universität wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

Deep Water – Deep Doubts

Contesting Anthropogenic River Transformations

verfasst von / submitted by

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In partial fulfillment of the requirements for the degree of

Master of Arts (MA)

Wien, 2024 / Vienna, 2024

Studienkennzahl lt. Studienblatt / / degree programme code as it appears on the student record sheet:	UA 066 656
Studienrichtung lt. Studienblatt / degree programme as it appears on the student record sheet:	Masterstudium DDP Cultural Differences and Transnational Processes.
Betreut von / Supervisor:	Univ.-Prof. Dr. Peter Schweitzer
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CHAPTER 1:
INTRODUCTION

"Willkommen an der Elbe,
nach dreyzehnjähr'ger Abwesenheit
ich sehe du bist noch dieselbe!
Du suchst die schönen Seelen vielleicht,
die dir so oft begegen't
und mit dir geschwärmt
die Nacht hindurch,
in dieser schönen Gegend.

Das Leben verschlang sie, das Ungethüm,
die hundertköpfige Hyder';
du findest nicht die alte Zeit
und die Zeitgenössinnen wieder!
Du findest die holden Blumen nicht mehr,
die das junge Herz vergöttert;
hier blühten sie –
jetzt sind sie verwelkt,
und der Sturm hat sie entblättert"

"Welcome to the Elbe,
after an absence of thirteen years-
I see you're still the same!
Perhaps you seek the beautiful souls,
who so often have met thee
and ravished with thee
through the night,
in this fine riverside.

Life devoured them, the monstrous,
the hundred-headed Hydra;
thou wilt not find the old time
and the contemporaries again!
Thou wilt not find the lovely flowers,
That the young heart adores;
here they bloomed,
now they withered,
and the storm defoliated them."

Germany – a Winter's Tale
(Heine 2005 [1844], transl. by author)

Dissatisfied with the political conditions in Germany and fearing censorship, Heinrich Heine emigrated to France in 1831[1]. During one of his journeys from Paris to Hamburg in 1843, the German writer composed a satirical epic poem called *Germany. A Winter's Tale*[2]. By appealing to people's consciousness, it points to domestic and governmental flaws and criticizes society and politics of the time, which was commonly understood as an affront to German culture.[3] The verses above, however, speak of the Elbe River, its past and the future, of its dwellers as "beautiful souls" and of the beautiful banks full of "lovely flowers". They talk about the river's constancy, echoing messages of freedom and invincibility to river dwellers[4] and beyond. In short, this poem praises the river and its importance to life along its banks.

Nevertheless, today there is not much left of the constancy and immutability mentioned in the poem. The river was changed drastically after the German writer traveled along its banks. A new dike, a weir, and three nuclear power stations had been built, and a mechanical dredger had begun to deepen the riverbed, with many more to follow in the upcoming decades. In this way, industrial development had brought more and more silt, waste and decay into the river, polluting its clear waters and endangering marine life, fishing and agriculture; and the promises of increasing shipping productivity had caused not only the Elbe River but many of its tributaries to sink under sediment loads and accelerate their streams. The "beautiful souls, who so often have met thee" had to experience profound environmental changes. Thus, there are no visible remains today of the 'white water', as the river was called in Gallic times.[5]

At the end of the poem, Heine refers to a monster that devours life along the river. This is a common metaphor that can also be found in many songs, myths and legends of the sea. It sleeps on the bottom of the ocean, sometimes for decades, and suddenly awakens to wreak havoc along the coast, stirring up tempestuous storms through its exhalation. As the last verse suggests, the storm surges that come along with the monster have not just "defoliated" the "lovely flowers", but also repeatedly threatened the lives of river dwellers, destroying dikes and flooding villages, fields,

[1] As a baptized Jew, Heinrich Heine had no opportunity to work legally during that time.
[2] In German: *Deutschland. Ein Wintermärchen.*
[3] As early as in October 1844, few months after the book was published, it was banned and confiscated in Prussia. A warrant was issued for Heine's arrest in December 1844.
[4] Throughout this work, I use this term to refer to the individuals who live and work (and protest) alongside the Elbe River, unless otherwise stated.
[5] The name 'Elbe' comes from its Gallic name 'Albis', which derived from the Latin word 'albus' for 'white' (Meier 2014).

and farmland. By making space for the monster that sleeps on the riverbed, the dredgers are continuously energizing its power.

This thesis, like the poem, is about the Elbe River, its (im-)mutability, and the communities residing at its banks. Instead of lyrical poetry, however, it takes an anthropological approach, exploring the interrelationship between the river and its dwellers through the medium of water as well as the socio-political significance of water use (cf. Krause 2010: 2). The use of the river as a part of the global infrastructure network has led to the detriment and displacement of river dwellers. As affected people, they have become critical and are questioning the anthropogenic transformations of the riverine world that they inhabit (cf. Schmidt 2022). By focusing on local activists, the most central objective of this thesis is to examine the role of maritime infrastructure projects in shaping political engagement and vice versa. In what follows, we will therefore explore in what ways 'the deepening'[6] is contested by activists and how they relate to each other.

What may seem like a regional conflict is actually a significant case that illustrates the impact of progressive globalization on both people and nature. Although immensely extensive and complex in scope, the dredging operations are not unique occurrences. Large-scale hydraulic engineering projects have been and continue to be carried out worldwide with port authorities, governments, and private firms aiming to make ports and waterways more appealing to shipping companies. Typically, such projects have a substantial impact on the environment and are politically contentious (cf. Gellert and Lynch 2003; Carse and Lewis 2017).

Given that "the excavation of sediment from aquatic environments appears to be a prerequisite for modern shipping and, by extension, economic globalization" (Carse and Lewis 2020: 1), one aim of this thesis is to situate current issues and practices of the deepening and its opposition within a wider context. The historical importance necessitates multiple references to the longstanding relationship between the river and its dwellers as well as the authorities. Specifically, the study centers on the tensions between a self-governing, rural community that dwells in the marshland beside the river, and the growing metropolis of Hamburg, which sought to extend its control over the river to enhance its trade opportunities.

[6] Throughout this paper, 'the deepening' refers to the dredging activities carried out on the tidal Elbe as well as the corresponding water management measures, unless explicitly noted otherwise. The term also encompasses the capacity of hydraulic engineering to modify the river and its surroundings.

By specifically concerning the political activism associated with this hydraulic engineering venture, my thesis contributes to the anthropological discourse on the politics of contested infrastructures. It explores the transformation of politics and human-non-human relationships through human interactions with material entities. One aim is to shed light on the complexities of stakeholder engagement and the importance of considering holistic perspectives in infrastructure development.

However, the following chapter outlines the approach I will take in examining the relationship between humans and water, and between activists and maritime infrastructures. Afterwards, the research methodology will be explained and reflected upon, and the subsequent steps of this work will be delineated.

1.1 Bridging Disciplines: Framing the Approach

We inhabit a planet where the natural world is progressively altered by the cumulative effects of human activity. Whilst exploring the interdependence between humans and the environment, it became apparent that environmental issues have been widely recognized and addressed by scientists, but the implementation of their strategies has often been hindered by political, cultural, and economic issues.

In this context, most discourses on the environment (and particularly those of an economic nature) see it as a 'natural sphere' in which human beings are unbound and free individuals with rationality and moral awareness (e.g., Costanza 1991). This restricts the universe to a set of entities that can be categorized based on their inherent properties. Identifying seemingly static elements of our environment, such as mountains and woodlands, as objects is a relatively straightforward task. However, this assertion becomes more contentious when applied to liquids. Water, in particular, is an ever flowing and metamorphosing element that is crucial to all biological existence on the planet. It is therefore apparent to scrutinize concepts of the environment by dealing with water-related matters (cf. Krause 2010: 3).

Taking a wider view, the primary focus of this investigation is to explore the links between political activism and a contested hydraulic engineering project. This stands in contrast to doing the same in the context of anthropogenic interferences with solid grounds. I therefore assume that the

contestation of maritime infrastructure would reveal the ideas of human interdependence with it more emphatically than that of a 'land-based' infrastructure (cf. Strang 2006a).

Clearly, this thesis is situated within an environment characterized by an abundance of water and sediment and therefore marked by continual social and ecological changes, as well as intricate connections between them. It is an attempt of crystallizing links between things that seem distinct (Callon 1980: 211). It asks in what ways humans and their surroundings are one (interdependent) and in what way they have agency (independent). This echoes Ingold's "dwelling perspective" (2000, 2005), which sees our existence not as passive but as active inhabitants that engage with their surroundings (Krause 2010: 16). That would mean that people's thoughts and practices are inseparable from their environment (cf. White 1990; Harris 2000). In this context, the idea of the "hydro-social" (Swyngedouw 2009; Budds et al. 2014) comes to mind. By recognizing that social interactions and hydrological phenomena are intertwined, that the movement of water reflects political and economic influence, it acknowledges that human perspectives are profoundly influenced by the properties, quantities, and timing of water (Linton and Budds 2014; Ballestero 2019).

Concepts of landscape also focus on the social negotiation of existing realities and cultural representations of it (Hirsch 1995; Krause 2010). Landscapes can be seen as cultural representations (Daniels and Cosgrove 1988: 1) or as the world as perceived by those who dwell in it (Ingold 2000: 193). Given this duality, Bijker (2007) and Bakker (2012) recommend analyzing human societies through the lens of 'water cultures' (e.g., Paerregaard et al. 2016.), while other anthropologists propose studying maritime environments as 'waterscapes' (e.g., Randle and Barnes 2018; Peters 2020) or 'water worlds' (e.g. Barnes and Alatout 2012; Hastrup and Hastrup 2015). To establish a causal link to the Elbe River, I employ the terms 'riverscape' (e.g., Swyngedouw 1999; Cusack 2007) and 'riverine world'.

When exploring the political implications of the riverine world, the concept of political ecology also comes to the fore. Originating in the fields of geology and anthropology, political ecology has been used as a tool to analyze ecological issues from a range of different viewpoints (e.g., Kane 2012; Carse and Lewis 2020). Contrary to the human-centric focus of political economists, political ecology studies seek to transcend it by investigating multifaceted links between politics and non-human elements. Sallie McFague (1997), for instance, argues for a subject-subject relationship model between humanity and nature:

> "(…) [This] opens the way to speak of animals, trees and plants, mountains, oceans, and even the earth as a whole as subjects, as agents which both influence others and are influenced by them" (McFague 1997: 108, as cited in Hofverberg and Kronlid 2018).

Hence, researchers have expanded ontological and epistemological perspectives, incorporating relational viewpoints such as human-nature relationships (Hofverberg and Kronlid 2018: 955-956). Anthropological perspectives[7] that focus on the political agency of material objects, including infrastructure, often describe the agency of materials by moving away from conventional logo- and anthropocentric political categories (Laszczkowski 2023: 3). However, excluding terms such as 'power' or 'resistance' from anthropological analysis may restrict the discipline's ability to engage in political critique (Bessire and Bond 2014; Laszczkowski 2023). In this paper, an attempt will be made to reconcile them, as proposed by Knox (2017).

Furthermore, this thesis benefits from literature on geosocialities. This field of study investigates how geological forces limit and facilitate various social and political actions (e.g., Palsson and Swanson 2016; Clark and Yusoff 2017). More specifically, how hydraulic construction works consistently generate unintended ecological consequences that spark novel forms of environmental politics (e.g., Richardson 2016; Carse and Lewis 2020; Gustafson 2020). Exploring the deepening within this intricate milieu thus has immense potential in nurturing interdisciplinary dialogues across an array of fields encompassing hydraulic engineering, geomorphology, landscape planning, ecology, and human sciences (cf. Carse and Lewis 2020).

I am considering the riverscape as a network of both human and non-human agents (Kortelainen 1999: 235; see also Callon 1986). Hence, I have taken on a multisided perspective to explore the contested infrastructure site from the perspectives of environmental history (e.g., Cronon 1993) and actor-network theory (e.g., Kortelainen 1999; Latour 2007). The valuable knowledge that emerges from the integration of these is not only apparent in how certain environmental history studies rely on anthropological research (e.g., White 1996), but also in understanding how individuals' day-to-day activities and abilities change within the framework of broader economic,

[7] Specifically new materialist approaches, linked to the 'ontological turn' (cf. Jensen and Morita 2017).

(hydro-)social, ecological, and political shifts and networks (as proven by Harris in 2005 and Krause in 2010). To analyze the river, the infrastructure as well as its activists as a "hybrid assemblage" (Gurchiani 2023: 2), a focus will be placed on the historical transformations of the cultural and natural landscape of the Lower Elbe on their implications. Such an application of an environmental historical approach within anthropology emphasizes the ongoing interdependence between the river and its dwellers (Krause 2010: 16-17). It also recognizes the historical context in which most activists discuss their experiences and the current state of the Lower Elbe.

I envision that examining reciprocal relationships within a maritime infrastructure project could help to reveal the dynamic nature of our surroundings, demonstrating how they form through continuous rhythmic movements of people, water, and other components back and forth (cf. Ingold 2009a; Krause 2010). This could further highlight how ideas about spatial, political and socio-cultural unities align with the courses and dynamics of rivers (cf. Harris 1998; Oslender 2008; Krause 2010). As a result, my investigations centered not just on political activism in the context of the deepening, but also on the ramifications of river-related practices and inherent perceptions of the river itself as well as of wider socio-political and environmental events related to it. I began an investigation to examine the relationship between river dwellers and their environment and the incidents that have triggered and formed political engagement related to it.

Navigating Complexities: Methodological Framework

When considering that this investigation aims to share insights into a lifeworld deeply influenced by hydro-social dynamics, one must design research accordingly. But what effective methods can offer insights into the mutual relationship between a contested maritime infrastructure project and its activists? What distinguishes the lifeworld of people in riverine or infrastructural settings, prompting the necessity for distinct research approaches?

As noted by Andrea Ballestero (2019), the complex geography of waterways and their inhabitants necessitates a comprehensive approach that integrates precise ethnographic research with a broader spatial and historical context. It entails the utilization of "multi-scalar methods that trace flows of

water, sediment, animals, and people to capture the processes of hydro-social change inherent to them" (ibid.: 412). On the one hand, it is thus imperative to analyze the social and material movements that encompass water, sediments, notions, traditions, activities and aquatic life to fully understand hydro-social dynamics. On the other hand, it is critical to accompany interviewees in river-related settings to gain a nuanced understanding of context-specific actions in ever-changing, unpredictable hydro-social environments. It also involves what Juris and Khasnabish (2013) refer to as 'militant ethnography', where scholars openly align themselves with the movements they study (see also Laszczkowski 2019).

On these grounds, I moved to the *Old Land*[8] to explore the *deep water* and the *deep doubts* along the Lower Elbe. This region is located just outside of Hamburg, in the marshes, where much of the resistance is taking place. It is well connected and home to various organizations and initiatives regarding the deepening. After a couple of visits at the end of 2022 and the beginning of 2023, I lived in the *Old Land* from March 2023 to June 2023[9]. Throughout my time in the field, I participated in meetings and public events of the resistance. I undertook many field trips, during which I tried to gain as much insight as possible. Particularly the surrounding marshland served as a great entry point for my fieldwork because not only was it close to my accommodation, but it is widely considered to be a hub for political activists in the context of the deepening.

I explored the movement's dynamics, origins, claims, its modus operandi and its relationship to changing perceptions of the riverine world (cf. Gledhill 2012; Laszczkowski 2019). I examined official documents regarding the history of the river as well as its influence on the region and its dwellers. Much information was available at provincial libraries. I also kept a subscription to regional newspapers[10] for just over six months, carefully preserving articles that were dealing with the deepening, of which there were many. Considering that the constructed field is being understood as a multifaceted network, it turned out to be specifically useful to extend the research to virtual spaces as well (cf. Burrell 2009; Pink et al. 2016).

The main underpinnings of this scholarly inquiry though consisted of engaging in participant observations and interviews, participating in meetings, or embarking on excursions alongside those

[8] In German: *Altes Land*
[9] With few interruptions.
[10] Such as the *Altländer Tageblatt,* the *Hamburger Abendblatt* and the *Hafenreport.*

who oppose the deepening and who inhabit the riverbanks. The most informative technique for unfurling the correlations between infrastructure site and activists, however, was carrying out on-site explorations on foot or by boat. During the excursions, river dwellers acted as guides, directing me to sites of significance that held personal or communal value or were transformed by human impact (cf. Kusenbach 2003). It became clear that using one's own sensory body as a research tool (Juris 2008: 20) enables the experience of interpersonal affective links with others (Laszczkowski 2019).

Through the recollection of memories, activists converted experiences and emotions into introspective knowledge of oneself and the world (ibid.). According to Mateusz Laszczkowski, it is important for researchers to look beyond such narrative (re-)constructions:

> "(…) [A]ttending to moments of intensity in ways that convey their unmediated experience will help register the non-prefigured affective sources of resistance. This might be a matter of combining narrative collection with first-hand participation when and where possible, but more fundamentally of ethnographic writing that eschews the reduction of affective intensities to clearly defined mental states and embraces the stochastic nature of confrontational events." (ibid.)

Furthermore, I participated in other activities and events, such as dike observations. This was because my focus was not fully settled at the beginning of the research process. As a result of this inductive research approach, from the outset I sought a comprehensive examination of the multiple facets of the contested infrastructure site. Although certain gatherings were not directly relevant to my research objective, they still contributed to my understanding of the subject matter and allowed me to network with relevant individuals.

Furthermore, it was advantageous to constantly reflect on the current state of data collection. I engaged in ongoing discussions and exchanges of ideas regarding my approach with insiders and outsiders[11] of the research field. That is also a reason why I adjusted the focus of my work a few times to make my objective more feasible, based on the data that emerged (cf. Mason 2002). Thus,

[11] Here, I distinguish between insiders, who are familiar with the Lower Elbe and its deepening in some way, and outsiders, who are not.

a key principle throughout this stage of the research has been to remain open and flexible. It has been fundamental in the discovery of previously unknown phenomena and facts, which may have otherwise gone unnoticed (cf. Karras 2017: 41). On top of this, it is noteworthy that I enhanced my fieldwork with the aid of digital technology (cf. Pink et al. 2016). With the mobile phone monitoring movements, boasting a camera and an incorporated memo feature, I documented my journeys, discoveries and dialogues in the field.

1.1.1 Voices along the River: Stories and Struggles of Activists

On numerous occasions, I engaged in interactions with dozens of activists[12], and with some even more than once. By the end of my last field trip, I had established professional relationships with various interlocutors, gatekeepers and other informants who have helped me with my investigation and soon also became close acquaintances.

Considering that there are "a multitude of possible ways to define the connection between researcher and researched" (Burrell 2009: 194), I always tried to be as neutral as possible with my position within the field as well as my research objective. Generally, I did not have an uncomfortable feeling at any time in the field. Instead, I was always warmly welcomed by the people involved. This may have been the case because, perhaps, I was identified as a participant, sympathizer, or as an auditor shedding light on the issue.

After all, I have conducted eleven informal and four formal in-depth and /or expert interviews with river-dwelling activists. In May 2023, I interviewed three members and chairpersons of the 'Regional Alliance against the Deepening': Walter, Claus, and Ernst-Otto. Walter, the head of the Alliance, is a former hydraulic engineer and an expert on the deepening as well as its natural, historical and political ramifications. Ernst-Otto, a former marine engineer, seaman, activist, and co-author of a book about the deepening, is another expert I interviewed. Claus is a farmer from the Old Land who has organized several protests and is an expert in dike security and flood control. Additionally, interviews were carried out between April and June 2023 with other supporters and participants of the resistance, such as agriculturists Hartwig, Susanne, Kathrin and Kerstin, student

[12] In this paper, the term 'activist(s)' is used to refer to individuals who take action against the deepening.

Steffen, fisherman Lothar, seaman Jan, as well as nautical pilot Frank, all of whom were affected by the deepening in one way or another. Other interlocutors

The interviews were conducted in person, either at their homes or in alternative settings, such as the river and its banks, or by telephone. My questions tended to focus on the interviewees' personal connections to the river and the changes they had witnessed, as well as the background stories of their political engagement, so I adopted an exploratory approach. To ensure participants had ample opportunity to share their motivation and experiences as opponents of the deepening, interviews were conducted in an open or minimally structured format (cf. O'Reilly 2005: 116 ff.). German was the main language of communication to promote linguistic fluidity and a comfortable environment.

Beforehand though, I ensured that everyone was aware of and consented to the fact that I was recording most of the dialogues, following the principle of prior and informed consent. However, some participants were reluctant to permit the use of recorded data, or selective aspects thereof, due to concerns over privacy or emotional sensitivity. Notably, one individual requested the removal of the recordings[13], and I complied with their request. Beforehand, I was aware that the field was filled with suspense and emotion. However, I did not anticipate the extent to which this would be present. Thus, the actual scope of the etic investigation only emerged in the course of the research process (cf. Witt 2001), meaning that I had to adapt my research. Yet the more time I spent with the people concerned, the more I understood their frustration and anger. This, along with the readings of Laszczkowski (e.g., 2019; 2020), helped to further realize the actual scope of the deepening and its contestations.

1.2.2 Analytical Framework and Reflections

When river dwellers share their stories, they follow the course of their own experiences through different locations, along with impactful events and in relation to other people, thereby embedding their personal journeys into the intricate entanglements of hydro-social existence (Ingold 2007a). Hence, such stories serve to connect places, environments, activities, events and encounters, to

[13] Due to personal reasons.

bring together disparate elements into a unified whole (Tilley 1994: 32). Therefore, the analysis of the datasets should involve what Karen O'Reilly (2005) succinctly stated as follows:

> „Making some sense of it all (…). It is summarising, sorting, translating and organising (...). It involves exploring deeply to see what is there that might not be obvious, standing back to see what patterns emerge, thinking and theorising to draw conclusions that can be generalised in some way or the other" (O'Reilly 2005: 184).

For this reason, the recorded dialogues were transcribed, the quotations translated, and the collected aspects systematized with the help of various software programs specifically designed for this purpose. Eventually, the collected data was openly, axially and selectively coded and analyzed according to a dimensional analysis. These time-consuming multi-faceted analytical steps turned out to be particularly worthwhile, as the multitude of characteristics and dimensions of the research became much clearer, thereby clearing the path for new interpretations. Furthermore, during the analysis, contradictions or missing information became apparent in some parts of the data collection. I therefore had to carry out further research to subsequently check the consistency of various statements. It became clear that the entire data material should be contextualized and scrutinized with accuracy to be able to adequately comprehend and interpret each individual statement. It was very important to look at the data "through multiple lenses" (McCormack 2000: 295).

In the process, I have come to realize that not only the data collected but also the results are highly dependent on the thoughts, notes and questions of the researcher. As I examine the correlation between infrastructure and humans in political contestations, I construct my ethnography from narratives and direct bodily experiences in relation to the infrastructure site. This approach presents a rather unique method of generating ethnographic knowledge (cf. Laszczkowski 2019). Some would argue that a study grounded in stories and active involvements cannot quite be regarded as statistically firm. Indeed, the portrayal of the occurrences along the Lower Elbe that I am going to depict is inherently positioned within its specific context (cf. Bourdieu 2003). Perhaps, though, acquiring knowledge and understanding can only be gained from a particular perspective that is firmly rooted in personal and interpersonal engagement (Jackson 1996; Ingold 2000). By

genuinely adopting this perspective, this thesis offers an account of the antagonists of the deepening that is linked to its temporal and spatial context rather than definitive or generalizing in its assertions. Nevertheless, this approach is by no means discretionary.

