READING THE WATER: UNDERSTANDING PEOPLE - WATER RELATIONS

A case study of the Malmö Canal

Arnold M. Nyawanga

Independent project • 30 hp
Swedish University of Agricultural Sciences, SLU
Department of Landscape Architecture, Planning and Management
Landscape Architecture Master´s Programme
Alnarp 2022

Reading The Water: Understanding People-Water Relations – A Case Study of The Malmö Canal

Arnold M. Nyawanga

Supervisor: **Victoria Sjöstedt,** SLU, Alnarp, Department of Landscape Architecture, Planning and Management

Assistant supervisor:
Examiner: **Gunilla Lindholm**, SLU, Alnarp, Department of Landscape Architecture, Planning and Management
Assistant examiner: **Christopher Klich**, SLU, Alnarp, Department of Landscape Architecture, Planning and Management

Credits: 30 hp
Level: A2E
Course title: Independent Project in Landscape Architecture
Course code: EX0852
Programme: Landscape Architecture Master´s Programme
Course coordinating dept: Department of Landscape Architecture, Planning and Management

Place of publication: Alnarp
Year of publication: 2022

Keywords: Water, Local knowledge, Engagement gradient, Hydrosocial Cycle, Planning, Framework.

Swedish University of Agricultural Sciences
Faculty of Landscape Architecture, Horticulture and Crop Production Science

Publishing and archiving

Approved students' theses at SLU are published electronically. As a student, you have the copyright to your own work and need to approve the electronic publishing. If you check the box for YES, the full text (pdf file) and metadata will be visible and searchable online. If you check the box for NO, only the metadata and the abstract will be visible and searchable online. Nevertheless, when the document is uploaded it will still be archived as a digital file.

If you are more than one author you all need to agree on a decision. Read about SLU's publishing agreement here: https://www.slu.se/en/subweb/library/publish-and-analyse/register-and-publish/agreement-for-publishing/.

☒ YES, I/we hereby give permission to publish the present thesis in accordance with the SLU agreement regarding the transfer of the right to publish a work.

☐ NO, I/we do not give permission to publish the present work. The work will still be archived and its metadata and abstract will be visible and searchable.

TABLE OF CONTENTS

1. ABSTRACT

The separation silo that exists between people, water and land creates a challenge when planning for equitable public water spaces in water environments/landscapes. This study discusses this challenge by bringing water to the forefront as a driving force for more inclusive and equitable planning practices. The project seeks to contribute to making local water knowledge become more available to planners and landscape architects, using water as a means to analyze social relations in urban water environments. The study focuses on understanding of dynamic relationships in water landscapes through the development and testing of a framework to harness people's local water knowledge of their environments, it's value in landscape planning practice and explore the potential of water knowledge to contribute to developing urban water environments.

This study is created based on literature studies, walking the site, following and interviewing users of the canal. From this, a framework to identify and use local knowledge is developed and tested on a case study area that is the Malmö canal system. The result is a catalogue of selected activities on the canal and a framework to identify and utilize local water knowledge in the planning of urban water environments. The analytical framework to capture local knowledge proposed in this study, directs attention to the role of local knowledge in the different waters produced, and the relations and conflicts that exist between and within various user groups and their waters. The framework can be valuable for planners and designers as a means to capture local water knowledge and identify sites to intervene to push towards publicly accessible waters of good quality.

2. INTRODUCTION

2.1. PROBLEM BACKGROUND

2.1.1. The missing link between people and water

People, water, and the (urban)land often seem to be in three different silos. This may be especially true in the physical sense and in sectors of planning and management, however, these three affect each other in so many ways. Water and land though physically separate are undoubtedly connected within the notion of "landscape" with people often being the common denominator in terms of appropriation. Landscape is defined by the European Landscape Convention as "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*." (COE 2000). With modernity the relationship between people and water has become a lot less evident, with water seen as separate from its social context. This has created a challenge in terms of planning for social activities in urban water environments.

2.1.2. Addressing the missing link.

The way to approach water in the urban landscape as a field of study, outside its use as a design element proved difficult during my landscape architecture studies. This difficulty can be derived from most urban water's existence being a material production of nature by man, including the case for this study - the Malmö city canal. Blind alleys and an unnecessarily narrow understanding of people water relations prevent us from discovering how people-water relations, and the local knowledge generated, can enrich the development of urban water environments and contribute to water literacy. Water literacy as a concept is "*the culmination of water-related knowledge, attitudes and behaviors*." (McCarroll & Hamann 2020, p. 1), in which a broad knowledge base is important for achieving sustainability and social equity.

It is therefore important to look deeper into water's social context because water is very present in society, especially in the public realm all over the world and also in Malmö. My intention is to tackle the ingrained modernistic distanced approach to water in urban environments and the water knowledge gap by finding out what knowledges are generated through water related activities and how such knowledge is valued within planning of urban water-landscapes.

2.1.3. Water related challenges in cities under climate change

Water until recently has often been perceived as independent of society and often treated as such until it became a 'problem' through climate change i.e. flooding, water pollution and water scarcity. In combination with the drive towards developing public space of high quality in water environments, it is important for the field of landscape architecture to focus on water, not just as something to react to but as something to engage with relationally. While it is necessary to look at water related problems and suggest solutions, it is also necessary to understand what water really is and means today because this type of knowledge can inform policies and design of urban water spaces.

In this study, I took inspiration from the works of; Veronica Strang

a social anthropologist whose writings focus on the socio cultural value and perception of water resources as well a methodology that encourages interdisciplinary and collaborative research.; Maria Kaika, a professor in Urban, Regional and Environmental Planning and human geography and Jamie Linton from the field of cultural geography and environmental studies.

I intend to look at water within the urban landscape and the relationship between people(professionals and users), water (the blue), and land (the green). Linton (2010) proposes a dialectical approach which emphasizes the analysis of processes, flows, fluxes, and relationships over the analysis of elements, things, structures, and organized systems. In this study I focus on people-water relations, following water related activities along the Malmö city canal.

2.2. PURPOSE, GOALS AND QUESTIONS

2.2.1. Purpose

The purpose of this study is to discuss how local water knowledge is valued within planning, and explore the potential of local water knowledge to contribute to developing urban water environments. The project seeks to contribute to making local water knowledge more available to planning, using water as a means to analyze social relations in urban water environments.

2.2.2. Goal

The main goal is to create a catalogue of activities and related water engagements along the Malmö canal, and identify a framework to capture local waterscape knowledge among canal users today, articulating different water engagements and related local water knowledges.

Another goal is to evaluate the capacity of the framework to capture local knowledge of water environments.

The main target group of this research is planners and landscape architects since they are involved in the planning and design of urban water environments. Another target group is the users of these outdoor environments, since their contribution to the development urban water environments, is important to strengthen.

2.2.3. Research Questions

- What characterizes local water knowledge?
- In what ways can local water knowledge enrich the development of urban water environments?
- How is people's local knowledge of their water environments valued within planning?

2.3. LIMITATIONS

I have limited my study area of water landscapes to the Urban particularly the landscape of the Malmö Canal. Given the large scale of the Malmö Canal I focus on the parts of the canal that are as a result of in-land landscape transformation as opposed to reclamations from the sea. In relation to that the focus is on the water area and the land in its closest proximity. I follow canal users and their paths, and these also draw the demarcation of the physical extents of the research area..

Given the vast scope of people-waterlandscape relations, I've chosen to focus on the social construction of water. The water in this study is represented by the Malmö Canal and the people are those who interact with it.

3. METHOD AND WORK PROCESS

3.1. Abductive Research Approach

I have chosen to use an abductive research approach which involves constant moves between the empirical and theoretical dimensions of the study. (Arajeh 2012). An abductive research approach means to weave between deduction (theory/top-down) and induction (empirical findings/bottom-up). This involves matching theory to reality as well as cyclic interactions between empirical data collected, analytical framework and analysis results. This is helpful because of the broad spectrum of the parts of the research topic. By looking at the theory in relation to the boundaries of the empirical world, I can narrow down and delineate the aspects to focus on when doing the field study and data collection.

3.2. Literature Study

At the start of preparing for this study I studied literature related to water and hydrology as understanding water would better inform me on how to view and understand water environments. I started with Maria Kaika's book 'City of Flows: Modernity, Nature, and the City' (2005), which I've come across in my earlier studies within landscape theory. The intention of using this book was to contextualize water in the urban context and find out how water can be used as a tool to analyze urban development. This book then led me into the world of cultural geography and the author Jamie Linton and his book 'What is water? The History of a Modern Abstraction' (2010). From this I got the idea to look at water within the urban landscape and the relationship between people, water (the blue), and land (the green). This book also provided ideas on methods to approach water in the context of the users and other actors involved with water. With recommendation from my supervisor I also looked into the works of the social anthropologist Veronica Strang; the book 'The meaning of Water' (2004) and the journal article, 'Thinking relationships through water' (2016). I chose these in order to get a better understanding of the relationships that exist between people and water and acquire an alternative view on how to approach water.

Emphasis is placed on knowledge related to water in general but then narrows it down to water in the landscape particularly the urban landscape. Local knowledge about water in the landscape is explored relative to landscape literacy and situated knowledge.

The second phase of the literature study involved a focus on the theoretical understanding of the forces that have influenced people water relations as well as concepts of knowledge about landscapes and how these can be recognized , read, collected and interpreted. The literature review also helped to build the analytical framework for this study.

3.3. Case Study and Data Collection

The Malmö City Canal was chosen as a case for this study. A case study may be broadly defined as a study of a specific event, situation or complex phenomenon investigated in their real-world context (Yin 2014).

The case study provides a setting for deepening the understanding of people water relations. The Malmö canal can be seen as typical example of an urban water environment with active use, providing a rich setting for exploring people-water relations. Since this is a single case, the comparison is a with-in case comparison. This is achieved through the use of theoretical perspectives across the case. Within the case study I used different data collection methods, such as document analysis, observations, walks and interviews. The multiple data collection methods generated a diversity of information and insights (Creswell 2004).

3.4. Document Analysis

During the course of the study I analyzed the planning document, 'Program För Utveckling Av Malmös Kanalrum' by The Malmö Municipality. From this I looked for information about local water knowledge, and its relevance and use in the document. I looked at the main driving forces behind the creation of this document and the source of the knowledge sources for its creation. I also looked for what types of water were evident in the document so as to contrast them with my own framework and methodology. The analysis of this planning document provided a platform for me to critique my own framework but also provided a testing bed to apply it.

In addition I analyzed historical documents maps and pictures about the canal to find out how the water uses have changed over time and what local values and knowledge of water existed it the past that have either evolved or disappeared completely.

3.5. Walking and Observation

The fieldwork was carried out in March and April 2022 with a total of 6 visits to the Malmö canal area. I would classify my walks as research walks (Macpherson 2016).These are walks aimed specifically at research and data collection. The first two walks were mainly about unobtrusive observation and finding out what activities were taking place along the canal. I walked the canal observing and documenting various water related activities through notes and photographs. At first, my observations had a more intuitive character, but gradually they became more directed, and I begun categorizing the different kinds of water-related activities and their places along the canal.

