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**Which factors influence the occurrence of cost overruns
in the complex transport infrastructure project
Spoorzone Delft: A network Perspective**

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Foreword

The courses in the master program Management of Governance Networks have motivated me to seek a thesis-topic that allowed me to explore the complexity of a network of actors in which both the public- and private sector are intertwined. Having to commute from The Hague to Rotterdam to attend university, my train would pass through the new tunnel that runs below the surface of Delft. The dichotomy between Delft's brand new train concourse and the dusty construction pit surrounding the station inspired me to dig deeper into the story behind this large infrastructural project; are the headlines about the financial troubles in Spoorzone project true, or is there more to this story?

I would like to express my gratitude towards all the participants who have welcomed me and have shared their thoughts on the project. I was pleasantly surprised by the willingness of the respondents to participate in my research despite their busy schedules. I would also like to thank my thesis supervisor, prof. dr. Klijn, for providing guidance and feedback throughout this final part of my master studies.

Executive Summary

On a global scale, large transport infrastructure projects are notorious for exceeding their budgeted costs. Researchers like Flyvbjerg determine the magnitude of this occurrence and concluded in 2003 that approximately 9 out of 10 large projects deal with cost overruns. The Spoorzone project in Delft is left no exception to this phenomenon. In 2014, it became evident through two stress tests that the Spoorzone project has a terminal value of -€ 80 million, with a bandwidth between -€ 38 million and -€ 101 million, with drastic consequences for the municipal budget. How could this happen? And which factors have influenced the occurrence of this particular cost overrun in the Spoorzone project Delft? These are the questions that this thesis aims to answer. Through the conducting of interviews with various actors in the Spoorzone network, their perceptions on the value of the project and the possible causes for the overrun are determined. Furthermore, the critical events regarding the Spoorzone project taking place between 2005 and 2016 are analyzed through means of a round-analysis, in which the strategies of the different parties are identified. This thesis thus determines the extent to which psychological- and political explanations for the cost overrun as categorized by Flyvbjerg take place in the Spoorzone project, through an analysis of critical decisions, strategies used the different actor perceptions. The findings indicate that the main explanation for the cost overrun is a combination between the impact of the global economic crisis on the financing structure of the Spoorzone project, and the anchoring of too much optimism during the first stages of the project. This optimism is evident in the low risk-reservation, the confidence in the real estate exploitation as a robust income source, and the accumulation of complex side-projects by the municipality Delft. In other words, psychological explanations as well as the influence of an uncontrollable external event are the main factors that have influenced the occurrence of the cost overrun in the Spoorzone Delft case. The manner in which this outcome is determined takes into consideration the complex nature of large infrastructural projects and the dynamics existing in the network that coordinates them.

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1. Introduction

The city of Delft in The Netherlands is internationally known for its iconic blue and white pottery, its connection with the royal House of Oranje-Naassau, the birthplace of painter Johannes Vermeer and its University of Technology. These icons attract tourists and visitors from a national and international level. For the facilitation of these visitors, as well as the city's strategic position between The Hague and Rotterdam, a well-established railway connection is needed. Plans for the expansion of the existing railway connection were already established in the late 1980's in light of project Rail 21 (Sporzone Delft, 2009). In this plan, the Dutch railways (abbreviated: NS) proposed to build a new viaduct on top of the existing viaduct in order to add two more rail tracks (Klijn, E., 2007). This proposal was strongly rejected by the municipality of Delft due to the undeniable effects that the tunnel would have on the visual appearance of the old city as well as noise pollution. This small snippet of the start of the rail expansion plans already forebodes the tumultuous collaboration that will ensue in the following 28 years between a complex network of actors.

Soon after the viaduct-idea was wiped off the table, the lobby for the implementation of a tunnel became increasingly stronger; Delft and its citizens collectively believed that transferring the train tracks from hovering above the ground to below the surface would drastically improve the environmental quality of the Spoorzone area. Moreover, ideas on how this tunnel would simultaneously cater to the increasing demand in public transport were being enforced throughout the following decades. Once the viaduct, the train track emplacement and several buildings are removed, free space can be utilized for the development of over 1500 living- and working facilities, a new train station and a refurbished municipal office. All in all, the arrival of the tunnel would provide promising opportunities for the municipality Delft to undergo a massive transformation. This would be financed through contributions by multiple public parties (on local, regional and national levels) as well as the additional revenues generated through land sales to real estate developers (NAR, 2010:7). Through the involvement of numerous public and private entities with each their own strategies and objectives, the Spoorzone project in Delft already checks off on the complex feature that often characterizes large infrastructural projects.

The occurrence of cost overruns seem to be a nearly inevitable element that typifies large-scale infrastructural projects. The causes for such overruns vary from overzealous forecasts to influences from unexpected external events (for instance an economic crisis). The Spoorzone Delft project is, in this case, no exception. On Thursday October 20th in 2014, alderman Aletta Hekker (political party D66) reveals that the expected budget shortage of the underground tunnel is not the anticipated 30 million euros, but rather between 50- and 80 million euros (OmroepWest, 2014). What are the explanations for this considerably large budget shortage in the Spoorzone Delft project? And how can research in form of a network approach add to the determination of the explanations for these budget shortages?

These are the questions that this research project aims to answer. It will do so by determining the perceptions of the main actors in the Spoorzone Delft network prior to the implementation of the project (c.a. 2005) though conducting an analysis of policy documents, minutes of network meetings and follow-up interviews with the main actors at that time. At this stage, the perceptions of the actors will involve possible expectations for the implementation of the project and any measures they intend to take stay within the projected budget. After that, the current perceptions of network actors on the explanations for the existing cost overruns will be gauged through interviews. Upon doing so, a comparison can be made between the actor perceptions in two different times of the Spoorzone Delft Project. Such comparison can reveal an interesting angle on the possible explanations for the cost-overruns that are experienced today. Aside from gauging the dynamics perceptions of actors within this particular network, a network analysis will be made in form of rounds. This approach, which will possibly reveal the strategic- and environmental uncertainties that a network surrounding the Spoorzone Delft project has to deal with, indicates how external effects (like an economic crisis or changing regulations at EU level) can influence the occurrence of cost overruns in complex infrastructure projects. Moreover, it will outline the major decisions that have been made and how the actors within the network have anticipated on the dynamics within the network and on external influences.

Herewith, the main research question and sub-questions of this thesis are as follows:

“Which factors influence the occurrence of cost overruns in the complex transport infrastructure project Spoorzone Delft?”

1. *What are the perceptions of the network actors on:*
 - a. *The costs and benefits of the project prior to- and after the implementation?*
 - b. *The value of the Spoorzone Delft project in general?*
 - c. *The possible reasons for the cost overrun?*
2. *What major decisions can be identified during the collaboration process?*
3. *How did the actor perceptions change from prior to the implementation process till now?*
4. *Which psychological and political explanations for cost overruns are most prevalent in this case?*
5. *What lessons can be learnt from the Spoorzone Delft project with regards to cost overruns?*

This thesis aims to determine the psychological- and political explanations that influence the occurrence of cost overruns as experienced in the Spoorzone Delft case through an analysis of the perceptions and strategies of the main actors involved in the network and the decision-making process between 2005 and 2016. By doing so, it aims to show the dynamics in actor perceptions within the network and the influence of the actor strategies on the status of the cost overrun. Furthermore, it aims to show how major decisions have been made in light of uncontrollable external effects and internal strategic uncertainties, and how these contribute to the psychological- and political explanations for the cost overrun.

1.1 Academic & Societal Relevance

This thesis is academically relevant as it aims to determine the explanations for cost overruns through analysis of the perceptions of actors involved in the network. The occurrence of cost overruns in large-scale transport infrastructure projects reveal a myriad of theories, indicating the necessity of project managers and policy makers to understand this nearly inevitable phenomenon. The network-approach as utilized in this research project promotes a different angle of looking at the reasons why cost overruns occur, as it takes the point of view of the actors into account as well rather than only looking at the process externally. Moreover, as the data collection will gauge the actors' perceptions in two different points in time, revealing how expectations on a project can contrast with current opinions could indicate more in-depth explanations for the

occurrence of cost overruns. It is therefore theoretically relevant as it combines the complexity of a network of actors and their perceptions with the explanations for cost overruns.

The societal relevance of this thesis entails the possible insights it may provide to the network surrounding the Spoorzone Delft project on their current situation. The budget shortage that the municipality of Delft is facing has placed it in a detrimental financial disposition, for which it must face the consequences in the coming years. By determining the possible explanations for the cost overruns as experienced in the Spoorzone Delft project, it could function as resource to consulted when initiating such large-scale projects in the future. Aside from this case in particular, the outcomes of this research could be beneficial for other infrastructural projects, as cost overruns are unfortunately difficult to avoid for networks in such endeavors.

2. Theoretical Framework

The Spoorzone Delft project, as well as many other infrastructural projects, is shaped through the interaction between stakeholders in a complex network. The actors within this network make a series of decisions on the development of the project whilst maintaining their individual strategies and perceptions on the issues at hand. Moreover, this decision-making process is shaped and influenced by uncertainties and events that happen in the external environment. The Spoorzone Delft project is therefore complex due to interplay within the network itself, as well as events taking place in the external environment. Henceforth, this thesis aims to determine the political and psychological explanations for the cost overrun as experienced in the Spoorzone Delft project through an analysis of the actors' perceptions and the major decisions that have been made through anticipation of the events that happened in the external environment. It considers the variety of the actors' perceptions on the process of the project, the possible psychological and political explanations for the cost overrun that have been shaped through these perceptions, the dynamics of the interaction process within the network, and the influences of the external environment.

This will outline the theoretical foundation for the central elements which will make up the theoretical framework for the research project. First, the phenomenon 'cost overruns' will be explained, after which the explanations for cost overruns will be elaborated on. After that, the complexity of networks will be explained as well as the dynamics within such an interaction process. Furthermore, an outline of the actor- and game analysis as designed by Koppenjan and Klijn will ensue. Such an analysis will outline the conditions and circumstances that under which complex decision making take place, thus creating the opportunity to determine the factors that influenced costs overrun as experienced in the Spoorzone Project (Koppenjan & Klijn, 2004:133).

2.1 Cost Overruns

The phenomenon 'cost overrun' has been broadly studied as there are many different traditions of research on the financial aspects, the different factors that contribute to its origins, and the dynamics within complex networks that influence the occurrence and cultivation of cost overruns. This thesis considers a combination of these different traditions of research, as it looks at the dynamics

of the complex networks with regards to the perceptions of actors and outside influences, as well as the psychological and political explanations for cost overruns. These terms will be further elaborated on in the following sections.

In order to study the setting in which cost overruns occur, it is important to first attain an understanding of the phenomenon ‘cost overrun’ itself. According to Cantarelli, Flybjerg, Molin, and Van Wee, the actual inaccuracy of cost estimates is measured as the size of cost overruns, and it is calculated as the actual out-turn costs minus estimated costs as a percentage of the estimated costs (Cantarelli et al, 2010:4). Actual costs are described as real, accounted construction costs set at the time the project is completed. Estimated costs are the budgeted costs determined at the time of the initial decision to initiate the project. Cantarelli et al refer to this moment as the ‘formal decision to build’, and the cost overrun is generally calculated based on the costs that were set at this time (2010:4). It is noteworthy that the decision-making process during such a project happens at different intervals in time; therefore the indications to the ‘formal decision to build’ do not always offer a precise picture of cost overruns (Ibid, 2010:4). When stakeholders base their calculation at an earlier point in time (also known as the ‘real decision to build’), then one could speak of a ‘lock-in’ at the decision making level (Ibid, 2010:4). This phenomenon often has an effect on the size of the cost overrun, as usually the estimated costs at the ‘real decision to build’ are generally lower than those at later stages in the decision-making process (Ibid, 2010:4).

2.2 Explanations for Cost Overruns

According to Cantarelli et al, cost overruns in infrastructural projects can be detrimental to a country’s Gross Domestic Product (GDP), especially if it is recognized that decisions on resource allocation are largely based on inaccurate cost estimates. They argue that the management of large-scale infrastructural projects is difficult due to frequent misinformation about the costs, which then results in great cost overruns that, in the end, could be detrimental for the overall project viability (2010:3). In their study, Cantarelli et al. have conducted a systemic investigation into the theories underlying the explanations behind cost overruns in infrastructure projects. They also have reiterated the difference between a ‘cause’ and an ‘explanation’ for a cost overrun. As Cantarelli et al

explain, causes refer to the variables or factors that influence the cost overruns (e.g. the implementation period or the size of the project), whilst explanations are more general and might include several causes (2010:4). The same distinction between these two terms will be utilized in this thesis.

From their systemic investigation of numerous studies, Cantarelli et al have derived four categories: technical-, economical-, psychological-, and political explanations for cost overruns in large-scale infrastructure projects. As utilizing all four explanations in this research project would be too broad, this thesis will predominantly focus on psychological- and political explanations for cost overruns. To explain briefly, the first category is *technical explanations*, which include scope changes, uncertainty, inappropriate organizational structure and inadequate planning processes (Cantarelli et al., 2010:11). The theories that support this category are forecasting theory, planning theory and decision-making theory (Cantarelli et al., 2010:14). The second category, economical causes for cost overruns, include the lack of incentives and resources, the devoted funding process, and the inefficient planning of public outputs, whilst an *economic explanation* would be strategic behavior as costs of projects are often deliberately underestimated in order to get them started (Cantarelli et al., 2010:12). The theories that support this category are mainly founded on neoclassical economics and rational choice theory (Cantarelli et al., 2010:14). The two other remaining categories as described below by Cantarelli et al will be utilized as a leeway in this thesis to subsequently categorize the causes and explanations for cost overruns in the case study Spoorzone Delft, amongst other theories as outlined in this chapter.

2.2.1 Psychological explanations

Psychological explanations, as described by Cantarelli et al, are based on the concepts of planning fallacy and optimism bias that influence the manner in which people take decisions with risky scenarios, either resulting in an overly cautious attitude or an underestimation of the costs (2010:12). A study by Kahneman and Lovallo about behavior of decision-makers involves the examination of possible implications for decision-making in organizations. In this study, Kahneman and Lovallo argue that the balance of two isolation errors (being overly optimistic and overly timid) affects the risk-taking propensities of

individuals and organizations (1993:17). The planning fallacy leads to optimism bias, meaning the systemic inclination to underestimate costs and completion times and to overestimate the benefits of planned actions. It is therefore almost a 'human tendency' that results in the eventual occurrence of cost overruns. In their paper, Kahneman and Lovallo stress that a broad view of decision problems is a critical requirement of rational decision making, meaning that the decision frame should be broadened to include uncertainties, and estimates of future earnings should be expressed in the assessments of wealth (Kahneman & Lovallo, 1993:20).

In another article, Kahneman and Lovallo argue that executives' 'overoptimism' can be traced both to cognitive biases and to organizational pressures (Harvard Business Review, 2003). The inherent tendency to be overly optimistic can be traced back to the human inclination to exaggerate its own talents and, at the same time, misperceive the causes of certain events (ibid). It is a human predisposition to take credit for positive outcomes, but to blame negative outcomes to uncontrollable external factors (for instance inflation). Furthermore, we also tend to overestimate the degree of control we do have over events, disregarding the role of luck and coincidence. When it comes to planning large infrastructural projects, these factors are unfortunately no exception. The illusion of being in absolute control or the downplaying of uncontrollable events are the cognitive biases that contribute to the psychological explanations of cost overruns in large infrastructural projects.

As argued by Kahneman and Lovallo, three other kinds of cognitive biases further reinforce the inherent tendency to be overly optimistic. The most prevalent cognitive bias is called 'anchoring', and it involves the initial plan (based on market research and financial analysis) as a proposal designed to persuade the acceptance of the plan, thus skewed toward over optimism (Ibid, 2003). Especially when it comes to forecasting, planners and executives establish budgets based on their original cost estimates without sufficiently considering the costs experienced in problems, delays, and changes in the gamut of the project. Through this anchorage, the forecast becomes overly optimistic thus providing unrealistic expectations on the development of the project. The second cognitive bias revolves around the underestimation of competitor's behavior due

to continuous focus on the organization's own capabilities and plans. When it comes to forecasting large infrastructural project, the influences of competing projects (for instance, other projects that are contending for the same municipal budget) can cause for disruptions in the implementation process. The third cognitive bias is the organizational pressure that executives experience in providing an attractive proposal, resulting in the tendency to accentuate the positive aspects of the forecast (Ibid, 2003). These pressures include the stress surrounding time shortages and need for funding, the practice of discouraging pessimism and the need to meet the benchmarks for their business units (Ibid, 2003).

2.2.2 Political explanations

Political explanations for costs overruns are the deliberate cost estimation and the strategic misinterpretations of forecasts, including causes like learning, a lack of coordination, long-term commitment- and discipline, organizational and political pressures, and asymmetric information. Learning comprises the knowledge amongst managers and decision makers that forecasts of outcomes of projects need to be desirable in order to get selected, henceforth leading to the strategic misinterpretation of forecasts. The lack of coordination, the lack of long-term commitment and the lack of discipline by managers and decision-makers allow for strategic behavior, as there are not many consequences related to this conduct. Organizational and political pressures contribute to strategic misinterpretation amongst decision-makers as forecasts are designed to gain the most politically or organizationally desired outcomes. Asymmetric information refers to the occurrence that decision-makers often base their decisions on little information derived from the forecasts, thus allowing them to misinterpret this information in a strategic manner (Cantarelli et al., 2010:12).

According to Cantarelli et al, the political explanation is the most prevalent reason for cost overruns in large infrastructural projects (Ibid, 2010:12). The theories supporting this last category are the concept of Machiavellianism, agency theory, and ethical theory (Ibid, 2010:16). Agency theory is considered to be the most interesting theory to use in order to create a better understanding of cost overruns due to its specificity and its multitude of different disciplines, including politics, economics and sociology (Ibid, 2010:17).

Agency theory notes the assumption that people act unreservedly in their own narrowly defined self-interest, with, if necessary, guile and deceit. It is mostly concerned with the contacts and relationships between individuals with an asymmetric dimension (Noreen, E., 1988:359). Agency theory is relevant to political explanations of cost overruns as it can clarify why strategic behavior is made possible by the concept of asymmetric information, as well as context of the institutional set-ups between parties to guide the decision-making on projects (Cantarelli et al, 2010:16).