Thus, it was fundamental to pay special attention to my own subjective assumptions, expectations and objectives (McCormack 2000: 287). I have obtained an assumed role as a selector, which meant that the fundamental decisions to include or omit certain findings was mine alone. Whilst much effort has been made to make the data collection as objective as possible and free from other influences, any such attempt to generate data is bound up with subjective, culturally shaped perceptions and social skills. In view of the plurality and diversity of the phenomena of empirical reality, my conception of the field, for instance, was shaped by my own field approaches. It is therefore relevant to consider the impact of researcher and participants on ethnographic fieldwork (cf. Gobo 2007).

Thus, in anthropological literature, there is an increasing recognition of the knowledge production practices of research participants, which is essential for contemporary research on social movements (e.g., Razsa 2015; Laszczkowski 2019). Accordingly, social movements and their participants generate knowledge, engage in critical reflections, and develop theoretical ideas about the world and the ways in which it can be altered in their own ways (Juris and Khasnabish 2013: 69). However, expressing these can be challenging, as experiences and understandings are difficult to put into words; yet they can still be comprehensible and convincing. When shared among others, they even have the power to deeply resonate with many individuals, eliciting a strong emotional response (Laszczkowski 2019).

Furthermore, it would be within the realm of possibility that my incentive, i.e., the enthusiasm towards maritime topics, could have an influence on the study. As someone who grew up sailing near Hamburg, I can understand the informants' perspectives on various levels. Throughout my research, I have thus found myself in agreement with the protestors concerning the wider political and ecological implications of the endeavor. Therefore, my study does not seek to establish right versus wrong but instead focuses on the dynamics of the opposition, its relationships with other actors and the infrastructure site itself. But whatever the motivation behind the research, it is ultimately crucial to add an additional perspective to the ethnographies and other thematic debates that exist to date (cf. Laszczkowski 2019).

1.2 Overview

Before we delve into the details behind the contested infrastructure site, it is important to put the occurrences into context, within anthropology, its theories and beyond. That is why I will first introduce the main theme of this thesis, which is the mutual relationship between nature and humans. The inherent focus on water is accompanied by concepts of the 'hydro-social' as well as 'flow' and 'friction', which will guide this entire work. In the process, I will also refer to and discuss relevant literature on the field.

Afterwards, I will familiarize the reader with the Lower Elbe in order to gain an overview of the research field. In order to truly understand both the origin and the expression of *deep doubts*, I will also delve into the ways that people interact with the river from a historical perspective (Ingold 2000: 290). Given that opposition to the deepening has its origins in the marshland and continues to take place there, this section provides a valuable insight into the issue. Examining the historical and contextual background can aid in the analysis of how various properties are manifested in rivers and infrastructure (cf. Humphrey 2005; Larkin 2013; Hetherington 2018; Gurchiani 2023).

Another focus is placed on the transformative effect of the growing Port of Hamburg and its connotations for the Elbe River. By placing the deepening and the river dwellers in their historical context, I show how historically conditioned powers, ranging from infrastructural to cartographic politics, have encouraged and discouraged particular livelihoods and associated ways of relating to the river. This resulted in developments that continue to shape the riverscape, paving the way for its contemporary relevance in a global infrastructure landscape.

Given the prevalence of hydraulic dredging operations around the world (cf. Carse and Lewis 2020), the interrelationship between the deepening and its opposition cannot be understood without also understanding wider changes, e.g., in the maritime transport sector. Hence, this chapter also investigates the driving forces behind contemporary endeavors, emphasizing the integration of the river into the global infrastructure and associating it with environmental impacts and management strategies. The information presented here is based on scholarly articles, scientific reports, and official documents from reputable organizations as well as from contemporary witness reports.

In what follows, I begin by describing how river dwellers are affected by the deepening and what prompted them to get involved in political action. By presenting the river and its inhabitants

through their stories, I illustrate how government policies have both enabled and constrained (Bissell 2016) specific livelihoods and corresponding relationships with the river. Hence, this chapter paints an inverse portrait of the hydraulic engineering project, seen not through archival sources but mainly through the lenses of river dwellers and other concerned people.

On the basis of this, we will then delve into various contestations that have arisen in response to hydraulic construction measures on the Elbe River. In this critical section, we will explore legal disputes, their development as well as the political activism that has developed around this infrastructure project. Throughout, my focus will lie on the interrelationship between nature and humans as well as between maritime infrastructure and political activism.

Based on ethnography and archival work, I want to examine what Ashley Carse (2014) means, when he persuasively writes in his examination of the Panama Canal, that "infrastructures produce [and shape] environments, and vice versa". To really understand how this mutuality develops over time, it is necessary to 'dig deeper', to refocus one's attention "Beyond the Big Ditch" (ibid.). On the basis of this, we will take a deeper look into the personal and sociopolitical embeddedness of the activists, while investigating the ways in which politics' material effects intersect with their lives. In this way, this paper aims to provide a comprehensive analysis of a disputed maritime infrastructure project to enhance a deeper understanding of its implications and interrelationships. This will be the basis for the final conclusion.

CHAPTER 2
Human-Water Relations

The importance of water to human life is undeniable and has received considerable study and attention in the past (e.g., Schwenk 1965; Riegner 1989; Shiva 2002; Barlow and Clarke 2003; Toussaint 2013). However, the perception of water has changed over time, from being viewed as a divine entity in antiquity to being regarded as a purely physical substance in modern times. Without a thorough consideration of the interrelationships and contextual factors in play, a complete understanding of the vital significance, vastness, and consequent influence of water is unachievable (Schwenk 1970).

Water is an inevitable element that greatly impacts not only physical environments but also social interactions. Anthropologists have therefore extensively explored the complex intersections between water and humanity by emphasizing the importance of the hydro-social (e.g., Wesselink et al. 2017; Ballestero 2019). Krause et al. (2017) write about water as "a vital substance biologically as much as socially" (Krause et al. 2017: 1), noticing this in:

> "(…) the rhythms of floods and tides resonating with fishing techniques and conflict patterns; inundations carrying moral and political weight as much as water and pollution; and particular mixtures of water and land generating wealth, anxieties and memories." (ibid.)

Thus, water transcends the status of a mere object in hydro-social relations (cf. Riegner 1989); by being subject to claims, imbued with meaning, and the cause of political disputes, it goes beyond being a simple natural resource (cf. Bijker 2007). It embodies a multi-faceted existence (Krause and Strang 2013):

> "Simultaneously an element, a flow, a means of transport, a life-sustaining substance, and a life-threatening force, the subject, object, and often the very means of social and cultural activity (…) water inspires novel ways of thinking about key aspects of social

> relations, including exchange, circulation, power, community, and knowledge" (Krause and Strang 2016: 633).

The realm of water and its relations challenges established presumptions concerning nature and resources, prodding us to question the conceptual and material boundaries and stability that we impose upon them (Schwenk 1965). This process, in turn, enhances our understanding of the multifaceted dimensions—both human and non-human—involved in their creation and sustenance (Krause and Strang 2016). Embracing this interconnectedness allows us to delve deeper into water's significance in human social existence:

In ancient times, individuals perceived nature as divine entities; the embodiment of a deity. This is clearly demonstrated in Homer's Iliad, which dates back to the 3rd millennium BC. Achilles engages in combat with the river Maeandros in front of Troy. This confrontation with the tumultuous waters is portrayed as a fierce struggle between the hero and the wrathful river god. Afterwards, human civilizations continue to encounter the influence of the divine in the waters, however, the deity himself no longer manifests; the waters serve as their abode and arena. During this time period, reverence for bodies of water remained common, with a clear differentiation between the physical water and the deity in charge of it. This is exemplified in the figures of Greek Poseidon and Roman Neptune, as well as in Psalm 104 of the Bible (cf. Schwenk and Schwenk 1989).

Such encounters with divine beings in the water fade as time goes on, until all that remains is the recognition of their work. People no longer looked to the divine for the causes of motion, but rather believed that they could grasp the causes themselves and thus manipulate them as desired. The technical expertise that they acquired and with the help of which they saw themselves as God's successors in mastering nature itself was initially used as art[14] and not, as is the case today, for economic benefits and conveniences of everyday life (ibid.). Hence, the divinity of natural processes, which people once recognized as the work of gods, has now largely been forgotten. Most people think of water as a commodity that is always available. So, how can we reconsider and redefine the connection between people and water in today's world?

[14] For park design and architecture.

When subjects or objects are viewed as separate entities from their surroundings, or only in terms of their individual identities, their interconnectedness is not fully recognized. This can lead to a disorganized world with isolated entities that are far from our own. Thus, many current urban considerations of water do not fully acknowledge its inherent connective and transformative character. Water is commonly seen as a sterile compound, as H_2O (cf. Illich 1985; Krause 2010: 6-8). Sometimes, though, the fundamental concept of fluid movement shaping people and objects persists. By arranging mental images and dissolving rigid structures, water can assist the imagination in unveiling and assimilating this concept (as seen in *Figure 1* and *2*)[15]. It also

Figure 1

Bird's Eye View of the German Wadden Sea,
on a Scale of 1:500 000 (Diercke Weltatlas 2015: 33).

Figure 2

A copper engraving of the 17th century, depicting a comparison of human arteries and water flow (Sachs von Löwenheim 2023).
In Taoist philosophy in China, water was considered as the "blood of the world" (Schwenk 1965).

[15] The water flows in tidal terrains resemble organic formations and structures, such as veins or plants. The shapes that emerge in this way are only considered permanent when we imagine them to be so or when they are photographed. The moment they are created and observed, they are already in a state of flux, where formation and transformation persist indefinitely, as long as movement ensues. Once the motion subsides, the shapes vanish. To comprehend this constant transformation is in the essence of water (cf. Schwenk 1965).

contributes to a continuous interweaving of mental images, freeing the mind from fixation on distinct physical entities (Bachelard 1983: 12). This is when thinking in terms of stable states and objects is replaced by thinking in terms of flows. This is when hydrological and social perspectives are amalgamated. This is when we are urged to perceive relationships through the lenses of water (cf. Krause 2014; Krause and Strang 2016; Krause 2019).

2.1. A Glance through the Lenses of Water

Numerous scholars have conducted research on the history of water relations in different eras and settings (e.g., Illich 1985; Schama 1995; Bergua Amores 2008; Helmreich 2011). While some emphasize recent transformations concerning hygiene and pollution, others depict communities skillfully managing complex irrigation systems in the past, as exemplified by Leach in 1961, or explore the socio-cultural complexities associated with irrigation in the present, as demonstrated by the writings of Lansing in 1991 and Mosse in 2003. Thereby, they shed light on how often certain people have framed and manipulated water for their own benefit.

Many scholars in the field frequently employ a political ecology framework, concentrating on power structures and narratives that create an inherent sense of natural inevitability in how water is perceived, utilized, and accessed (e.g., Lansing et al. 1998, Potkanski and Adams 1998; Swyngedouw 1999; Kaika 2003; McAvoy 2006). However, some written works also delve into the rich socio-cultural and material ramifications of living and interacting with bodies of water (e.g., Linton 2010; Barnes and Alatout 2012; Hastrup and Hastrup 2015).

Examinations with a heightened focus on the nature of water encompass a wide range of scholarly endeavors. These often concur that social relationships extend beyond mere human connections; they comprise of interactions with animals, places, objects, and materials, which play an active role in shaping and developing human relationships (Krause and Strang 2016: 634).

Veronica Strang observed that engagement with water yields meanings that show congruences across cultures and historical periods (Strang 2005a). Therefore, a constant theme in her research

is the complex interplay between water management, material artefacts and social hierarchies (as elaborated in 2004: 129-192, 2005b, 2005c, and 2008a). This upholds Krause's (2023) argument that water management profoundly affects its dwellers. Such conclusions stem from the recognition that water has unparalleled integrative potential, both in the tangible sense of uniting communities along a watercourse, and in the metaphorical sense of profoundly affecting individuals in different ways (Krause 2010: 6).

Furthermore, scholars have described the intricate alterations that occur to and around water when it becomes incorporated into acclimatization or commercialization systems (Strang 2005c; 2006c; Krause 2010). Water is an indispensable component not just in manufacturing goods but also in shaping the identities and affiliations of those responsible for their production (cf. Strang 2006b and 2008b). Water is closely linked with social and political concerns, not only because it sustains livelihoods and supports production processes, but also because the communal nature of its usage requires collective responsibility and consideration, as it has significant implications for both nature and people (cf. Strang 2004; 2006b; Krause 2010; 2017). Managing water could therefore be seen as a means of managing oneself.

In another volume, Strang (2009: 3-4) summarizes that what she sees as the culturally and historically pervasive significance of water is that water is universally perceived, in the broadest sense: as the core of social and spiritual existence, as the source of both individual and communal agency and prosperity, and "as the fluid manifestation of literal and metaphorical processes of change and transformation" (ibid.: 4). Thus, "further intensity is given to conflicts by the powerful and emotive meanings encoded in water" (ibid.: 3).

Another intriguing perspective on the study of human-water relations was put forward by Jarmo Kortelainen in 1999. His approach involved a nuanced examination of the use of a river through the lens of an actor-network theory and is thereby providing means of understanding the river as an intricate system of diverse actors that shape the river's multifaceted dynamics (Kortelainen 1999: 237). But water holds greater importance than 'simply' serving as a unifying factor between humans and their environment. Water embodies both a tangible and metaphorical flow that constantly (re-)shapes social and ecological landscapes (see Ingold 2007b, 2009b; Krause 2010). Rather than suggesting an unchanging state within a world of fixed entities, it offers an entirely different way of conceiving materiality.

In attempt to connect water as both a physical and metaphorical element, Veronica Strang distinguishes between materially based places and a socio-cultural realm dominated by flows. This recalls Harris' (2005) and Krause's (2010) researches, which assert that individuals engage with water not only by floating on it or consuming it, but above all by 'immersing' themselves in its rhythmic currents and directing their attention and activities towards its ongoing fluvial dynamics. Instead of categorizing it as an object or a substance, the concept of flow arises as the fundamental nature of water (Schwenk 1965).

In essence, studying the deepening through anthropological 'lenses of water' hinges on two interconnected facets of water. Firstly, it embodies the nature of a communal essence, both physically and metaphorically. This concept underpins notions of belonging within oneself as well as specific natural and cultural settings. Moreover, it emphasizes the interconnectedness of different entities and configurations, as water is part of and flows between many things that are typically considered separate and distinct. This leads to the second facet, its fluidity. With its characteristic rhythms and transformative power, it has specific implications for human activities and has served as the basis for symbolic interpretations that contribute to a better understanding of existence (cf. Krause 2018).

2.2. Flows and Frictions

Where water is active in nature, processes occur rather than static states (Schwenk 1970). Considering the immense presence of water and water management, I suggest that it can be fruitful to perceive the world from the perspective of continuous movement and fluidity, as opposed to the perspective of permanence and solidity. If we consider this, then an anthropological study of a rivers' contested infrastructure and its mutual interrelationship, inspired by the works of Krause, Harris, Ingold and Strang, could provide valuable insights. Particularly rivers are both formidable expressions of ceaseless movement and significant centers of human habitation:

> "Tectonic plates shift across a rotating globe, whilst mountains form and are gradually worn away by the oceans. Glaciers constantly grow and shrink, and in this never-ending cycle of nature, rivers stand out as some of the most prominent dynamic features" (White 1996: 3).

Rivers serve as catalysts for the development of cultural artefacts and the formation of identity (cf. Cusack 2007). They offer insight into historical events and serve as transportation routes, sources of sustenance, as political borders, sites of trade and industry, stages of calamities, and settings for art and literature (Dannenberg et al. 2006: IX). Living by a river means paying attention to its rhythmic fluctuations (Harris 1998; Krause 2010) and inhabiting a world imbued with the auditory (cf. Feld 1996; Levin 2006), visual and tactile elements of the river (Strang 2004; 2006a). It involves a profound awareness of its ceaseless progress and transformation (cf. e.g., Shields 1997; Strang 2006b; Krause 2023):

> "As the water rushes (…), it carves rock and gravel; it deposits silt on slow turns; it switches courses and breaks earth dams after a sudden storm. As [it] (…) flows, it makes and remakes its channels" (Tsing 2000: 327).

Thus, scholars have discussed the notion that socio-cultural dynamics, particularly in terms of geographical connections and shifts, can be thought of as meaningful flows (e.g., Shields 1997; Krause 2023): "Flows signal pure movement, without (…) a point of origin or a destination" (Shields 1997: 3).

This aligns with Tim Ingold's contributions, presenting a new perspective on the connections between people and the environment in which they live. Our surroundings should not be considered static and confined. Rather, they are shaped by constant motion, including that of people and animals, and have no borders; he calls it the "Politics of Dwelling" (Ingold 2005). In his work, life is not regarded as a sequence of interplays between subjects and objects but rather as a continuous dispersal of motion through and between humans and nature. We should therefore view people, locations, and objects as integral parts of the environment (cf. Ingold 2005: 506-507).

However, concepts related to water flow can also be found beyond the scientific scope, in public media. One of the most famous works is probably Mark Twain's book about the Mississippi River

(1950 [1874]). It is filled with descriptions of the ever-changing nature of water, riverbeds and courses, and the unpredictable mischief they wreak on navigation, settlements and various human activities along their course. Besides notions of connection and disconnection, life on the Mississippi unfolds as a constant process of change, where the ever-shifting routes of the river, the rapid advancement of transportation technology, and the life stories of individuals all intertwine (cf. Krause 2010: 10-11).

Furthermore, in Norman Maclean's classic "A River Runs Through It" (1976), the author recounts his family's fishing experiences in the United States. However, he seamlessly interweaves the family story with the rhythmic flow of the waterways and their interactions with the fish that inhabit them. His narrative concludes with the frequently cited reflection that:

> "(…) in the Arctic half-light of the canyon, all existence fades to a being with my soul and memories and the sounds of the (…) River and a four-count rhythm and the hope that a fish will rise. Eventually, all things merge into one, and a river runs through it. The river was cut by the world's great flood and runs over rocks from the basement of time. On some of the rocks are timeless raindrops. Under the rocks are the words, and some of the words are theirs. I am haunted by waters." (Maclean 1976: 104)

Even beyond these well-known river tales, the topic remains relevant, and multifaceted notions of water flow, symbolizing the interconnectedness of river and dwellers, continues to be a core element. Consider, for example, anthroposophical and esoteric ideas about water, which emphasize the importance of the flow of water to the world by highlighting its role in the hydrological cycle and in the human body. Thus, Austrian author and occultist, Rudolf Steiner, extensively explored the properties of water in the last century. Although his writings have been subject to significant scrutiny (see e.g., Husmann-Kastein 2007: 22-29), they suggest the existence of elements in all life on earth:

> "(…) if the hierarchical nature of the laws of the elements is understood, it is apparent that they are not only present in the exterior world of natural phenomena (macrocosm), but also wield dynamic and formative influences within individuals (microcosm). The elemental forces reside within every human; the earth element in the bones, the water

> element in the blood circulation and bodily fluids, the air element in the breath and the fire element in his thoughts and speech" (Steiner 1987: 233, transl. by author)

According to Höyng (2018), this is recognizable, for instance, when we return from nature with a sense of refreshment. When we bring our experience into our consciousness, we realize that the direct encounters with earthy, watery, airy, and fiery elements have enlivened us. Our whole world is woven from the elements - they interpenetrate each other subtly and always work in living, mutual contexts. Experiencing the various aspects of the elements provokes a direct emotional response and provides prompt inspiration and stimulation (Höyng 2018).

River dwellers are thus accustomed to a coherent environment that shapes, manages, and animates their actions as well as the dynamics of the natural world. Processes like fishing and transportation show recurring patterns of varying busyness throughout the year, week, and day. With natural patterns of change that significantly impact life along the riverbanks and beyond, it becomes evident that rhythms both affect and are affected by their environment (cf. Mauss and Beuchat 1979; Leopold 1994; Harris 1998; Lefebvre 2004).

According to Wilkes (2001), rhythms are ubiquitous in the environment and thus crucial for existence. Water, in particular, serves as a sensitive carrier and mediator of these rhythms. According to the author, surface, proportions, and rhythms are interconnected and arise from resistance rather than a mechanical process (Wilkes 2001: 34-51). In this context, Lefebvre (1991; 2004) proposed a structure to examine rhythms as indivisible from time. Instead of focusing on the objects and products of social and material life, the author analyzed the underlying rhythmic processes that underlie and transform them. Thereby, he clarified that specifically in relation to the human body do some processes appear dynamic and others static. Sediments, for instance, may appear inert, although they are momentary phenomena resulting from a series of interrelated rhythms of building, erosion, and the general flow of materials (Krause 2010: 242-243). Hence, comprehending the underlying patterns behind fleeting moments of the 'present' can lead to a better understanding of the social and ecological world (Ingold 2000: 200-203).

Based on multiple and interlocking rhythms, such an approach is suitable for studying the socio-cultural and ecological processes that make up a river (ibid.). Because, in addition to their temporal dimension, rhythms also have a spatial aspect (Lefebvre 2004). This is critical for examining dynamics along the Lower Elbe. As the tides and the processes of erosion and sedimentation are

rhythmic, it is central to find out about the role of the deepening and its contestations in this context.

What is more is that Lefebvre's approach was aimed to reveal hidden rhythms that are often overlooked, pointing to politics of clashing rhythms (Merrill and Lindgren 2018: 660-661); or the state, in which different rhythms cannot be reconciled, which is also relevant for the hydro-social dynamics surrounding the deepening. Yet, his approach appears rather generalized, with little regard for the processes that coordinate the different forces (Krause 2010: 242-243).

However, in considering how thinking and engaging with such a world full of flows can be related to rhythmic patterns and movements, for now it is crucial to recognize that these processes are interdependent. Interwoven with power structures and rhythms, they are constantly shaped and framed by other ongoing processes. The flows erode the riverbed and -bank, constantly shift all kinds of materiality, thereby constantly posing new challenges to dwellers. They inherently involve some degree of 'friction' (Tsing 2005).

To gain a complete understanding of it, it is important to acknowledge that friction is a constant force in our daily lives. Walking, for instance, would solely consist of sliding without friction. When the underlying principle of this concept becomes apparent, one can even see that all matter requires a context other than itself to be productive. Geertz (2000: 12) claims that even thinking necessitates "traction", which originates from real-life interactions (Krause 2010: 269): "Friction is not just about slowing things down. Friction is required to keep global power in motion" (Tsing 2005: 5-6).

Incorporating Tsing's emphasis on friction into Lefebvre's comprehensive rhythmic analysis helps to grasp the intricacies and influences of colliding rhythms in daily life. In such scenarios, power manifests itself as the rhythm's capability to cope with other rhythms, either by adjusting to them or causing them to adjust. The concept of friction is thus applicable to demonstrate the various ways in which different processes converge (Tsing 2005). This notion emphasizes the fact that rhythmic processes are reciprocal, as they constantly converge and shift their mode and strength (Krause 2010). One important connotation of the constant friction in the interplay of different flows and rhythms is that conflicts as well as "new arrangements of culture and power" (Tsing 2005: 6) come to the fore. In both physical and metaphorical aspects, flows and frictions are driven by specific contexts. Nonetheless, the ramifications of them extend far beyond these contexts (Strang 2004, 2008b; Krause 2010).

CHAPTER 3:
A Riverine World

The Elbe River flows over 1000 kilometers from its source in the Giant Mountains of the Czech Republic, located at a height of 1.386 meters above sea level, before it reaches the North Sea. The final hundred kilometers of the river, from the weir of Geesthacht to the mouth near Cuxhaven, are called the Lower Elbe (cf. Martin and Fischer 2018).