The consequent visits focused on the activity of fishing, observing, following and interviewing various fishers along the canal. I chose to focus on this particular activity because I discovered in my earlier walks that fishers had no officially dedicated spaces of their own of their own and often appropriated spaces meant for other activities and spaces that were not interesting to other user groups because of their difficulty to access. These walks sought to discover the landscape in the eyes of the fishers. As I walked, I perceived and experienced the landscape and also observed the response of the fishers to this landscape. I also noted that walkers' bodies bring with them their own politics, cultures, histories, habitual responses and lived experiences. I too as an outsider to the study area brought with me my own subconscious perceptions and interpretations because of

my preconceived ideas of what I imagined the canal to be like and from my readings about it and my casual passing observations during earlier visits to Malmö before starting this project. The observation in these walks, following the fishers later became obtrusive as they resulted in interviews.

I also gathered additional information from fishing journals, social media groups and news articles specific to fishing on the canal. Focusing on one activity was useful as it highlighted the way in which activities relate and conflict with one another and the values attached to activities in the canal.

3.6. Interviews

According to Kapferer (2016), local knowledge is often implicit and not recorded systematically or officially but handed down orally making interviewing a good method with which to source local knowledge. My first attempt to interview fishers happened spontaneously, without much preparation, which made me realize I needed a set of questions to better structure the interviews. I decided to use a semi-structured set up for the interviews, with open questions, to gain insight into the life-world of the fishers. The semi-structured interview is defined as "*an interview with the purpose of obtaining descriptions of the life world of the interviewee in order to interpret the meaning of the described phenomena*" (Kvale & Brinkman 2009, p. 3). Important for the semi-structured interview is to formulate open questions, to open up the conversation, and let the interviewee freely express his/her perspective. I must add that I did not try to challenge any of the fishers' viewpoints as this was their world and I wanted to take it without any bias or input from my side.

During my visits to the study area, I always started with observing the intended interviewee and I also made a decision to avoid groups of more than three people because it would be difficult and impractical to hold the attention of a larger group of people already engaged in something else. I conducted interviews in order to gain insight into the fishers' experiences and local water knowledge of the canal. My encounters with the fishers happened spontaneously with some of the fishers I met on my walks agreeing to be interviewed. In all I interviewed 14 fishers i.e. 2 individuals, 3 pairs and 2 trios. Many of the fishers I asked declined to be interviewed, so to further supplement my interview findings, I used observation. The age demographic among the fishers I interviewed ranged from 13-60 years. The gender demographic among the fishers is also skewed with a very small number of female fishers. I only came across a total of 3 female fishers actively engaged in the activity and not 'just tagging along' only one of whom I managed to briefly interview. One declined to be interviewed and the other was on the opposite side of my planned route.

In addition to the interviews with the fishers, I carried out an interview with Hannah Smekal, who is a landscape architect and part of the team behind 'Program för utveckling av Malmös kanalrum'. This interview on 12/04/2022, had more the character of an informal talk about her work with the canal program and the process involved in

gathering information/knowledge.

3.7. Analysis Conceptualizations

3.7.1. The Engagement Gradient

Knowledge does not originate only from distinctive professional techniques but is also generated through practices and engagements (Kapferer 2016).

Strang (2004) portrays engagement as the way people get involved with water. The range is so wide describing both tangible and intangible and includes engagement through water related activities which I pick up on. I use activities as a representation of how people are involved with water. Based on this interpretation, I identify a gradient of different water engagements, from distanced to immersed as this is also the range from which water related activities can occur. The gradient can be further nuanced into the intangible experiences related to the activities which one could say is how the water engages with the user. The gradient thus becomes a tool to map and categorize various forms of engagements i.e. water related activities and uses along the canal and the type of engagement involved in these activities. The gradient describes the social activity and the physical place it occurs as the type of engagement. The gradient maps this as follows; Distanced, Near/ Proximate and Immersed. These representations can also be interpreted as intangible meaning the intensity of involvement with the water. To fully grasp intangible engagements requires direct input from the users.

Distanced engagements: These kinds of engagements happen at a distance from the water. In this context, the water is perceived a lot more through vision and olfaction. These engagements can also be imagined in that the ideas associated with being in the vicinity of water supersede its material attributes of sight and smell. There is little care about the aesthetic quality of the water itself but more about the aesthetic quality of the surroundings and the idea of the water in the background. Emotional attachments are not made with the water but with its surroundings.

For the intangible context, distance can be interpreted as an unbodied separation from the water through the engagement activity.

Near/proximate engagements: These kinds of engagements happen on the surface of the water as well as on its immediate edge. The aesthetic quality of the water matters more in this category than with the distanced engagement. The olfactory sense is also more pronounced. Imagined physical sensations of floating are taken into consideration as the users do not themselves float but do so with the aid of technology and infrastructure. Emotional bonds may form with the water but these can be superficial and specific to individuals and not necessarily collective to a group.

For the intangible context near/proximate engagements can be interpreted as minimal involvement with water.

Immersed engagements. These kinds of engagements happen in the water /below its surface and has the strongest sensory impression of the water. Both visual and olfactory senses greatly affect this category.

Physical sensations of the water as well as its aesthetic quality are given the most priority in this category. Emotional bonds with the water are strongest with immersed engagements.
For the intangible context immersed engagements can be interpreted as those with the most intense involvement with the water.

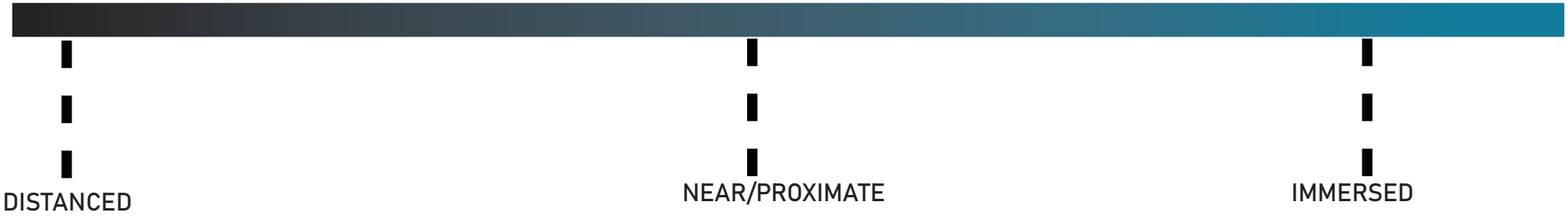


Figure. 1. The engagement gradient. Own drawing, created with my interpretation of Strang, 2004

3.7.2. The Hydrosocial Social Cycle As The Framework For Analyzing People-Water Relations.

The hydrosocial cycle offers a framework to investigate the social production of water by looking at water flow as both a physical and social process and tracing it in the urban landscape, illuminating social struggles and conflicts. The exploration of this hydrosocial cycle/ flow of water according to Lindon (2)010 reveals stories about the city's structure and development. The relevance to my study lies in the fact that practically every body of water on the planet bears traces of human involvement. Drawing the hydrosocial cycle can be regarded as a means of producing critical knowledge of the social nature of waters (Linton, 2010).

The idea is to try and show how instances of water are produced and how this water reconfigures social relations i.e. explore how the canal water is produced and how this produced water reconfigures social relations.

Key aspects

- Water gives rise to forms of social organization i.e. the different user groups
- The relation that these groups have with water produces different waters and these different waters in turn produce different kinds of relationships
- Despite the production of these waters, the material properties of the water play an active role in structuring these relations.

Figure 2 shows an example of a hydrosocial cycle adapted from Linton & Budds (2013) showing the socio-natural process by which water and society make and remake each other over time. The model shows how water is constantly produced in various dynamic constellations, in which the produced water also interacts. Study of water engagements, I have learned can be a way to uncover water knowledge. Descriptions of water engagements could be interpreted then as descriptions of local knowledge.

Placing the water engagements within the hydrosocial cycle, gives a larger setting for these engagements. The hydrosocial cycle shows how the water engagements are dynamically interrelated with other aspects, collectively producing different waters. The engagement gradient covered earlier, seeks to describe the character of local water knowledge. The hydrosocial cycle then places this knowledge in a larger setting, emphasizing dynamic interrelationships, uncovering how local water knowledge matters. Describing water engagements and describing their dynamic interrelations within the hydrosocial cycle, is suggested as a means to identify local water knowledge and argue for its importance.

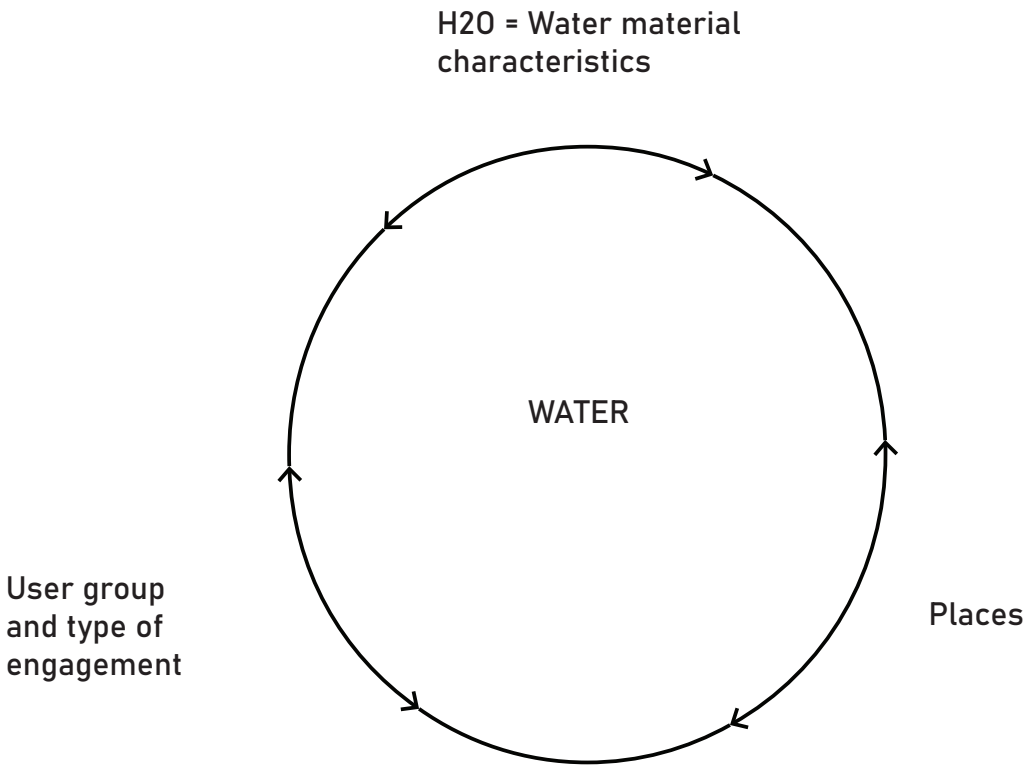


Figure 2. Hydrosocial cycle. Own drawing adapted from (Linton & Budds 2013, p. 176)

3.5. DISPOSITION

This thesis comprises of five main parts.

