A Port is a Mirror of Society: Perpetuating or changing existing logics and systems through (re)designing the Nieuwe Waterweg

Velzen, Babette van

A PORT IS A MIRROR OF SOCIETY

Perpetuating or changing existing logics and systems through (re)designing the Nieuwe Waterweg

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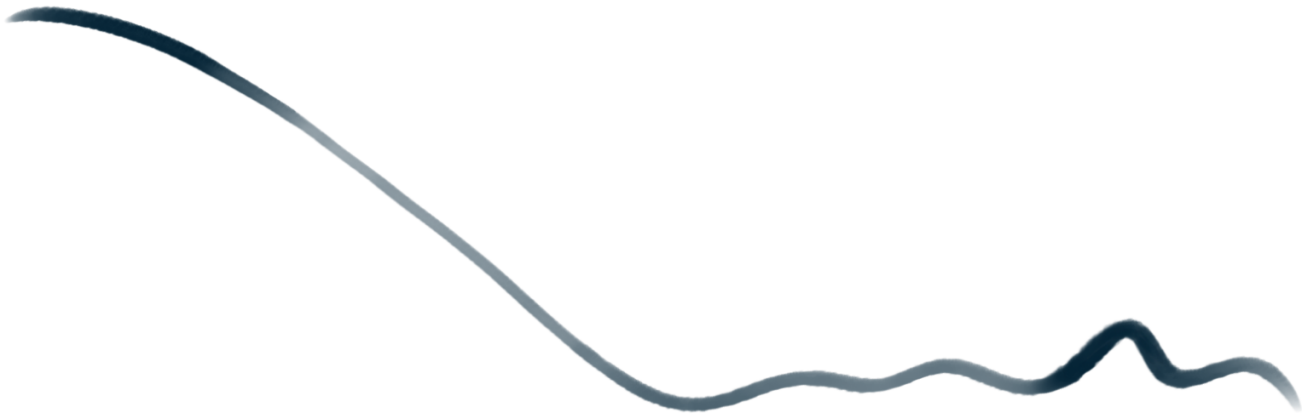
By

Babette van Velzen



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Een Haven is
een Spiegel
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PREFACE/ACKNOWLEDGEMENTS

When it was first suggested to me to look into anthropology for a masters, I was hesitant. After having studied both international event management and international tourism management – fields that I love but did not see myself pursuing a long-term career in – I figured I would choose a more economic or organisational field. However, I am interested in people. I feel that it is individuals that make up the world by making rules in specific places and contexts. Rather than choosing a place or context to study, anthropology therefore allowed me to study world making processes.

Having broad interests, I was uncertain about what to research for this masters. For instance, I would have loved to study museum collections, mining villages in Limburg, youth participation in regional or national politics, or even join the field school in Ghana (if it was not for Covid restrictions). In the end, I decided to look at what really brought me to this masters in the first place. My father is a technician who works in ports all over the world. It is because of his job that I first became interested in travelling and thus decided to study tourism. While I learned more about the spatial, societal, political, economic and ecological impacts of tourism, I also paid more attention to how my father's experiences working in those ports. The large organisational aspects that need to be aligned for him to fix a problem intrigued me. Therefore, when I saw the opportunity to conduct anthropological research towards spatial policy making practices in the port of Rotterdam, I was very enthusiastic to combine my interests and previous experiences. Especially since I have lived in Rotterdam for three years during my event studies, it really felt like everything came together. A full circle moment, I would say.

I feel that anthropology is an honest, reflective, and ethical way of researching matters such as tourism or port activities, even if not flawless, as it looks at how policies are created by individuals. It has everything to do with people and connections between people and places. In my opinion, this is essential to build better practices in the future, no matter what subject.

I am proud to present this thesis. This thesis is the outcome of fieldwork conducted for the master's programme Cultural Anthropology and Development Sociology, Policy in Practice track, at Leiden University. This research explores how different actors involved in, or likely to be affected by, the spatial development of the Nieuwe Waterweg evaluate *just* relationships between human and nonhuman actors. The aim is to unveil the axes of tension between the actors and research why dissatisfaction and conflicts arise, as well as why it is hard to change the ideologies predominant in policy making processes.

This research would not have been what it is without the help of some wonderful people. The brilliant people I have met through PortCityFutures introduced me to the intriguing world of port cities. They have helped me construct this research and connected me with my interlocutors. A special thanks goes out to my supervisor Andrew Littlejohn for their wonderful theoretical and moral support during

this research. These months have not been the easiest, but your sympathetic ear and advice have been very motivating. I also wish to thank my friends and family for listening to me talk through my findings countless times to find the right structure for the thesis and my co-workers for taking over my shifts so I could focus on this research. Especially drs. Max Bosch, without whose unfailing support, countless language checks and final proofreading this thesis could not have been the best version of itself. Most importantly, I want to thank all the incredible people who agreed to participate in this research and/or referred me to others. I loved hearing you all talk about your professions with such passion, and your ideas on my research have helped me shape it.

I am dedicating this thesis to my grandparents who both passed away this year. Although no longer with me, their love and support has always been so very strong that it continues to motivate everything I do. Oma, you taught me to love everyone and anyone unconditionally. No matter what others do, keep the honour to yourself and be kind. Opa, you taught me to stand up for myself. Yet, you always said to work hard and to earn your reputation, so you never have to prove your worth. These lessons are, and will always be, a part of everything I think and do.

CONTENTS

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INTRODUCTION

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I sat in front of my laptop. I checked whether the spot at my dinner table offered a stable internet connection and the sunlight shining through the tall windows was not over-illuminating my face, eyes and screen. Patiently, and a bit nervously, I waited for the Zoom notification alerting me that Daan was ready for the interview. Daan is both a professor teaching at a university and a researcher working with and for various actors operating both on a national and international scale. They are an expert in the field of port economics and development. When the notification popped up I admitted Daan to the meeting. My nerves disappeared when we quickly fell into the pace of the interview. I wanted to know how Daan evaluates the development of the port. What they stated fascinated me, and gave me a new perspective on the subject:

> *Daan: I always say "a port is a mirror of society." So when society changes-, it is a mirror of the global economy. If the global economy changes, the port changes.*

For Daan, the port is a reactive entity. They see it as a reflection of society and acceleration of the global economy. They highlight two scales of influence on spatial development: society and the global. In Daan's narrative, economic activities are foregrounded in both. It is therefore crucial to depict what "society" means and who defines it. For that reason, this research has focused on how evaluations of port development are framed, by who, and how these framings are responded to.

According to Daan, which economic activities take place in the port depend on the needs of society in a certain place and time. For example, when the demand for certain fuel grows or ecommerce increases, the port facilitates these needs by establishing companies in the port and carrying out transhipment of products between ports and into society through a network of infrastructure. Societal needs, in Daan's narrative, are socioeconomic processes. In the case of the port of Rotterdam, the port has been spatially and organisationally (re)designed to best provide functions such as the production and transhipment of fossil fuels. Yet, had there been a demand for other products, the port would have developed differently to meet these demands. This leads to Daan's main point, that a port *experiences* development rather than developing on its own initiative. They mean to say that port development is motivated by external demands and long-term developments. The port merely adapts to be able to facilitate desired functions, changing along with temporal circumstances.

Ports must establish infrastructures appropriate to the products they need to carry. Hence, my research specifically focuses on the main waterway located in the Rotterdam port; the Nieuwe Waterweg. This waterway is part of the Rijn-Maas [Rhine-Meuse] delta, connecting these rivers to the North Sea. Its location is indicated with a red line in figure 1. The Nieuwe Waterweg is a crucial part

of the infrastructural network essential to the port of Rotterdam, as its hydraulic system is designed to facilitate transhipment between ports inland and offshore (Meyer 2021a).

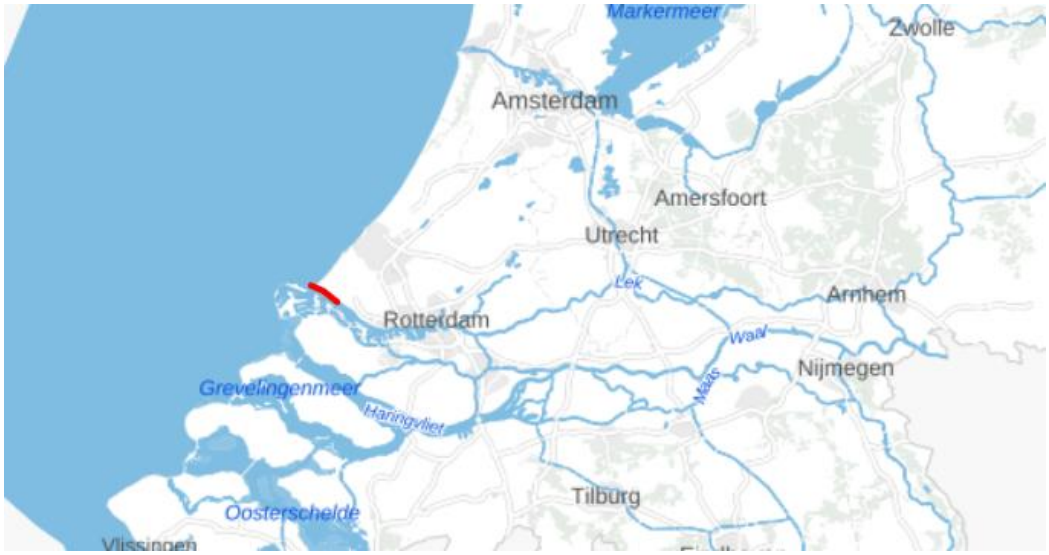

Figure 1: Location Nieuwe Waterweg

In line with Daan's definition, the waterway and infrastructures generally are systems that (re)organise a landscape according to the functions that different actors require from it (Carse 2012; Blok, Nakazora & Winthereik 2016). The functions required from it are born from long-term developments in a certain time and place and phrased by individuals from their respective moral evaluations of how human and nature should be organised. These ideologies meet and clash when they discuss the (re)organisation of a specific landscape, such as the Nieuwe Waterweg. An infrastructure by definition is only that in relation to a certain context (Star & Ruhleder 1996). The Nieuwe Waterweg for port authority is the main shipping channel for the port of Rotterdam, yet an ecologist might describe it as a crucial part of a deltaic ecosystem, for example. These valuations and contexts are created by human and nonhuman actors who have varying relations to the waterway, depending on their ideologies of *just* relations between human and nonhuman actors (Scaramelli 2019). The question, then, is not *what* an infrastructure is, but *when* an infrastructure is (Star & Ruhleder 1996).

The construction of the Nieuwe Waterweg was concluded 150 years ago as of 2022. It was designed in a time when Rotterdam and the Netherlands greatly benefitted from the activities in the port of Rotterdam (Sennema 2021). Commissioned by the city of Rotterdam and the Dutch State, the waterway was artificially deepened to create an open and direct connection from the port to the sea through which the deepest ships could fare. After the devastating flood of '53, nature was seen as a threat and policy makers took a "fighting against water" approach born from profound knowledge of technology and natural workings of the water (Wojciechowski 2009; Pelling & Dill 2010). The Deltawerken – a system of flood barriers, dams and dikes in the delta – were constructed, ensuring both

water safety and the continuation of port activities by maintaining the open connection to the sea (Rijkswaterstaat s.a.). These logics of the hydraulic system thus prioritise economic interests and human actors. This system proved especially successful after the Second World War, when the port of Rotterdam accelerated the national and global economy by facilitating the production and transhipment of fossil fuels, which currently takes up over 60 percent of the Rotterdam port (Meyer 2021b). This economic focus is experienced and valued as very successful, as the Rotterdam port has long been the busiest port in the world (1966-2006) (Sennema 2021). This is both the result of and results in the universal symbolic value of the (economic) success of the Rotterdam port which is prominent in valuations of the Nieuwe Waterweg. Both the hydraulic system and the symbolic effects of the economic success of the Nieuwe Waterweg have shaped the logics from which we further shape the Rotterdam port.

The port of Rotterdam is thus designed to facilitate socio economic demands. However, this economic focus is now challenged in light of long-term developments such as climate change and the housing assignment. With the threat of rising sea levels, dry rivers, silt intrusion threatening fresh water supply, and dangerous high-water situations, among other effects, the current spatial organisation of the Nieuwe Waterweg and its water safety management approach might not be able to withstand future conditions. Therefore, several actors are now challenging the growing injustice between human and nonhuman actors, arguing that the emissions and nuisance the port emits are no longer justifiable (Star & Ruhleder 1996). In 2022, the Nieuwe Waterweg celebrates its 150th anniversary since its first artificial reconstruction, and these actors argue it is the perfect time to change the logics with which we think through development (Meyer 2021a; 2021b; 2021c). They advocate for a more balanced approach where the economic function is still considered but does not dominate over other functions. One example is the “working with water” approach put forward by Han Meyer and nature organisations. Already executed in small scale projects, this approach utilises the natural workings of the river to not only maintain the open connection from Rotterdam to the sea, but also creates a more resilient landscape that ensures water safety, increases ecology, and creates an attractive urban pattern. It thus balances the natural environment, hydraulics, and economic and urban development. If successful, Meyer argues that the way the Netherlands approaches these issues in Rotterdam can set an important and admirable example for port cities worldwide.

But Daan’s comment raises a conundrum. By arguing that a port is a reactive entity, they imply that a port can easily change to facilitate temporal needs. Yet, these new proposals are not seriously considered for the entirety of the Nieuwe Waterweg, even though they might fit future conditions better than the current system. This is because infrastructures like a waterway, once built, have a certain inertia; they are built, continuously maintained, but ultimately disappear into the background as an inherent structure that is no longer thought of or questioned (Star & Ruhleder 1996). This is what Alex

and I discussed when we met early in the morning, somewhere near the start of the new year. Alex, like Daan, is both a professor and a researcher. Alex is specialised in socio-economic transitions, which is why I wanted to know how they experience environments where varying, sometimes clashing ideologies meet and collaborate to (re)design future (spatial) developments. Alex introduced me to the concept of transitions, arguing that it is crucial to look at current strategies and critically evaluate whether these are prepared for future developments. Most often, they said, the logics in current approaches are introduced to fit certain circumstances, but remain in use when these circumstances change:

> *Alex: current structures [...] seemed logical in the past but looking at the impact they now cause together with what is now possible, they are no longer logical. But there's some kind of inertia in those systems somehow.*

According to Alex, even though the current system has widespread effects that are no longer ethically justifiable, its logics are so deeply embedded in the way policy makers think about the port and the Nieuwe Waterweg that other proposals are disregarded. Infrastructures can thus both be engines as well as barriers for change (Star & Ruhleder 1996). Where its hydraulic structure was once the source of considerable economic growth, it now globally contributes to negative effects on the environment beyond justification, as well as hinders local water safety, ecologies and livability of surrounding (residential) areas. The system thus no longer makes sense in current circumstances, which will only escalate in the future, but because of the inertia in the logics that make up the system, initiating change is slow. Even though policy makers make an effort to minimise the negative effects, the considerable symbolic value assigned to the economic success of the Nieuwe Waterweg renders it unlikely the approach will change entirely. The inertia of infrastructures thus not only refer to the hydraulic system of the Nieuwe Waterweg, but also to the way the waterway symbolically represents the logics of appropriate relations between human and nonhuman actors (Star & Ruhleder 1996; Scaramelli 2019). Alex stresses that an external push is needed to convince policy makers that the logics of the system are not prepared for future circumstances:

> *Alex: So, we need an urgency to say "yes, sustainable development is not enough, we really need a system change."*

According to Alex, system change will not come about through discussions only. The proposals advocating to change the current approach have a hard time doing so because this predisposition is deeply rooted in how human and nonhuman actor relations are evaluated. To me, their conclusion sparks the question "what will it take to change this approach?" After the flood of '53, the approach to water safety management was quickly decided: nature was a threat that had to be kept out (Pelling & Dill 2010). However, does it take another natural disaster in order to convince policy makers to change their

approach? The current system can withstand the changing circumstances for at least another 50 years, but it will also take a couple decades to alter the landscape in line with the "working with water" approach. The willingness to look beyond one's individual influence on this process is another important variable in defining one's views on ethical landscape use. If we want to be prepared for potential devastating situations, what could convince policy makers to change? Pressure from global climate laws, local residents, or stakeholders of the port of Rotterdam, for example?