From Geesthacht onwards, the Elbe continues to flow through a riverbed that constantly changes in shape and width, with various islands dividing it into main and side channels until it eventually reaches the North Sea at a funnel-shaped estuary that is typical of tidal coasts (as seen in *Figure 3*). But the river water does not come to a halt when it finally meets the sea. Its influence extends far off the German coast (into what is called the Outer Elbe) but also into all the river's tributaries. These waterways rely heavily on the tidal Elbe and are thus susceptible not only to its tides but to other changes on the main river. In this way, the Lower Elbe functions similarly to an artery in the human body, transporting fluids and other substances to its periphery (cf. Dannenberg et al. 2006).

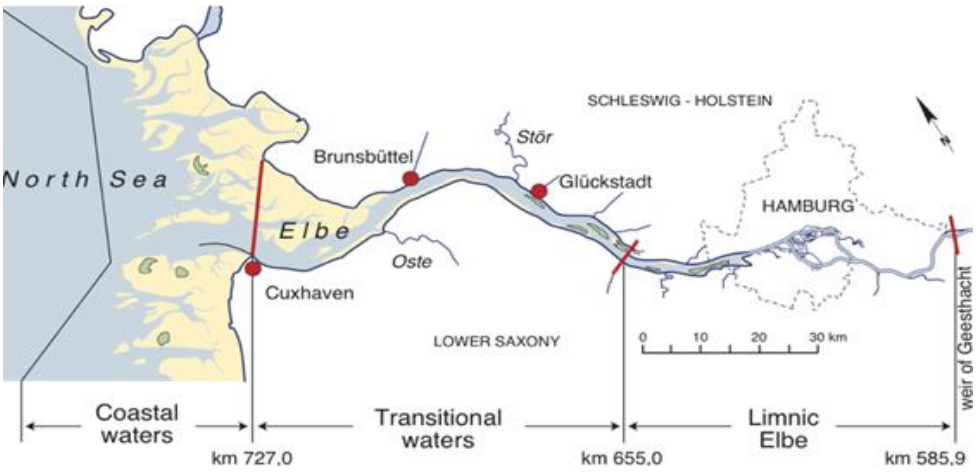

Figure 3

The contemporary Topography of the Lower and Outer Elbe (Brockmann Consult and Common Wadden Sea Secretariat. 2023)

This tidal part of the Elbe, together with its surrounding maritime world as a physical, cultural and social space, forms the spatial focal point of this study. It captured my research interests on several levels. Special local circumstances and a unique mindset have emerged when it comes to the

management of the river's water. These particularities have been passed down from one generation to the next, in the face of various external influences over the centuries. The allure of this riverscape is also closely tied to its proximity to the open sea, leaving a historical imprint for centuries. The maritime legacy is palpable throughout the entire area between Hamburg and the North Sea, evident in both the cultural and natural landscapes. Not only the metropolis of Hamburg, known as the 'gateway to the world', but also smaller port towns along the waterway, with their historic ships, dikes, locks and old farmhouses characterize the image of this unique riverine world (Dannenberg et al. 2006; Wiese 2016).

Today's riverside is host to a range of activities. From large container ships to local and interregional ferries, frequent sailing yachts and fishing boats, there is a diverse array of vessels. Leisure and industry are present along the banks, ranging from opportunities for swimming and cycling to production- and nuclear power plants. This area is significant both economically and culturally (cf. von Allwörden et al. 2004; Fischer and Wellbrock 2020).

Beyond this, with its moors, wet meadows, reed beds and freshwater mudflats, the natural landscape has an amphibious character and forms important refuges for flora and fauna. The pronounced fluctuations in water flow provide an excellent opportunity to study the dynamic development of tidal rivers, and to illustrate shifts in human practices and political engagement in response. About every six hours, they change due to the moon's gravity. While the ebb tide induces the river water to drain out from the river, during the flood tide, the water rises again. At low tide, underwater sands become visible. If you are quick on your feet, you can even walk the five nautical miles along the Wadden Sea from Cuxhaven to the island of Neuwerk before the flood tide arrives and the sandy path is submerged (cf. Wiese 2016).

Near the river's mouth, the tidal Elbe widens into an estuary that reaches a maximum width of approximately 17.5 kilometers. At low tide, only about 1.5 kilometers remain. Due to this specific shape of the riverbed, which highly depends on the water level, other natural phenomena occur than in tidal rivers with less significant changes. That is why much of this area around the river's mouth is protected in nature reserves and recognized as a Cultural and Natural World Heritage Site (von Allwörden 2004; Dannenberg et al. 2006).

However, these riverscape's physical attributes and topography are relatively recent. A century ago, the water flowed very differently and was perceived in different ways, and even more so a

millennium ago. The Lower Elbe has undergone significant changes over time, requiring a thorough investigation of its transformations to comprehend its true nature. The ongoing disputes regarding the river have been significantly influenced by its historical uses. While many of the changes brought discontent, certain changes, such as the expansion of the road network, enabled easy access to the river and its banks during my time in the field.

Especially in recent years, the river has experienced considerable and fast-paced alterations. The alterations involve the destruction and recovery of land after floods, the fluctuating financial conditions of the trade and shipping sector, and the hydrological consequences of climate change and water management. Typically, river dwellers have had to modify their prior lifestyle to adjust to new circumstances. The economy experiences alterations, and people adjust accordingly. The system of governance alters, and people adjust accordingly. The climate transforms, and people adjust. Although this might implicate an inability to influence the surroundings, people are actively shaping them by adapting to them. That is why, in this work, we will examine an alternative phraseology for describing change, one that better aligns with the daily encounters of river dwellers, one that is based on fluidity, flexibility, and mutuality (cf. Krause 2010; 2021a; 2022) and we will take this as a starting point to examine political activism in relation to the maritime infrastructure site.

In this context, I reiterate the significance of perceiving the river as a fluid and constantly changing realm rather than a fixed set of structures. This riverine world is characterized by unpredictable and potentially rapid shifts, mutually influenced by a range of factors and difficult to anticipate. In this world, plans should be considered as aspirations rather than concrete solutions, and all activities related to the water necessitate adaptable and flexible measures (Krause 2022: 7-8). I argue that, to some extent, this also applies to political activism in maritime infrastructural contexts.

The river is an emblem of change and history, evoking the past through references to local landmarks, altered coastlines, and former industrial sites (Krause 2010: 17). The following chapters will display a variety of maps of the Lower Elbe to highlight the different constructions of the river and anthropogenic alterations in the river flow (cf. Olwig 2004). However, the Lower Elbe's history has been captured not only by cartography, but also by written chronicles and, more recently, by the memories of the people who lived along the river. References to historical events

are thus common in both personal stories and in relation to broader changes along the river. Dwellers tend to contextualize their personal narratives within a wider historical framework (Ackroyd 2008).

After consulting with local history experts and conducting research in nearby libraries, it became evident that there is a lack of literature focusing specifically on political engagement in the Lower Elbe region. Nonetheless, the Elbe River has been extensively studied from various angles. Geological, historical and cultural studies of the entire course of the river were carried out by Reky (1992), Küster (2007) and Rada (2013). The Lower Elbe was also a subject of investigation in scientific domains (e.g., Siemens 1948; Hinrichs et al. 1985; Dannenberg et al. 2006, Fischer 2003). However, the majority of them focus primarily on agriculture (e.g., Behre 2008; Tiemann 2012) or geology (e.g., Ratter and Weig 2012; Meier 2014; Wiese 2016). The work of geographer Richard Linde, published in 1908, is often considered exemplary. It provides an initial comprehensive perspective on landscape and nature, cultural practices and traditions, trade and transportation, agriculture, and industry (cf. Linde 1908). Literary works (e.g., Meyer-Marwitz 1949), personal memoirs (e.g., Schmidt 2022), and regional chronicles (e.g., Aschenberg and Kroker 1992; Bartos-Höppner 1998) also contain considerable content about life along the waterway. The *Hamburg Port Authority* (HPA) has compiled chronicles of the port's development (n.d.; 2016), which primarily focuses on its accomplishments.

In summary, publications about the Lower Elbe emphasize its historical significance. While these studies provide detailed explanations and insightful analyses, they also reveal how industries have influenced the riverscape. However, they often leave little space to explore other vital issues that define the relationship between the river and its dwellers.

Unlike many written documents, the majority of stories about the river that I have come across concentrate on its modern history. That includes a period after the latest hydraulic construction works were carried out in the 21st century, after the streams have notably accelerated in the 2000s, after the salinization and sedimentation began excessively in the 1990s, after major industrial sites have been built along the river in the 1980s, and after a massive flood has seriously jeopardized the riverine world in the 1970s. Before those events, life along the river was usually depicted as vibrant and flourishing. The river served as a central hub for many different practices, allowing its dwellers to thrive enormously. These accounts are undeniably connected with a past era that has

gone by, only conserved in old pictures and the nostalgic tales of grandparents and at most retraceable in the architecture all along the river (cf. Krause 2010: 58).

Studies have noted that narrating the past is always a conscious retelling of the actual sequence of events, thus assortative but not entirely random. The accounts of the deepening and its political contestations that I have gathered therefore exemplify the fact that retellings always draw from an events' importance when it occurred and its implications for comprehending the present and shaping the future (Hastrup 1992a: 9). Occasionally, stories of people manifest ideas of a better past that was prevalent before the deepening. They describe an idealistic, old time where the inhabitants' relationship with the river seemed safe and sound. On other occasions though, they describe past events as predecessors that triggered off the catastrophic turn of events that have led to the current situation (cf. Krause 2010: 58-59).

The narrative proposes that during the 'good old days', the Elbe was much more meaningful. Nowadays, they say, it has become less relevant in people's everyday life. The narrative idealizes the 'past river' as a symbol of social and ecological balance. Struggles against the river's storm surges were rewarded with wealthy times in between the floods. Remembrances of plentiful fish and fruit crops imply that each season and year without inundations was fruitful. Tales of the infamous era of the pirates and the Hanseatic League underline these notions even more. Nevertheless, stories and recollections of employment in the shipping, fishing and agriculture industry of the past underplay the actual struggles of such practices and neglect the tragedies that have happened. Troubles brought about by storms or piracy are frequently retold as romantic anecdotes. Such romantic reinterpretations place a strong emphasis on the river's significance to those living alongside its banks (ibid.).

Contradictorily, everything 'old' is regarded as harmonious and endearing, and everything 'new' is disregarded as no-good (Hastrup 1992b). Thereby, the glorified past is used to indicate a distinction from the current world. Although the remote past is often seen as a romantic image and subject of stories, it is not considered a model for development. Such interpretations of historical events seem to challenge predominant notions of modernization. Instead, they are firmly grounded in their historical context and can be easily differentiated from the now and what is to come, which adheres to distinct ideals. Nevertheless, by idealizing past times, a foundation is laid for the creation of traditions, which portray the present not only as a discontinuity from the past but also

as having fundamental links to earlier times, ideas, and habits. This presents the opportunity to conceive alternative approaches to the contemporary dominant purpose of the Elbe as a pathway for large vessels supplying global infrastructure. If former ties of the river and its dwellers are reframed as not being the harbingers of destruction, they may provoke a different vision of the future (cf. Krause 2010: 46-47; 58-59).

Even if it is necessary to study the different socio-cultural aspects that have affected the Elbe River in order to understand the interdependencies of today's resistance and infrastructure, it is also important to recognize the non-human, material factors that have shaped and continue to (re-)shape them. These forces comprise the ceaseless activity of the surroundings: Almost the entire North German Lowland is a product of the Ice Age, which fundamentally shaped its surface. During this time, mighty glaciers penetrated the land for thousands of meters. Terminal moraines formed on the glacier fronts. In front of the terminal moraines, wide glacial valleys were formed to drain off the enormous amounts of meltwater (Behre 2008). When the sea level rose rapidly after the Ice Age, the Lower Elbe marshes and moors were formed along the Elbe's glacial valley (Meyer-Marwitz 1949: 15-16).

The lowering of the sea level around 900 BC eventually caused the marshes to dry up (as seen in *Figure 4* and *5*). The former bank of the glacial valley, the *Geest*, is still traceable today with a large bunk bordering the Elbe marshes (as seen in *Figure 5*). The decline of water eventually

Figure 4

A map illustrating the flooded riverscape about 8.000 years ago, with the contemporary bank of the Lower Elbe marked in red (Meier 2014: 12).

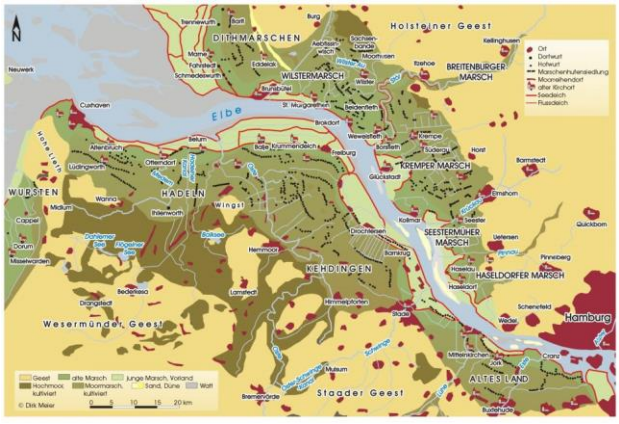

Figure 5

The former Glacial valley, which is now marshland (marked in green), and the current dike-line (in red) along today's waterway (Meier 2014: 27).

allowed people from the *Geest* to move into the tideland and establish settlements. The first large-scale colonization of the Lower Elbe marshes took place in the first century AD, with the Saxons to the east and the Frisians to the west. Nevertheless, in the unbanked marshland, water regularly overflowed the banks during storm surges or floods. This is why there have been multiple cycles of abandonment and resettlement, ultimately prompting a significant shift from a natural to a cultural landscape (cf. Meier 2014).

The history of this cultural landscape is relatively brief when compared to the lengthy period during which nature existed in harmony with itself (and a sparse human population at most). As I will show, in just one millennium, humans have transformed the natural landscape according to their needs, resulting in drastic changes to the environment. Initially, survival was the primary concern, and people eventually devised new tools and techniques to sustain a continuously growing population. For a long time, settlements completely depended on varying natural spaces and adapted to them. But with technical innovations and newly introduced crops, differences in the landscape became less important. Instead, economic policy changed the landscape on a large scale across all natural boundaries. During this process, the once unspoilt natural landscape surrounding the river vanished and was transformed into a cultivated terrain, often in unforeseeable and irreversible ways. Both the historical dimension and the interconnectedness of cultural landscapes and environmental development are often overlooked, although they are crucial for comprehending both modern landscapes and contemporary controversies (cf. Meier 2014: 4-41).

3.1 Of Dikes and Deluges: Water Defenders

Time and time again, successful defense against water has contributed to the emergence of societies and cultures. The Netherlands, for example, one of the archetypal marshland nations could only flourish because it had triumphed over the sea (Schama 1995). According to a saying, “God created the world but the Dutch created the Netherlands” (Bijker 1995: 234). Karl August Wittfogel also observed that the creation of social institutions was strongly linked to irrigation and drainage management (Wittfogel 1957; see also Greffrath 1979). Some water control structures in the form of dams, like those found on the Euphrates and Nile, were constructed over 5.000 years

ago, marking one of the earliest examples of large-scale technology in history (Dannenberg et al. 2006).

The construction of such structures demonstrates the remarkable engineering capabilities of ancient societies. The myths of early civilizations suggest that they believed they could overcome the overwhelming power of nature, sometimes even surpassing the gods, through the management of water (cf. Schwenk 1970). These myths demonstrate their unique perspectives on the world and the value they placed on water. As I show, the building and upkeep of embankments and water regulation structures were crucial to this success. The history of the dikes is therefore key to understand not just modern landscape but also the independent structure and mentality of marsh societies (Meyer-Marwitz 1949: 17-20; Fischer 2003).

3.1.1 Challenges and Uniqueness of Early Riverside Settlements

Initially, the desiccated, former glacial valley of the tidal Elbe had no practical human purpose. Only after the initial settlements from the 1st century onward did people come to realize the high fertility of the riverbanks but also the hazards of dwelling in this riverine environment. The marshy and often flooded region was cultivated manually, subsequently lost, and then reclaimed multiple times.

In 1113, Dutchmen were brought to the southern bank of Lower Elbe by the Bishops of Bremen and Verden. They were tasked with constructing dikes and drainage systems to prevent frequent flooding and to make the marshland more suitable for agriculture (Meier 2014). Through intensive manual labor, drainages and irrigation channels were excavated and over time, the terrain became habitable. The drained areas became the *Old Land*, as opposed to the ‘new land’ that had yet to be embanked (Röper et al. 1988).

As the diking progressed, the floods now affected other lands along the banks, which were not yet protected by dikes. Therefore, the Saxons in the uplands followed the settlers in the *Old Land* and also built embankments along the Elbe and its tributaries (Meier 2014). The construction of the dikes, which was costly but vital at the time, had to be legally regulated between the Saxons and the Dutch. While in principle the judicial constitution of the two groups was otherwise different, the dike jurisdiction of the Saxons was oriented towards that of the Dutch colonies. The collective

struggle against the water and a uniform dike jurisdiction eventually gave rise to a sense of commonality. In the course of time, both population groups merged, and a uniform language was spoken in the marshes (von Allwörden 2004: 142-144).

The jointly supervised and jointly established embankments, along with the need for ongoing maintenance checks, culminated in an exceptional legal standing and political structure in the marshes. Dike associations that persist to this day were established; with landowners whose property bordered the water being obligated to maintain the embankments adjacent to their land. As the representative of the dike associations, the dike reeve held considerable governing power within the local community. Through regular inspections of the embankment, the dike reeve was able to impose repair measures and punishments. Failure to maintain the assigned section of the dyke, for instance, resulted in harsh penalties, such as forfeiting the entire estate (Fischer 2003).

While the social and political environment of the marshland was shaped by the entrenched internal arrangements of the provincial communities over centuries, it was eventually influenced by higher authorities and changing jurisdictions, such as those of the German, Hanoverian, Swedish or Prussian. For a long time, local authority supplemented or even superseded the broader legal frameworks, indicating the long-standing distinctiveness of the self-contained marshland.

The construction and upkeep of dikes resulted in the establishment of particular behavioral norms[16] and local responsibilities for river dwellers. It resulted from the danger posed by the water masses, which necessitated the establishment of a reliable flood management system, which was not a concern for other areas. In the marshes, dike associations have historically provided and continue to provide this security more effectively than any other authority (Fischer 2003).

[16] For instance, local status and reputation was influenced by the respective maintenance of the dike. Furthermore, the land was traditionally passed down to the youngest child, contrary to the more prevalent custom of primogeniture. This allowed a greater number of children to participate in the maintenance of the embankment and the orchard, while at the same time giving the youngest child the opportunity to acquire the necessary skills and techniques from a very young age on. The elder siblings often married into another farm (and were thence referred to as *'Kofferbauer'*, meaning 'sack-farmer') or pursued a seafaring career.

3.1.2 Beyond the Banks: Historical Echoes of Storm Surges

The thousand-year history of diking along the Lower Elbe is fundamentally shaped by storm surges, dike breaches and settlement reclamations. When it comes to severe inundations in the marshland, however, a distinction must be made between dike breaches caused by storm surges on both sides of the Elbe and its tributaries, and breaches of the rear dikes resulting from rainfall and melting water from the bank of the former glacial valley, the *Geest*. Siemens (1935) compiled a comprehensive list of major floods that occurred after the Dutch settlement, some of which have had lasting effects still evident today.

Some of the dike breaches were not always sudden and unpredictable. Archival sources frequently reveal antecedents of these events, sometimes highlighting structural weaknesses that were not adequately addressed at the time. Yet, the most substantial threat remains posed by storm surges, which occur when southwesterly winds push water masses from the English Channel into the North Sea. When the wind then turns back to northwest, vast amounts of water are carried into the Elbe estuary (Aschenberg and Kroker 1992).

This situation has occurred a number of times in recent history, for example on 24th December 1717. A severe storm from the southwest had already lasted three days before, damaging numerous houses while uprooting countless trees. When the wind changed direction to the northwest, people were gripped by anxiety. The authorities were well aware that with this wind configuration, the water masses could easily cause the dikes to breach. When, according to the calendar, the tide should have been receding at midnight, there was no indication of the water level dropping. Even though the high tide arrived a few hours earlier than usual, it carried such force as if it aimed to engulf everything in its path. The water not only seeped through multiple dike breaches, but also surged over the dike at almost the height of a man, resulting in the inundation of the entire marshland (Rieken 2005: 196).

Chronicler Friedrich Ahrendt reports that the carefree inhabitants were abruptly awoken from their deep slumber and soon realized their misfortune. They were forced to vacate their warm beds and enter the cold water. Survivors, still clad in their nightwear, endured a freezing night in the attic, on the rooftop, or in trees, where they were trapped for several days without food. At dawn, they saw the full extent of the catastrophe: dwellings had been cleaved in two, with roofs and beams shattered. Amidst the debris, individuals and livestock, as well as haystacks, straw and piles of

grain floated through the streets in a chaotic scenery. Many bodies were swept away to distant locations, and due to the high water levels that persisted for months, some were found late. This led to a substantial proportion of deceased persons remaining unidentified. Ultimately, approximately 10.000 individuals perished, with many more indirect victims who fell ill from marsh fever[17] caused by the long-lasting water masses. In commemoration of the disastrous events, local pastors have been delivering water sermons on Christmas for centuries. Even to this day, the Christmas flood is often remembered during church masses (cf. Aschenberg and Kroker 1992; Sönnichsen and Moseberg 1994).

Most of the time, floods were seen as a test bestowed by God. Overcoming these challenges has slowly but steadily fostered confidence among the populace. While inundations were seen as divine retribution, the victory of the construction of dikes over the disasters of storm tides eventually became a presumed sign of being in God's favor. Therefore, floods being seen as a test of faith served as a significant factor in shaping local culture. The use of geographical and meteorological evidence to support a moral analogy instilled a sense of uniqueness into the collective consciousness (cf. Schama 1995; Bijker 2007).

Thus, artists documented dike breaches and floods of the era through paintings and other cultural artefacts (as seen in *Figure 6* and *7*). Additionally, numerous local myths, tales, and poems provide clues about the significance of floods to the river dwellers. Prominent examples include common reports of a sea monster (as outlined in the introduction), of tragic incidents at sea, and of the legendary city of Rungholt, which was submerged by a storm surge (cf. Meyer-Marwitz 1949). By drawing attention to the importance of the embankments in the fight against the floods, many (Low-)German proverbs, such as „*De nich will dieken, mutt wieken!*"[18] (Sterr et al. 2008: 343), were and still are well-known in the marshland. These statements warrant consideration as they indicate the extent of the labor involved, engineering progress, and transformation of a previously inhospitable tidal landscape into a highly populated cultural hub. They also emphasize that the geographical landscape and social identity were closely, even inextricably, linked.

[17] A form of malaria.
[18] "If thou do not shovel the bank, thou shall avaunt".

Figure 6

Contemporary Copperplate Engraving of the Burchardiflood of 1634. Unknown Author (Ankerherz 2020).

Figure 7

Engraving of a Dike Breach (Winterstein 1675).

However, catastrophic storm surges also led to long-lasting alterations to the way the dyke system was managed. In 1825, for instance, one such major calamity ruined the dikes not just as technical structures but also as a hydro-social symbol of the marshland, which extended far beyond its material nature. Due to their inability to restore the dikes using their own resources, and necessary reliance on aid from the Hanoverian state, river dwellers lost a great degree of their independence. This was evidenced by their loss of autonomy, such as the dike associations' status as regional authorities. The Kingdom of Hanover capitalized on the storm surge catastrophe of 1825 and used this as an opportunity to impose a standardized concept of a modern dyke system. With this, the state eventually undermined the autonomy of the once-independent marsh society (Fischer 2003).