Flyvbjerg outlines his research in “the Machiavellian formula for project approval”, which essentially looks at the political explanations for cost overruns in large construction projects. In this article, Flyvbjerg and his fellow research associates have looked at 300 cases in twenty different countries. They have discovered that these large construction projects follow a general pattern of cost underestimation and cost overrun. One prominent reason given for cost underestimation is the deliberate manipulation of costs and benefits to help get projects approved. Flyvbjerg is alarmed about the extent to which rent-seeking behavior by stakeholders in such networks has captured and substituted the pursuit of public good and how the resulting high costs fall on the shoulders of society (Flyvbjerg, B., 2005:57). Moreover, large projects are often incentivized by promises made on their positive impact on society, politicians get persuaded to have a ‘ribbon-cutting moment’ in their career, and cities receive investment that would otherwise go elsewhere (Ibid, 2005:57). Flyvbjerg argues that corruption often also plays a significant role in approving major construction projects with misleading forecasts. According to Transparency International, the occurrence and magnitude of bribes are bigger in construction and public works compared to any other economic sector, which applies both in developing and developed nations. In his article, Flyvbjerg calls for accountability and critical questioning in the war on deception in large infrastructural projects and this can be done through examination by independent specialists and organizations (2005:59).

According to Wachs, planners who are in charge of presenting a forecast are often trapped between two competing models of their role, which often results in the forging of data to make it desirable (Wachs, 1989:476). On the one

hand, planners are expected to exercise independent and professional judgment, but at the same time use data and models to appease the course of action by a client or employer (Ibid, 1989:477). This dilemma between planning as science and planning as advocacy is another reason as to why budget forecasts are often inaccurate from the start, most likely resulting in the eventual cost overrun in large infrastructural projects. This is yet another political explanation as to why this phenomenon occurs.

2.2 Complexity in Networks

In order to determine the psychological and political explanations for cost overruns, it is important to recognize the complexity and the dynamics of the interaction process within a network of actors. Firstly, the theory behind policy networks will be explained. Secondly, the dynamics of policy processes will be elaborated on, including the diversity of actor perceptions and the institutionalization of rules within networks. Once the theory behind complex networks is clarified, section 2.3 shall continue with elaborating on the steps of an actor- and game analysis as designed by Koppenjan and Klijn.

2.2.1 (Policy) Networks

The concept (policy) network inhibits the trait that policy processes take place within networks of actors that are mutually dependent on each other (Klijn, E.H., 1996:91). In his article, Klijn lists three qualities that characterize the network approach to public policy, namely a) the interdependency between actors, b) the interaction between actors shape the eventual policy or outcome of the network, and c) through patterns in relations rules of conduct emerge that give meaning to the interactions between actors (Ibid, 1996:93). Furthermore, Klijn stresses the importance of recognizing the dynamics in policy making and the strategic character of the interaction between actors. In order to conceptualize a network as a social system, it can be compared to a 'game', which is structured in different 'rounds' as derived from the structuration theory by Giddens (Ibid, 1996:96). This will be further explained in the following section.

2.2.2 Dynamics of Policy Processes

The interaction setting in which actors operate can be compared to a game. In his article, Klijn refers to a game as "an ongoing, sequential chain of (strategic)

actions between different players (actors) governed by formal and informal rules that develop around issues or decisions in which actors are interested” (Klijn, E.H., 1996:98). In a game, actors behave in a strategic manner in order to achieve the means-ends combinations that they want to pursue. This strategic behavior results in the constant estimation by other actors of each other’s behavior and a frequent evaluation of their own strategies (Ibid, 1996:99). The strategic uncertainty contributes to the highly dynamic character of policy networks, as well as the continuous alteration of actor strategies based on changing strategies and preferences. A game is shaped through the perceived realities by the different actors involved as these perceptions shape their actions and strategies.

The existence of different perceptions contributes to the dynamics within a network. According to Klijn, perceptions are the images or definitions that actors use in their game situation and concerns three vital aspects of the game, namely a) the interdependencies with other actors; b) the ambitions of the game and the actors; and c) the policy arena and the policy problems that are important on that arena (1996:100). Perceptions can change due to several reasons, namely due to interactions within a game, the entrance (and exit) of actors, due to (un)foreseen effects of previous games, and consequences of other games outside the policy network.

Another factor that contributes to the dynamics within policy networks is the institutionalization of the interaction process between the actors. As actors are continuously drawing upon resources in the network to attain goals or to create new games, there is a need to adjust and sustain the rules and resources that comprise the network (Ibid, 1996:101). These rules are not necessarily tangible or deliberately enforced within the network; they have to be assembled by the analyst through observation of the actors’ perceptions and interaction within the network. Whilst the institutionalization of the interaction process adds to the dynamics within policy networks, it simultaneously provides the opportunity to structure interactions and provide a sense of stability within the network.

Recognizing the dynamics within a network is of pivotal importance, as it constitutes a continuous interaction between actors, which is shaped and reproduced through a series of games (Ibid, 1996:112). By creating an

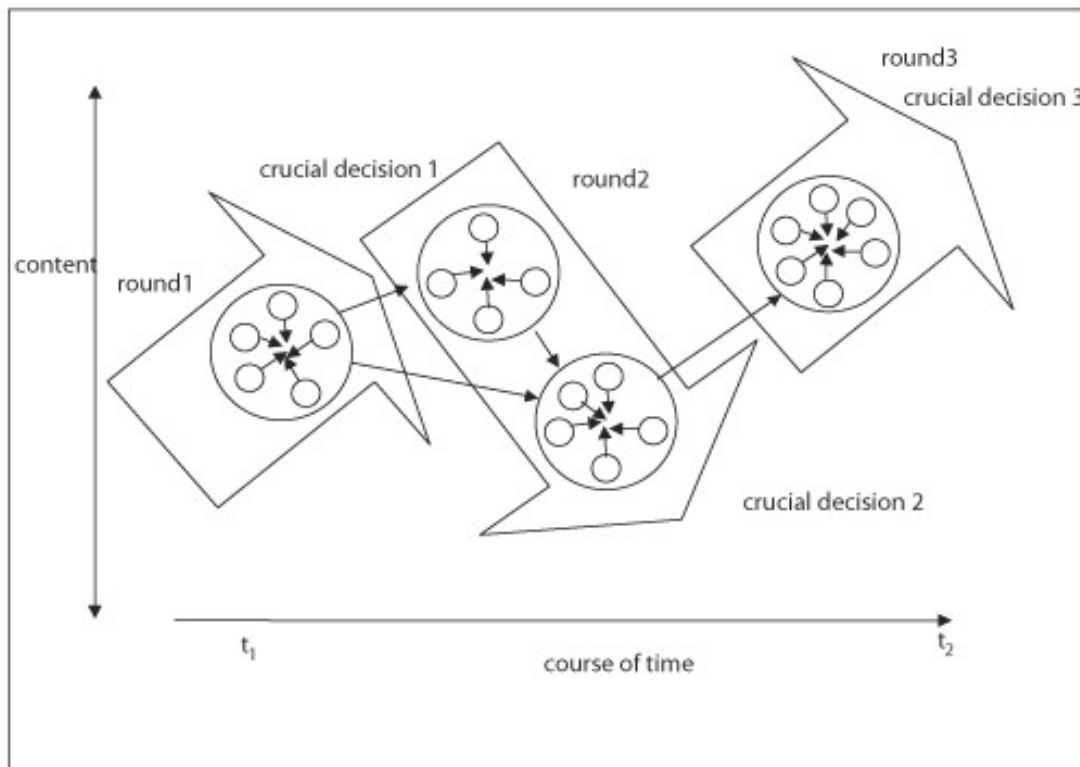
understanding of the different perceptions, strategies, and rules existing within a network, it allows an opportunity to outline the major decision that have been made and how the network anticipated on dynamics within the network itself and in the external environment.

2.3 Analyzing Complex Decision-making Processes

A governance network is often rather large and complex, which can also be said on the collaboration process during the implementation of the project. In order to create an understanding of the functioning of a network (and ultimately determine how the psychological- and political explanations for cost overruns have impacted the decision-making process), this thesis will conduct an actor- and game analysis as designed by Koppenjan and Klijn. By doing so, the thesis will contain an overview of the organization and conditions under which the complex decisions in the project have been made. Important is to note that the elements each type of analysis will be selected according to its usefulness for this thesis. The actor, game and network analysis as designed by Koppenjan and Klijn is a very useful approach to creating an understanding of the complexity surrounding such a case.

Large spatial projects (including the Spoorzone case that is discussed in this research project) typically inhibit complex decision-making processes. These often become multifaceted due to the involvement of multiple actor strategies and the large stakes that are at hand. For instance, many citizens are affected by the long construction period, so factors like safety and continuity of the existing public transport flows need to be maintained at all times. In order to create an understanding of this complexity, the decision making process can be arranged through means of a rounds model. This model outlines the typical evolution of policy games, in which the context of the network influences the decision making process over the course of time. The graph below is a visual representation of the rounds model as designed by Koppenjan and Klijn:

Figure 1: Rounds Model



(Koppenjan, J., Klijn, E.H., 2004:61)

The two central elements that typify the analysis of this complex decision-making process through the rounds model are the actors (who they are, their resources, objectives, and strategies) and the process in which they make crucial decisions. These elements will be further elaborated in the remainder of this chapter.

2.3.1 Actor analysis

In order to create a preliminary overview of a (governance) network, it is important to firstly identify the main problem situation as a starting point. Herewith it is important to look at the current situation of this problem, the consequences that derive from it, possible causes, the desired situation, and what solutions are momentarily pursued (Koppenjan, J., & Klijn, E., 2004:138).

The second step is to create an inventory of the actors involved in the problem situation, and arrange these actors according to their importance through the usage of selection criteria. A few examples of such criteria are the amount of resources each actor has, the extent to which the actor is involved in the problem situation, and the manner in which actors are affected by the problem or the approach to it (Ibid, 2004:138). It is important to note that some

actors within a network are affiliated, as they are units of one larger organization; Koppenjan and Klein refer to this as a 'compound actor', and they stress that the selection of such an actor should be from the highest organization possible without losing information (Ibid, 2004:139).

Subsequently, the third step of an actor analysis is to create an inventory of the (problem) perceptions of the actors, as each stakeholder has their own impression on what the problem at hand entails and how it should be dealt with. This trait of actors within a network is what actually contributes to its complexity and what makes networks interesting to study. The different actors' perceptions are then mapped systematically according to a list of questions. A few examples of such questions involve the possible causes according to those actors and what the crux is of the problem situation (Ibid, 2004:140). Furthermore, the objectives and interests of the different actors are reconstructed through means of interviews and/or analysis of documents. According to Koppenjan and Klein, objectives are a concretization of the actor's perspective, whilst the interests are guiding values pursued by an actor (Ibid, 2004:142). In order to understand the actors' interests and objectives, the analyst first uses a 'quick and dirty' method by answering the three following questions: what the actor wants to achieve in light of the problem situation, the reason behind the objectives of the actors, and what the costs and benefits for the actor are in relation to the problem situation (Ibid, 2004:142). The answers are then translated into an 'objective-means' schema, in which the means and the goals of each actor are hierarchically ordered. By doing so, a systematic comparison can be made between the different problem definitions of the actors, this shines light on the areas where conflict exists but also where agreements can be accomplished (Ibid, 2004:143).

The fourth step of the actor analysis includes the determination of the dependency relations between the actors in the network by taking a close look at their resources and what they mean to other actors. Koppenjan and Klijn distinguish five different resources that can be mapped according to each actor, namely financial- and production resources, competencies, knowledge and legitimacy respectively (2004:144). Financial means are an important resource to have as they facilitate the costs that complex decision-making processes bring

along. Production resources include the know-how and equipment for solving a particular problem or executing a certain project. Competencies as a resource concern the formal or legal authority to make certain decisions (for example the issuing of permits). Knowledge as a resource involves the information needed in order to determine the nature of the problem or the development of solutions. Legitimacy concerns the ability to give a certain 'weight' to a project or problem (through means of support by a political party or through the media) (Ibid, 2004:145). Once these resources are mapped according to each actor involved, the degree of dependence needs to be determined through Schapf's taxonomy. By doing so, the importance of the resource as well as its substitutability provides insights into the different dependency relations that exist between the actors in the network. A distinction can be made between the actors that are dedicated (ergo willing to use their resources to solve a problem) and non-dedicated, as well as critical (ergo owning resources that play a large role in facilitating or hindering a solution to the problem) and non-critical actors. It is important to note that the actors and dependencies can change during the different stages of collaborations; actors may enter or leave the network or other resources may become more important at a later stage. It is therefore critical to recognize that a dependency analysis should be done at different intervals to ensure its accuracy (Ibid, 2004:147).

2.3.2 Game analysis

This type of analysis provides more insight into the collaboration process as a whole. It starts with the identification of the relevant arenas where the interaction between actors in a network takes place. After determining the most important stakeholders during the actor analysis, it should be backtracked what decisions were made at which locations and which issues the main stakeholders are dealing with at those locations. This gives an overview of the actor activity in an array of different arenas. Furthermore, it should be determined what organizational arrangements are in place that structures the interaction of these stakeholders (Ibid, 2004:148).

The next step is to determine whether there was an impasse during the collaboration and its nature. An impasse happens when actors are disagreeing about a certain point but are yet unable to move towards a consensus or reach a

break-through in their pattern of interaction. This often has a polarizing effect amongst network contacts and could sometimes lead to stagnation in the collaboration process. Through mapping of an argumentation structure, the nature of conflict can be determined and possibly new methods of intervention can be found (Ibid, 2004: 149). For the argumentation structure, the perceptions collected in the actor analysis (as explained in the previous section) can be utilized by comparing these different actor standpoints; are actors failing to collaborate based on differences in standpoints or on the language used during the debate? Aside from looking at the substantive component of an impasse, one must also look at the social element. This can be done through the mapping of the nature and frequency of interaction between the different stakeholders, as this could provide an explanation as to why certain actors are in conflict (for instance through a drastic decrease in interaction).

Due to the complexity of policy games and the involvement of different actors in an extensive variety of different arenas, a functional way to display this is through the coupling of games. The evolution of policy games can be compared to sports match in a number of rounds, as visualized by Koppenjan and Klijn (2004:60), in which actors interact in order to reach a common goal. As mentioned previously in this section, the occurrence of impasses, stagnations, blockages by other actors and eventually breakthroughs are characteristics of a policy game, which exists out of different rounds. Each of these rounds ends with a crucial decision, which is a decision that offers a solution for the question that is central to the policy round in question (Ibid, 2004:60). This crucial decision again initiates a new round in which possibly new actors and new arenas come in play. Especially policy games or network collaborations surrounding a project stretch over a long period of time; by translating this process in terms of rounds, it will contribute to the understanding of its complexity.

2.3.3 Actor Strategies

Aside from the actors and the process being important elements in the analysis of complex decision-making process that typify large spatial projects, it is also important to consider the strategies that actors use. According to Koppenjan and Klijn, both of the objectives of the actors as well as their strategies are derived from and inspired by their perceptions (2004:48). Through means of the actor

analysis as described in section 2.3.1, the individual objectives and the perceptions of the actors are determined. Based on the (critical) decisions that have been made by the actors, the type of strategy can be derived. Koppenjan and Klijn distinguish five types of strategies (2014:49):

- 1) **Go-alone:** The actor at hand has formulated a substantive solution to the problem situation, but attempts to realize this despite his strategic dependencies on other actors; meaning that the actor will go about it alone. Due to the solitary mentality of this strategy, it sometimes results in the resistance by other actors, as they will notice that the party at hand is mainly interested in achieving its personal objectives.
- 2) **Conflictual:** The actor at hand predominantly acts to prevent or block solutions that are considered desirable by one actor.
- 3) **Avoidance:** Parties adopt a passive attitude or avoid conflict instead of resisting a particular solution.
- 4) **Cooperative:** Actors acknowledge their external dependencies and do everything to interest other parties in their plan and subsequently aim to achieve a desirable result in the negotiation process.
- 5) **Facilitating:** Actors work together to achieve a mutually beneficial solution through means of mediation in conflicts and creating unity in networks. Facilitating strategies may occur when actors themselves aim to do so, or when they want to limit transaction costs (Koppenjan, J., Klijn, E.H., 2014:49).

These strategies influence the manner in which actors go about their objectives and how they react to certain decisions or events that happen within the network. In the same way, the different strategies that actors apply during a collaboration process can affect the occurrence of a cost overrun. The next chapter will outline how this exactly can take place and which indicators are used for the identification of psychological- and political explanations for cost overruns.

3. Methodological Considerations

The following chapter will outline the methodological considerations taken in this thesis by explaining the methods of data collection, the operationalization of the different variables, the visualization of a conceptual framework, the ethical considerations, as well as the internal- and external validity of the research design.

3.1 Methods of Data Collection

In order to determine the psychological- and political explanations for cost overruns as experienced in the Spoorzone Delft project, this thesis aims to achieve this through an analysis of policy documents and conducting interviews with the (main) actors involved in the network. It is therefore a case study with qualitative research methods in the form of interviews and document analysis. An essential part is gauging the actors' perceptions at two times in the ten-year timeframe; namely prior to the implementation of the project (expectations of the project) and their current perceptions on the apparent cost overrun. This allows for displaying the dynamics in actor perceptions and how these have changed according to the different 'rounds' in the last ten years. Moreover, it may indicate whether actors had already expected cost overruns to occur, or whether they were too optimistic in their budgeting. Furthermore, an analysis of policy documents aside from data gathered in the interviews shall be conducted in order to compensate for actor perceptions that may be influenced by fallacies in memories or unintentional alterations. The development of the Spoorzone Delft project, the main actors involved and their own perceptions are established through the actor- and game analysis as designed by Koppenjan and Klijn (2004).

3.2 Operationalization

The variables in this thesis are derived from the main elements as discussed in the theoretical framework, namely the psychological- and political explanations for cost overruns. These two categorical variables are divided into several sub-explanations, which make up the indicators of this thesis. The *psychological explanations* for the occurrence of cost overruns make up a total of five factors:

1. The overestimation of own capabilities by the initiators

2. The underestimation of the effects of uncontrollable external factors
3. The anchorage of optimism in the project forecast
4. The underestimation of competing projects
5. The organizational pressures in providing a desirable proposal/forecast.

The *political explanations* for the occurrence of cost overruns make up a total of two factors. The second factor contains three sub-explanations.