In this research, I explored how moral and ethical ideas are translated into how actors are designing or contesting future spatial development of the Nieuwe Waterweg, contributing to our understanding of why it is hard to change the logics embedded in these systems. Based on recent anthropological studies and the data gathered in this research, I hypothesise that part of the reason other proposals for the Nieuwe Waterweg's future are disregarded is not only simply clashing ideas of what function actors believe the Nieuwe Waterweg should prioritise. Rather, it is the different ideologies about *just* relations between human and nonhuman actors that cause conflicting ideas about how environments *should* be organised and why (Larkin 2013; Scaramelli 2019; Star & Ruhleder 1996). Despite the disagreements over the political functions of the Nieuwe Waterweg, all actors alike praise the symbolic, poetic value it serves (Larkin 2013). Its international reputation on port activities, association with water safety and overall symbol of innovativeness could once again be the key to contest the current logics and systems and convince policy makers of ones more sustainable and suitable for the future.

I will substantiate my argument in the empirical chapters of this thesis, using the theoretical framework and methods as I will describe in this chapter. The first empirical chapter uses actor narratives of the spatial development of the river to reconstruct how these relations have been organised and by whom, and how these landscape alterations have been framed and justified by the policy makers initiating them. I have also looked at how these framings are responded to by other actors and why. In the second chapter, I look at how these actors, both involved in and affected by these development policies, envision the ideal future spatial development of the Nieuwe Waterweg as well as how they evaluate each other's proposals. These two chapters serve to unravel the moral and ethical views of the actors; the ideologies from which they evaluate landscape use. So, these chapters serve to analyse the way actors evaluate and justify *just* relations between human and nonhuman actors (Larkin 2013; Scaramelli 2019). It is for this reason that I have mainly focused on the narratives of my interlocutors, rather than official documents of the waterway's spatial development. The third chapter discusses how these ideologies collaborate and clash in certain situations, and with what goals. This helps us understand why certain approaches are prioritised above others, why changing is hard, and what might motivate the actors to change their approach (Star & Ruhleder 1996; Pelling & Dill 2010). Together

with the previous chapters, the last chapter serves to identify areas of tension and possible synergy that could be leveraged to motivate these actors to work together towards a shared agenda.

In conclusion, this thesis attempts to unveil the moral ecologies – the different perceptions and conceptions of how human and nonhuman actors *should* be organised (Larkin 2013) – from which actors evaluate the spatial organisation of the Nieuwe Waterweg (Carse 2012; Scaramelli 2019). Although there are countless actors that could and should be included in such research, this thesis foregrounds actors in port authority, local government, national water safety management, nature organisations and (port) development experts. These actors are either involved in or respond to spatial development policy making processes of the Nieuwe Waterweg. The goal of my research is to understand how actors evaluate *just* relations between human and nonhuman actors (Scaramelli 2019), and how these ideologies are applied to systems such as the Nieuwe Waterweg (Larkin 2013), perpetuating or changing the logics in spatial policy making in a certain place and time.

THEORETICAL FRAMEWORK

As I have alluded in the previous section, infrastructures do not exist in itself, but rather, they exist in contexts and are utilised and experienced differently by different actors (Star & Ruhleder 1996). In my research, I therefore approach infrastructures as systems embedded in logics, representing actor ideologies of ethical landscape use which become visible when we look at valuations of its function(s). The artificial alterations made to landscapes are justified or contested through moral evaluations of *just* relations between human and nonhuman actors (Scaramelli 2019). I therefore adhere to Scaramelli's proposition to research the lifeworlds of different actors involved in deltaic environments through the analytical framework of *moral ecologies of infrastructure*. This framework exposes the different ethical considerations actors have about ecological and infrastructural (co-)development.

The discussions between actors regarding the future spatial developments of the Nieuwe Waterweg are thus not discussions of its shipping function versus its ecological function, for example. On the contrary, the actors challenging the current system take the river's shipping function into account in their visions of the future spatial development of the Nieuwe Waterweg. Rather, they are discussions between the different logics used to identify the proper relations between human and nonhuman actors, evaluating the Nieuwe Waterweg as a system that (re)organises these relations (Scaramelli 2019; Carse 2012; Blok, Nakazora & Winthereik 2016; Star & Ruhleder 1996; Larkin 2013). These logics can be deeply rooted in system thinking, causing certain inertia that makes changing hard. I have used Larkin's (2013) framework of the *politics and poetics of infrastructure* as it provides a perspective that looks

beyond the technical system of infrastructure to understand the logics it is embedded in, and the effects it yields on system thinking.

Together, these frameworks help us understand how individual actors envision the ideal future spatial development of the Nieuwe Waterweg, what these visions can teach us about how they evaluate ethical relations between human and nonhuman actors through landscape reorganisation, and how these visions influence and are influenced by the wider logics in system thinking in the port of Rotterdam.

Moral Ecologies of Infrastructure

As changes to a technical infrastructure system shape landscapes and affect larger environments according to the values of policy makers, it is important to look at the actors both making the policy and those affected by it (Carse 2012). This also requires addressing ethical considerations regarding creating technical systems of infrastructures to reshape landscapes, which functions are prioritised over others and by who. Therefore, I used Scaramelli's concept of *moral ecologies of infrastructure* to work towards understanding individual ideologies, which translate into creating or resisting spatial development policy a certain way.

As Scaramelli (2019) argues, people evaluate infrastructures and their effects on ecologies through moral ideas about *just* relations between human and nonhuman actors and between humans and other humans as mediated through the environment. These ideas or critiques about the changes are expressed in moral, emotional terms about what the relationship between actors and the landscape *should* be. This includes justifications of landscape alteration in order to serve a certain actor's goal. Scaramelli describes this as the *moral ecologies of infrastructure*. Moral ecologies of infrastructure describe individual ideologies of proper relationships between human and nonhuman actors, infrastructure and ecology. So, different actors involved in deltaic areas, both human and nonhuman, have different valuations of what the *just* relationship between infrastructure and ecology is. These valuations are moral ecologies.

However, not all moral ecologies are equally considered in the spatial development policy of the Nieuwe Waterweg. Researching what interests are adhered to in policy making processes thus also reveals the hidden power structures of what actors get included and excluded from spatial development policy making, as well as who benefits from the spatial organisation (Blok et al. 2016; Scaramelli 2019). Therefore, we see what actors' interests are prioritised above others, and who instigated the general logics that are still used in landscape alteration policy today. On one side, actors actively create these policies and frame their justifications according to their *moral ecologies of infrastructure* (motivated by economic goals). On the other side, actors respond to that framing from their own *moral ecologies*

of infrastructure that conflict with those of policy makers (contesting the focus on economy over other interests).

Thus, it provides a framework to approach the individual ideologies from which actors valuate and evaluate an infrastructural system that reorganises relations between human and nonhuman actors. I have used it to examine how the production or contestation of the proposed developments of the Nieuwe Waterweg are motivated or interpreted according to different *moral ecologies of infrastructure*, or fundamental ideas about ethical landscape use.

Politics and Poetics of Infrastructure

Larkin's (2013) notion of *politics and poetics of infrastructure* provides an overarching perspective on how infrastructural systems are designed and justified by policy makers, and their effects on other human and nonhuman actors. This theory frames the motivations behind and effects of the conceptions and perceptions of an infrastructural system.

Human actors have artificially altered the river mouth to create the Nieuwe Waterweg, thereby facilitating the circulation of things, dictating its pace, direction, temporalities, and vulnerabilities (Larkin 2013). Therefore, transhipment is a function serving a political goal as the alterations have led to considerable economic growth in Rotterdam, the Netherlands, and globally. The effects of the alterations, however, spread beyond economic goals. The political effects of infrastructure also cause actors to create symbolic meanings to infrastructures, which are emotional, rooted in moral evaluations of appropriate landscape use. This leads to the poetics of infrastructure, the sensory meanings of its technical system as it becomes a part of everyday life. The products moving through the port to the people, the jobs it creates, and its international recognition are such examples of the poetics of infrastructure. In the case of the Nieuwe Waterweg, political goals are used to convince the stakeholders of the Rotterdam port to invest in its development, whereas the poetics are its result that kindle a sense of pride in other actors so that the negative effects the port might generate are tolerated in light of its successes. The framings used to then justify the alterations belong to a certain actor group and temporal circumstances, which we unravel using the notion of *moral ecologies*. Both its political and poetic effects have caused a certain inertia in the logics and power structures of the social and political environment, rendering it hard to convince policy makers that the current circumstances no longer benefit from the current structure.

These political and poetic goals also interact with each other (Larkin 2013). The extensive positive impact on the economy in itself a political goal, and this result generated poetic results as the Nieuwe Waterweg is valued as, as one of my interlocutors called it, the "umbilical cord to the sea;" the

lifeline that revived the city of Rotterdam and made it what it is today. The interconnection and co-production between these goals are thus important for theorising infrastructure projects and its effects on society, as it motivates both the engines and barriers to change (Star & Ruhleder 1996). This framework thus helps us understand why changing approaches is hard in the case of the Nieuwe Waterweg, as it guides us in understanding the intended and unintended effects of infrastructure.

RESEARCH APPROACH

In this research I use anthropological, qualitative methods to approach the study of policy and infrastructural development. These methods focus on connected worlds, constructed and maintained through interactions between human and nonhuman actors. These methods are useful because I want to understand the moral ideas and values that motivate or lend support to these interactions and are translated into policy (Tate 2020; Emerson, Fretz & Shaw 2011; Gains 2011).

Therefore, I took an interpretivist approach to this research, as it allowed me to understand the values actors assign to the infrastructure and its effects through their own terms and explanations (Cramer 2016). Geertz (1973: 5) once theorised "man is an animal suspended in webs of significance he himself has spun [...] the analysis of it [is] therefore not an experimental science in search of law, but an interpretive one in search of meaning." This means that the goal of interpretive research is to interpret the meanings and perceptions of people to understand how it motivates them to take part in something. In my research, this translates to understanding the moral ecologies of the actors from which they evaluate the *just* relations between human and nonhuman actors, causing them to participate in discussions of (future) spatial development of the Nieuwe Waterweg.

Rather than looking at individual actors, I have looked at actors belonging to an organisation that is either involved in or affected by the current and future spatial organisation of the Nieuwe Waterweg. The actors included in my research are operating within the port authority, national water safety management, nature organisations, the municipality of Rotterdam, or are experts on the subject of (port) development. Each actor and their relevance to this thesis will be elucidated in the thesis, their names altered to ensure anonymity. I have focused on how these people attempt to change how human and nonhuman actors are organised based on their moral evaluations (Carse 2012; Scaramelli 2019; Star & Ruhleder 1996), and to what degree they are attempting to perpetuate existing logics and systems through changing some parts (Larkin 2013). Specifically, I have analysed how the moral evaluations of these different actors translate to ideas about what function they believe the Nieuwe Waterweg should provide, and how they justify and frame these ideas. A full list of the actors, their occupation and the actor category are included in Appendix I.

Because this research takes a comparative approach, I have gathered and analysed the actor narratives to explore different ethical considerations actors have about ecological and infrastructural (co-)development. This also includes how they frame or respond to the framing of spatial (re)development policy (proposals). To be able to compare the data, I have used da Vinha's (2017: 76) framework of geographical mental maps as a tool for researching moral ecologies relating to the specific space that is the Nieuwe Waterweg in the port of Rotterdam: I) "the events or phenomena to be defined (i. e., the extension, denotation, or definiendum);" II) " the defining properties or attributes (i. e., intension, connotation, definiens, or definitions)," and; III) "a label encompassing both 1 and 2." By comparing the data from different actors based on this framework, I was able to identify similarities and clashes between them, which is the ultimate goal of my research. I have used this framework in the two main research methods of my thesis: semi-structured interviews and mental mapping, as well as the analysis of the data through coding. The topic list and codes I used for the interviews and analyses are included in Appendix II and III.

Inspired by Cramer (2016), I have conducted interviews as the main method for gathering information. The interviews were semi-structured, meaning that I had a list of general topics, not set questions, that I discussed with all actors (Bryman 2016). Considering I did not know how the actors value the landscape beforehand, this allowed them to shape the content of the interview. The open structure of this method is favourable as it provides flexibility to adapt or change the direction of the interview based on the subjects the interviewee addresses. This way, the same topics will be addressed by all actors and therefore serve as axes of comparison to analyse the similarities and differences between the actors. This was useful as different interlocutors focused on different aspects of the development. Through their occupation, they were also concerned with different areas. The topics I used were their expertise and connection to the Nieuwe Waterweg, the development of the Nieuwe Waterweg until now, evaluation of the current spatial organisation, how they would ideally see the spatial organisation of the Nieuwe Waterweg develop, and who decides how it develops.

Additionally, I asked all participants to draw a mental map of the Nieuwe Waterweg in two stages: its development until now and its ideal future developments. This method was useful because the interlocutors were more engaged with the space, place and subject of the area, often sparking new details which would otherwise be forgotten (Spradley 1979). Especially for the limited timeframe of the interviews, this method granted me deeper insights of the significance of the spatial characteristics, and, inspired by Larkin (2013) and Scaramelli (2019), the professional and emotional connections different actors have with it. It helped reveal how infrastructures shape the livelihoods of human and nonhuman actors (Blok et al. 2016) and provide a sense of modernity or progress (Larkin 2013). Ultimately, I attempted to link the ideologies, beliefs and principles expressed through the local context

of the Nieuwe Waterweg to larger fundamental ideas about how humans and nonhumans *should* be organised.

I reached my interlocutors using a snowball method, starting with contacts from my initial gatekeeper and gaining more contacts through the interview participants (Bryman 2016). This approach proved successful, as people were mostly happier to participate after I was introduced to them by someone in their network (Chancer 2020). I have reached out through email, introducing myself as a master's student interested in this subject and asking them to share their perspective on the spatial reorganisation of the Nieuwe Waterweg as I know they are involved in or affected by these policies. Because this request implies a professional context, the interviews were held during office hours. This approach therefore allowed me to analyse their evaluations of *just* relations between human and nonhuman actors, specifically between them in their professional function and the river.

Due to COVID measures, I was obliged to conduct the interviews online. The infrastructure of this method of communication structured the contexts in which I have communicated with the interlocutors. People were often still working from home and as I was logging on from home as well, it created a different context than if we had met face-to-face in their offices. There was not a lot of time for small talk or building rapport, but I feel that by asking them to evaluate on a personal level about what they tell me I was able to establish a more personal relationship during the interviews. Inspired by Cramer (2016), this approach helped me better understand the values of the different stakeholders in policy making or resistance regarding the Nieuwe Waterweg by allowing me to go into the emotional evaluations of a certain answer more when it came up. This was especially useful since I did not necessarily know what the actors valued in advance, and I did not want to make assumptions.

I prompted the interlocutors to assume a teaching role, which most were happy to take, and others appeared to find it a bit frustrating. With this, I mean that I framed the questions very generally and sometimes a bit black-and-white. I did this purposefully to "play the innocent" (Hermanovicz 2002) to encourage the interviewee to teach me about the Nieuwe Waterweg and policy making processes as if I was unaware of the history and processes. I also probed about the who's and the why's of it, because I felt that this allowed me to unveil the interlocutor's underlying values most. Actors in these positions deal with other actors and asking who and why a policy is installed or rejected, it sparks an emotional reaction that could be either proud or angry or anything in between. This then gives more insight into the moral evaluations of the actors of the world around them. It also helped clarify what the interlocutors meant, as they sometimes rephrased or expanded their answer when I asked more about it. Overall, all people are very passionate about their occupations, and they were happy to teach me, a student, about it. My positionality as a student thus also influenced the data I gathered.