The first part is the INTRODUCTION, in which I introduce the problem background and the driving forces behind the choice of the topic for this study, and present the purpose, goals and research questions.

The second part is the METHODS, in which I describe my methods chosen and my work process.

The third part consists of the LITERATURE STUDY presented in a format that discusses three main themes. Under each theme various texts are interrelated and put into dialogue.

Knowing and understanding water: This theme discusses water and water knowledge, it's complexity, importance as well how it is perceived and valued by people. This theme also focuses on water relative to people's knowledge and knowing of it as well as why people engage with it.

People, Water and The landscape: This theme focuses on the relationship people have with water in the landscape and explores the idea that water and land are not as separate as they are presumed to be. Water's broad social dimensions and the use of the hydro social cycle to describe different waters, are also discussed. .

Landscape literacy and Knowledge: This theme focuses on knowledge in the landscape and how it can be read as well as the effects and outcomes of it. Within this theme, are also discussions on identifying different knowledges, how they can be sourced, interpreted and used.

Together these themes contribute to the identification of an analytical framework for the case study.

The fourth part is the RESULTS and ANALYSIS, that presents results from the case study , including findings from observations, walks, interviews and document analysis. .

The final part is the DISCUSSION and CONCLUSION, where I discuss my findings and evaluate the analytical framework and the methods used.

4. LITERATURE STUDY

4.1 KNOWING AND UNDERSTANDING WATER

4.1.1. An introduction to water

Water is one of the most important resources known to man and yet it is one that is taken for granted the most (Karlsson 2021). The finite amount of water and its eternal cycle as Karlsson (2021) calls it, makes water a curious and relevant research subject. Tempelhoff (2009) considers water as one of the most pressing environmental and resource concerns while Mollinga and Meinzen-Dick (2008) consider it a political challenge due to the plurality of worldviews, ideologies, interests, and discourses related to it. This in turn creates many waters and consequently, a challenge in the study and research of water within landscape architecture. The challenge created by the many waters means that there are various actors involved, each with their own understanding and point of view leading to the classification of water according to the various vested interests of the actors.

According to Kaika (2005), the turn of the 20th century was the apotheosis of the modern promethean project, which seemingly succeeded in conquering nature. This period is typified by large scale infrastructure projects which sought to tame nature, harness resources from long distances and even produce new urban nature. The author goes on to point out that with the taming of nature, the presence and availability of water became normalized and taken for granted making it a hub for socio-environmental disasters ranging from water shortages to floods and water-borne illnesses. This echoes Karlsson (2021) who points out that one of humanity's greatest mistakes was thinking that we could ever fully control water. When looking at water, Kaika (2005) suggests exploring the flow of its commodification, labour power, technology, capital investment and social relation.

There are various points of view on how people and water are connected or how they relate to one another. The relationship between people and water, though often not viewed that way, is cyclic, meaning how we behave towards water often has bearing to how water behaves towards us. It is difficult to pinpoint where the point of divergence in terms of who the actor is and who the reactor is, although one can assume humans are the actor given that water pre-dates humanity but water is an actor as well. Going from this I take the stance that throughout history the connection to water is based mainly on the human centred perception and understanding of it. This in turn has led to a relationship of continued reactions and counter-reactions between people and water.

Chen (2013) is critical of the human centred logic prevalent in many dominant cultures where efficiency, profit and progress are at the forefront, relegating water to a passive role as a resource. This created an exploitative relationship where water, as a result was urbanized i.e., contained, commodified and instrumentalized, only coming to the forefront if it were being contested, managed or in situations of water-related disasters. Consequent to this modern approach to water, arose

the assumption that all waters can be separated from social and ecological relationships and reduced to an abstract quantity. (Linton 2010).

4.1.2. Thinking With And Through Water

This section attempts to look into how people know water and what kind of water knowledges there are by looking at how water is perceived and experienced. To think with and through water means to look at water relatively to other things particularly humans and their environments. Thus to think with water is also to appreciate the role of water in society. This can be done through studying human relationships through water i.e. looking at the connection between social and hydrological relationships and how they are mutually constitutive (Kraus &Strang 2016). To think with and through water is also to be knowledgeable about water making water literacy important. Hawke (2012) in McCarroll & Hamann (2020) points out that water knowledge has many sources beyond western science and these should be taken in to consideration in the drive towards sustainable water practices.

In relation to the above Linton (2010) presents the concept of hydrolectics and defines it as an approach to water that redefines what it is, in relation to social as well as to hydrological circumstances. According to Linton (2010), hydrolectics is the idea that we cannot have knowledge of water except in relation to our own circumstances and modes of knowing. Knowing and identifying water can be interpreted as the product of real engagement making knowledge of water a relational substance of both the knower and the known. (Linton 2010). Simply put every instance of water is secondary to the process of engagement that makes it part of our world.

Water inspires new ways of thinking about key aspects of social relations, such as exchange, circulation, power, community, and knowledge, on top of being an element, a flow, a mode of transportation, a life-sustaining substance, and a life-threatening force. It is also the subject, object, and often the very means of social and cultural activity (Kraus & Strang 2016). There also exist complexities involved in water research which are further compounded by the fact that, it is an integral part of human life, "*human life, which is often divided up into social and material spheres*." (Krause and Strang 2016, p.3). Questions surrounding water are numerous and extensive, my focus is on the social context in terms of the connection and links that people have with water through the social activities in water landscapes. Tying the hydrological and social together in a space where the direct connection is physically manifest is an opportune way to explore and highlight this connection.

According to Strang (2005), water is an integral part of social and political relationships from which water meanings emerge. There are many factors that draw people to engage with water which are not limited to the values that are attached to the water but include the properties that water itself displays. This is very important when looking further at how water is valued and how various measures of concern born out of water relationships can bridge the separation

created by the industrialization and urbanization of water. According to Chen (2013) we need to be conscious of people water relations as water does not exist in the abstract, it takes up body and place and we are all situated in relation to it. This is true in either a global, regional or neighborhood scale.

Strang (2004), whose work focuses on human-water relations, challenges us to think with water. This means that water's relationality needs to be emphasized because water greatly influences how we live and thus we need to learn more about it outside its physical properties. Chen (2013), from an environmental studies perspective, points towards a need to bring water forward for a conscious and careful consideration so as explore the possibilities and limitations of thinking with water. This can be done in various ways including through exploring the water engagements that exist in the communities that are formed as a result of the presence of water and even in those places where water is absent. Engagements with water are nuanced and range from distanced engagements to immersed engagements (Strang 2004).

4.1.3. Perceiving Water

Looking into water's social context, one discovers that there is a relationship between sensory experience, material realities as well as cross cultural meanings relating to water (Strang 2005). Human communities engage with material environments, not just economically or consumptionwise but also politically and socially, through imaginative, emotional, and sensory engagements (Strang 2013). In the context of urban water today for example, there is a continued competition between engagement and economics. This comes into play when facilitating engagements with water not just through commodification but also in provision of the infrastructure that can foster these engagements. It is thus often difficult to separate economics from the engagements with water.

Culture is often at the core of meaning generation and Strang (2005) points out that engagements with water are experienced and interpreted within specific cultural contexts but she also acknowledges the existence of a universality in meanings attached to water. Meaning, though a human product, elements like water form the basis for meanings which can flow across cultures, creating common meanings and interpretations (Strang 2005). A good example is the innate fear of death through drowning as a consequence of man's inability to exist unassisted in water's material environment. It can therefore be contended that people's experience of water in its basic material form is influenced by the meanings attached to it, meanings that have developed and evolved over time in tandem with the predominant culture of a particular community. Though the individual should not be ignored, Strang (2005) notes that meaning remains a shared cultural product even when interpreted individually.

When looking at the limited analysis on natural phenomena as repositories of meaning, more focus is often placed on how humans infer meaning in relation to them rather than their capacity to suggest meaning (Strang 2005). To understand the capacity of a non-living

kind or a non-artefact like water to suggest meaning, Strang (2005) calls for considerations of their material characteristics and formal qualities. According to Linton (2010), meaning like environments and culture can be layered changing, repeating, and evolving with or over time. This is evidenced by Strang's (2005) warning against ignoring the recursive nature of humans' engagement with both the social cultural and physical environment because water becomes embedded in specific social relations while also providing sites for changing them.

Strang (2005) suggests that studies of human-environmental relationships should consider sensory experience and factors such as the water's characteristics in generating meaning. This strengthens the suggestion that natural elements have the capacity to suggest their meanings to us instead of us imposing meanings of our own. Even in instances of imposed meaning, the fluidity of time allows for the evolution of these imposed meanings into meanings suggested by the natural element.

Thinking with and through water one can conclude, is relational dialectical thinking. Relational dialectics to be specific, in that things become what they are in relation to other things that emerge through an overall process of mutual becoming (Linton 2010). Relational dialectics helps us see how the idea of water is internal to what people do with it, and what water does to people.

4.1.3.1. Perceptions of water in the landscape

Water in the landscape is associated with many perceptions, meanings, and values related to humans (Burmil 1999). The places where water flows within an infinite extension of a particular landscape attracts human attention, making the landscape readable and mysterious at the same time (Burmil 1999). The readability is true when considering way finding by following the water as well as its dramatic juxtaposition in contrast with land due to the unique characteristics of water. People are often attracted to that which is less common or hard to find, something that rings true for surface water in 'non water' landscapes like urban areas.

According to Burmil (1999), water historically played a significant aesthetic role in the gardens of ancient Mesopotamian and Egyptian cities, and its importance is still recognized today by landscape architects and designers. The authors go on to point out that the perceived quality of landscape scenic beauty and the quality of many outdoor recreational experiences have consistently been found to be influenced by water features. Studies have shown that seeing water in the landscape is helpful psychologically, potentially providing important restorative health benefits (Burmil 1999). It can be argued that water's social dimension is an important component of recreation through water surface activities like swimming, boating, fishing and water side activities like jogging, walking, picnicking, to mention but a few.

Despite its unique physical form, water has other physical

attributes which are important to its perception in the urban landscape. A key element is the color of water in the landscape, which appears to change depending on various factors, such as lighting, the sun's position during the day, cloud cover, and all other particulates in the atmosphere or on the surface of the water (Burmil 1999). This color variation creates different perceptions and moods directly influencing how people relate to it. This is more significant if the color of the water is affected by the materials suspended in it due to erosion, aquatic organisms, or oxygen content (Burmil 1999). This perception can influence the type of activities that happen on the water since the perception and appearance of cleanliness is taken a lot more into consideration than the scientific disposition of microscopic pollution.

4.1.4. The Sensory Experience And Impressions Of Water

To understand why and how people engage with water socially, there is a need to look at the sensory connection between people and water. This is because sensory and aesthetic engagement with the material environment enables effective connection with places that consequently evoke a sense of belonging and even protective concern (Strang 2013).

