DIFFICULTIES WITH POWER, INFORMATION AND RELATIONS

The Downsides of Mediation

Abstract

This thesis studies boundary spanners with regard to their possible negative qualities in complex construction projects, and how they affect the performance and satisfaction of and within the project. The three potentially negative qualities studied are their unique power position, their risk of forming an information bottleneck, and their danger of potential sour informal relations with their stakeholders. Additionally, it is checked under which circumstances these qualities prevail. To gain an insight into this, three case studies in Amsterdam are studied throughout a document analysis and a series of interviews with different actors. The results show that boundary spanners indeed suffer from these qualities, and that they negatively impact upon the results and satisfaction. They mostly occur in situations of role uncertainty, low individual competence, and low organisational support.

Anneke van der Werf – 602902aw
Urban Governance, Erasmus University of Rotterdam
Supervisor: Leon van der Dool. Second reader: Jose Nederhand
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Summary

Complex public construction projects prove challenging for governments and other organisations. This thesis focuses on the complexities caused by social difficulties. More specifically, the collaboration and potential stressful relationships between involved organisations, leading to complex, interchanging, unstable situations. A solution to this form of complexity is the use of one or more boundary spanners. These are people forming bridges between different organisations, improving knowledge sharing, cooperation and trust. However, possible negative qualities of boundary spanners have been under-researched. Therefore, this thesis tries to fill that academic gap, by answering the central research question: (how) do potential negative qualities of boundary spanners affect the performance in networked governance construction projects, and if so, under what conditions? The performance of projects is defined in both objective and subjective terms, thus relating to project efficiency, and the satisfaction of those involved. Both methods were picked because they complement each other.

Through an extensive literature review combining insights from politics, management, and governance, three possible negative qualities of boundary spanners came to light. The first potential negative quality is their power imbalance. Boundary spanners try to mediate between different power relations in a network, but hold a special power position themselves. Second, information bottlenecks. When all information in a network needs to pass through one point, be it a person or a team, an information bottleneck may be created. Third, personal, informal relations. Although personal, informal relations are generally thought to be helpful, they can turn sour, result in favouritism, obstruct critical thinking, etc. Traditional literature on boundary spanners defined conditions for boundary spanning. Three conditions are important: role stressors, organisational support, and individual competence.

Three case studies were picked to study boundary spanners and their workings: the quay development, the University Quarter, and the Gaasperdammertunnel and the Brasapark. All three cases are located in Amsterdam, The Netherlands. Through a document analysis and a series of interviews, a detailed overview of the cases was achieved.

The results show that boundary spanners do in fact suffer from power imbalances, information difficulties, and personal, informal relations, hindering results and satisfaction. Stakeholders are generally less positive than boundary spanners. The flaws mostly come from role stressors and role uncertainty, things that can partially be fixed by organisational support and individual competence. In sum, more role stressors lead to stronger negative effects, and less efficiency and satisfaction.

Key words

Preface/acknowledgement

This thesis started back in January 2022, as an exploration of the state of the quays in Amsterdam. Through various changes and alterations, the current topic came to light. First and foremost, I would therefore like to thank all those who inspired me and helped me to find the right topic and thesis question. During the research and the interviews that I did for this thesis, I realised that the position of boundary spanner truly is very special, which I deem very promising and hopeful for all sorts of projects, despite some weaknesses that it might have. This thesis is meant to gain more insight into these weaknesses.

Not only does this thesis have academic and social relevance, it also provided my personal life with useful insights into what I want to do later in my career. Therefore, I would like to thank all my interviewees, for being honest with me and for being so enthusiastic and welcoming. The interviews inspired me in what I want to do later in life and what I want to be in my professional life.

Then, I want to thank my thesis group: my supervisor, Leon, and my two classmates, Josha en Sjoerd. They have provided me with indispensable help and feedback. Their feedback has helped me to define my question, structure my thesis, and come to more insights.

A special thanks go out to my partner and all of my friends who always support me, and in some cases, have helped me with this thesis.

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Introduction

In this introduction to the research, the problem statement, research objectives, research questions and relevance will be explained.

Problem statement

Public construction projects are large-scale construction projects on buildings or infrastructure. They are important to the broader public and are a common practice for many governments. Examples are everywhere, and thus, everyone comes into contact with them. These can be infrastructures, e.g. new bridges or tunnels, as well as, important buildings, e.g. central stations, town halls, and so on. However, their commonness does not mean that they are easy to create. On the contrary, many construction projects have significant time delays and cost overruns (Teisman & Hertogh, 2009). Construction projects are often complex, multi-actor, dynamic situations, shaped by uncertainty and challenges. They are often technically, financially, and socially complex, making it hard to find good, effective solutions to the challenges of construction. Moreover, construction projects frequently involved many stakeholders. These stakeholders are often governed according to the principles of networked governance: a form of government whereby all parties together decide on the course of action (Sørensen & Torfing, 2007). The many stakeholders involved generally each have their own objective, which can be problematic, as these objectives are not naturally in line with one another (Hertogh & Westerveld, 2010). One way to improve these processes is by the use of (a) boundary spanner(s): a person, group, or organisation who can span the boundaries between the multiple stakeholders involved in different projects, for example in marketing or communication (Cai et al, 2022; Desmond & Hanssen, 2017). This is done to unite their goals, stimulate cooperation, facilitate knowledge exchange, improve efficiency and effectiveness, increase trust, and so on (Nguygen-Duc et al, 2014). Boundary spanners are thus seen to have plenty of positive qualities and effects, therefore they are used frequently, especially in the networked governance forms that are arising today.

However, there are concerns that boundary spanners might also have some potential negative effects on the quality of cooperation and the satisfaction with the end result, among others the creation of information bottlenecks, destructive interference, partiality, and issues of objectivity (Neal et al, 2021). All of these potential issues might have negative effects on for example the subjective satisfaction with the project performance: it might cause frustration, anger, and disappointment. However, these potentially negative effects have

hardly been researched. Literature on urban governance should be combined with insights from politics, psychology, and management, to create a broader view of how boundary spanners function. This would add to existing knowledge on boundary spanners.

Research objective

The objective of this thesis is to determine if and when boundary spanners have qualities that negatively impact complex projects, both in objective performance quality as in subjective performance satisfaction. This will be done through different case studies into ongoing construction projects in the city of Amsterdam, namely the development of the University Quarter, the Quays, and the Gaasperdammertunnel and appurtenant Brasapark. Amsterdam is chosen, because it is the biggest city in the Netherlands and has multiple challenging projects of international allure ongoing. Additionally, the researcher's familiarity with the chosen case studies heightens the reliability. Although Amsterdam has a specific participatory culture (Nederhand et al, 2016), the insights from these cases might form interesting leads for further research beyond the city.

Research question

The main research question therefore is: (how) do potential negative qualities of boundary spanners affect the performance in networked governance construction projects, and if so, under what conditions? The potential negative qualities will be defined in the next chapter. Boundary spanners are those connecting several organisations. Performance is measured in both subjective performance satisfaction of the stakeholders involved, and in objective performance: efficiency and visible results. Last, networked governance construction projects refer to complex public construction projects which are handled with special care for the involved stakeholders through horizontal, networked cooperation.

Relevant sub-questions to answer the main research question:
- What are the possible negative qualities of boundary spanners in collaborations?
- What are the underlying antecedents for these negative qualities of boundary spanners?
- How do the negative qualities of boundary spanners and antecedents exhibit themselves in complex projects?
- How do the negative qualities of boundary spanners influence the performance of construction projects?

Relevance

This research is relevant for multiple reasons. Academically, it provides an interesting case study on complex, multi-actor infrastructure problems. Plenty of work has looked into boundary spanners who work in dyadic private partnerships, but literature on multi-actor, public-driven projects is relatively scarce (Holmes & Moir, 2007; Agnihotri et al, 2014; Cai et al, 2022). The latter category provides a more challenging working environment for boundary spanners. These, first, suffer from issues around collaboration, as it is difficult to unite the many different actors involved. Second, public-driven projects bring along a range of challenges, including but not limited to public sector inefficiency, free-riding behaviour, and long time scales. Furthermore, this research complements existing research by specifically focusing on potential pitfalls and downsides of boundary spanning too: something that is currently lacking in academic literature (Neal et al, 2021). Previous literature is regularly focused on the benefits or non-results, but it is interesting to shift the focus to potential negative effects, such as power imbalances, prejudices, and information bottlenecks.

The societal relevance can be found in the importance of looking into the optimisation of construction processes. Complex construction projects often cause a lot of time and cost overruns, resulting in a suboptimal environment for nearby inhabitants and users, (financial) problems for responsible governments, and frustrations from other involved stakeholders. To ensure that these processes run as smoothly as possible, it is thus important to know how to optimize all factors involved. A full answer to this question is beyond the scope of this thesis, but it can highlight a potential part of the optimisation process, by providing an insight into the possible weaknesses of boundary spanners, and where they come from. Knowing this is a first step towards finding a solution to these weaknesses, if they are present. Especially in such demanding contexts as complex, multi-actor infrastructure projects, it is important to acknowledge the weaknesses that boundary spanning might have and work with them.

The remainder of this paper is structured as follows. First, a literature review will answer the first two sub-questions: explaining what complex projects are, how boundary spanners can form a solution to this complexity, and what it takes to be an effective boundary spanner. Next, the negative qualities of boundary spanners, and performance will be defined. The research then continues with the conceptual model and method section, followed by a general explanation of the cases. For the analysis, the cases are explored more in-depth through a document analysis, which forms the context for the series of interviews that will be done. Last, in the discussion and conclusion, the results of the research are brought together. It will be shown that boundary spanners can indeed have qualities that negatively impact the performance of complex projects.

<center>**Literature review**</center>

This literature review begins with a description of the context of the research, to answer the first two sub-questions. The review starts with an academic overview of construction projects and how these suffer from issues around complexity, followed by an explanation of one possible solution to complexity: the boundary spanner. Construction projects are complex, when they happen over a long time and involve multiple autonomous actors who interact dynamically. Complex issues cause multiple difficulties to a project. Therefore, solutions to complexity are constantly sought. Previous research has shown that boundary spanners can (partially) mediate complexity, by uniting the relevant actors, acting as a bridge of spanning knowledge and trust (Van Meerkerk & Edelenbos, 2014). They are seen to have plenty of positive character traits and qualities. The antecedents to effective boundary-spanning work are also discussed in this section. However, the potential negative qualities of boundary spanners have been under-explored (Neal et al, 2021). In this thesis, three possible qualities of boundary spanners that could harm the cooperation, effectiveness, and subsequent satisfaction in complex construction projects network are discussed. These three are power imbalances, information bottlenecks, and personal likeability. This literature review is concluded with a section on performance measurement, and a general conclusion about the definitions used in the remainder of this paper.

Collaboration in network governance of complex construction projects

Construction is one of the main sectors of the economy (Khattak & Mustafa, 2019). However, despite their abundance, construction projects frequently suffer from multiple challenges due to their complexity. Complexity arises when situations are diverse and contain multiple autonomous agents, who interact dynamically (Gerrits, 2012). This complexity stems from uncertainty around the various components of a project and the interdependence among all activities. As each project is fully unique, localised, and constantly evolving, it is hard to apply general lessons (Sunindijo & Zou, 2015). The results of this complexity are mostly visible in both characteristics of the project and the evolution of the implementation processes (Hertogh & Westerveld, 2010). Empirically, for example, well over 50 percent of all infrastructure projects suffer from cost overruns (Teisman et al, 2009). Therefore, construction projects need considerable planning throughout the entire construction process, from the very first sketches to the evaluation. This should be adaptive: every project suffers from unforeseen contingencies (Perrone & Zaheer, 2003). Late completion and other types of failure will likely result in multiple adverse effects, ranging from financial losses to reduced credibility of the project (Toor & Ogunlana, 2009). To effectively manage the complexities of construction, the sources of complexity should be tackled. Complexity can stem from technical, financial, or social difficulties (Hertogh & Westerveld,

2010). This thesis focuses on the latter: the social difficulty of dynamically complex stakeholder systems. Social difficulties revolve primarily around the collaboration between the involved stakeholders, and the potential stressful relationships between these organisations.

Construction projects often require a form of collaboration with various stakeholders. Collaboration is an interactive process involving an autonomous group of rational actors with shared rules, norms, and organisational structures who can make collective decisions (Alam et al, 2014). This collaboration often does not come naturally: participants might need to be pressured into collaboration (Holmes & Moir, 2007). Client participation is however very necessary for construction projects: including clients increases the sustainability of the project, makes it more context-specific, better connected to the community, etc (Toor & Ogunlana, 2009; Fernández-Sánchez & Rodríguez-López, 2010; Holmes & Moir, 2007). Not including stakeholders is harmful to the course and outcomes of the project (Toor & Ogunlana, 2009).

The scope and methods of collaboration have transformed over the last few decades. Collaboration between the public and private sectors has increased, both in scope, frequency, and duration (Alam et al, 2014). Networked governance is coming up as an alternative to traditional government and its failures (Ansell & Gash, 2007). In networked governance, various state and non-state parties can be involved, including citizens and NGOs: it is a negotiated exchange between several autonomous yet interconnected actors, where numerous interests collide, and which are structured by rules and norms (Sorensen & Torfing, 2007). Another alternative is collaborative governance (Ansell & Gash, 2007). Broadly speaking, a (policy) network refers to a form of governance that combines interrelated markets and hierarchies (Debray et al, 2014). Engaging these stakeholders from different backgrounds and sectors enables a better combination of different knowledge bases, which is very useful, especially in today's world, as this is highly fixated on knowledge (Holmes & Smart, 2009). Through this method, planning took an argumentative turn: sense-making through contested interpretations and communication methods became more important (van den Brink et al, 2019). Networked governance is about two-way communication: both parties must interact with each other (Ansell & Gash, 2007). These multilateral forms of collaboration are even more complex than (PPP-structured, bilateral arrangements (Holmes & Moir, 2007). This research will largely focus on multilateral forms of collaboration, which can take up multiple different forms and set-ups.

Within networked governance, forms of collaboration can differ widely. First, one partner can be the dominant, leading partner, but a more neutral facilitator can also take the

lead (Alam et al, 2014). Second, collaborations can be structured, e.g. via contracts, or can be more flexible. It is beneficial to have a mix of the two: contracts provide stability, yet flexibility is necessary to incorporate unforeseen circumstances and developments (Hodge & Greve, 2007). Flexibility furthermore stimulates learning and innovation (Holmes & Smart, 2009).

Thus, working with stakeholders is generally recognised as a beneficial or at least necessary practice for complex construction projects. However, it is not an easy task to work with stakeholders. This paragraph will explore some of the problems that potentially arise when working with stakeholders. First, stakeholders often have a wide, diverse range of interests, objectives, and viewpoints (Alam et al, 2014). Potentially, this can create conflicts of interest (Hertogh & Westerveld, 2010). Interests are often not neatly aligned, but interfere, or even conflict with each other. Friction and debate are possible consequences. Moreover, often not even the jargon they use is similar. Thus, communicating effectively can be challenging (Debray et al, 2014). Third, these interests are not stable but may change over time (Teisman et al, 2009). Stakeholders work in a constantly changing environment, where new input leads them to change their actions (Teisman et al, 2009). Although the environment quickly changes, their perceptions and evaluations are not so quick to change. Once relations between stakeholders have been established, they are hard to change. This is especially so when relations have gone sour (Hertogh & Westerveld, 2010). Similarly, the perceived distance between stakeholders in a project can differ substantially from the actual distance according to the formal organisation structure (Hertogh & Westerveld, 2010). Fifth, some stakeholder interests are not represented accurately, because they do not have the power to enter the policy arena, because the system is so rigid that no other actors can get in, or because the project is simply too broad. The participation process should thus be open and welcoming (Smink et al, 2015). Additionally, because construction projects have a big impact on a broad environment, it is necessary to take in an audience representing this diversity (Hertogh & Westerveld, 2010). However, the system must remain manageable and practically feasible. The number of actors participating should thus not be too broad (Kauffeld-Monz & Fritsch, 2013). Finding a balance between these two extremes can be complicated.

One of the key factors of a successful collaboration is to unite stakeholders (Head, 2008). The stakeholders should form a properly functioning team (Toor & Ogunlana, 2009). Relatedly, trust between stakeholders is crucial (Head, 2008). The third precedent for a successful construction project is a good leader (Khattak & Mustafa, 2019). All these qualities are united in a boundary spanner. They form an important part of construction project management (Gustavsson, 2015).

Boundary spanners: a solution to complexity?