The modern art of dam and dike construction was thus introduced, together with the construction of sluices, to meet the need to prevent the Lower Elbe and its tributaries from overflowing. With the new protection, fruit cultivation began to experience a continuous upward trend in the marshland. Harvests went as far as England and Scandinavia. The fertile soils, the favorable influence of the river- and irrigation-system as well as the climate, which mitigates late frosts

during the blossoming period, proved to be decisive locational advantages. In addition, the growing city of Hamburg guaranteed a secure sales market nearby. Today, the houses, windmills and churches, along with many more cultural monuments bear witness to the prosperity of earlier generations as well as cultural history of the riverscape (cf. Tiemann 2012). The natural area has ultimately been transformed into a cultural landscape (as seen in *Figure 8* and *9*).

Figure 8

Modern dike situated alongside the tidal Elbe. It separates a portion of the riverine world, creating what is now recognized as a distinct ecosystem (Hermann 2023).

Figure 9

The Elbe River, one of its tributaries as well as the surrounding marshland with the typical long-stretched orchards of local farmers (Elsen 2023).

As Professor Richard Linde (1908) states, man has outwitted the element. Over time, however, the taming of the untamed water (Linde 1908) has substantially influenced the socio-cultural, political and economic life of the riverine world (cf. Martin and Fischer 2018). Scholars have thus emphasized that dikes cannot be evaluated solely in terms of their technology, as their importance is all-encompassing (Bijker 2007; Fischer 2016). Water management is essential to comprehend the present condition of the riverscape. It was and still is the basis not just for security and prosperity but also for political and social forms of organization and collective mentality along the riverbank (Fischer 2003; 2016).

3.2 From Tides to Trade: Water Directors

"Water becomes land and land becomes water"[19] is how Richard Linde described the Lower Elbe as a land of culture and water in 1908. Especially the tides determine life on the river like a strong and steady pulse (Meier 2014: 24). However, human interference has disrupted this natural rhythm. Although hydraulic construction measures were not officially documented until the nineteenth century, there is much evidence that hydraulic construction works were carried out long before then (e.g., Lang 1970; Meier 2014).

The following chapter specifically provides insight into the transformation of the riverscape in relation to a small wooden pier, initially less than a hundred meters long, which eventually became one of the most significant ports of Europe (Meier 2014: 5).

3.2.1 The Emergence of a Maritime Hub

Originally, the Lower Elbe consisted of numerous sandbanks and waterways, one of which was eventually designated as the main waterway. As the river's tidal zone neared its end, distinguishing between the main river and minor streams became increasingly difficult. This is typical of tidal rivers, where the delta is found not at the river's mouth but where the saltwater transitions to fresh river water. That is where numerous small streams emerge and gradually converge (as seen in *Figure 10* on page 44), despite frequent tidal changes to the boundaries between land and water.

Early seafarers explored this complex river system using the same boats they sailed with on the North Sea. Only when the water was too shallow or the currents too strong, they eventually established settlements and harbors. Many port cities were thus located far inland. At one location, where a tributary flowed into the larger Elbe, a fortification known as the *Hammaburg* was built in the 9th century. The position of its pier facilitated the transfer of goods onto smaller ships that could transport goods further along the Alster River (Meier 2014: 5). The area grew and developed

[19] In German: "Wasser wird zu Land und Land wird zu Wasser" (Linde 1908: 5)

gradually, alongside other settlements, as they encountered both favorable visits from merchants and unfavorable ones from Vikings (von Allwörden et al. 2004: 136).

As both transport and settlement came together in this multi-sided riverscape, its waters played a crucial role in shaping its surrounding landside. In contrast, the establishment and maintenance of land routes posed significant challenges and was not sufficiently feasible with the resources available at the time. Especially the moors and marshes were hardly crossable, which is why access to different areas meant traveling along water routes. It was much easier to travel anywhere by boat. The distribution of the plentiful marshland harvests was mainly performed using boats, as transporting them by land would have resulted in damage to the fruits. Boats were even utilized for transportation to church. Thus, the waterway influenced the movement of people and the geographical landscape much more than the landward terrain. This led to a vast number of vessels drifting on the river, which did not require high speeds as they were propelled by the tides.

With subjects and objects arriving and departing, the Lower Elbe's waterways acted as vital orchestrators of their surroundings. People undoubtedly had knowledge of the land surrounding the rivers. Nevertheless, this knowledge seems to have been less profound than their familiarity with the riverside. Hence, during river crossings, fishing, or simply observing the flow of water, people have always perceived the prevailing tidal flow. River dwellers have also recognized various other phenomena that coincide with the permanently changing tides. For example, fish swarms usually move in the direction of the tides and fishermen have to place their nets accordingly; or boats may run aground on sandbanks that were not there before the last high tide (cf. Damm 2019). In short, inhabiting this riverine world meant living not only in an area of fluid movement and variable water levels, but also in an area that constantly flowed in a different way.

The constant tidal fluctuation posed a significant challenge for any nautical navigation on the river (cf. Hagen 2017). Specialized vessels were necessary, capable of resting on the riverbed during low tides without being damaged. At the same time, there was no requirement for highly maneuverable boats as the movement of the tides propelled all vessels (von Allwörden et al., 2004: 144-147). To meet this need, Ewers were employed. These boats had flat bottoms and were loaded and unloaded at locations that became accessible by foot or horse teams during low tides. After loading, the ship was carried to deeper waters by the next high tide (Martin and Fischer 2018: 136). Evidently, the timing of local activities was significantly determined by natural rhythms.

Traders, for instance, also displayed their wares at port towns along the Lower Elbe according to the water level rather than the time of day. This was mainly because after the business was done, the currents would then help them on their way by flowing in the same direction as they were headed. Local trade proved beneficial not only through the exchange of crops and commodities but also due to the proximity of towns, allowing boats to travel between different localities during a single tide.

During the Middle Ages, the port of Stade evolved to be one of the main hubs for maritime trade on the river, alongside Hamburg. This was due to Stade's advantageous and centrally located position, with both the prosperous *Old Land* and the main channel of the Elbe situated just outside the town (von Allwörden et al. 2004: 137-138). In 1259, Bremen's Archbishop even awarded stacking rights for goods to Stade. All merchants passing through were thus compelled to sell their goods in the town for three water times, equal to a day and a half. In response, Hamburg submitted an older document of privilege. The document allegedly granted Hamburg free customs up to the sea, signed by Emperor Barbarossa in 1189 (ibid.: 138-139). However, recent research indicates that the document is a fraudulent fabrication from the mid-13th century (cf. Meier 2014).

Notwithstanding that Emperor Charles IV granted Hamburg special rights in 1359, which included securing the fairway and policing functions, the political sovereignty of the Lower Elbe remained uncertain. Soon, both Stade and Hamburg joined the Hanseatic League, a confederation of merchant guilds that grew to be the most important economic association of the Middle Ages. It also arranged protection, as piracy was a major threat to trade in the North and Baltic Seas. In this era, the Lower Elbe occupied a special position, as the *League* was orienting its trading activities towards the North Sea (ibid.).

However, the main navigational route of the Elbe River remained situated on the southernmost river arm, whereas the port of Hamburg was considerably distant on a narrow northern branch. Here, the water inflow was minimal. To improve navigation on this side of the river, certain sections of the riverscape were dammed and closed off as early as 1438, and water from the southern stream was diverted northward by cutting through several islands in the 15th and 16th centuries. During this era, the first ever dredging operations were carried out in the northern channel. However, other forms of hydraulic engineering were undertaken many decades earlier. On top of this, Hamburg hindered trade on the southern waterway (von Allwörden et al. 2004:

139). These endeavors were pivotal to the growth of Hamburg given that the water gradually shifted to the northeast and the main navigational route was consequently relocated (cf. Vanderostyne and Cohen 1999). As a result, Stade eventually experienced increased siltation and lost its maritime significance (Meier 2014).

Due to the advantageous economic situation that emanated from their efforts, the population of Hamburg grew rapidly. At the same time, there was a general increase in maritime trade, as innovations in ship design made it possible to undertake longer voyages. Merchants opened up new trading areas in England, Flanders, Scandinavia and the German inland, and businesses diversified by commodity and region (HPA n.d.). However, the increasing size of ships also required other sections of the river to be deepened. This led to the establishment of the *Düpe Commission* in 1555 with the aim of maintaining an adequate water depth in the long-term. This commission was later converted into the *Office for River and Port Construction*, which was subsequently succeeded by the *Hamburg Porty Authority* (Meier 2014: 135-137).

Yet even back then, the regulation of the river posed a number of challenges: the siltation, the general southward shift of the current and the ever-unpredictable interactions between high and low tides. Consequently, the sandbanks and islands were regularly flooded and frequently shifted, creating additional obstacles for navigation (cf. Aldersey-Williams 2017: 162). Due to its vast size and tidal nature, it became more and more clear that the Lower Elbe is specifically susceptible to natural changes. This made it less controllable in comparison to other rivers. Nonetheless, Hamburg's port accessibility was essential for its survival. Ironically, the dredging operations worsened the siltation because, with more depth, more silt would also be washed into the riverbed.

Later in the 16th century, however, several towns situated along the Lower Elbe, including Stade, raised concerns to the imperial court that Hamburg was trying to extend its influence beyond its borders to the detriment of other river-dwelling regions (von Allwörden et al. 2004: 139-140). This may be the first opposition to the deepening or its consequences, as individuals attempted to counteract Hamburg's hydraulic construction measures. In response, however, Hamburg commissioned the artist Melchior Lorichs to create a map of the Lower Elbe , which was presented to court in 1568. The chart measures one meter in height and twelve meter in length and depicts the southern river branches in a reduced scale while enlarging the northernmost branch (as seen *Figure 11*). It also illustrated Hamburg's concern for the river by highlighting all the navigation

marks and beacons that were set up to guide ships to the port. Following the court's decision, all branches of the river (as seen in *Figure 10*) were now recognized as a single entity, subject to the privileges of Hamburg (Meier 2014: 137).

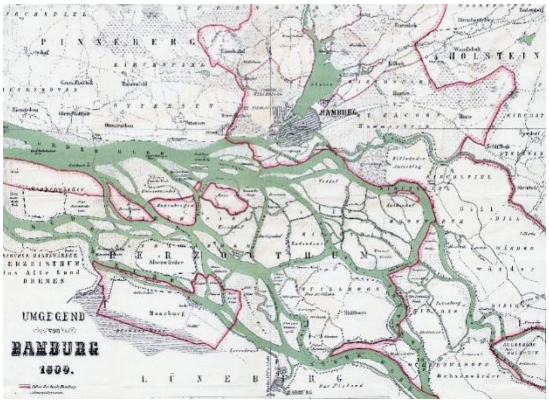

Figure 10

Historical topography of the Lower Elbe near Hamburg in the 16th Century (Gaedechens 1880).

Figure 11

A section of Melchior Lorichs' (1568) distorted map of the tidal Elbe.

Eventually, the city became the prerogative to govern the entire Lower Elbe. As a result, the river continued to grow in economic, political, and social importance as a transport route. Due to the increasing number of ships, Hamburg greatly benefited from trading with America and other overseas destinations (HPA n.d.). While Hamburg still faced competition from neighboring cities on the northern bank of the river, such as Altona and Glückstadt, which were under Danish rule at the time (von Allwörden et al. 2004: 141), the city had already established its dominance in the riverine world.

3.2.2 River Management in Transition

Following the Congress of Vienna in 1815, waterways such as the Elbe, which flowed through several countries or served as borders between them, underwent a substantial transformation. With the reorganization of political structures, advancements in technology, and newly imposed trade regulations, the field of hydraulic engineering has gained significant importance all over Europe. Large-scale (re-)construction projects of inland waterways, including the Kiel Canal[20], were launched. Due to the positioning of the Lower Elbe, river traffic soon witnessed a significant rise (Dannenberg et al. 2006).

Albeit their economic reason, the hydraulic construction projects have been instrumental in extending federal territorial claims (van Laak 2018: 34). Hydraulic engineering thus became progressively influential in state infrastructure policy and a demonstration of technological proficiency (Syvitski and Kettner 2011; Swayamprakash 2019). With the growing significance of technical infrastructures, power also became increasingly concentrated in the hands of central infrastructure players (Engels and Schenk 2015: 56), who have largely shaped modern landscape.

For the Lower Elbe, it resulted in a technical and socio-political shift of river management. Whereas in the past the flow of water was controlled defensively and locational, now a more offensive and consistent approach was taken. This involved a pre-calculated regulation of the entire Lower Elbe. In the process, the hydraulic engineer Reinhard Woltmann, was a key figure. Some of the techniques used today to reduce the velocity of water flow and safeguard banks and dikes can actually be traced back to Woltmann's work. As seen in *Figure 12*, these protective structures are often situated orthogonal to the stream's path to mitigate the power of the currents and secure the banks (cf. Martin and Fischer 2018: 141-155).

Upon his appointment as Director of Water Engineering in Hamburg, Woltmann instigated the first officially documented deepening (Martin and Fischer 2018: 145-146). For its realization, the mechanization of dredging (cf. Syvitski and Kettner 2011) has been pivotal. Whereas sand scrapers had previously been used to remove obstructive sand in the river to deepen its channel, the *Drehewer*, an important innovation of the Woltmann era, along with the first steam-powered

[20] By permitting vessels from the North Sea destined for the Baltic Sea to take a shortcut, this canal still reigns as one of the most heavily trafficked in the world.

bucket dredger (see *Figure 13*), enhanced the effectiveness of the deepening to produce a consistent depth throughout the entire watercourse of the Lower Elbe (Meier 2014:190).

Figure 12

Common bank protection in the Wadden Sea (Drayton 2008).

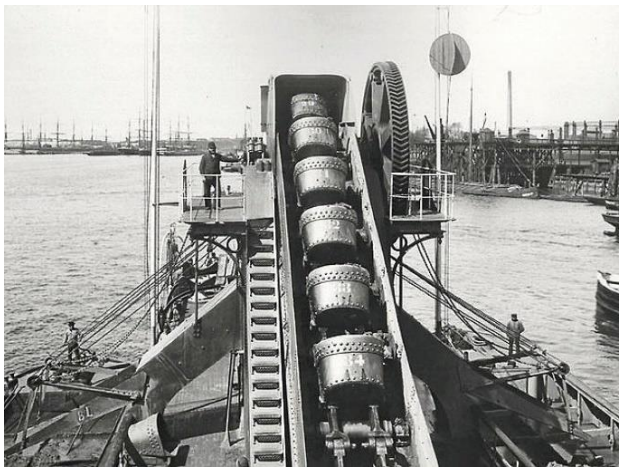

Figure 13

A steam-powered Bucket-Dredger in 1887 (Nyary 2019).

Meanwhile, there was a power shift in the region. The marshes, which flourished due to surplus agricultural production, slowly declined in their social and political significance to Hamburg's trading and shipping interests. Originally, hydraulic engineering was aimed at securing the marshland. With the rise of Hamburg as a global port, attention shifted to navigation on the river. The dredging of the Lower Elbe to augment its navigability represented the political, and economic potential of the metropolis (Engels and Schenk 2015: 56). The initial and all later dredging operations thus precipitated a transfer of influence in managing the river away from the agricultural and regionally focused marshland towards Hamburg's global trade interests, further underscoring the political and social ramifications of hydraulic engineering (Martin and Fischer 2018: 150-155). Although the new Kingdom of Hannover tried to establish hydraulic engineering inspectorates on the southern banks of the Lower Elbe, Hamburg's acquired privileges over centuries of trade diminished the influence of the Hannoverian authority on the fairway (ibid.).

Furthermore, the minor harbors located in the marshy areas of the Lower Elbe, formerly a crucial sector for agricultural transportation up until the 19th century, have gradually witnessed a decline in their significance following the introduction of railway transport. Owing to silting, the tributaries and drainage routes leading to these harbors have become progressively unsuitable for

shipping. Unlike on the Lower Elbe, there was minimal interest in implementing hydraulic engineering to address this issue. Consequently, the *Ewers*, the customary transport method for mobility on the Lower Elbe, gradually decreased in significance (Meurer 2000: 80). Moreover, the storm surge disasters of the time have caused destruction all over the marshland, making them unable to rebuild the dikes on their own (as detailed in Chapter 3.1.2). With these developments on top, it became clear that the economic, socio-political, and hydraulic focus was shifting from the southern banks of the regulated river to its navigable channel. All other uses of the river were from now on subordinated to its use as waterway.

In the meantime, rapid industrialization and technical innovations led to a rapid increase in the volume of maritime trade (Meurer 2000: 82-85). The leap from wooden to steel shipbuilding made it possible to build larger and more load-bearing ships, and the transition from sail to steam engines ensured calculable transport across the seas. This set the stage for the globalization (cf. Carse 2012). In Hamburg, the manageable port facilities were no longer sufficient. Instead of a closed dock harbor based on the London model, an open tidal harbor was built. This established Hamburg as one of the most important ports of the time, alongside London and New York (Meier 2014; Martin and Fischer 2018).

Later on, the introduction of standardized containers further enhanced international trade, dramatically reducing cargo handling times and costs while increasing capacity and the overall growth of global trade networks (Cullinane and Wang 2009). With these developments, the global economy became more accessible, making goods from distant regions quickly available at remarkably low prices for both consumers and manufacturers. That is why the containerization has played a pivotal role in revolutionizing global trade and transportation (cf. Levinson 2006).

At the same time, cargo ships have also been continuously developed to boost efficiency, culminating in larger vessels capable of carrying heavier loads. Today, container ships can transport thousands of containers in one go (Peters 2020). Following the Post- and Neopanamax classes, the state of the art is now considered to be the Ultra Large class, encompassing ships measuring 400m in length and possessing the capacity to transport up to 24.000 containers (Carse 2012; Carse and Lewis 2020). Although these mega-ships are too large in size for the Panama Canal, they can navigate through the Elbe River with a depth of about 16 meters.

The widespread adoption of containerships has spurred the development of massive container ports and maritime hubs worldwide (cf. Levinson 2006; Peters 2020). These ports are essential economic infrastructure hubs that play a crucial role in exploring new political geographies. In such an environment, mobility is enabled and rigidly channeled based on its stasis as a checkpoint (Hönke and Cuesta-Fernandez 2017). As the port of Hamburg evolved into such a key transshipment hub that facilitates global supply chains and economic growth, it has been transformed to accommodate the Ultra Large sized vessels, requiring deeper berths and sophisticated container-handling equipment (Notteboom and Rodrigue 2005).

For the Port of Hamburg as a logistics hub interlinked with various businesses, attracting container ships has been and remains crucial in maintaining the supply chain (Pettit and Beresford 2009). The arrival of bigger tankers, coupled with the growing significance of the global trade, has therefore substantiated the need for more extensive hydraulic construction efforts on the tidal Elbe (see *Figure 14*). Due to the pursuit of other hydraulic constructions worldwide to cater to the transport sector and global economies, the deepening of the Elbe River had to be done as well, and it had to be done immediately. Therefore, powerful actors attempted to shift both the spatial and temporal scales of action (Nonini and Susser 2020: 2).

Deepening Nr.		**1st**	**2nd**	**3rd**	**4th**	**5th**	**6th**	**7th**	**8th**	**9th**
Time frame	Until 1817	1818 – 1825	1850 – 1862	1909 – 1910	1922 – 1937	1957 – 1964	1964 – 1969	1974 – 1978	1991 – 1999	2019 – 2022
Water Depth (minus zero) during LAT[21]	3m	3.5m	4.8m	7.5m	9.5m	10.5m	11.5m	13m	14.9m	15.9m

Figure 14

The Historical Progression of Deepening Measures along the Lower Elbe.
In addition to these major hydraulic construction ventures, ‘upkeep dredging‘ and measurement works are being pursued on a regular basis (WSV 2022).

[21] The Lowest Astronomical Tide (LAT).

CHAPTER 4:
The Deepening Dilemma

> "Throughout history, humans have maintained a continual belief in their ability to exert control over the natural world. Examples of this phenomenon include incidents such as the Titanic and other unwavering faiths in technological advancements. This viewpoint has given rise to the belief that humans have boundless abilities and can overcome any challenge that comes their way. But humans have always had to take a back seat because nature simply cannot be tamed" (Schuldt 2023, Interview, 00:01:32, transl. by author).

Figure 15

Container traffic on the Elbe River near Stade (Liebig 2019).

We inhabit an environment that is largely shaped by human activity (as seen in *Figure 15*). Nature was once thought of as untamed and harsh. Mountains and forests were seen as hindrances rather than havens. The lights of civilization provided a comforting outlook (Hayes 2014: 1-2). It is likely that most people can relate to the initial disturbance caused by the intrusion of industrial facilities on untouched nature. Hayes utilized this experience to create a nature guide within "the world we have made for ourselves" (Hayes 2014: 5), a publication that stands out distinctively. The author illustrates a secular change in our perception and moral sensibilities. Nowadays, we view nature as something positive and worthy of preservation - a sanctuary of authenticity. Conversely, the 'man-made nature' appears problematic and requires ongoing attention (cf. van Laak 2018: 184-185).

However, it is crucial to acknowledge the impact of Western thought on the conception of natural environments as well as the inherent interconnectedness with the 'built environment' (Schweitzer et al. 2017: 58-59). By acknowledging their interrelations and entanglements, Schweitzer et al. (2017) propose to think "beyond the built" in order to gain a 'more-than-human' understanding of the (social) implications of altered environments. Hence, they contend that the implications of the Anthropocene go beyond mere recognition of human activity as a geological influence; they must encompass both "anthropogenic and non-anthropogenic drivers of change" (ibid.: 79) and their complex interrelationships and responses. With its 'built environment', it is evident that the tidal Elbe is not merely a geographical location but also arises from specific political and infrastructural configurations. These remarkable structures and systems harness the force of water flow, while driving trade, transportation, and economic growth on a global scale.

Given the tidal river's long history of serving as both an inland waterway and a route for ocean-going vessels, it has become the dominant view that the river is an essential part of local and global infrastructure, surpassing any other functions it may have fulfilled or currently fulfils. Evidence of this can be seen all along the river (e.g., *Figure 15*), as well as in the technical and political changes of the past. Material manifestations, including buoys and groins, were employed to demarcate the tidal Elbe as a political and infrastructural domain (cf. Martin and Fischer 2018). Evidently, the river is impacted by socio-political changes and infrastructure development, including state funding, local construction efforts, and private financing. This remains true for both past and present periods. Various historical and current social relationships and imaginings have therefore significantly influenced the water flow (Krause 2010: 46-47; Krause et al. 2020).

In this context, studies have extensively examined the relationship between private and public actors and the influence of infrastructure on 21st century globalized societies (e.g., Star 1999; van Laak 2018; Carse and Lewis 2020). Many scholars have thereby emphasized the crucial role played by well-functioning supply chains in ensuring the effectivity of globalized societies. Especially maritime infrastructure is often considered as critical to the functioning of society. Still, it is often overlooked how much societies rely upon the supply chains for daily needs and occasionally even survival (Bueger and Liebetrau 2023: 1). Given the significance of global trade, millions are benefiting from the goods that arrive at the Port of Hamburg, which continues to be a crucial guarantor of economic prosperity and future growth (Michalski 2011). According to

authorities, the national economy is highly reliant on the deepening (HPA n.d.; Zurke 2006). Driven by the 'self-granted' and historically rooted overarching purpose as well as Hamburg's economic interests and influence, the development of the maritime infrastructure is being pursued on an expanding scale.

However, the construction of maritime infrastructure is not always effective, often resulting in unintended consequences and exceeding the intended purpose with severe consequences (cf. Li 2015). When infrastructures do not (or no longer) meet the expectations or result in adverse consequences, they can pose a significant challenge to society, as seen in *Figure 16* (van Laak 2018: 38). Thus, "infrastructures have often been studied as technologies of social engineering, matrices of collective rights and hierarchies, inclusion and exclusion, and as such also objects of contestation" (Laszczkowski 2019).