1. The deliberate manipulation of costs and benefits to get the project approved
2. The strategic misinterpretation of forecasts; with the sub-explanations:
 - a. Learning
 - b. Organizational and political pressure
 - c. Asymmetric information

These categories represent the indicators of the psychological and political explanations for cost overruns as identified in the Spoorzone Delft case. They will be operationalized through the categorization of the contents of in-depth interviews and through document analysis. The in-depth interviews with the main actors of the Spoorzone Delft network will contain questions that are directed towards the possible psychological and political explanations for cost overruns whilst maintaining openness for other explanations that the interviewees want to discuss. After conduction of the interviews, a memo of each interview will be written in order to identify preliminary conceptual connections between categories. By doing so, the core categories as identified in the theoretical framework will be tested according to their fit, relevance and workability for the theory (Holton, J., 2010). The contents of these interviews will be coded and categorized according to the explanations and sub-explanations as discussed in the theoretical framework. Furthermore, analysis of documents as well as minutes of network gatherings will be coded according to the same categories. Find in the table below an outline of the variables, their definitions and the indicators that will be utilized in the interviews and document analysis.

Table 1: Variables & Indicators Explanation Overrun

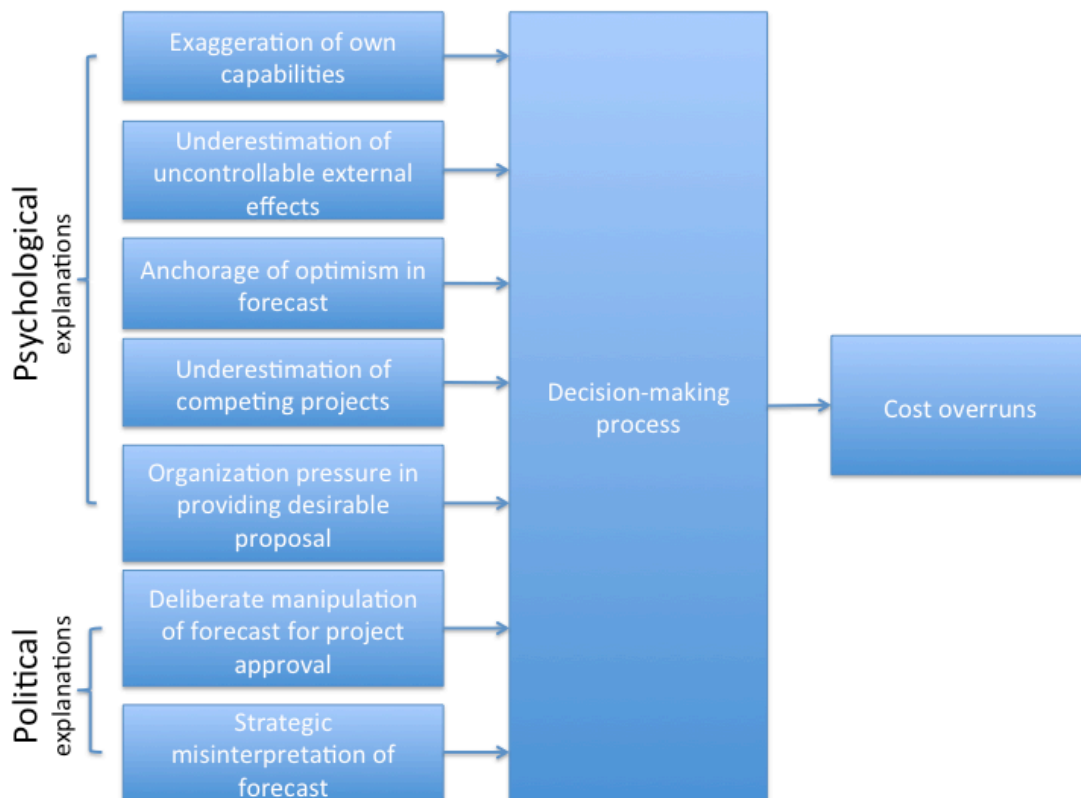
Variable	Definition	Indicator
Exaggeration of own capabilities	The inherent tendency to be overly optimistic can be traced back to the human inclination to exaggerate its own talents and, at the same time, misperceive the causes of certain events. It is a human predisposition to take credit for positive outcomes, but to blame negative outcomes to uncontrollable external factors (for instance inflation) (Kahneman & Lovallo, 2003)	<ul style="list-style-type: none"> • Critique on forecast's inaccuracy (in interviews) • Low risk-reservation in business case • Taking on many risky projects at the same time by commissioner • Continuous underestimation of risks when making decisions
Underestimation of uncontrollable external effects	The inherent tendency to disregard the role of luck and coincidence in the success of large projects. The lack of recognition of possible 'doom scenarios' of uncontrollable external events.	<ul style="list-style-type: none"> • Absence of worst-case (or no case) scenarios in business case/forecast • Coming across 'unexpected' troubles that should have been considered beforehand
Anchorage of optimism in forecast	Being overly optimistic on the prospects of the project; that it can be achieved in a short amount of time within the desirable budget	<ul style="list-style-type: none"> • Low risk reservation • Overzealous timeline in forecast • Taking risky decisions in initiation of project
Underestimation of competing projects	When it comes to forecasting large infrastructural project, the influences of competing projects (for instance, other projects that are contending for the same municipal budget) can cause for disruptions in the implementation process. (Kahneman & Lovallo, 2003)	<ul style="list-style-type: none"> • Absence of realization influence/impact of other projects on main project • Underestimation of interdependency of project elements
Organizational pressure in providing desirable proposal	The organizational pressure that executives experience in providing an attractive proposal, resulting in the tendency to accentuate the positive aspects of the forecast. (Kahneman & Lovallo, 2003).	<ul style="list-style-type: none"> • Indication of stress surrounding time shortages and need for funding • Pressure by commissioner or financier to keep budget and timeline unrealistically low
Deliberate manipulation of forecast for project approval	Companies acquired through tenders or executives design the proposal or forecast in such a way that it will be desirable by the initiators thus resulting in approval.	<ul style="list-style-type: none"> • Unrealistic proposed budget and timeframe for project; actual costs are eventually much higher than in proposal/forecast
Strategic misinterpretation of forecast - Learning - Asymmetric information	Organizational and political pressures contribute to strategic misinterpretation amongst decision-makers as forecasts are designed to gain the most politically or organizationally desired outcomes. Learning comprises the knowledge amongst managers and decision makers that forecasts of outcomes of projects need to be desirable in order to get selected. Asymmetric information refers to the occurrence that decision-makers often base their decisions on little information derived from the forecasts, thus allowing them to misinterpret this information in a strategic	<ul style="list-style-type: none"> • Deliberate inaction of actors in situation where action is highly necessary; deliberately ignoring warnings of high costs • Critical decisions are based on insufficient information

manner (Cantarelli et al., 2010:12).

3.3 Conceptual Framework

The following conceptual framework is a visualization of the system of concepts, assumptions, expectations, beliefs and theories that supports this thesis. It outlines the relationships between the psychological and political factors occurring in large infrastructural projects, its influence on the decision-making process within the network and the eventual manifestation of cost overruns.

Figure 2: Conceptual Framework



Henceforth, in this thesis, the case will be analyzed in forms of rounds, which are determined through critical decisions that are made within the network. These decisions have a certain effect/relation (or no effect, given the situation) on the apparent cost overrun. After the critical events or decisions, it is then to be determined how the different actors strategized and reacted to the events (for instance, the manifestation of the global economic crisis) and how these actions/strategies are related to psychological and political explanations as formulated by Flyvbjerg.

3.3.1 Expectations

As the variables and relations are displayed in the conceptual framework in the previous section, a few expectations can be derived from these relations. Firstly, that the psychological- and political explanations for cost overruns have an effect on the manner in which the actors in the network make decisions. For instance, an anchorage of optimism in the forecast amongst the actors will have a direct influence on the decisions that the network will make. Based on a positive forecast, actors could make bolder decisions or agree with higher costs as they envision a surrealistic future for the project. Another probability for the relations in this thesis is that the expectations of actors and the decision-making process that is based on these expectations will have an influence on the occurrence of cost overruns; if the decision-making process is predisposed by internal- and external pressures (for instance strict deadlines by the client or the results of the economic crisis in 2008), it will have an influence on the manifestation of cost overruns.

Henceforth, in this thesis the eventual result is already known, being the cost overrun that the municipality of Delft is dealing with today as a result of the Spoorzone Delft project. The relations it aims to determine are the psychological- and political explanations for this cost overrun and how the dynamics within the complex network formation and external forces have influenced the decision-making process towards a project with a cost overrun.

3.4 Ethical Considerations

During this research there are some ethical factors that are important to consider. The interviewees will participate voluntarily and the manner in which the contents of the interviews will be utilized will be fully disclosed to them. Upon completion of the interview, a transcript will be sent to the interviewee to ensure optimal accordance with the data that has been gathered. Furthermore, information acquired through interviews and documents will remain fully confidential. The identities of the participants will be anonymous unless otherwise specified. Upon completion of the thesis and if given a passing mark, the participants who wish to remain informed on the result of the study will receive a digital copy of the thesis.

3.5 Internal- and External Validity

Prior to the gathering of data for analysis, this thesis must consider the factors that could influence its internal- and external validity and how this should be handled. The internal validity refers to the initial quality of the research and how the causality between the independent- and dependent variables can be justified.

Due to the actor- and game analysis as designed by Koppenjan and Klijn, any events that could have influenced the variables are incorporated in this analysis. It will give an overview of the main actors, decisions and events that have happened over a period of approximately fifteen years, thus considering this in the identification of the psychological and political explanations for the occurrence of the cost overrun. This overview will also take into account the maturation of the dependent variable, being the different actors that exit- and enter the different rounds. The interviewees will be selected through the actor analysis, which provides an inventory of the actors involved in the problem situation and are arranged according to their importance. Furthermore, the interview questions will gauge their perceptions on the explanations for the cost overruns as experienced in the Spoorzone Delft case prior to the implementation period and their current perceptions, after which a comparison can be made. In order to compensate for actor perceptions that may be influenced by fallacies in memories or unintentional alterations during the interviews, an analysis of policy documents aside from data gathered in the interviews shall be conducted.

A possible threat to the internal validity of this research could be that some actors are unable or not willing to participate, which could jeopardize the results of the research. One way to deal with this threat is to properly inform the actors on the potentials of this research project and to emphasize their importance in its completion. Another important factor to consider is that actors' perceptions on the explanations for cost overruns are biased according to their direct environment, personal experiences and memory. This is an asset to the evaluation of the different perceptions, but simultaneously also could influence the accuracy of their answers in the interviews. In order to counterweigh this occurrence, it is of pivotal importance to have an accurate timeline present at interviews and during the analysis.

The external validity of the research refers to the degree to which the results of this thesis could be generalized to and across settings and times, thus to other infrastructural projects dealing with cost overruns. The results of this research will be rather specific as it takes an in-depth look at the Spoorzone Delft and does not necessarily compare it with another case study. Especially by only looking at the psychological- and political explanations for cost overruns through the perceptions of the actors, the results of this research are then rather specific to the circumstances of Spoorzone Delft. However, by eventually comparing these results with findings in research done by Flyvbjerg and Cantarelli, its generality to other situations can be identified. Moreover, this thesis could function as an addition to the already existing body of research done on the explanations for cost overruns in large infrastructural projects.

4. The Network surrounding the Spoorzone Delft case

The following chapter gives a brief overview of the actual problem situation and the tasks and responsibilities of the central actors within the Spoorzone Delft project, as each plays their own significant role in the Spoorzone Delft network from the period 2005 till 2016. These central actors are essentially the “players” of the “game” that make up the interactions within the network. The parties each function in various governance levels and each have their own tasks, responsibilities, resources, perspectives, and objectives. This chapter will outline the perceptions of these actors on the central problem that the municipality of Delft is currently dealing with due to the Spoorzone project, namely the repercussions of a considerable cost overrun.

Firstly, a brief explanation of the ‘problem situation’ will ensue. This involves the crux that the whole actor analysis revolves around, namely the possible explanations for the cost overrun as occurred in the Spoorzone Delft case. In order to provide some more context and information on the actors in the network, the following chapter will also consist out of several tables. The first table outlines a general description of each of the actors involved and their main objective within the Spoorzone project. The second table displays the tasks and responsibilities of each of the actors. By outlining the functions of the different parties involved, it allows for assessment of their centrality and importance in the network. The third table represents the resources that each of the stakeholders possess within the network. By doing so, it provides the opportunity to establish where mutual dependencies are present within the network and which actors are most vital within the network. The fourth table outlines the perspectives of each other the actors on their perceived value of the Spoorzone project and on the possible explanations for the cost overrun. The perspectives of the different actors are gauged through the conduction of interviews and derived from policy documents and minutes from meetings where necessary. This information serves as a foundation for the round analysis in chapter 5.

It is important to reiterate beforehand that some of the actors described in this table (OCDS and City District Haaglanden respectively) are not mentioned in further analysis as they are dissolved at some point or could not be

interviewed during the data collection. In order to make up for this gap, the perception of Ballast Nedam is gauged through a report of a public discussion on the role of the real-estate market in financing of large-scale infrastructural projects. Furthermore, it must be noted that the respondent on behalf of Combinatie Crommelijn VOF (CCL) could not make any statements about financial matters as they are contractually prohibited from doing so. Henceforth, the statements on behalf of CCL in this analysis are from the perspective of the respondent itself or on behalf of the citizens of Delft. It is therefore not the statements by CCL as a whole, but personal views on the matter by one of its professionals.

4.1 Problem Situation

Currently, the municipality Delft is dealing with the financial repercussions of the cost overrun of the Spoorzone project as such became evident after the two stress tests in 2014. These ramifications are noticeable in the cutbacks of the municipal office and the significant increase in property taxes in Delft (L. Harpe, personal communication, May 16, 2016). Fortunately, the municipal budget is proven to be solid again from 2017 onwards, and the Province Zuid-Holland is withdrawing its supervision for the four-year budget 2016 – 2019. According to De Adviesgroep, who wrote a guidance report for the municipality called “Delft, Parel in de Randstad”, the time span needed to achieve sustainable and healthy municipal finances again will take at least ten more years (De Adviesgroep, 2016). The consequences of the cost overrun are definitely noticeable for the municipality and its citizens.

The possible causes that are regarded for this cost overrun are rather diverse considering the complexity of the network and the impact of the financial crisis in 2008. In light of the cost overrun, the Policy Research Corporation has conducted research on three large infrastructural projects in Delft (including the Spoorzone project), as commissioned by the municipal council. This research is solely based on facts and has been initiated due to the financial predicament that the municipality was in 2015. Some conclusions that are drawn from this research refer to the possible causes of the cost overrun in light of the Spoorzone project. The first conclusion is that Delft did not consider in its risk-analyses the robustness of the deal with OCDS, and that the agreements made with this actor

in 2003 were not reassessed in 2008. This means that a ‘worst case scenario’ regarding these agreements was never really considered by the municipality nor by the state (Policy Research Corporation, 2016:10). The second conclusion is that the planning of the project appeared to be scheduled much too optimistically, considering that none of the project elements was realized according to the original planning (Ibid, 2016:10). Another conclusion states the delays of the tunnel and the new municipal office, resulting in high additional costs that could have been prevented according to the policy (Ibid, 2016:11). Furthermore, according to Policy Research Corporation, many aspects prior to and during the execution of the project were estimated way too optimistically; the design of urban development has proven to be much more expensive than initially planned and that the tunnel also exceeded the initially planned costs (also after the scope-change). Another conclusion states that the primary risk planning has been rather low for such a complex project and its magnitude; on a total sum of 350 million euros, the total reserved risk amounted to only 7% (Ibid, 2016:11). The research project also concludes that the net costs have increased drastically for Delft from 61.2 million euros to 218 million euros. The main contributing factors to this increase are, according to the Policy Research Corporation, the decrease of real estate exploitation (in 2008 the expected real revenues were 90 million euros, and in 2014 this amounted to 50 million euros), interest costs, additional expenditures to the management organization, changes in the scope, and the costs derived from a higher risk profile (Ibid, 2016:12).

Aside from the aforementioned conclusions, the research as conducted by Policy Research Corporation has resulted in many other interesting observations. As the interviews for this particular report are predominantly conducted with individuals who are directly involved within the project, this thesis also considers actors that are a bit more in the periphery of the project (including interest groups and local businesses).

4.2 General Description of Actors

The following table will provide a brief overview of the actors involved within the Spoorzone network. Some of these actors have not been interviewed directly and are therefore not listed in the tables thereafter, however, they are still important to mention. Following the table, more information will be provided about the actors and a brief analysis of their roles will ensue.