Boundary spanners are one way of tackling complexity and uniting all different stakeholder interests. Boundary spanners are those who operate within intra- and inter-sectoral collaborative environments, to promote better cooperation and work on common issues (Williams, 2011). They select and translate information, and transfer it to the relevant actors, connecting them (van den Brink et al, 2019). Their advantages are numerous: they are trusted by both internal and external actors, improve decision-making quality, have multi-area expertise, increase flexibility and adaptability, create coherence in a fragmented system, spur innovation and learning, and so on (Nguygen-duc et al, 2014; Li, 2020; Kauffeld-Monz & Fritsch, 2013). Although they do not always reduce conflict, they do help to suppress the negative influence of national or cultural differences (Di Marco et al, 2010). Additionally, they are also seen to decrease workload, often by making a problem more structured and manageable (Desmond & Hansson, 2017). In this thesis, these characteristics are boiled down to the following four key characteristics: boundary spanners are those who share and translate information, manage relations, form a bridge between several parties, and improve coordination.

Within collaborations, boundary spanners can have different ways of working. First, managing is possible through control, or through interaction (Hertogh & Westerveld, 2010). Especially the latter is of importance. Managing through interaction generally improves satisfaction for all parties involved (Hertogh & Westerveld, 2010). Control is vertically structured, and interaction is horizontally structured (Nguygen-duc et al, 2014). In their roles and with their competencies, boundary spanners can seek innovative ways to spur relationships. They effectively help the involved stakeholder to develop their own needs and achieve their goals (Agnihotri et al, 2014). Research shows that boundary spanners achieve significant results (Holmes & Smart, 2009). Second, boundary spanners can work through formal collaboration, but can also go beyond this: informal relationships are as important (Alam et al, 2014). For this, a long-term relationship is important. Similarly, informal meetings are helpful to establish good relationships between stakeholders. They enable achieving common objectives, can overcome conflicts of interests, and produce a more trustful bond between actors (Alam et al, 2014).

Boundary spanners can be formally appointed or arise naturally (Guven-Uslu et al, 2020). In construction projects, engineers and/or architects are traditionally the boundary spanners, yet everyone can take up a boundary-spanning role (Cao et al, 2021). Several facilitating factors support the rise and success of boundary spanners. These antecedents to effective boundary spanning are discussed below. They are general environmental

characteristics, personality, organisational support, and role definition. For each of these, four main characteristics will be picked, based on what is at the core of these variables.

First, naturally, general environmental characteristics can enable boundary-spanning work. Examples are heterogeneity in partners and funding, which requires more boundary spanners (Bielefeld, 1992). Additionally, in less institutionalised environments, more uncertainty exists, demanding more boundary-spanning activities. Furthermore, in times of crisis, an intensification of boundary-spanning work is usually seen (Ryan & O'Malley, 2015). Boundary spanners are seen to be very useful in disturbed or dysfunctional situations (Smink et al, 2015). It is especially in such situations that they arise naturally (Nguygen-Duc et al, 2014). This thesis will only focus on case studies that have these characteristics. The following antecedents are thus the most relevant to the research of this thesis.

Second, personality and personal characteristics play a major role. Boundary spanners must ideally be competent in what they do. Competence is a set of knowledge or a mindset, that is required to be successful in a certain role (Khattak & Mustafa, 2019). The wider the competence range, the more successful. Boundary spanners are usually seen to have the following competencies. First, they must have some knowledge of the project they are working on, as well as some technical skills (Agnihotri et al, 2014; Khattak & Mustafa, 2019). To work with and translate knowledge, you must be able to understand it. Second, social awareness and in a broader sense emotional intelligence are important (Agnihotri et al, 2014). A boundary spanner must be able to 'read the room' and play into the existing relationships. Relatedly, they must be able to connect to people and gain their trust. Therefore, they must be friendly, people-oriented, and cheerful (Williams, 2011). For this, face-to-face contact is very important (Kauffeld-Monz & Fritsch, 2013). Third, enthusiasm and dedication help the boundary-spanner get involved (Khattak & Mustafa, 2019). Competences such as honesty and hard-working are also appreciated (Williams, 2011). A special character trait that is often mentioned is creativity. Creativity boosts work engagement and performance, as it forms more innovative, unique solutions (Yoo & Jeong, 2017). These characteristics often come with experience (van Meerkerk & Edelenbos, 2020). Other factors supporting competence are self-monitoring and flexibility, motivation, and network ties (van Meerkerk & Edelenbos, 2020). The more authentic and secure they become in their competencies, the better boundary spanners they will be (Delozier & Durbach, 2021).

Third, organisational support is important for boundary spanner success. This is mostly seen in facilitative project management and executive support (van Meerkerk & Edelenbos, 2018). Facilitative project management encourages team members to perform at

their best, increasing team performance (van Meerkerk & Edelenbos, 2018). It stimulates workers to come up with their own initiatives and to be committed. Second, empowerment and support are important, as it allows boundary spanners to form better connections with stakeholders and are more confident about their actions (Delozier & Durbach, 2021). In the broader sense, good management is of the utmost importance (van Meerkerk & Edelenbos, 2018). Good management can deal with challenges, changes and can successfully divide tasks and resources over the relevant actors. However, it also means that managers should not micromanage the process, but should instead leave discretionary space for their employees. Furthermore, the formalisation of a role can be either helpful or obstructive: offering extra resources would be beneficial for feelings of security, but limiting movement space could potentially harm the project (van Meerkerk & Edelenbos, 2020).

Fourth, role definition and role stressors play a significant role. Role stressors often occur because of work overload, and because of uncertainty about what the work of a boundary spanner should mean (van Meerkerk & Edelenbos, 2020). Moreover, they express a feeling of being 'stuck' in a position where it is impossible to satisfy all needs (Singh et al, 1994). Such discrepancies, combined with high expectations and other role stressors, can lead to burnout. Burnout is both harmful to the individual as to the broader cooperation, as it negatively impacts the psychological state of the boundary spanner, and on behavioural outcomes of their work (Singh et al, 1994). Being burned out lowers the quality of performance of a boundary spanner, often because they are demotivated, low on energy, and less prone to ask for support (Singh et al, 1994). The greater the role stressors, the greater the chance of burnout.

These factors are partially interrelated. For example, research by Stamper and Johlke (2003) showed that organisational support could affect the influence of role stressors. This is especially the case as factors move through time. Boundary spanners work incrementally. Throughout the process, they not only restructure the boundaries but boundary spanners get restructured themselves too (Vilas-Boas et al, 2022). The iterative, intertwined process leads to boundary-spanning elements that grow on top of each other. New elements were thus added to what already existed, the initial base is mostly not deconstructed, but used as a basis (Vilas-Boas et al, 2022).

Despite their many advantages, boundary spanners are not always successful, it can for example be very hard to get out of traditional standards, no matter their best interests (van den Brink et al, 2019). Similarly, it might be possible that these positive qualities can become negative, depending on the situation and the extent to which they are used. This research will explore and test whether boundary spanners can have qualities or effects that

act negatively on a project, and how these deficiencies originate. To summarise, boundary spanners in this research are defined as people who work in collaborative environments on common issues, to decrease fragmentation, translate information, improve trust, and improve coordination. These are the four key characteristics, which all strive to promote better cooperation. These four characteristics are dependent on their individual competence, organisational support, and the role stressors they encounter. In the next few sections of this theoretical framework, three possible negative qualities from insights from psychology, politics, and management are combined and discussed below.

Boundary spanners: possible negative effects

Power imbalance

Power dynamics are always at play in networks, shaping how the cooperation functions and who has the ability to say things. For example, big corporations possess considerable (market) power (Clapp, 2021). This gives undesirable effects on equity, efficiency, and innovation; for example, it easily leads to lock-in: actors blockading transition and keeping out alternatives, in favour of the previously established trajectory (Conti et al, 2021). To prevent these negative consequences, too dominant partners need to be countered (Clapp, 2021).

However, not much research has gone into the special power position of the boundary spanner. It is crucial to clarify how boundary spanners impact the process by adding another dimension of power (Rossi et al, 2019). On the one hand, the task of a boundary spanner is to equally structure the playing field. However, on the other hand, they are a powerful player themselves too. This is because they are the ones who are in a position to make decisions, who to talk to, what to share, how to frame it, etc. The unique set of knowledge is a very valuable source of power (Turner et al, 2020). Utilising one person or one organisation for knowledge-brokering makes the use of that knowledge highly dependent on their personal preferences, connections, and skills (Kislov et al, 2017; Ansell & Gash, 2007). Considering the unique position that they have, it is easy for boundary spanners to abuse that position for power enhancement (Spekman, 1979). This scenario is often seen: attitudinal and cultural aversion are the main drivers of blockage (Conti et al, 2021). Boundary spanners can use different forms of power, both coercive and non-coercive (Spekman, 1979). The overly dependent position of the collaboration on these boundary spanners is thus problematic (Spekman, 1979). Boundary spanning is not a neutral activity, it contains a normative stance. After all, the boundary spanners can lead the project in one certain direction, by legitimising one specific course of action (Vilas-Boas et al, 2022). When taking this to the extreme, this can lead to lock-in and exclusion.

Power dynamics become especially visible in a diversity of complex contexts. The multitude of interacting agents in these environments shapes multiple different power dynamics and subsequently gives a lot of possibilities for changes and subtle nuances (Rossi et al, 2019). Powers develop among agents: they are hence not stable. Different forms of power are also seen to interact with each other: whereas boundary spanners mostly have symbolic or ideational power in the form of knowledge, other actors in the field might have material power, mostly through financial resources (Rossi et al, 2019). This can give a fluctuating dynamic. Especially when power changes become institutionalised, they can generate significant changes (Rossi et al, 2019).

To sum up, boundary spanners can have considerable power in a network, leading to one actor having disproportionately more power than others. From the literature, four characteristics were picked that signify power: decision-making power, knowledge-based power, dependency, and normative, steering power. These were chosen because they form a broad view of how an imbalanced power relationship influences the cooperation.

Information bottlenecks

Additionally, a boundary spanner can make the collaboration process more vulnerable by becoming the only person that can deal with all relevant knowledge. Instead of becoming an organisational capability, the knowledge remains stuck with one person.

This effect is strengthened in this case of information overload. The correct information is very important for a fully functioning organisation, as it is used for sense-making and making decisions (Schneider, 1987). However, the amount of information that needs to be dealt with is often overabundant, complex, diverse, vague, and originating from a turbulent environment. Our current times are particularly seen to be complex, challenging, and information-rich: we live in an information society (Pothos et al, 2021; Jackson & Farzaneh, 2012). Humans have bounded rationality, meaning that they can only process a limited amount of information (Jackson & Farzaneh, 2012). It is therefore impossible for a boundary spanner to deal with all information correctly, as this can be simply too much for one or a few persons (Schneider, 1987).

In an information rich environment, as state of information overload can be created: a state in which information cannot be used effectively anymore (Jackson & Farzaneh, 2012). This has multiple consequences. First, it may cause escalating confusion, as the correct information cannot be processed and remains 'stuck in the system.' Second, it might lead to integration issues and fragmentation in the implementation stage. Since it is unclear what the priorities and goals of the project are, it becomes difficult to act on them. Third, emotionality and personal needs override logic and the organisation's needs. To cope with these effects,

people and organisations might use strategies that limit effectiveness even more, such as minimising the information that needs to be processed, superstitions, or fixed, narrow practices (Schneider, 1987). Fourth, individuals might experience loss of control, being overwhelmed, or even health problems (Bawden & Robinson, 2009). Relatedly, job satisfaction and effectiveness tend to decrease (Bawden & Robinson, 2009). Practitioners on the ground have earlier hinted at and commented on these effects of information overload, they recognise it makes it both harder to make accurate decisions as to select the correct information (Guvun-Uslu et al, 2020). These difficulties were mostly stemming from unfamiliarity with their role as a boundary spanner.

Other factors, such as political views, personal preferences, and narrow attention can also be sources of information distortion (Schneider, 1987). In general, people suffer from numerous biases (Pothos et al, 2021). Meaning that people process information in unique ways, but these are not always the ways the sender wanted them to be processed. External factors, such as time constraints, might also pressure people in using heuristics and short-cuts (Jackson & Farzaneh, 2012). Not all of these heuristics are necessarily detrimental to decision-making quality, yet they do run a high risk of becoming detrimental when not used correctly (Bawden & Robinson, 2009).

Here, the following four characteristics are important: highly centralised knowledge, or knowledge described as 'stuck', information overload/feelings of being overwhelmed, loss of control/logic, and biases and heuristics. These characteristics all lead to an information bottleneck: a narrow point through which all information has to go.

Informal, personal relations

Further, although boundary spanners mean well, they may end up hindering the process. This could potentially happen when the personal relations with the people they have to work have become 'cold'. Acting in ways that are not aligned with relevant stakeholders in the process, or involving themselves in processes where they are not wanted, can cause such tensions (Neal et al, 2021). When they are actually unwanted or not well connected to the stakeholders, boundary spanners run the risk of not belonging to either of the parties (Kislov et al, 2017). Especially top-down boundary spanners are vulnerable to this weakness (Smink et al, 2015). It decreases trust and the willingness to cooperate between actors. Additionally, tensions might exist between the boundary spanner and other people taking up a leadership position in the cooperation. This might lead to increased transaction costs, team conflict, and fragmentation, thus decreasing project performance (Cao et al, 2021). In such distributed leadership structures, the different leaders should recognise each other as

leaders. Obtaining a successful project outcome requires them to collaborate (Mehra et al, 2006).

Broadly speaking, for a good personal relationship, it is important to be liked. People are likeable when they show a consistent range of positive social behaviours, resulting in a high fit between parties (Drescher, 2017). Because negotiations are necessarily an interpersonal interaction, personal characteristics play a major role in negotiations (Pulles & Hartman, 2017). For example, charismatic leaders are seen as more positive, likeable, and favourable than autocratic leaders (Lopez & Ensari, 2014). Likeability forms a social reward that can compensate for economic rewards. Likeability makes it more likely that actors will engage in collaboration (Pulles & Hartman, 2017). However, much of the research on likeability has been done on leaders or project managers, not specifically boundary spanners. Likeability often comes with informality: unregulated behaviour, such as spontaneous and casual interactions and personal affective ties (Innes et al, 2007). Informal relationships need to be distinguished from friendships: these are situated at a higher level (Kratzer et al, 2005).

Working together spurs informal relationships. Strikingly, collaborating in a working environment is a stronger predictor of forming some kind of social relationship than many other factors, such as sharing gender or religion (Yakubovich & Burg, 2019). Moreover, in formal collaborations, informal interactions arise almost automatically and necessarily (Yakubovich & Burg, 2019). Often, informality is seen as productive, yet, informality can also be a dangerous zone (Williams, 2011). The negative sides might even have more explanatory power than the positives, as negative information tends to stick better (Labianca & Brass, 2006).

How both parties view each other, or the personal relationship between people, thus impacts the process and the subsequential outcomes (Pulles & Hartman, 2017). On the one hand, the closer the relationships, the better learning and innovation (Holmes & Moir, 2007). Innovation is spurred by diverse social ties, as different sorts of information and resources become in reach (Fan & Stevenson, 2019). Informality moreover can help to overcome differences between firms and it can form a bridge between government and the public (Yata & Hurd, 2021; Innes et al, 2007). It furthermore promotes the formation of a team, which can complement and motivate each other to get the best results (Kratzer et al, 2005). The stronger a tie, the more a relationship becomes effective and cooperative, instead of merely instrumental (Oh et al, 2004). In sum, having the right types of social connections enhances people's abilities to use their other capacities (Oh et al, 2004).

On the other hand, positive informal relations could lead to unwanted side effects. Including but not limited to, are tensions with formal government, reduced legitimacy and importance, long-term uncertainty and ad hoc decisions, reduced equity, reduced managerial control, and other counterproductive workplace behaviours (Innes et al, 2007; De Menezes & Kelliher, 2017). Especially when informality means that there are fewer procedural moments for feedback and training, this might lower performance (De Menezes & Kelliher, 2017). Informality might reduce critical thinking, providing critique, and complete information acquisition, as maintaining good team relations becomes more important than delivering the best results (Fan & Stevenson, 2019; Kratzer et al, 2005). Additionally, the need for reciprocity might create an inefficient allocation of resources (Pullen & Hartman, 2017). The relationship between informality and productiveness is U-shaped: at first, the higher, the better the results. Yet, there is a counterpoint, at which a higher cohesiveness results in more negative outcomes. (Fan & Stevenson, 2019; Kratzer et al, 2005).

Moreover, friendly relationships always run the risk of 'going sour', which is even more likely for friendships (Morrison, 2005). On a personal level, negative relationships represent 'an enduring, recurring set of negative judgements, feelings and behavioural intentions toward another person, a negative person schema' (Labianca & Brass, 2006, p. 597). Research shows that people often have difficulties continuing to work with the person with whom the relationship has become negative (Morrison, 2005; Dillard and Fritz, 1995). Working with such a person for too long can even result in hostility.

Additionally, ethical issues exist. Friendly relations might develop into favouritism, whereby certain persons get special treatment over others. Indeed, women for example are seen to be offered fewer resources and advice at the office, because they belong to other social circles than the men who were in power (Oh et al, 2005). Other potential downsides are conflicts of interests, romantic relationships, and even abuse (Amjad et al, 2015).