By revealing decisions about the use of financial resources and changes in the natural and cultural environment, water infrastructures are not only outcomes but also preconditions, instruments and

Figure 16

In 2017, the shipping traffic into and out of the port of Hamburg came to a standstill. The CSCL Indian Ocean, one of the largest ships in the world, measuring 400 meters in length and about 14 meters in depth, encountered difficulty in a shallow region close to the *Old Land* whilst travelling from Felixstowe, UK to Hamburg carrying almost 19.000 containers. As a result of damage to the ship's rudder, it ran aground on a shallow bank. After nearly a week of dredging and towing operations and aided by an unusually high tide, the vessel was eventually released (THB 2017).

sources of power, and their study therefore offers new perspectives on the history of power relations (Förster and Bauch 2015: 9). In fact, many development projects serve the needs of national and international elites rather than the local population (cf. Ribeiro 1994; Laszczkowski 2020).

4.1 The Politics of Dredging

The materiality connected to infrastructure sites can create new concerns, conflicts (cf. Li and Velasquez 2022), alliances, and forms of engagement and thereby change politics (cf. Laszczkowski 2020: 940). This is especially evident in the hydraulic construction works that aim to maintain and manage the Elbe's *deep water*. Although the deepening is generally regarded as a direct transfer of material from Point A to Point B in a linear, spatial, and temporal manner, it is not always as straightforward as it appears. The interaction between water and sediment along the tidal Elbe creates a highly complex situation:

> "[Such] amphibious environments cannot be understood by simply rejecting territorial metaphors (…). Rather, these environments highlight the dynamic distributions and redistributions of sediment and water and make clear how these movements challenge infrastructural attempts to fixate hydraulic dynamics (…)." (Ballestero 2019)

The subsurface is constantly experiencing a state of turbulence; nothing remains stable for prolonged periods. Even recently published nautical charts can quickly become outdated as the constant tide continuously alters the riverbed. Sediments exhibit notable variations in certain riversides, specifically evident in tributaries and meanders (cf. Syvitski and Kettner 2011). Due to the specific geographical and sedimentary features, maintaining a specific depth remains a major challenge. An intervention at Point A leads to more geohydrological, sociopolitical, and /or ecological changes, which, in turn, create demands for more interventions elsewhere. This overall

situation is now beyond management; it can no longer be controlled, as any fairway operation only leads to more complications elsewhere (cf. Hintz and Schuldt 2014).

The issue stems from the conversion of a formerly secure and shallow river into a canal that has amassed loose sediments. The average depth, which was around three meters before the first hydraulic construction works, has now reached a minimum of sixteen meters. Due to the steep slope of the main waterway, there is significant erosion (Schuldt 2023, Interview, 00:06:58). Considering this as well as the fact that the tides are constantly shifting the sand back and forth dynamically, a dredger's work is a never-ending process (Gustafson 2020), trying to counteract the natural water movement of the river.

For this Sisyphus-like work, modern specialized vessels (as seen in *Figure 17*) use their powerful pumps and a rotating cutterhead to loosen and remove sediments and other materials from the riverbed and store them onboard for later disposal (Hsieh et al. 2016; de la Vega et al. 2017). Due to the uncontrollable river flows, the outdated government-owned dredgers[22] were no longer capable of maintaining the river's depth. In light of the most recent and abrupt alterations to the river, assistance was sought from the Benelux Union (cf. Schuldt 2023, Interview, 00:34:21). Owing to their historically established expertise in water management, these nations possess sophisticated hydraulic engineering technologies, which were then utilized for the deepening (see e.g., Bijker 2007). Their dredgers now symbolize the deepening, yet only carry out overarching interests and decisions.

Figure 17

The dredger *Geopotes 15* runs on a daily basis, traversing from Hamburg to the river mouth, transporting a full load of sediment (Rademacher 2007).

[22] Although these state-funded dredgers would significantly reduce the costs of the deepening, they are still under construction since dozens of years and therefore contribute to the dwellers' denial of the deepening.

Much like the water, the "sediment balance [also] (…) has a social life" (Carse and Lewis 2020) that is shaped by an interplay of factors including water governance, industry, and urban development. This reveals that hydro-social concepts do not adequately recognize the crucial importance of sediment dynamics in river ecosystems (Camargo 2017). Although the deepening may seem like a coherent large-scale project, it is actually a combination of various heterogeneous forces, including sediments, waters, workers, engineers, markets, and states (Laszczkowski 2023). It is constructed and contested at various scales, ranging from the vast to the small (ibid.). It is an "entanglement" (Hodder 2012) where the nature, infrastructure, science as well as human and non-human bodies converge (cf. Gurchiani 2023: 1).

This is particularly evident in the context of dredging operations that have political and ecological implications that are immensely challenging to track, measure, and legally dispute (e.g., Shaffer et al. 2009; Hintz and Schuldt 2014; Kondolf and Pinto 2017; Lewis and Ernstson 2019). While ecological implications have been extensively thought out in a number of scientific studies, both in general (e.g., Turner et al., 2018; Hernández-Montoya et al., 2019; Carse and Lewis 2020) as well as particularly along the Lower Elbe (e.g., Zurke, 2006; Hintz and Schuldt, 2014; Meier, 2014; Kohler et al., 2018), political implications of river deepening have received less attention.

Some of the direct environmental impacts can be predicted and, under German law, the institutions implementing dredging projects are generally required to develop mitigation plans (Havelaar et al. 2022). In Germany, the *Federal Ministry for Digital and Transport* as well as the *Federal Waterways and Shipping Administration* (WSV[23]) are the most central players that decide about any kind of water construction. They are supported by the *Federal Waterways Engineering and Research Institute* (BAW[24]). In the case of the tidal Elbe, its embankments, and its deepening, however, the three bordering states Lower Saxony, Schleswig-Holstein and Hamburg as well as their local governments have decisive political power. All of the hydraulic engineering measures connected to the Lower and Outer Elbe are then executed by the *German Port Technology Association* as well as the *Hamburg Port Authority*, who are extremely well linked to political agencies, hydraulic engineers and dredging companies. They employ a range of experts from the fields of research, construction, waterways and shipping administration, port administrations, port

[23] In German: *Wasserstraßen- und Schiffahrtsverwaltung des Bundes.*
[24] In German: *Bundesanstalt für Wasserbau.*

companies, consulting firms, carriers, and the supply industry. Both organizations are responsible for addressing scientific and practical issues of a technical and economic nature.

Yet, different authorities assess and approach the project and its risks differently. That is one reason why, in practice, the implementation and execution of the strategies frequently fall short, as demonstrated in Hintz and Schuldt's (2014) analysis. Nevertheless, countries and their policies dictate infrastructure processes. This is why the macro-political dimensions of infrastructure receive the most attention, and discussions often focus on official government responses (cf. Shaw and Docherty 2014). However, such debates often draw on a restricted understanding of politics, assuming that political actions are carried out through the manoeuverings of national-, state-, and city-level institutions that have the capacity to build infrastructures and manage transport- and waterway operations. But pointing to macro-politics is only one way of interpreting the politics in all the specific unfolding scenes surrounding the deepening (ibid.).

In this paper, it is essential to expand the scope of the politics of infrastructures by conceptualizing it as "a socially structured and discursively constituted space, marked by institutional heterogeneity and contending forces" (Peck and Theodore 2015: 24). This dimension of the embeddedness of infrastructure implies that people are able to participate in decisions about changes in the spaces that they use (Kuklina and Baikalov 2021: 3). Although it might be highly relevant to focus on macro-political dimensions while discussing maritime infrastructures, the significance of micro-politics comes from the fact that these barely perceived forces determine macro-politics:

> "[I]t would be naive to think that [micro-politics is] (…) separate from that kind of macro-activity. Anything that augments powers of existence creates conditions for micropolitical flourishings." (Massumi 2009: 81)

In the end, macro-political decision-makings are always complicated by virtue of there being a much greater range of forces at play. This immanent sense of politics is also expressed through Stewart's (2014) description of emergent systems, describing

> "[how] its elements are thrown together not through the conspiracy of a state power, or a pre-existing common ground or ideal, but through events of articulation, histories of use, unintended consequences, and experiments that register. Its lines of force propel forward, spread laterally, and diverge into distinct trajectories." (Stewart 2014: 550)

It can therefore be fruitful to "elucidate the various interconnections […] among people, policy, and places that make policy-making a social and political practice" (Temenos and McCann 2013: 352). Considering that the events themselves and the specific ways in which they unfold complicate social formations, it is important to further delve into a situation directly affected by the deepening in order to indicate the transformative impacts of the multiple forces at play (Bissell 2014; 2016). These forces include the experiences, actions, and gestures of river dwellers when engaging with the deepening and its consequences. They encompass the juxtaposition of flows and frictions along and within the Lower Elbe.

4.2 Affected by the Change

Politics occur, in part, "through affective engagements with the material arrangements of the worlds in which people live" (Knox 2017: 375). This can be difficult to grasp as affect, senses and sensibilities are often subtle and intangible. Nonetheless, they do have a substantial impact on human attitudes and can consequently encourage or discourage behavior (Massumi 2002; Stewart 2007; Laszczkowski 2019; 2020).

A number of studies in anthropology have emphasized the importance of affect as an influential power in political contexts, delineating it as 'sense and sensibility' among people and their material surroundings (e.g., Knox 2017; Lasczckowski 2019; 2020). While emotions, for instance, may be nameable and 'manageable', affect encompasses immediate deep physical intensities and accentuates the unpredictable, uncertain essence of any moment that 'mold' activists not only at a personal level but also in a collective capacity (Massumi 2002; 2009; Laszczkowski 2019).

This leads to the insight that every encounter between different subjects and objects is full of affective intensities that have the ability to change the affected bodies (Stewart 2007; Laszczkowski 2019). Hence, their performance cannot be simplified to macro-political decisions and unrestricted state actions but by their own actions as well as the actions inflicted upon them (Butler 1990). In this context, Chiara del Gaudio (2023) has emphasized the importance of the experiences that drive individuals to participate in political action.

In what follows, I take everyday events and observations of river dwellers, as well as my experiences participating in and observing the life along the river, as starting points to reflect on "the roles of material entities, human ways of knowing about them, and related effects in shaping political activism" (Laszczkowski 2019). Throughout the following chapters, we will therefore explore how shared experiences and alarming issues allowed individuals with varying backgrounds and professions to come together and demonstrate for a shared objective, regardless of their unique concerns. Additionally, it is necessary to consider how activists make sense of the encounters that shape their actions (Laszczkowski 2020). The following accounts are therefore largely based on personal experience and communication with river dwellers who are active in the resistance, as well as evidence from natural sciences literature.

4.2.1 Exploring the River

It was very early in the morning on a foggy day in May when Lothar, the captain of the *Welz*, and I untied the ropes, to set out on the Elbe. The low tide meant that there were low water levels when we were leaving the harbor. Before we reached the river, however, we had to navigate the meanders of a tributary of the larger Elbe. It was still relatively dark and the low tide meant that we had to be very careful not to leave the shallow waterway. As we noticed muddy sands nearby, I could feel the coxswain's tension not to run his boat aground, but I was also aware that he had been operating this vessel in this riverine world for decades. He has encountered various transformations and has had to cope with them. Just as on that day, he has often navigated the *Welz* through challenging conditions and unpredictable surroundings. He told me that a few years ago

the water was nowhere near as shallow and muddy as it is now (Buckow, L. personal communication, May 14, 2023).

During the eighth deepening between 1991 and 1999, which was the largest in its extent so far, a total of fourteen million cubic meters of sediment were excavated. However, with the recent 2019-2022 deepening, approximately forty million cubic meters of sediment had to be dredged and relocated, in addition to the annual upkeep, which now demands around 20 million cubic meters of sediment per year (Hintz and Schuldt 2014). The relocation of dredged materials is causing controversies surrounding deposition sites (Hollenstein and Widmann 2020). Some loads have previously been released near the triangular-shaped estuary of the river, which is an exceedingly scarce and precious habitat. Additional locations for sediment disposal are located close to sandbanks along the river. Identifying other dumping sites, such as the open sea, were so far denied (Hollenstein and Widmann 2020).

Figure 18

A local harbor on a tributary at low tide (Timmermann 2022).

However, the river is not able to transport the sediment loads out to the sea during tides. Instead, much of it mixes with the river or continues to drift upstream, thus requiring additional dredging operations (as seen and further depicted in Hintz and Schuldt's (2014) publication. As a result, materials eventually deposit heavily along the banks of the river and its tributaries. Due to the mud build-up, many harbors that I encountered have recently started to dry up at low water levels, as depicted in *Figure 18* (cf. Fanger and Kappenberg 2007). As compensation for this sedimentation,

the government financed a several million Euro heavy subsidization, which is being used to build new harbor facilities and new access channels. Furthermore, dredging activities are removing pollutants and nutrients that have accumulated in the sediment, leading to adverse effects on water quality and posing additional risks to marine biodiversity (Kohler et al. 2018; Turner et al. 2018; Hernández-Montoya et al., 2019; Borja et al. 2020). All these have significant implications for the lives of both human and non-human river dwellers.

With the first beams of light, however, the *Welz* arrived at the main waterway of the Elbe, where we were to sail for the next few hours. After we have seen a container ship pass by and encountered its waves, the captain told me he has already gone overboard when he was fishing, because of the water displacement of such a large vessel. He told me how the volume displaced by container ships creates gigantic suctions, causing large water masses to move back and forth. That is why he and other seamen have to avoid venturing too close to container ships (Buckow, L. personal communication, May 14, 2023; see also Hintz and Schuldt 2014)

In the narrower channels of the riverscape, the water level decreases significantly during low tide, thus enhancing the possibility of grounding. Due to the *deep water*, the tidal range[25] has increased considerably, as more water is washed in and out of the river. In Hamburg, for instance, it has risen from around 1.5 meters in the 19th century to over 3.5 meters today (Kopp 2008). The influence of the tide eventually extended far beyond the Lower Elbe estuary, leaving more and more parts of the river vulnerable to tides, flooding and siltation. To mitigate this impact, a barrier was constructed in the 1960s at the inner end of the Lower Elbe, in Geesthacht. Nevertheless, large water masses still reach as far as Hamburg, especially during storm surges, which also arrive at a more rapid pace than before. This was shown with terrible consequences during the inundations of 1962 (e.g., Schönfeld and Tornow 1976; Sönnichsen and Moseberg 1994).

Due to the river's strong currents, navigating the river is a challenging task. Whilst making progress against the tide proved to be difficult for the vessel, a significant increase in speed occurred while drifting with the tide. This way, the boat glided smoothly over the undulating surface of the water, aided by the momentum of the wind. As both boat and water were in motion, it was evident that controlling the boat necessitated a consideration of the fluid dynamics of the

[25] The average difference between high tide and low tide.

surroundings (cf. Krause 2010). It involved what Franz Krause described as “thinking like a river”, it entailed thinking in terms of flow (ibid.; 2021).

With the riversides and dwellers connected by water, notions of flow and locality complement rather than contradict each other (ibid.). Along the Lower Elbe, these notions are mutually constitutive not just through sediment- and water dynamics (Carse and Lewis 2020), but also through collective involvement and affect (Laszczkowski 2019). Thus, subjects undergo transformation not only during one moment of intense impact but continuously and repeatedly as the impact of these moments is recalled, narrated, and assessed (cf. ibid. 2020). Considering that political engagement is often based on peer-to-peer relationships, such events create new capacities for other people to reach out, having heard the stories from the people affected and concerned:

> “This (…) [deepening] of the river, I didn’t realize that at all. The connections weren't so clear to me either. But after hearing the stories of others, you take a closer look. When you get the idea that this is happening (…) then you ask yourself, how this can be true.” (Hintz 2023, Interview, 00:20:35, transl. by author)

In a similar way, I became increasingly aware of changes in the speed, range and force of the tides only after exploring the river and learning about the long-term effects of dredging. They present even more challenges for navigation on a watercourse that has always posed difficulties. As a result, the frequency of maritime accidents has multiplied in recent years. Recreational activities, specifically swimming and sailing, are losing popularity due to increasing risks associated with them. Furthermore, the pilots who are accountable for assisting container ships in navigating the main waterway are increasingly worried about the longevity and feasibility of their work forth (Diercks, F., personal communication, June 6, 2023; see also Hintz and Schuldt 2014).

To exacerbate matters, water flow and sedimentation is slowly eroding the mudflats that function as breeding habitats for wading birds, waterfowl, rare fish and plant species. Large parts of the mudflats have already disappeared, leading to the extinction of multiple fauna and flora species as well as the habitat of millions of microorganisms. While a decade ago, plenty of migratory and breeding birds were observable, and they came across a multitude of different fish species, this is

not the case anymore. To circumvent this process and protect the mudflats, elaborate groins were built. These and other sites, materials and processes associated with the deepening were observable during my journeys along the river (ibid.).

Whilst on board, I have also encountered dredgers and several scientific research vessels who consistently monitor and evaluate the effects of dredging. Fishermen have told me that the oxygen percentage of the water close to Hamburg started to drop drastically after the eighth deepening, further prohibiting underwater wildlife from spreading. This is primarily the result of the devastation of substantial algae populations, which produce a significant amount of the essential oxygen (Wilber and Clarke 2001; Wenger et al. 2017). Dredging operations obstruct and eliminate vital algal growth, resulting in an increase of oxygen-depleted areas in the tidal Elbe, leading to the suffocation of numerous fish (Hintz and Schuldt 2014: 194 - 215). Especially in recent years, fishermen have observed a notable increase in the quantity and extent of oxygen deficiencies in the tidal Elbe. However, they only become aware of these dead-zones not before three to four years after they have occurred, when an entire generation of smelt[26] and other fish have already disappeared (Buckow, L. personal communication, May 14, 2023; see also Hintz and Schuldt 2014).

Seamen have also noticed that the dredger's pumps extract not only sediment but also other organisms from the surrounding area. In addition to the evident decline in sea life populations, the nets and traps are no longer able to withstand the high pressure of the tides anymore. In recent years, fishers have voiced their concern for the increasing threat to their livelihood, with many colleagues leaving the profession (ibid.). Unlike most other impacted livelihoods and sites, the fishermen did not receive any compensation to sustain their business. The small group of mariners who continue to work on the tidal Elbe are feeling frustrated, as they were promised in 1999 that the eighth dredging initiative would be the final one (Selzer 2012).

Examples such as these illustrate the diverse effects of the deepening and how its politics manifest in different contexts. Along the river, one can observe all the adverse conditions non-human and human dwellers may encounter. When engaging in riverine practices, one can even feel how one's own body is exposed to different types of affect regarding nature and infrastructure (Laszczkowski

[26] Small fish species, common in the northern hemisphere.

2019). Every encounter with the river and its deepening is full of micro-perceptions that hit us before we are able to consciously make sense of them through our habitual modes of interpretation (cf. Massumi 2009; Bissell 2014). Each element of the daily incidents on the river contribute to the enablements and constraints (Bissell 2016) created by the deepening. All of the forces build on and combine with each other. Correspondingly, different body capacities are affected by the stream of previous encounters that happened before this moment. They are caught in subjective transformation processes, which they can only partially control (Laszczkowski 2019; 2020). Rather than understanding identities of subjects as static, the concept of micro-politics thus helps to appreciate how multiple flows and frictions in everyday encounters are actually shaping the people that eventually become politically active.

4.2.2 Deep Doubts on High Banks

On another day, I found myself on land, sitting on a trailer full of apples being pulled by a tractor. Upon arriving at the orchard, Claus, the driver of the tractor and owner of the fruit trees, began to talk at length about a new variety of apples that was growing there. Following a stroll through the fields, we came across expansive water reservoirs. This water is utilized in arid weather to irrigate the fruit and shield it from heat damage, or at night, to safeguard the blossoms from frost. The reservoirs are thus fundamental to secure the yield. The latest deepening has resulted in the saltwater reaching the riverside of the *Old Land*, thereby leaving many farmers in the marshland unable to use the river water for watering their orchards (Blohm, C. personal communication, April 4, 2023; see also Hintz and Schuldt 2014).

To compensate for this, Hamburg allocated water reservoirs. Considering also the state-funded reconstruction of harbor facilities, it is evident that various techniques have been used to "establish commensurability among what is often essentially non-comparable" (Laszczkowski 2023). Compensation is provided for environmental damage, quality of life, and livelihoods that are adversely affected by a project. The compensation process is a balancing act. Money, in particular, is commonly regarded as "the ultimate objectifier" that "commensurates the incommensurable" (Li 2015: 25, as cited in Lasczckowski 2023).

The water reservoirs, however, fall far short of meeting the demand as farmers require several million cubic meters of water during cold nights and the saltwater continues to move further upstream, affecting more and more farmers. This is the reason why Claus started to participate in the protests (Blohm, C. personal communication, April 4, 2023).

He told me that more and more brackish water habitats and groundwaters are becoming saline, further resulting in a decline in biological diversity and alterations to local species composition (ibid.). When I visited the riverbanks with a number of birdwatchers and nature enthusiasts who regularly observe the wildlife on the mudflats, some nostalgically recalled the rich flora and fauna that once characterized the unique riverine world. Now, instead, they are increasingly encountering deceased fish populations that are stranded on the banks due to the poor water quality. While the abundance of species is shrinking, others are profiting. For instance, the stock of geese and reed has grown immensely, often resting in numbers of thousands in the shallows of the river. Environmentalists have issued persistent warnings about the severity and irreversibility of these changes to the ecosystem (cf. Hintz and Schuldt 2014).

A few days later, I visited another homestead located directly next to the dike. For generations, it belonged to the same family. After a coffee, we walked over to the levee. Hartwig, a local farmer, started to explain to me how the embankments used to be much farther away and were re-built closer to the river after each inundation. I was told about the dike association and the special jurisdiction and solidarity that was prevalent in the past, all because of the immense threat that the water poses (Quast, H. personal communication, April 10, 2023). From above the dike, the water looked quite calm and harmless. It was hard to imagine how it could cause the instability and even destruction of embankments that were as massive as the dike we were standing on. Yet, this exact part of the dike was underflowed and crushed by the water masses during the 1962 flood. Some river dwellers recounted their vivid memories of that particular night, even though they were only children at the time:

In the night of the 16th of February 1962, the waves eroded the non-armored back slope of the dikes, causing structural damages which eventually led to breaches in the sea defenses. Large water masses first flooded the low-lying areas of the marshes. Most river dwellers were unprepared for the magnitude of this natural disaster, as a flood of this scale had not occurred in over a century.

With the river deeper than ever before, water flooded inland more quickly and to a greater extent than ever before.

The flooding eventually affected the entire riverine world, including Hamburg (as seen in *Figures 20*, as well as *31* and *32* in Annex). Thousands of homes were flooded, and hundreds of thousands of people were left stranded on their roofs or in their attics until they were rescued by boats and helicopters. Only after days, the full extent of the damage became apparent. The floodwater not only lingered for weeks but also claimed the lives of hundreds of people, countless cattle, and displaced hundreds of thousands of dwellers.

No one had considered the possibility of a coastal storm causing such catastrophic flooding in a city located more than one hundred kilometers inland. The traumatic effects were felt at both an individual and national level, as well as within the coastal engineering industry.

> "(…) [In] such extreme weather events, water becomes a catastrophic backdrop, a kind of atmosphere that dissolves into a traumatic context. In these circumstances, we can see most clearly how water refuses to become an object, and instead is an all-encompassing force that dampens everything and disrupts planetary relations" (Ballestero 2019: 426).