4.2.1 Overview Description & Objectives

Table 2: General Description Actors

Actor	General Description
Delft	Central role: mandating the project through OBS. Carries a majority of the risks and consequences Main objectives: <ul style="list-style-type: none"> • Improve the environmental quality • Improve the accessibility & refurbishment of the geographic heart of the city. • Further economically build on the concept of Delft as a city of innovation and knowledge
OBS	Ontwikkelingsbedrijf Spoorzone Delft: A separate not-for-profit company that is responsible for completing the agreements made within the network. Main objective: <ul style="list-style-type: none"> • Complete tasks in network • Business case and its risks are tied to the municipality • Municipality owns 100% of shares
ProRail	Carries responsibility for the construction, maintenance, management and safety of the national railway network. Main objectives: <ul style="list-style-type: none"> • Allocate usage of rail tracks • Arrange railway traffic • Build and maintain railway stations and installation of rail tracks.
Ministry (I&M)	Previously existent out of Ministry V&W and VROM Main objectives: <ul style="list-style-type: none"> • Optimize livability and accessibility within Netherlands through enhancement of national highway and railway networks as well as aerial and nautical traffic • Handle water-management and optimization of quality in air and water. • Decrease of nuisance as caused by public transport on the national railway system as well as facilitating capacity-development at a later stage. • Support execution of the policy in the Fifth Nota on regional planning 2000/2020.
Province Zuid-Holland	Central administrative body is responsible for the construction and maintenance of roads, cycle tracks and waterways within the province Main objectives:

(ZH)	<ul style="list-style-type: none"> • Support of urban development through stimulation of the economic growth around the Public Transportation junction at the central station in Delft. • Improve the quality and size of the public transportation network in the Southern part of the province through a central junction in Delft 	
CCL	<p>Combinatie Crommelijn VOF: Consortium existent of the following companies: CFE NV, Mobilis BV, and Dura Vermeer Group; specialized in underground construction with diaphragm walls in particular.</p> <p>Main objectives:</p> <ul style="list-style-type: none"> • Complete design and construction of underground train tunnel (2,3 kilometer) • Deliver underground station, a parking garage, preparation of construction area and partial design of Busquets 	
City District Haaglanden	<p>Provides platform for nine municipalities to collaborate together and synchronize their efforts in order to execute tasks on a regional level (has been dissolved and is currently in a status of liquidation; merged with the Metropoolregio Rotterdam Den Haag)</p> <p>Main objective:</p> <ul style="list-style-type: none"> • Improve regional public transport facilities and its connection to the national railway network 	
OCDS	<p>The main real estate organizations that are involved in the Spoorzone project: NS Poort and Ballast Nedam Ontwikkeling</p> <p>Main objective:</p> <ul style="list-style-type: none"> • Deliver high quality working- and living facilities in Spoorzone area 	
Citizen Groups	WeSD	<p>Citizen's initiative group (Werkplaats spoorzone Delft: established in 2006)</p> <p>Main objective:</p> <ul style="list-style-type: none"> • Utilize the transition phase from the old situation to the new developments happening through the Spoorzone project by combining it with culturally and educational initiatives
	Platform Spoor	<p>Citizen group established by the municipality in 1999 to collectively inform the neighborhood associations about development of the project and gauge their perceptions on prospective decisions.</p> <p>Main objectives:</p> <ul style="list-style-type: none"> • Exchanging information and perceptions • Elevate position of citizen as stakeholder within the network
Local Shops	Bazaar of Magic	<p>Establishment for an online store that sells Magic the Gathering merchandise</p> <p>Main objective:</p> <ul style="list-style-type: none"> • Maintain business during construction period
	Gamma Delft	<p>Local hardware store that is located in the area now housed by Spoorzone for nearly 35 years</p> <p>Main objective:</p> <ul style="list-style-type: none"> • Maintain business during construction period

4.2.2 Analysis of Roles

Actor Interests

Firstly, by looking at the separate interests and objectives of the actors, it will indicate how different interests are served simultaneously and which ones are comparable or contradictory. As can be seen in section 4.2.1, the main objectives of all the actors involved is to essentially improve the old situation in Delft and to refurbish the area around it. For some actors this objective is a bit more nuanced; the ministry I&M, ProRail and Province Zuid-Holland are for instance also interested in improving the accessibility of that area and catering to the increasing demand for accessibility through an installment of a four-railed system. The municipality and its citizens are mostly interested in exploiting the construction of the tunnel to simultaneously refurbish the heart of the city. Ballast Nedam (previously OCDS) aims to successfully develop the area into profitable real estate within the realms of Plan Palmbout. Representing the interest of the municipality, OBS's main objective is to successfully realize the agreements made within the network and to achieve a high-quality result. The main objectives of the interest groups are somewhat similar, however, Platform Spoor aims to represent the Delft citizens as an active stakeholder within the network, whilst WeSD rather aims to utilize the construction process as an impulse for local creative development. Both local businesses' main objective is to essentially maintain their businesses whilst the long-term construction process is in effect.

Whilst the general objective of the stakeholders involved is rather similar, some slight nuances show a few contractions. For instance, both the municipality and its citizens aim to refurbish the living environment in the heart of the city as the viaduct is removed and the tracks are moved underground. When digging deeper, however, it appears that some elements of the Spoorzone project are deemed more important to the municipality than to its citizens. For instance, the construction of the new municipal office has received critique by both Platform Spoor and Gamma Delft. Especially the magnitude of the building (“is it really that necessary to have such a large office”) and the costs that come with to incorporate it in the new train station are scrutinized by these two actors.

4.3 Tasks and Responsibilities of Actors

The following section will provide an overview of the tasks and responsibilities of the different parties in the Spoorzone network. By doing so, it will emphasize the role and importance of each actor within the network and their abilities to influence the project according to their individual objectives. Furthermore, it will give an indication of who finances the project and which actors actually carry out the decisions made within the network.

4.3.1 Summary of Responsibilities

Table 3: Tasks & Responsibilities of Actors

Actor	Tasks & Responsibilities
Delft	<ul style="list-style-type: none"> • Commissioner and financer of project • Responsible for up to 5 million euros for the tunnel, and fully responsible for areal development • Overall process management within the Spoorzone project. • Develops the urban design and executes urban, architectural, technical, transportation- and environmental studies for the project. • Organization of a public debate and platforms for public participation • The closing of contracts or the confirmation of zoning plans. Any additional budgetary requests are to be confirmed with the Council • Determine ex post whether the municipal executives have indeed executed within the set framework and are ultimately held accountable towards the voters
OBS	<ul style="list-style-type: none"> • Carrying out the agreements that are established within the network. • Urban development (the building of offices and homes) • The completion of the train concourse as commissioned by Prorail and the municipal office. Henceforth, for the execution of these tasks, OBS closely collaborates with ProRail and NS • Three project elements: <ul style="list-style-type: none"> ○ Public Scope; this department carries the responsibility to deliver the parking facilities Spoorsingel (PGS), the design of the public areas (IOR), the municipal office and the train concourse. ○ Commercial Real Estate ○ Conditioning, which carries out the preparatory tasks for the elements Public Scope and Commercial Real Estate
Ministry I&M	<ul style="list-style-type: none"> • Commissioner and financer of the project • Participation in the steering committee, which is shaped through the BUOK addendum • Bears costs and responsibility of construction tunnel

ProRail	<ul style="list-style-type: none"> • Execution of the partial project ‘railinfrastructure’ with the Ministry of V&W bearing the costs and responsibility. • The totality of the civil service including the parking facilities and the design of public areas to be delivered to the municipality Delft is commissioned to consortium CrommeLijn VOF (CCL). • Construction and risks of the aerial element of the train concourse, a section of the municipal office, the design of public areas and the parking facilities Spoorsingel; these are contracted to CLL as commissioned by OBS. • ProRail is held accountable according to the Ministry of V&W, and all the risks that are caused through projects as commissioned by OBS will be transferred by ProRail to OBS
Province Zuid Holland	<ul style="list-style-type: none"> • Part-financer of tunnel • Ensure a smooth settlement of environmental planning and permits within the according legal framework and practicalities • Collectively think about the ambitions of the railway system: <ul style="list-style-type: none"> ○ Increase the two-railed system between The Hague and Rotterdam to four rails in order to support the increasing demand. ○ Further develop the areas in close proximity to train stations with living- and working facilities.
CCL	<ul style="list-style-type: none"> • Design and construction of an underground train tunnel • Underground station, a parking garage adjacent to the Spoorsingel • Preparation of the whole construction area • Partial design of Busquets
City District Haaglanden	<ul style="list-style-type: none"> • Settle both transport-wise and civil engineering boundary conditions for the regional public transport • Part financer of tunnel
OCDS	<ul style="list-style-type: none"> • Ballast Nedam will account for 33% of the realization of real estate development in the Spoorzone project: <ul style="list-style-type: none"> ○ Construction and development of 400 living facilities (instead of 1200) ○ 6.000 m2 gross floor space (instead of 25.000 m2) • NS Poort has stepped out of the framework agreement
Citizen groups	<p>WeSD:</p> <ul style="list-style-type: none"> • Creation of links between the citizens and the project in a creative manner. <p>Platform Spoor:</p> <ul style="list-style-type: none"> • Function as a representative group for citizens that are directly affected by the construction of the tunnel and the development of Nieuw Delft
Local shops	<p>Aside from keeping their businesses running throughout the construction process and mentioning any nuisance when necessary, no direct responsibilities towards the network.</p>

4.3.2 Analysis of Responsibilities

By looking at the individual tasks and responsibilities of each of the actors in the table above, it can be observed that the Spoorzone project is rather complex and diverse. The multitude of project elements (construction of a tunnel, a new municipal office, Public Scope, Commercial Real Estate etc.) bring along a myriad of commissions and obligations. The actors that are involved on a daily basis within the project are most definitely Delft, OBS, ProRail and CCL. Whilst ProRail is commissioned by the Ministry I&M but also at the same time by Delft/OBS to complete the 'railinfrastructure', ProRail also commissioned OBS in return to build the train concourse. Henceforth, there is a complex intertwinement of both public and private entities with each their own duties to fulfill.

The actors that are still very important to the project but are a bit less directly involved are the other financiers of the project, namely the Ministry I&M, Province Zuid-Holland and City District Haaglanden. A steering committee consisting of two representatives appointed by the former Ministry VROM- and V&W, the alderman Spoorzone and the managers from ProRail and OBS frequently gathers to discuss the progress of the project and is therefore the primary consultation group (NAR, 2010:14). This is also a way for the Ministry I&M to maintain involvement in the project. The position of the Chairman of this committee is fulfilled by the Spoorzone-alderman. The framework of the committee is shaped through the BUOK-addendum, which contains a financing-model in which the financial repercussions of the magnitude of the project as well as the agreements made on risk-allocation are established (NAR, 2010:7).

The actors that are a bit more in the periphery of the project, but play nonetheless a significant role for the project are the citizen groups WeSD and Platform Spoor. Especially the latter group aims to elevate the role of the Delft citizen to a stakeholder within the network and to increase their level of influence on the separate project elements. Especially considering the magnitude of the Spoorzone project and its impact on the heart of the city, it is of pivotal importance to maintain the contact with its citizens. Also, the local businesses are vastly influenced by the construction of the tunnel. The manager of Gamma Delft therefore already collaborated closely with the area managers in the early

stages of the project to ensure optimal awareness on the building-stages of the Spoorzone project and how this affected the business at hand.

4.4 Available Resources of Actors

The following section will take a closer look at the various resources that the parties within the Spoorzone network possess. These assets influence their position within the network and their abilities to fulfill their communal (and individual) objectives. After the resources are outlined in a table, a brief analysis will ensue, after which the dependency relations between the actors can be identified.

4.4.1 Table of Resources

Table 4: Available Resources of Actors

Actor	Available Resources
Delft	<p><u>Financial</u>: Providing a set contribution to the construction of the tunnel and other project elements</p> <p><u>Competencies</u>: Ability to authorize certain decisions and hand out permits, supervisory role of the municipality</p> <p><u>Knowledge</u>: Expertise of Municipal Executive and previous experience with large projects</p> <p><u>Legitimacy</u>: Representation of local citizens</p>
OBS	<p><u>Knowledge</u>: Assembling and allocation of construction companies</p> <p><u>Production</u>: Carrying out decisions made within network; coordinating entire project</p>
ProRail	<p><u>Knowledge</u>: Expertise in railway construction and extensive previous experience in building railways on a national level</p> <p><u>Production</u>: Possess the materials needed to complete the construction of such a large project, as well as the necessary know-how in overseeing the construction processes.</p> <p><u>Competencies</u>: Carry responsibility for the construction and management of national railway system and can therefore make decisions within the confinements of the "Spoorwegnet"</p>
Ministry I&M	<p><u>Financial</u>: One of the main financial investors of the Spoorzone project</p> <p><u>Competencies</u>: Ability to authorize certain decisions, grant permits</p> <p><u>Legitimacy</u>: Credibility of the ministry amongst citizens and media</p>
Province Zuid-Holland (ZH)	<p><u>Financial</u>: access to the Provenche-fund as allocated by the national government; part-financer of tunnel</p> <p><u>Competencies</u>: Ability to make decisions on environmental planning within the province, ability to financially supervise municipalities when necessary</p>
CCL	<p><u>Production</u>: Combining efforts of three construction companies: CFE, Haverkort Voormolen TBI Infra and Dura Vermeer</p> <p><u>Knowledge</u>: Great expertise on civil engineering, infrastructure, consultancy and service delivery; previous experience in large construction projects</p>
City District	<p><u>Financial</u>: Receives funding from the national government as well as the participating municipalities that each allocate a fixed amount per citizen</p>

Haaglanden	residing in their area
Ballast Nedam	<u>Financial:</u> The new land allocation agreement as signed in 2012 also involves the investment of Ballast Nedam's own financial resources into the project. <u>Production:</u> Much expertise in building properties in complex and dense environments like city centers.
Citizen Groups W&SD & Platform Spoor	<u>Legitimacy:</u> Ability to gather their efforts and go to the media with their thoughts about the project, attracts local media attention and interests from local citizens through its cultural activities, which also partially influences the image of the Spoorzone project.
Local Shops Gamma Delft & BOM	<u>Legitimacy:</u> Ability to gather their efforts and go to the media with their thoughts about the project; clientele could indirectly influence the image of the Spoorzone project in- and outside of the city Delft.

4.4.2 Analysis of Resources

The actors that are central to the execution of the project are the municipality Delft, OBS, CCL, and ProRail. All of these actors possess either (or both) knowledge- and production resources, which makes them essential to the formation of the tunnel. They can also be expected to be involved at any moment considering their centrality within the network. The actors that possess hindrance or realization power are most definitely the municipality Delft and the ministry I&M, as both are essentially funding the project, and the absence of either one of them would mean the deathblow to the project. Another party that plays a significant role in the funding of the project is the Province Zuid-Holland as it boasts both financial- and legitimacy resources. Especially when Delft was in a financial predicament, the Province has the commanding power to place the municipality under surveillance until the municipal budget is solid again. The actors that play a central role on the construction of the project are CCL and Ballast Nedam (previously OCDS), as they are commissioned by ProRail and OBS respectively. These actors provide production resources to the network considering their expertise in underground construction and real estate development. The actors that reside a bit more in the periphery of the network, but are nonetheless still very important are the interest groups Platform Spoor

and WeSD. These groups are the representative of the public interest, with Platform Spoor functioning as a gateway to transform citizens to an active stakeholder within the network, whilst WeSD opts for combining the construction process with local cultural development. These groups predominantly possess legitimacy resources, as they play a significant role in positioning the project as either favorable or unfavorable to the citizens of Delft. The actors that are also not likely to participate, but are still affected by the problem are local businesses, in this case Gamma Delft and Bazaar of Magic. In the case of Gamma Delft, however, the management was somewhat involved in the planning of the project and what this would mean for local businesses, but both Gamma Delft and Bazaar of Magic are mostly affected by the construction process of the tunnel.

4.4.3 Dependency Relations

Now that the resources of the different actors are outlined, it is part of the actor analysis to look at the dependency relations between these actors. As their resources are outlined in the previous section, the degree of dependence can be determined by looking at what these actors' resources actually mean to other actors. The most important resource given the problem situation in the Spoorzone case is most definitely of financial nature; parties that have capital and are willing to invest it into the project are of great value within the network and to the municipality, given its strenuous financial position. The dependency relations between the actors are outlined through a table as can be seen below:

Table 5: Dependency Relations in Network

Actors	Very important resources	Degree of replace ability	Dependency: low, medium, high	Critical actor: yes/no
Municipality Delft	Financial Competencies Knowledge	Not replaceable	High	Yes
OBS	Production Knowledge	Not replaceable	High	Yes
Ministry I&M	Financial Competencies Knowledge Legitimacy	Not replaceable	High	Yes
ProRail	Production Knowledge	Not replaceable	High	Yes

Province ZH	Financial Competencies	Not replaceable	High	Yes
CCL	Production Knowledge	Replaceable	High	Medium
Platform Spoor	Legitimacy	Replaceable	Low	Medium
WeSD	Legitimacy	Replaceable	Low	No
Gamma Delft	Legitimacy	Replaceable	Low	No
BoM	Legitimacy	Replaceable	Low	No

By looking at the individual resources, the degree of replaceability of each other the actors, and the degree to which other actors are dependent on them, the critical actors within the network can be identified. Considering the role that financial stability plays within this particular case, the actors with financial resources (being Delft, Ministry I&M and Province Zuid-Holland) are already labeled as critical actors. A large infrastructural project without the presence of any actors with considerable financial resources cannot run. Furthermore, the parties that possess competencies as a resource are also critical, as their ability to grant permits (or withhold them, for that matter) is vital for the permanence of the project. OBS is also a critical actor, as it functions on behalf of the municipality and directly executes the decisions made within the network. This development company also boasts a lot of know-how and necessary resources to coordinate such a complex project. The CCL is identified as both a critical- and non-critical actor. This is due to the fact that they are commissioned by ProRail to construct the majority of the project elements, however, in the end they can still be replaced by another construction consortium. Albeit it still would be a hassle and have a great impact on the continuity of the Spoorzone project, CCL still has some degree of replaceability. Platform Spoor is also regarded as a 'medium'- critical actor, as they are an important link between the central Spoorzone actors and the citizens of Delft. But at the same time, they do not have the decision power within the network, thus their eventual influence is limited to the occasional meetings with the platform. Nonetheless, the role of the citizen groups should definitely not be underestimated. The other citizen group and the local businesses are no critical actors, as they do not possess any resources vital for the continuance of the Spoorzone project, or the power to assist (or block) any processes. Henceforth, there is a distinction made between critical actors

(municipality, OBS, ProRail, Ministry I&M, Province ZH, and CLL) and peripheral actors (citizen groups and local businesses). Now that the resources and dependency relations between the actors are known, the next step is to look at the perceptions of each of the actors on the value of the Spoorzone project and the possible explanation behind the cost overrun.