“THE UMBILICAL CORD TO THE SEA”

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In the introduction I began with introducing Daan. Daan is an expert on port development and argues that the port is a mirror of society, through its facilitating character a reflection of socioeconomic processes. The port has thus developed according to economic interests to facilitate certain products to society. However, if the port is a reactive entity, it could have developed in different ways if the actors in spatial policy making processes prioritised other interests. With these other interests, the Nieuwe Waterweg would have served a different function. This, in turn, influences society differently. For example, when ecology would be prioritised above economy the port would not have deepened the Nieuwe Waterweg as drastically and the riverbanks would not be industrialised. Instead, the port may still have facilitated society, but perhaps through agriculture and other means of transport.

According to Daan’s framing, the way the Nieuwe Waterweg develops thus depends on the function policy makers require from it, derived from their evaluations of *just* relations between human and nonhuman actors. In this first chapter, we will therefore look at what interests were prominent in the historical spatial developments of the Nieuwe Waterweg. By analysing the effects of the landscape alteration in various contexts, we can unveil the different considerations actors have about appropriate landscape use. Historically, economic interests have largely motivated and justified the spatial development of the waterway. The effects of the alterations have, in turn, altered social and ecological domains. In this chapter, I will use both the actor narratives as obtained in my fieldwork as earlier research on the motivations for landscape alterations to reconstruct these historical developments rather than history books, as we want to look at the valuations these actors assign to the developments and its effects. This allows us to analyse the moral ecologies of these actors as they articulate a moral stance on how the spatial influence of infrastructural development reorganise relations between human and nonhuman livelihoods as well as the goals and effects of infrastructures (Scaramelli 2019; Blok et al. 2016; Larkin 2013). We will thus look at who created these development policies, how they are justified and framed by these actors, and how these framings are responded to by other actors.

“THE RIVER IS THE LIFELINE”

Rotterdam finds its origins along the Rotte, a river vertically connected to the Maas, in 1270 (Van de Laar 2021). Rotterdam utilised its strategic location along the delta to transport herring to both national and international markets. It was because of the increased trade around 1550 that Rotterdam and the other cities established along the river network began to grow. This aquatic infrastructure allowed

shipment of all sorts of products. These trading routes became increasingly important after the Dutch East India Company was established in 1600 (Port of Rotterdam s.a.). Unfortunately, around that time the port of Rotterdam was hard to access because islands of sand and silt obstructed the waterway that we now know as the Nieuwe Waterweg (Sennema 2021). Figure 2 shows the Rijn-Maas delta.

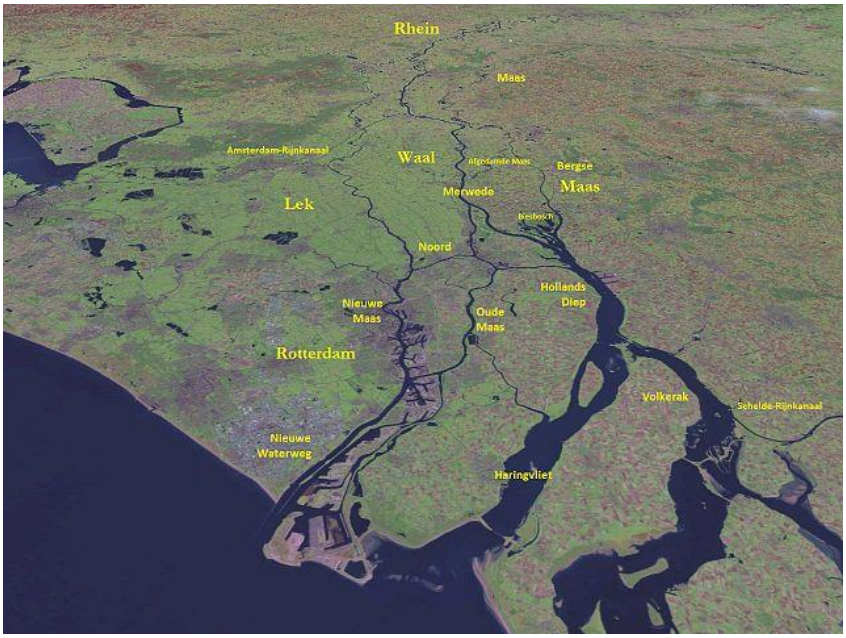

Figure 2: Rijn-Maas delta

The water from the Rijn and Maas moves through the multiple smaller rivers of the Rijn-Maas delta to the North Sea. Originally, Haringvliet was the main discharge channel of the rivers. This means that most of the water from the rivers moved through Haringvliet to the sea. Almost no water flowed through the Nieuwe Waterweg. This affected these waterways because the water from the rivers provides a certain pressure that provides counter pressure to sand and silt entering from the sea. Because the Nieuwe Waterweg lacked that counter pressure from the rivers, sand islands started to form in it. Ships could not pass through and had to sail via Dordrecht and the Oude Maas to reach Rotterdam, which could take weeks. To clarify, let's look back at figure 2. When the Nieuwe Waterweg was inaccessible for these ships, ships from offshore would have to enter through, for example, Haringvliet, and circle back after Hollands Diep to cross the Oude Maas and reach Rotterdam. This was not efficient, especially with the rapid growth of trade at that time.

Goods and products coming in through the port of Rotterdam were further transported over land or through the rivers to distribution centres in the Netherlands, Germany, and Belgium, for example. This also required good road connections, another infrastructural system that was constructed. This infrastructure system in Rotterdam is also known as the "*snelwegruit*," or highway square, that connected the port to cities inland. Daan, the port development expert who formulated the title of this

thesis, adds that these connections are known as the port network. These places are thus connected physically through the infrastructure network, but also because of the trade agreements that allowed them to provide society with the goods and products they needed. Creating these infrastructure networks thus served a political function as its connections allowed for efficient trade and generated a steady form of income for the city of Rotterdam and the national government (Larkin 2013). In addition, it served a poetic function as it created a sense of modernity for these societies whose everyday lives changed because of these products and jobs facilitated by the port.

However, the problem of inaccessibility via the aquatic infrastructure persisted until the nineteenth century, when Rotterdam became known as an important global port (Van de Laar 2021; Sennema 2021). Because of the port's success, the rivers had to endure even larger quantities and sizes of ships, but they could not reach the ports directly from the sea. The city consequently did not grow as much as the local and national government, those benefiting from the economic gain of trade, had wished. These actors thus wanted to open up the waterway to create a direct, open connection from the port to the sea. They proposed alterations designed to facilitate efficient shipping and thereby boost the economy of both the city and the country by artificially deepening the waterway with dredging techniques so that the newest, largest ships could fare. The alterations were designed by hydraulic engineer Pieter Caland. Caland calculated both the sufficient depth of the river so that the newest steam vessels would be able to travel from the sea to the port even with the fluctuation of the tides, and later dredging techniques that could continually remove the sand and silt that still gathered in the waterway.

However, as these plans did not only affect the city of Rotterdam but the whole country, they had to be approved by the national government (Sennema 2021). Whether it would be accepted was a matter of two aspects: whether Rotterdam would not have an advantage over the country's capital, Amsterdam, and whether the anticipated economic gain would outweigh the risk of the project.

The first issue speaks to the symbolic valuations such a project represents. Deepening the waterway would greatly improve the volumes of trade that Rotterdam could facilitate. Aside from the economic gain it would generate, the port network also serves poetic functions as it provides a sense of modernity (Larkin 2013). The parliament did not feel they could allow such a feat to be constructed in Rotterdam when Amsterdam would be left with inaccessible ports. It was thus not a matter of whether they could justify artificial alterations to a landscape for its political function: facilitate efficient shipping. Rather, it was considered *unjust* that a city that is not the capital would have this advantage (Scaramelli 2019). The question thus became whether they could justify allowing these alterations being done in Rotterdam and not the capital. This consideration was addressed by also opening up the waterway Noordzeekanaal (North Sea channel) that connected the North Sea to Amsterdam. This way, Amsterdam would not be disadvantaged and the alterations in Rotterdam could be approved.

The second issue thus became more pressing. Instead of one costly project, the government now agreed to two major water works (Sennema 2021). However, during a time where shipping was a large source of income and shipping technologies were quickly developing, minister Thorbecke believed that the envisioned effects would outweigh the risks. It thus made sense in the logics of the time. Even more strongly, minister Thorbecke did not talk of economic gain to justify this risk but argued it would bring "one's freedom and independence," making this risk "an unavoidable duty to seize the resources that may save us" (Sennema 2021). Again, considering opening up the waterway was not so much a question of the success of its political effects, but a poetic one in search of what such a structure could represent.

Both issues consider or utilise the poetic function of the Nieuwe Waterweg to justify its costs rather than the political functions (Larkin 2013). With this, I mean to say that while the political functions are designed using calculations such as Caland's and the desired economic gain, it is the poetic functions of the Nieuwe Waterweg – what it represents in the logics in a certain time – that justify landscape alterations at its core. By deepening the waterway, the deepest ships could efficiently reach the ports, boosting the national economy: the political functions. This would lead to the valuation of the projects as a symbol of modernity that both motivated and justified the alterations, the poetic functions. These poetic functions have been utilised and reframed to address the needs under certain temporal circumstances, as I will elaborate further in this chapter.

Governing the Port of Rotterdam

After careful consideration, the government thus gave the green light for these projects to commence. The construction of the Nieuwe Waterweg began in 1864 and was concluded in 1872, 150 years ago this year (2022) (Port of Rotterdam s.a.). The State had been investing in the development of the port and infrastructure since the 19th century (Port of Rotterdam s.a.). To ensure the organisation was efficient and effective, a separate department of the city of Rotterdam was instituted to better oversee the port activities. This department has gone by many names since 1872, but today we know it as the Port of Rotterdam. In 2004, the Port of Rotterdam became an independently operating organisation, with the city of Rotterdam still as its sole shareholder. Not long thereafter, in 2006, the State became its second shareholder. The Port of Rotterdam executes two main responsibilities commissioned by these stakeholders: facilitating efficient and safe shipping and managing the space in the port to facilitate the clientele that establishes there.

The first responsibility is facilitated by the spatial alteration of the Nieuwe Waterweg. To learn more about how these alterations are made, I talked to Kris. Kris is one of the few people that

specifically works on spatially designing the aquatic structure of the Nieuwe Waterweg to ensure the accessibility of the Nieuwe Waterweg. They explained that this entails that the depth of the waterway must be sufficient to facilitate the largest ships, as well as the efficient time schedules (that accounts for the tides) in which ships can enter and leave the ports. Ensuring this consistently also means that any construction executed by any actor will work with Kris to make sure the shipping experiences little to no hinder.

The second responsibility of the Port of Rotterdam is to attract clientele to establish their operations in the port. This means that it facilitates the infrastructures as well as lots that companies (potentially) establishing in the port need for their operations. That this system is termed a "landlord" model. The Port of Rotterdam earns an income through the rent the establishing companies pay, as well as transhipment. Another port authority actor I met is Luca. Luca is responsible for the spatial organisation of the port. Unlike Kris, Luca thus focuses on the dry land. The Port of Rotterdam thus develops the port and builds quay walls. They then evaluate what companies require to be in the port to carry out their operations to ensure only those who benefit from the aquatic infrastructure establish there. The companies that establish in the port then rent the lots for 50 years. Therefore, both the Port of Rotterdam and these companies need to have clear goals that they work towards in these 50 years. Luca explains that the Port of Rotterdam also works to make these lots as attractive as possible for the companies, while maintaining the focus on their core responsibilities. How this works in practice will be discussed in chapter two.

The moral evaluations of the port authority actors I spoke to all tell similar evaluations of the functions and goals of the Port of Rotterdam. Therefore, let me conclude with how Guus summed up the role of the Port of Rotterdam. Guus also works with port authority and is involved in the organisational aspects of port development in the port of Rotterdam. Like Kris and Luca, they are very passionate and proud of the port, and happily told me more about the organisation's focus.

> *Guus: The port, and the Port of Rotterdam, is a world in itself. Actually, it is a kind of enclave. It is commercial, it is international, it is technical, it is legal, [...] just like Schiphol, it has a lot of aspects that come together, and the Port of Rotterdam has an active role in that process. So [the Port of Rotterdam] really gets involved in everything. [They] do not have to interfere in everything, but [they] do. All in the interest of the business climate and the future of the port.*

The Port of Rotterdam thus focuses on developing the port in line with the goals instated by its stakeholders. They are thus solely responsible for and focused on facilitating the port activities in the port of Rotterdam. I also spoke to Guus about what the construction of the Nieuwe Waterweg has done for the port of Rotterdam. They state:

Guus: the Nieuwe Waterweg was constructed primarily for efficient shipping in order to, say, directly go from Rotterdam to the port. And that has been the basis for the port of Rotterdam to become successful. [...] the Nieuwe Waterweg is primarily to guide seagoing vessels to the port. [...] So that's where the seagoing vessels enter. Besides, there is the [Haringvliet] but of course you also have to deal with inland shipping that goes to the hinterland.

The Nieuwe Waterweg thus played a crucial role in the port. It facilitates shipping and is therefore the reason for certain companies to establish in the port. I asked Guus, as a port authority actor, about the fundamental goals of the waterway. They state that the "life goal" of the Nieuwe Waterweg is to facilitate shipping. The entire spatial organisation is therefore built to best provide this function for economic interests, in which they succeeded. The construction of Nieuwe Waterweg was considered successful from an economical perspective, as it offered possibilities for the port to further expand as well as maintain the open connection to the sea. This resulted in Rotterdam being the busiest port in the world from 1962 to 2004 (Port of Rotterdam s.a.). After 2004, Shanghai took over this title, but the port of Rotterdam remains the largest port of Europe and is considered one of the best until this day. Next to the political goals that justified the artificial deepening of the river, the construction of the Nieuwe Waterweg thus also served a poetic function as it symbolises successful port activities.

This symbolic value deeply motivates the people dedicating their time to maintaining and improving the political function of the Nieuwe Waterweg. This framing also justifies the continuous artificial alterations made in the landscape in favour of the economy for port actors. Proudly, Kris tells me:

Kris: I generally think it is cool that you can say that the Nieuwe Waterweg was once conceived and calculated and an engineer was involved in that process, well, quite a long time ago. And for me, it feels a bit like you're following in the footsteps of that by doing the new design.

This proud tone is what I encountered from the other actors working in port authority as well. Guus, who calls themself a generalist rather than a specialist, oversees the spatial development and designs these plans with a team. They, too, are proud to work there.

Guus: I say to people, I thank God, if it exists, on my bare knees that I started working for the port authority.

During our talk, Guus often mentioned that whatever the port does, it does it right. Luca, talking about the qualitative spatial organisation of the lots, agrees:

Luca: I am actually pretty proud of what we do.

Luca, Guus and Kris alike talk about how the spatial developments of the port and the waterway are successful because of the port's reactive character. When the port is met with a challenge or needs to facilitate a new development, Luca says that port authority is quick to respond and creative in their solutions. Specific examples will be included in chapter two, when we look more closely at the port's current operations and how these actors envision its future.

The City of Rotterdam

Because of the huge success of the port activities, the port kept growing. The port had moved westwards until they met the sea and ran out of room. When it needed even more space, dredging techniques were used to take sand from the bottom of the Nieuwe Waterweg and other places at sea, and collected elsewhere to create new land. The port expanded on this land offshore and was able to further develop to facilitate these new societal needs.