Hence, boundary spanners are required to balance personal and professional relationships, managing both their information, power, and appearance wisely. To summarise, the following characteristics were picked to define informal, personal relations and their effects: obstructions to critical thinking, reciprocity, relations turning sour, and favouritism. These are all major consequences of informal relations in a negative way.

Performance evaluation

The performance and process of boundary spanning, in general, can be measured in various ways. For example, it is possible to look at costs, duration, efficiency, effectiveness, satisfaction, etc. In this thesis, performance will be measured in two ways. First, the objective

performance of the case studies is judged. Second, to broaden the results of this first method, the subjective performance satisfaction of different stakeholders is assessed.

To start, some objective qualities of the performance of the case studies are judged, namely time and cost over-runs, and what type of visible results are present. These are relatively easy to measure and will give an objective indication of how well a project has been doing.

Second, performance is defined as how well the individual stakeholders feel about the process and its outcomes, thus the subjective performance of a project, or the participant satisfaction. The focus on subjective performance is chosen to solve several issues that frequently hinder accurate performance measurement. Traditionally, PMS (performance management systems) were focused on quite narrow economic performances. Nowadays, more social, environmental and other qualitative goals are be incorporated as well (Asiaei & Bontis, 2019). Second, the different forms of data that have to be collected are often fragmented and incompatible. Third, the quality of the data and goals to be reached depends on the stakeholder: what is right for one, might be wrong for another (Taylor & Taylor, 2013; Schachter, 2010; Van Meerkerk & Edelenbos, 2018). Thus, obtaining objective, apolitical, neutral data is increasingly hard (Schachter, 2010). Fourth, due to the lengthy timelines, performance might change frequently (Koppenjan & Klijn, 2004). Subjective performance measurement in the form of satisfaction can pose a solution to these issues of objectivity, as it focuses on the perceptions of citizens and stakeholders (Schachter, 2010). Specifically, satisfaction is frequently used as a proxy for governance quality (Tsujinaka & Abe, 2016; Prochnow et al, 2020; Robertson & Choi, 2012). Citizen satisfaction is defined as the aggregate judgement of the citizen regarding the quality of governance (Bhuvana, 2020). Important features of this are trust, information quality, and usability (Bhuvana, 2020). This measure is not fully similar to service quality, but it is very comparable (Bhuvana, 2020). Therefore, participant satisfaction is measured in high trust, satisfaction with the quality of inclusion, and with useability/effectiveness.

Key points from the literature review

After this literature review, it has been established that public construction projects can be very complex. Nowadays, they are often managed according to the principles of networked governance: the stakeholders involved shape decisions together. Because working with stakeholders can create problems, boundary spanners are frequently used. These are people that mediate between several organisations, thus enhancing and improving trust, relations, and information. They establish the best results when they are competent themselves, supported by their management and organisation, and have a clear,

workable role definition. However, potential downsides exist too. First, because of their unique position in a network, they can have an overly powerful position. Second, selecting, translating, and communicating information by one person or organisation might create an information bottleneck, where information is left behind or altered according to personal bias. Third, personality and informal relations might obstruct critical thinking or might turn sour. These qualities potentially have a negative influence on both the objective and the subjective performance of a project. In the next section, these key variables will be operationalised in further detail.

Conceptual model

This research will explore whether and how the previously discussed potential downsides of boundary spanning work influence the performance results of construction projects. The research is double-edged. On the one hand, this will be exploratory, because it is currently unknown whether the negative effects exist. On the other hand, the selected variables are tried and tested following a deductive method. In the following few paragraphs, the findings from the literature review are operationalised.

In the table below, the relevant variables are listed, together with their definitions and characteristics. Per variable, four characteristics are mentioned. If the interviews show at least three of these characteristics, or something closely related, the presence of the variable can be confirmed. For the dependent variables, it goes that all three characteristics are checked.

Variable	Definition	Characteristics
Main topic		
Boundary spanner	People who operate within intra- and inter-sectoral collaborative environments, to promote better cooperation and work on common issues (Williams, 2011).	- Work on common issues/decrease fragmentation - Translate information - Improve trust and connections - Improve coordination
Potential negative effects – independent variables		
Power imbalance	One actor having disproportionately more power over the other than vice versa.	- Decision-making power - Power relating from knowledge - Dependency - Normative, steering power
Information bottleneck	One narrow point which all information has to go through.	- Highly centralised: Knowledge described as 'stuck' - Information overload/feelings of being overwhelmed - Loss of control/logic - Biases and heuristics
Informal, personal relations	Unregulated behaviour, such as spontaneous and casual interaction and personal affective ties (Innes et al, 2007)	- Obstructions to critical thinking - Reciprocity - Relations turning sour - Favouritism
Antecedents		
Individual competence	A set of knowledge or a mindset that is required to accurately fulfil a certain role (Khattak & Mustafa, 2019).	- Accurate understanding and technical skills - Social abilities - Enthusiasm and dedication - Experience

Organisational support	Empowerment and facilitative project management (van Meerkerk & Edelenbos, 2018)	- Facilitative management - Team (leader) support - Discretionary space - Formalisation
Role stressors	Uncertainty and overload of role definition (van Meerkerk & Edelenbos, 2020)	- Work overload - Uncertainty - Burnout - Impossibility to satisfy all needs
Performance - dependent variables		
Objective performance	Measurable qualities of how well the project has been doing.	- Time overruns - Cost overruns - Visible result
Participant satisfaction	How the stakeholders value and rate the project in effectiveness.	- High trust - Quality of inclusion - Useability/effectiveness

Table 1: operationalisation of the variables

Together, these variables lead to the following conceptual model:
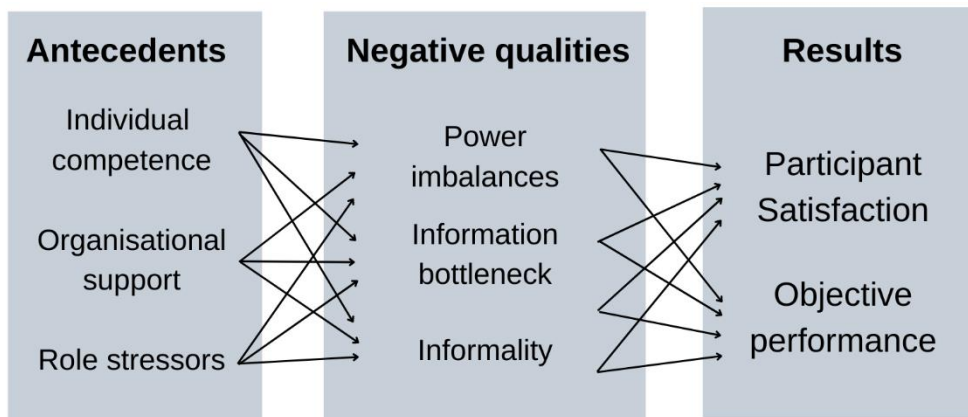
Figure 1: conceptual model

The factors within the two blocks might influence each other. For example, when someone is not very competent, many more things might act as role stressors than when someone is very competent. A similar phenomenon might be seen in the negative qualities block: informal relations can have an impact on the likeability of a boundary spanner. This is visually represented in the following models:

Figure 2: antecedents relations   &   Figure 3: negative qualities relations

From these models, the following hypotheses follow.

H1: When the antecedents are lacking or in a bad state, at least one of the negative qualities will prevail.

H2: One or a combination of the negative qualities will lower the satisfaction of the participants in the construction projects, and will lower the objective performance of the project.

Method

Given the lack of research into the topic, combining exploratory research with theory-heavy testable hypotheses was deemed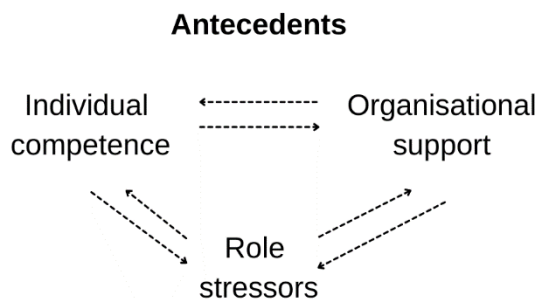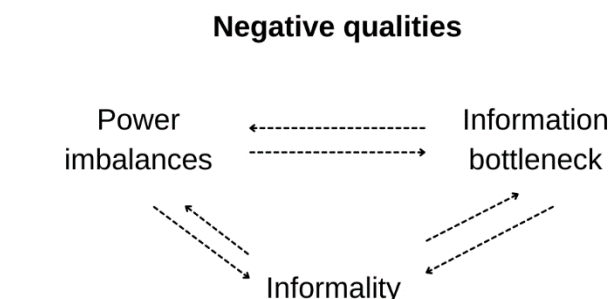 most useful. This thesis thus consists of a qualitative analysis of the above-defined variables, and will be conducted via a document analysis of the cases and a series of interviews with different relevant stakeholders from three case studies on construction projects in Amsterdam. Besides checking for these previously tested ideas, the study also allows for new insights to get in, which might be further explored in later research.

A comparative multiple case study design will be used. Although a clear definition is lacking, a case study is an intensive study of a certain unit (Jacobsen, 2002). This thesis uses multiple case studies for literal, embedded replication (Yin, 1998). A comparative multiple case study design is chosen for multiple reasons, as explained by Gustafsson (2017). First, working with multiple cases allows for them to be judged within and across situations. Comparison and contrasting them will give a better view of the phenomena studied and how they emerge. Second, it creates greater reliability and generalisability, as the results are grounded in more instances of empirical evidence. Third, it allows for wider theory-building and a broader perspective on the phenomena. What might be lost in depth from a single case study, is thus gained in broadness. Especially for a partially exploratory research like this one, keeping a broad overview of the possibilities is key. Thus, following the comparative study, the three cases will be compared and contrasted for broader themes and differences between each other, both in boundary-spanning styles and performance. In this thesis, three different case studies are used, to ensure to get a broad view of different cooperation styles in complex construction projects. They projects are all complex and challenging, yet each with a unique point of view. It will thus give a broad overview of very different, yet all major, construction projects.

The case studies are the quay development, the development of the University Quarter, and the development of the Gaasperdammertunnel and the Brasapark. These cases will be explored in more detail in the following chapter. The projects are all located within the construction culture of Amsterdam, yet all involve multiple parties and are each in a slightly different phase of the construction. Additionally, the researcher has personal affection for and links to these cases, making the design practically feasible. As they are all located in Amsterdam, where the researcher lives, some interviewees are part of the personal network of the researcher. Moreover, it is easier to visit people 'on site' in their work environment. The case studies will be explored from their first mentions onwards to their current state. Where necessary, history is added to provide a richer view of the case. Furthermore, the unit of analysis is the direct neighbourhood the project is situated in,

including all those acting in it, to allow for a local view. This design is chosen because it allows for a thorough analysis of how boundary spanners perform, and how the possible limitations and downsides are experienced by multiple different stakeholders in this process.

First, a document analysis will provide the introduction and context to the three cases. Documents from different sources will be selected to investigate the justifications, the context including the stakeholders, timeline, and performance evaluations of the projects. Documents will come from three sources: governmental institutions, involved companies or partners, and the news. News articles are mostly used to show the performance of the projects. Similar documents will be sought for all three cases. Different examples are strategic plans, project evaluations, participation minutes, etc. The news is used as a critical voice in the debate around the projects. Because of the dominant media logic, news articles might be skewed towards more shocking or negative news, yet it can give 'ordinary' people a voice and is therefore worthwhile (Bennett, 2009).

The participants will be selected from the three case studies, starting with a purposive sample which partially transcends into a snowballing sample. First, a stakeholder analysis will be made to determine who the stakeholders are in the three case studies. Second, these stakeholders will be contacted and interviewed via a semi-structured interview. Third, the interviewees will be asked for further recommendations for other relevant stakeholders, after which the process repeats itself. Following this method is supposed to give a broad and complete stakeholder selection, enabling a wide range of different views. Again, even though the method allows for variability, similar or comparable stakeholders will be sought for each case, to ensure comparability. The interviewees will be asked about their experiences with the above-explained concepts and how they view the performance outcomes in their respective construction projects. A full list of the interview topics and questions can be found in appendix A. The interviews will be audio-recorded and transcribed. Through its semi-structured format, the interviews are both deductive and inductive. They namely build both on existing theory and concepts, but also allow for new perspectives to be brought in. This method is thus very suitable for a partially exploratory research. Because of the delicate nature of the topic, the interviews will be anonymised, to ensure that people can give their honest opinions about other people in the project. To distinguish the opinions, only their broad function in a project will be named.

Next, the data from the interviews will be coded following a thematic analysis. Thematic analysis is a method for systematically identifying and organising themes across a data set (Braun & Clarke, 2012). Thematic analysis enables a researcher to logically structure themes across collective or shared meanings and experiences. It is a flexible

method that can be used to examine data in different ways. By focusing on abstracting different themes, this thematic analysis will be utilised to explore whether and if so, how the possible downsides of boundary-spanning work play a role, and under which circumstances. While coding, codes will be a mix of descriptive and interpretative codes (Braun & Clarke, 2012). Per variable, it will be checked whether it is mentioned by looking at the key words and sentences, which help to construct themes. The codes will then be pattern-matched to the existing knowledge, which is laid out in the theoretical framework (Yin, 1998). For each variable, three or four key characteristics were identified. For a variable to be present, two or three of those characteristics respectively should be mentioned in either the document analysis or in the interviews.

Last, the data from both the documents from the interviews is merged. Via pattern matching (Yin, 1998), the empirical results of the case studies will be compared and contrasted with the predicted theoretical patterns established earlier.

Case studies descriptions

The chosen case studies are all complex construction projects in the municipality of Amsterdam. First, a quick oversight of the case studies will be given. Second, their commonalities and their broader context will be explained. The case studies can also be found on the following map:
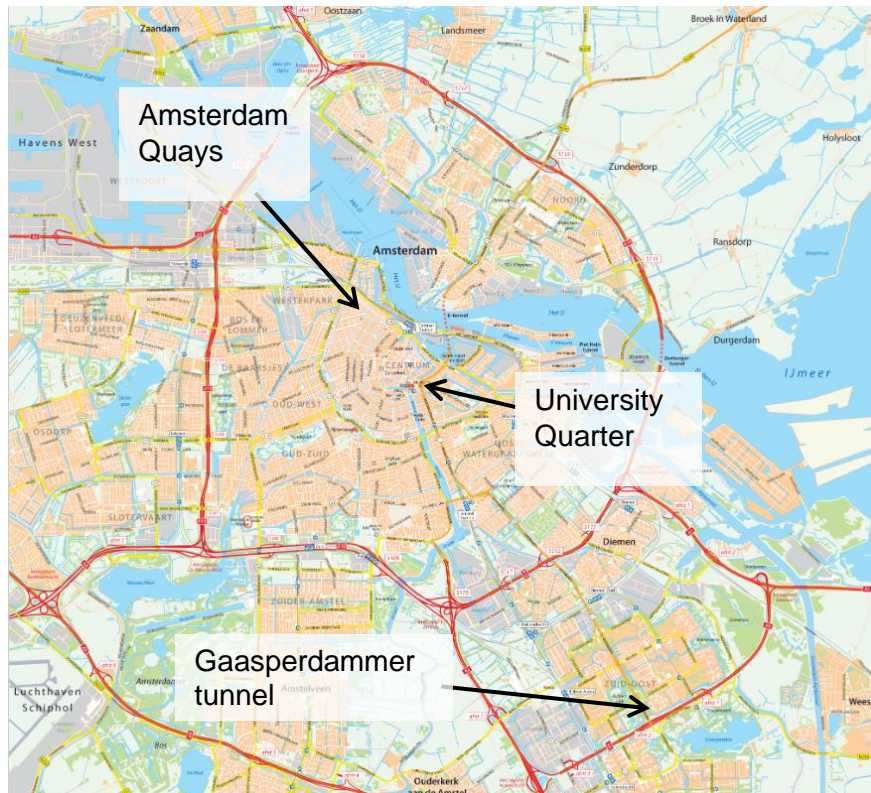
Figure 4: map Amsterdam

The first case is the redevelopment of the Amsterdam quays. Currently, the quays (kades) of Amsterdam are in a constantly deteriorating state. In the last few years, multiple quays have been sinking or collapsing, causing hazardous situations. For example, a quay collapsed in September 2020, causing damage to two buildings of the University of Amsterdam (Nationale Bouwgids, 2020). The quays are important because they often form major infrastructure in the city. In the upcoming 20 years, therefore, the municipality of Amsterdam wants to investigate, strengthen and/or renew 850 bridges and 200 kilometres of quays (Gemeente Amsterdam, 2020). The current rate at which this is happening has to be upgraded with a factor 20.