4.5 Perceptions of Actors

4.5.1 Value of Project: overall, back then, and now

Table 6: Actor Perception on Project Value

Actor		Overall perceived value	Cost & benefits beginning (2005)	
Delft		The Spoorzone project is very valuable to the municipality.	A great opportunity for the municipality to vastly improve the quality of the city center and its accessibility. Relying on the exploitation of real estate is a logical way to finance the project.	The direction in 15 years
OBS		Very valuable to the municipality.	A great project that can be funded through endorsements by public stakeholders as well as the exploitation of real estate.	The orientation of the
ProRail		The Spoorzone project is very valuable for the municipality. Especially with regards to the improvement of the surroundings and the accessibility.	From the point of view of ProRail, the cost and benefits are settled once the civil contract is signed as such a contract is vital and can only be signed if confident about the financial coverage.	Be sta fra as du rat
Ministry (I&M)		The project can be perceived as both a virtue for Delft, but also as a current financial burden.	The manner in which the project was financed through funding by the national government and through real estate exploitation was a logical way to do it.	De loa do: 80 rec of
Province Zuid-Holland (ZH)		Very favorable for Delft.	The province was confident that the financing structure of the project would work.	No cu
CCL		It is a virtue for Delft.	Delft is an incredibly brave city to be taking upon this immense project with much public support by its citizens.	The be the
Ballast Nedam		Not known	Not known	The Pla cri
Citizen groups	WeSD	The Spoorzone project is very valuable to the municipality, but it is also a financial burden.	Fine with the initial costs and benefits.	Th
	Platform	It is both a virtue for Delft as well as a financial burden.	There was not much known about the initial costs and benefits. Platform Spoor couldn't have much input.	It reg

Local shops	BOM	It is a virtue for Delft	Not very concerned with the costs and benefits.	Ha wi mu re
	Gamma Delft	The Spoorzone project is definitely valuable for Delft.	Already suspected beforehand that the project would become way more expensive than they initially shared. And that they knew about this.	Th de be

4.5.2 Analysis Perception of Value

Overall Value of Project

With regards to the perceptions on the overall value of the Spoorzone project, all actors essentially argue that it is very favorable for Delft. Firstly, the eleven interviewees were presented with two statements, being ‘The Spoorzone project is beneficial for Delft’ and ‘The Spoorzone project is a financial burden to Delft’, as they had to select one, which applied most with their views on the matter. The riddance of the old viaduct and the nuisance that comes with it are emphasized by all actors as being significant improvements from the old situation. Three actors, however, also emphasize that the financial repercussions of the project are definitely a factor; that the Spoorzone project is both favorable for Delft, but also a financial burden. These interviewees represented Platform Spoor, WeSD, Gamma Delft and the Ministry I&M. As one interviewee states: *“They tell us: ‘We will resolve this, it’s not that bad’. No, it is bad. They have just redistributed the expenses. It is and will remain a financial burden at the moment. That’s simply the case, and they have to be honest about it”* (personal communication, May 13, 2016). This shows that all of the interviewed actors positively link the Spoorzone project as being an improvement from the old situation, whilst only a few also emphasize the financial burden. It is interesting to see, however, that these particular actors are situated more in the periphery of the Spoorzone network, therefore indicating their tendency to be more critical to the project.

Costs & Benefits in Beginning

The views of initial costs and benefits prior to the execution of the project (around 2005) are essentially positive. At least eight from the eleven interviewees indicate that they were confident in the business case and that the expected revenues from real estate exploitation was a logical thing to do. As an exemplary quote from one of the central actors: *“It al seemed very realistic, and in that time [the exploitation from real estate] seemed like the ideal option in order to fund a solution for such a complex issue”*. (Personal communication, May 25, 2016). Another actor, however, emphasizes that they were not much aware of the costs and benefits back then, as this information was not disclosed to them. One interviewee more in the periphery of the Spoorzone network states that it was already known beforehand that the project would be more costly and that

they went ahead with it anyway: *“They already knew from the beginning, in my opinion, that they were going to run short of money”* (Personal communication, June 9, 2016). This indicates that the actors situated on the fringe of the network show a bit more skepticism toward the initial costs and benefits rather than the actors situated more centrally. [This could be due to the fact that these peripheral actors do not have access to the actual cost and benefits at that time, and therefore have to base their opinion on the information provided to them through information-sessions and through media outlets].

Costs & Benefits now

When asked how they perceive the costs and benefits of the Spoorzone project at the moment, nearly all respondents indicate that they believe that it is heading in the right direction and that everything is going to be fine, eventually. For instance, the interviewee for OBS states that the real estate is now being sold with greater revenue than initially planned, albeit it will never be fully closed. Delft adds to that, that the current business case is checked and challenged at least twice a year, and that the initial overrun sum has been pushed back with 15 – 17 million euros by now. The ministry I&M also reiterates the fact that Delft is going to have to pay at least 1 million euros per year for the next 80 years, and that is the amount without interest. Gamma Delft, for that matter, is fully confident that the costs made will be funded back through the selling of developed real estate. This overall confidence amongst the respondents about the current costs and benefits of the project shows that the cost overrun has not permanently diminished their views on the project and its significance for Delft.

4.5.3 Perceptions on the Cost Overrun

The following table provides an overview of the actor perceptions on the occurrence of the cost overrun: whether it came as a surprise or not, what the explanation for its occurrence is according to their point of view, and what lessons can be learnt with regards to cost overruns based on the Spoorzone case.

Table 7: Actor Perception on Cost Overrun

Actor		Cost overrun: Expected or not?	Explanation for cost overrun	
Delft		Definitely not expected the cost overrun.	It is partially due to the economic crisis, but not all of it. Paid too much attention to the underground structure rather than aerial development in the upstairs. Also the payment structure was a complicating factor.	Or; eff in ; Ke ev or
OBS		Not expected the cost overrun	Partially due to economic crisis, but also due to human mistakes that were made	No pro cer
ProRail		Not expected the cost overrun (not in the part of the municipality nor in the part of ProRail)	The financial crisis definitely contributed. Also the setbacks in other projects added to the overrun.	Ini cos me Ma the en
Ministry (I&M)		Not expected. Both secret business cases from 2005 and 2008 were solid	Due to the economic crisis Distancing the development company from the municipal council, which makes sudden alterations in the plan much more difficult	Ch cas Pla Do sar
Province Zuid-Holland (ZH)		Not expected the cost overrun	High initial investments and too much optimism in the expected real estate exploitation	Be
CCL		Not expected, but knew it would cost a lot of money	The economic crisis but also the manner in which the funding of the project was organized	Pla Ha giv mu
Ballast Nedam		Not known	Not known	No
Citizens groups	WeSD	Not expected, also not by citizens.	Many interdependent projects running at the same time	Cre co po ea
	Platform Spoor	Expected some cost overrun, but not as much as it eventually ended up being	Particular decisions that have been made within the network that arrange the manner in which methods of working are arranged	Ha mc che

Local shops	BOM	Not really expected	Positivism anchored in the expected costs & benefits, possibly to get the project off the ground	Cal un
	Gamma Delft	Expected a cost overrun.	Human mistakes made within the network	Cal Ma be ov

4.5.4 Analysis Perceptions on Overrun

Cost Overrun: Surprised or Expected?

When it comes to the initial shock of the cost overrun, at least eight of the eleven respondents indicate that they absolutely did not expect this overrun. Delft, OBS, ministry I&M, the Province Zuid-Holland, CCL, and ProRail all state that the appearance of a cost overrun came as an unfortunate surprise. The Province Zuid-Holland reiterates that it was unexpected but not a strange thing to happen considering the ramifications of the financial crisis on municipalities. The respondent for Delft even states: *"I was surprised, angry, and as baffled as any other council member. In March 2014, I still lived under the impression that we had a shortage of 8-9 million. That's also no fun. But in the following months after I became alderman, the stress test indicated numbers nearly ten times higher. There were investigations that showed different amounts. I thought, how is this possible?"* (personal communication, May 26, 2016). The remaining actors, being Platform Spoor, Bazaar of Magic, WeSD, and Gamma Delft, however indicate that they actually did expect an overrun. Platform Spoor states that it did expect some overrun, but not to that great extent. WeSD argues that its occurrence did come as a surprise, however, he was aware that the project would cost a great sum of money. The respondent from Bazaar of Magic states that it comes as no surprise; it happens with similar large infrastructure projects that the expected costs are estimated too optimistically, perhaps to get the project accepted in the first place. Henceforth, it can again be observed that the actors located more centrally in the network are more surprised of the occurrence of the cost overrun rather than the actors in peripheral positions. This indicates that the actors with more of an 'outsider perspective' on the matter follow the Spoorzone project more skeptically. Furthermore, the actors with more central positions in the network showed more confidence in the reliance on real estate exploitation for the funding of the project, making the ramifications of the financial crisis a harder blow.

Explanations for the Cost Overrun

As can be seen in the table in section 4.3, the possible explanations for the cost overrun from the point of view of the different actors varies greatly. During the interview, the respondents were presented with three options of possible

explanations for cost overruns and asked to arrange them according to their applicability to the Spoorzone case. One actor chose “Certain decisions made within the network” as her first pick. Five other actors picked “Unexpected external events” as the most applicable explanation for the Spoorzone case. And the remaining four parties chose “Humanly mistakes within the network” as their first option. This shows that the overall majority of the respondents believe that the occurrence of the cost overrun was a combination between unexpected external events (in this case being the consequences of the financial crisis) and ‘humanly’ mistakes that have been made in the network (for instance, the anchoring of optimism in the projected costs and benefits).

Firstly, at least six actors emphasized the fact that this particular cost overrun is not necessarily a factor of spending too much money, but rather an issue that stems in the financing part of the project. For instance, one of the central actors argues: *“The commotion around Delft is in the financing part of the project. Not because the project suddenly become so much more expensive. That’s because the revenues that were supposed to finance the project were disappointing. The real estate crash suddenly appeared, which resulted in lower and later revenues for Delft needed to fund the project”* (Personal communication, May 18, 2016). Henceforth, this actor also emphasizes the role of the financial crisis in this cost overrun and its impact on the Spoorzone project. The Ministry I&M adds that Delft could not help that the global financial market crashed; a business case that was solid in 2005- and 2008, was solid no more.

Both Delft and OBS, however, argue that the explanation for the overrun is not only due to the repercussions of the economic crisis. Delft states that they have spent a lot of time on the underground structure to prevent any costly delays, but by the time they moved on upstairs, they realized that the aerial development was in dire need of attention too: *“We obviously were aware that this needed to happen, however, it actually received too little attention than it deserved”* (Personal communication, May 26, 2016). OBS agrees that more factors aside from the economic crisis contributed to the cost overrun, being that the planning was set too optimistically in the beginning, and that setbacks appear only halfway through the project. Province Zuid-Holland argues that the explanation for the cost overrun is a combination of considerably high costs of

getting the project off the ground (or in this case, underneath the ground), and setting too optimistic expectations for the real estate exploitation. So here too, the ‘humanly mistake’ of too much optimism plays a significant role.

Both WeSD and Platform Spoor believe that the explanation is found elsewhere. Platform Spoor was the only respondent to place the “Decisions made within the network” as most applicable to the Spoorzone case: *“The economic crisis had a large impact, but not the main reason for the overrun, in my opinion. I think the decision to place additional dilatation walls with cameras and whatnot: a capital that was not anticipated before”* (Personal communication, May 13, 2016). This indicates that the respondent does not agree with all the decisions that were made within the network, and that some of these have resulted in higher costs than necessary. The respondent on behalf of WeSD believes that the explanation for the cost overrun is found in the social dynamic of the Spoorzone network. He states that very often constructs are made within networks in which actors find themselves in a ‘prisoner’s dilemma’, preventing them from solving issues in more creative and constructive ways. He states: *“It’s these kinds of processes in which a network slowly becomes attached to certain agreements from which they cannot escape. This indeed has to do with viewing your competencies more rosy than they actually are. You’ll present them like: “We have everything under control”* (Personal communication, May 19, 2016). WeSD therefore takes a much more critical look towards the social dynamics within such a network and the constraining effects that contracts can have on the fluidity of the network.

Lessons Learnt

The respondents all have each their individual (and different) ideas on what lessons can be learnt on cost overruns based on the Spoorzone project in Delft. Given their different positions within the network and their diversified experiences, it is understandable why their feedback is so varied. The opinion of the area manager at CCL to initiate an independent group that provides legal- and financial advice to aid the Municipal Executive somewhat overlaps with that of WeSD, who states that it is important to create a group within the network that constantly challenges the ideas given to signalize early troubles in time. Platform Spoor, for that matter, argues that the municipal council should gain more insight and control on the finances of such a large project, considering that

OBS was placed at a considerable distance from the council. ProRail gives the advice to first fully understand what the cost overrun truly entails before pointing fingers and assuming that its due to reckless spending or ill management. The biggest lesson learnt from this situation according to Delft is to continue communicating with parties that provide funding, even in times when things go well or in dire times. OBS adds that it is of pivotal importance to bring in time the sense of realism into a project whilst maintaining the optimism needed to initiate such a project. The local businesses argue that a project of such magnitude needs more risk planned in from the start to cover any unexpected costs. Gamma Delft also emphasizes the importance of being more transparent with the citizens on the costs- and benefits of the project, as well as the risks that are involved. This will create a better sense of understanding amongst the public in case things go awry, and a sense of involvement when the project runs according to the plan. The Ministry I&M suggests that a municipality the size of Delft should not take on too many complex projects at the same time that are dependent on one another.

4.6 Wrapping up the Actor Analysis

The previous sections discuss the characteristics of the different parties within the Spoorzone network, their objectives, their resources, but most importantly, their individual perceptions on the overall value of the Spoorzone project and their speculations on the possible explanations for the cost overrun. Some important observations were made regarding the views of the actors compared to their position within the network; parties located more in the periphery of the network seem to express more skepticism towards the costs and benefits of the project and how the cost overrun exactly occurred. For instance, the actors that did expect an overrun are both from citizen groups and local businesses, whilst the central actors were all very baffled by the occurrence of the overrun. Moreover, multiple actors (both critical- and non-critical) identify that the explanation for overrun is not one where more money was spent than initially planned, but rather a removal of a source where capital should have been generated. This indicates that these actors do not necessarily believe that the term 'cost overrun' is truly fitting to this case and that Delft's financial setback was not a matter of reckless spending.

Another significant factor in the actor analysis shows that basically all actors indicate that the cost overrun came as a complete shock and that it was wholly unexpected. Aside from two peripheral actors expressing some expectation on the overrun (mostly due to the undeniable reputation of large infrastructural projects that nearly always exceed the expected budget), it is interesting to see that most actors were caught completely by surprise. The question that this brings about is how this unknowingness prior to the revelation of the financial troubles can be seen in the behavior of the actors and how they reacted to the cost overrun. This will be determined through means of a rounds-analysis in the next chapter. It will determine what actually transpired in the Spoorzone Delft case in the past ten years, how the different parties dealt with the major decisions made within the network, and how their perceptions on the overall value of the project (and the explanation for the cost overrun) has influenced their decision-making process. Moreover, the status of the cost overrun will be tracked throughout continuation of the rounds, and the strategies of the actors in relation to the status of the overrun and possible psychological and/or political explanations.

5. The Process

With an extensive view on who the actors in the Spoorzone actually are and their perceptions on the possible explanation on the cost overrun, the next step is to look at the events that actually took place in the last ten years and how their perceptions changed accordingly. Furthermore, by being aware of the opinions within the network, it is interesting to look at how these had an influence on the process and the decisions made between 2005 and 2016. The following chapter therefore contains an analysis of the events surrounding the Spoorzone project, which will be structured in rounds. These rounds are demarcated through the crucial decisions that are made within the network. At times, the collaboration process finds itself stagnating, preventing parties from developing a common understanding (Klijn, E.H., Koppenjan, J., 2004:147). As the evolution of policy games is not a linear process, the rounds model reflects the true erratic nature of interactions within a network. With each crucial decision, a new round starts with new perceptions, new stakes, and new strategies. First, a rounds analysis will ensue in which the arenas are identified and any impasses and breakthroughs that have taken place.

5.2 Spoorzone Delft in rounds

In order to provide an overview of this analysis, a brief summary of each round will commence as well as a table. Round one (2005 – 2008) entails the signing of many important agreements between central actors within the network, which also marks as the crucial decision. The BUOK, SOK, and ROK are arrangements that are vital to the structure, funding and risk allocation of the Spoorzone project. The following years the tendering process of architect commences, which proves to be a difficult process, in which a brief stagnation ensues.

The second round (2008 – 2012) marks a period of time in which many vital events take place; the crucial decision entails an addendum on the BUOK and SOK, shifting the risk for the rail infrastructure, the rail-element of the public transport node and the train station from the municipality to the State. In this same time frame, the devastating consequences of the global financial crisis became apparent as investors and consumers were losing trust in large projects;

as a result, ongoing discussions are sparked between Delft/OBS and OCDS on the viability of the agreements made in the ROK.

The third round (2012 – 2014) starts when an alteration on this agreement is made; it is decided that NS Poort withdraws from the collaboration and Ballast Nedam will account for 30% of the initially planned real estate. In the meantime, the effects of the global financial crisis on the real estate market continue to fester.

The fourth -and final- round (2014 – 2016) includes the revelation of the true problems that the municipality is dealing with: two stress tests signify an immense overrun with devastating consequences for the municipal budget of Delft. Direct financial supervision by the Province Zuid-Holland is enforced. A tough two years follow in which Delft has to make considerable cutbacks to mitigate an Article 12 status. The year 2016 commences when Delft avoids reliance on an Article 12 status and no longer requires supervision by the Province. Slowly but surely, Delft is starting to recover from the financial blow and the real estate market shows carefully improves from its setback. In summary, the following table displays the crucial decisions made during each of the rounds and the actors involved:

Table 8: Overview Rounds Analysis

	Round 1: 2005 - 2008	Round 2: 2008 - 2012	Round 3: 2012 - 2014	Round 4: 2014 - 2015	Round 5: 2016 - now
Crucial decision	Signing of the BUOK, ROK, SOK: The project can commence	Addendum on BUOK & ROK: Shifting risk of tunnel from Delft to the state	Dissolving of OCDS: Ballast Nedam only accounts for 30% real estate development	Two stress tests reveal magnitude of cost overrun	Delft no longer under supervision by Province ZH
Impasses	- Selection procedure of architect for train station/ municipal office - Tunnel seems more expensive: Delft notices risk	- Between State and Delft on risk allocation - Between OCDS and Delft on stipulations in SOK	None	- Between Delft and Province ZH on solidity of municipal budget	None
Significant events	- Additional 40 million euros to tunnel by State - Start of OBS	- Global economic crisis - CCL is	- Delays in construction start to surface	- Discussions on Article 12 status - Delft under	- Adoption of plans from 'Delft, Parel in de Randstad'

	- Majority real estate in Spoorzone purchased for development	commissioned by ProRail to construct tunnel - Start construction tunnel	- Critique on size municipal office	supervisions Province ZH - Mal-contramal structure between OBS & Delft	- Round is still in progress
Actors involved	Ministry V&W + VROM, Delft, ProRail, City District Haaglanden	Ministry I&M, Delft, OCDS, OBS	Delft, Ballast Nedam, OBS	Ministry I&M, Delft, Province ZH, OBS	Delft, OBS, Province ZH

5.2.1 Round 1: Official Start Spoorzone Project (2005 – 2008)

This round contains the signing of many important contracts between vital actors within the network; the substantiation of the Spoorzone project has commenced. On the 5th of October 2005, the signing of the BUOK (bestuurlijke uitvoeringsovereenkomst) marks the start of the Spoorzone project and thus the start of this first round. The BUOK further stipulates that this project will fall under risk and on account of Delft and the specific amounts that will be invested by the actors involved. The State will contribute a total of € 269 million, excluding VAT, as derived from the Meerjarenprogramma Infrastructuur en Transport (MIT) budget for the construction of the tunnel. An additional € 75 million from the Budget Investerings Ruimtelijke Kwaliteit (BIRK) will be invested in the aerial development of the Spoorzone. The municipality is to cover the residual costs and risks through a personal contribution of € 45 million, the revenues that will be derived from real estate exploitation amounting to € 78 million, a contribution of € 30 million by the Province Zuid-Holland and a contribution of € 11.4 million by City District Haaglanden (Policy Research Corporation, 2016:20). This collaboration agreement was signed by the mentioned parties accordingly. In the event that something would go wrong with the tunnel, it would be accounted for by Delft. In order to mitigate this risk (which would be massive for Delft), the BUOK also stipulates that the scope can be decreased by diminishing a part of the second tunnel, in the event that something goes awry in the project. According to former alderman Grashoff, this was the most significant and largest risk-management measure (Burgers, E., 2015).