Questions are raised as to how meaning translates into human perception. Csikzentmihalyi and Rochberg-Halton quoted by Strang (2005, p. 94) point out: "*Meaning involves an active process of interpretation.*" Interpretation is of the mind and the mind is highlighted and considered as a way through which the humans can move through the environment using various sensory pathways. These pathways highlight the interaction between cultural beliefs and values, processes of perception and external stimuli (Ingold 2000, in Strang 2005). In relation, sensory and emotional experiences are to be considered in the formation of consciousness and the creation of values (Damasio 1999; Milton 2002 in Strang 2005). It is also important to note that priority given to sensory faculties is often dependent on the cultural context. An example given by Bender is the valorization of vision in western societies and the prioritization of sound in forest dwelling groups (Bender 1998, Feld 1982, in Strang 2005). Strang (2005), however, adds an important aspect to this mentioning that environmental differences which are considered in this case as external factors do contribute to the cultural preference of the sensory experiences people have with water.

The starting point of the sensory/emotional experiences people have with water is that it is essential to the human body. We thus share an experience of water as a substance that is vital to our existence, integral to our bodies and constitutes a major part of our substance, composition of self and our identity (Strang 2005). The author strengthens this interpretation by using the example that smell and taste which are integral to ingestion play a part in human evaluation of water quality whose perceptions are based on neutrality i.e., if it smells, then it is tainted/ polluted. People can thus choose how to engage with water by either staying away from it, make it smell less or completely

get rid of it all together. Water can thus be deemed undesirable because of the negative sensory experience it generates.

After neutrality has been established, sensory experience can further occur in relation to direct physical contact where the concept of immersion can present fear or can be highly pleasurable. Immersion can be dipping the body in water but can also be nuanced towards the imaginative. The notions of enjoyment or the lack thereof in the context of body immersion are often dependent on the ability of the water to provide thermal equilibrium through warming or cooling the body (Strang 2005). The psychological and therapeutic effects of immersion have also been revealed by experimental immersions (Suedfeld 1983 in Strang 2005). The environmental conditions of the water coupled with the perception of the outcomes of immersion will affect if and how people engage with water through immersion or at a distance.

Indirect or distanced interactions/ sensory experiences of water can occur through observation. According to Strang (2005, p. 101), water is visually compelling and she quotes the writer Haslam's (1991, p. 281) description of water as "*numinous and hypnotic while gazing at it*". The author goes on to reference informants from her study in the town of Dorset in England who considered water as mesmerizing and that it induced meditative states of being. This spiritualistic relationship to water can be tied back to human history where water was the only avenue that people could see reflections of themselves creating a belief of its embodiment of the human spirit or image (Strang 2005). Indirect interactions can also occur through audio stimuli resulting from the movement of water.

Lastly, meaning is created not just by individuals and groups, but also by the common and diverse material characteristics of their environments (Strang 2005). Hence, as opposed to treating water as a product of social and cultural production, something produced by people and infused with meaning by cultural schemes, we should consider water as a generative and instrumental component of social relationships and meanings (Kraus & Strang 2016).

4.1.5. Conclusion

To conclude this chapter, water, it can be argued is created through the relationships it forms with those who engage with it because there is a direct connection between how people choose to engage with water and what people's perception of water is. These perceptions are often culturally induced and localized. Exploring these experiential relationships with water can uncover the knowledge possessed by those who are interacting with the water, since it is based on this knowledge that value is added to water, affecting the choice of what to do with the water and how to engage with it. When people engage with water for example through water related activities, emotional experiences are created allowing for an even deeper consciousness and knowledge about water which in turn adds value to it.

4.2. PEOPLE, WATER AND THE URBAN LANDSCAPE

4.2.1. The relationship between people and urban water environments

Water related activities are often manifest on land making it important to look and instances of water in connection to land. Since water has a mouldable physical form, it takes the shape of its container particularly through its interaction with the landforms around it, the minute textures of the ground beneath it and in sharp striking contrast of moving water with still elements along its edges (Burmil 1999). Ingold (2010), in his essay on the relation between becoming knowledgeable, walking along, and the experience of weather, talks about Karl Marx and his idea of the ground being a production platform materially furnished through human activity. The human activity performed on water can therefore be assumed to shape the landscape adjacent to it blurring that sharp line between the two that appears on maps. This is exemplified further through the processes of cultivation and urbanization that have according to Stockman (2008), shaped water through the construction of man-made canals, ditches, ponds, and dams that made the best use of natural water resources. Water was thus perceived or known as a resource or nuisance which consequently caused it to either be brought in from a far or completely drained to facilitate human demands towards land.

Within the urban landscape, Linton (2010) points to the modern society´s need to keep water neat and separate from land and consequently separating it from people as well. By water's separation from people there is a limit to participation in the decision making process. This is true because when people are cut out, their knowledge through engagement with water is cutoff as well, limiting their capacity to contribute to decisions about the water. Linton (2010) further points out that people's engagements with water constitute a kind of participation by which they make different waters rather than making decisions about water. The notion of getting into water(in this context from the land), can be taken literally as well as figuratively, in the sense of getting involved in the decision-making process of water environments/landscapes (Linton 2010).

In relation to the above, Linton (2010) calls for the recognition of water's social nature relative to its hydrological nature. The critical inquiry into this relationship between water and society is highlighted by Linton &Budds (2013) who point out the need to reflect on and recognize water's broader social dimensions. The authors put forward the hydrosocial cycle as a as a means to theorize and analyze people-water relations because it questions how water is made known and represented as well as its effects. The concept of the hydrosocial cycle is adopted from the hydrological cycle which Linton & Budds (2013) criticize for leaving people out and hence they modify it to include the social and political nature of water. By approaching the hydrosocial cycle through relational dialectical thinking the authors regard it as a social-natural process by which water and society make and remake each other over space and time. Building on the scholarship in critical

geography and political ecology, Linton & Budds (2013) propose the hydrosocial cycle as a tool for investigating hydrosocial relations as it highlights the relational and dialectical processes by which water and society interrelate, a hybrid between the physical and the social.

During the transition from pre-industrial to industrial-era cities, water systems had to take on ever more functions due to the increasing concentration of human activities and settlements (Stockman 2008). Water in the landscape became infrastructure that could integrate with other important urban functions, including transportation routes for goods and building materials, open spaces, and a system for managing storm water, irrigation, and wastewater (Stockman 2008). The multiple functions given to urban water evidence water's ability to generate knowledge that could evolve and disappear or remain and be stacked together.

Linton (2010) emphasizes water's significant ability to create social connections in the urban landscape referring to how the ancient Romans did not only go to the public baths in order to wash off their personal dirt from the city but to cement a civic bond through water and even exchange knowledge. Disconnection from shared physical water space undermines the very basis of community life which is why we see a lot of instances of trying to get as close to the water from land including the use of physical elements like decks to make this possible. This is because people perceive ground kinaesthetically through our bodily movements and visually through ocular movement as Ingold (2010) states. The perception of water is similar albeit in the way it stops or transforms movement but retains the same ocular perception which is enhanced the closer one gets to something which in this case is water.

There is a general focus on the creation of ecosystem services and interventions aimed at creating anthropized spaces and public use in urban water environments today. However, technical, and economic values of water in the landscape take precedence as they are easily quantifiable compared to the values associated with culture, perception, meanings, and feelings as they are harder to identify and quantify. In contrast to a human centered logic to water, society cannot continue to manipulate water however it wishes, while maintaining the (mis)perception that society itself remains unaffected.

4.2.2. Conclusion

From this chapter I conclude that within the landscape, water cannot be read on its own. It is tied to the land and the people that use the water who primarily have to access it from or through land. According to Linton (2010), water becomes in relation to how it is being engaged with, in that it always becomes something for someone. Thereby when trying to read the water landscape, it is also important to look at the water, the people for whom the water becomes, and the land on which engagement is borne collectively. This can be best done by following actors that even though they move on land, still connect to the water through various water related activities. Collectively, these provide a source of local knowledge which according to Kapferer (2016) is

fluid and open to changes in the context of its reference. A method therefore is necessary that can capture this fluidity so as to make local knowledge more usable in planning practice.

4.3. LANDSCAPE LITERACY AND KNOWLEDGE

"*To read and shape landscape is to learn and teach: to know the world, to express ideas and to influence others*" (Spirn 2005, p409).

4.3.1. Reading the landscape

To understand how people use water environments, one must be able to read their landscapes. According to Spirn (2005), when we read the landscape, we learn that nothing stays the same, that catastrophes and cumulative changes shape the present. The author goes on to point out the need to understand aspects that are not immediately apparent, in order to see the long-term consequences of the present because people often focus on the most obvious effects of what is happening in the present. By reading the landscape one can also envision, choose, and shape the future based on the existing patterns and in combination with the knowledge gained from the actors that create these patterns. Haraway (1988, p. 595) puts forward the need to recognize "*a material-semiotic actor*" making acquiring local knowledge through the lens of those who use and are present in the landscape a necessity.

Landscape literacy is thus about both the problems in a place and its resources as well as understanding how they come about, are sustained and even related (Spirn 2005).

4.3.2. How to read the landscape

In order to read the landscape, Spirn (2005) gives an example of her students who learned to do this by tracing the landscape's past, deciphering its stories and then told their own stories about its future. They used tools such as their eyes and imagination, the place itself, historical documents, and redevelopment plans. With regards to the use of visual media and observation, Haraway (1988) points out that eyes both organic and artificial are active perceptual systems based on translations and specific ways of seeing or ways of being so our way of seeing is based on how we live. It would thus be difficult to see the landscape and understand it from another's point of view without engaging with the landscape.

Studying the history of a place is key to unlocking how it is imagined but also understood and Spirn (2005) underlines this when remarking how the children of Mill Creek became more receptive of the project when the history was presented to them through an old photograph from 1880. The continued focus on specific time periods led the eighth graders participating in the workshops to new discoveries. Through examining various documents, the students found a hypothesis and found further evidence to support it. Observation and finding explanations to what is observed in the history of a place is key to reading the landscape itself. The use of the concept of a primary document is rather interesting in terms of sourcing knowledge and where the information comes from.

Landscape literacy according to Spirn (2005) is more than just about reading, it is about shaping the landscape too, with her students creating proposals that turned the creek from a liability into a neighborhood asset. An outcome of this process is that the students became more aware of their landscape and learned to

be proud of it coupled with the desire to make it better. With the effort of landscape literacy, the plight of Mill Creek received more attention and more actors got involved particularly those in power. It is quite interesting to note and contrast this with Haraway's (1988) argument on "subjugated" standpoints and how there lies a danger in romanticizing and appropriating the visions of the less powerful while claiming to see from their position.

4.3.2. Understanding And Contextualizing Knowledge

Within her discourse on situated knowledge Haraway (1988, p. 579)calls for the recognition of our own semiotic technologies in generating meaning and calls for "*a no-nonsense commitment to faithful accounts of a real world*." The author encourages the embracing of otherness and difference as part of a whole and highlights the variety that local knowledge contributes with. Situated knowledge questions the objectivity of scientific knowledge whose neutrality is often affected by power relations and a "*view from above, from nowhere*" Haraway (1988, p. 589). Situated knowledge can thus be squired by a direct link to a place which is often the people and their landscape. In a way situated knowledge recognizes different standpoints and views as well as how they come about without disregarding them as a mere matter of opinion. Situated knowledge thus recognizes unequal positions of privilege and dominance in society (Haraway 1988).