The flood of 1962 changed the politics of Hamburg and beyond forever, making dike safety a much higher priority than it had been before. In fact, heightened public awareness and increased coastal engineering and research often follow natural disasters that negatively impact the lives and property of many people (Bijker 2007). Thus, shortcomings in the dikes were detected, leading to debates concerning their long-term stability. As a consequence, a new and higher dike line was built closer to the river (Aschenberg and Kroker 1992).

While such floods are undoubtedly devastating, they also highlight the need for people to reach out in times of crisis to collectively fight against the water masses and its consequences. Storm surge disasters are thus central in public consciousness (Bijker 2007: 120). The events of February 1962 continue to have significant implications for witnesses today (cf. McEwen et al. 2017).

Having personally experienced several storm surges rising higher than ever before and deepenings, many (elderly) river dwellers remain deeply concerned about the deepenings' long-term impact on the riverscape (cf. Schuldt 2023, Interview, 01:07:20). As the ships and the streams put immense

Figure 19

A post located behind the dike in the *Old Land* indicates the water level during the most severe storm surges of the recent past, with the 1962 flood at the top (Dammann 2019).

.

Figure 20

Aftermath of the Storm Surge of 1962 near Hamburg (Bahnsen 2012).

Figure 21

During a storm surge in 2022, the water level of the Lower Elbe almost reached the height of the dike-line (Holm 2022).

pressure on the levees, the shoreline experiences considerable erosion (cf. Baur and Peters 2013). The larger the vessel, the greater the drawdown and, consequently, the higher the harm of the waves. Together with rising tidal speeds in recent years, there has been a growing incidence of subsidence and landslides in certain sections of the dike (cf. Hintz and Schuldt 2014). Accordingly,

the deepening causes the dikes to become unsafe and increases the risk and severity of storm surges.

This is particularly evident at a river bend located alongside the *Medemrinne*. Due to the proximity to the open sea and the frequently dominant north-west winds, the banks are exposed to significant strain from waves and currents. That is why the dike has dropped for more than 50cm in the last decade. As a measure to counteract the adverse effects of the rising tidal streams, the authorities have laid an underground foundation near Stade during the eight deepening. This plan, however, was abandoned shortly after with the result that the area had to be dredged again and a new base has now been built closer to the sea, at the *Medemrinne*. Stones and large sandbags were dropped in the water to guide and slow down the pressure of the water. Hydraulic engineering experts have publicly expressed concerns about the durability of this approach due to the lack of a comparative measure. Instead, now there is ample evidence of its failure. Currently, there is ample evidence of its failure (cf. Schuldt 2023, Interview, 00:17:05).

As the banks of the tributaries also become unstable and the authorities refuse to act there, some members of the community take matters into their own hands and build their own protective embankments (cf. Hintz and Schuldt 2014). River dwellers and hydraulic engineering experts are concerned about the stability of the dikes in the future, as they distrust authorities' measures. This is especially worrying considering that storm surges are regularly returning at higher levels (as seen in *Figure 21*).

Clearly, the consequences of the deepening affect all river dwellers in some way or another. This vulnerability gives many of them a reason to join the protests:

> "When the words of the instability of the dikes reached us, people started to listen. Only then did we finally understand how they related to the experiences of fishermen and sailors of long ago, and thus the true extent of the deepening. (…) This was when we joined forces (...) and tried everything to prevent the project." (Quast 2023, Interview, 00:25:13, transl. by author)

With this level of threat and impact, *deep* flows and frictions, as well as shared experiences, have created a collective force willing and capable of resisting dominant powers (cf. Laszczkowski, 2019).

4.3 Deep Flows - Deep Frictions

The dynamic nature of the riverscape is evident from all angles, as showcased by the diverse collections of river dwellers or the inadequate abilities of cartographic depictions in precisely delineating the constantly changing boundaries between water and land. In this fluid environment, ideas of stable and unchanging surroundings are readily substituted by concepts of continuous flux, akin to the human body which is impacted by and entwined with these movements (Krause 2010; 2021a).

Although the agriculturalists and the mariners, who were previously introduced, have different professions, they share a common bond with the river and its fluidic patterns. The history of the river – its utilization, morphology, and noteworthy occurrences – has always been closely entwined with the life stories of those who inhabit its banks (White 1996; Krause 2010). When the dikes were breached by another flood, river dwellers constructed a new and taller one. When the river provided abundant fish, the dwellers ardently fished.

For centuries, the dwellers of the Lower Elbe have adjusted their rhythms to the flows of the riverine world. The fishermen adapted their nets in line with the behavior of the fish, just as sailors adapted to changing winds and currents, and so forth. This range of river-related practices, that correspond with various aspects of the river, have in turn influenced the condition of the river. Rather than treating these events as separate, understanding them as rhythmic processes intertwined with other rhythms reveals the integration of seemingly distinct aspects of agriculture and Ultra Large containerships, of cold winters and hot summers, of low tides and extreme floods into this riverine world (cf. Krause 2010).

If we recognize the rhythmic patterns inherent in the interactions between dwellers and their environment, the landscape itself becomes an interconnected network of interwoven movements. This interconnectivity is part of a constantly evolving and changing ‘socio-environmental realm’. Such a perspective offers insights into how the movements and actions of non-human and human river dwellers, water and sediment flow, ship traffic as well as various other elements are interrelated and mutually determining along the Lower Elbe (cf. Ingold 2005; Tsing 2005; Krause 2010).

However, river dwellers have started to manipulate and alter natural rhythms over an extended period of time, consequently impacting the lives of fellow river dwellers. With the removal of sediment, the longstanding balance between the river and its non-human and human dwellers has become volatile without any possibility of reversal. Humans are not only taming the force of water (Linde 1908) with specific technologies, but they are also inadvertently releasing it.

Those affected by the deepening or its ramifications include sailors, pilots, fishermen, farmers, communities residing behind the dikes as well as other human and non-human river dwellers. In addition, there are dockyards, harbors as well as land- and water boards who have been adversely affected by the hydraulic construction measures. Concerned about the potential hazards and their vulnerability, many of them have started to oppose the deepening and express *deep doubts* about its impact and necessity. In their efforts, they have highlighted damaging ecological and societal impacts that contradict the positive aspects of this project. The harbors' lack of progress in recent years, along with adverse predictions for the future and the underuse of nearby deep-water ports, provide additional justification for the opposition (cf. Hintz and Schuldt 2014).

It is thus pertinent to acknowledge that, according to Ashley Carse, the construction of infrastructure produces scenarios with winners and losers (Carse 2014). However, it should be noted that this does not always happen in a straightforward manner (Carse 2012). For example, the authorities in Hamburg face the risk of dike breaches, just like those who oppose the project might benefit from the transportation of goods to Hamburg.

The resultant complications of different river-related activities reveal another aspect of the world that is connected to rhythms, namely the presence of power structures. Yet, I do not address this issue using the most prevalent framework in anthropology, drawing, for example, on the writings of Michel Foucault (e.g., 1977; 1978; 1982) or Eric Wolf (e.g., 1990). Rather, I aim to draw attention to the conflict regarding the interdependent influences that promote some forms of change while impeding others, alongside specific incidents that have instigated these changes. In doing so, my aim is to go beyond expansive notions of power and to illustrate power relations and the resulting actions in a naturally and materially grounded context (cf. Krause 2010: 268).

While some rhythmic activities may influence others, some do not possess the ability to compel others to adjust to their patterns. By highlighting the dominance of one activity, we can trace how it holds sway over others and prompts them to conform to its patterns. In the process, many

rhythms undergo significant transformations (cf. Krause 2010: 267-269). The argument that rhythms are susceptible (Tsing 2005; 2012) is therefore inextricably linked to power dynamics. This fundamental concept applies to any political engagement, waterway management, and all types of activities, whether related to rivers or not. It propels any sociocultural and ecological alteration (cf. Mol and Law 1994; Lefebvre 2004).

Frictions arise due to rhythmic flows (Krause 2010: 270). On the one hand, material frictions occur from physical dynamics, such as the natural flow of water, sediment movement as well as human excavations. On the other hand, different uses and purposes of the Elbe, with some more dominant than others, also lead to frictions. Hence, frictions may arise between material elements and between subjects. All of these frictions are interdependent. They are influenced not only by water and sediment dynamics and dwellers but also actively shape them in turn (ibid.). Throughout centuries, the flows and frictions of the tidal Elbe have thus shaped the existence of many generations of people who have lived alongside its banks, and those residing there today are no different.

To approach the frictions of different rhythmic activities, I have observed different utilizations of the Lower Elbe alongside the rhythms they align with. Thereby, it became clear that in the past, dominant rhythms have gradually transformed the Lower Elbe into a progressively specific site. A multitude of rhythmic activities underwent significant changes after being confronted with contrasting rhythms that took priority. In the end, only those rhythms that adapted endured, while others perished. Where the Lower Elbe was once home to a variety of rhythmic activities such as local sailing, swimming, transport, agriculture, fishing and the movement of an abundance of wildlife, it has now largely adapted to the rhythms of transport (cf. Krause 2010).

According to Toussaint (2008), frictions are conflicts that arise from non-local effects on localized matters. Indeed, local alterations to the river and doubts about them have become increasingly prevalent due to wider technological, socio-economic, and political changes. By simply residing along the river, dwellers now share comparable experiences and histories (Krause 2010) that are significantly shaped by the deepening. Frictions arose between those who were vulnerable and dissatisfied with the changes to the river and those responsible for its management.

CHAPTER 5:

Affective Resonance and Maritime Activism

Opposition to the deepening has increased ever since its negative effects had gradually become apparent and public awareness had grown. By emphasizing *deep doubts* about the *deep water*, river dwellers started to engage for the protection of the riverscape. In this chapter, I will portray how the opposition to the deepening evolved.

In the past century, before the most recent dredging measures, water quality concerns were the primary focus of political activism on the river. Allegations were made that industrial waste from manufacturing sites was contaminating the river. Images depicting fish ulcers caused by contaminated water from the Elbe River gained international attention. The fishermen were most affected by the pollution, which is why they were the first group to voice concern about the ecological damage caused by industrial practices in the river (Jungblut 1983; Damm 2019).

After investigating the causes of the poor water quality, attention was eventually drawn towards industrial sites and hydraulic construction works. The fishermen could then establish correlations between the dredger and the disruption of the river's natural functions. That was mainly because the area where the dredgers operated suffered significant damage to underwater biodiversity, leading to a decline in fish populations. This incited the fishermen to take proactive measures against the excavation operations. In the 1970s, they used their boats to block the main shipping channel, causing severe congestion on the river and complicating port operations. However, the opposition, led by the representatives of the fishing community, Heinz Östmann and Walter Zeeck, lacked structure, resources, and was limited in size (Rademacher, W., personal communication, May 24, 2023; see also Jungblut 1983).

During this time, hydraulic engineering priorities were not solely centered on deepening the river, but rather on carrying out various underwater construction projects aimed at mitigating the negative impacts of the deepening. Only as time passed, an increasing number of people have become aware of the intricate ramifications of the dredging procedures. During the planning process of the seventh deepening in the 1980s, inhabitants of the marshland eventually voiced

official objections, prompted by politician Hans Hermann Ott. These objections were taken into consideration and satisfied people at the time, as documented by Schmidt (2022: 273).

When the next deepening was on the agenda in the 1990s, many river dwellers did not object but instead endeavored to participate in the planning process. In the meantime, they became increasingly critical of the authorities' plans and implementation. To assist in the planning process of the deepening and to assess the potential hazards of this and other industrial developments, the *Environmental Planning Consortium of the Lower Elbe* (EPCL) was established (Schmidt 2022: 274).

Instead of carelessly dumping and destroying existing mudflats with sediment from the riverbed, the EPCL has recommended, in an expert report, the deposition of sediment on particular islands along the tidal Elbe. Other areas, in their view, should not be altered in any way because these were too important for the ecological self-purification capacity of the river water and would endanger the ecological quality of the Elbe River as a whole. Thereby, the EPCL did not want to prevent, but to help the execution of the plans in a compromised, sustainable way. It wanted to reduce the negative impacts of the deepening to the lowest possible level (ibid.: 274– 276).

However, no constructive cooperation with the authorities came about. The appointed expert commission negated the offer of cooperation and preferred to keep to itself and continue without the experts of the EPCL. Despite offering constructive guidance, locals have faced willful ignorance by authorities. Since then, people have had the impression that the authorities and their representatives do not consider the ecological and biological problems associated with the deepening to be relevant. On top of this, the planning authorities have even prevented people from following the plans, for example by repeatedly refusing to publish documents of public interest (ibid.).

The eighth deepening was then executed with minimal protests and proceeded without much issue. There was little media coverage given to the issue. However, three weeks before it was completed, in November 2000, the *Central Association of German Seaport Operators* demanded a further 'fairway adaptation' and urged for a prompt planning and realization. Soon after, Hamburg's Senator of Commerce has announced plans to deepen the waterway to a minimum depth of about 18 meters. This would be the largest 'fairway adaptation' of its kind, despite the fact that the effects

of the previous deepening have not been investigated as promised by the authorities (Hintz and Schuldt 2014: 9–13).

5.1 A New Beginning

The new situation caused political uproar. On 19 April 2001, a 'train of anger'[27] rolled towards Hamburg: from all over the riverbanks, river dwellers gathered along with farmers who chugged their tractors and trailers, loaded with fruit crates and draped with banners, through the city center to the town hall market. It took almost an hour before the last of the few hundred tractors was parked in front of the town hall – a sight the Hanseatic city had never seen before (Westphal and Nimtz-Köster 2005).

The river dwellers did not celebrate their harvest, they feared for their existence: slice by slice, more and more plans came to light that threatened the centuries-old cultural landscape. The ninth deepening of the Lower Elbe, at that time still described as vague dreams of the future by the authorities, was not the only reason for this protest. The government had proposed plans for two highways through the marshland.

Moreover, the production of the world's biggest commercial plane, the A380, necessitated the enlargement of the Airbus factory located next to the river. This expansion of the riverbank has not only cost millions of taxpayers' money but has also destroyed the livelihoods of farmers as well as Europe's largest freshwater mudflat, an important breeding ground for birds and fish, and home to rare plant and animal species (ibid.). The tideland was filled and concreted without consideration for the ecological impact or the interests of river dwellers, solely to serve the interests of political and private entities.[28]

With both these developments on top, the deepening seemed like a 'Trojan dredger' to the river dwellers, enabling entry into the industrialization of the Lower Elbe (Schmidt 2022). Following

[27] According to an article in the *Hamburger Abendblatt*, referring to the protesters as a *"Zug des Zorns"*
[28] For a thorough analysis of this conflict, please see Westphal and Nimtz-Köster (2005).

these events, river dwellers have started to join hands to foster stronger political cohesion and proactivity than ever before. This led to major political and administrative disputes and extensive debates, protests and bureaucratic challenges surrounding the implementation of the ninth deepening. As a result, the project was delayed and faced controversy for nearly two decades. In what follows, I will detail the circumstances and processes involved in this protracted controversy, paying particular attention to the projects' opposition.

5.1.1 Commoning Processes

Due to the new level of threat, several initiatives were launched to protect the river from the forthcoming jeopardy[29]. Local communes, parties, churches and clubs started to unite despite their specific concerns. Environmental agencies, including the *Friends of the Earth Germany* (FoE), *Nature and Biodiversity Conservation Union Germany* (NABU[30]), and the *World Wide Fund for Nature* (WWF) also began to oppose and actively impede the project. Together, their objective was to comprehensively understand and protest the multifaceted ramifications of the deepening.

Due to the extensive media coverage of the conflict, however, individuals from various backgrounds also became more familiar with the issue. While the deepening received significant support from the media in Hamburg, the northern banks, and other areas, the coverage from the southern bank has been more skeptical. It seemed that environmental protection mostly concerned locals instead of authorities or the wider public. Meanwhile, numerous local and national media outlets have suggested that a small number of obstinate farmers were obstructing the entire harbor (Westphal and Nimtz-Köster 2005: 65).

However, the concerned farmers received support from the *Lower Elbe Protection Alliance*. This was a novelty, as it marked the first occasion for dwellers from the northern bank of the river to unite with those from the southern bank as a collective group. As one of the largest citizen

[29] For instance, the support groups *Rettet die Elbe*, *Rettet das CuxWatt*, *Hamburg für die Elbe*, and *Waterkant*, were formed to safeguard the Lower Elbe from the deepening. Besides, the *Hafengruppe Hamburg* was founded with the objective of drawing attention to the injustices of global trade.

[30] In German: *Naturschutzbund Deutschland*

initiatives in Germany's history, the coalition boasted approximately 30.000 members. Around 30 different organizations and individuals, including fruit farmers, merchants, nature protection groups, sailing clubs, countrywomen's associations and lawyers, came together in their concern for the Lower Elbe, which they viewed as threatened by the conduct of Hamburg's authorities. While participants may have had diverse motives for participating, they ultimately shared identical objectives (Schuldt 2023, Interview, 00:55:29).

Eventually, frequent informational meetings were organized to raise public awareness regarding the upcoming planning approval. For this, the *Regional Alliance against the Deepening* was established. It aimed to operate as an unbiased collective of dedicated individuals. Anyone who was interested could join (Schuldt 2023, Interview, 00:24:30). The alliance convened once a month in Cadenberge, situated in the midst of the marshes, to discern the ramifications, arrange protests, and perform other actions. Over the years, all kinds of people have started to attend the meetings, including representatives from pomiculture, fishery, political parties, and environmental protection agencies (ibid., 00:55:29). Unlike before, the opposition to the ninth deepening now involved a diverse group of activists and experts from various fields. That meant that the resistance movement consisted of individuals and groups who represented a wide range of ideologies and worldviews.

During demonstrations, activists often interacted with other actors such as locals, bystanders, or the police. Such interactions capture the unique quality of transnational encounters, where global and local concerns are brought together in new and unusual partnerships (Juris and Khasnabish 2013). Nevertheless, there were also signs of disparity in the resistance. The seafarers, for example, felt neglected, especially in contrast to the farmers who have received millions of Euros for new water reservoirs (Selzer 2012).

Furthermore, there was minimal participation from river dwellers of the northern riverbanks[31], although they were almost as impacted by the deepening of the river as the southern riverside. One activist suggested that the 100-kilometre distance or the need to cross the river by boat may have contributed to this divide (Schuldt 2023, Interview, 01:13:20). Another individual pointed to the longstanding historical roots of the southern riverbanks and its dwellers and the corresponding

[31] Besides the members of the *Lower Elbe Protection Alliance,* who were mostly against the extension of the Airbus factory and less concerned with the ninth deepening.

deep connection to the river that does not exist ‘on the other side’. Clearly, the hub of the resistance was located on the southern banks.

However, at this point it is worth noting that certain nominations and descriptions may lead to an “exoticization” (Theodossopoulos 2014: 416) of the resistance. Regardless of whether the intention is to belittle or romanticize it (see, for example, Abu Lughod 1990), or to be congruent or incongruent with the activists, or to portray them as unwavering and intransigent, or as having a superior understanding of the situation, political activism is often being detached from the complex networks of power and everyday dependencies and interrelations that shape them (Theodossopoulos 2014: 416; see also Scott 1990; Laszczkowski 2019). Dimitrios Theodossopoulos explains that this is a precursor to a “stereotypical reduction (...) of resistance into static images of homogenous, undifferentiated resisting subjects” (Theodossopoulos 2014: 418, as cited in Laszczkowski 2019). Relating resistance to vulnerability, affect, and interdependencies thus challenges the tendency to position resistance as a force separate from power, leading to a “de-exoticization” (Theodossopoulos 2014: 426) of resistance (cf. Laszczkowski 2019).

It should also be noted that the proposals for the new deepening were not universally opposed by all inhabitants of the riverbanks (although by far the most activists were river dwellers), just like some officials in Hamburg may have opposed them. When I name the opposition of the deepening, I imply this heterogeneity. When I name the authorities as the counterpart, I imply this heterogeneity as well. Furthermore, people involved in challenging other infrastructure projects, such as the construction of the A20 motorway (Schuldt 2023, Interview, 00:59:17) or the Airbus factory, started protesting the deepening as well, and activists involved in the deepening began participating in contesting other infrastructure projects, too.

5.1.2 See-saw Politics: Negotiating Controversies

From the very beginning, the planning approval was afflicted with serious technical errors and has therefore been the subject to much criticism (cf. Hintz and Schuldt 2014: 144 - 160). In accordance with the *Federal Waterways Act*[32], the initial version was published in 2006.

The planning documents were available to the public for a reduced timeframe of six weeks, in accordance with the provisions of the new *Act on the Acceleration of Planning Procedures for Infrastructure Projects*[33]. Although such a "strategic shift of temporal scale (…) massively disadvantage[d] antagonists" (Nonini and Susser 2020: 2) of the complex project, approximately 5.200 legitimate objections were submitted. With the issue receiving extensive attention in public (media) and government plans being extensively scrutinized by experts, notable deficiencies and restrictions of both the measures and the political decisions and procedures have come to the fore.[34] That is why the HPA withdrew its plans in June 2007. With this development, it was widely recognized among protestors that the determination of the state can be undermined through direct mobilization and objections. The lack of appropriate environmental considerations, however, was deemed a significant act of hostility by the people of the marshland (Meier 2014). For activists, it appeared that the authorities were displaying an unfair weighing of pros and cons (Schuldt 2023, Interview, 00:45:21).

In late 2007, a series of formal conferences were held in Cuxhaven and Stade to present and discuss plans of the ninths deepening. These critical events saw high attendance and turned out to be decisive for further proceedings.

On one side, there were few advocates for the deepening, consisting of representatives from the project and port employees, among others, who were involved in the project or the port or in another way. On the opposite side, numerous opponents stood against the project, such as river dwellers and other concerned individuals, alongside protest groups and dike associations, as well as environmental activists (cf. Schuldt 2023, Interview, 00:24:30). According to witnesses, it turned out to be a well-moderated but extremely heated debate. *Deep doubts* about the predicted

[32] In German: Wasserstraßengesetz.
[33] In German: Gesetz zur Beschleunigung von Genehmigungsverfahren im Verkehrsbereich.
[34] These were examined and published in detail by Hintz and Schuldt in 2014.

effects of the planned hydraulic engineering measures and questions about dike safety could not be dispelled. One activist remembers:

> "We attended, and listened to the speeches, which we found to be quite outrageous. I wondered if the speaker truly believed that average citizens could be deceived so easily" (Schuldt 2023, Interview, 00:29:14, transl. by author).

Due to the representatives' inability to competently justify their reports, plans, and prognoses, the local population began to distrust the officials and scrutinize their actions even more. Since then, those responsible for the deepening have lost credibility, especially among activists. From this point forward, the project operators have declined to make public appearances and ignored the resistance whenever feasible. As a result, there have been no opportunities for transparent discussions with the planning authorities and representatives of the project. Shortly after, a former Hamburg Senator for Economic Affairs and member of the dredging companies' supervisory board, expressed that the project must be pursued by 'all means necessary' (Hintz and Schuldt 2014: 133–144).

Eventually pressurized by the public, the BAW started an investigation of the eighth deepening, which surprisingly concluded that damages on the dikes were caused not by ship waves (ibid.). Instead, the institute absurdly accused runners of damaging the dikes more than the waves would do. This outcome was easily refutable as the measurement exhibited major deficiencies (cf. ibid.). For many political activists, this investigation was symbolic of the authority's deception regarding the deepening.

The authorities also attempted to fragment the diverse groups of the resistance. With official news, they accused environmental organizations and associations of knowingly misleading citizen regarding the damage done by the impacts of the deepening. It backfired, leading the authorities to face queries about who was truly misleading whom (Hauschildt, M. personal communication, April 18, 2023).