In addition to the BUOK, this same date also marks the ratification of the Samenwerkingsovereenkomst Plangebied Spoorzone (SOK) between ProRail and

the municipality Delft/OBS. This contract entails the agreements between the parties surrounding the project elements rail infrastructure, public transport node and urban development. ProRail is responsible for building the railway infrastructure under the responsibility and finances of the municipality (Policy Research Corporation, 2016:21).

Aside from the BUOK and SOK, the collaboration agreement Raamovereenkomst Plangebied Spoorzone (ROK) is signed between the municipality, OBS, NS Vastgoed Ontwikkeling, and Ballast Nedam Ontwikkeling. The two latter parties will form an alliance named Ontwikkelings Combinatie Spoorzone Delft (OCDS). The ROK involves the agreements made surrounding the redevelopment of the urban environment within the Spoorzone area. This means that the parties involved are to design a quality framework, a plan that denotes the appearance of the area, a development plan on the public domain, and a structural fund. The municipality is to acquire the necessary real estate within the Spoorzone area and to deliver it as a construction site to OBS. At its own risk, OBS would continue to prepare this real estate for development and upon completion, hand it over to OCDS. These parties thus retrieved the right to develop living- and office facilities within the Spoorzone area. Subsequently, OCDS is to construct the buildings with living- and commercial facilities at its own expense and risk (Policy Research Corporation, 2016:21).

The following year, the first quarter of 2006 inhibits the start of the tendering process, which encompasses the building of the tunnel with an underground train station plus parking garage, as well as the design of the public areas. ProRail invites contractors who are interested to apply until the 30th of March. During this tendering process, OBS states that they deliberately do not provide a construction method, but rather allow candidates the opportunity to draw up numerous possibilities (OBS, 2007:1). The original urban architectural master plan as designed by Prof. Joan Busquets in 2003 will be further elaborated on when the tendering of the public areas is finished (OBS, 2007:2). The tendering assignment for the architects encompasses a draft design of the municipal office; a building that contains administrative counters and work space for approximately 1000 public employees. The municipal office is

combined with the station concourse of the new train station (Intenders.net, 2006).

The selection procedure for an architect designated to design the main station building and the municipal office commences. Four architectural architect their preliminary designs for the station concourse and the municipal office. These four organizations are: Mecanoo Architecten (Delft), Rudy Uytenhaak Architectenbureau (Amsterdam), Soeters van Eldonk (Amsterdam), and Dirk Jan Postel / Kraaijvanger (Rotterdam). The selection board considered the design, the costs, the sustainability as well as the constructional execution of the draft designs. Moreover, the opinions of the citizens of Delft are also taken into consideration through means of the Delft Internet Panel (Intenders.net, 2006).

The selection procedure of the architectural bureaus proves to be a difficult process. When the OBS selected the designs of two architects, namely Soeters and Uytenhaak, the three remaining architectural bureaus objected this decision. Upon this turmoil, OBS eventually decides to withdraw the option for a follow-up assignment and announces a reassessment of the selection procedure. A new selection process for the architectural bureaus commences, to which four of the previously participating organizations participate again. After this a new follow-up procedure is initiated, since the selection processes till now still have not resulted in a final decision. Ultimately, Mecanoo Architecten is finally selected to be the winner in Juli 2007.

In the meantime, based on the outcomes of a quick-scan, minister Eurlings of V&W assigns an additional € 20 million for the tunnel in order to publically secure the tunnel's location at the Kampveldweg and the ground of DSM/Gist. Eurlings explains this decision when answering the questions that the House of Representatives have sent him in September 2007. The minister believes that the additional € 20 million serve as a precautionary measure to construct the four-railed element at a later stage. Eurlings states that, by doing this now, it saves time and money at a later stage if the two extra rails need to be tendered separately. In November 2007 the minister again assigns an additional € 40 million in order to excavate a second tunnel (V&W, 2007:2).

The majority of the properties located in close proximity to the Spoorzone, including the buildings as previously owned by NS Vastgoed, are by now property of the municipality. These purchased buildings are utilized by housing corporation DUO for the time being, as well as the PTD-complex. With regards to the securing of the Bacinol building, the municipality is consulting the current owner, DSM Gist to discuss the possibilities of acquisition (OBS, 2007:2). The idea is to develop the purchased land for living- and working purposes and re-sell it in order to secure the fixed contribution of the municipality to the construction of the tunnel (amounting to € 45 million).

In 2006, the development company OBS officially starts as they construct and coordinate on behalf of the municipality the Spoorzone project. Later this year, however, it became evident that the tunnel becomes much more expensive than initially expected. For the following two years, the municipality lobbies at the State in order to receive additional funding; the risk is too great for Delft to bear on its own (Onderzoekscommissie Grote Projecten, 2016:2).

5.2.2 Round 2: Shifting the Risk and the Economic Crisis (2008 – 2012)

This round marks a period of time in which many vital events take place. On the 9th July 2008, an addendum is added to the BUOK and SOK. New agreements are established concerning the scope of the tunnel and the financial responsibility on a particular section of the project. This means that the risk over the rail infrastructure, the rail-element of the public transport node and the train station is transferred from the municipality to the State. (Policy Research Corporation, 2016:22). Delft will continue to bear responsibility for the risks concerning public areas, the parking garages and real estate (Delftse Rekenkamer, 2010:7). The risk for the tunnel is estimated around € 45 million, and in case sum would be exceeded, the municipality Delft would contribute 20% of the additional costs, up to a maximum of € 5 million. Furthermore, a definitive decision is made on the scope of the tunnel with regards to four rails, from which two will be constructed per immediately. The addendum also stipulates additional funding to the project: the Province Zuid-Holland, city district Rotterdam and Stadsgewest Haaglanden collectively provide € 21 million. The ministries V&W and VROM contribute an additional € 7 million (Policy Research Corporation, 2016:22).

On 18th July 2008, ProRail commissions Combinatie Crommelijn VOF (CCL) to construct the tunnel, the underground station and a parking garage adjacent to the Spoorsingel. Furthermore, this organization will be responsible for preparing the entire building zone for construction as well as a significant part of the ‘masterplan’. The total costs of this assignment amount to a total of € 355 million.

The year 2009 marks the period of time in which the construction of the tunnel has commenced. As the initial start of the building process, it involves the establishment of baselines of contiguous buildings, the elongation of electricity cables and pipelines, as well as clearing the construction space. This clearing involves the demolishing of buildings in close proximity to the Van Leeuwenhoeksingel, Houttuinen and the Bacinol. Furthermore, the bus station has to be relocated to the rear side of the train station, the extension of the tram tracks on the Phoenixstraat and the extension of the Engelsestraat closer to the homes. All in all, it is an intense construction process with strenuous circumstances for the habitants living in the heart of the city.

Meanwhile, trouble is brewing in the global economic climate, spreading from the United States to other parts of the world with tremendous vigor. Many European banks had invested in risky and complex financial product, which were in hindsight much less worth than initially thought. As a result, many banks like ING suffered from immense losses and were supported by national governments to be kept afloat (Europa-nu, 2016). Due to strong economic ties and diminishing trust by investors and consumers, industries like the real estate industry were falling apart, and large investments suddenly dissolved. Unfortunately, the Spoorzone network was not spared by this unexpected external event.

In January 2009, OCDS informs OBS and the municipality that they are unable to develop the allocated land as stipulated in the ROK due to several reasons; the ambitious image quality plan, the parking-debacle, and the ambitions with the public area within the Spoorzone, the vastly increasing of the construction costs and the expected revenues of the real estate are not taken lightly by the development consortium. From this point onwards up until 2012, years of legal negotiation between OCDS and the municipality ensues, as OCDS believes that, partly due to the economic crisis, the agreements made in the ROK

cannot be fulfilled any more (Policy Research Corporation, 2016:22). In the end, OBS concludes that the agreement with the real estate developers will not ensure the profit of € 78 million. A legal procedure would also cost a lot of money and time, which are scarce resources at this point. OBS therefore suggests a different structure to oversee the development of the Spoorzone area, in which the management lies with Delft/OBS (Onderzoekscommissie Grote Projecten, 2016:3).

5.2.3 Round 3: Breaking ties with OCDS (2012 – 2014)

The third round starts off with the signing of the new land allocation agreement between Delft, OBS and OCDS. This moment signifies the dissolving of OCDS and the end of back-and-forth discussion between Ballast Nedam and Delft/OBS on the terms in the SOK as signed in 2005. Due to the economic crisis in 2008, the whole perspective on real estate development has changed drastically, resulting in drastic measures within the Spoorzone network. On 29th June 2012, the aforementioned parties signed a 'land-allocation agreement', which stipulates that Ballast Nedam will account for 33% of the realization of real estate development in the Spoorzone project. This involves the construction and development of 400 living facilities (instead of 1200) and 6.000-m² gross floor space (instead of 25.000 m²). This agreement also means that the responsibilities of the property development in Spoorzone Delft are accounted for by the municipality and that NS Poort has stepped out of the framework agreement (Spoorzone Delft, 2012). Henceforth, the signing of the new land allocation agreement functions as a break-through for the ongoing discussions between OBS, Delft and OCDS on the agreements in the SOK, which seemed unrealistic considering the effects of the global financial crisis.

These changes in the collaboration agreement with Ballast Nedam has considerable effects on the organization within OBS. The new stipulations in the ROK got OBS seeking for improved alignment within its current operations, which suddenly also included real estate development. According to research conducted by Onderzoekscommissie Grote Projecten in 2016, the project organization is not running as flexible; there is an 'ingroup and outgroup' mentality detected within- and between OCDS and the municipality and OBS. Researchers conclude that between 2012 and 2014, there is insufficient

understanding of the project objectives amongst the parties, making effective guidance and control not possible (2016:4).

According to the Onderzoekscommissie Grote Projecten, the municipality had to invest additional funds in order to complete the ending of the collaboration with OCDS. The municipal costs for the Spoorzone increased drastically in the following two years; approximately € 31 as opposed to the estimated sum from 2008 (2016:3). Moreover, by the end of 2013, it seems that the risk reserves are fully depleted whilst the project is far from completed. This unfortunate realization leads to the need to conduct extensive research on the financial health of the project. An independent organization takes another look at the financial data, and concludes that the results are continuously deteriorating through means of an upper- and lower limit. Delft takes these results into consideration in her municipal funds (Onderzoekscommissie Grote Projecten, 2016:4). This realization by the municipality to take a critical look at the financial prospects of the Spoorzone project functions as the breakthrough for the muddling between OCDS and OBS and the uncertainties surrounding the risk-buffer of the project.

5.2.4 Round 4: Stressful results from Stress Tests (2014 – 2016)

The fourth round starts off with the nomination of a new managing director, I.F.M. Hermans, at OBS on the 1st January 2014. His entry into the organization, a new manner of collaboration between the municipality and OBS is set in place that is based on the principle of ‘mal-contramal’. This means that there will be shared responsibility between the managing director of OBS and an administrative director to optimize the planning and the decision-making process of the project. Furthermore, coordination and decision-making is to happen on a weekly basis on both management- and administrative levels aimed at a successful and well-governed project (OBS, 2015:6).

Shortly after the entry of Hermans, the Advisory Board, the municipal accountant and the new director of OBS plea for the implementation of a stress test. The first stress test is executed by OBS in the first half of 2014. With the results not even substantialized yet, the alderman Spoorzone and the concern-controller already indicate that the risk-buffer for the project is fully depleted and most likely needs to be increased. On the 9th of July, the municipal council is

presented with the preliminary results of the stress test: there is a budget shortage of approximately € 30 million on the end result in 2030, which could possibly increase in the event that the control measures are not substantial enough (Policy Research Corporation, 2016:66).

As urged by the Municipal Executive and the new director of OBS, Rebel Group conducts a second stress test, from which the results are presented in October 2014. Rebel Group takes a closer look at the profit side, whilst OBS looked specifically the costs and risks. This test also took into consideration the much lower revenues (about -€ 8 to -€ 25 lower) derived from the real estate development than previously anticipated. The results of the second opinion are shocking: the deficit is not - € 62 million, but a baffling terminal value of -€ 80 million, with a bandwidth between -€ 38 million and -€ 101 million. In its calculations Rebel Group took inadequate revenues from real estate exploitation, any contingencies and a different actuarial interest into consideration enough (Policy Research Corporation, 2016:66). The new general director of OBS, states in his opening letter in the yearly rapport that the cost overrun is larger than expected due to higher costs- and risk profile of the urban development of the area. Another reason given for the magnitude of the cost overrun are the unfavorable effects of interest charges (OBS, 2015:5).

Per immediately, the Municipal Executives and OBS collaborate together to collectively come up with measures to reduce the projected cost overrun. One of these measures is the renewal of the contract with ProRail and the contractor that would realize the establishment of the public domain, making it possible to reassess the planning and to mitigate the risks (OBS, 2015:5). Alderman Aletta Hekker announces on Thursday 30th October to the public that the Spoorzone project will cost even more than previously projected. Hekker states that the expected cost overrun is not € 30 million as preciously expected, but between € 50 and € 80 million (OmroepWest, 2014). Hekker also states that Delft cannot solve this problem on its own, but needs the help of the province and the national government. With the prospects as they are now, Delft is expected to cut its expenditures with € 16 million per year. The municipal executives, however, can see in their inventories only feasible savings of € 12 million, with the

possibility of having to sack civil servants and increasing the costs of housing (De Volkskrant, 10th September, 2014)

On the 18th December, it became clear that the municipality Delft will start the year 2015 in a dire financial situation; the municipal budget is far from solid, which places them under direct financial supervision of the Province. In order to mitigate this yearly deficit to solidify the municipal budget, drastic cutbacks need to be made. Measures like the sack of many municipal officers, the closing of community centers and cuts in the cultural sector are discussed, as well as increases in property taxes for the citizens of Delft (Dirks, B., 2015).

On 2nd April 2015, alderman Alleta Hekker states that the municipality is working on three scenarios that would handle the financial situation Delft is currently residing in, as stated in De Volkskrant (Dirks, B., 2015). The first scenario is to solve the problem them selves, but that seems at this point in time nearly impossible due to the preventative supervision of the province. The second scenario involves the aid of the province and neighboring municipalities. Both Rotterdam and The Hague are facilitating in the urban development. There is also an ongoing discussion between the ministry of Infrastructure and Delft for them to receive more time for the payment of the tunnel. The third scenario that Delft is working on a request for an Article 12 status. This means that the municipality can receive an additional benefit from the national government, albeit in return has to give up a substantial part of its financial independence (Dirks, B., 2015).

The fourth round ends when in December 2015 the municipality announces that it is not under supervision by the Province any more. This means that Delft no longer needs authorization by the Province in the case of amendments in the municipal fund before taking action. In the letter to the municipal council, the Province announces that the funds are in accordance with the standards to receive punitive supervision (Provincie Zuid-Holland, 07-12-2015). Furthermore, through an accountancy arrangement with the Province, the deficit of € 80 million can be paid back over a longer period of time. This means that the Article 12 status is off the table. These announcements therefore function as the breakthrough for the back-and-forth collaboration between Delft, the Province, and the Ministry I&M on its municipal budget.

5.2.5 Round 5: Delft Bounces Back (2016 – now)

The fifth (and final) round starts off with Delft having control again over its municipal budget for the year 2016 (Van De Stadt, P., 2015). Slowly but surely, the fractions in the municipal council react positively on the new plans that are presented in the Framework Memorandum 2017 – 2020. For a significant part, the ideas in the rapport by former-minister Deetman called “Delft, Parel in de Randstad” is incorporated. The Municipal Executive aims to reinstate these ideas for Delft through means of a Parel-fund. From the forecasted surpluses in the year 2016 and 2017, € 7 million will set aside. From this sum, approximately five ton will be invested in numerous initiatives for the second half of 2016, along with partners and co-financers (Gemeente Delft, 2016). Henceforth, this fifth round is still in progress, with a steady improvement for the financial outlooks of Delft and a heart of the city that is looking more complete every day.

5.3 Actor Strategies Per Round & Influence on Overrun

Now that the critical decisions are outlined through means of rounds, the next step is to determine how these critical decisions are related to the cost overrun and which strategies they have used regarding these critical decisions. In this case, the choices will be arranged according to three different strategies, namely, choices by actors that:

- a. Accept the current situation; being inactive with regards to the prevention or contribution with an overrun
- b. Contribute to the explanation of the overrun; for instance, by interpreting forecasts too positively or taking on too many risky projects at the same time
- c. Are geared towards limiting the overrun; taking preventative measures or dealing with results of overrun

By doing so, it will pave the way towards determining the strategies that different actors have used based on the critical decisions made (or external events that happen), that can subsequently be categorized according to being psychological- or political explanations for the apparent cost overrun.

In order to create a preliminary overview, the following section starts off with two tables. Table 9 outlines the outcomes per round and a summary of the strategies used per actor in that round. Table 10 outlines the status of the

overrun per round and the strategies aimed at either enforcing- or mitigating the overrun. Following these tables, an analysis of the actor strategies and their relation to psychological and political explanations for the cost overrun will ensue. Henceforth, the following section does not include the actor perception yet, but rather looks at the strategies of actors derived from sources like the factual paper by Policy Research Corporation.