In relation to the above, local knowledge could be considered a form of situated knowledge as it is the kind that appreciates people's skills, capabilities and experiences and whose applicability is bound in specific spatial-cultural environments (Kapferer 2016). The author goes on to point out that bodies of knowledge are often prefixed with, informal,indigenous, folk or traditional are summarized as local by experts and associated with cooperation development targeting less or least developed areas on the planet. In the case of Mill Creek, however, a vision was presented and created by the less powerful in tandem with those within a specific professional discipline. Through seeking the perspectives from those points of view which would otherwise not be known, Haraway (1988) is optimistic as to how this produces knowledge that can lead to the construction of worlds less organized by axes of domination. In the case of Mill Creek when the project was taken up by professional consultants and the political bodies, the work done was abandoned in favor of the more top-down approach. This signaled a relapse to historically specific mediations through which everybody must see the world as Haraway (1988) puts it.

Local knowledge according to Kapferer (2016) is that kind of knowledge administered by those who know within a particular context and presupposes familiarity within this context and sourced through experience and resilience. The resilience of the Mill Creek community is, commended by Spirn (2005) highlighting how flourishing community gardens are a testament to the energy and determination of the gardeners who reclaimed abandoned lots. The author points out that recognizing resources does not deny the existence of problems,

but the resources are readily apparent once an observer is prepared to see them. Spirn (2005) gives the example of those that see the city as degraded nature are apt to see only pollution while those who see it as supplanted nature might miss the natural processes that shape the landscape. The prejudice is further reinforced by the tools professionals use where occupation of the landscape by an isolated 'underclass' is only viewed as devastation. Spirn (2005) goes on to discourage those responsible for planning from relying only on maps of features they deem important without spending time in these places and partaking in the local knowledge as this will result into a contradiction in their assumptions.

In relation to that Spirn (2005) emphasizes the mistakes that follow from misreading or failing to read significant features in the urban landscapes and the terrible consequences that might follow. This can be attributed to the absence of local knowledge because local knowledge is a result of a conscious adaptation to an environment and specialized knowledge of it (Kapferer 2016). Spirn (2005) calls for landscape literacy which is a form of local knowledge among landscape planning and design professionals pointing out how the children in Mill Creek were more landscape literate than the professionals evidenced by their more astute proposals for their neighborhood. The author further suggests that it is such literacy that should be the cornerstone of community development as well as planning and design of urban landscapes. Prudent planning is about transforming problems into opportunities and liabilities into resources with interventions at an appropriate scale. Reading ongoing dialogues in a place and imagining ways to join the conversation is key to wise designs and plans as one gains the kind of knowledge the potential user shares.

Spirn (2005) contrasts literacy with planning, as something that can either perpetuate inequalities of existing social structures or enable democratic change.

4.3.3. Reading the landscape, Acquiring Knowledge through walking.

Kapferer (2016, p. 10) divides local knowledge in three distinct categories; *"common local knowledge - shared by all community members, shared local knowledge - owned by a particular group within the community and specialized local knowledge- local expert knowledge."* To find this knowledge, one has to find those who posses it and interact with them.

Ingold (2010), points out that when placed on a particular point on the surface, the perceiver can acquire knowledge of things lying within their circle of view. People then know the limits of their knowledge of the landscape through the limits of what they can see about the landscape. Seeing is not the only way to know the landscape, but other senses do come into play. Haraway, (1988, p. 587) poses the question, "*What other sensory powers do we wish to cultivate besides vision?*" In earlier discussions it was pointed out that the preference of a particular sense is often rooted in culture and the type of environment. According to Ingold (2010), by knowing the limits of one's knowledge,

so can one know the limits of the potentially knowable world and thus compensate for it in order to acquire knowledge through other means.

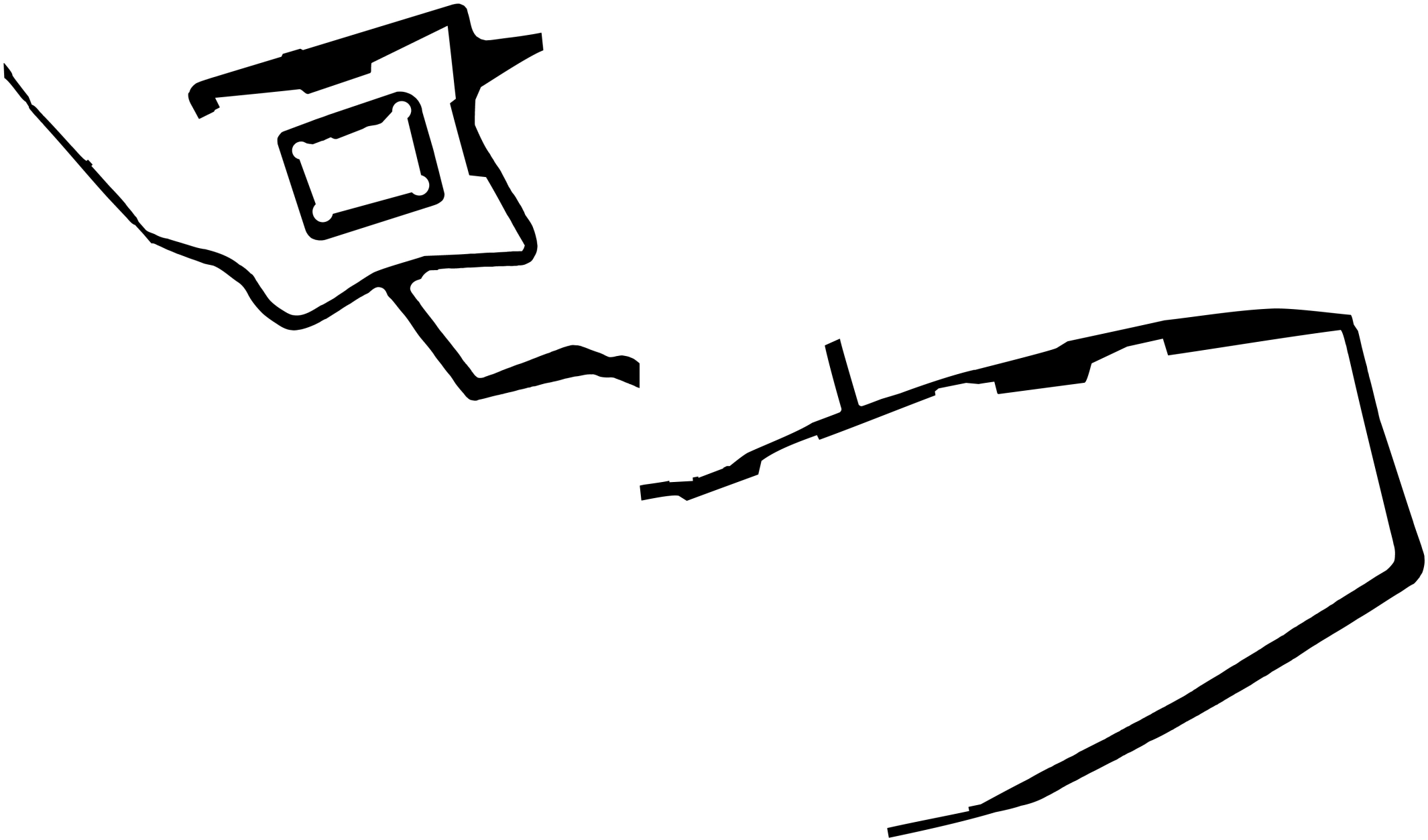
Ingold (2010) uses the example of the Kantian traveler who picks up data and fits local particulars in conceptual wider frames and in so doing architectonically builds up knowledge based on this way of reasoning. The Kantian concept of knowledge and the limits of knowledge and presuppositions are not realistic when it comes to inhabitants and their lived experiences. Ingold (2010), refers to inhabitants as wayfarers whose knowledge is not built up but rather grows along the paths they take. It is not how much one knows but how well one knows as one who knows well is able to tell as a result of a fine tempered awareness of one's surroundings (Ingold 2010). This highlights the existence of different knowledges beyond just the scientific and they too should be acknowledged and taken into account. Ingold (2010) points to the wayfarer as one that draws tales from impressions on the ground in relation to that which paved the way for it. The author goes on to state that walking along is in itself a way of thinking and knowing in as much as through the mind as well as the body inevitably tangling with the minds of other inhabitants of the landscape from whom knowledge can be acquired.

4.3.4. Conclusion

Vacant spots provide space for new uses and opportunities to correct past mistakes (Spirn 2005). The city of Malmö foresaw that the canal was one such space and proposed to reintegrate it as part of the city through using it as an urban outdoor recreational space. The impulse to create space for particular social activities often poses the question of what is valued over another and why. Thus, by walking, observing and engaging with particular user groups of the canal environment and its history, it is possible to acquire knowledge about both the landscape and those who use it since different types of local knowledge are generated by different local actors (Kapferer 2016). One can find traces and patterns, conflicts, and appropriations of value in the future planning of these environments.

4.4. SUMMARIZING THE LITERATURE STUDY

To conclude this chapter, the engagement gradient and the hydrosocial cycle, constitute the analytical framework for the case study. The engagement gradient is used to identify different water engagements of different user groups along the Malmö canal and their knowledges. Further the hydrosocial cycle is used to identify the different waters and of the user groups, placing the water engagements in a larger setting of dynamic interrelations.



5. RESULTS AND ANALYSIS

This section presents the results of my study , guided by the study's analytical framework. For the case study, I posed the following questions.

1. What activities related to water take place along the canal?

2. What knowledge is generated through these activities?

3. How is this water knowledge used/valued within planning?

5.1. INTRODUCING THE STUDY AREA

Figure 3. The Canal in wider context

There is approximately 5km of Canal in the central part of Malmö city (Malmö stad 2014). The amount of open water in the Malmö canal area is striking especially in contrast to its surroundings. The canal appears as an amalgamation of hard and softscape edges.

Since 2012 the canal has been planned as a social arena for outdoor living and recreation. This goes into the realm of the social dimension of water, which to a large extent is ignored in the mechanized, industrialized and or urbanized water understandings.. According to Malmö stad (2014), the urban fabric through which the canal flows influences how it is experienced. The varying architecture and green spaces that are connected by the canal play a significant role as most of the water interactions happen as an extension of the urban surroundings or as escape from them. In relation to this the physical character of the canal is attributed to its historical function for example, the northern section of the canal has a dockyard character. The physical character of the canal coupled with the urban character either limits or facilitates water related activities. The Malmö canal according to Andersson (2019) is not a canal in the actual sense of the word but a collection of canals and pools (See Fig.9).

Figure 4. The Canal and its immediate surroundings

5.1.1. A Historical Review Of The Malmö Canal.

In order to understand local water knowledge and value in the current transition that perceives urban water as public space, we need to look back at the transitions that came before. How water is used conveys knowledge about the water and the value placed in it while changes in these uses convey changes in water knowledge and or value of water. There are two instances of major transformation with regards to usage of the canal that I shall look at: The pre-1800s and post 1800s.