Second, the University Quarter. The University Quarter is about one square kilometre in the middle of the city centre which should become one of the main spatial points for the

University of Amsterdam. The University of Amsterdam is one of the two universities in Amsterdam, besides the VU (Vrije Universiteit), and has about 40.000 students (Universiteit van Amsterdam, 2022a). The university quarter currently already hosts, among others, the location Oudemanhuispoort and the Allard Pierson Museum. This is one of the four clusters the University has (Universiteit van Amsterdam, 2022b). The construction started in 2019 (Strikkers & Kerklaan, 2019). In 2025, it will form the new basis for the Faculty of Humanities, together with other UvA-broad facilities such as the university library, a theatre, museums, and a boardroom (Universiteit van Amsterdam, 2022c).

Third, the Gaasperdammertunnel and the subsequent Brasapark. The Gaasperdammertunnel is a tunnel through Amsterdam Zuidoost of 3 kilometres, making it the longest tunnel in the Netherlands. It is part of the highway A9 in the trajectory of Holendrecht-Diemen (Rijkswaterstaat, 2022). Above the tunnel, a park, the Brasapark, is being developed. This is a big park connecting the Nelson Mandelapark to the Gaasperplaspark.

All three cases have in common that they take place in the city of Amsterdam. In all three projects, the municipality is closely involved. Amsterdam traditionally has a culture of (citizen) participation, especially bottom-up involvement (Niitamo, 2020). It is seen as a matter-of-fact, self-evident part of the planner's work to involve several parties, although the type and content of participation can be under discussion (Niitamo, 2020). For example, experts are often given more importance than citizens. All three cases, therefore, involve extensive stakeholder participation, meaning that various parties, ranging from contractors to citizens, are involved. In Amsterdam, stakeholders are often tried to be involved early on in the process, to prevent later disturbances. All projects are similar in scope: not only do they impact their direct region and neighbours, but often impact the entire infrastructure of the city.

The cases differ concerning their progress. The Gaasperdammertunnel is relatively far in its development, as the tunnel has been opened. However, the Brasapark, on top of the tunnel, is in full construction. The other two projects are more in a continuous state. The quay development is in full swing, yet needs to be upgraded, and the first stage of the University Quarter development has just been completed with a Strategic Masterplan. Thus, the cases can show how participation changes through time and development stages.

In this chapter, a document analysis is done to get a broad context of the three case studies. For each case, four aspects are analysed: the justifications for the project, the stakeholders, the timeline, and the performance evaluations. These are found in documents from the government, relevant partners, and the news. It offers more insight for the researcher and reader and provides a good background for the interviews.

The Amsterdam quays

Justifications: The redevelopment of the Amsterdam Quays is very necessary, as the quays have been deteriorating. Multiple factors have caused the bad state of the quays. First, almost all were built hundreds of years ago and are thus not designed for the intense, modern use, which includes very frequent and heavy transport. Second, the quays have not been maintained for a considerable time: many of them are owned by third parties, not by a government. In theory, the third parties are responsible for the maintenance of the quays, yet often have failed to do so. The work that has been done was mostly 'reactive', meaning that reparatory work only happened after an inspection showed that the quay had to be replaced or after it had been damaged (Gemeente Amsterdam, 2020). As problems are rapidly increasing, the municipality is seeing the relevance of restoring the quays. Therefore, they try to have a more proactive and structured approach, based on monitoring and research (Gemeente Amsterdam, 2019). For this, they have freed up millions of euros and created a partnership (Kade 2.020) to rebuild the quays. The municipality realises that it is crucial to have good communication with the citizens and entrepreneurs for a successful realisation of the project (Gemeente Amsterdam, 2019). Hence, they have stimulated the use of the private market, comprising various actors such as engineering companies, architects, deliverers, knowledge institutions, innovative start-ups, etc. To manage all these different efforts, they want to implement one central directing agency which can oversee the coordination over and between the different steps in the process (Gemeente Amsterdam, 2020).

Stakeholders & timeline: Several (partially overlapping) partnerships exist between different actors. First, Kade 2.020 was established in 2020. In 2019, the municipality concluded that traditional methods of quay renewal would not be efficient and timely enough (kade2020, 2022). Commission Cloo analysed the situation and concluded things had to be sped up by a factor 20 (Gemeente Amsterdam, 2020a). Therefore, they initiated a competition in which different companies and groups could present a proposal for the renewal of the quays. This plan should stretch beyond one specific project but should apply

to the multi-annual programmatic character of the quay renewal (Gemeente Amsterdam, 2020). Three different consortia, associations of multiple private companies, were chosen to collectively work on quay renewal. This group forms Kade2.020. The team that is working on the project is, in their own words, 'multidisciplinary and brings together theoretical and practical technical knowledge, innovation expertise and implementation capacity' (kade2020, 2022).

Currently, they are in the transition from phase 1 to phase 2 of the project: from research and setting up the ideal solution, to implementing a pilot project. Two other groups working on quays exist as well, which were established in similar ways. They build on the research that was started in 2017, in the plan 'future-proof quays'. Second, several SOK agreements exist. These are cooperation agreements and are similar to a framework agreement (raamovereenkomst) as meant in the Public Procurement Act (aanbestedingswet) (Gemeente Amsterdam, 2020). Specifically, it means that there is intense cooperation between the client and the contractor(s). Tenders can be hosted through a pilot/experimental zone, a contest, or an innovation partnership (IPK). The latter are European tendering procedures. A few examples are SOK Kademakers, SOK ingenieursdiensten, SOK Deformatiemetingen, and SOK Veiligheidsmaatregelen. Third, innovation contracts combine different parties from the triple helix: government – market – knowledge institutes. One specific one is the Innovation Partnership Quaywalls (Innovatiepartnerschap Kademuren: IPK). Parties from the Triple Helix Model have also combined themselves in four different living labs, where solutions are tested through co-creation and experiments (Gemeente Amsterdam, 2020) SBIR (Small Business Innovation Research) is another specific complement to the Triple Helix Model.

Generally, it takes time till these cooperation agreements and other joint production agreements are established properly. Thus, there might be an 'interim agency' that functions as its replacement for 1 to 2.5 years (Gemeente Amsterdam, 2020).

Additionally, plenty of actors are not concluded in direct talks but are relevant to the project. Other stakeholders are for example truck drivers, waste management services, Waternet, emergency services, police, touring cars, etc, and different municipal programs, such as Autoluw, Luchtkwaliteit, and Programma Varen (Gemeente Amsterdam, 2019). The program Quay and Bridge Development (Bruggen en Kades) actively cooperates with all of these (Gemeente Amsterdam, 2022). A full stakeholder analysis can be found in appendix B. Moreover, there are different actors within the actors in the partnership. For example, in the municipality, the alderman, an advisory council, and different project leaders all have a say in

the project. Last, knowledge exchange between programs within the municipality and with other municipalities also happens regularly, for example with the network partnership AMROR, between Amsterdam, Rijkswaterstaat, and Rotterdam.

As construction will likely cause significant hindrances to these groups, it is important to include them as much as possible in the process (Gemeente Amsterdam, 2019). Thus, it is the municipality's goal to not only consult inhabitants, users, and visitors but that they can also have a say in how the process of quay development should happen. In the municipality's plan, consulting the neighbours and other stakeholders happens most explicitly in step 5 of the plan, which is called 'weighing the measures', in which their process and effects are taken into consideration. Step 7, to inform and communicate, is also meant to inform citizen stakeholders about the decisions(s) that is/are being taken. Practically, the municipality has been using resident meetings, information letters, digital newsletters, open hours, visits to the location, municipal websites, and social media. Additionally, they will organise open events, for example on archaeological findings or milestone celebrations.

To manage participation effectively, different scenarios are presented to the residents and those interested. This is meant to simplify the project, but offers less freedom. The scenarios are always built on a fixed design: the Puccini-method on which different varieties can be built (Gemeente Amsterdam, 2018). This is the standard procedure to shape the Amsterdam streets. It integrates different interests and provides a framework for design. Residents can express their preference for these different varieties. The municipality hopes that this forms a good middle ground between participation and speed (Gemeente Amsterdam, 2020b). The different options can be very modern and experimental. A new project is for example the 'Green Quays'. These are quays that are also suitable for plant growth and animal housing. For example bats, birds and insects can live in the quay walls.

Especially for those private institutions or people who own a part of the quay wall, the renewal can be challenging. After the collapse of the Grimburgwal in 2020, the topic has been brought to the centre of attention. The municipality is trying to support them, but is also looking at how to force owners to restore their quays (At5, 2021a).

A summarised timeline, extracted from the documents and descriptions above can be found below in figure 1. For a more extensive timeline made by the municipality, check appendix B.2.
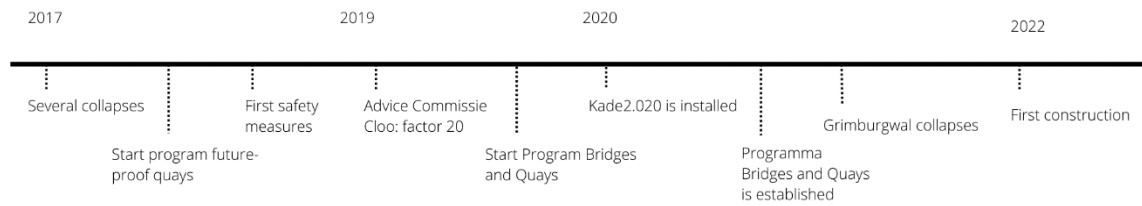
2017 2019 2020 2022

Several collapses | First safety measures | Advice Commissie Cloo: factor 20 | Kade2.020 is installed | Grimburgwal collapses | First construction

Start program future-proof quays | Start Program Bridges and Quays | Programma Bridges and Quays is established

Figure 5: timeline quay development

Performance evaluations: Yet, the efforts mentioned above are not enough. In the current tempo, it would last 100 more years before the entire project is finished (De Vries, 2021). In the previous years, 500 meters of quay development have been realised. This should go up to a standard of 2 kilometres per year, with a temporary peak in the upcoming few years (Gemeente Amsterdam, 2020b). Throughout the project, protest seems moderate. There have been instances of residents protesting the arrival of so-called 'dam walls': constructions to uphold failing quay walls. Residents often think the dam walls are 'hideous and completely unnecessary (At5/NH Amsterdam, 2021). Furthermore, residents are disappointed in the speed and measures: it feels as if they are 'living in a sinking ship' (At5, 2021b). They also question why heavy traffic has not been forbidden sooner. In general, most stakeholders recognise that safety goes above everything (Miltenburg, 2021). Yet the way how to obtain safety again differs per stakeholder.

The municipality itself recognises that 'the start has been made', but that the approach should become structurally embedded in the municipality's finances and work apparatus, and needs to be sped up (Gemeente Amsterdam, 2021g).

Furthermore, the municipality is aware of the need for good relations with the residents and users of the area. For example, they organise participation evenings and events for residents and business people, but they also hold a bi-yearly PBK Festival, focused on serious learning and informal entertainment. This is meant to promote an open and friendly atmosphere among the employees (Gemeente Amsterdam, 2021d).

University Quarter

Justifications: The University Quarter is redeveloped because the area needs an upgrade, the university needs new buildings and the university wants to become more future-proof with respect to sustainability, image and growth of the university. It currently hosts a variety of UvA (University of Amsterdam) buildings and functions, such as the university theatre, Oudemanhuispoort for lectures and tutorials, and the Allard Pierson museum. Next to that, it

also hosts a range of other functions accessible to the residents and tourists visiting the area. In the new plans, the area for example also hosts the main university library and the offices of the board of directors of the UvA, both things are currently in other parts of the city. The main goals are twofold. On the one hand, the UvA wants to create four big campuses in the city, instead of buildings spread throughout the entire city. On the other hand, they want to create a synergy between the city and university (Gemeente Amsterdam, 2021c). This intense use makes it a very complex location. One of the main challenges is the infrastructure and logistics of the project and the new campus. As the University Quarter is located in the middle of the city centre, which is already overpopulated. The arrival of the new library and faculty will put extra pressure on the urban space. This overuse is currently damaging the area: the roads are generally quite small and the waterways are potentially suffering from failing quays (Van Amstel, 2021). To solve the challenges that come with an even busier area, the municipality and the UvA try to work innovatively with the different stakeholders involved.

Stakeholders & timeline: For a very long time, the area has been in the interest of the UvA, with thoughts about development already starting in the 70s. In figure 2, a timeline is presented.
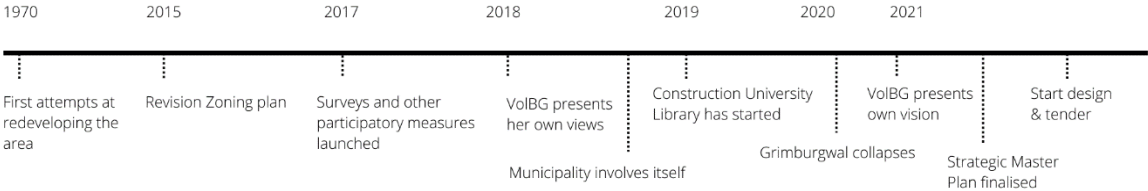
Figure 6: time-line development University Quarter

The University of Amsterdam expresses that the campus is not just a place for studying, it is a meeting space as well. At the campus, students, employees, entrepreneurs, cultural facilities, hospitality, shop owners, tourism workers, and residents are able to meet each other (Amsterdam, 2022a). A stakeholder analysis by the municipality can be found in appendix C, and is accompanied by an explanation of the project organisation of the UvA in appendix D. To combine all these different stakeholders and unite their goals and wishes as best as possible in one plan, combined with a focus on the historical value of the campus, a Strategic Masterplan has been designed. This establishes the University Quarter as a mix of 'living, working, studying, researching, retail, and hospitality' (Gemeente Amsterdam, 2021c).

In designing the campus, several (f)actors had to be taken into account. First, the municipality and its diverse range of guidelines, ranging from their vision of the inner city of Amsterdam, to Amsterdam Autoluw, to the quay development (Gemeente Amsterdam, 2021c). Second, the university itself, especially the Faculty of Humanities, thus mostly students and lecturers. Third, residents, employees, users, retail, and other hospitality in the area. These include organisations related to the university, such as university radio VoxPop, but also other stakeholders that are not affiliated with the UvA, such as de supermarket Spar City and café the Jaren. Other stakeholders are designated local traffic organisations: ambulances, waste collectors, and others. Last, part of the buildings is owned by housing corporation de Key (Gemeente Amsterdam, 2021c). Similar to the quays, there are different relevant persons within the stakeholders: in the municipality, different people work on the matter, for example.

The university and municipality of Amsterdam held several meetings with relevant stakeholders and used other participatory methods to develop the campus. For example, students and staff of the university could give their advice on the location of the university library via an online survey in 2017. Further on in the process, several open meetings, 1-on-1 conversations, and other online surveys were used, among other things. More innovative methods are also used. In 2019, a city walk around the campus was organised, after which participants could experiment with designing the streets themselves (Wolthekker, 2019a). In 2021, the UvA even launched a special course, 'Placemaking: University Quarter', for those students who wanted to participate in the process (Universiteit van Amsterdam, 2020b). The input of stakeholders was eventually developed into six core themes that should guide the construction process and were put in the strategic plan. This was not the end of the participation process: participation remains important throughout the entire process. An example of this is how the construction project is shaped, practically seen. To minimize hindrance for the residents, the builders start at 8 instead of 7, builders are urged to come by public transport or bike, supplies get delivered via the canals, and innovative building ways which cause less noise pollution are used (Wolthekker, 2019b). Next, a contest will be held to determine which architect and design will be implemented for BG3. This jury will consist of different stakeholders, under the leadership of an independent external chairperson.

Performance evaluations: Despite participation efforts, the project has thus far not been universally accepted. Residents of the area have expressed their dissatisfaction with the UvA and its proceedings. They do not feel heard, nor taken seriously (van der Hee, 2017). Residents are afraid that the infrastructure in the area is not able to handle the many students who will be using the campus, and that these groups of students will cause

nuisance to the neighbourhood (Timmerman, 2019). They also fear that public space is taken away from them and that social safety will deter (Bianchi, 2021). As a response, VOLBG, the residents' committee of the Binnengasthuis, the main residential building in the University Quarter, has presented its vision. Their plan was designed by a design agency with more respect to the wishes and needs of the residents (Wolthekker, 2021a). Points of contention are among others the removal of the 'iconic' Theo Bosch pavilion, the strong focus on study spaces, and the lack of 'green': plants, trees, etc (Wolthekker, 2021b). As the UvA is still determined to continue the demolition of the pavilion, the residents have gone to the municipality to obstruct the process (Wolthekker, 2021a). Other groups, such as cultural institutions and architects, have also criticised the project. They argue that it would damage or even destroy monumental buildings (van der Hee, 2017), and for example protested the new campus by nominating buildings as monuments, making it impossible to demolish them (Wolthekker, 2019c). Third, although the plans have been approved by all relevant municipal audit institutions, some experts remain sceptical about their feasibility and costs (Wolthekker, 2018).