The city of Rotterdam was built around its ports and kept expanding because of the success of the trade, too. To generate a city perspective, I reached out to Hanne. Hanne is a local governmental actor who works on the long-term spatial development of the city of Rotterdam for the local government. They work to improve the city by designing processes (both legally, financially, and organisationally) that create a healthy, safe and attractive urban environment for its residents. Hanne illustrates that the city expanded southwards first, until they reached the Nieuwe Maas. Then, it expanded in width until there was no more room to grow. Hanne explains that, where the city of Rotterdam first had a "function mix," but because of the increased scale of trade, the city mostly focused on efficiently organising port activities. Hanne says:

> *Hanne: all those boats could now do their thing, so the focus then shifted to industry and not so much living.*

Hanne explains that before the city developed to facilitate both trade through its location along the river and provided housing for the port workers. Soon, the port function of the city became so important so fast that port development was prioritised above city development. Hanne continues to say that these interests are historically opposed and have been governed as such. Port development was regulated by port barons, and today by the Port of Rotterdam, and the aldermen of Rotterdam concerned themselves with city development interests such as creating a livable city. In a city that is restricted in space, this posed axes of tension between the port and city authority.

> *Hanne: It is* one *municipal boundary. It is a municipal boundary, but you do notice that those aldermen are more concerned with [the city] than with the port. And the port is also of national*

importance. So, the national government is also involved in its development. [...] Yes, so you can already see here which actors operate on which scale in this area. And the Rotterdam aldermen are mainly concerned with [the city].

Hanne explains that these opposed focuses were justified because the port activities served national interests. So, while city actors experienced the effects of policies prioritising port activities over city interests, they accepted this injustice because of what the port represents. I asked Hanne why this forgiveness is so strong. They explain:

Hanne: And the economy, well, that city also bled to death, right? Because in the past, that port was smaller and more related to the city. As it grew larger, the port became more and more important at higher scales. The country, Europe. And, well, it is therefore important that the umbilical cord to the sea, that the Nieuwe Waterweg was restored at that time, so that the economy could be brought to fruition once again.

Here, Hanne talks about the Nieuwe Waterweg as the "umbilical cord to the sea." This symbolic language indicates the importance of economic growth to Rotterdam's development. The growth of the city depended on the success of trade. As many interlocutors agreed, the Nieuwe Waterweg was what made Rotterdam successful, what made the global city it is today. An important mention is the way Hanne juxtaposes the situation before and after the construction of the Nieuwe Waterweg: "death" versus "fruition." This moral evaluation further illustrates the immense symbolic representation of economic success that without this economic growth, the city, country and continent would have greatly suffered. It was the alteration made to the landscape that boosted the economy, thereby the source of prosperity. This thus justifies the focus on port activities over city interests, as without the port, there would be no city. Hanne goes on to describe the river as "the lifeline" of Rotterdam because the Nieuwe Waterweg's facilitating design made it possible for port activities to be successful.

This sentiment is shared among the local governmental actors I spoke to. Jules, like Hanne, is an actor operating with the local government. They, too, concern themselves with the long-term spatial development of the city of Rotterdam at the local government. Like Hanne, Jules assumes a very thankful tone towards the rivers. They said:

Jules: To which we owe our origins. Where the Rotte once flowed into the Nieuwe Maas. Rotte of Rotterdam. What actually made us great.

These valuations are thus the result of the enormous success of the Nieuwe Waterweg. The belief that the city of Rotterdam would not have existed if the Nieuwe Waterweg was not constructed forms the deeply rooted symbolic appreciation for the port. This thankful feeling towards port activities thus justifies the economic focus in the eyes of local governmental actors, even if the city interests they

advocate for suffer from it. The exact ways in which these functions interact will be included in this chapter, after we look at how this symbolic value became this deeply rooted in the way we think about the port and how it shows.

"THE FOUNDATION FOR THE GROWTH AND PROSPERITY"

The poetic functions considered when the first plans for the Nieuwe Waterweg were proposed were used to convince policy makers of its construction. In turn, these poetic functions translated into the waterway to become a symbol of freedom, innovation, and fruition of the economy and thereby the growth and prosperity of the city of Rotterdam and the Netherlands, as well as the further port network. These symbolic connotations are strong and deeply rooted in the way actors valuate the Nieuwe Waterweg, and therefore justify injustices. Looking at how these justifications and injustices arise and how they translate to policy making and experiencing processes, I turned to Alex. Alex is a university professor and researcher, but above all expert on socioeconomic transitions. They, too, spoke with admiration when they said:

> *Alex: Of course, it is also a huge engineering icon. So it is also a feat that has laid the foundation for the growth and prosperity of the port and therefore also the city.*

In this excerpt, Alex articulates what I have heard in most interviews; the Nieuwe Waterweg is a hugely impressive technical project that became the success of the port of Rotterdam, and thereby the city and the Netherlands. I want to highlight the translation of the word "feat." The original term Alex used was "*huzarenstukje*" which, when I look it up in the encyclopaedia, means "act for which you need a lot of courage, skill and luck" (Encyclo s.a.). The risk of the Nieuwe Waterweg's construction was justified by the considerable poetic function it would serve. This gave policy makers the courage to take that risk, not only to reap the benefits for the economy, but to utilise it as a symbol for time-specific issues. Then, it was independence, later it was resilience and safety (as I will discuss below), and now it could be innovativeness and sustainability (which chapter 2 will elaborate on). This required technologies that were top-notch during that time, and later perfected when technology improved. Of course, luck also plays a role in this. One being the right arguments used in the logics of that time, when there was a need for independence, the Nieuwe Waterweg could be the key to do so.

The poetic function of the Nieuwe Waterweg thus generated a certain feeling of pride and admiration towards the port that actors easily embodied. This is what actually convinced people to believe in and accept a costly project and therefore it accelerated change. This economy-first approach thus became deeply rooted and accepted by all actors involved in or affected by spatial development policies of the port, even when individual actor interests were secondary focus. Like Alex described in

the introduction, the success of this system thus installed a certain inertia that resonates with the logics of a certain time. This becomes especially apparent when looking at how policy makers respond to disaster (Pelling & Dill 2010).

Responding to Disasters

To illustrate my argument, we have to look back to 14 May 1940 when large parts of Rotterdam and its port were destroyed by a bombing. Daan, who argued that port developments are born from time-specific societal needs as well as external temporal developments, explains:

> *Daan: This was a time of reconstruction. After the Second World War, the Netherlands was in Ruins. The world had completely changed and the country had to be rebuilt.*

Daan tells us that after the destruction of most parts of the city and port, the landscape had to be restored. Restored in this narrative means that it could once again serve economic functions. Daan also says "the world changed completely." There was an increased societal need for fuels and products such as plastic. This meant that the port had to facilitate it by housing refineries and petrochemical industries. However, this reconstruction of the port was also a symbol of resilience, of Rotterdam and of the Netherlands (Sennema 2021). Mentions of the port popped up in cultural representations such as children's plays and books. These notions called for a renewed appreciation for what the port has brought the Netherlands and used these symbolic meanings to convince people of the importance of restoring the port. This poetic function was, again, important for the justification of artificial landscape alteration and new industry settling in the port of Rotterdam.

These ideologies also become visible in the approach to water safety after the devastating flood of '53. The Nieuwe Waterweg is one of the many open connections to the sea in the South-Western delta of the Netherlands, where the whole area flooded. These areas already occasionally overflowed during high tides from the sea, yet the flood of 1953 was an extreme case caused by a heavy storm at sea. Most dikes broke, whole cities were consumed by water, and many people lost their lives.

This led to a universal belief that water was dangerous and we needed to be protected against nature (Wojciechowski 2009). In this sense, universal means that there was both a societal need to be protected against dangerous high-water situations born from their livelihoods, as well as the need to safely continue port operations born from the political goals according to which the landscape was altered in the first place. As a response, the Deltawerken were constructed; a system of flood barries, dikes and dams to protect the Netherlands from the sea. The Deltawerken are illustrated in figure 3.

Figure 3: Deltawerken

These measures were installed by the Delta Programme, a collaboration between various governmental actors and organisations protecting the Netherlands against floods. To gain a more in-depth perspective, I reached out to national water safety management actors. I met with Beau and Charlie, who both work for the water safety management department with the national government where they continuously discuss the (co)construction between space and spatial quality, and the various functions of water versus water safety. They elaborate:

> *Charlie: The motto of the Delta Programme is; we have to work to stay ahead of the disaster. Right? So, we are looking ahead and we are thinking about what measures must be taken in the long term, and we build in enough space and time to do so.*

The Delta Programme thus works to prevent the next devastating natural disaster, so a similar flood will never happen again. They do so by revising the water safety strategy at least every six years to evaluate whether the current system still protects the areas from flooding under changing circumstances. One of these flood barriers is the Maeslantkering, located in the Nieuwe Waterweg. Figure 4 shows the Maeslantkering.

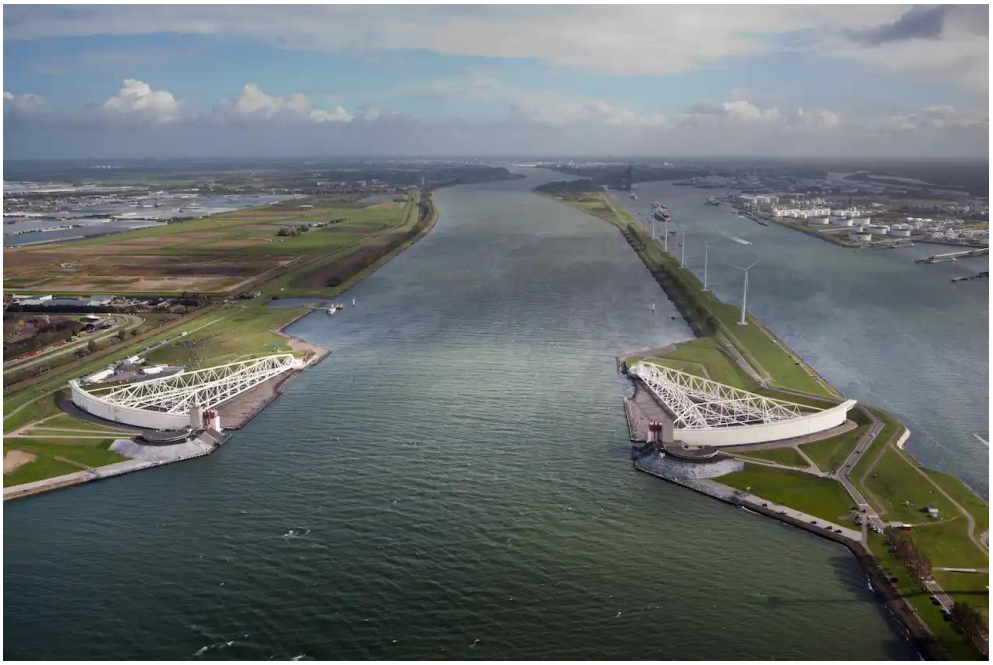

Figure 4: Maeslantkering

The Maeslantkering is a structure that can close the Nieuwe Waterweg off on the seaside when water levels rise to dangerous levels. It then relieves the inland areas from floods. However, if it does close, ships cannot reach the port. This is something that port and governmental actors alike want to avoid at all costs. Therefore, an extra system of dikes and dams has been built to protect the areas of the city that lie before them from the water. The areas outside these dikes might still flood if the water levels rise a bit, but not enough to threaten the safety inland. This does not harm port activities, as the ports located outside these dikes are raised sufficiently. I spoke to Fedde about how these interests, water safety and port activities, coexist. Fedde is a national governmental actor overseeing the national water safety management. Fedde explains:

> *Fedde: That means that you get a system where there can still be a lot of flooding due to high water, but also enormous economic interests.*

Both water safety and economic interests are prominent in that area. We have established that the port activities are not only valued for their economic gain but are also seen as a crucial part of the identity of Rotterdam and the Netherlands. However, such a devastating event must never take place again. Fedde elaborates by saying that there is currently a "status quo" that the economic interests are prioritised. The general consensus in current Dutch water safety management is that the economic interest is of considerable importance to the Netherlands that the negative effects are accepted and anticipated. This also means that local governments design their spaces while keeping in mind what activities can take place in areas prone to flooding and prepare fitting legal organisations for when it does happen. This, again, emphasises the moral evaluations of human and nonhuman livelihoods in the

area. In this approach, it is justified that certain areas occasionally flood if it means that port operations can continue. Actors from port authority, local government and national water safety management all agree that certain negative effects are tolerated in favour of the port. Water safety management policies thus assumed an economy-first approach in designing a system that protects the Netherlands from the sea. This approach can be described as "fighting against water" as it resists the natural workings of the sea to keep the water away completely. (Meyer 2019). Placing human interests above the natural workings of the sea had thus been considered *just* landscape use. Charlie explains this development through this scheme they drew during the interview.

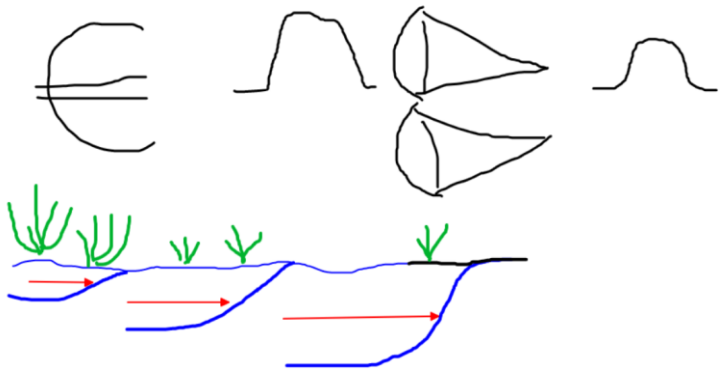

Figure 5: Mental map Beau and Charlie

In the bottom of the image, we see the Nieuwe Waterweg developing over time. The continuous deepening of the river to facilitate the increasingly large ships is illustrated here from left to right. In the top right, the two horizontal "ice cream cones," as Charlie nicely referred to them, represent the Maeslantkering. The two bumps on both sides of the cones represent the dikes. The illustration shows that the dikes outside of the Maeslantkering, on the left, are higher. This is because they are the sole means of protection of the areas outside of the Maeslantkering. On the right side, the dikes are much lower. This is because they only need to protect the areas against a certain amount of water level rise. When the water level becomes too high for the dikes to protect against, the Maeslantkering closes, relieving this area of the threat. In the top left, Charlie drew a Euro sign. This refers to the dominant historical narrative that these developments were installed to best serve the economic interest.

Beau and Charlie argue that the way the Delta Programme currently protects the area from flooding, with the Deltawerken, does so pretty well. The barriers built to protect the areas need regular maintenance and, eventually, replacement. In addition, they explain that the effects of climate change need to be monitored as it influences the sea level and water discharge system. However, the Deltawerken, when maintained, are able to protect the areas even with the expected sea level rise until at least 2070. What will happen after that, or when the anticipated effects of climate change increase rapidly, will be discussed at length in chapter two.

Fedde, national water safety management actor, previously explained that the ports are raised sufficiently so that the operations are not harmed when sea levels rise slightly. However, the areas outside the dikes further inland are not raised. So, what are these areas used for? These areas belong to the cities and are used for interests such as housing. As a spatial designer in the city of Rotterdam, I asked Hanne what they think of this. They state:

> *Hanne: Those problems usually do not last longer than a day or so, so we have to take measures [in the city] to make sure that it can be wet for a day every now and then without the city experiencing too much damage.*

Both Fedde and Hanne explain that the flooding risks of the area's outside of the Deltawerken are tolerated in support of the port activities. Spatial policy makers in the area work with these risks by calculating the conditions in which their operations can continue. This is what they called an adaptation strategy. These conditions include what functions the area can be used for, and if it is living, the heights that they need to have to be considered safe. Hanne notes that this is sometimes challenging, as there are already houses that remained from the old city which now need to be raised. These measures thus affect the lives of residents as they experience the direct effects of this approach. Sometimes these developments are then resisted by residents. But Fedde notes that when designing these measures there is a consensus that the economy-first approach is the status quo. Because the economic interest is of considerable importance on a large scale, authorities agree that flooding is a risk that must be taken. Especially since the city, too, has no other directions to expand in and faces a huge housing assignment. This temporal development will also be discussed at length in chapter two. For now, I want to stress that city interests such as living have to compensate to facilitate shipping and that the policy makers in the city and national water safety management agree with this status quo. These actors all evaluate this approach as *just* relations between human and nonhuman actors (Scaramelli 2019).