Urban Water as a deterrent; The canal system pre-1800s

The initial instances of urban water in the Malmö context appear when Malmö was still a province of Denmark subject to contestation from the Swedes. As a means to aid in the defense of this urban area, water in the form of moats around the citadel was used as a way to protect the citadel and either slow down and or prevent attacks. Knowledge about water in this period was focused on its ability to defend the city and most decisions were made by royal decree with expert knowledge of defense mechanisms. The use of water as a deterrent was abandoned and thus the relationship with water starts to change and with it a new urban water landscape transformation that best suits the people water relations at the time.

The creation of Malmö's urban water (1800s+)

According to Andersson (2019), a government decision in 1805 with the aim to open up Malmö resulted into the compulsory demolition of Malmö's defense system giving rise to new streets, squares and the digging of a new canal. The author goes on to state that unlike other canals

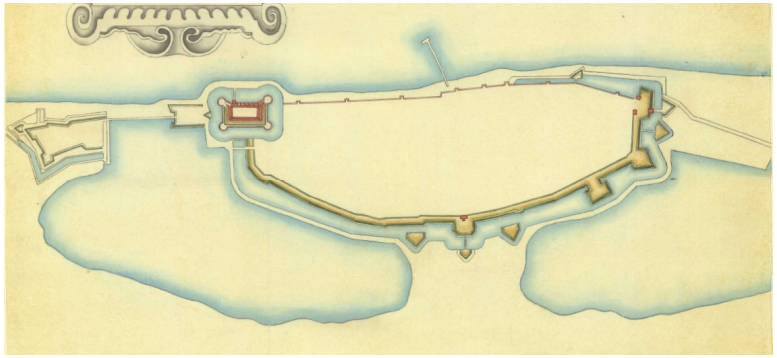


Figure 5. Map of Malmö ca. 1650 drawn by Christophorus Heer

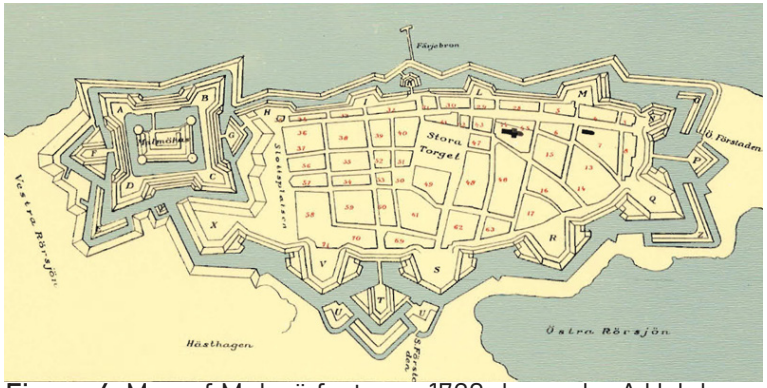


Figure 6. Map of Malmö fortress 1720 drawn by A.U. Isberg 1850

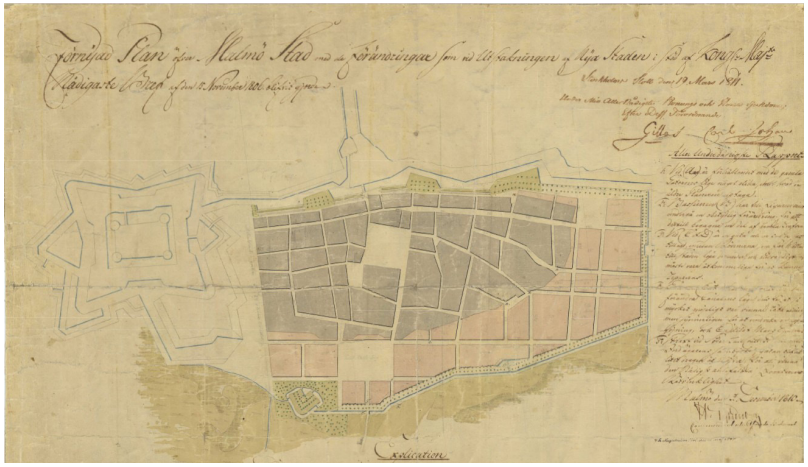


Figure 7. Map of Malmö 1811 drawn by Carl von Angell after the destruction of the ramparts.

built around the world at the time, the Malmö canals were intended for beautification and the improvement of community hygiene. After the use of water as a means of defense, the aesthetic quality of water's surroundings was considered together with the mechanical quality of water as a means to carry waste. Work began with the construction of the canal replacing the moat, lakes and marshes that previously existed around the city (Andersson 2019). The western Rör lake had already been turned into a horse pasture and eastern Rör lake was removed to give way to human progress. This is a clear indication of the relationship people had with water where there was good and bad water and the view of water as an enemy of progress which is something Kaika (2005) also mentions.

The canal construction allowed for the expansion of the inner city and allowed the city to grow by one third (Andersson 2019). There was the use of water as a boundary with the canal separating the city from what was then the countryside and eventually the 'outer city'. The clear distinction between the treatment of man made water systems and natural water systems during the growth and transformation of Malmö is also a clear indicator of the value placed in water that was under human control and the fear and distrust of the water that was not. Activities related to the country side spilled over into the canal but people also kept livestock in the city which affected and were affected by the canal.

The excavation and works were done by soldiers from the Malmö city regiment as well as 'allegedly', Russian prisoners of war with finances raised by Raseringsbolaget through the sale of plots in the 'new city'. (Andersson 2019). The depression from the Napoleonic wars of 1803-

Figure 8. Map of Malmö 1853 drawn by Liunggren Gustaf showing the beautification of the canal and the continued city expansion

1815 stalled the construction leaving many parts unfinished and shallow. The economic impact on urban water is clearly displayed cementing the notion that the people's relationship to urban water is directly affected and influenced by economics. The canal has been continuously modified, and during the 20th century it became increasingly surrounded by the city.

The oxymoron of Beautification and drainage

According to Andersson (2019) it was decided as early as 1805 that canal would have a tree-lined promenade. This backfired because, the canal was no more than a ditch in which sewer pipes terminated creating a stinky swamp. In the northern part of the canal promenades were leased out to the wealthy citizens in exchange for maintenance but had to be closed for 5 years by the city council because of damage to plants by people and animals. In the southern part the bastions were also privatized and closed to the public. It was not until the spring of 1850 that a section of the northern promenade was opened to the public. Where the high court exists today was a rope making warehouse, a children's playground and a laundry raft where women could do laundry at a fee.

Anderson (2019) points out the stagnant water coupled with human waste from the gutters as well as industrial waste from the growing industry created a putrid smell from the canal. The narrative is very typical, with human activities affecting the water to such an extent that they become affected themselves, an then start to rectify the situation. What followed was a series of decisions to make the canal healthier, by building circulation pumps, widening and deepening the canal, creating legislations among other things. Barriers on the canal were a result of the numerous drownings that happened over the years which were blamed on poor lighting and intoxication.

In 1945, a headline in the Sydsvenskan stated that the water was now clear and fresh and that "no bad smell bothered the walker anymore" (Andersson 2019). However in 1957, Kvällsposten reported that the central port area and the canals were a single stinking sewer with about 80 drains and toilet pipes (Andersson 2019). A private person even wanted to put up warning signs as the young fishermen do not understand that " *their fishing waters consist of 80 percent urine* ". (Andersson 2019).

Conclusion

It is clear that throughout history, the recreational possibilities of the canal have always been in conflict with the canal's function as a sewer. This, one could say, played a significant role regarding people´s levels of engagement with the canal waters. This historic review of uses of the canal in the past, provides insight on activities and related water engagements. Some of the identified activities such as keeping livestock and doing laundry, indicate that the canal has played an important part in people's everyday life. These activities involve immersion, and assumably also rich local knowledge about the water environments. The use of the canal for recreational purpose such as hang-out, play and walks, are also present in the historic review, and indicate lifestyle changes following urbanization. With industrialization, the water quality in the canal was heavily affected, which limited possibilities for immersed water engagements.

5.1.2. Mapping the different parts of the canal

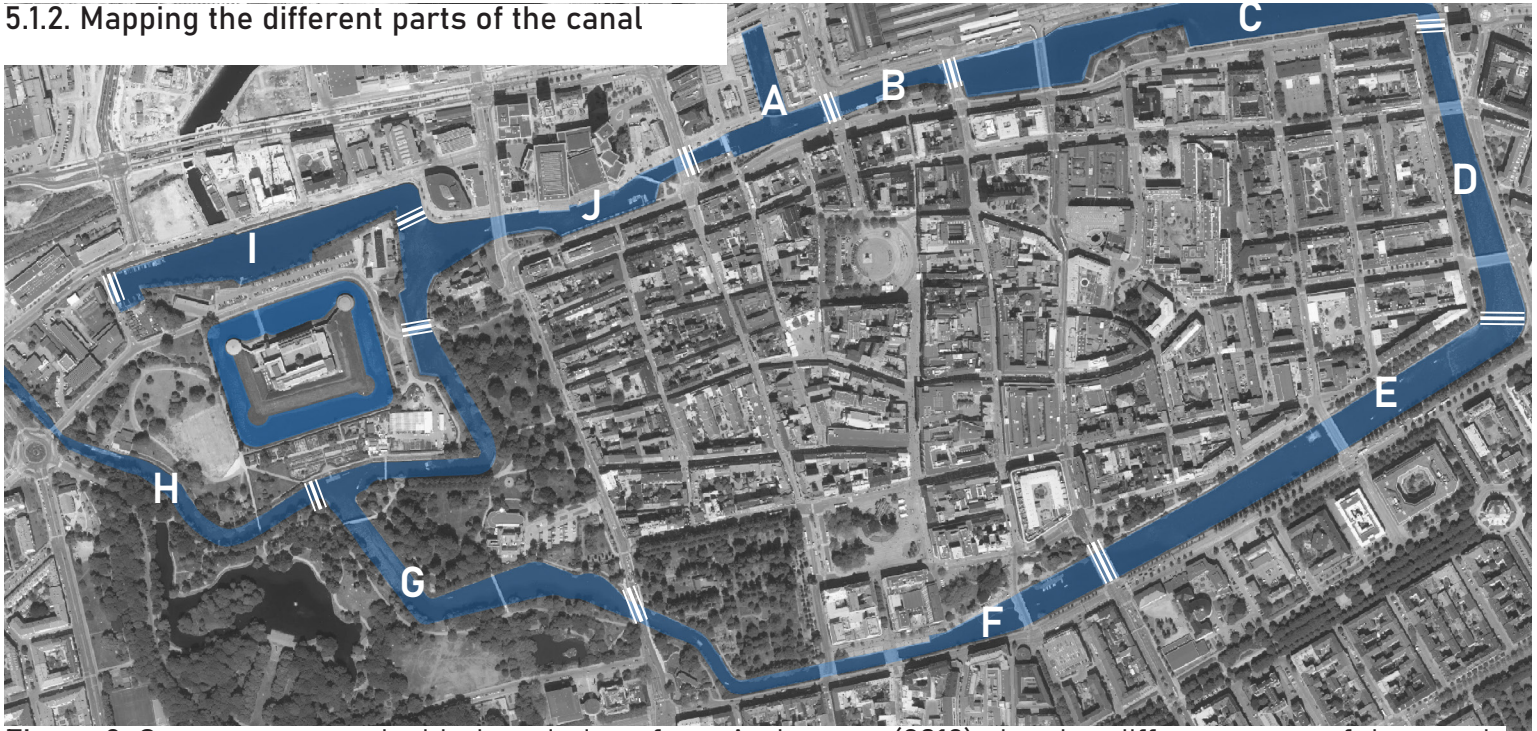


Figure 9. Own map created with descriptions from Andersson (2019) showing different parts of the canal

A-Suellshamnen: Where the Inner Harbor joins the canal, between Älvsborgs bridge and Mälar bridge

B-Järnvägshamnen: Between the central station and bastion Vänersborg.