Walter Rademacher, the well-known and esteemed speaker of the Regional Alliance, described the decision-makers as a cohesive, publicly closed circle of private and political organizations and interests that have the power to implement various construction measures behind

the curtain, calling it the "Water Engineering Circus" (Rademacher, W. personal communication, May 24, 2023). As a former hydraulic engineer, working in different agencies, Walter has vast insider knowledge of the construction authorities' mode of operation. With reference to an episode of the satirical investigative TV-show *Die Anstalt*[35], he argued that the German authorities in the construction sector are structured in such a way that environmental policy is not adequately addressed and merely seen as an 'obstacle' to overcome in order to realize a project. Due to the diverse directives of different agencies, policymakers tend to tackle infrastructure, environmental, and other concerns as separate issues (cf. Hein 2016).

During several telephone conversations, Walter argued that infrastructure authorities frequently pursue new projects to keep their employees occupied, often neglecting actual necessity and potential long-term societal and environmental impacts (Rademacher, W. personal communication, May 24, 2023). In the aforementioned episode, the TV program explicitly criticizes the authorities' use of cost-benefit analyses to assess the appropriateness of all infrastructure projects. They only consider direct, short-term ecological impacts and measure them against the expected benefits for society as a whole. In this way, planning authorities externalize political, economic, and ecological problems not conceptualized as such. Based on neoclassical economics, cost-benefit analyses and their regulatory requirements are influential instruments that have sparked scrutiny and research into dredging operations not just in Germany (Carse and Lewis 2020: 3):

> "The dominance of [cost-benefit analyses] (…) constrains critical analysis of dredging as a complex, multi-scale phenomenon that links global transportation and trade to local politics and ecologies" (ibid.)

In the end, Walter stated that authorities are capable of achieving their project objectives regardless (Rademacher, W. personal communication, May 24, 2023). Lobbying has also played a substantial part in the controversy concerning the deepening, with accusations of bribery, prompting outsiders to speculate about the behind-the-scenes negotiations (Schuldt 2023, Interview, 00:48:54).

[35] Episode 74: *E-Fuels oder doch eher "Ö-Fuels"?,* a production by the German public-service television broadcaster *ZDF*.

Activists have found out about links between HPA and the Belgian dredging firm *van Aard*. Recently, a former supervisor of the deepening retired, and the entire management board of *van Aard* traveled to Hamburg (Schuldt 2023, Interview, 00:33:18). With alternative dredging solutions available, campaigners like Walter argue that the main reasons for the realization of the ninth deepening lie with the dredging industry rather than the shipping industry (Rademacher, W. personal communication, May 24, 2023). Many river dwellers argued that politicians maintain close ties with shipping companies and dredging firms yet lack a genuine concern for environmental issues.

River dwellers have become activists, as evidenced not just by their actions but also by their amended views on citizenship and the state. The state was no longer viewed as a rightful representative of its citizens, but instead as a harsh and malevolent entity which caters to the agendas of illicit factions and individuals (Laszczkowski 2019).

5.2 Pressure on more or less solid Grounds

To get more people involved, the resistance became increasingly united and began organizing a wide range of activities: activists gathered on the river, in orchards, on the dikes, on town hall squares and other public spaces, organizing smaller rallies as well as mass mobilizations. They engaged in hindering dredging activities, conducting educational work, raising awareness, and submitting petitions.

From that point onwards, vigils were held every Monday evening, even during the winter months. Small groups stood together at certain meeting points along the Lower Elbe, holding flags and banners, illuminated by a patrol lamp. Initially, there were merely three or four, but gradually, the numbers grew. Activists quickly realized that it only made sense to demand something from the government if there is real pressure on the ground, from a position of strength (Schuldt 2023, Interview, 00:14:16). That is why the resistance put a lot of effort into organizing larger and more radical protests, including actions on the river.

Once, over fifty boats, including the few remaining fishermen, gathered in the harbor of Cuxhaven for a rally. They formed a convoy and headed towards the Port of Hamburg with banners and loud noise, travelling the entire length of the Lower Elbe (see *Figure 22*). People also made a pilgrimage

Figure 22

Fisherman, Sailors, and other river dwellers united on the river in protesting against the deepening (Rademacher 2019).

along the more than one hundred kilometers of the disputed infrastructure site (see *Figure 38* in Annex). Prior to demonstrations and official hearings, the resistance would meet in Claus' orchard to make protests signs, flags, and banners. During the demonstrations, the activists remained calm yet dedicated. Depending on the site, they often used whistles, flags, banners and other devices to attract attention (Schuldt Interview 2023, 00:29:14). Some activists, however, broke the law or went beyond the rules of conduct. For instance, some were masked and navigated their boat into restricted areas (as seen in *Figure 23),* while others interfered and clashed with the police.

Protesters recounted that a strong and inseparable sense of unity prevailed among the attendant activists, who collectively defied the actions of the state and what they represented. They experienced *deep doubts*, as they stood or sailed together. Oftentimes, they were exposed not only to the strong tide and inclement weather conditions but also to potential interferences from the authorities. Once the intertwined deep affects reverberated and resonated through their bodies, they became a collective force. Through shared experiences, they underwent a transformation from

Figure 23

Masked Activists are protesting against the Deepening on a section of the river in the Port of Hamburg that is restricted to Container Ships, Haulers and Coast Guards (Marks 2020).

a collection of vulnerable individuals into a temporary collective with the ability to resist (cf. Laszczkowski 2019).

Meanwhile, the impacts of the deepening and its resistance were increasingly evident along the Lower Elbe, also affecting and involving more and more dwellers. Local media reports, conversations, and rumors have circulated regarding the destruction of certain riversides and animal populations, as well as demonstrations and negotiations. River dwellers and activists began to view the infrastructure project not only as an inappropriate handling of the environment but also as immoral. They believed it was wrong to try to control nature without respecting its character. It was common to hear statements such as "nature will eventually defend itself" (Schuldt 2023, Interview, 00:01:32, transl. by author). Furthermore, it was considered as "un-Christian" (Hauschildt, M. personal communication, April 18, 2023, transl. by author). With strong connections between the church, local communities and protest networks, they provided a platform for the resistance. As a result, Christians started to include the prevention of the capitalist project in their prayers (as seen in *Figure 24*).

Figure 24

Christian Mass in the *Old Land* with Banners of the Resistance (Rademacher 2019).

Figure 25

The Logo of the Alliance and of the entire Resistance, which can be observed all throughout the Marshland (Fatzer, S. 2020).

The common struggle eventually became part of culture of the river dwellers in the marshes. This was and still is evidenced by the presence of the resistance's logo throughout the entire marshland. It was originally a protest sign made in Claus' barn for a demonstration but eventually became the emblem of the entire resistance movement (see *Figure 25*). When activists passed away, a flag with this logo was raised at their funeral (ibid., 01:18:43). Local newspapers frequently reported on the contestations and books were also written about them (e.g., Hintz and Schuldt 2014; Feldt and Schumacher 2017; Schmidt 2022). With most demonstrations taking place in the marshes and on the dikes, these areas can be considered as centers of resistance and as spaces for social critique in the context of the deepening (as per Schüler 2017).

The breadth of the resistance in turn provoked contradictions in local politics. Mayors sided with the protesters, whether in earnest or out of expediency. An activist recalled an incident where a sign had once been placed too close to the road. Following this, the police removed the sign. When the local mayor and other river dwellers found out about this, the officers had to return the sign, allowing for it to be replaced in its original position.

All these initiatives have successfully inspired river dwellers to unite and have generated attention for their cause throughout the years. At a certain point, activists witnessed something that they

believed had deeply touched the people (Schuldt 2023, Interview, 00:14:16). One activist told me that "what we wrote and said was also believed by many others".

This was demonstrated through several torchlight processions held at forty locations along the 140km dike-line, attracting approximately ten to fifteen thousand people to the banks of the Lower Elbe. One torchlight procession was even carried out along the entire length of the Elbe River for its protection, uniting thousands of people from hundreds of kilometers apart in one protest. "The significance of this contingent event was that it triggered a rapid shift in the structure of feeling prevalent among the activists at the time" (Laszczkowski 2019). Claus has pointed out that during the torchlight processions, all kinds of individuals, no matter if river dwellers or not, spontaneously went to the nearest dike and lighted up their torches. This was a key moment in the history of the opposition:

> "(…) [The torchlight processions] constitute a wonderful occasion for the majority of people, providing a sense of community, as evidenced by several thousand participants" (Schuldt 2023, interview, 00:24:30, transl. by author).

In this context, Donatella della Porta (2008) has indicated how participants' collective engagements strengthen the motivation and ability to resist by fostering a sense of solidarity and belonging (see also della Porta and Piazza 2008). Laszczkowski (2019) has highlighted how

Figure 26

Thousands of River Dwellers showing presence on the Embankments of the Elbe River at a Torchlight Procession (Rademacher 2019).

Figure 27

Environmental Activists during a Torchlight Procession in Hamburg (Quellmalz 2008).

embodied affects generate these moments in the first place. Active bodily participation in such contingent and contentious events thus reveals how affects serve as a powerful impulse to resist. Such deep affects can be observed through the vulnerability, fear, pain, and thrill of the demonstrators. Grasping them is crucial to fully comprehend collective direct-action activism. Such critical moments "(…) can change the structure and trajectory of the development of a social movement" (Laszczkowski 2019).

The noteworthy level of participation ultimately displayed a widespread concern among river dwellers regarding the deepening. Consequently, it has become customary for the media to provide coverage of it. However, after some time, it became evident that only a minority of individuals were consistently engaging in the resistance movement, whilst the majority were present at few protests only. Those who have been at the forefront of the opposition, partaking on every event, have typically been river dwellers that have a direct involvement with the Lower Elbe or are directly affected by the deepening:

> "(…) [It] was apparent that interest was decreasing considerably. Hence, the core group in attendance was not particularly large" (Schuldt 2023, Interview, 00:24:30, transl. by author).

For many activists, the reason why many potential stakeholders failed to engage with this issue is that the once deep connection between river dwellers and the surrounding terrain no longer exists. This can, to some extent, be attributed to the deepening as its ramifications displaced numerous previous river usages. I would often hear that the benefits and drawbacks of the river are no longer widely recognized by the public.

River dwellers of the older generations also claim that the role of the dikes is much underestimated by the authorities and by the younger generations who have not witnessed the major catastrophic events of the last centuries. Apparently, there are many people who move to this area without knowing the historical context and the risk of flooding. They also complain that, as I have observed, the majority of individuals attending meetings on the deepening issue are of an older age (ibid., 01:07:20). Furthermore, a significant number of activists, flood witnesses and experts have now retired, and some have passed away (ibid., 01:18:43).

Once, the *Regional Alliance* arranged a gathering in the *Old Land*, where eyewitnesses would talk about their memories and encounters with the flood of 1962. Although the organizers had anticipated an audience of 35 individuals, nearly one hundred river residents attended the event, inundating the crowded venue. Various juveniles communicated to me their increased sentiments after the gathering, consequently leading to a substantial alteration in their perception of the river and its flows (Schuldt 2023, Interview, 01:05:49).

Such educational events can aid in reinstating the profound meaning of the river for both younger and older residents, cultivating a renewed bond between them and the river. With this in mind, I have met quite a lot of river dwellers, particularly those born after the dramatic changes to the Lower Elbe ecosystem became apparent, who hold the opinion that any additional dredging should be ceased. They argue that, after becoming familiar with the riverside and its transformations, they have come to acknowledge its shocking condition. It is widely believed that policymakers should prioritize the natural environment rather than supporting capitalist economies. Most of the young river dwellers, who are aware of the project, oppose it. However, they are not actively involved in the resistance movement. When confronting them with it, most told me they did not have the time to engage regularly. One member of the *Regional Alliance* also told me that:

> "It is understandable that, as a young person, launching a career or planning a family and home in today's complicated circumstances may be overwhelming. Their schedules are filled to the brim as a result. Thus, it is possible that they may feel no time remains for participation (…)" (ibid., 01:07:20, transl. by author).

Ernst-Otto also spoke of an overtired society: Currently, there would be too many problems, which is why it is understandable that many people just want to be left alone with their own problems.

> "These are rapidly changing times, and what is popular today may not be popular tomorrow. Topics of focus tend to change every few weeks. Consequently, we, as a resistance, have had limited continuity in our actions" (ibid., 00:24:30, transl. by author)

People can only effectively tackle a problem, when they feel personally affected by it or it concerns them significantly, prompting them to react. In this context, one has to say that it is not easy to

activate many people when there is no visible danger. The threats of the deepening and the critical conditions of the river and its non-human dwellers are hidden below the surface and the consequences of the deepening come to the surface decades later, with some not even directly ascribable to the hydraulic construction measures. It is also worth noting that the resistance relied solely on self-financing and volunteer efforts.

5.3 Breaking Promises

In 2008, the Lower Saxony State Parliament opposed the ninth deepening, as stated in the *Otterndorf Declaration*. The declaration highlights major concerns regarding the potential impacts on regional dike safety, flood protection, water management, and ecology. It notes that the river's dredging capacity has reached its limit. Additionally, it is stated that increased cooperation among ports would eliminate the need for additional dredging measures (cf. Selzer 2012). While politicians spanning all parties in Lower Saxony rejected the deepening, the majority of politicians in Hamburg and Schleswig-Holstein were in favor of the measures.

Consequently, the deepening was a significant issue in the Hamburg parliamentary election campaign in 2008. Following the election, new hydraulic construction plans were put out to the public again. With many changes in the plans, it became clear that criticism had led to significant rethinking and redesign. Despite this, the number of objections increased to 7.200. After people have again indicated serious technical and methodological errors in the planning approval, the *Federal Administrative Court* ordered a temporary halt to the process.

Soon after, the third version of the planning documents were made available for six weeks and involved thousands of objections again. Although the initial deadline for the planning approval decision was not met, the plans were approved this time and submitted to the European Commission to request a statement under the Habitats Directive. One year later, the European Commission allowed the execution of the deepening 'for crucial reasons of overriding public interest', even if adverse impacts on surrounding zones would take place. Stringent measures were

enforced to safeguard the critical plant species hemlock, and monitoring had to be carried out and published annually for the following twelve years.

After receiving approval from the EU and federal authorities, the ninth deepening was further backed by the states of Hamburg and Schleswig-Holstein. Subsequently, Lower Saxony granted approval, whereby various politicians disregarded their commitments in the *Otterndorf Declaration* and showed no further interest in the document (cf. Schuldt 2023, Interview, 00:56:05). This greatly angered the river dwellers, who expressed profound discontent towards their government. It was a major setback for the resistance and thus followed by a period of apathy that lasted for several months. Eventually, "the movement regained force and the ability to resist, not just symbolically but physically and concretely" (Laszczkowski 2019). Similar to the deepening, the resistance was also oscillating between complete abandonment and resumption.

5.4 The Verdict

Although distinct river uses and dwellers were all connected through the rivers' water and the deepening, planners and politicians eventually divided each issue into legally independent packages and handled them separately (cf. Hein 2016). This 'administrative trick' proved to be a decisive advantage for the project's proponents. As the conflict was divided into distinct issues, the recently united opposition was fragmented and dismantled one by one.

Fishers, farmers, environmental organizations, and dike associations were now forced to manage their objections in a distinctive manner, based on their legal positions. Only those groups directly impacted by the project had the necessary legal standing to pursue litigation, which put the collective resistance at a disadvantage. Specifically, the dike associations had a strong legal position. However, after investigating and proving the cause of the levees' instability, the government agreed to cover the excessive costs of new bank protection measures. This ultimately led to the dike associations accepting the deepening. As mentioned earlier, government subsidies also helped to alleviate many concerns of farmers, sailors, and others in the short term.

Legal proceedings were thus initiated by two environmental associations as well as local marshland authorities. Hence, the ninth deepening could not be prevented until large amounts of paper or digital files had been dealt with. At that stage, the project was both physically and metaphorically unpacked. Activists thus encountered towers of cardboard boxes filled with project documents. This highlights the politics of scale in multiple ways (Nonini and Susser 2020; Lasczckowski 2023). The sheer volume of the material testifies to the project's vastness and complexity, making it appear formidable and almost beyond human scale. However, with enough people and perseverance, it was possible to take the files, folders, and sheets of paper out of the boxes and to dismantle the project (Lasczckowski 2023). From this angle, the deepening appeared to be made up of numerous small and distinct components; it could be described as an "interscalar assemblage" (Carr and Lempert 2016: 14), where different scales compete and interact with each other (cf. Tsing 2012:510; Laszczkowski 2023).

In fact, scalability, the ability to "expand without changing" (Tsing 2012: 507), is central to the creation of capitalist societies (Laszczkowski 2023). The capitalist market is always expected to expand, and the deepening makes this possible. However, this requires significant material and political effort to stabilize and eliminate the diverse elements that disrupt the process by forming unpredictable flows and frictions (Laszczkowski 2023). This creates potential for contestation and resistance (cf. Nonini and Susser 2020).

Although many people took the scale of the deepening for granted, several activists questioned it and came up with the idea of the 'deepening light', which consisted of intervening in the riverine world on a smaller scale (cf. Hintz and Schuldt 2014). Even though this alternative was denied, it highlights the fact that opposition to large-scale infrastructure projects could profit from a greater consideration of the fraught nature of the authorities' effort to create and maintain scale (Laszczkowski 2023).

During the hearings, environmental experts emphasized the need to identify appropriate thresholds for water, flora and fauna in the river ecosystem before any intervention in the environment can take place. Initially, the contestations resulted in a moratorium on construction imposed by the *Federal Administrative Court* to resolve concerns regarding water conservation and protection of species. The court also identified a number of legal errors in relation to the planning permission procedure. Nonetheless, it deemed that future improvements could rectify such issues.

One activist remembers that the claimants arrived with one, two or possibly three solicitors to court, whilst the authorities were accompanied by six, seven or eight legal representatives. The issue at hand is the unequal distribution of financial resources between authorities and lobby organizations, on one hand, and private individuals and donation-funded environmental organizations, on the other. Authorities and lobbying organizations have considerable financial resources at their disposal, enabling them to launch legal action using both commercial and public funds. Meanwhile, others are compelled to use their personal assets to cover the costs of litigation, and some have none at all. Activists have extensively complained how this creates an imbalance in the legal system. The financial implications are substantial as they depend on the value at stake in the litigation (Schuldt 2023, Interview, 00:21:55).

Eventually, the objections to the disruption of the river's recuperative potential and the consequent enduring ecological harm, which constituted the primary basis for their legal challenge, have been disregarded. The court asserted that the execution of restorative measures would require enhancements but concluded them to be lawful. Two issues were identified in the impact assessment and coherence assurance in favor of the hemlock but the *Federal Government and Hamburg* could address these shortcomings through supplementary proceedings. In all other respects, the claims made by the environmental associations were unfounded and with this, the *Federal Administrative Court* eventually approved the ninth deepening in 2017. Once the assessment of the environmental impact on habitat conservation was completed, the dredgers and hydraulic engineers were thus allowed to realize the plans.

Thereafter, the activists that were present during the hearings (as seen in *Figure 28*) stated that nature conservation and citizens' rights have been disregarded, bypassed, and subordinated to ambitious plans due to pressure from authorities and dredging companies (cf. Westphal and Nimtz-Köster 2005). The project opponent's lawyer even suggested that the ninth deepening was an instance of how major projects were able to undermine democracy, stating that there was no consideration for legality, but rather a focus on finding ways to push it through.

After all legal proceedings were completed, the so far largest intervention in the Elbe's waterway commenced on the 23rd of June 2019. The activists showed their anger to this with diverse protest actions. Protesters displayed banners featuring the logo of the resistance and left 150 kilos of dead fish in front of the authorities' building (as seen in *Figure 33* in Annex). Others tried to hinder the

Figure 28

Demonstrators in front of the *Federal Administrative Court* in Leipzig (Schuldt 2019).

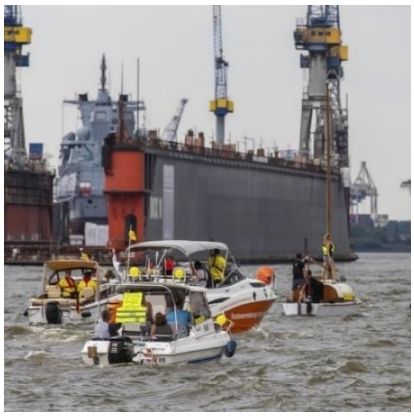

Figure 29

Protesters heading towards the dredger to join others in blocking it (Rauhe 2020).

dredging activities that commenced right in front of the marshes (see *Figure 29*). Some boat operators even attempted to intercept the dredger by steering their vessels into its path (Schuldt 2023, Interview, 01:34:19), resulting in interventions by the coast guard.

5.5 What is left? The Interplay of Vulnerability and Resilience in Resistance

The judicial approval of the deepening and the commencement of construction along the river resulted in a devastating setback for the opposition. In the subsequent months, the campaigners shoveled for novel methods and channels to prolong their resistance, while dredgers shoveled for sediment. Including today, the whole resistance struggles to recuperate.

Following the failed lawsuit, activists convened once more in Cadenberge to review and rectify their previous actions and to come to terms with the jurisdictional setback. The activists stated that the atmosphere resembled an internment camp, conveying a sense of debilitation, hopelessness, and failure. There was a pervasive sense of dissatisfaction and frustration that all the efforts had been futile, as Hamburg and the federal government did not show a willingness to consider their

arguments (Schuldt 2023, Interview, 00:47:46). It was noted that the legal system does not evaluate the worth of a proposal, but instead its viability in compliance with the law (ibid., 00:17:05). In the meantime, several active members have announced their retirement:

> "I apologized; I was fatigued. I could not proceed any further. I was unwilling to participate in this matter any longer. We were just working for no purpose as there were no parties that listened to us, at least not those who should have expressed an interest." (Hintz 2023, Interview, 01:01:34, transl. by author)

Notwithstanding, other campaigners persisted in expressing their anxieties over the ecological harm inflicted by dredging equipment. The gathering resulted in a consensus that, despite their long-lasting and extensive engagements, the deepening continued regardless (cf. Laszczkowski 2019). Ever since, the alliance's monthly meetings were suspended.

In 2022, the deepening was declared complete. Soon after, the WSV and the HPA admitted that they would not be able to maintain the newly assigned water depth of 18 meters. The deepening has failed, as declared by nature conservation organizations, political parties as well as Hamburg's parliamentary group (Buchen 2022). External organizations' efforts then resulted in first positive concessions in early 2023, when the HPA expressed willingness to collaborate in container handling with other ports nearby. Hopes were raised among river dwellers that this advancement could prompt a restructuring of river management.

Nevertheless, maintenance dredging operations continue to persist with heightened efforts by the dredgers and growing fury on the part of the opponents. This is drastically shown at the annual meetings regarding the future of the Lower Elbe. On June 17th, 2023, the hearing had the title 'river at its limit?'[36] and was giving a platform for a group of experts from different fields to talk about the current condition and future of the river after the ninth deepening. After indicating that the natural habitat has been irreversibly destroyed, resulting in the extinction of certain segments of flora and fauna, a heated debate ensued regarding how to address these findings.

Apart from these informative events, it appears that the resistance is no longer operational. This has hindered this study's attempt to research political activism using a 'militant ethnographic'

[36] In German: *Anhörung zur Zukunft der Elbe – Fluss am Limit?*

approach. However, there were still events related to the opposition, such as the previously mentioned hearing and other meetings. Moreover, participating in activities related to the river, its infrastructure, and activism also helped to clarify the intricate relationship between political activists and the infrastructure site. To fully understand the unfolding of the flows and frictions and their affective nature, it has been essential to experience them.

Being part of critical events, like the torchlight processions, the verdict, the last meeting in Cadenberge or other protests and situations affected by the deepening, offers valuable insights into the interplay between susceptibility, affect and the experiences of activists. They align with Butler's (2016) and Laszczkowski's (2019) notions of vulnerability as a central part of resistance. Activists demonstrated their vulnerability with their actions, statements, and expressions.