Table 9: Strategic Actions per Actor per Round

Time Period	(2005-2008)	(2008-2012)	(2012-2014)	(2014-2015)	(2016- now)
Round	Signing BUOK, SOK, ROK	Addendum on BUOK	Dissolving OCDS	Stress tests Indicate Overrun	Delft no longer Under Supervision
Delft	- Signing BUOK, SOK, ROK - Strong lobby to reallocate risk tunnel	- Agreeing to addendum - Talks with OCDS on ROK	- Accepting break with OCDS: takes on remainder real estate development	- Initiate stress test - Request waiver of costs or later payment at I&M	Initiate austerity measures to solidify municipal budget
OBS	- Signing BUOK, SOK, ROK - Strong lobby to reallocate risk tunnel	- Agreeing to addendum - Talks with OCDS on ROK	- Accepting break with OCDS: Takes on remainder real estate development	- Initiate stress test	Finding other development companies for real estate
Ministry I&M	Signing BUOK, SOK, ROK	Agreeing to addendum	-	Reject waiver or request for later payment by Delft	Payment arrangement for Delft
ProRail	Signing BUOK	Taking on construction tunnel	-	-	-
OCDS	Signing ROK	Indicate doubts on ROK	Backs away from contract	Ballast Nedam remains	Ballast Nedam Remains
Province ZH	Signing BUOK	Additional funding tunnel	-	Enforcing supervision on Delft	Lifting financial supervision

Table 10: Status Overrun and Actor Strategies

Time Period	(2005-2008)	(2008-2012)	(2012-2014)	(2014-2015)	(2016- now)
Status of Overrun	Non-existent	Emerging: Value of real estate plummets; start relying on risk reserves	Emerging: Risk reserves are fully exhausted: need for reality check	Existent: Much more drastic than initially expected: municipal budget is no longer solid	Existent: Sum of overrun is transformed into a loan; Delft can pay it back gradually, but overrun will never dissolve
Accepting current situation	Ministry I&M lets Delft take on all risk of tunnel	Province ZH and other financiers contribute additional funds to tunnel	-	Delft is placed under financial supervision by Province ZH	-
Contribute to explanation overrun	Delft does not consider not building tunnel	Delft takes on different side projects; risk accumulates	OCDS dissolves: income stream falls away	-	-
Limiting overrun	Initial official risk analysis plus second opinion by Delft	Risk of tunnel shifts from Delft to Ministry; possible overrun avoided	Long collaboration between OCDS and Municipality /OBS to solve dispute; to no avail	Two stress tests are conducted to recover status overrun	- Austerity measures by Delft - Ministry grants more time for Delft to pay sum

5.3.1 Determination to Attain Tunnel

According to research conducted by Policy Research Corporation, the municipality did never consider the possibility of not building the tunnel when signing the BUOK (Policy Research Corporation, 2016:9). This could signify that there was indeed great determination in securing the arrival of the tunnel, but it could also imply that this willpower canopied them in perusing other options besides the excavation of the tunnel. This optimism and determination is admirable, however, it could reflect the exaggeration of their own capabilities by Delft as well as the initial anchorage of optimism in the forecast. Henceforth this stage in the process, possible signs of psychological explanations for the overrun could already be manifesting itself. Furthermore, this particular agreement stipulates that the municipality would bear the total (financial) risks of the tunnel, as signed by Delft, the Ministry I&M and other co-financers (Policy Research Corporation, 2016:9). This could imply that the Ministry believed at that point as well that Delft could bear the tremendous risk on its own, with a considerable financial contribution by the State. This strategy by the Ministry signifies a 'accepting of the current situation', meaning that they have delivered a considerable contribution given that Delft would bear the risk of the tunnel. Here too, the anchorage of optimism in the forecasts as a psychological explanation plays could possibly be observed, as the Ministry believes that Delft can bear all that risk. At this same time, ProRail is commissioned by the Ministry to coordinate the construction of the tunnel hence they also adopt an accepting of the current situation and the agreements as stipulated in the BUOK, SOK, and ROK. This also counts for the other co-financers of the project (City District Haaglanden, Province ZH).

5.3.2 Realizing Risk of Tunnel

The years of lobbying by Delft and OBS and the eventual agreement by the State to take on the risk indicates that these parties were aiming to limit a possible overrun that would be devastating to the municipality. This could signify a possible realization of previous exaggeration of own capabilities was by the municipality. The other parties that attributed additional funding at this point in time as well as the Ministry I&M were also taking on the strategy of limiting a possible overrun, as they too realized that Delft had taken on too much risk

during the signing of the BUOK in 2005. Henceforth, at this point in time, the status of the overrun was still non-existent and possibly evaded due to the re-allocation in risk. In the meantime, the municipality purchases an increasing amount of land in the Spoorzone area. This shows that there is much confidence by Delft in its financing structure, as it anticipates that the purchased land in question will be sold with greater revenue later in order to cover the fixed contribution to the tunnel. This again could indicate the underestimation of uncontrollable external events (for instance, a potential plummeting of the real estate market) and the anchorage of optimism in the forecast (confidence in that the land will be sold successfully with a profit), thus psychological explanations for the overrun.

5.3.3 Economic Crisis Causes Concern

The OCDS adopted an exit strategy by announcing its wish to distance itself from its agreement with the municipality/OBS. In return, OBS and the municipality pursued years of discussion with OCDS to find a solution by adopting a cooperative strategy, as their dependency on the financial input by the development companies was very significant. The strategy of OBS and Delft to try to find a solution to the disagreements with OCDS denotes on the one hand an attempt to limit the cost overrun, as they were aware of the financial void that would deploy once the developers would back away. On the other hand, it signifies an acceptance of the current situation, as they eventually agreed to taking on the majority of the real estate development by itself once the dispute has been resolved. Henceforth, a myriad of psychological explanations for the cost overrun could possibly be identified found at this stage: the confidence in the robustness of the agreement with OCDS could indicate an anchorage of optimism in the forecast, as there was full belief that real estate exploitation would turn out successful. Moreover, the underestimation of uncontrollable external events could be a factor, as the impact of the economic crisis has wreaked havoc on the financing structure of the project.

5.3.4 Need for Reality Check

The initiation of the municipality and OBS to conduct two stress tests signifies a strategy to limit the overrun, as it indicates that they wanted to clarify the financial situation of the project. This again implies that Delft adopts a strategy

to mitigate the effects of the cost overrun. The Ministry I&M, the Province Zuid-Holland and ProRail are collectively willing to arrange a payment schedule that is suitable for Delft however full remission of the costs is out of the question given their own financial dispositions. These parties also adopt facilitating strategies, as they collectively cooperate to achieve a mutually beneficial solution.

Due to the austerity measures by the municipality and the transformation of the payment deficit into a 'loan', supervision by the Province Zuid-Holland is no longer necessary. These measures and the temporary guidance by the Province are strategies directed towards the limitation of the overrun.

5.4 Wrapping up Rounds Analysis

As can be seen from the rounds analysis in this chapter, the strategies that each actor uses- and the critical decisions made within the network influences the manner in which a cost overrun is enforced and mitigated. The most prominent explanation for the overrun can already be identified in the very start of this round analysis, namely the confidence in the costs and benefits structure of the project. The fixed contribution by the municipality would be financed through the real estate exploitation derived from the area surrounding the Spoorzone, and all co-financers (including the Ministry I&M) agreed to this structure. A business case that was solid in both 2005 and 2008 is solid no more due to the dissolving of an income stream. Henceforth, the anchorage of optimism in the forecast and the underestimation of uncontrollable external events as psychological explanations for the cost overrun are evident in the Spoorzone Delft case, based on an analysis of the actor strategies. Being aware of the process and critical decisions over the last ten years of the Spoorzone project, the question remains whether this prominence of psychological explanations for the overrun can also be found in the perceptions of the actors. This will be determined in the next chapter.

6. Psychological- and Political Explanations in Perceptions

The previous chapter included an analysis of the process, in which the strategies of the actors and its relation to the psychological and political explanations to the cost overrun are identified. The next step is to analyze the perceptions of the different actors within the network, which have been gauged through means of interviews, and identify whether these also exhibit political and psychological explanations. The structure used to conduct this analysis complies with some of the structure-elements from Section 4.5, in which the costs & benefits in beginning, the expectation and explanation for the overrun are identified, as well as the lessons learnt from the Spoorzone case. More so, the perceptions will be analyzed whether they enforce (or contradict) the observations made in the rounds analysis. At the end of this chapter, a concluding table will clarify the distinctions made between the psychological- and political explanations for the overrun found in the actor strategies and the actor perceptions respectively.

6.1 Costs & Benefits Beginning

The overall majority of the respondents exhibit confidence in the robustness of the costs and benefits at the beginning of the project in 2005. The critical actors all state that the business case was solid during the signature of the BUOK and that the spirits are high amongst the collaborating parties. A few exemplary quotes that reflect this confidence are: *“The Province and many other governments at that time thought that, through the development of offices and housing-locations, the benefits would eventually weigh up to the costs”* (Personal communication, May 18, 2016) and *“Back then it was customary to rely on real estate development. If I compare it to other key projects, the ministries and national governments also placed the risk of the environmental developments around Rotterdam and The Hague at these municipalities, this also happened in Delft. This was a very usual thing to do”* (Personal communication, May 16, 2016). From these quotes could be interpreted that there was quite some of confidence in the financing structure of the project at the beginning of the project. Even though certainty in the cost and benefits is necessary to initiate such a project (otherwise not any would take place), the positivity amongst the majority of respondents could imply that a sense of confidence dominated the beginning of

the Spoorzone project. Henceforth, the psychological explanation for the cost overrun in the anchorage of optimism in the forecast could possibly be identified in this case based on the confidence at the beginning on the project. These observations also verify the analysis in section 5.3.1, in which the great determination to secure the arrival of the tunnel also exhibits psychological explanations for the cost overrun.

The more peripheral actors are also looking forward to the promising prospects that this new project is going to bring. The majority of peripheral actors, however, already indicate that a possible overrun of costs would not come as a surprise: *“Initially they have already taken into consideration a cost overrun. Isn’t that remarkable?”* (Personal communication, May 13, 2016), and: *“They already knew from the beginning, in my opinion, that they were going to run short of money. If you share the true costs of such a project, it will never get off the ground”* (Personal communication, June 9, 2016). These exemplifying quotes could indicate some skepticism towards the robustness of the costs and benefits, and also elements of political explanations of the cost overrun. The last quote could imply either a deliberate manipulation of forecast for project approval or a strategic misinterpretation of the forecast. This again fortifies the notion that the actors with a more marginal position within the network already take a more critical stance towards the costs and benefits of the project. A possible reason for this dimension could be that their knowledge on the details of the project are only limited to what is disclosed through media outlets and what the municipal council shares on the project. This shapes their idea on what the Spoorzone project could mean for the inhabitants and how the financing of the project influences them directly and indirectly.

6.2 Cost Overrun: Expected or Not?

At least eight of the eleven respondents indicate that they did not expect a cost overrun at all. Essentially, all of the critical actors claim to be baffled at the arrival of the overrun. A few exemplary quotations: *“I don’t think many people have expected the overrun, myself included. But due to the economic crisis it’s not surprising that this is happening to Delft. Many other municipalities are dealing with shortages”* (Personal communication, May 18, 2016), and: *“I was surprised, angry, and as baffled as any other council member. In March 2014, I still lived*

under the impression that we had a shortage of 8-9 million. That's also no fun. But in the following months after I became alderman, the stress test indicated numbers nearly ten times higher. There were investigations that showed different amounts. I thought, how is this possible?" (Personal communication, May 26, 2016). These perceptions of surprise and dismay could indicate that the cost overrun was a scenario that was not anticipated at all by the critical actors. Even though a cost overrun is not necessarily an inevitable phenomenon for large infrastructural projects, the astonishment by the critical actors could imply the psychological explanations for the overrun, in which an underestimation of uncontrollable external effects plays a significant role.

The peripheral actors, however, do indicate that they expected a cost overrun to some degree. Some state that it was mainly the magnitude of the overrun that was truly shocking rather than the occurrence of the overrun in of itself. One peripheral actor claims that it frequently happens with similar large infrastructural projects that the expected costs are estimated too optimistically to get the project approved in the first place. This observation insinuates an explanation of political nature, in which there is a deliberate manipulation of the forecast for project approval. Once more, there is a discrepancy between the opinions of the critical actors and the peripheral actors; the views of the central actors comply more with psychological explanations whilst those located more on the outside of the network insinuate more political explanations.

6.3 Explanation for Cost Overrun

When asked about their opinion on the possible cause of the cost overrun in the Spoorzone case, the overall majority of the respondents believe that the occurrence of the cost overrun is a combination between unexpected external events and the 'humanly' mistakes that have been made within the network. These particular mistakes refer to psychological explanations for overruns, like the anchoring of optimism in the projected costs and benefits. One exemplary quote by a central actor states: *"What you always see with such a large project is that there is always great enthusiasm and optimism on the project itself when it is started. When you would analyze this, you'll see that there is always a phase where optimism is optimal, but halfway through the project the setbacks happen. This is a pattern, and it happened in this project too. Without optimism these projects won't*

happen, but it's the challenge to let reality kick in at just the right time" (Personal communication, 26 May, 2016). This quote literally refers to the consistent error of too much optimism at the beginning of a project, and that the Spoorzone project in Delft is left no exception.

All of the critical actors mention the impact of the economic crisis on the financing structure of the project, but both Delft and OBS also emphasize the planning for the tunnel was set too optimistically, which caused for a delay in attention for the aerial real estate development: *"For unknown reasons we've spent much focus on the underground structure. If that went overtime it would cost millions. We have spend so much effort in completing it in time, that by the time we came upstairs, we thought 'oh yeah, area development has to happen as well'. We were aware of this, but it still didn't get as much attention as it deserved"* (Personal communication, May 26, 2016). These two central actors could imply a psychological explanation for the overrun, being the anchorage of optimism in the forecast, the underestimation of uncontrollable external events, and the exaggeration of own capabilities by Delft by planning the tunnel and side projects too optimistically.

Another reoccurring factor that contributed to the cost overrun according to both critical- and peripheral actors is the accumulation of high-risk projects that Delft took on her plate. Not only the complexity of the entire Spoorzone project, but also other endeavors like the refurbishment of the Harnaschpolder and the Sebastiaansbrug added to the financial difficulties of the municipality. One central actor states: *"Delft took on too many of these high-risk projects. The question remains whether one should fill up their plate like that with projects in which they know how risky they are"* (Personal communication, May 25, 2016). One peripheral actor adds to that: *"You are building a tunnel, a very big municipal office-central station combo, and then also the development of a new neighborhood. So you're building 4-5 things at the same time, and they are all intertwined and dependent on one another. The one has to finance the other, and that's too risky in my opinion. If one stone drops, you'll get a domino effect spiraling down"* (Personal communication, May 19, 2016). The fact that multiple actors refer to the multitude of projects that Delft took on, it could imply that the psychological explanations for the cost overrun, as the overestimation of own

capabilities by Delft by biting off more than she can chew, and the underestimation of competing projects, are contributing factors in this case.

6.4 Lessons Learnt

When asked about the lessons that can be learnt from the Spoorzone case with regards to cost overruns, the perceptions are quite diverse. Two actors, both critical and peripheral, emphasize the importance of initiating an independent group that gives legal- and economic advice to the Municipal Executive and the Municipal Council when it comes to overseeing such a complex endeavor as the Spoorzone project. This group would also function as a devil's advocate to continuously challenge ideas and possibly mitigate the initial doses of enthusiasm that could work adversely for the project. This notion could imply that the psychological explanation, being the anchorage of too much optimism in the forecasts, was present in the Spoorzone case and possibly could be alleviated in future projects.

Furthermore, a total of six respondents argue that the expected costs and benefits need a larger risk reservation in order to be better prepared for unexpected events. This could imply that positivism was already affixed in the beginning of the project and that the potential risks are initially undermined considering the modest risk provision percentage. Two respondents add that that the income element of the project needs to be secured before considering the expenditures. One of the critical actors states: *"In that time it was thought, we'll earn it back easily. Those risks were taken back then; with today's risks you would never do that... it shouldn't be combined. Because you finance your main infrastructure with the revenues from real estate development: allotment of land. The one is a market mechanism, whilst the other you've tendered and developed and the money is gone. If one of these dissolves, you'll catch a void"* (Personal communication, May 26, 2016). Henceforth, it could be interpreted that these perceptions enforce the psychological explanation for the overrun, by insinuating that uncontrollable external were constantly underestimated and that optimism dominated the initial forecasts. Any possible political explanations for the cost overrun are not further identified in the perceptions on what can be learnt from the Spoorzone project.

6.5 Most Prominent Explanation?

When looking at the perceptions of the different actors in the Spoorzone network on the value of the project and the possible explanations for the cost overrun, the psychological explanations for the cost overrun are a reoccurring factor. Elements like the anchorage of optimism in the forecasts (the solidity of the contract with OCDS) and the underestimation of uncontrollable external events (risk reservation too low) are frequent themes throughout the perceptions of the different parties. Albeit the ramifications of the economic crisis on the real estate market were significantly damaging for the financing structure of the project, the 'human mistakes' that are made in the eyes of the different parties are still dominating in the true explanation for the cost overrun, as derived from the actor perceptions.

6.6 Synthesis Of Explanations in Strategies and Perceptions

As a bridge to the concluding remarks for this thesis, the following table will outline the indications found in both the strategies of the actors as well as their perceptions for the two possible explanations of the overrun. By doing so, it will create an outline between the psychological- and political explanations found in both the actor strategies and perceptions to indicate any similarities and discrepancies between them.

Table 11: Explanations for Overrun in Strategies & Perceptions

	Actor Strategies	Actor Perceptions
Psychological Explanations	Adamancy of Delft to secure arrival of tunnel: Anchorage of optimism in forecast	Overall shock at revelation of overrun by critical actors: Anchorage of optimism in forecast
	Delft taking on all the risk for the tunnel: Exaggeration of own capabilities	Planning for tunnel was set too optimistically, which diminished the attention to real estate development: Anchorage of optimism in forecast
	Full reliance on real estate exploitation as income resource: Underestimation of external uncontrollable events	Great enthusiasm on arrival of tunnel and confidence in business case: Anchorage of optimism in forecast
	Confidence in robustness contract with OCDS: Anchorage of optimism in forecast	Reliance on market mechanism to fund a public project: Underestimation of uncontrollable external events
	Accumulation of side projects by Delft and their interdependency: Exaggeration of own capabilities	Accumulation of high-risk projects by Delft: Exaggeration of own capabilities
	Low risk reservation for project: Anchorage of optimism in forecast	Low risk reservation for project: Anchorage of optimism in forecast
Political explanations	None found	Skepticism towards robustness costs & benefits by peripheral actors: Strategic misinterpretation of forecast
		Already some degree of overrun by expected by peripheral actors: Deliberate manipulation for project

		approval or strategic misinterpretation of forecast
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As can be seen in the table above, the psychological explanations for the overrun are prominent in both the strategies of the actors as well as their perceptions. Any political explanations for the cost overrun are not identified in the actor strategies. Only in the actor perceptions, any suspicions of deliberate manipulation in forecasts to achieve project approval or the strategic misinterpretation of prognostications are mentioned. And in these few instances, the actor with these remarks is situated in the periphery of the Spoorzone network. A possible reason for these suspicions is that they are either based on eye-catching headlines in newspapers that are misconstrued, or the person in question has existing reservations on the 'fairness' of such large projects.