C-Östra hamnkanalen: The widest stretch (90 meters) between Petri and Sluss bridges, at bastion Uppsala.

D-Östra Förstadskanalen: Extends from Rörsjö Canal to Sluss bridge and Östra hamn canal.

E-Rörsjökanalen: Goes from Amiralsgatan to "Svansjön" by the police station.

F-Södra Förstadskanalen: The narrowest part of the canal (16.5 meters) extends from the Park Canal to the Admiral Bridge.

G-Parkkanalen: Runs from Slotts bridge and between Kungs and Slotts parks to Fersens bridge and the old burial grounds

H-The turbine canal - The part that passes Malmö Canoe Club and empties into the sea at Ribersborg

I-Citadellshamnen - From Slotts bridge and up to Banérs dock by the fishing huts.

(Andersson, 2019)

Figure 10. Photos depicting the materiality of different waters

5.2. ACTIVITIES AND WATER ENGAGEMENTS ALONG THE CANAL

5.2.1. Tracing The Activities On The Canal

I started my study of the canal by walking the study area over the months of March and April, in the morning afternoon and evening. On the first walks in the early spring the weather was just starting to warm up and people already seemed excited to go out into the sun after the long covid restrictions of the last two years. It was slightly cold though streaks of sun were present. My first walk was on a weekend because I wanted to capture a diverse user group on the canal. My walks all started at the train station with the first walk going along what I deemed the outer edge of the canal which I followed all the way and back to my starting point. I continuously alternated which edge side of the canal I walked with the subsequent visits. The width of the canal made it so that the other side was always in view and I could visually compare what was happening on one side to what I was physically experiencing on the other side. One thing that was very apparent was the edges of the canal that consisted of various materials, topographies and vegetation. The canal was accessible by foot but I use that statement with slight hesitation because getting physically close to the water was another story and was only possible on some parts of the canal. Even among those, there was a contrast between planned access points and those appropriated and or created by the users of the canal.

I chose three activities which I deemed had the greatest focus on water. This means activities that could not happen without the presence of water. I ignored indirect activities related more to the canal than the water itself i.e. walking, jogging cycling as they are not typical of water environments and to me were a means to get to the canal. Of the three activities chosen, I focus on fishing because on top of being the most naturally connected activity to water, there is a clear absence of spaces planned and designed for the activity of fishing.