Mateusz Laszczkowski (2019) proposed that vulnerability can enhance individual and collective resistance through the physical and interpersonal dimensions of affect. While my observations support his insights, I have come to recognize that affect and vulnerability also have the potential to undermine both individual and collective resistance at any given moment. However, vulnerability is not exclusive to bodies engaged in resistance; instead, it complicates the distinction between the domination of certain flows and the reaction of others. In other words, vulnerability is not limited to those actively opposing a force; it complicates the relationship between those who dominate and those who resist (Laszczkowski 2019).

In this context, affects denote variations "in the body's capacity to act and be acted upon" (ibid.), revealing both "vulnerability and agency" (ibid.). The overstrained activist's ability to continue in the resistance was visibly impaired by the lost verdict and the connected emotions of exasperation, frustration, and anger. However, the surplus of strength and resilience, which I observed during my fieldwork, also provided some with the willingness to persist even after the failed lawsuit. Hence, affective dynamics among protesters significantly influence the capability to resist, not only during critical junctures, as elaborated by Mateusz Laszczkowski in 2019, but also beforehand and afterward. Previous studies from anthropologists have elucidated the sociologically constructed nature of emotions and their vital role in connecting individuals to their (social) environment (e.g., Lutz and Abu-Lughod 1990). They argue that affect plays a key role in fostering mobilization, shaping and solidifying collective identities, and influencing the interpretation of political prospects (cf. Laszczkowski 2019; 2020).

Critical events such as the failed verdict, the numerous retreats of activists, and the resulting stagnation of the movement are therefore not only unique moments, in which certain dynamics of socio-cultural life uncover novel ways of shaping socio-cultural existences (Kapferer 2015: 2), but they are also indications of the forces at work beneath social processes. The forces at play in this context include the flows and frictions of the riverine world. They involve the interactions between nature and humans, the river and its inhabitants, and the deepening and the campaigners.

These mutual connections have played a crucial role in transforming the riverine world and shaping the status quo. They have triggered and formed the deepening and its contestations. Besides, they also clarify that binary distinctions, such as ‘direct’ and ‘indirect’ effects, ‘costs’ and ‘benefits’, and the ‘macro-‘ and ‘micropolitical’, as well as the ‘built’ and ‘natural’ environment, do not fully capture the mutual, ‘more-than-human’ nature of the underlying processes at play (cf. Massumi 2009; Schweitzer et al. 2017; Carse and Lewis 2020). Nevertheless, such biases are still present in the politics of influential institutions and imaginations that have the power to shape the environment and the trajectories of the flows and frictions inherent to it.

Many dwellers sense this, yet often lack the power to change it. However, they have come to realize that by joining forces and unifying different groups, they can make a difference. Given the economic power and historical and contemporary dominance of the federal authorities, it is important to acknowledge the private, personal, and voluntary means through which protests and objections were initiated. The obstacles and adversity encountered render the opposition’s success all the more impressive.

Although many activists understandably felt that they have failed in the end, their sustained opposition over the years has compelled planning authorities to delay and redesign their implementation strategy multiple times, leading to the implementation of additional measures to safeguard and compensate river dwellers and to preserve the ecosystem. Therefore, the authorities are now increasingly obliged to consider environmental aspects when carrying out their plans. Stakeholder involvement and public participation were crucial for fostering transparency and inclusivity in decision-making processes (Flemming and Tinsley 2021). Building on the networks and connections formed during the campaign against the deepening, other infrastructure projects in the riverine world are now facing opposition as well.

CHAPTER 6:
Final Insights and Future Prospects: Deep Doubts – Deep Links

As we reach the end of this river voyage, which has taken us from the transformations of the riverine world and associated life stories to the arena of political engagement and reciprocal interdependencies, the moment has come to make some final observations. In the process, I will reconsider this work's central objective of elucidating the reciprocal correlation between political activism and maritime infrastructure.

This study has examined the development of human life along the banks of the Lower Elbe and the concomitant anthropogenic alterations of the riverine world. Seeing how the changes along the river have unfolded has allowed us to see the connections between all kinds of river dwellers, material entities and their surroundings (cf. Ingold 2009b; Krause 2010). Water, tides, winds and sediments interact with shipping, agriculture and fishing. The rhythms of the dwellers often coincide with those of the river (ibid.). Dwelling this riverscape involves shaping and being shaped in return (Deleuze and Guattari 1987: 257), trying to adjust to its flows and frictions while being constrained or empowered by them.

Eventually, people began to manipulate the river flow according to their needs, to such an extent, that the understanding of the local environment now hinges on water management techniques. It has led to new dimensional changes to the riverscape that go far beyond the facilitation of transport, adversely impacting the abundance of life and its safety along the banks as well as establishing new sites. As greater amounts of sediment were dredged, and additional hydraulic structures were established, a greater number of river practices were affected and vanished or had to be adjusted to these transformations. Over time, more and more river dwellers have become increasingly vulnerable and have had to adapt to living by a river that has been significantly altered to suit the will of others. The land along the river now displays an increasingly uncertain and unstable balance between human interferences and natural forces.

Although a project of this size may seem to intrude upon the riverscape, I have illustrated that infrastructures are intertwined with its environment (cf. Carse 2012). The deepening has triggered a series of causal events that have permanently altered the riverscape and the lives of its

inhabitants. It has caused changes in sediment and water dynamics, sparked debates about its validity and the trustworthiness of those in power, and empowered disadvantaged citizens, leading to public demonstrations (Pardo and Prato 2011: 15). Clearly, it does not merely imply a deepening of the waterbed and a deepening of doubts, but also a deepening of flows and frictions. As a result, river dwellers have worked in their spare time for an alternative prospect of the river, while others have worked against it.

Whilst dredging is a controversial and intricate intervention in a riverscape, it primarily serves as a response to the shipping industry meeting consumer demands (cf. Carse and Lewis 2020). This has come to the point where economic reasons outweigh the risks and damages to the environment. After all, the deepening emblematizes a long-lasting dispute between Hamburg and the rural population of the Lower Elbe. In much of history, Hamburg was able to rule the inhabitants of its periphery and it seems that even in modern times, the prerogative of economic power has proven to still be present. Hamburg's historical dominance has led to the imposition of their agenda, despite numerous counterarguments. Together with other research (e.g., Cowen 2014; Chua et al. 2018), the deepening exemplifies yet another way how "supply chain capitalism depends on the displacement, exploitation and exclusion" (Carse 2012) of certain parts of society.

It is becoming apparent that centuries of altering the water flow have put the river, its dwellers as well as their mutual relationships at risk. By altering the configuration of rhythms and sparking debates about river usage, the deepening has reinforced traditional relationships, and encouraged new ones between the river, its material entities, and its dwellers as well as between the river dwellers themselves. It raised questions about the "morality of materiality, [as well as] proper and improper handling of nature" (Gurchiani 2023: 1).

Political actions were instigated by the affects that dwellers faced in their practices along the river and largely shaped by the conveyance of those affects (cf. Laszczkowski 2019). Hence, the agencies of material entities linked to the deepening, such as dredgers, levees, or the waterskins implemented in the river, as well as water and sediments dynamics, have significantly contributed to the formation and shaping of resistance. River dwellers that became politically active are thus clarifying "the capacity of affects to multiply forms of political engagement" (ibid.) in hydro-social contexts. Just like there are transformative effects in engaging with the river (as proven by Krause in 2010), there are transformative effects in engaging with its infrastructure as well.

While some of the activists are river dwellers with robust local connections, others lack these customary bonds. However, they are all linked by a specific bond: the environment. For years, this bond has influenced objects, subjects, and thoughts, eventually enabling the creation of alliances. The people's desire to engage in political activities stems from the changes occurring in the (riverine) world they reside, utilize and care for. The space they share literally gives a common ground to unite.

Linked by a variety of practices, challenges and influences concerning the river's alterations, the heterogenous groups of activists share a general understanding of how the riverscape should be (re-)designed. However, when it comes to the exact objections, different activists are at odds with each other. Different groups have thus intersected, clashed and merged, and collaborated each with their own skills, narratives, goals and sense of identity. Shared goals, along with coordinated social mobilization networks, eventually united them. Such commoning processes involved heterogeneous groups to collaborate with each other to gain more societal and political influence (Nonini and Susser 2020). They "imply a radical will to establish collaborative and solidarity networks based on anti-capitalist principles of economics, ecology and ethics" (Özkan and Büyüksarac 2020).

While it seems that understanding people's lives depends on a comprehensive understanding of their practical interactions with each other and their environment, their experiences and the narratives they create, I also strongly argue that this understanding benefits immensely from being aligned with the transformative dynamics of the constantly changing environment as well as broader political and socio-cultural changes. This suggests that the resistance was profoundly shaped by the maritime context of the infrastructure project, including the actors, grounds, forms, and scopes involved. The contestations display a degree of diversity that align with the multiplicity of issues and actors involved. The spontaneous actions of the activists are reminiscent of skills required during river dwelling practices. Furthermore, their protests have resulted in the temporal politicization of public places connected to the river.

As "infrastructure (…) and technical procedures become sites where citizenship is mediated and contested" (von Schnitzler 2016), "the domestication and undomestication" (Gurchiani 2023: 1) of the Lower Elbe reveals the complex entanglements of human and non-human networks and unsettled pasts (Keane 2005). It challenges one to think in more material terms about activism.

> "(…) [While] seemingly overcoming nature, [infrastructure projects] (…) simultaneously reinforce (…) the complex entanglement between nature and infrastructure, the material and immaterial, the human and non-human" (Gurchiani 2023: 1).

The deepening is imbued with particular ways of comprehension and affects and eventually developed into what Li describes as a "politically productive entity" (2015: 4). It produced shifts in understandings of political decision-making, as well as construction sites and generated new modes and meanings of environmental activism (cf. Powell 2018). While the protesters strived to protect the natural environment affected by the infrastructure project, the continuous rhythmic movements and frictions regularly reinforced the rationale and provided further grounds for protest.

As politics emerge from the affective involvement of dwellers with the "material arrangements" (Knox 2017: 375) of the riverine world they inhabit, activists both 'acted' and were 'acted upon' (Laszczkowski 2019) the deepening. Hence, there is an interdependent relationship between the maritime infrastructure site and the protester. These relationships are manifested within both natural and socio-political processes. It has become apparent that they can have varying levels of effectiveness, and in some cases, they may not even manifest at all. Moreover, these interdependencies are heavily dependent on the spatial, temporal, political, and socio-cultural context.

The nature of Elbe River dwelling was thus reflected in the opposition to the deepening. As Krause (2010) demonstrates, individuals living and working in riverine environments have had to adapt to the ever-changing conditions of their surroundings in a number of unique and novel ways. Throughout the prolonged dispute, river dwelling activists have thus demonstrated a sense of flexibility, mutuality, and resourcefulness by adjusting to political and juridical processes, by being flexible in spatial, temporal, and political terms, and by using innovative techniques to resist the mega-project. The resistance demonstrated relative autonomy from institutions, adopting a horizontal and networked mode of self-organization. It emphasized self-management and lived

experience and employed creative protest tactics (cf. Juris and Khasnabish 2013). Hence, protest locations and means used corresponded to the context of the maritime infrastructure site.

Similar to the congruencies with the dwellers and the riverine world (as elaborated, e.g., by Krause in 2010), activists now share similar biographies with the deepening. Processes surrounding the maritime infrastructure site have had a profound effect on the patterns of political activism related to it. When the people of Hamburg diverted the stream to suit their needs in the 15th century, the neighboring towns attempted to counteract and resist. When the consequences became clearer and new plans for another deepening were published, dwellers attempted to counteract and resist. As the plans and outcomes became increasingly extensive and menacing, dwellers became more and more organized and turned into activists. Once the ninth deepening was approved, activism eventually decreased to a minimum. Just as the river dwellers flexibly adapted and resisted the current river flow, activists also flexibly adapted and resisted the deepening.

The built and natural environments are interconnected (Schweitzer et al. 2017), just as the ways in which people interact with the processes inherent to them are interconnected. However, a distinction may be made between the interdependence of the natural world and its dwellers, and that of the infrastructure project and the activists. The former involves natural processes to which people have flexibly adapted and resisted over centuries (cf. Krause 2010), while the latter involves discursive, political, and legal processes with which the dwellers have had to learn to cope in a comparably short amount of time. Despite their efforts in both cases, dwellers often feel powerless against more powerful forces. However, the fact that both nature and infrastructure are interconnected, makes a differentiation between people's reactions to them diffuse. In fact, activists are resisting both, political and natural, processes because they are all intertwined. Recent dramatic changes in the river are thus also reflected in the remarkable life stories of the activists, underlining the extent to which these changes 'shape' and 'have been shaped' by the people themselves.

Considering the central objective of this thesis, the outcomes clarify the role of maritime infrastructure projects in shaping political engagement and vice versa. They influence each other, but so is the case with the contestations of 'land-based' infrastructures. It was found that the distinction between the two infrastructures is vague, but that the complexity and fluidity of riverine environments facilitates a more holistic understanding of the mutual interdependencies involved

in human-nature relations. The thesis outcomes thus confirm the initial idea that maritime infrastructures highlight the interconnections between nature and humans, and between infrastructure and activists. The intricate interconnections of river systems within the broader environment, as well as the fluidity of water, aid in comprehending the prevalent flows and frictions in between infrastructure projects and their opposition. Although it is often tempting to diagnose how events might be the product of dominant powers, the concepts of flows and frictions are able to refocus attention from the designs, plans, policies, etc. towards an awareness of all the complex forces that unfold in unpredictable ways.

The theoretical framework as well as the approach employed in this thesis proved advantageous, although it remains open how they can be utilized in other infrastructural contexts. Examining the interconnections in 'land-based' infrastructures may be more challenging than in their maritime counterparts, which suggests the feasibility of this approach. Furthermore, the amphibious environment of the research field helped to gain a complete understanding of the interconnections.

Once put into context, the contested infrastructure site appears to be a multi-dimensional and heterogeneous spatial phenomenon undergoing continuous reconfigurations. This raises concerns about the explanatory power of this exploratory approach. Clearly, this research is situated in its context. The induction of fieldwork and conversations with activists also points to certain allegations regarding the knowledge production of resistance movements and the researchers that portray and align with them. Although this approach can be seen critical, it has been central to this paper's objective. Since most activists are river dwellers affected by the maritime infrastructure project, their knowledge production is closely related to their interrelationship with the river. As a result, the whole resistance is significantly impacted by this.

During the fieldwork, I was struck by the way in which the affective resonances of past events persisted and continued to have an impact long after the event had occurred. I also noticed that dwelling the river requires a continuous monitoring and evaluation of its current state. Although the resistance has now diminished and the riverscape is becoming increasingly industrialized (cf. Schmidt 2022), this research has therefore demonstrated how individuals maintain an awareness and involvement with the environment, both past and present. This is reflected in their political actions, emphasizing the need for a more careful and proactive analysis and consideration of the processes involved, which would lead to a more equitable solution. Due to the increasingly one-

sided use of the river, however, the awareness of the existing interdependencies seems to be dwindling. Beside the *deep doubts*, many dwellers are therefore trying to maintain a *deep link* through various means: they navigate traditional vessels, share historical legends, speak Low-German, and preserve other local cultural artifacts. Such common idealizations of the past provide a basis for the creation of traditions (cf. Krause 2010: 46). Not only do they highlight the present as a discontinuity with the past, but also as having fundamental links to earlier times, ideas, and habits (cf. Macdonald 2002). This offers a chance to conceive alternatives to the currently dominant uses of the Lower Elbe. If earlier ties to the river and its inhabitants are not interpreted as harbingers of destruction, they can evoke a different vision of the future (cf. Krause 2010: 46-47).

River dwellers have thus suggested that a potential solution would be to examine what has been effective in the past, when humans adapted their life to the river and not the other way around. Rather than assuming that rivers can be altered without any limitations and disregarding other options, it seems more pragmatic, for instance, to modify the boat according to the river, rather than trying to do the opposite. This has worked well in previous times as it led to the development and construction of all kinds of boats, harbors, dikes, and bridges unique to the riverine world. All of this is part of the cultural heritage, which activists believe should be preserved. According to them, it is not only the special ecology of the Lower Elbe that are at risk, but also the many aspects of culture associated with it. Technically, vessels specifically designed for shallow waters could be constructed; however, they would not cater to the needs of the prevailing shipping and dredging firms and authorities.

Numerous river dwellers hold the belief that a balance between preserving waterway infrastructure and protecting the fragile aquatic ecosystems can be (re-)attained. One method is already employed all around the world, but not along the Lower Elbe.[37] Other improvements called for by those affected by the deepening are the introduction of a joint estuary management strategy and adopting

[37] This method was developed by Norbert Greiser and is known as *Sedimentkonditionierung* in German. In summary, it involves dredging, compressing, filtering, and releasing specific sections of the riverbed that contain fluid mud. This method can avoid the laborious relocation of sediment and other adverse effects of conventional dredging. It has been utilized in numerous sites, including Bangkok, Bordeaux, Dunkirk, Husum, Para-maribo, Rotterdam, Tianjing Xingag, and Zeebrugge. The fact, that this method is not being used along the Lower Elbe further fuels speculation that dredging companies and lobbyists have had a significant influence on the implementation of the deepening.

a holistic and future-oriented approach rather than solely prioritizing Hamburg's interests. Beyond this, activists have continuously stated that cooperation between stakeholders, compliance with stricter regulations and continuous research are key to ensuring the long-term sustainability of the riverscape (cf. Schewe 2019; Nordström et al. 2020).

Projects, such as the *Old Land Workshop of the Future*[38] and the *Maritime Landscape Lower Elbe*, have been active in this regard. By anticipating future developments, they address key topics concerning the riverine world with its cultural heritage and natural environment. They recognize that collaborative engagement with the dwellers of the riverine world is critical to identifying and pursuing shared future goals (Interview, Schuldt 2023, 01:10:31; von Allwörden et al. 2004).

Furthermore, the *Free Southern Elbe River Zone*[39] initiative and *The Idea of a Free River Zone*[40] were art and research projects that placed an emphasis on exploring alternative, utopian designs of riverscapes. The aim was to challenge customary, almost unquestioned river practices. One focus was placed on the former Elbe River delta that has been altered and channeled to consist of not numerous but of two canal-like arms[41]. It was hypothesized that a part of the river would be removed from economic use, and then explored what might happen in such an area, and how a new urban and landscape space could be created where economic and ecological purposes are not the primary concern. Although closing the southern arm of the Lower Elbe may seem politically unfeasible, it has led people to imagine alternative scenarios.

As these projects enter into a dialogue with multiple river dwellers, they contribute to the further development of the riverscape. Hence, the controversies about the deepening and about the fate of the ecosystem come down to a debate about the meaning and character of the (riverine) world to humans that have the capacity to alter, exploit and destruct it but also to protect and help us imagine and reconsider our interrelationships with it. In the end, human understanding and recognition of their environment determine the policies that influence the future of riverine ecosystems.

Even past efforts to restore, tame and shape the Elbe River were driven by defined goals that envisioned a different future. Hence, "the river and its infrastructure are caught up with ideas,

[38] In German: *Zukunftswerkstatt Altes Land*
[39] In German: *Freie Flusszone Süderelbe*
[40] *At the Gallery for Landscape Art* in Heidelberg.
[41] As detailed in Chapter 3.2

beliefs and materialities" (Gurchiani 2023: 1) that have reciprocal connotations. Given that the tidal Elbe has undergone constant cycles of (re-)creation and (re-)construction to fit the respective prevailing concept of what the river should represent, even those efforts to create a sustainable and more equitable future follow the historical pattern of numerous anthropogenic changes to the river.

However, by endeavoring to find a more balanced solution, they emphasize the need to adopt a more reciprocal and holistic perspective of our relationship with the environment. The political and legal status and role of the river do not fully capture its complexities and peculiarities in reality. In light of the prevailing trend towards the fragmentation of natural, legal, and political processes, the concept of 'flows' and 'frictions' (as seen in Tsing 2005 and Krause 2010), as well as the 'hydro-social' (e.g., Swyngedouw 2009) emerge as specifically valuable to address the complex dynamics between water, sediments, society and policy across different sectors and scales. However, despite any human efforts to better serve the various uses of the environment and despite the *deep doubts* that arise, the *deep water* continues to evolve, and so do their inherent flows and frictions, guided by the politics of the riverine world.

7. List of References

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8. Annex

Abstract (English version)

In the context of the deepening of the Elbe River in Germany, the thesis analyzes the role of maritime infrastructure projects in shaping political activism and vice versa. Dredging operations are carried out to maintain the deep water of the river, ensuring that the Port of Hamburg remains accessible to the world's largest container vessels, regardless of the tides. However, deep doubts have been raised about the negative impact on the environment and local river dwellers. In this context, I explore how the fluid properties of water can provide a more comprehensive understanding of the interdependencies between humans and their environment. Using an interdisciplinary approach that integrates perspectives from phenomenological anthropology, political ecology, environmental history, and actor-network theory, an attempt will be made to reveal the interwoven rhythms of human activities and natural processes along the course of the river. Based on several months of ethnographic fieldwork, local activists and their relationships to a large-scale hydraulic engineering project are being portrayed to clarify the socio-political effects of 'the deepening'. This will shed light on the dynamics of affect in political engagement, as well as the interconnected relationships between people, water, and landscape.

Abstract (German version)

Anhand der kontroversen Vertiefung der Niederelbe in Norddeutschland wird das komplexe Wechselspiel zwischen Infrastrukturprojekten und politischem Aktivisten entschlüsselt. Dabei wird der Frage nachgegangen, inwieweit der maritime Kontext und die fluiden Eigenschaften von Wasser dabei helfen können, die gegenseitigen Beziehungen vom Menschen und seiner Umwelt besser zu verstehen. Durch einen interdisziplinären Zugang, der Perspektiven aus der politischen Ökologie, der Umweltgeschichte, sowie der Akteur-Netzwerk-Theorie integriert, wird versucht, die verflochtenen Rhythmen menschlicher Aktivitäten und natürlicher Prozesse entlang des Flusslaufs aufzuzeigen. Auf der Grundlage einer mehrmonatigen ethnographischen Feldforschung werden lokale Aktivisten und ihre Beziehungen zu dem Wasserbauprojekt porträtiert, um die soziopolitischen Auswirkungen der Elbvertiefung zu verdeutlichen. Im Mittelpunkt der Arbeit steht somit eine Untersuchung von lokalem Aktivismus, die die Dynamiken von Affekt und politischem Engagement, sowie die verflochtenen Beziehungen zwischen Mensch, Wasser und Landschaft beleuchtet.

Figure 30

Topography of the Lower Elbe during the early 19th Century (Streit 1811).

Figure 31

An Appeal for the Public to take Part in the Torchlight Procession in January 2011 (Quast 2011).

Figure 32

Ernst-Otto and Kerstin with Anti-Deepening-Flags during a Torchlight Procession (Schuldt 2019).

Figure 33

Aftermath of the flood disaster of 1962 in the submerged marshland (WDR 2012).

Figure 34

Flood Water in the City of Hamburg (Klebe 1962).

Figure 35

Environmental Activists dumping dead fish in front of a building of Hamburg's authorities (Heimken 2019).

Figure 36

Activists, including informants Claus, Ernst-Otto and Kerstin, demonstrating in front of a container ship that ran aground (Schuldt 2019).

Figure 37

Environmental Activists demonstrating against the deepening (Rademacher 2019).

Figure 38

Activists during one of the Protest Marches along the entire length of the Lower Elbe (Schuldt 2019).