"SHIPPING. THAT IS ACTUALLY THE ONLY ONE"

Although the Nieuwe Waterweg has had huge positive effects on the economy of the city of Rotterdam, it also negatively affected it. As previously discussed, the port kept expanding and moving westwards, out of the city. A trail of ports that were no longer in use were left behind. Hanne, a local governmental actor, tells me what the city of Rotterdam does with those abandoned spaces.

> *Hanne: Old fragile harbours weren't really used that much anymore, so a bit of a sluggish area. Riek Bakker once said: we're going to do that, we're just going to make a city out of that again. And you can actually see that Rotterdam has continued to do so. It has let that city grow a bit in those old ports. So he actually healed that wound that was left here.*

As the port moved westwards and out of the city, the former port structures remained. Hanne talks about "healing" the "wounds" left by the port. They evaluate these empty ports as holes in the city; spaces that no longer serve a purpose. The city of Rotterdam thus experienced the negative developments of the rapid growth of the port as they leave behind purposeless areas in a place that has too little space to develop. As a response, the city approached these challenges as an opportunity to develop the city in these ports, within its municipal borders. Local governments, while experiencing the negative effects of the port, do not approach these as such. Instead, they view these abandoned spaces as opportunities to further develop the city. The city of Rotterdam intends to pursue these space-efficient and symbolic approaches to developments in the future, as Hanne and Jules will elaborate on in the next chapter.

This symbolic representation and global scale of port activities thus justified prioritising port development, even if other interests to that landscape were not facilitated. Where these deeply emotional connotations with the Nieuwe Waterweg once accelerated change, for example during the construction or after a devastating event, they now act as barriers to change. While most actors agree that the shipping function of the Nieuwe Waterweg is one that we cannot and do not want to erase, some feel it has been *too* economy-focused. Even though the importance of trade through the Rotterdam ports are unanimously agreed upon, these actors instead propose a more balanced approach. One of the actors is Ezra. One afternoon about a month into my fieldwork, I was sitting at the desk in the bedroom. I had assembled that desk the day before and decorated its extra shelves with books, a painting and a plant. I made sure my laptop was plugged in to the charger and the internet cable so that the online meeting would not be cut short. It was in this new, cosy spot that I met with Ezra. Ezra works with a nature organisation that advocates for giving nature the space and time to develop naturally. Naturally, in their use of the word, means without human intervention. However, Ezra believes humans should provide nature with tools to give this natural development a push, such as regulating water levels or (re)locating certain livestock. Both perform functions that increase natural processes such as biodiversity. Ezra is critical of the fact that the entire Nieuwe Waterweg is designed to facilitate shipping. In the next chapter, we will discuss how they propose to spatially develop the Nieuwe Waterweg in favour of that balanced approach. Here, I ask Ezra to evaluate the current spatial organisation.

> *Ezra: So about what I think of the spatial organisation itself; I find it very unnatural how deep it is kept, and then it still has to be deeper. [...]*
>
> *Babette: Yes, because whose interests now benefit most from the depth of the Nieuwe Waterweg?*
>
> *Ezra: Shipping. That is actually the only one.*

Ezra thus argues that the spatial organisation is "unnatural," and that this focus on economic interests harmed other interests. We previously discussed how the economy-first approach to water safety is tolerated, even though residents get wet feet occasionally. These negative effects are legally accepted in favour of the "greater good."

However, aside from the approach taken to water safety prioritising shipping, the spatial organisation of the Nieuwe Waterweg also directly affects the water safety of the area. The riverbanks are designed to be sloping steep and the banks became for the most part concrete to facilitate industry. This spatial organisation of the landscape ensures it serves the function required from it by local, national, and global government from an economic perspective. However, this increased the risk of flooding as high water had nowhere to go but into these areas where people live and work.

This continuous process of dredging also influenced the water discharge system. This alteration in the spatial organisation of the waterway thus also affected natural workings of the delta which, in turn, affected the ecology in those landscapes. When I asked Ezra about the spatial development of the Nieuwe Waterweg, they argued it is not possible to separate it from its delta connections. They said:

> *Ezra: It also needs to be seen in a broader spatial context than just the Nieuwe Waterweg, Scheur, en Nieuwe Maas. You also have to look at the connection with Haringvliet more clearly.*

Ezra thus argues that we cannot and should not look at the effects of the Nieuwe Waterweg in isolation, but as a part of the entire delta. Then, the effects become visible. Previously, we discussed the issue of sand and silt entering the river mouth. To look at this subject more clearly, I reached out to a local governmental actor who is responsible for everything "water." I spoke to Iben about how a lot of water from the river disperses through the delta. However, the counter pressure from the rivers is beneficial for the Nieuwe Waterweg as it helps push back silt and sand intrusion from sea that infiltrate the rivers during high and low tides. Therefore, more water is artificially guided to the Nieuwe Waterweg using dikes and dams inland. This way, it benefits the Nieuwe Waterweg as it keeps it open. However, Ezra explains that this leaves the Haringvliet with these very problems. This harms the natural ecology in that area, which would otherwise offer attractive nature opportunities.

Another effect of this artificial interference is that the current depth allows a lot of salt water to infiltrate the river. Iben explains that a "*zouttong*," or "salt tongue," "rolls" over the riverbeds and moves further inland when the rivers water levels are low and high tides come from sea and is pushed back more towards the sea when water levels in the river can provide counter pressure or when the sea has its low tides. This is problematic for our freshwater intake, as these intake points are located in the Rijn-Maas delta. The *zouttong* can reach as far as Gorinchem now that we increasingly experience low water levels in the river due to climate change (more on these effects in chapter two). Fresh water is used for

drinking water, agriculture, but also for the industry in the port, so when these intake points have to seize freshwater intake because there is too much salt water, this threatens the fresh water supply for these functions.

CONCLUSION

In Daan's framing, the port facilitates societal needs. It is therefore that Daan said it is a mirror of society. The port *experiences* development. These developments have however focused on economic interests that helped Rotterdam become the successful global port city that it is today and with it, benefited the national economy. The artificial alterations of the landscape were justified through socioeconomic framing; they served the political goal of boosting the national and international economy in order to become free and self-sufficient, as well as the poetic goal of representing modernity and symbolising the identity of Rotterdam and the Netherlands (Larkin 2013).

This economy-first approach is deeply rooted in the ideologies that make up spatial development policy. It created a certain inertia in the way we think about systems, although the logics in which these systems are created belong to a certain time. This does not mean, however, that this approach is blindly accepted by everyone. Even though the effects are tolerated by local governmental actors who have a close relationship with the port, actors further removed argue that the current spatial organisation of the Nieuwe Waterweg has negative effects on the ecology, freshwater intake, and water safety that cannot be justified. These actors are increasingly voicing their concerns regarding whether the current spatial organisation in the city and port and the approach to water safety is sustainable. Sustainable in two ways. The first being how long the Deltawerken remain functional, whether it be because the costs of maintenance outweigh its effectiveness or because it no longer withstands the effects of climate change. The second focuses on sustainability in a more moral sense, where we think about the cases and effects of climate change and the way we evaluate *just* relations between human and nonhuman actors as mediated through landscape alterations (Scaramelli 2019). These and more temporal developments will be discussed at length in the next chapter, especially thinking through questions on how we want to approach spatial development of the Nieuwe Waterweg in the next 150 years.

“GREEN YIELDS NOTHING”

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Still conducting my fieldwork from my apartment, I poured myself a cup of coffee. I was a little nervous to meet Guus because it had been a bit more challenging to reach someone in this field. But when Guus entered the chat, these nerves quickly made room for intrigue as they told me about the port's operations. In the last chapter, I already noted Guus’ description of the Port of Rotterdam as a world in itself, operating in the interest of the business climate of the port. I asked them how they would ideally envision the future development of the Nieuwe Waterweg. They stated:

> *Guus: So, it has been optimised over the years. However, I believe that it has reached its limit. So, if it remains as it is and it is maintained as it is now, then it is perfectly fine for the port authority.*

In the last chapter, we discussed how the Nieuwe Waterweg has developed to facilitate economic interests. Consequently, Guus and other port authority actors are satisfied with the current spatial organisation. Guus thus explains that the port authority is happy with the current structure, and there are no further plans to deepen the Nieuwe Waterweg or expand the port even more westwards. However, certain societal developments might force the port to change its approach as the current system cannot withstand the logics of future conditions. In the last chapter we also found that conflicting moral evaluations of how human and nonhuman actors *should* be organised through systems of infrastructure exist. In this chapter, we will look at how these moral ecologies would propose to approach future development, and how port authority responds to these framings. Additionally, in line with Daan’s theory that the port is a reactive entity, we now also face temporal developments that urge the port to further develop, or even change its approach to development completely.

“PRIMARILY, IT IS THE HIGHWAY”

As we found in the last chapter, the Port of Rotterdam has two main responsibilities: facilitating transhipment and issuing lots. These are the primary goals of the port authority. However, other actors argued that we should not only be so focused on how well the current spatial organisation of the Nieuwe Waterweg, and port serve these economic and symbolic interests, but also look at those effects in connection to other human and nonhuman livelihoods. The examples used were the water safety of residential areas, effects on ecology and sand and salt intrusion. These effects are not ignored by policy makers. They are, however, justified as secondary functions to facilitating shipping. Guus explains:

> *Guus: Look, the Nieuwe Waterweg also has a role in the water drainage system. Of course, the Maas is behind it, and the Rijn. Well, I don't know exactly which rivers are behind it, but [the Nieuwe Waterweg] has an important function as a water drainage. Of course, it also has nature value, so the Port of Rotterdam also ensures that we stimulate biodiversity. But anyway, that is secondary. So primarily, it is the highway, and the access [to the hinterland].*

Guus stresses that, while the Nieuwe Waterweg plays an important role in the delta in terms of water drainage and ecology, its main function is facilitating shipping. All attention given to these interests is done secondary to, or even in support of, its primary function. Port actors, however, do not justify the injustice between these human and nonhuman interests, they do not see any injustice to begin with.

Officially, my fieldwork period was over when Luca replied to my email with the interview request. Luca is one of the port authority actors I spoke with and is responsible for the quality of the spaces in the port. In terms of responsibilities, they thus work to create an attractive and functional environment that attracts companies. Therefore, I really still wanted to speak with them. Luca also explains that the Port of Rotterdam is mainly concerned with organising and managing port activities.

> *Luca: Well, look, we are a port, an industrial area. So our first priority is that port activities can continue, and where possible, we fit nature into it and give it the opportunity to develop as well.*

Luca goes on to explain that the number one function of the ports spatial organisation is issuing the lots to companies. However, they state that the port is also one big nature reserve where many plants and animals reside. But these plants and animals can hinder port activities. Luca explains this by saying that when an endangered plant or animal species pops up in the port, and they are not allowed to relocate it, it obstructs their main function: issuing lots. Therefore, the Port of Rotterdam has previously kept the lots clean so as to prevent attracting new species. Today, the port has obtained exemptions to relocate endangered species when they do pop up on the lots. Because the port wants to increase biodiversity where possible, but only if it does not hinder its primary function. These exemptions allow the port to relocate these species when companies move onto the lots, so an increased biodiversity does not threaten their operations. Therefore, the Port of Rotterdam now sets targets for increasing the biodiversity in the port. The goal to increase biodiversity thus does not come from an ideological belief that that is what is *just*, it is still subordinate to the primary goal of the port. However, since they were able to obtain the legal right to remove any obstacles to serve their goal, they are now able to use these efforts to advertise that they, too, increase biodiversity. This creates an attractive image that fits the logics of this time, without them having to change the system.

Even attempts to increase biodiversity are thus framed through political functions and economic motivations. Luca explains why:

> *Luca: They are actually residual spaces, right? Green. Green yields nothing and the more land we have that generates money, the better. But you also want the spaces to look attractive to customers, so you do want to have a certain amount of green to make it attractive.*

By saying that "green yields nothing," Luca explains that the lots need to be used for industry in order to generate income. Green – biodiversity, ecology – takes up space that could otherwise be rented out to companies: one of the two responsibilities of the port. Therefore, the port does not want green areas. However, these lots need to be attractive for customers that establish there, for which, green *can* be useful. Luca explains that not all areas in the port can be used for issuing, because of regulations stating that there needs to be sufficient room between a road and a lot, or nothing can be built on top of underground structures, for example. These areas are then used to plant trees and plants that make the port more attractive for clientele. So, the Port of Rotterdam is responsible for improving the economic functions of the landscape, including the Nieuwe Waterweg, and other functions such as increasing biodiversity are applied only when possible and when it does not obstruct port activities. In this sense, the port's green efforts are not only subordinate or secondary to, but also done in support of, the "primary function."

The port of Rotterdam, like many European ports, tightly borders the residential areas. Livability, aside from a certain spatial organisation, also means that there is an attractive environment for people to live. These residential areas closely border the port and thus also personally experience its effects. This might stop people from living in those areas or, perhaps even worse for the port, complain about the port activities. The port thus also wants to be attractive to residents to create tolerance for the negative effects of the port's operations. Because the port is an industrial area that emits noise and smell. Yet, these effects are taken for granted because these economic interests are prioritised. They approach this issue by fuelling the symbolic associations people have with the port. The poetic functions the port facilitates through its representation of freedom, resilience, innovativeness, and global appreciation serves as a tool to create tolerance of its neighbours (Larkin 2013). Kris, port authority actor, explains:

> *Kris: But we also put a lot of energy, and time too, into, well, creating a little goodwill.*

One example of the ways in which the port motivates tolerance is by organising the World Port Days where people are invited to discover the Port of Rotterdam (WereldHavenDagen s.a.). The aim is to promote the positive effects of the port and generate acceptance to those effects that might be more negative such as nuisance.

Another effort the port executes is offering opportunities for recreation such as biking and fishing. This way, the port serves a poetic function as it becomes a part of the everyday lives of residents (Larkin 2013). Guus explains:

> *Guus: In the port of Rotterdam you can just take your bike, you can just-, it's really beautiful, by the way, very nice cycling paths and nature. You can-, you can cycle to the Maasvlakte with your bike. That is not possible in many other countries. Just like in Limburg, Chemelot has a very large chemical complex. Well, I don't think you can ride your little bike through that.*

In arguing that the port of Rotterdam is an attractive recreational site, Guus makes the comparison with Chemelot, a large chemical complex in Limburg. In this framing, they thus not only argue in favour of the port, but also how much better the port is in comparison to another site. This use of language emphasises the positive effects of the port of Rotterdam presumably to disregard the negative effects that are also an effect of port activities. This creates a symbolic advantage for the port, as the comparison aims to justify its shortcomings by guiding our attention to the successes.

Aside from attracting residents to visit the port, the port authority also tries to create borders between the port and city to minimise nuisance. Luca, concerned with the quality of the spaces in the port, says:

> *Luca: The whole of Rozenburg is completely wrapped up in a horseshoe of green to ensure that the residential area is shielded from the ports as there is a kind of green belt around it.*

The Port of Rotterdam thus shields the residents from the negative effects by separating the port and residential areas with, for example, green. This way, the residential areas are visually attractive as a green horizon is favourable over an industrial one.

