power (Kirk, 2001; Kim & Angouri, 2019; Simpson & Carroll, 2008). However, the data suggests that power was mainly negotiated between the demolisher and the client. To elaborate, the data showed the client occupied a powerful position, while being able to decide the nature of the construction project. As a result, the extent to which the demolisher was able negotiate the enactment of their role change depended on the client's drive for circularity which created either constraining, mixed or enabling conditions for demolishers to negotiate their role.

Thus, in the context of sustainability transitions, future research could explore whether the client's drive for circularity mediates the extent to which other actors are able to negotiate their role. After having reflected the findings to the theoretical framework, the next section will be used for concluding remarks.

CONCLUSION

In this thesis, I have studied how role transition and role negotiation occurred among demolishers in the construction supply chain, and in circular construction projects, and how new role constellations played out in two circular construction projects. As we have now reached the concluding chapter, allow me to briefly restating the research objective and the main research question.

In short, my research objective was to understand how demolishers negotiate their transition role as circular demolishers. Keeping this in mind, my findings provide an answer to the following research question: "How do demolishers negotiate their transition role as circular demolishers in the construction supply chain and how does the new role constellation play out in inter-organizational construction projects?". In order to answer the main research question, the findings on transition roles, role constellations and negotiation strategies will be briefly recaptured.

Firstly, demolishers seem to occupy transition roles, as they ascribed their (lack of) role change to the transition towards a circular economy. This role change occurred through incorporating new way of working disassembly and through role expansions into the jurisdiction of six other actors in the construction supply chain. Surprisingly, an alternative approach to transition roles appeared in the findings, by viewing the extent to which a demolisher performs circular activities as a spectrum moving from circular to traditional. Additionally, the findings stress the complexity of transition roles, while demolishers are thought to be determined by combining information of the demolisher's role expansion(s), the nature of the construction project and the client's drive for circularity.

Secondly, role constellations played out differently in the two circular construction projects. Similarities were shown in terms of the demolisher's central position, integral collaboration and role changes of other actors involved. These similarities can be linked to the circular nature of the construction project, while re-using materials for supply encapsules a dependency on demolishers for careful disassembly, and interwoven labor processes. However, differences arose in power-relations and communication. In the first case, traditional power-relations and ways of communication were held onto by actors involved, while the demolisher's disassembly skills were developing. Whereas in the second case, the demolisher's role expansion included a new power-position, sparking changes in power-relations and communication. Thus, the different outcomes of both role constellations can only be partially ascribed to the transition role of demolishers and partially to the circular nature of the project.

Thirdly, demolishers used four strategies to negotiate their role in the construction supply chain and in construction projects. Surprisingly, demolishers only used the strategy engaging in new collaborations to negotiate their transition role in the construction supply chain. Possibly, this was due to demolishers being able to perform role expansion on company property, independently of other actors. In contrast, three strategies were used by demolishers to negotiate their transition role in construction projects: persuade and enthuse, strengthen existing collaborations and establishing new role boundaries. Although, the success of strategies used by demolishers was mediated by the client's drive for circularity, creating either constraining, mixed or enabling conditions for demolishers to negotiate their transition role. Concluding, it seems as though little negotiation was necessary for demolishers to negotiate their role in the construction supply chain, whereas the negotiation of demolishers' transition roles in construction projects was submerged in power struggles with clients. Inevitably, this study has its limitations and suggestions for future research, which I will touch upon in the following paragraphs.

The first limitation of this thesis concerns the issue of generalization due to method of conducting qualitative interviews with a small number of participants (Bryman, 2012). One could argue whether the outcome of three interviews conducted with two participants is representative for other actors in a circular construction project. In spite of this, the outcomes remain useful for theory building. In order to better investigate how role constellations play out in the context of sustainability transitions, future research should include a larger and more varied group of actors involved in circular construction projects.

The second limitation of this thesis has to do with the diversity of transition roles among demolishers. Due to differences in the (combinations of) role expansion among demolishers, and the extent of role change, one could argue whether assumptions can be made about the group of participants as a whole. In order to select participants based on similarity, future research could explore mapping the various transition roles of demolishers.

The third limitation of this thesis pertains the transitioning role constellation. With changes in the entire role constellation occurring simultaneously, changes in the roles of other actors may not be fully ascribed to changes in the role of demolishers. In an attempt to cope with this uncertainty, the data was critically analyzed for similarities tracing back to the circular nature of the project. Taking this issue into account, the transitioning role of other actors in the role constellation would be an interesting subject of study. This leaves me to the final section of this thesis, in which I will present the policy and practical implications for the demolition sector.

This study revealed three policy implications directed towards the trade association of demolishers. Firstly, due to money-driven clients hindering the demolisher's transition role, my suggestion would be to intensify lobbying practices for climate laws as well as laws or regulations to diminish the use of virgin materials for construction. Secondly, as circular construction accelerates the demolisher's transition role, my suggestion would be to lobby for subsidizing circular construction projects. Thirdly, while design for permanence hinders demolishers to perform disassembly, my suggestion would be to lobbying for incorporating design for easy disassembly in construction projects.

Additionally, this study identified two practical implications directed to demolishers (willing to) occupy a transition role. My first recommendation would be for demolishers to obtain certificates for circular demolition, which can be used to attract clients whose drive for circularity is CO_2 reduction. My second recommendation would be to engage in collaboration with other actors in the construction supply chain sharing their circular ambitions, thereby enabling both parties to expand their role. Hopefully, these implications will bring demolishers one step closer to transitioning from wasteful to resourceful negotiations.

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