Gaasperdammertunnel & the Brasapark

Justifications: The development of the Gaasperdammertunnel was built to enlarge the capacity of the Gaasperdammerweg and to lessen noise pollution for the neighbourhoods surrounding the tunnel. This was necessary, as Amsterdam Zuidoost is becoming a very important area for Amsterdam and its surroundings. Amsterdam Zuidoost has about 90.000 residents, and hosts important amenities, such as the Ziggo Dome and the Amsterdam ArenA, large offices of the ING and ABN-Amro, and the hospital AMC. Reachability is thus very important for the area. Second, the neighbourhood is still growing and being upgraded (Gemeente Amsterdam, 2020c; Dubbeld, 2022). Additionally, the tunnel acts as a dyke against the river the Gaasp (Bezoekerscentrum SAA, 2014). Especially in times of climate change and uncertainty concerning water safety, the tunnel might be a useful beacon against the water. The project was very influential. Minister Cora van Nieuwenhuizen called it 'the biggest road construction project of the last 10 years' (Rijkswaterstaat, 2020b). Over 10.620 people worked on the project for the past 7 years (Bezoekerscentrum SAA, 2021).

Stakeholders & timeline: The project concerns various different stakeholders. Internally within Rijkswaterstaat (RWS) and the municipality, lots of different people worked on the tunnel. Project teams that were involved were, among others, for the construction, for safety, and for training. Other official agencies involved were Schiphol, ArenaPoort, Ajax, etc. Residents, local politics, and other more societal organisations like Metropolis Zuidoost were

also involved. Then, a range of construction companies were involved. The most prevalent of these are the three operating in the consortium: Fluor, Heijmans BV, and Ballast-Nedam. Appendix E provides a stakeholder analysis of the project.

The tunnel was built in multiple phases. In 2013, the project was started, by (re)moving cables and pipes. At the end of 2016, the actual construction process of the tunnel was started. In 2017, the tunnel itself was finished. This allowed the construction of the roof starting in 2018 (Bezoekerscentrum Rijkswaterstaat, n.d. a). The tunnel opened in 2020 in four consecutive phases (Bezoekerscentrum Rijkswaterstaat, 2019). The construction formed a collaboration between Rijkswaterstaat (the ministry of water and infrastructure) and IXAS, a contractor collaboration. This consisted of different people from Heijmans, Ballast Nedam, Fluor, and 3i, all companies related to construction (Rijkswaterstaat, 2020). Till 2038, IXAS is responsible for the maintenance of the tunnel (Ballast-Neudam, n.d.). The cooperation takes the form of a DBFM contract, specifying the responsibilities and liabilities of each partner, but still allowing space to move (COB, 2017). In a visual timeline, the development of the tunnel roughly looks as described in figure 3.
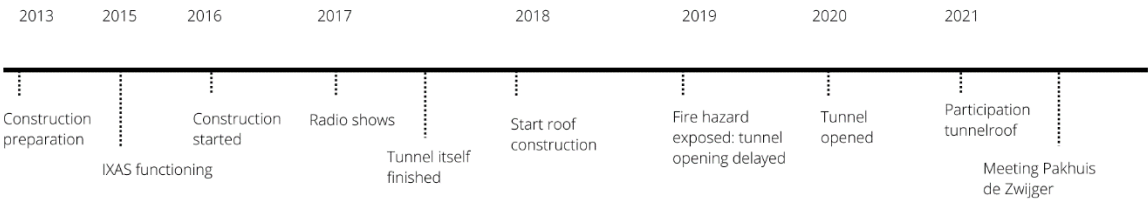
Figure 7: Timeline Gaasperdammertunnel & Brasapark

The remarkable thing about this tunnel is that it is more than the tunnel itself. The roof of the tunnel is used for multiple purposes. For example, it is used as a solar park, where 5246 solar panels create energy for the residents of Amsterdam Zuidoost. Additionally, a park is being built on top of the tunnel. The design of the park was co-created by the municipality of Amsterdam, Rijkswaterstaat, and involved residents (Rijkswaterstaat, 2020). It was coordinated by Ruwan Aluvihare, a landscape architect of the municipality of Amsterdam, specifically the 'dienst Ruimtelijke Ordening', the service Spatial Planning (Bezoekerscentrum Rijkswaterstaat, n.d.-b). This collaboration was described as very constructive and positive (Ballast-Neudam, 2020).

In the process, stakeholder participation was very important. Stakeholder participation was among others organised via PLYGRND.city. PLYGRND.city is an organisation meant to

facilitate and stimulate participation in city development. First, a frequently used tool was information meetings. Even during the Covid-19 pandemic, these continued online (Rijkswaterstaat, 2020e). In one of these online meetings, 300 people participated from their own homes. For the park, for example, different scenarios were shown, from which the residents could pick their favourites, similar to the earlier mentioned Puccini method (Bezoekerscentrum Rijkswaterstaat, 2021). Alternatively, PLYGRND.city also hosted an information evening in Pakhuis de Zwijger. During this meeting, those interested could think about the design of the roof of the tunnel, through breakout rooms and a menti-meter (Pakhuis de Zwijger, 2021). The results from this menti-meter were used by the project manager to create a direction. Next, Rijkswaterstaat also published a series of photos of the construction process online, to allow those interested to have a 'digital look into the kitchen' (Rijkswaterstaat, 2020e). A special information centre, Bezoekerscentrum SAA (Schiphol, Amsterdam, Almere) was set up to provide one fixed spot for all relevant information. On their website, written information, but also produce informational videos can be found. Second, more practical cooperation was also used. Children of a school in Zuidoost were actively involved in the project, by allowing them to plant flower seeds in an incline near the construction project, after they received a class on how flowers grow from Rijkswaterstaat (Bezoekerscentrum Rijkswaterstaat, 2016). PLYGRND.city involved the neighbourhood by actively going into the neighbourhoods, and speaking to passers-by about the park (Gemeente Amsterdam, 2021d). Furthermore, the end of the project was celebrated with the residents during the 'goodbye A9 day', which was filled with music, workshops, and other forms of entertainment (Bezoekerscentrum Rijkswaterstaat, 2021).

The contractor tried to support the surrounding residents and to minimise nuisance. For example, construction only happened at set times, they did interviews on the local radio stations to enable easy information collection, started a homework helping centre for students in the neighbourhood, and even offered temporary housing to people who experienced noise pollution from construction (Postma, n.d.).

Now the basic construction of the tunnel and park is done, a collective of citizens, supported by the municipality, concerns itself with the further interpretation of the park (Gemeente Amsterdam, 2021a). Rijkswaterstaat is not involved anymore. The collective of so-called 'Parkmakers' exists of residents and neighbourhood organisations. Divided into three working groups, they decide on how the park will be designed and used. Residents are also asked to deliver input on the name of the park, first by asking for new names, and later via an online survey with a fixed set of possible names (Gemeente Amsterdam, 2021d).

Performance evaluations: Residents express that they are satisfied with the end result of the park, but that it was difficult to live next to a construction project for the past 7 years. Nearly 30.000 residents could potentially experience nuisance. A working group, Aktie Gezondheid Gaasperdammerweg, was started to unite their interests into one substantial interest group. Other collectives, such as Zuidoost City, were also involved in the project. The residents furthermore highlight the importance of a participation project (Bezoekerscentrum SAA, 2022).

Interviews – results

In total, 27 interviews were done. In 16 of these cases, interviewees were contacted through an direct email or LinkedIn messages, 11 interviewees were contacted through the snowballing method. Most stakeholders from the three case studies were contacted, but not everyone responded. About a 100 people were contacted, from which 16 responded. 6 were interviewed in person, 17 interviews were held online via zoom/teams, and 3 interviews were held over the phone. One interviewee responded in writing due to scheduling issues. For each of the three cases, 9 interviews were conducted. A full list of interviewees can be found in appendix F. Some of their exemplary quotes can be found in appendix G.

17 of the respondents exhibited boundary-spanning qualities, which is quite a remarkably high number. They saw themselves as 'spanning bridges', 'being a connector', 'working with several organisations to connect them', etc. Only 10 of the respondents were primarily involved with their own interests. Boundary-spanning positions were found in project managers, environment managers, technical managers, contract managers, project leaders, delegated clients, and executive managers. This is in line with the importance of good stakeholder management as seen in the documents. Other respondents were from residents, technical staff, students (active in participatory councils), monumental care, and municipality workers. Despite contacting similar stakeholders per case study, different sorts of stakeholders were interviewed per case due to different response rates,. It is therefore harder to compare the three cases accurately, but the broad span of different functions also adds to the completeness of the picture painted. This is further discussed within the limitations. The interviews were tailored to either boundary spanners, or non-boundary spanners. Due to time constraints, not every interview was able to discuss all topics at length. However, during each interview, all relevant topics were addressed. Transcripts of all or specific interviews can be requested at the researcher.

First, nearly all interviewees view their project as a complex project. Three respondents specifically use the term complex, or complexity, others point at the large numbers of stakeholders, the different interests, its vulnerability to changes, the many subparts of the project, and the lack of central focus. Furthermore, they made several statements confirming what has been stated in the literature review: because of the dynamically moving actors, it is sometimes hard to keep up with reality. For example, the delegated client for the quays says he has never seen so many different stakeholders in one project, as is also hinted in the document analysis. This makes it harder for him to understand who to contact, and who is doing what. One interesting comment about the complexity of the development of the quays was made by a contract manager: he states that

not all complex situations are really complex: complexity is made by humans. It feels good to be able to say that a project is complex, according to him. Contrary to this side note, the majority of interviewees seemed genuinely overwhelmed by the sheer size and scope of the projects they were working on. The complexity of the projects is thus not disputed. One interviewee, an integral execution manager of IXAS in the Gaasperdammertunnel took the following conclusion from this: 'the more complexity, the more risks, the more cooperation is needed.'

The integral execution manager of IXAS was not the only one who expressed this. Previously to the current structure, as 3 interviewees explained, management was often simplified and structured top-down: the client gave money and an assignment, the contractor had to build this assignment. However, this construction does not work for complex projects. Therefore, the three projects under inspection here have adopted the IPM method. This method was designed by Rijkswaterstaat, which is the agency for infrastructure and water management in the Netherlands. In the words of Rijkswaterstaat, this set-up is meant to optimize internal and external cooperation. Projects are being executed by an integral project team, existing out of five different roles: project management, project control, environment management, technical management, and contract management (Rijkswaterstaat, n.d.). This development is in line with the views on participation: the policy documents by the municipality all mentioned the importance of stakeholder management and participation.

Some of these roles, alongside a multitude of other functions, were interviewed for this thesis. In the interviews, these roles, expressed that they had boundary-spanning qualities. 5 respondents from all three case studies spoke about "decreasing fragmentation", "keeping the organisation together", "getting out of the fragmented organisation". 12 others used different terms, but all expressed that their central goal was to connect different stakeholders. This was not always successful: one stakeholder of the University Quarter mentioned that the project was too fragmentised, even though that people did attempt to create a bond. Four respondents mentioned that they kept knowledge in the organisation, and were responsible for spreading knowledge. Nearly all noticed they had a role in improving trust. This will be elaborated on more thoroughly later. Improving coordination was only mentioned implicitly. For example, one mediator from the University Quarter saw cooperation as a gift for a project, as he saw it as stimulating results. Similarly, an interviewee from the Gaasperdammertunnel mentioned that one should focus on connections and working together towards a grander goal, instead of focusing on conflict.

However, not everyone recognised boundary-spanners, or boundary-spanning qualities in the people they had to work with. One person in the Gaasperdammertunnel-development could not pinpoint someone specific with these qualities, but also did not see it as having added value. In contrast, four people from the quay development explicitly expressed that they missed someone with boundary-spanning/mediating qualities in their project. The first two were both employed at one of the contractors. In the project, they miss someone from the municipality, or from another organisation, who mediates between and connects different organisations. Expressing further, they think a clear vision and clear steering is missing due to this lack of guidance. Because many people only work on the project for a short amount of time, knowledge is lost relatively easily, and it is hard to form real connections with other stakeholders in the project. This is corroborated by two respondents from the technical engineering firm of the municipality. They also miss a central connection. According to them, this can partially be blamed on the vast scale and timeline of the project: in only a year's time, the project grew to 350 FTE. These four interviewees see the solution in a new organ in the structure: a team of people to mediate between all different stakeholders. However, it is not so that boundary spanners were not at all present in this case: one member from the technical staff clearly recognised boundary spanning qualities in his technical manager, as well as that one project leader of the measuring agency described himself as having boundary spanning qualities, but only for his specific project and task.

In the other two projects, boundary spanners were in general recognised, be it on smaller scales. Many boundary spanners operated within a few teams or with multiple stakeholders, but do not work with every stakeholder possibly involved. Because three of the four characteristics, working on common issues/decrease fragmentation, translating information, and improving trust, came forward, it can be concluded that boundary spanners were present in each of these cases. Below are the results for their possible negative effects. This is explained per predefined variable. To structure the research, each section starts with a table, in which the four characteristics of the variable are named, and explained whether they are present. This is done by showing the amount of times they were mentioned by the total number of interviewees, including key words. The table is finished with a quick conclusion.

Power

Characteristic	Amount	Key words	Confirmed
Decision-making power	Quays: 4/9 University Quarter: 6/9	'I just organise'(QS*, BS**) 'decide on the	Yes. Stakeholders from all three projects clearly see

	Gaasperdammert.: 3/9 Total: 13	decision' (UQ, BS) 'flat organisation' (UQ, BS) 'power is seen as a given' (UQ, ST)	that boundary spanners can make decisions, but think that this power is a blind spot for boundary spanners. Boundary spanners themselves only recognise their 'influence' on that decisions need to be made.
Power relating from knowledge	Quays: 0 University Quarter: 0 Gaasperdammert.: 0 Total: 0		No. This was not mentioned by any of the participants.
Dependency	Quays: 1/1 University Quarter: 3/5 Gaasperdammert.: 1/5 Total: 6	'can skip a group, have to appeal the boundary spanner' (UQ, ST) 'power play' (GT, ST) 'key figure that cannot be avoided' (GT, ST) 'Determining factor' (QS, ST)	This question was mostly answered by stakeholders, not boundary spanners. It can be seen that most of the stakeholders acknowledge that they are dependent on the boundary spanner and what they decide.
Normative, steering power	Quays: 3/9 University Quarter: 5/9 Gaasperdammert.: 4/9 Total: 12	'Define the process' (GT, ST) 'Created own plans' (UQ, ST) 'Gave his own opinion and changed the course' (UQ, ST)	Again, most stakeholders recognise the ability of stakeholders to steer the process into a certain direction. Only limited boundary spanners recognise this.

Table 2: power - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

The results in table 2 show that from the four predefined characteristics, decision-making power, dependency, and normative, steering power are all present in the cases. Power relating from knowledge is not mentioned often, or at least not explicitly. Thus, a power balance can be seen. However, there is a difference between how boundary spanners and stakeholders view this. For example, 9 boundary spanners acknowledged that they have influence, but not that they have power, whereas only 3 boundary spanners recognised that they have 'power'. The distinction can be found in the fact that they are not the ones who ultimately make the decision, but that they can influence how the decision is being made: with what information, which stakeholders are heard, etc. One boundary spanner admits that

they have the power to get a decision made, but not to make a decision. 4 boundary spanners express that the power or influence they have is never absolute: they always have to work together with other people. Therefore, most see their opinion as just one of many, and despite being taken seriously, they cannot expect all their wishes to be granted. This is similar in all three case studies.

Stakeholders see boundary spanners as having more power than they, and do use the word 'power' on 9 occasions to describe it. For example, a safety expert in the Gaasperdammertunnel expressed that she was surprised that the project organisation seemed to have an interest of their own. Similarly, during discussions with stakeholders in the University Quarter, a participant noticed that the facilitator/boundary-spanner at some point gave their opinion and tried to steer the process. This view on this boundary spanner was confirmed by another participant, who also had the feeling that the boundary spanner had strong opinions of their own, rather than listen to them as stakeholders. Yet another instance of 'power play' was in the case of the university quarter, when one of the boundary spanners decided to 'skip a group'. Words that are often used to describe boundary-spanning management are things like: 'a more powerful player than others', 'a key player', 'a driver in the process', etc.