However, the tolerance of residents for the nuisance of the port decreases. This shows in the reputation survey that the Port of Rotterdam conducts somewhat every four years. Guus elaborates:

> *Guus: We score very high, but in recent years you can see that it is sinking in a little bit. And that partly has-, in my opinion, that the acceptance of everyone is becoming less and less. So in general everyone thinks it is very good that we place windmills, but of course that should not be done in the place where people live, where you live. So that "not in my backyard" is becoming more and more prominent and so is the port.*

Guus thus argues that it is not the actual activities of the port that generate resistance from residents. Rather, it is when these residents personally experience the negative effects of these operations that they voice their concerns. Guus terms this phenomenon as “not in my back yard” which is not only recognisable in this case, but also in how the actors included in my research evaluate each other’s

proposals as I will later elaborate. Port actor Kris does not experience this resistance as negative or obstructive, though. Instead, they approach this criticism as positive because it challenges the port authority actors to create policy that works for these actors as well. They state:

> *Kris: The resistance of external or-, and the amount of energy that you have to put into a new development to justify why you do it and why it can be done safely and without too much nuisance for local residents, I think that is also a good thing.*

Kris explicitly mentions the "amount of energy one has to put in justifying why certain decisions are made." This once again notes how important moral ecologies of infrastructure are (Scaramelli 2019). These ideologies of how the landscape should be shaped and with what desired effects have to resonate between these actor groups in order for those on the other end to tolerate and accept the activities. However, as Guus adds, "of course, it will remain an industrial area," meaning to say that in the end, it is the port activities that have the highest priority.

However, port activities now face temporal circumstances beyond their control. In the face of climate change, the CO2 the port emits is no longer justifiable and has to be decreased by law. They are thus forced to change their operations. I asked the actors from the port authority how they plan to respond to these developments, to which Kris replied:

> *Kris: No, yes, you know, basically we just have to ensure that the rise of the sea level rise is reduced. Well, that will continue for years to come. Anyway, we as a port do play a role in that, aren't we? We are one of the major polluters in the Netherlands, but we do have great ambitions to play a leading role in reducing that. That is really the basis and then, of course, more on the reactive side. So, the control measures; we are talking about raising areas, among other things, to be able to absorb the sea level rise. Yes, I actually hope that with a solution such as the Maeslantkering, which is also sufficient now, you can guarantee water safety in any case. And yes, how long will it last and whether it is indeed sufficient? That, yes, I can't estimate that very well.*

Kris thus notes that the Rotterdam port, as one of the larger emitters in the world, has a great responsibility and ambition to decrease these effects. Practically, that means that the port takes precautionary measures such as elevating the areas surrounding the river. Together with the Maeslantkering, they hope that these alterations can withstand the earliest effects. Whether these alterations are sufficient to fully withstand the rising sea level, or at least for how long, is uncertain, and Kris concludes that it is difficult to calculate. What Kris is saying is that, because the current system and approach work so well for successfully carrying out the responsibilities of the Port of Rotterdam, they do not wish to change too much. Therefore, there are no plans for how the port wishes to ensure

the water safety in the long term. Even though a sluice or other structure would not only ensure water safety in the long term, but also solve the problems we already face regarding the sand and salt intrusion, the open connection to sea is crucial for the port's operations and therefore not considered. This makes it hard for the port authority to think about long term solutions. Rather, they look at what they can do now to minimise the effects of climate change, perhaps hopeful to postpone the inevitable. Therefore, they are fully focused on the process of an energy transition. Guus elaborates:

> Guus: *And what has led to the Port Authority actually shifting its strategy from "we facilitate the companies, the industries in the port that all want to get started with hydrogens themselves, produce, build all kinds of things" to "as the Port Authority, we are primarily going to ensure that we have contracts worldwide and have contacts with the countries that will soon produce green hydrogens, sustainable hydrogens, because we have to ensure that we store and tranship that in Rotterdam and that we can then do something with it, but we should not produce that here".*

Guus explains that the Port of Rotterdam altered their strategy to work towards a sustainable port and port network. The port thus utilises their main responsibilities to negotiate a better future. The core of their operations will remain the same, but the types of fuel they produced and shipped to and from the port change. The port actors told me that the types of fuel the port wants to attract now are hydrogen and wind. This means that the port actively works to establish hydrogen factories in the port and form windmill parks along the coastline. Even more so, the Port of Rotterdam works together with the companies already established in the port in the hopes that these same companies will decide to start producing or shipping these cleaner and greener fuels. Luca adds that the port also works towards circular operations. This means that they develop green zones in residual spaces and reuse water and other products where possible.

Kris, port actor, assures me that the energy transition has received priority within port operations. However, this is not an easy process. Aside from attracting the right customers, the Port of Rotterdam has to facilitate an attractive and appropriate environment for these companies to operate. This requires a spatial reconstruction of the entire port, because the port has organically grown from the city centre to the coastline. However, all port actors expressed their willingness to face these challenging issues.

However well the intentions of port actors are, this perspective on transition uses a system that was created with time-specific logics. Port authority now takes this system and optimises it to accommodate today's standards. Guus explains:

> *Guus: It will of course always remain an industrial area [...] just cleaner.*

Yet, the logics that system was created in does not apply to today's circumstances anymore. I thus turned to Alex to find how they evaluate this approach, they stated:

> *Alex: Then you very much take the existing situation as a starting point and try to cancel out the negative effects of it. [...] Well, from a transition perspective, that is called optimisation. And that doesn't have to be a bad thing at all, but it becomes problematic when there are long-term developments that put pressure on this situation. [...] Then, the way we have currently organised it is not future-proof, and adding some green frills on it will not be enough.*

Alex thus argues that the future circumstances as dictated by the effects of climate change require a different approach. We should abandon the logics of the current system altogether if we do not want the port to be wiped out by rising sea levels altogether. For now, however, the success of the current system is too deeply embedded in how we value the port's operations to convince policy makers of its flaws. The distance of the actors who themselves are not as closely motivated by the port's success, however, allows them to let go of this strong ideology in favour of more favourable solutions. Instead of the economy-first approach, they might thus lean more towards a nature-based approach.

"TURN THE THREAT INTO AN OPPORTUNITY"

The way in which actors want to shape landscapes teaches us about what they believe to be fair and ethical landscape use. The way actors evaluate *just* relations between human and nonhuman actors thus becomes apparent in their visions of ideal future developments (Scaramelli 2019). We have found that port actors evaluate these *just* relations in the case of the Nieuwe Waterweg to be prioritising economic interests. This means that the port develops to best facilitate these interests, and other interests are attended to after and in support of the main functions. These alterations are then justified using arguments of symbolic value. This economy-first approach, however, does not appear as strongly in other actor evaluations of future developments.

In the first chapter, local governmental actor Hanne explained that the city and port are governed separately, and that while city interests are subordinate to port interests, the city greatly benefits from port activities both in its economic and symbolic impacts. However, the Netherlands currently faces a huge housing assignment. According to Beau and Charlie, the national water safety experts, 50.000 new houses have to be built in the municipality of Rotterdam by 2040. But as we have touched upon before, there is no more room for the city to expand within its municipal borders. Hanne explains the reasoning behind this strategy.

Hanne: Improving the existing city, also to prevent us from actually building up the surrounding landscapes there, right? That's the easy way, of course, like hey, we'll just grab a tiny bit more land. Then, you will just consume the landscape of the Netherlands at a given moment.

Aside from having no more room to expand, the city of Rotterdam is also cautious towards reorganising landscapes for living. Technically, there are "empty" landscapes north and south of the city that could essentially be repurposed to expand the city. However, local governmental actors like Hanne feel it is not fair that all this space is used for housing when there are still opportunities to develop within the municipal borders. Their valuation of *just* relations between human and nonhuman actors thus include those residential functions should not be carried outside of the existing borders when it is not absolutely necessary (Scaramelli 2019). This ideology clearly translates to how Hanne and colleague Jules envision the ideal future of the city, as will be discussed later on.

Hanne previously described that the city repurposed abandoned ports to further expand the city within its municipal borders. However, as Guus, port authority actor, said in the beginning, the port will not be moving further west. Because of the ideological stance local governmental actors such as Hanne and Jules assume, the city aims to carry out the approach of working with the existing structure to create an attractive urban pattern. In the last chapter, Hanne mentioned that the highway square was one of the infrastructural systems constructed to facilitate trade. Today, Hanne sees those roads and train tracks as large obstructions in the city. Therefore, when looking for new opportunities, Hanne argues that the existing city should be repaired, starting with these infrastructures.

The image below is the mental map drawn by Hanne. It has a lot of information, but for this argument I would like to draw your attention to where Hanne sees new opportunities for development. For orientation purposes, the blue line through the middle is the river, ending in the Nieuwe Waterweg on the left. The green circles on the top and bottom of the drawing indicate the landscapes that will not be used to expand the city on, as officially recorded in city policy since 2007. In the middle, the black strokes represent the highway square. They have been crossed out with red. With this, Hanne indicated that this structure has become so much of a barrier, that they want to remove it and further develop the city in its wounds.

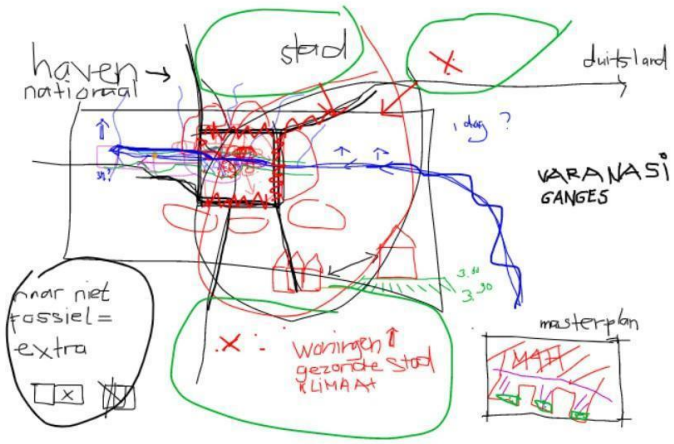

Figure 6: Mental Map Hanne

This "approaching obstacles as opportunities" development ideology assumed by local governmental actors is not only limited to the "wounds" left by infrastructural development. It also looks at the river as a crucial aspect that can be utilised in their ideal view of the future of Rotterdam. They thus go against the currently instated "status quo" that views nature as threatening and takes a fighting-against-water approach and instead see opportunities to work with water towards an attractive and future-proof city. Jules explains:

> *Jules: And that was already 2005, eh, and then there were already climate scenarios that the sea level might rise six metres. And then we already made a story of, yes, what should you do as a city to anticipate this. And then we actually converted that threat into an opportunity that as a city you have to use much more water as a means of making an attractive city.*

Jules introduces me to the project "Room for the River" which was installed in 2005. This project advocated to literally create more room for the river by creating gradual and broader riverbanks. This way, when sea levels fluctuate more heavily and ultimately rise, the water can spread out in these banks. This not only safeguards water safety as the spatial organisation anticipates these effects, it can also be used as a tool to create a more attractive urban pattern. Jules notes that this project, too, is argued with symbolic language. They state that actors working on the project created a "story" that not only convinces people of the benefits of this approach, it formulates the poetic functions of such a spatial organisation (Larkin 2013). Jules continues:

> *Jules: the overarching story is a bit like: How could the river central park program in the middle of that city? And that includes inland shipping, eh, that's just really part of our identity and that main shipping route will always remain. Inland vessels in the Maashaven are simply*

an important starting point, but you can still see that we are also focusing on greening and softening.

Jules, like other non-port actors, state that the shipping function of the river is an important part of the identity of the city. Therefore, it will always remain a part of it. However, by creating more room for the river in the city, the city's vitality increases as residents can enjoy nature. This does mean that these actors with different, perhaps even clashing ideologies, need to collaborate to make it into a success. Jules argues that both city and port actors need to look out for each other's interests and goals in order to fulfil these renewed political and poetic functions (Larkin 2013).

In contrast to the "fighting against water" approach, this approach thus advocates studying the natural workings of the tides in order to organise resource extraction around it. Meyer (2019; 2021a; 2021b) proposes to apply this nature-based approach to the entirety of the Nieuwe Waterweg. This project is called "The River as a Tidal Park" and was first developed in collaboration with nature organisations, which is why Ezra was involved early on. In contrast to the previous economy-first approach, this initiative suggests taking a nature-first approach by restoring the estuary character of the river mouth by ceasing dredging, where the sedimentation process will shallow and broaden the river naturally (Meyer 2021a). This has many benefits: more natural wildlife and biodiversity; natural protection against high waters and salt intrusion; opens up opportunities for attractive urban development; less fresh water transported to the Nieuwe Waterweg; safer during storm surges at sea; and even though the port is less accessible, the existing "Maeslantkering" flood barrier will be open more allowing for another part of the port to become easily accessible (Meyer 2021a; Meyer 2019).

Additionally, we previously discussed that the port of Rotterdam is facing a huge transition in the future, as currently more than 60 percent of the port is fossil fuel. The port will have to change its total (spatial) organisation to achieve local, national, and global sustainable energy goals. Ezra and Meyer thus ask whether, while the port has to completely redesign its spatial organisation, we might as well calculate for the sea level rise through the ideologies of this approach.

Moreover, this project could be the key to reinvent the symbolism of the Nieuwe Waterweg to fit future circumstances. How the Netherlands approaches today's problems is of international relevance, as it stimulates international discussions (Meyer 2021b). Rotterdam and the Netherlands can therefore once again be internationally renowned for their profound knowledge of both technical systems and water workings. The 150th anniversary of the Nieuwe Waterweg is therefore the perfect moment and symbolic opportunity to decide that the logics with which the system was created needs to be updated to fit today's circumstances.

“DO NOT DEVELOP ON THE HIGHWAY”

This proposal is only possible, however, when urban, port, and ecological development can be developed in a way that it can be combined (Meyer 2021b). It would also require buy-in from key actors such as the Port of Rotterdam and local municipalities. However, port authority is not very eager to consider an approach that clashes with their own moral ecology of infrastructure (Scaramelli 2019). Ezra voices their concern:

> *Ezra: So it's water, agriculture, so drinking water, agriculture, safety are actually all very big interests and yet the importance of shipping is always undiscussed and takes precedence. And I'm also not saying that shoaling would be quite a run-of-the-mill race- all easy or completely logical, but even researching already seems to run into resistance- running into resistance.*
>
> *B: And resistance from who?*
>
> *Ezra: From the harbour in particular. Yes, Rotterdam finds it interesting. But yeah, the discussion just doesn't really get going because it seems they don't look that far ahead. Delta program, yes, they also find it interesting to research it further, but leave that to us. Instead of them taking initiative themselves. And I could hardly discuss it with the port. It's very difficult.*

In their moral evaluation of *just* relations between human and nonhuman actors, Ezra argues that while this new approach benefits fresh water supplies, agriculture and water safety, the port authority does not seriously consider it. Even though this vision of the future includes shipping still, the competing ideologies between these actors clash and because port authority has the largest interest and therefore the most authority they do not want to discuss such proposals.

Besides actors from national water safety management and port development experts speculating that the port authority might not welcome these projects with open arms, I wanted to hear what port authority actors themselves would respond. Therefore, I turned back to Guus. They stated:

> Guus: Of course, we, as the Port Authority, are not going to appreciate that widely. [...] We think it's just fine if there are ideas to create tidal areas as long as the highway continues to has its function, so you're talking about its possibilities along the banks to do something with tides, recreation, nature. You know, fine, but hands off the highway function. So that you do something on the verge of the highway is fine, but don't develop on the highway. That just cannot be combined.

Guus, similar to the other port actors I spoke to, argues that their main concern is keeping the highway function of the Nieuwe Waterweg operating. If others want to create estuaries along the riverbanks or further inland they do not oppose. In some cases, when these alterations do not influence port activities, port authority also collaborates in realising these projects. Yet, they do not see this as a viable option for the entirety of the Nieuwe Waterweg. These proposals are thus seen as a threat to the operations of the Port of Rotterdam, or even to the symbolic value inscribed in the port and the Nieuwe Waterweg. However, national water safety management is a bit more hesitant to draw such strict conclusions. Beau and Charlie both work within the same department but have varying views on the subject.