Furthermore, there are a few correlations between the explanations found in both the strategies and the perceptions; the low risk reservation for the project as well as the accumulation of side projects by Delft are factors both enforced by the strategies of actors and their perceptions on the possible explanations for the cost overrun. Overall, the possible reasons for the overrun that are derived from the actor perceptions reinforce the findings from the process analysis; the psychological explanations for the cost overrun are an evident factor in the Spoorzone Delft case.

7. Concluding Remarks

7.1 Explaining the Cost Overrun

The central research question *“Which factors influence the occurrence of the cost overrun in the complex infrastructure project Spoorzone Delft?”* has been addressed in this thesis through the conducting of interviews and by gauging the opinions of different actors within the Spoorzone network on the costs and benefits of the project and the possible explanations of the cost overrun from their perspectives. The factors that are particularly sought after during the interviews were the possible psychological- and political explanations for the cost overrun, which is derived from a theory of Flyvbjerg in which ‘humanly faults’ are a structural, prevalent and consequent cause for overruns in large infrastructural projects. These ‘humanly faults’ could be either through, for instance, the (unintentional) anchorage of too much optimism in the projected forecasts or the (possibly deliberate) manipulation of costs and benefits to get the project approved. By acknowledging the complexity of the network surrounding the Spoorzone project in Delft, in which each of the actors involved pertain their individual perceptions and goals whilst collectively pursuing a common objective, the possible psychological- and political explanations for the cost overrun can be identified. The information is gauged and structured through means of an actor- and game analysis, in which the network of different actors is mapped according to the resources these actors possess and their perceptions on the cost overrun. The game analysis involves the structuring of major events and decisions taking place within the last ten years through means of rounds. Through this, the influence of the individual perceptions of each of the actors on the overall decision-making process can be identified. Moreover, through an analysis of the actors’ perceptions and strategies, the psychological and political explanations for the cost overrun are identified.

The main conclusions that can be derived from this research go as follows. First of all, the majority of the interviewed actors in the Spoorzone network believe that the main explanation for the occurrence of the cost overrun is a combination between the influence of uncontrollable external events (in this case being the global economic crisis in 2008) and ‘humanly mistakes’ that are

made within the network (in this case, the manifestation of too much optimism in the estimates for the project in what the costs would be). Even more so, nearly all of the interviewed actors address the reliance of the municipality Delft on the projected revenues from the real estate exploitation in order to cover the fixed contribution to the tunnel. This anchorage of optimism is also enforced through the analysis of the actor strategies, which shows that the reliance by the municipality on the agreement with OCDS was unprecedented. This vital umbilical cord was unexpectedly severed as the throes of the economic crisis was felt on a global scale, with the municipality Delft being no exception. The occurrence of the market crashing is not in the hands of the Spoorzone network, however, the question remains whether the strong reliance on the health of the real estate market to fund such a large project is a logical thing to do at that time, or could be considered a 'humanly mistake' after all. The critical actors in the network (being Delft, OBS, ProRail, Ministry I&M and Province Zuid-Holland) all argue that it was indeed a logical funding framework for municipalities to rely on in order to initiate such a large project. Especially in the beginning of the 2000s', spirits were high and the tendency to invest in state-of-the-art projects was widespread. It therefore came as no surprise that the Provinces placed multiple municipalities under curatorship shortly after economic crisis manifested itself in Europe. If the initiation of a four-railed tunnel plus the refurbishment of a whole neighborhood would have taken place today, it is debatable whether it would happen on such magnitude, or whether it would happen at all. It can therefore be concluded that the feeling of optimism and desire that was so prevalent in the beginning of this century is necessary for the initiation of such an endeavor as the Spoorzone project in Delft, however, that all of the financing structures need to be considered thoroughly whilst keeping cyclic behavior of the financial climate in mind at all times. It is truly admirable for such a relatively small city like Delft to arrange a project that is so transformative yet at the same time so drastic for its inhabitants. May the citizens of Delft (and the commuters passing through by train) reap the benefits of the project for many decades to come.

The second large conclusion that can be derived from this research is that the risk that came with the construction of the tunnel and all the other project

elements was immense. The interdependency between these project elements especially was, in hindsight, very precarious for the municipality to take on. Delays in the construction of the tunnel resulted in troubles with the new municipal office and the refurbishment of the public areas. Moreover, Delft was also in the process of refurbishing the St. Sebastiaans-bridge and developing the Harnaschpolder simultaneously with the Spoorzone project. The transfer of the risk from the tunnel between the municipality and the State in 2008 has already alleviated a tremendous amount of pressure from Delft, albeit the other project elements collectively filled up Delft's plate to overflowing extents. The question that arises is whether Delft has bitten off more than she can chew, or that the decision to initiate so many projects at the same time was a logical decision to make. This is where the psychological explanation for the cost overrun can be partly identified in the analysis of actor strategies, in which Delft has overestimated its own capacities whilst underestimating the possible threats that came with the endeavors it took on. In the perception analysis of the involved actors, the overzealousness of the municipality is also translated as a psychological explanation for the overrun with an overestimation of ones own capacities by the municipality. The Spoorzone alderman emphasizes that Delft is a brave and aspiring city and that it should not adjust its ambitions, but rather organize them in a different way for the next time (Personal communication, 16th May 2016).

The factors that influence the occurrence of the cost overrun as derived from perceptions within the network are therefore a combination of psychological explanations and the influence of uncontrollable external events, which can be identified in both the actor- and process analyses. Any political explanations like the strategic misinterpretation of forecasts or the deliberate manipulation of costs and benefits to make them favorable are not identified in the process analysis. In the analysis of actor perceptions, however, a few peripheral actors insinuate that the occurrence of a cost overrun was known beforehand, thus insinuating explanations for the overrun of political nature. These remarks are too diminutive to conclude that this is truly the case for the Spoorzone project, as they are most likely based on speculations and on an existing stigma of "megalomaniac" projects. Even though the political factor is

the most prevalent explanation for cost overruns in large infrastructural project according to Flyvbjerg, this does not seem the case with regards to the Spoorzone project in Delft. It must definitely be emphasized that it is extremely difficult to identify any political explanations in the first place, as no one would admit witnessing (or doing) such behaviors. Taking this into perspective, however, it seems that the Spoorzone project was an immense venture to take on, and that a combination of tremendous optimism, guts, and simply very bad luck resulted in a significant cost overrun for the Spoorzone network to deal with.

7.2 Answering the Sub-questions

7.2.1 Perceptions in the Network

In summary to the sub-questions of this thesis, the findings are as follows; the analysis of the network has resulted in the presentation of the actors' perceptions in order to determine its influence on the decision-making-process and to display the complexity that characterizes such networks. The perceptions of the actors on the costs and benefits of the project prior to the implementation process was overall positive as the business case was solid in both 2005 and 2008. The views on the costs and benefits of the project in its current state inhibits overall confidence as well; the real estate is being sold at higher rates than initially planned, albeit the deficit will be never fully closed. The actors perceive the total value of the project as highly beneficial to the municipality. Even though its construction comes with a cost, the actors generally express great enthusiasm on the upsides for Delft. The perceptions on the possible reasons for the cost overrun are varied. The actors situated centrally in the network overall emphasize the negative consequences of the economic crisis, whilst the actors in the periphery of the network are more critical on certain decisions that have been made and the costliness of the project.

7.2.2 Major Decisions in Network

The most critical decisions that have been identified through means of a rounds analysis are the signing of the BUOK, SOK, and ROK, which marks the official beginning of the Spoorzone project in 2005. The next important decision involves the addendum on the BUOK, which stipulates the transfer of risk from

the municipality to the State in 2008. The third major decision concludes the dissolving of the ROK-agreement between OCDS and Delft/OBS in 2012; this had large consequences for the allocation of land development between the actors and the role of real estate development as a responsibility for the municipality. The fourth critical decision would be the initiation of two stress tests in 2014, both of which revealed the extent of the financial disposition that the municipality was in. The fifth (and final) major decision marks the moment when the municipality is no longer under financial supervision of the Province Zuid-Holland and has full control over its budget again. These significant decisions that took place over the last ten years have had a major impact on how the Spoorzone project progressed and how the different parties interacted with one another.

7.2.3 Changes in Perceptions

By looking at the actor perceptions on the Spoorzone project at two periods of time, it can be seen that overall enthusiasm on the potential of the project has remained the same. In both the beginning and right now (as the completion of the project is becoming more of a reality), the actors view the arrival of the tunnel and a refurbished heart of the city as a major improvement for the municipality and its citizens. What has mostly changed between the beginning- and current state of the project are the reservations on the ostensible delivery date of the project (as some project elements take longer than initially expected) and the overall demeanor of the network. It has been a rough few years, and especially for the citizens living in the city center of Delft, the construction pit is a site they are tired of being confronted with. But now that the results are increasingly visible as the new train station is almost finished and the site fences are slowly disappearing, the citizens of Delft and the other actors are preparing for the last stretch. This overall change in actor perception from beginning to end shows the drastic impact of the sheer magnitude of the Spoorzone project. Furthermore, the steady improvement of the real estate market strengthens the outlook of Delft's financial situation and that of the project.

7.2.4 Psychological & Political Explanations

The most prevalent psychological explanations for the cost overrun in the Spoorzone Delft case are the anchorage of optimism in the forecasts of the

project (especially with regards to the reliance on real estate exploitation by Delft whilst underestimating the possibility of the plan going awry) and an overestimation of ones own capacities, as Delft took on so many projects at the same time. As mentioned before in this chapter, there are no political explanations identified. One significant contributing factor that was not included in the theoretical framework but nonetheless important to this case, is the occurrence of the economic crisis and its ramifications on the income-framework of the project. This could be viewed as the underestimation of the influence of external events, however, the global economic crisis was a phenomenon that was unexpected by everyone.

7.2.5 Lessons Learnt from Spoorzone Case

With cost overruns being a prevalent reoccurring theme in large infrastructural projects, the Spoorzone Delft case in particular has been interesting to study. Most importantly, it has emphasized the importance of first determining what the cost overrun in question actually entails before drawing any conclusions in how and why it took place. With the term “cost overrun”, individuals often quickly assume that more money has been spent than initially planned (and thus also in an irresponsible manner). This is not necessarily the case in the Spoorzone project, even though media outlets often insinuate the contrary. Firstly, the scope of the project has changed drastically throughout the construction process, as the train tunnel has increased from supporting two rails to four. The project then indeed becomes more expensive than initially planned, however, from a completely caliber. Secondly, the cost overrun that did occur is not a matter of exceeding the budgeted costs, but rather a falling out of a much needed revenue stream to fund the project. Henceforth, what can be learnt from the Spoorzone project is to secure both the income- and outcome side of the balance sheet, and making sure that all expenditures is accounted for.

Another lesson is tied together with the previous one, in that the role of the media should not be underestimated when it comes to the outlook of a large construction process. Especially in the event of a cost overrun, the emphasis on the ‘juicy’ news is framed in such a way that the public is bound to misunderstand the actual reason for the overrun. Whilst a critical watchdog is always necessary as it keeps the public informed and the actors in check, it does

require time and effort to provide them with the correct data and showing them all the sides of the project (the good and the bad).

7.3 Suggestions for Future Research

The research on the possible explanations for the cost overrun as occurred in Spoorzone project has brought about many other interesting factors that could be investigated further. One prevalent and reoccurring theme was the distance between the municipal council and OBS and how it has played a role in the controlling and framework-setting duties of the council. At first, the development company has been placed at a distance from the council deliberately, as it would ensure the operational effectiveness that was much needed in such a large project. The deliberate void between these two entities, however, also brought about questions on how the municipality was able to exercise control on the decisions project and the transparency of the financial information to the council. It would be interesting to determine how this particular governance structure has influenced the decision making process in the project, and how it could be improved.

Another potential topic for further research also involves the importance transparency on the costs and benefits of a project, but then to the citizens. Especially during the interviews with the citizen groups and the local businesses, it became evident that citizens want to know what is going on behind the scenes and why a cost overrun of such magnitude would take place. For some, the notion that such delicate financial information would be publicized to the public would be outrageous and could inhibit the progress of the project. But wouldn't it be interesting to determine the possibilities of creating more transparency on the costs, benefits and risks; information that is usually only disclosed to a few members within the network? In a day and age where everyone has access to a universe of data and knowledge, perhaps the stigma (and possibility for strategic behavior in large infrastructural projects) on the costliness and often unfairness in large projects can be diminished through greater transparency and increased involvement of citizens.

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Appendices

Appendix 1. List of Abbreviations

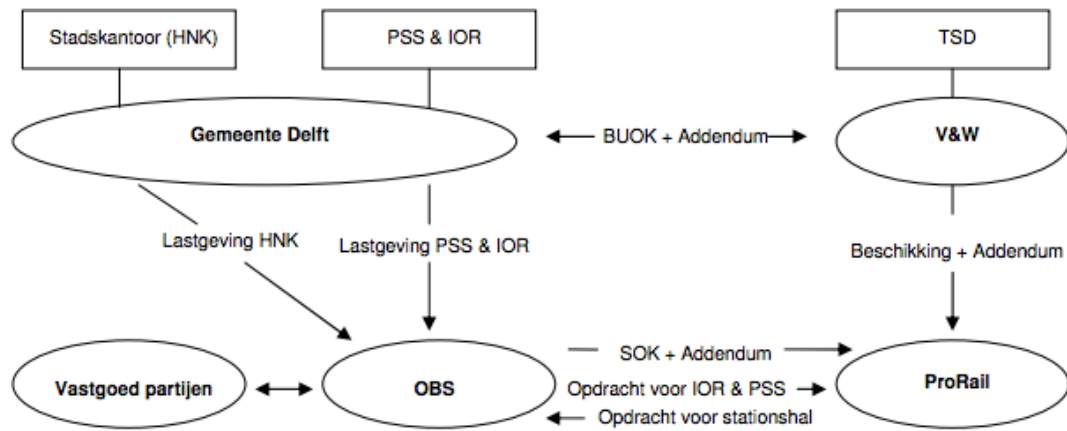
Abbreviation	Name
BIRK	Budget Investerings Ruimtelijke Kwaliteit
BoM	Bazaar of Magic
BUOK	Bestuurlijke Uitvoeringsovereenkomst
CCL	Combinatie Crommelijn VOF
IOR	Inrichting Openbare Ruimte
Ministry I&M	Ministerie Infrastructuur & Milieu
Ministry V&W	Ministerie Verkeer & Waterstaat
Ministry VROM	Ministerie Volkshuisvesting, Ruimtelijke Ordening & Milieubeheer
MIT	Meerjarenprogramma Infrastructuur & Transport
NAR	Nederland Adviesbureau voor Risicomanagement
NS	Nationale Spoorwegen
OBS	Ontwikkelingsbedrijf Spoorzone Delft
OCDS	Ontwikkelingscombinatie Spoorzone Delft
Province ZH	Province Zuid-Holland
ROK	Raamovereenkomst Plangebied Spoorzone
SOK	Samenwerkingsovereenkomst Plangebied Spoorzone
WeSD	Werkplaats Spoorzone Delft

Appendix 2. List of Interviewees

Organization	Name	Function
Municipality Delft	L. Harpe	Alderman Spoorzone
Onwikkelingsbedrijf Spoorzone	I. Hermans	General Manager
Ministry Infrastructuur & Milieu	T. Vaatstra	Policy Official
	L. Postma	Policy Official
ProRail	A. Broeders	Project Manager
Provincie Zuid-Holland	F. Vermeulen	Member Gedeputeerde Staten
Combinatie Crommelijn VOF	A. Haasnoot	Area Manager
	B. Slagmolen	Former Committee Member
Platform Spoor	C. De Koning	Public Official
Gamma Delft	J. Van Beek	General Manager
Bazaar of Magic	J. Van Der Ham	General Manager

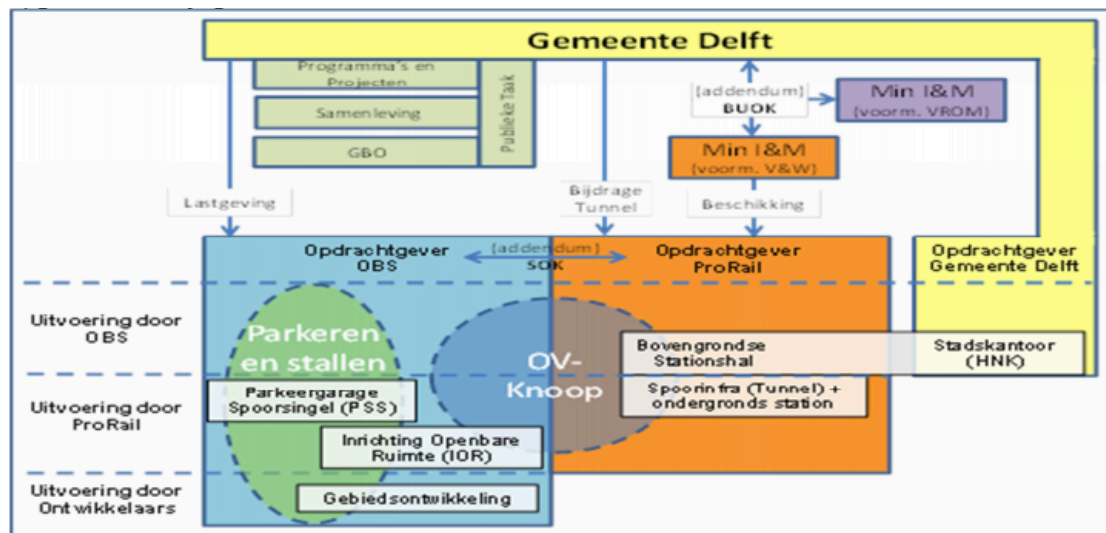
Appendix 3. Network Charts Spoorzone Delft

Figure 1: Network Chart Spoorzone Delft



(Delftse Rekenkamer, 2010:8)

Figure 2: Organization- and Commissioner Relationships



(OBS, 2015:12)