Information bottleneck

Characteristics	Amount	Key words	Confirmed
- Highly centralised: knowledge described as 'stuck'	Quays: 7/9 University Q.: 7/9 Gaasperdammert.: 6/9	'not always notified' (GS*, ST**) 'not honestly shared' (UQ. BS). 'no correct transfer (UQ, ST). 'benefit from secrecy' (UQ, BS).	Yes. Both stakeholders as boundary spanners recognised that knowledge sometimes gets stuck and is not communicated honestly. However, this is not only a matter of boundary spanners, but of stakeholders not wanting to share information as well.
- Information overload/feelings of being overwhelmed	Quays: 8/9 University Q.: 7/9 Gaasperdammert: 7/9	'Can never be an expert' 'overwhelmed' (QS, BS) 'misunderstand' (UQ, BS). 'I've never seen such a mess' (QS, BS) 'absolutely	Nearly all people mentioned that they suffer from information overload. This was strongest in the Quay Development.

		impossible to understand everything' (QS, BS)	
Loss of control/logic	Quays: 0 University Q.: 0 Gaasperdammert.: 0		Not seen or mentioned explicitly.
Biases and heuristics	Quays: 1/9 University Q.: 2.9 Gaasperdammert.: 5.9	'Need to use tricks' (GT, BS). 'Words can get twisted' (GT, ST)	This was seen by only a view people. First, boundary spanners felt as if they had to use tricks. However, stakeholders felt as if their words got twisted. This is mostly done in the Gaasperdammertunnelproject.

Table 3: information bottleneck - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

All interviewees express that it is hard to deal with information accurately, as it is so widespread, plentiful, technically complicated, or has other complicating qualities. From the predefined characteristics, they mention that knowledge sometimes does get stuck in the system, that people can experience an information overload, and that biases are present. Therefore, information imbalances are a factor affecting satisfaction with and the performance of the project.

Especially the characteristic of feeling overwhelmed is mentioned frequently. One manager from the Gaasperdammertunnel expressed that the information was so plentiful, that he could hardly distinguish the key points. However, most boundary spanners have developed several tricks to help them manage information. First, they use official, often digital ways of storing information. In the case of the Gaasperdammertunnel for example, Relatrix was used. This is a program to store information and create 'narratives' of the events that happen. The University Quarter also has installed methods to guide information. These are often more relational. For example, they have installed a sounding board, which provides feedback to and keeps an eye on the boundary spanners. Second, they have installed better interlock positions for people to communicate information more smoothly. The Quay development project does not seem to have such a strategy yet. Furthermore, boundary spanners are very aware of the fact that information overload is a real problem. The project managers from the University Quarter for example are very explicit about this: they realise their role is not to deal with the content, because they can never be the experts, but they need to bring the right experts together.

Despite boundary spanners not practically experiencing information problems, nearly all stakeholders do recognise those information problems. One stakeholder from the University quarter states that information is not shared honestly, which is confirmed by a second stakeholder. Others in the project of the University Quarter also notice that 'information is being handled strategically' and that it seems as if 'information is not openly shared.' Furthermore, stakeholders recognise differences in which information is given to whom, and which amounts of energy are spend on different stakeholders. For example, both students and internal operators in the cases of the University Quarter and the Gaasperdammertunnel respectively, have both remarked on how they felt residents got more information than them. Remarkably enough, the only stakeholder who saw no information flaws was from the quay development, a project where no tricks were used. He expressed that information was always clearly communicated by the technical manager, sometimes a bit later than ideal, but always in a workable manner. Another stakeholder from the quays did see some difficulties: he explained it using the term 'Unintended obstruction'. This means that when people hear a thing that is negative to them, they do not communicate it openly, but first try to solve their problem or reshape it in such a way that it becomes positive to them. In general, difficult knowledge transfer between boundary spanners was seen in all three projects by at least 2 different stakeholders. As one boundary spanner is replaced by the next, they take along valuable information, which is not always available to their successor.

Informal, personal relations

Characteristics	Amount	Key words	Confirmed
Obstructions to critical thinking	Quays: 3/6 University Q.: 3/5 Gaasperdammert.: 3/6	'It is a risk, but we are professional enough' (QS*, BS**) 'Things always have to be negotiable' (UQ, BS)	This part was not in depth discussed with all interviewees. However, with those discussed, some saw it as a practical reality, whereas others saw it as a potential risk.
Reciprocity	Quays: 1/9 University Q.: 0/9 Gaasperdammert.: 0/9	'We work together very well, and you start granting each other things' (QS, BS)	This was mentioned only so few times, that the results are left out of this thesis.
Relations turning sour	Quays: 6/9 University Q.: 7/9 Gaasperdammert.: 7/9	'When people's expectations are not met, this obstructs cooperation' (UQ, BS)	Most stakeholders and boundary spanners realised and experienced how hurtful it can be

		'It was very hurtful when someone I could trust turned against me' (UQ, ST)	when relationships turn sour, and the long-time consequences it can have.
Favouritism	Quays: 4/8 University Q.: 2/5 Gaasperdammert.: 3/5	'easy to let yourself be dominated by one group' (QS, BS) 'You cooperate better with the persons you are close to' (GT, BS)	This question was answered by boundary spanners. They were generally aware of the danger of listening to one group only.

Table 4: informal, personal relationships - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

Obstructions to critical thinking, relations turning sour, and favouritism were all mentioned as possible limitations of informal, personal relationships. However, all stakeholders recognised the importance of relationships. Complex relationships are seen as troubling the cooperation by one project manager from the University Quarter. Although "it is always important to keep a difference between personal feelings towards a person, and a business attitude" (student, University Quarter), "without informality, no formality" (mediator, University Quarter). All three projects, therefore, spend considerable time on forming strong, positive relationships within teams and between stakeholders. This is done by fun, informal gatherings in the case of the Quays; tours, and lectures in and about the projects in the Gaasperdammertunnel and the University Quarter, and starting meetings with a quick, personal update, which happened in some projects around the quays. 7 boundary spanners try to keep personal contact as well as formal contact: a contract manager from the Quays for example always asks people about their weekend, and how their children are doing, because developments in these areas can influence their work.

Yet, most people recognise the dangers of informality too. First, informality should not result in too tight bonds or any kind of favouritism. Boundary spanners recognise that their gaze cannot be determined by one dominant group, but that they should keep an open view, to draw other perspectives in. The other way around also happens: both a project leader and a stakeholder from the Gaasperdammertunnel and the University Quarter respectively recognise that relationships can easily turn sour. People are possibly not liked on a personal level, especially if adverse events happen through a project. Second, informality should be done for the right reasons. One project manager from the quay development recognised it can be done for reputation issues. When done to improve a reputation, it is done merely as a show, but the results are not actually taken in. Third, informality might alter your way of

thinking. One technical manager sees a risk of not being serious enough anymore, another sees a risk of not thinking critically enough. Therefore, the latter expresses the need to always be aware of the fact that parties have different interests. Boundary spanners state that they are actively trying to keep everything negotiable, without reservations or awkwardness. However, they experience this only as risks, not as actual realities. Another executive manager from the Gaasperdammertunnel highlights how informality does not mean 'without obligations'. According to him, you have to remind people that they have a responsibility, ownership, and that they have to be critical. He did see this as an actual reality.

Next, in the following section the effects of the qualities on the subjective performance of the projects are explored, followed by a discussion about the antecedents, to see whether they influence the negative qualities of boundary spanners.

Performance

Now it is established that the adverse qualities of boundary spanners do exist, it is possible to look at their effects with regard to participant satisfaction.

Variable	Amount	Key words	Confirmed
High trust	Quays: 4/9 University Q.: 9/9 Gaasperdammert.: 6/9	'Distrust is still present' (UQ*, BS**) 'I don't trust the people working here 'UQ, ST) 'relationship with management is frustrating' (UQ, ST)	Especially in the case of the university quarter, distrust is rampant. In the other two cases, trust is mentioned less frequently. It does not play that big of a role for people's satisfaction.
Quality of inclusion	Quays: 5/9 University Q.: 6/9 Gaasperdammert.: 5/9	'It's hard to see not everyone feels included' (UQ, BS) 'It's nice to be able to include people' (GT, BS) 'Some people have left the project' (QS, BS) 'They have not given much say to the people, but have given lots of information ' (GT, ST)	Boundary spanners are generally satisfied about reaching people, but do recognise the difficulties and limitations. Stakeholders generally feel less included, or feel that others have been included more.

		'They've listened so much to the residents, but forgot their students' (UQ, ST)	
Useability/effectiveness	Quays: 8/9 University Q.: 8/9 Gaasperdammert.: 9/9	'It's so much easier now we have Relatrix!' (GT, BS) 'We've really done a good job' (GT, ST) 'I'm proud of what I did' (UQ, BS) 'The project is nice, but the results are not' (UQ, ST) 'The procedure has become standardized' (QS, BS) 'From me, the project gets a three' (UQ, ST) 'We've worked so hard, but what we've actually accomplished is so little' (UQ, BS)	This factor is mentioned the most. Most boundary spanners are proud of themselves, most stakeholders are more sceptic.

Table 5: participant satisfaction - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

Table 5 shows that in general, a line can be drawn between boundary spanners and other stakeholders with respect to their satisfaction about the course and outcomes of the project.

Although boundary spanners experience many challenges, drawbacks, and disappointments, they are generally positive about the project they are working on. Two main reasons are at play here. First, they are frequently proud of what they accomplished. Concerning power, for boundary spanners, having power is partially positive, as one boundary spanner from the Gaasperdammertunnel explains: he recognises he has the power to look for stakeholders. Therefore, he tries to include most people by taking a lot of initiative. Furthermore, the tricks seen in the storage of information have made it easier to store and process information, increasing ease and satisfaction. The environmental manager of the Gaasperdammertunnel explains that Relatrix has made it much easier to store information. The mediator of the University Quarter is also positive about the relational measures. Nearly all boundary spanners think good informal ties are beneficial to a project. Nearly all of them

express first and foremost the importance of good relationships within their team and the broader organisation, but also express the importance of having a good connection to the external stakeholders and partners in the cooperation. Second, the boundary spanners are proud to be working on such projects: the projects are described as 'unique challenges' by many, and they are honoured to be allowed to be working on them. Pride was not a variable initially defined by the researcher, but proves to be an important component of participant satisfaction.

Four boundary spanners are less positive in general, for various reasons. Two are disappointed that they could not solve the frustration among residents of the University Quarter and those at the Gaasperdammertunnel, two are disappointed with the development of the quays and the University Quarter. The chaos and information overload are seen as especially problematic for various boundary spanners in the quay development. In this project, no sorts of tricks are used to process information, as does happen in the other two projects. Yet even these boundary spanners express that are generally still positive and proud of the project. One project manager from the University Quarter turns it around: she gets energy from difficulties and challenges, therefore she is still very satisfied with her project.

However, most stakeholders are less positive. One stakeholder from the quay development is nothing but positive, but all others are dissatisfied in some way or another. Only 1 stakeholder, a resident in the University Quarter, is nothing but negative: she gives the project a 3 (on a scale from 1 to 10), as it has completely failed in her opinion. All others are somewhere in the middle. Most recognise that the projects are in theory beneficial and understand why the projects have to be done: the stakeholders frequently mention the justifications identified in the document analysis. However, stakeholders deem the projects not executed in the correct way. They blame this mostly on the feeling of not being heard, not being taken seriously, not getting the right information, and having bad relations with the people involved, including the boundary spanner. For example, the stakeholders express that an unequal power distribution made them feel powerless. It feels 'incorrect' that boundary spanners can steer the process: their opinion should be left out. However, it is important to notice that an unequal power balance is not necessarily always harmful: three stakeholders express that someone must make a decision from time to time. Sometimes, the boundary spanner is the most practical person to do so. As indecisions are costly, a boundary spanner should take decisions, according to two contractors. Having said this, the contractors also recognise that it is a delicate balance between giving power to stakeholders and exerting power yourself as a boundary spanner. Additionally, 8 stakeholders express their 'frustration'

with unequal information. If the person who should give information does not do this correctly, they experience an information deficit, which obstructs their decision-making (stakeholder, University Quarter). At the Gaasperdammertunnel, problems arose too. One stakeholder from the safety team expresses how information was generally handled correctly, but that exceptions exist. For example, in one case, her words were misinterpreted and used against her. This was very painful for her. In the quay development case unintended obstruction and general chaos is described as a negative experience by 3 stakeholders. Last, in all three cases, stakeholders thought it was 'tiring' that information went missing so often, either due to bad knowledge transfer, chaos, or other reasons. Furthermore, although stakeholders recognise informal, personal relationships keep people motivated and interested, they can also obstruct cooperation and satisfaction. As mentioned, some stakeholders noticed their relationships turning sour: this negatively impacted their willingness to cooperate and their satisfaction with the project. One stakeholder from the Gaasperdammertunnel mentioned that if they don't like the other person because they have the feeling the other does not treat them right, they will act up: 'If I'm not happy, no one's happy.' Besides that, the consequences of informal, personal relationships were limited: people did recognise the risks but did not see them actualised.

One specific thing that is mentioned is the lack of trust: especially in the project of the University Quarter, distrust is rampant. All 9 interviewees for this project have mentioned that they have experienced problems with trust: relationships have been ruined in the past, and it is very hard to get this trust back. This impacts the other two factors: because of low trust and bad personal relationships, the stakeholders on both sides easily feel as if information is withheld from them, and as if people abuse their position of power. These issues are less severe in the other two cases. In the case of the quays, it is mostly the effectiveness that is doubted, whereas, for the Gaasperdammertunnel, most people are generally quite satisfied. Issues here are mostly very temporary and can be solved with minor adjustments and good conversations.

Furthermore, many people have an opinion about the objective results of the projects. This is most severe for the University Quarter. These results, combined with the insights from the document analysis, are combined in the table below:

Variable	Amount	Key words	Confirmed
Time overruns	Quays: 6/9 University Q.: 8/9 Gaasperdammert.: 2/9	'So many time overruns and cost overruns have happened' (UQ, ST)	Especially the University Quarter saw plenty of time overruns. The

		'This project has been going on for years' (UQ, ST) 'Had to be delayed by one year' (GT, ST)	Gaasperdammertunnel also experienced one overrun. The quays do not have a concrete planning yet.
Cost overruns	Quays: 6/9 University Q.: 9/9 Gaasperdammert.: 2/9	'Cost overruns are abundant: another million here and there' (UQ, ST) 'Of course it's going to cost much more' (QS, BS)	Again, especially in the University Quarter, cost overruns are prevalent. In the other two projects, they did not come to the foreground so explicitly.
Visible result	Quays: 7/9 University Q.: 8/9 Gaasperdammert.: 6/9	'It's sad to see we produced so little' (UQ, BS) 'We've accomplished something great!' (GT, BS) 'Our results are pretty stable now' (QS, BS)	The Gaasperdammertunnel is going quite smoothly, with the tunnel being done and the park slowly starting. The actual progress for the quays and the university quarter is slow. Yet, especially in the case of the university quarter, this is experienced as frustrating. In the case of the quays, this sentiment is not so strongly felt.

Table 6: objective results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

Interviewees from the University Quarter and the Quays express that it is disappointing that the actual results from their project are limited, whereas costs and time are running out of hand. Especially in the case of the University Quarter, the focus on the weaknesses of the project is very strong. Folia, the University Newspaper, for example, frequently releases news articles stating costs are rising again. Although this is bad news, openness is appreciated by some stakeholders. Yet, 3 others express that it feels as if it is a PR trick. Frustration is less expressed in relation to the cases of the quays and the Gaasperdammertunnel. For the Gaasperdammertunnel, some delays took place, but these were also understood by the stakeholders. The delays namely meant that the tunnel became safer: something that was necessary without question.

In the next sections, the antecedents to boundary spanning are discussed.

Role stressors

Characteristics	Amount	Key words	Confirmed
Work overload	Quays: 6/9 University Q.: 7/9 Gaasperdammert.: 5/9	'Stress causes people to make the wrong decisions' (GT*, ST**) 'The roles can be too much work' (QS, BS) 'The amount of work is overwhelming' (QS, BS)	Many people experience stress and work overload, especially the boundary spanners, but stakeholders do too. Stakeholders also recognise it is too much for boundary spanners.
Uncertainty	Quays: 7/9 University Q.: 7/9 Gaasperdammert.: 5/9	'Had to look for the correct role' (UQ, BS) 'Need to check what the client wants' (GT, BS) 'Lots of issues with our position' (UQ, ST) 'Can become confusing who does what' (UQ, BS) 'You do grow in your role' (GT, BS)	In nearly all projects, roles tend to get confused. Especially when there is an abundance of people working on a project, or it is just starting, roles tend to get confused.
Burnout	Quays: 2/9 University Q.: 3/9 Gaasperdammert.: 1/9	'Project managers experience too much stress' (UQ, ST)	In some cases, work overload and stress do lead to burnouts, this was luckily not seen much.
Impossibility to satisfy all needs	Quays: 0 University Q.: 1/9 Gaasperdammert.: 0	'It is impossible to make everyone happy' (UQ, BS).	Not really mentioned strongly.

Table 7: role stressors - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

Role stressors are one of the most named factors as a cause for failing boundary spanning work, they are mentioned in two-thirds of all interviews. In total, since work overload, uncertainty, and burnout symptoms are all seen, role stressors play a big role in boundary-spanning work.