> *Beau: Yes, I don't believe in that very much myself to be honest, because if you do, if you think you can tame the power of high water at sea with a shallowing of the Nieuwe Waterweg, then yes, then you have to give it a go. You will have deepen it insanely deep, so to speak. Then you have – we just deepened it one and a half meters three years ago and then we said: well, the effect of that one and a half meters of deepening is not that great, so shallowing one and a half meters back, the effect is not that great either. So if you really want to solve the problem, then you are talking about a Nieuwe Waterweg that is only a few meters deep. Yes, then it will work.*

Beau is sceptical of the proposal. They argue that the alterations would have to be huge while we spend all this time altering it to its current state. Beau thus argues that, for this plan to work, they would have to reverse almost all alterations made in the last 150 years. But Charlie challenges this view:

> *Charlie: Yeah, I'm a little more nuanced about it [...] the idea is actually the basis of a quest of, well, how could you do that. And yesterday it was explained that with a shoal something like a storm surge barrier or a closing device is still needed. Not a dam, of course, because then you lose all of that quality of such a river as an estuary, but the Maeslantkering or something like the Maeslantkering in combination with the shoal is of course a nuance of how Beau describes it. And then I think it just gets a little more workable. But then you still have those ships, of course, eh that, I mean, that may eventually remain the real bottleneck for such developments.*

Charlie looks beyond the specific spatial organisation that would be required and calls upon the core of the message, being that this proposal forms the basis of serious reconsiderations of system-thinking as a whole. Crucial is, however, that the open connection to the sea remains to create the sought-after estuary, as well as the function of shipping. The latter, Charlie thinks, might be the bottleneck that prevents these proposals from being installed. Charlie also mentions that there would be need for a similar structure to the Maeslantkering. In combination with the widening of the river, Meyer (2019; 2021b) argues, the dikes and dams inland would not be necessary. From this perspective, both Beau and Charlie do not see any issues as to why the "working with water" approach cannot be translated to the

spatial development policy of the Nieuwe Waterweg as it sufficiently ensures the water safety of the area.

The crux remains, however, that while shipping might not necessarily suffer, the current structure facilitates this function as well. And because this is the main concern of the port authority and its main stakeholders, who are also the most prominent policy makers in this regard, they do not see the urgency to change. So even though the port authority would, in the long term, also benefit from these alterations, they do not look that far into the future. This disparity between what it actually is these actors are talking about blocks them from having serious conversations about what the Nieuwe Waterweg should look like over another 150 years. And even though port actors participate in smaller "working with water" projects, they do not consider this option for the Nieuwe Waterweg. The concept of "not in my back yard" thus also applies here, as the port authority is not against these developments, but they do not want it to obstruct their own operations.

CONCLUSION

Whichever approach is taken, it requires key actors of the Rotterdam port to collaborate in water management policy making processes (Meyer 2021b). This is challenging because, as we have been able to analyse so far, the actors have conflicting moral ecologies of infrastructure.

To conclude, the critique of actors operating from local government, nature organisations, and national water safety management was not necessarily against shipping as a function the Nieuwe Waterweg provides. Rather, it is the moral justification with which these spatial development policies are made. One interest is currently prioritised above all others. Other interests, such as livability, ecology, and water safety, are considered secondary in spatial development. Especially now that we face developments beyond our control, certain actors advocate to change the approach to spatial development of the Nieuwe Waterweg in a way that serves all these interests in a more balanced and mostly a more sustainable way. And, even though the port authority might not want to change its approach, they might be left with no choice as a result of the effects of climate change.

However, port authority actors do not simply "not want to change." They do not believe that their operations create unjust inequalities between human and nonhuman actors (Scaramelli 2019; Wojciechowski 2009). Therefore, their wish to maintain the current system or replicate it in the future is valid, as the positive effects justify the negative effects. Some negative effects, like the emission, are being legally challenged. But because of this deep symbolic valuation of the current system, these challenges are met with a greener version of the current system.

The conflict, thus, is not between the interests of each actor, rather, it is the difference between moral ecologies of infrastructure (Scaramelli 2019). Actors are not fighting for their own interest to be prioritised. Rather, they are discussions of views on the ethical landscape used to (re)organise *just* relations between human and nonhuman actors. Discussions between actors are rare and difficult, as they do not discuss the same timeline or places. In the next chapter, we will therefore look at how these moral evaluations between actors interact in collaborations or resistance and what it would take to convince policy makers that the current system made sense in the logics of time 150 years ago but does not fit future circumstances that changes these logics (Larkin 2013).

“A SMALL DISASTER DOES HELP FOR A BIT OF URGENCY”

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While we waited for Charlie, Beau was telling me how they, in the “water safety world,” have an overload of brilliant engineers on their projects. Yet, they lacked the expertise acquired in gamma studies – studies of human action – that could be good for transition processes. Beau explained that a change in water safety approach needs certain programmes to create support, because just explaining the maths behind the proposed structures is not enough to convince policy makers to transition. This is a very interesting, and for me very flattering, start of this interview.

Water safety management thus works with people who can calculate how high a dam should be to protect people from flooding, but to convince people living behind that dam that their loss of view over the water is for their own safety requires a different focus. This example that I used came from Guus. Guus was the first actor from the port authority that I introduced, who later argued that the main function of the Nieuwe Waterweg is shipping, and other interests can develop outside of the industrial area. Beau and Charlie are concerned that this ideology is so focused on the economic effects, it does not take water safety into account.

> *Beau: To be honest, I don't know whether the flood risk management story will really be leading for the future of the Nieuwe Waterweg.*

Beau thus says, and Charlie later agreed, that national water safety management could benefit from the perspective social and organisational scientists provide. They thus allude that the technical expertise they put into ensuring water safety is no longer enough to convince policy makers of its importance. As we found in the last chapter, long-term developments influence the conditions under which water safety management operates. This might lead to the conclusion that the current approach to water safety is no longer compatible with future circumstances. However, these economic interests are deeply embedded in the way we evaluate the Nieuwe Waterweg that these technical arguments might not be enough to initiate transition.

In the previous chapters, we found that evaluations of the current and future spatial development of the Nieuwe Waterweg are not only rooted in wishes to have one's own interests provided for. Rather, actors evaluate the Nieuwe Waterweg based on value-driven ideas regarding how relations between people and environments should be organised to benefit particular actors. These ideas can be related to some actor’s interests, such as the economic gain of the waterway’s stakeholders. Even though all actors agree that shipping is an important function of the Nieuwe Waterweg, some suggest a more morally *just*

spatial organisation as they believe the current system is unethical and unjustifiable. Instead, they suggest a more balanced approach that not only continues to facilitate shipping, but also increases biodiversity, water safety, and creates a more attractive urban pattern. Especially since the current approach will likely not suffice another 150 years in light of the long-term developments we now face. In this chapter, we will look at how the actors participate in discussions of future development of the Nieuwe Waterweg to find possible areas of tension and synergy that could be utilised to design a sustainable future for the Nieuwe Waterweg.

To do so, I turned to Alex. Alex was the first person I interviewed for this research. They are an expert on socioeconomic transitions and therefore a perfect source of information to start my fieldwork off with. Alex explained how an entire system can transition to accommodate a sustainable society.

> *Alex: There are actually two things to this: one is criticising the system, so current structures that seemed logical in the past, but looking at the impact they now cause together with what is now possible, they are no longer logical. But there's some kind of inertia in those systems somehow, [...] so we need an urgency to say "yes, sustainable development is not enough, we really need a system change."*

Here, Alex explains that we need two things before we can initiate transition. First, we need to acknowledge that the system created in a different time with different circumstances does not make sense in the logics of today anymore. For the Nieuwe Waterweg, the industrial development was long focused on sourcing and shipping fossil fuels which was very necessary and successful back then. But now, we are aware that these activities emit CO2 that contributes to climate change. At the same time, technologies exist that make fossil fuels redundant, such as hydrogen. So now, past logics do not make sense in this time anymore and adding some "green fringe," as Alex called it, is not sufficient to justify it in the current conditions. Secondly, we need an urgency to convince these policy makers of the need for a complete system change. The effects of climate change threaten the sea level to rise and weather to be more extreme in the future. This not only threatens the water safety of the residents of the area, but also the entire operations of the port. In this chapter, we will look back at how these actors have argued towards these two categories.

As we found in chapter one, the port has historically developed according to the interests of the city of Rotterdam and the State, who created and argued in favour of its spatial development policy through the promise of its poetic functions (Sennema 2021). When following the narrative of certain port actors in the previous chapters, we found that they disregarded or minimised the negative effects of their operations and justified it by emphasising the positives or comparing it to similar organisations that lacked in certain aspects. This is not simply because they deny the negative effects of the port, but

because they believe these effects are justified because of the great success of the political and poetic goals of the infrastructure (Larkin 2013).

Other actors, however, do critique the system. Actors such as nature organisation's Ezra and Han Meyer (2019) argue that prioritising the economic interest above all other human and nonhuman livelihoods involved in or affected by the landscape did more harm than good. They strongly believe that the system does not work in the current logics, and advocate for all actors to reconsider their evaluations of *just* relations between human and nonhuman actors as the negative effects are unjustifiable (Scaramelli 2019). Local government actors also adopt this nature-based ideology. They believe that widening the river and its banks, thereby restoring its estrual character, is not only ethical landscape use but also contributes to the functions the city requires from the river. The river is utilised as a tool to create both a safe and attractive urban pattern.

Some actors, however, are a bit more divided between these ideologies on opposite ends. Actors in national water safety management are mostly concerned with the water safety of the Netherlands. They are not necessarily concerned with what approach is taken to ensure it, as long as they have enough time to prepare the system.

The only actors expressing real criticism of the current system are the nature organisation actors. However, this is also the group that is most excluded from all policy making processes. While there are platforms – such as "Room for the River" and "The River as a Tidal Park" – where all these actors meet, their concerns are shut down as policy makers are looking to execute these projects in the short term and on specific locations. Guus, port authority actor, argues that change within the Port of Rotterdam is initiated by its CEO. They argue:

> *Guus: [Allard Castelein] is the big boss and you just see that he is the boss that initiates the transition we are currently in. The previous boss – well, boss, what a stupid word – was a boss who worked to get Maasvlakte II built, so he was, say, from the old economy. [...] Well, Allard Castelein still holds the position of CEO for another year and a half. So, the next boss that comes along, who is appointed by the supervisory board, must be the boss who will be primarily tasked to pick up where Allard has left off, to continue that transition. So that is what changes the port. It is mainly the leadership where it changes.*

Guus argues that the development ideology is implemented top-down in the Port of Rotterdam. As Guus mentioned, they have long thought through development from an old economy perspective. Therefore, Guus adds that "now we are at the point that we need external expertise." Alex mentions this dilemma as well:

Alex: And the second thing [is that] if you know that we get stuck with more of the same, well then we have to look for people or organisations that do things differently, or that also have an idea of how things can be done differently. And then these [people and organisations] should be brought together and develop power. Because in the end, transitions are also a kind of power issue: who has authority and who decides, who has the money. Well, and if you look historically, transitions are actually processes in which power shifts, and where there is resistance for a long time. But in the end, every power constellation will be broken. So if you persevere long enough, you will succeed.

Alex thus explains that transition can only come about when power shifts. The actors in charge of the spatial development policies are those who embody similar ideologies. It is therefore unlikely that they will decide to change the approach altogether, as they do not recognise the faults in the current system nor are they able to fully suggest another approach as it does not fit their idea of appropriate and ethical landscape use (Scaramelli 2019). However, as the current platforms do not allow for fruitful discussions between the actors, we need an extra motivation to change.

Building further on Alex's framework, there thus needs to be an urgency to challenge the inertia of the current system. Historically, we have seen that developments and technical projects are accelerated when confronted with disaster. Water safety management actor Beau jokingly suggests that this might be the key to initiate change.

Beau: A small disaster does help for a bit of urgency, as can be seen in Valkenburg now. Though I don't mean "small" disrespectfully, when it comes down to these kinds of things.

Beau thus argues that a natural disaster that has immediate visible effects helps in convincing policy makers of the urgency to create a system that will protect areas from future floods. They use the example of Valkenburg where the river Maas overflowed in 2021 when too much rain had fallen – an effect of climate change. This flood had disastrous effects as many people had to be evacuated and a lot of damage had been caused. Like the flood in '53, these natural disasters with disastrous effects require immediate action from water safety management (Pelling & Dill 2010).

However, this raises the question whether the argument Alex, Beau and Charlie are building is that the best way to press for alternative approaches is to frame them in terms of future disaster preparedness. And whether this is true or not, it might trigger societal intervention when residents of the area do not feel that they are sufficiently protected against dangerous high-water situations. Especially with the decrease in tolerance already evident in reputation surveys. Charlie elaborates on how they foresee this happening:

Charlie: Yeah, I think that, when it comes to climate mitigation, eh, as you rightly point out, that difference, that, yeah, maybe not climate laws, but society's response to discussions about climate change, that ultimately those offer the opportunities to use the Nieuwe Waterweg and the surrounding area differently.

Charlie thus argues that the societal response to climate mitigation efforts, the efforts to decrease emissions, might force policy makers reconsider their approach. Not because they are necessarily convinced of the injustice in their logics, but because public societal resistance obstructs operations. Fedde, also a national water safety management actor, calls this phenomenon "political momentum." With this, they mean to say that there needs to be both a strong minister that can convince the Dutch society of the urgency of a problem, as well as a serious response of society. This also has to do with the concept of "not in my back yard." Everyone agrees that the Netherlands needs to invest in more sustainable fuels and energy sources, but nobody wants a windmill in their backyard. But if enough people in society are convinced that the port of Rotterdam, an organisation that greatly contributes to global warming, is not doing all they can to minimise the effects, they might force the port authority to reconsider their approach. Whether the port then acts on these demands or not is not so much a question of whether they are willing to change their approach, but whether they are willing to lose the tolerance and symbolic value that they have worked hard to install in society over the last 150 years.

The question remains, however, whether the existing logics will be changed in time to prepare for the effects of climate change. Iben, local governmental actor, wonders:

Iben: It could be possible, eh, look, if you had to make a decision now, we're going to do that and then it might take you 50 years to create some more space, that could be possible, but that-. It is very difficult for directors to make a decision now on something that is very uncertain for the long term. Hey, if the sea level rise might slow down, then you might be able to postpone that decision for a long time, but if it goes much faster, for example, then you have to-, then there might not even be time left to work towards such a system.

The difference in short and long-term thinking thus becomes more immediately relevant. As we have learned in previous chapters, the Deltawerken have an expiration date. The Maeslantkering has to be replaced at some point. We are not sure yet when this will be, but Beau and Charlie expect it will be in at least 70 years. This depends on the specific effects of climate change, how much the sea level will rise and when we can expect these effects. However, the "working with water" approach as suggested by Meyer (2019) and Ezra, as Iben now highlights, will also need about 50 years until enough room is created. There is thus already a considerable urgency with which we need to think through the approach we want to take in the future.

It is hard for policy makers to invest in something that they do not know for certain they might need soon. This is called Giddens' Paradox (Giddens 2015). The effects of global warming, although visible, are not threatening the port's operations yet. Therefore, there is no urgency to prepare for these effects. However, when these effects will eventually sufficiently impact the operations of the port, it will be too late to prepare for it.

In addition, some actors have told me that these decisions will probably be made after they are no longer in their current positions. These observations were made by national water safety management actors Fedde and Charlie.

> *Fedde: So that is still considerable, such a decision [...] there are currently agreements about it, but really those decisions will be rediscussed after I no longer work here.*

And as Charlie stated:

> *Charlie: And I wish them a lot of wisdom by then.*

These arguments are not simply explained by a short- or long-term vision. Here, the concept of "not in my back yard" then also takes a temporal dimension. Rather than not claiming responsibility to carry out certain changes themselves in a spatial sense, both Fedde and Charlie carry over the responsibility of deciding on an appropriate approach to landscape alterations to other people.

CONCLUSION

The historical developments have been made within the logics of those times and have been so successful that they accumulated a symbolic admiration and pride from all actors. Therefore, policy makers still take the previous system as a starting point and reduce its negative effects with the energy transition and adding more green in areas that are not needed for port activities. But even though this system does not hold in the logics of the current time, they are not open to a system change. This is largely because the poetic and economic value is also used to justify the current approach even when it does not make sense in today's conditions. But the negative effects can no longer be overlooked and denied and there is sufficient knowledge to create a better system. However, policy makers do not recognise that the system no longer fits, making it hard to convince them otherwise.

To transition, urgency needs to be created to convince policy makers to change the approach completely. I started this chapter by quoting Beau and Charlie, who say that just arguing the technical facts is not enough to convince policy makers that certain measures need to be taken to continue to ensure water safety. Later, they argue that it might take a natural disaster to prove to them the urgency

of it all. But as the effects of climate change are not immediate, the responsibility of taking action is now often put off to future situations and next policy makers. Therefore, Alex argued that other perspectives, such as those put forward by Ezra and Han Meyer, should be persistent. Like Guus also said: transition requires a cultural change within the organisation, and the CEO is responsible for bringing about cultural change within the Port of Rotterdam, which might change the ideology from which they operate. Additionally, it requires societal pressure that can be sparked when the right arguments are made in the right time, creating political momentum.

So, by continuing to argue in favour of the working with water approach on the right platforms, together with the long-term developments continuing to develop and threaten the sustainability of the current approach, the urgency to transition will become clear. It takes just a few people who have the authority to put forward changes to be convinced of the necessity and do so instead of pushing off the responsibilities to next generations.

Moreover, as we found in the previous chapter, it is not that these actors arguing in favour of transitioning to another approach do not value the port activities. On the contrary, they too assign poetic value to the Nieuwe Waterweg. They argue that when the port transitions to the working with water approach, it can once again be the international frontrunner in the field of sustainability and water management. To establish an impressive, global example once again for facing the current challenges with and within the current logics. These poetic functions have been the core of all accelerations and barriers of change since before the construction of the Nieuwe Waterweg, 150 years ago. It is the collective value assigned to the symbolic effects a system brings about that has always connected actors and motivated development policies. Therefore, it is these symbolisms that need to be utilised to ultimately change the logics through which we redesign the Nieuwe Waterweg.

CONCLUDING REMARKS

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Port authority, local government, national water safety management, nature organisations and (port) development experts all valuate the Nieuwe Waterweg from their respective lifeworlds. Areas of tension arise during discussions of the *appropriate* spatial organisation of the Nieuwe Waterweg and the functions it *should* serve. These discussions are not about the political functions of the Nieuwe Waterweg, and which interests spatial development policy should prioritise (Larkin 2013; Star & Ruhleder 1996). Instead, these discussions arise between clashing ideologies of *just* relations between human and nonhuman actors (Scaramelli 2019). These actors have different valuations of how landscapes should be organised and why and justify their views using arguments of the poetic functions of the Nieuwe Waterweg. These valuations are emotional, deeply embedded, cultural feelings of ethical landscape use. My argument can best be concluded through paraphrasing Scaramelli (2019):

> *"The analytics of moral ecology illuminate the urgency through which [port actors] have tackled questions of environmental and infrastructural change. Understandings of ecology in [the port of Rotterdam] are mediated by the politics [and poetics] of large-scale infrastructure development, as well as by [temporal developments]" (Scaramelli 2019: 390)*

Aside from individual ideologies of ethical landscape use and the attempts to convince one another of their beliefs, temporal developments now increase the urgency with which policy makers should reevaluate the logics and systems through which they design the future of the port of Rotterdam. However, it is hard to do so when, aside from these different ideologies, actors do not discuss the future in the same timeline and places. Whereas port authority actors are mainly focused on decreasing their emission in order to slow the effects of climate change in the short term, all other actors are looking further into the future. These effects might be decades away, but they are inevitable.

What could be the key to convince policy makers to change existing logics through redesigning the Nieuwe Waterweg, moving away from an economy-first approach towards a "working with water" approach, is by calling upon the poetic function of this change. Since the project was first pitched, the construction of the Nieuwe Waterweg has been justified by arguing what it could represent symbolically. Back in the 19th century, there was a societal need for freedom and independence (Sennema 2021). In the aftermath of the devastating events in 1940 and 1953, there was a societal need to show resilience and feel protected against dangerous high-water situations. Today, the umbilical cord to the sea can once again represent the innovativeness and sustainability of the system, where green efforts are not only subordinate to but aid in achieving the political functions, and where we do not sit back and wait until the next disaster occurs to convince us of the urgency to change.

The obstacle, however, is the degree to which the symbolic value gets in the way of reconsidering alternative approaches. The huge successes of the port have created a deeply embedded inertia in the system that withstands changing logics. This research could therefore greatly benefit from an expanding, in depth view of how these sentiments construct openness to alternative approaches.

NEDERLANDSE SAMENVATTING

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De Nieuwe Waterweg. Een waterweg die als onderdeel van de Rijn-Maas Delta deze rivieren met de Noordzee verbindt. Een cruciaal onderdeel van de Nederlandse infrastructuur die door haar open verbinding met zee efficiënte scheepvaart faciliteert. Een groot natuurgebied waar zeldzame diersoorten voorkomen. Een levenslijn die de basis heeft gelegd voor de groei en het internationale karakter van Rotterdam. Een internationaal icoon op het gebied van waterveiligheid. Over slechts 7 kilometer waterweg kunnen al deze, en meer, beschrijvingen worden toegepast. Dat komt omdat een landschap wordt geëvalueerd door mensen vanuit hun desbetreffende leefwerelden. Iemand die werkzaam is bij een bedrijf gevestigd in de haven zal de Nieuwe Waterweg waarderen door haar scheepvaart faciliterende karakter, terwijl een ecoloog de waterweg zal beoordelen op haar natuurwaarde. De waterweg vervult functies voor zowel menselijke als niet-menselijke actoren. Het zijn dus niet alleen mensen die iets van een landschap willen, ook natuur ontwikkeld daar afhankelijk van de omstandigheden. Evaluaties van eenzelfde waterweg verschillen dus, ze zijn persoonlijk.

Conflicten tussen actoren ontstaan wanneer zij datzelfde, relatief kleine landschap willen (her)organiseren. Waar een haven actor pleit voor een verdieping van een aantal meter om scheepvaart beter te faciliteren, vindt een ecoloog dat deze juist verondiept moet worden om het natuurlijke karakter te herstellen. Echter gaan deze discussies niet puur over hoe diep de Nieuwe Waterweg zou moeten zijn of welk doel deze primair moet dienen. Deze discussies ontstaan omdat deze stakeholders verschillende morele evaluaties hebben over in hoeverre zij het ethisch te verantwoorden vinden dat er kunstmatige aanpassing aan een landschap worden gedaan. De haven actor beargumenteert de verdieping met de economische waarde en internationaal aanzien welke daaruit voort zullen komen. De ecoloog onderbouwt haar argument door de eerlijkere balans tussen menselijke en niet-menselijke actoren die eruit voort zal komen. Beide actoren gebruiken morele en emotionele termen wanneer zij hun standpunt verantwoorden. Er wordt niet gesproken over hoeveel economische winst wordt behaald, maar er wordt een beeld geschetst dat aansluit bij het collectieve “moderne” wereldbeeld waar veel Nederlanders naar streven. Ook de eerlijke balans tussen alle actoren gaat niet over het procentueel verdelen van de waterweg functies, maar over een toekomstvisie waar de mens niet alleen maar profiteert van een landschap ondanks dat de natuur hieronder lijdt. Dergelijke conflicten gaan dus niet over “hoe veel meter diep wil ik de Nieuwe Waterweg hebben?” maar “kan ik het ethisch en moreel verantwoorden naar mezelf en anderen dat ik de relatie tussen verschillende actoren (zowel mens als natuur) aanpas?”

Ook andere actoren gebruiken morele termen wanneer zij de Nieuwe Waterweg evalueren. Actoren van lokale overheid waarderen de Nieuwe Waterweg zoals deze nu is, ingericht voor scheepvaart, omdat deze heeft gezorgd voor de groei en het internationale karakter van de gemeenten aan de rivier. Nochtans ervaren de gebieden grenzend aan de rivieren regelmatig wateroverlast, waar met bouwmaatregelen op wordt geanticipeerd zodat de effecten niet desastreus zijn. Deze overlast wordt dus getolereerd door beleidsmakers omdat de emotionele connectie met de huidige functie zo sterk is. Natte voeten af en toe worden gedoogd. Toch betekent dit niet dat alle inwoners in gebieden grenzend aan de haven of rivier hier even vergevensgezind over zijn. Qua

waterveiligheid is het echter geaccepteerd. Actoren van nationaal waterveiligheid management geven aan dat het huidige systeem van dammen, dijken en waterkeringen het gebied voldoende beschermt tegen hoogwater risico's. Anderzijds is deze groep actoren niet zo gehecht aan de huidige functie waar de Nieuwe Waterweg prioriteit aan geeft. Zij zien verondieping als een valide optie voor de waarborging van waterveiligheid, maar zien dit niet snel verwezenlijken omdat dit zowel een kostbare als averechtse investering is. Het is juist het succes van de vroegere, economisch gerichte strategie die diep is gegraveerd in de manier waarop beleidsmakers ook vandaag de toekomstige ruimtelijke ontwikkelingen van de Nieuwe Waterweg ontwerpen. Deze strategie is dus opgezet in een tijd met andere prioriteiten dan de omstandigheden die we vandaag de dag ervaren.

Met deze scriptie heb ik de morele ideologieën – de verschillende percepties en opvattingen over ethische organisatie van menselijke en niet-menselijke actoren – proberen te onthullen waar vanuit actoren de ruimtelijke organisatie van de Nieuwe Waterweg evalueren. Deze ideeën worden vertaald naar het ruimtelijk ontwikkelingsbeleid van de waterweg door mensen die deze functies bekleden, ofwel naar contesteringen van dit beleid door actoren die hier niet bij betrokken zijn. Het doel van dit onderzoek is om een bijdrage te leveren aan ons begrip van waarom het moeilijk is om de logica's in de huidige beleidssystemen te veranderen. Dit heb ik gedaan door interviews te houden met stakeholders van dit gebied. Ik heb gesproken met actoren van nationaal water veiligheidsmanagement, lokale overheid, haven, natuurorganisaties en experts op het gebied van (haven)ontwikkeling. Tijdens deze interviews evalueerden zij de geschiedenis, huidige situatie, en ideale toekomstige ontwikkelingen van de Nieuwe Waterweg. Uit deze evaluaties heb ik kunnen reduceren hoe zij rechtvaardig landschap gebruik definiëren.

Uit dit onderzoek is gebleken dat conflicten tussen actoren dus niet oppervlakkig ontstaan tussen botsende ideeën over welke functie de Nieuwe Waterweg primair moet faciliteren. Deze ideeën worden ook niet uitgedrukt in harde resultaten zoals geld, procenten of meters. Het zijn de onderliggende morele evaluaties en ethische en emotionele ideeën over rechtvaardige relaties tussen menselijke en niet-menselijke actoren zoals bemiddeld door landschapsorganisatie die tegenstrijdige ideeën veroorzaken over hoe omgevingen moeten worden georganiseerd en waarom. Ondanks de onenigheid over de praktische functies van de Nieuwe Waterweg, prijzen alle actoren de symbolische, morele en emotionele waarde die het dient. De internationale reputatie op het gebied van havenactiviteiten, de associatie met waterveiligheid en het algemene symbool van innovativiteit is iets wat bij allen zwaar weegt.

Met blik op de toekomst zou deze gedeelde symbolische waarde wederom de sleutel kunnen zijn om de huidige logica's en systemen te contesteren en beleidsmakers te overtuigen van meer duurzame en geschikte toekomstige ontwikkelingen. We staan aan de vooravond van ingrijpende effecten van klimaatverandering waarop geanticipeerd *moet* worden. Rivierstanden worden lager en de zeespiegel stijgt waardoor we te maken krijgen met zoutindringing die de zoetwatervoorziening bedreigt en hoogwatersituaties worden dreigender en frequenter. De huidige strategie waar de haven en haar aandeelhouders zich vol inzetten voor een energietransitie is niet duurzaam, zowel op het gebied van vergroening als toekomstige omstandigheden. Er is noodzaak voor een systeemverandering. In plaats van de focus op optimalisering van huidige systemen om de scheepvaart ongestoord voort te zetten, kan Nederland met de haven van Rotterdam wederom een globale koploper zijn op het gebied van toekomstbestendigheid. Door te werken *met* water in plaats van ertegen te vechten wordt niet alleen scheepvaart

behouden, maar wordt de waterveiligheid gewaarborgd zonder de open connectie met zee te verliezen, wordt het stedelijk milieu aantrekkelijker voor inwoners omdat de rivier leefbaarder wordt, ontstaan er meer kansen voor natuurontwikkeling, en wordt de zoetwatervoorziening voor landbouw, wonen, drinken en industrie beschermd. De gedeelde symbolische connotaties aan de Nieuwe Waterweg moeten worden versterkt om beleidsmakers en aandeelhouders ervan te overtuigen dat de huidige strategie is gebaseerd op logica's van een tijd met andere omstandigheden. Door samen te werken met al deze actoren, maar ook alle andere menselijke en niet-menselijke actoren die invloed hebben op of ervaren van de rivier, kan de Nieuwe Waterweg toekomstbestendig ontwikkelen. Daarmee kan Nederland wederom een belangrijk internationaal voorbeeld zijn op het gebied van werken met de uitdagingen die de tijd brengt in plaats van ertegen te vechten.

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APPENDICES

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APPENDIX I: LIST OF INTERLOCUTORS AND ACTOR GROUPS

The (port) development experts I spoke to during my fieldwork are Alex and Daan. Alex is an expert on socioeconomic transitions, and Daan on port and economic development. They are both professors at a university as well as external researchers working with and for large corporations or governmental organisations. Their theories have shaped the way I approached all other data I have collected for this research, through their theories of "transition" and "the port as a mirror of society."

A crucial actor group included in my research is port authority. The individuals I met were Guus, Kris and Luca. Operating on different focus areas, Guus oversees the organisational aspects of the spatial development of the port, Kris focuses on the design and planning of the aquatic infrastructure, and Luca is responsible for the spatial quality of the dry areas of the port.

Another group is the local government. Therefore, I spoke with Hanne, Iben and Jules. Hanne and Jules concern themselves with the spatial quality of the city, mainly focusing on the livability which includes not only housing but also creating an attractive, vital and safe urban pattern. Iben is responsible for all things related to water, both underground in pipes as well as flowing through, and occasionally into, the city.

Regarding national water safety management, I met Beau, Charlie and Fedde. These actors operate on a national governmental level and ensure the water safety of the Netherlands.

Last but not least, I talked to Ezra from a nature organisation. Ezra manages a nature organisation and leads projects that reinstate natural processes in the Netherlands.

APPENDIX II: TOPIC LIST INTERVIEWS

Personal

- Occupation
- Education
- Link to Nieuwe Waterweg

Port's development until now

- How it developed spatially
- Opinion on development

Port's future development

- Ideal future development
- What needs to happen to achieve it

Actors

- Who are the actors in the area
- Other proposals
- Who decides

Closing

- Did I forget to ask anything that you would consider important to this subject?
- Do you have any questions for me?
- Who would you suggest I speak to about this subject?

APPENDIX III: LIST OF CODES USED TO ANALYSE DATA

Category "label encompassing both" (da Vinha 2017: 76)	**Main code** "defining property" (da Vinha 2017: 76)	**Subcode** "event or phenomena" (da Vinha 2017: 76)
General	Profession	[emic term]
	Core values	[emic term]
	Education & Professional experience	[emic term]
	Occupation	[emic term]
	Ownership and control	[emic term]
	Recommendations	[emic term]
Transition	Internal initiation	[emic term]
	External motivation	[emic term]
	Process	[emic term]
	Platform	[emic term]
Interests	Interests	[emic term]
Temporal developments	Temporal	[emic term]
Spatial developments	Spatial	[emic term]
Actors	Collaboration & communication	[emic term]
	Conflict	[emic term]
	Not in my back yard	[emic term]
Evaluation of the Nieuwe Waterweg	Evaluating NW	[emic term]
Ideal future development of the Nieuwe Waterweg	Ideal future NW	[emic term]