All three projects experienced uncertainty. This was foremost because boundary spanners and project management in general was often uncertain which role to take. For the university quarter, for example, the project had been going on for over 20 years, but the

municipality only joined in 2019. Therefore, according to the project manager, the municipality had to search for its correct role. This counts for multiple parts of the municipality: not only project management, but also the monumental care division experienced trouble with this. Another complicating factor is the existence of the subparts of the several projects discussed. This was the case for the quay development for example. Additionally, it does not help that there are sometimes too many boundary spanners active in a certain area. The area broker (gebiedsmakelaar) in the University Quarter for instance expressed that it can become confusing who does what. This project contained an area broker, a project manager, and multiple environmental managers from both the municipality and the University of Amsterdam. One of the environmental managers expressed that he sometimes had trouble with which tasks belonged to him, which tasks were shared, and how they were shared. Especially during Covid-19, when physical communication was limited, it became very hard to know who does what. The consequences were not too harmful, as they all had good relations with each other, but it could complicate matters now and then. This confusion thus mostly impacted how information was handled. The cooperation manager in the quay development states that the steering from the municipality has been too weak, complicating their functions and tasks. Currently, the change in culture and procedure is too unclear, the organisation is too vague, there are lots of unnecessary discussions, etc. To improve clarity, they propose a document signed by the alderman which explicitly states several tasks and responsibilities.

Second, work overload and burnout are two very real risks in project management. For the University Quarter, project leaders are often replaced, because the situations they have to deal with are too stressful. This stress causes people to make the wrong decisions and limits their sensitivity to issues, according to two stakeholders, leading to dissatisfaction and frustration, can also be seen in the Gaasperdammertunnel development.

Yet, it is not that none of the interviewees understood their role. About half of the interviewees were quite clear on their roles. The passing of time helps: 'you grow in your role', according to a project manager from the Gaasperdammertunnel. Sometimes they did see that their role was confusing for others, but they did understand it themselves. One transition manager from the Gaasperdammertunnel highlighted how his role was clear to him and his co-workers. He had some overlap with other roles and functions, but they knew how to cooperate.

Thus, when boundary spanners experience role stressors, this mostly impacts the quality of information being given by the boundary spanners.

Organisational support

Characteristics	Amount	Key words	Confirmed
Facilitative management	Quays: 2/8 University Q.: 2/5 Gaasperdammert.: 1/4	'Facilitative management is incredibly important' (GT*, BS**) 'Management is strongly lacking' (GT, BS) 'There's a severe lack of oversight' (QS, BS) 'My management improves my functioning' (GT, BS)	Management is seen as very important by all, but not everyone currently has proper management. Those who do have proper management see clear benefits.
Team (leader) support	Quays: 3/8 University Q.: 1/5 Gaasperdammert.: 1/4	'My team leader supports me well' (QS, BS) 'My team is the most important thing for me' (QS, BS) 'Team building is very important' (QS, BS)	The team is one of the most important things for most workers.
Discretionary space	Quays: 2/8 University Q.: 2/5 Gaasperdammert.: 2/4	'Upper management is always in your neck' (UQ, BS) 'Even if you want to be flexible, you have to meet targets' (GT, BS) 'In the end, management decides'	Some boundary spanners felt as if their discretionary space was limited. Management could easily override their decisions or push them.
Formalisation	Quays: 0 University Q.: 0 Gaasperdammert.: 0		Formalisation was not mentioned.

Table 8: organisational support - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

Organisational support was not frequently mentioned as a reason why boundary spanning did or did not work. However, the times it was mentioned, people expressed it was very important to their work attitude. Especially the importance of facilitative management, team (leader) support, and giving discretionary space was mentioned.

In general, as explained above, the general team was very important to create a good atmosphere while cooperating. Management was mentioned 5 times, particularly with respect to support at work. For one, a stakeholder in the university quarter recognised that many housing directors quit prematurely. This is mostly because it is a very ungrateful job: no one is ever happy with them or the project, costs are constantly overriding, etc. This constantly changing environment of management does not benefit the project, as it causes more confusion, therefore also strengthening role stressors. Additionally, multiple stakeholders and boundary spanners recognise that there is a lack of supervision. Moreover, especially for the University Quarter, management is too rigid and does not offer enough discretionary space to its employees. Furthermore, management does not support its employees enough. Too much pressure is exerted on them, instead of support and facilitative management.

Similarly, it was mentioned 5 times how important management is for fully functioning services. The Gaasperdammertunnel for example had one case of how management should function. Here, employees were supported fully. If they felt as if they did not fit into a certain team, they were replaced in a position where they could use their full capabilities. Next, management here had an example function, which they executed quite well.

Results of this were mostly seen in the quality of information, as positive management improves boundary spanner's capacities, and their informal relationships. When management sets a good example and the team functions well, people become more open and friendly to working as a team and cooperating with stakeholders.

Individual Competence

Characteristics	Amount	Key words	Confirmed
Accurate understanding of technical skills	Quays: 5/9 University Q.: 4/9 Gaasperdammert.: 5/9	'It's not that he doesn't have skills, he's just hard to work with' (UQ*, ST**) 'Has nothing to do with intelligence' (UQ, BS) 'Mistakes happen despite competence' (QS, BS)	Technical skills are not seen as that important by most. A boundary spanner is not meant to have many technical skills.
Social abilities	Quays: 5/9 University Q.: 7/9 Gaasperdammert.: 5/9	'People don't always want to work together'(UQ, ST) 'Many boundary	Social competence is very important. Many stakeholders and boundary

		cannot handle all stakeholders (UQ, ST) 'Kindness does not make up for all actions (UQ, ST) 'The mediator does not seem to care about us' (UQ, ST)	spanners realise that cooperation is not always easy, due to not wanting to, stress or other mistakes. This is especially strong in the University Quarter.
Enthusiasm and dedication	Quays: 7/9 University Q.: 8/9 Gaasperdammert.: 7/9	'You need to be enthusiastic' (UQ, BS) 'Helps to be a born optimist'(UQ, BS) 'I am very excited about my work, I love solving problems' (UQ, BS). 'It's great to work with challenges. I have the best profession in the world' (GT, BS) 'Working in an environment like this is also a incentive' (QS, BS)	Many recognise that it is necessary to be enthusiastic, and many boundary spanners are enthusiastic about their job.
Experience	Quays: 7/9 University Q.: 8/9 Gaasperdammert.: 7/9	'Limited experience plus stress is not a good combination' (QS, BS) 'The more experience, the better' (QS, BS)	More experience generally helps to achieve better results and satisfaction. For the quays and the university quarter, this experience is generally lacking.

Table 9: individual competences - results
*GT: Gaasperdammertunnel, UQ: University Quarter, QS: Quays
** BS: Boundary spanner, ST: stakeholder

Although enthusiasm and dedication are present, experience and social abilities are lacking. Accurate understanding and technical skills are as not important. The lack of experience and social skills mostly impacts the power position of boundary spanners. Again, there is a difference between stakeholders and boundary spanners.

In general, most stakeholders recognise that the boundary spanners are trying their best and that they are very kind. This is explicitly mentioned in 5 cases. However, stakeholders also recognise that people can make mistakes and have flaws. Furthermore, all stakeholders understand that boundary spanners work in hectic environments: cooperation can be hard, and the environment can be hostile. Partially, this is seen as a mediating

circumstance, yet people also think that boundary spanners should be aware of the skills that are required and should live up to these standards. One stakeholder thinks that the boundary spanner cannot handle all different stakeholders, and another stakeholder thinks that the boundary spanner actively 'does not care about certain parties'. 4 other stakeholders deem a boundary spanner 'chaotic and not always reachable'. They ascribe this mostly due to stress and inexperience. Inexperience combined with insecurity makes it even harder to perform well: boundary spanners are in that case easily overtaken by all the information and by the more dominant players.

In general, experience is mentioned by nearly all interviewees. All boundary spanners highlight it as something very valuable: without experience, being a competent boundary spanner is significantly harder. For example, inexperience and blind spots can lead to imbalanced power positions. 4 stakeholders also express that those with power are not always deliberately using this power. One interviewee sees it as a direct result of chaos, another as something that goes automatically, meaning that boundary spanners are blind to their power.

Boundary spanners on the other hand are more enthusiastic and dedicated. They seem genuinely passionate about their jobs. They express that they think it is a challenge to work with so many people on such a complex project, but that they enjoy it, and that they find pleasure in finding solutions for individuals. Their enthusiasm is, according to them, important for how they act and function in their work.

Discussion

First, the cases will be compared, moving on to a section answering the research questions, to end with a section on the limitations and further research possibilities for this topic.

Case comparison

Similar problems came forward in all cases during the research. This makes the cases relatively comparable. All cases express difficulties with handling information correctly, the dangers of (sour) informal relations, and power imbalances. Not all cases experience these to the same extent. For example, although power balances are mentioned twice in the case of the quays, power imbalances appear to be more prominent in the other two cases.

Most confusion and organisational difficulties are present in the case of the Quays. A lack of (accurate) boundary spanning was caused by inadequate role clarity, organisational support, and competence were all lacking. For all cases role stressors formed a very real problem, with some exceptions. Uncertainty and burnout symptoms hinder boundary spanners in their work in all cases. Similarly, organisational support was lacking in all three cases, and all three cases mentioned its importance. All cases mention at least one or two boundary spanners who were at some point lacking in competence.

Despite having similar problems, not all cases have dealt with them equally. In general, boundary spanners in the Gaasperdammertunnel appear to have found the most successful solutions. For the information problems, for example, Relatrix was used. To reach stakeholders effectively and keep good connections, a radio show was set up. Mechanisms like these have not been successfully set up in the other two cases. This is reflected in the results: respondents were generally happiest and most satisfied in the case of the Gaasperdammertunnel and the Brasapark. This is also the project that was finished the quickest and is currently continuing without significant issues. The start of the Brasapark is slow, yet ongoing. The tunnel itself has generally benefited the area and experienced few problems.

In contrast, the objective and subjective performances of the quay development and the University Quarter are not so positive. Despite efforts, the actual renewal of the quays has been lacking. Although big steps have been made with respect to measuring the problem, progress in renewing the quays is very slow. The proposed upgrade of tempo in the policy plans has not been realised yet. Still, respondents here do not experience the least satisfaction. Most of the boundary spanners and stakeholders here acknowledge that the

project is still too complex, and that progress will be made in a next phase. Frustration is most clearly felt in the University Quarter. This is partially because the project here heavily impacts a long-existing community. It has a very strong us-versus-them dynamic, between on the one hand the University of Amsterdam and the municipality, and on the other hand the residents and other stakeholders. This dynamic does not exist in the case of the quays, where simply too many parties are involved to get an us versus them dynamic. The objective performance of the University Quarter is also quite slow: news reports show that the project has been delayed by multiple years, which is paired with great cost overruns. A start has been made with the construction of the new library, but besides that, no definitive plans are made. The strategic master plan, made in the past two years was only meant to structure the designing phase: plans can still change significantly. These outcomes match analysed news and documents. First, people were generally positive about the Gaasperdammertunnel. Second, people were frustrated about some preparatory/temporary measures in the quays, but besides that, nothing much else has happened. Third, frustration thrives in the University Quarter, actively blocking further development of the area.

From the comparison of the three case studies, it is possible to conclude that despite differing circumstances, similar phenomena happen in complex projects with respect to the negative qualities of boundary spanners. Because each project suffers from role stressors, weak organisational support, and low competence, as a consequence boundary spanners and stakeholders experience power imbalances, information bottlenecks and disturbed personal relations. These lead to lower satisfaction and lower objective performance. The stronger the antecedents, the stronger the negative qualities, and the worse the performance. From these conclusions, several general lessons can be drawn. These will be elaborated on in the next section.

General lessons

The first two sub-questions, what are possible negative qualities of boundary spanners in collaborations, and what are the underlying antecedents of these, were answered through an extensive literature review. The identified negative qualities were threefold: problems arising from power imbalances, information difficulties, and informal relationships. These were hypothesized to arise because of the presence of role stressors, a lack of organisational support, and deficient individual competence. To answer the third sub-question, how do these negative qualities and antecedents exhibit themselves in complex projects, a document analysis and interviews were done. From these documents it can first be seen that power imbalances do in fact occur in complex projects. Although boundary spanners themselves often do not recognise their power, merely their influence, stakeholders

who have to deal with boundary spanners do experience their special power positions. Second, information difficulties are also seen as an actual risk, despite two of the case studies having developed 'tricks' to deal with information. These 'tricks' help solve some problems, yet both boundary spanners as stakeholders acknowledge handling information correctly is always a hazard. Third, although informality is generally seen and experienced as positive, some recognise that it has its possible dangers. For its antecedents, all three of the dangers came forward as well. Role stressors were mostly seen in burnouts and confusion. This impacted the information quality most. Second, organisational support was in general quite strong, but when it was lacking, it impacted the quality of information and the informal relations. Third, competence was mostly seen in the (lack of) experience boundary spanners had, causing them to abuse their power. Often, this was not because of bad intentions, but because of inexperience and other wrong decisions.

The fourth sub-question, how do the negative qualities influence the performance of complex projects, was measured in both subjective as objective performance, and can be answered by constructing the following model (figure 7). The orange arrows signify a negative connection, the green ones a positive one.
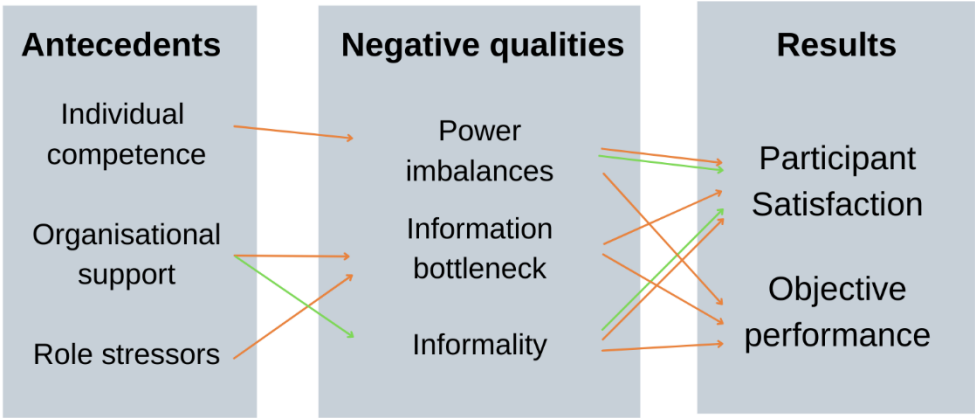

Figure 8: Relational model

First, the subjective performance was heavily influenced by the negative qualities. A distinction should be made between boundary spanners and stakeholders: boundary spanners are in general more positive than stakeholders. How stakeholders viewed the objective performance of projects was partially influenced by the negative qualities, among other reasons. The better the antecedents, the lesser the negative qualities, and the smoother and quicker the project goes. However, two antecedents can become positive, when implemented correctly. When power balances are used correctly, and informal relationships are good, this positively impacts participant satisfaction. The

Gaasperdammertunnel is the most positive project in that sense, the other two projects have less well antecedents and hence more qualities negatively impacting the performance of the projects.

It is important to note that different variables influence each other, also within their respective blocks of antecedents, negative qualities, and performance. The relationships are highlighted in figure 10. It can first be seen that weak organisational support leads to more role stressors, strong organisational support is important for personal competence. Personal competence of the managers in turn influences organisational support. For role stressors applies: the more competent, the better a boundary spanner can handle role stressors. Similarly, the variables power imbalances and informal relations influence each other. Participants express that due to power imbalances, it is harder to maintain a good personal, informal relationship with someone. Besides that, no other connections are observed between the three main variables. Last, a bad objective performance also influences participant satisfaction. The more cost and time overruns happen, the less satisfied participants become. These observations make the following models (figure 9, 10, 11):

Figure 9: Relations antecedents

Figure 10: Relations negative qualities
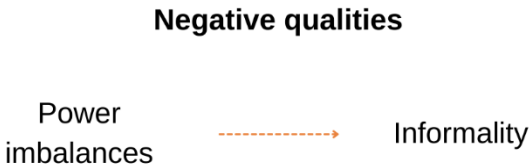
Figure 11: Relations performance

Limitations

The limitations of the research are threefold. First, it proved hard to find information for the three case studies that was completely similar. Therefore, both in the document analysis and the interviews, different types of documents and stakeholders were compared. Partially, this was because different documents are written about the three projects. For

example, the municipality has a very large participation report in the case of the University Quarter, which is not the case for the Gaasperdammertunnel and the Quay Development. These latter two had a less problematic participation process, in which extensive guidance and participation were less necessary. For the interviews, only one-sixth of those contacted responded affirmatively. Therefore, some important or necessary stakeholders were not interviewed. A very great amount of boundary spanners was for example interviewed, whereas most stakeholders did not respond. This could be because of the naturally open nature of boundary spanners, but it would be beneficial if more stakeholders could be included. However, the lack of similarity has provided a rich and varied insight into different aspects of boundary spanning. Additionally, despite the differences between the cases, it is possible to draw some preliminary conclusions, which might be deepened in further research.

Second, considering the awkward nature of the topic, some participants might have felt hindered by social norms when giving their honest opinion to others in the process. Social norms might make it hard to acknowledge the negative qualities of other persons. Especially in the case of the adverse effects of informality, such as bullying, MeToo, etc, it might be hard to confine with a researcher. Therefore, sending out an anonymous survey might be a viable solution to this problem in further research to this topic.

Third, because of the complexity of the projects, a significant amount of time in the interviews was spent trying to understand the situation. For some interviews, this meant that relatively little time could be spent on the actual content-rich questions. Nevertheless, the information was useful to get a clearer view of the projects and to confirm information found in the document analysis.

Further research
Further research could go into several avenues. First, it could look more at potential new qualities of boundary spanners or other factors that were not discussed in this research. Some of the interviewees mentioned potential interesting things, examples are the timing of mediation, the shape of the contract, and how people can feel uncomfortable around a boundary spanner at first. The latter is mostly because they are not used to it, or because they do not understand boundary spanning yet. Second, as said with the limitations, it might be worthwhile to release an anonymous survey, to make the topic more discussable, without the hindrance of social norms. Third, it could look into how to solve the adverse effects of boundary spanners. Many boundary spanners have shown to be aware of their limitations,

but every person seemed to have a different solution. More thorough research could show what solutions exist and which ones work best.

Recommendations for practitioners

With the conclusions from this thesis, boundary spanners and those who work with them should realise that boundary spanners hold a promising, important position in a network. Despite their many advantages, boundary spanners are not without flaws. Practitioners should thus be aware of this. It is recommended that they check in regularly with their stakeholders, to see whether their power position is balanced, whether the information they transfer is correct, and how the personal relations are. Expectation management especially is recommended: both boundary spanners as stakeholders should know of each other what to expect, in what way, and on which terms. To limit confusion and stressors generally means to obtain better results and a higher rate of satisfaction. Additionally, good relations both within a team and with an outside network improve results and satisfaction. Therefore, practitioners should invest heavily in not only technical capital but also relational capital.

Conclusion

To answer the first part of the main research question, (how) do potential negative qualities of boundary spanners affect the performance satisfaction in networked governance construction projects, it is first possible to answer in the affirmative. A document analysis and an extensive range of interviews show that boundary spanners, where they were seen, can indeed suffer from problems regarding power imbalances, information difficulties, and difficult personal, informal relations. Not everyone sees these issues in the same way: differences in perception between boundary spanners and stakeholders exist. Nevertheless, all recognise that the adverse qualities exist, be it in an actual reality, or a potential risk for future projects. Next, the adverse qualities influence both subjective performance satisfaction, as objective performance. To start, subjective performance satisfaction lowers significantly in most cases. Adverse qualities generally make the process frustrating and unsatisfactory for stakeholders, as they do not feel respected enough. Similarly, the negative qualities also hinder the process, although there are exceptions to this rule. In general, the negative qualities hinder proper decision making, yet sometimes someone must take a decision and move the process forward. Boundary spanners should thus find a precarious balance between listening and giving stakeholders space and taking decisions to advance the project.

Answering the second part of the main research question, under what conditions these negative qualities take place, it can be concluded that all three circumstances (role stressors, organisational support, and competence) play a key role in either stimulating or tempering the negative qualities. Role stressors are the most prevalent reason why boundary spanners cannot make the most of their work, but the other two also influence boundary spanners to some extent. Furthermore, these factors strengthen each other.

Despite limitations and flaws, the importance of boundary spanners was not disputed by any of the people spoken to. Importantly, the aim of this research was not to argue that boundary spanners negatively impact project results. This thesis should be seen as a way to further improve the approach to tackling complex projects. Boundary spanners offer many advantages to complex networked construction projects, and participation and inclusion in general. In the future, if an eye is kept on its quality and effects, boundary spanning can be very valuable for complex, networked, public construction projects.

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Appendixes

Appendix A: Interview guideline

Interview guide (words: 491)

Introduction: I'm Anneke, urban governance student, and I'm doing this study into the possible negative effects of boundary spanning work. Normally, boundary spanning is mostly researched for its benefits, which is completely valid, but I'm curious to see whether boundary spanning has downsides, and if so, how we can deal with these downsides, to make boundary spanning work even more useful. This interview will last about 1 hour, for which I've prepared a couple of questions, but there's plenty of room to discuss multiple topics. So if you think of anything that you would like to say, or if you have a question, please do so. It is also important to know that you do not have to answer the questions if you don't want to, and that we can always take a break if necessary. Next, this interview is completely anonymous. If there are things you feel uncomfortable saying in person, you can always contact me anonymously via the following link (link to a google forms). Now, it is okay with you if I record this interview? This will only be used to transcribe the interview and will only be heard by me.

Topic	Questions for partners	Adapted for boundary spanners
Introduction	In your project, were there a lot of different participants/stakeholders?	
	If so, how were the relationships between them managed?	
	Was there someone trying to form bridges/connections?	
Power imbalance	How were power relations in the project? Were there interests that were clearly more important than others?	
	The person spanning boundaries, did you have the idea that you were on an equal level playing field with them?	What did you think of your own power position in the network?
	What kind of effects has the power position of the boundary spanner had on the project?	What was your influence on the project?
Information bottleneck	How is information spread in the network? Are you satisfied with the way this is done?	
	Is information spread honestly in the network according to you?	
	What is the role of the boundary spanner in spreading information?	Did you notice any obstructions or difficulties for you to spread information?

|	How has it impacted your evaluation of the project?	
Informality	How important are informal proceedings in this work? What is the balance of formal/informal work?	
	When working together informally, have you ever experienced any negative things? Are there dangers to informality?	
	What is the role of the boundary spanner in managing relations?	What to do when situations are not positive? How to resolve conflict?
	What kind of effects did positive/negative informality have?	
Antecedents	What do you think is important for a successful project?	
	We've just discussed some things, what do you think caused this?	
	Do you feel supported enough by your team?	
	Was the assignment and your role clear enough?	
Ending	Have you noticed any other downsides or difficulties of boundary spanning work, and if so, what were they?	
	Do you have any other comments about cooperation?	

Appendix B.1: Stakeholders Quay Development

Contractors: Dura Vermeer Infra Regionale projecten, Beens Groep en Aannemingsmaatschappij H. van Steenwijk (met in onderaanneming Mobilis en Van Gelder).
Technical staff: measuring, designing, etc
Municipality: Ruimte & Duurzaamheid (climate-neutral, sustainability, monuments), verkeer & openbare ruimte (Centrale verkeerscommissie, programma Varen, Programma Bruggen en Kademuren, Agenda Amsterdam Autoluw), Economische zaken, Municipal Council, Ingenieursbureau
Residents: specifically houseboat residents
Road users: waste management, emergency services, individuals, public transport
Monumental care: Heemstede, Vrienden van de Amsterdamse binnenstad
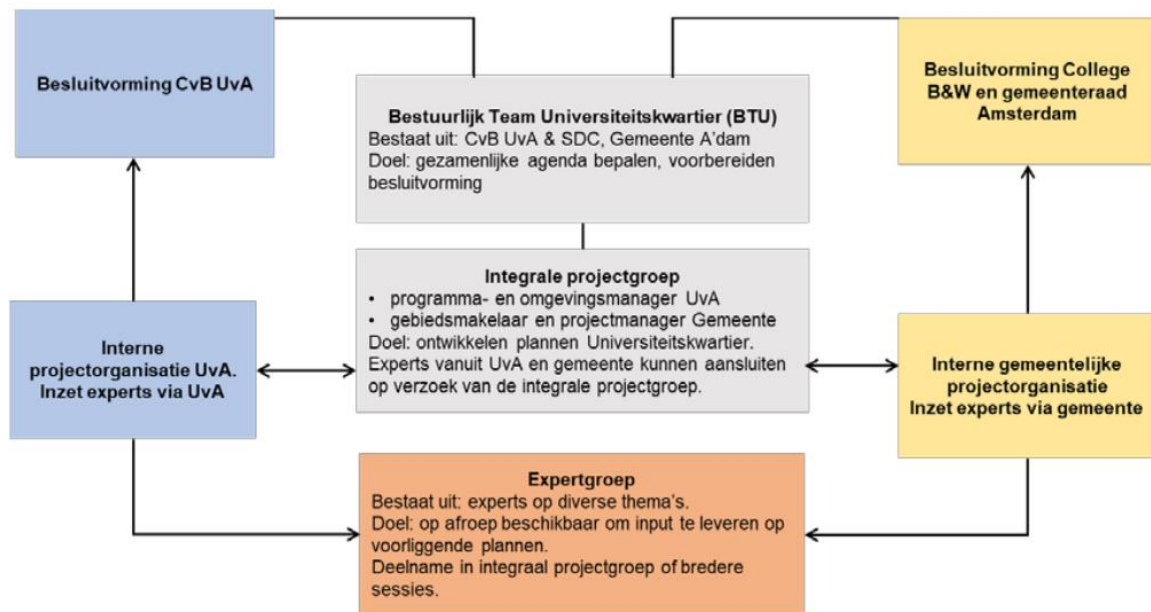
Appendix B.2: Time-line Quay Development
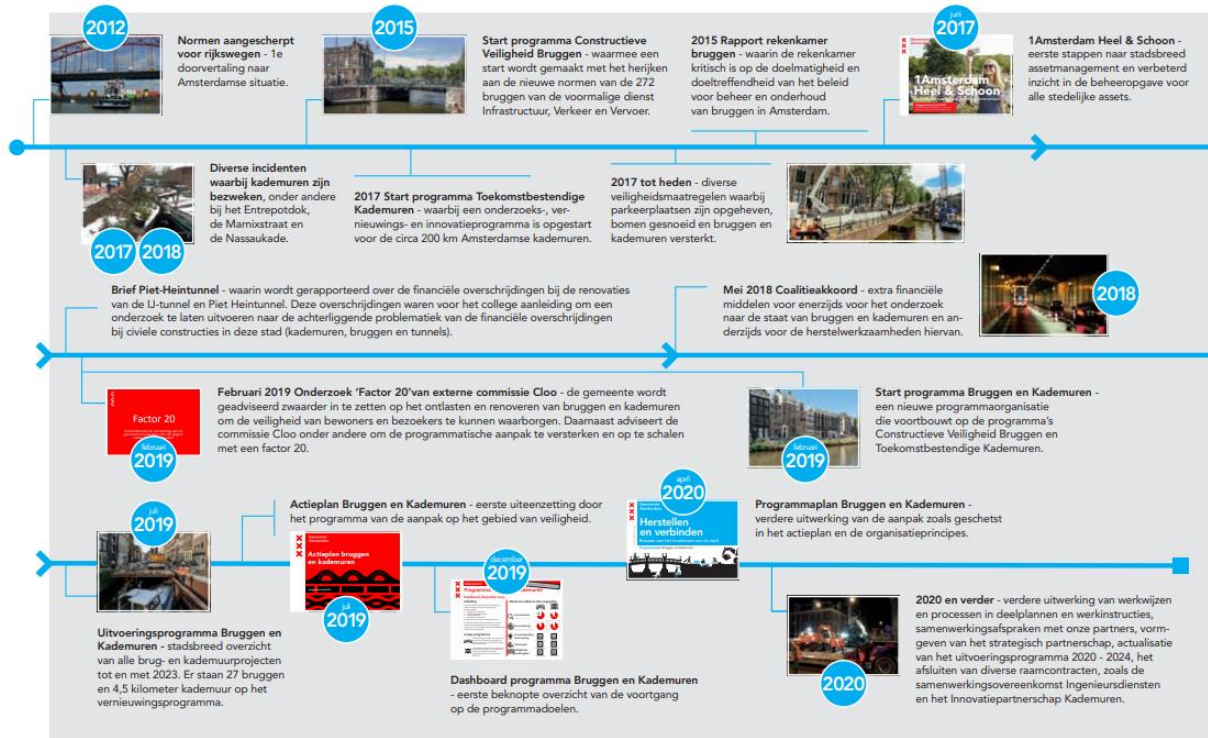
Appendix C: Stakeholders University Quarter
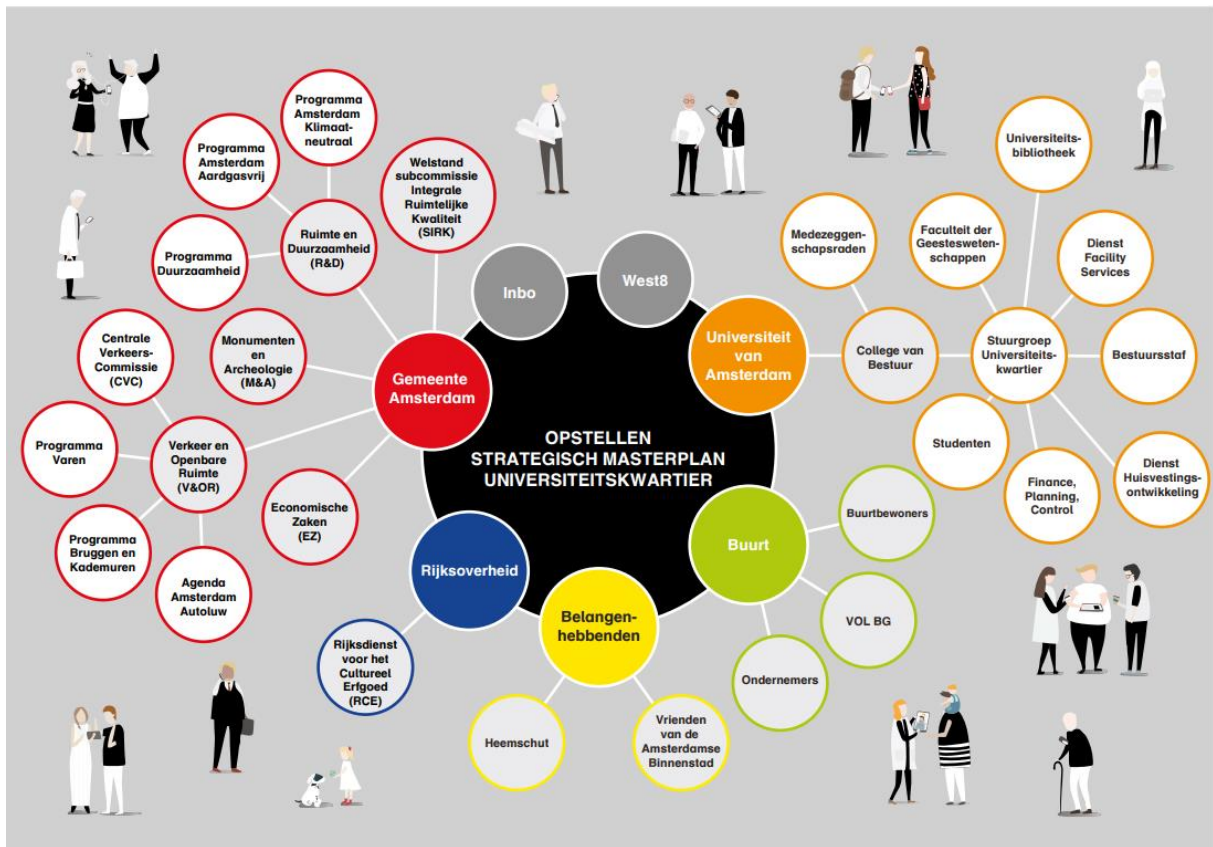
Source: End evaluation Participation Trajectory. Made by the Municipality of Amsterdam, 2021.

Appendix D: Project organisation University Quarter

Source: Convenant UvA & Gemeente Amsterdam, 2018.

Appendix E: Stakeholders Gaasperdammertunnel & Brasapark

Contractors: IXAS (Ballast Nedam, Fluor & Heijmans)
Technical staff: safety managers, green experts, measurement, traffic experts
Municipality: economische zaken, duurzaamheid, verkeer & openbare ruimte
Rijksoverheid
Road users: individuals, emergency services, event planning, surrounding businesses (KLM, Amsterdam ArenA, hotels, etc).

Appendix F: List of people interviewed

Project: University quarter	
Function	Boundary spanner?
Student	No
Project manager	Yes
Mediator	Yes
Monumental care – private organisation	No
Monumental care – municipality	No
Project manager	Yes
Student	No
Resident	No
Environmental manager	Yes
Gebiedsmakelaar	Yes
Project: Quay development	
Designer	No
Program manager	Yes
Project leader – contractor	Yes
Project leader - municipality	Yes
Strategic project manager	Yes

Delegated client	Yes
Manager	Yes
Cooperation manager	Yes
Contract manager	Yes
Project: Gaasperdammertunnel	
Environmental advisor	Yes
Environmental manager	Yes
Safety manager	No
Integral execution manager	Yes
Transition manager	No
Project leader	Yes
Resident	No
Green expert	No
Trainer	No