5.2.1.1 Mapping Of The Walks

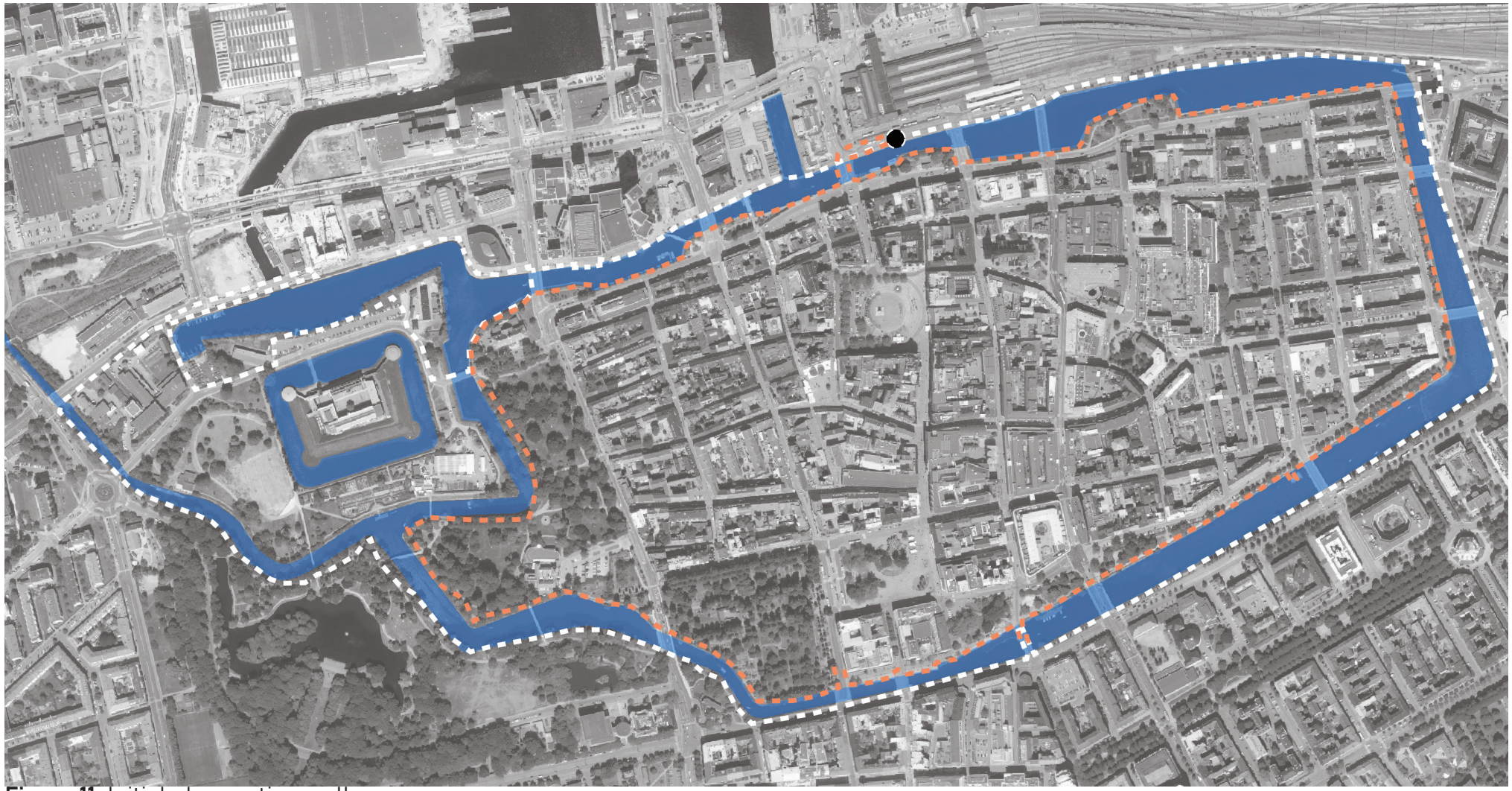


Figure 11. Initial observation walks

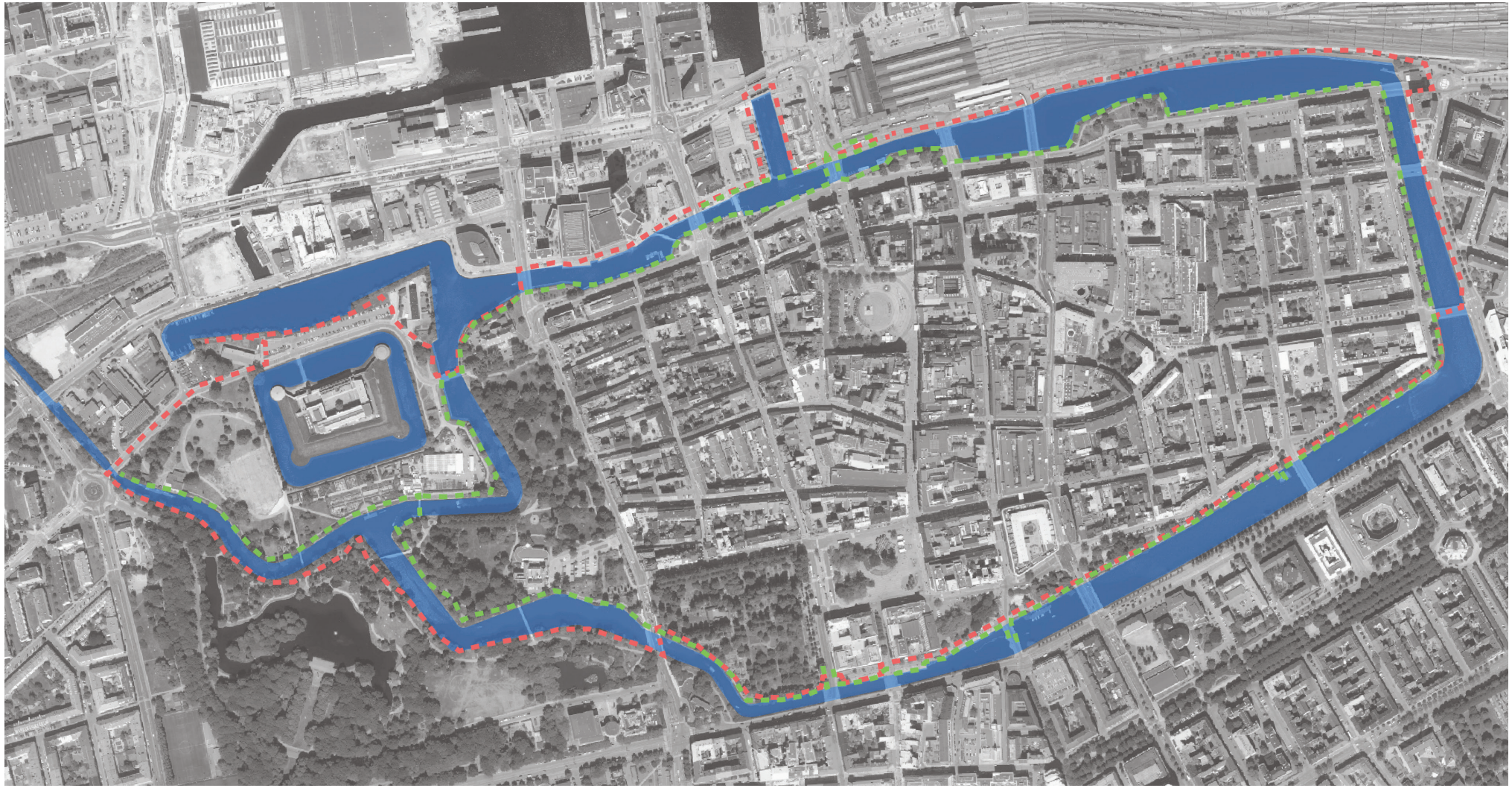


Figure 12. Walks involving following and interviews with the fishers

Walk 3

Walk 4

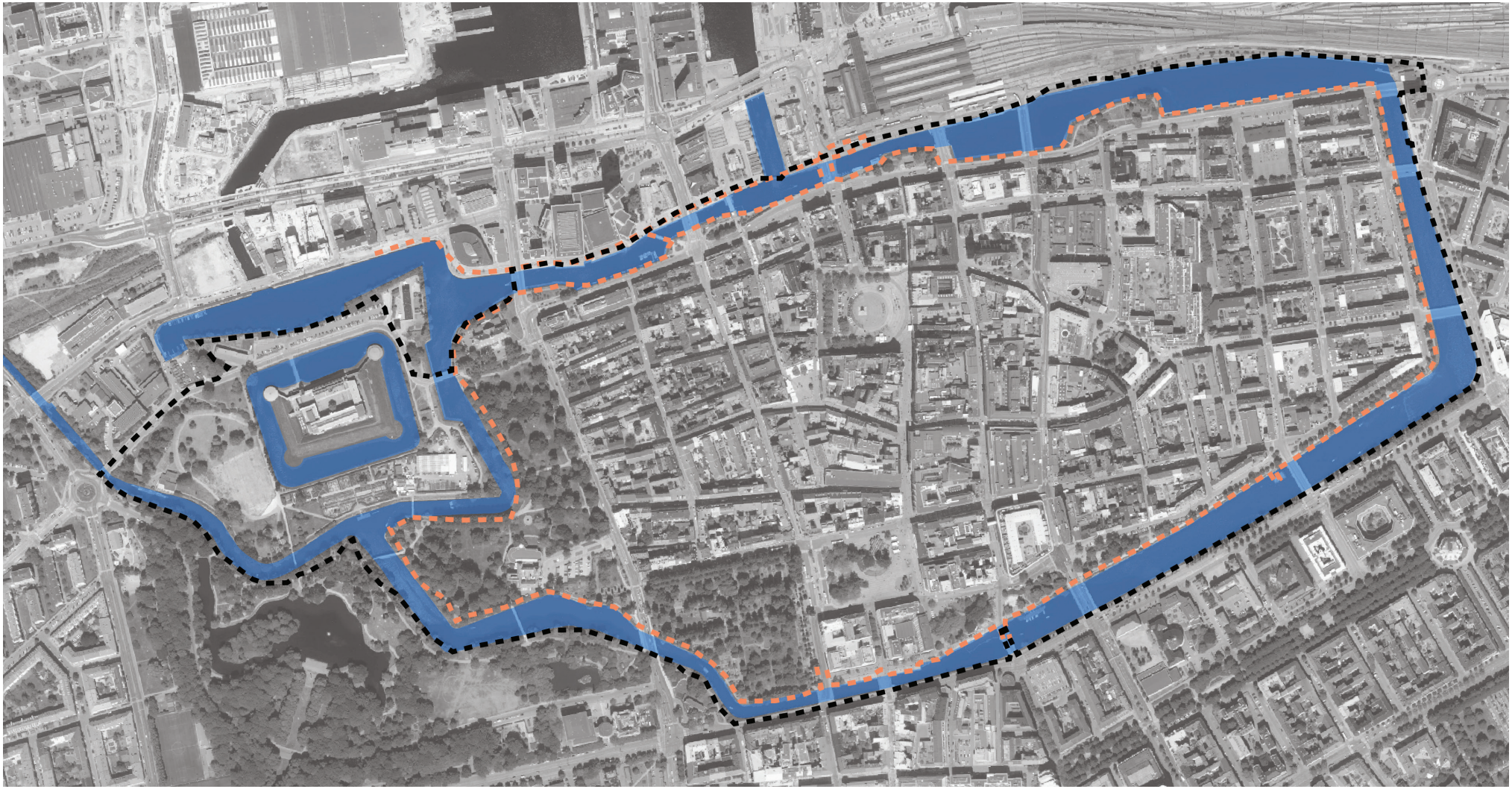


Figure 13. Final walks involving interviews with the fishers

Walk 5

Walk 6

5.2.1.2. Mapping Of Activities

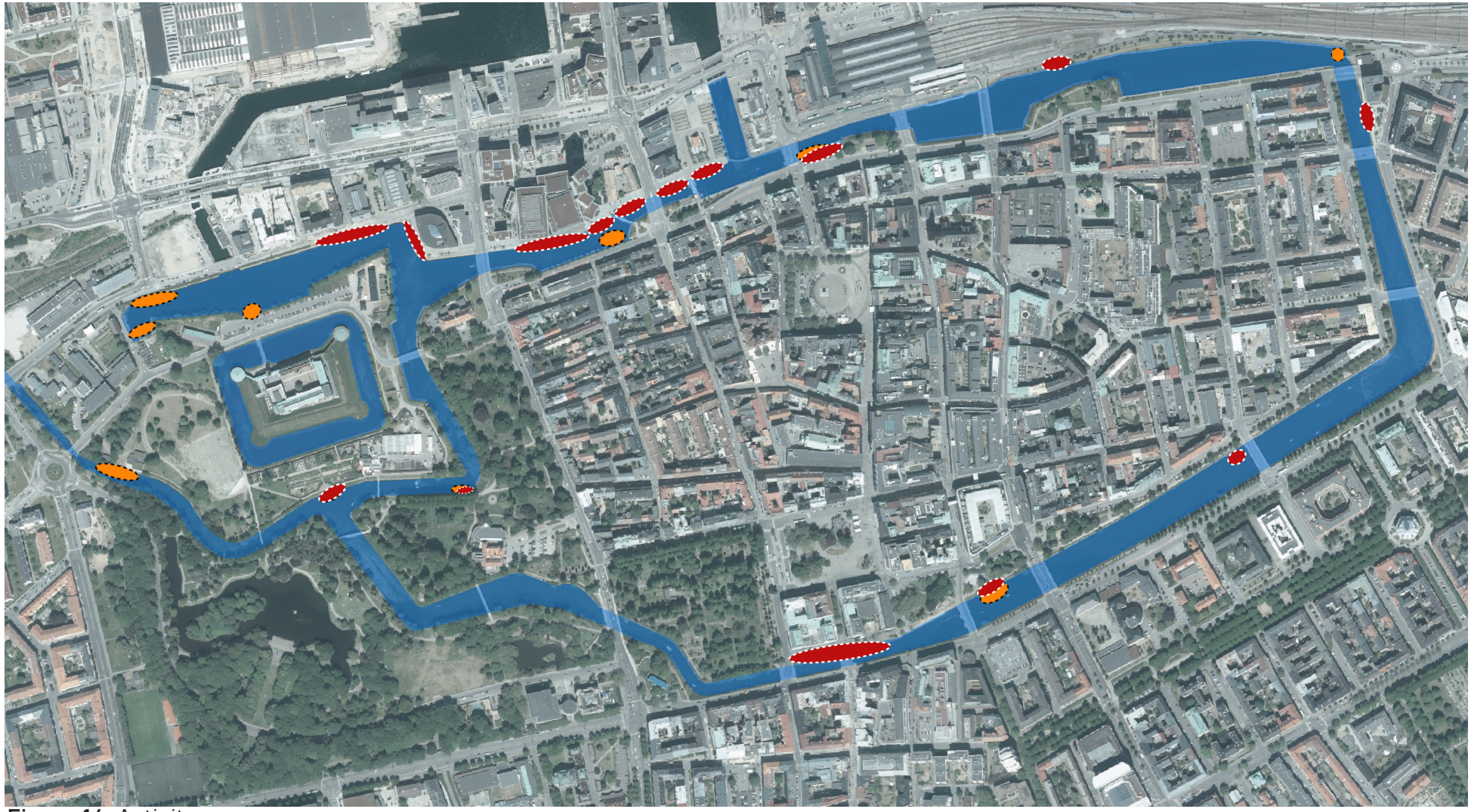


Figure 14. Activity areas

Boat docks

Hang out area

5.2.2. WATER RELATED ACTIVITIES AND WATER ENGAGEMENTS ALONG THE CANAL

5.2.2.1 Hanging Out

During my walks I observed the activity I called hanging out which involves sitting, lying down or standing in places close to or in a water environment. Hanging out by the water is sometimes accompanied by other activities like eating especially true for places where food is sold in close proximity to water. The active choice to sit by the water and not somewhere else suggests a conscious choice to engage with the water and the imaginative idea that it is a calming and relaxing environment. In some cases the space by the water is taken over as outdoor sitting space by business operators along the canal. The focus is thus those that actively make the choice to seek out water environments as a place to hang out either individually, in pairs or groups. This echoes the disposition earlier in the literature study that cultural meanings attached to water draw people to it. The idea that water is relaxing means that people go there for the feeling of calm and relaxation provided by the presence of water. The areas where people hang out are also directly tied to the type of water and the presumed quality i.e. the areas that give the perception of being dirty have a clear absence of places for people to hang out. This points towards knowledge about water quality by the planning authorities who then planned for these spaces in waters that they knew would give the best experience for the proposed users.

Figure 15. Levels of engagement

Figure 16. Effect of climate on engagements

In relation, the effect of weather/climate is undeniable and the majority prefer to hang out in the sunny areas. The availability of alternatives to sun or shade are significant because even though a majority seems to prefer the sunny areas , some people may want occasional respite from the sun.

Conclusions on Knowledge generated from observation and walking

The activity of hanging out is greatly influenced by the climate, time and the activities in proximity to hangout spaces.

Climate: There were more people using the hangout spaces later in the spring when the weather was warmer than earlier in the spring when it was cold. In both these instances a majority of people preferred to sit in the sunny areas and avoided the shaded areas.

Time: The time of the day and week also influence the number of people who use the hang out spaces. Weekends and holidays saw more people as well as the afternoon compared to the morning hours

Activities In proximity

The hangout spaces see a surge in users during meal times in relation to the many food business that are dotted along the canal. In relation events happening in the proximity of the canal also see a surge in users of the hangout spaces and thus can be considered as spill over space for events and spaces in proximity to the canal.

Figure 17. Appropriation of space used by fishers

Figure 18. Planned hang out space (on edge engagement)

Describing Engagements Within The Activity Of Hanging Out

DISTANCED

There exists places to hang out in form of benches that dot the entire canal. The sitting places are a distance away from the canal with some even facing away from the canal.

The distanced engagement experiences the water by engaging with it visually and through the sense of smell, a **sensory engagement.**

An **emotional engagement** is formed but more with the aesthetics of the ideal seating spot than with the water itself.

NEAR/ PROXIMATE

There exist parts of the canal where people can hang out near the water with the help of decks but also on the edge with the aid of stairs and ergonomic edges.

There exists an **imagined engagement** of floating on the water through the decks and not the bodily experience of floating directly on the water. This can also be an indirect engagement.

The **sensory engagement** through the olfaction and sight is also present here.

IMMERSED

There are currently no instances of bodily physical immersion in the canal for this particular activity.

Figure 19. Engagement gradient - Hanging out, Own drawing, created with my interpretation of Strang, 2004

Placing The Activity Of Hanging Out In The Hydrosocial Cycle

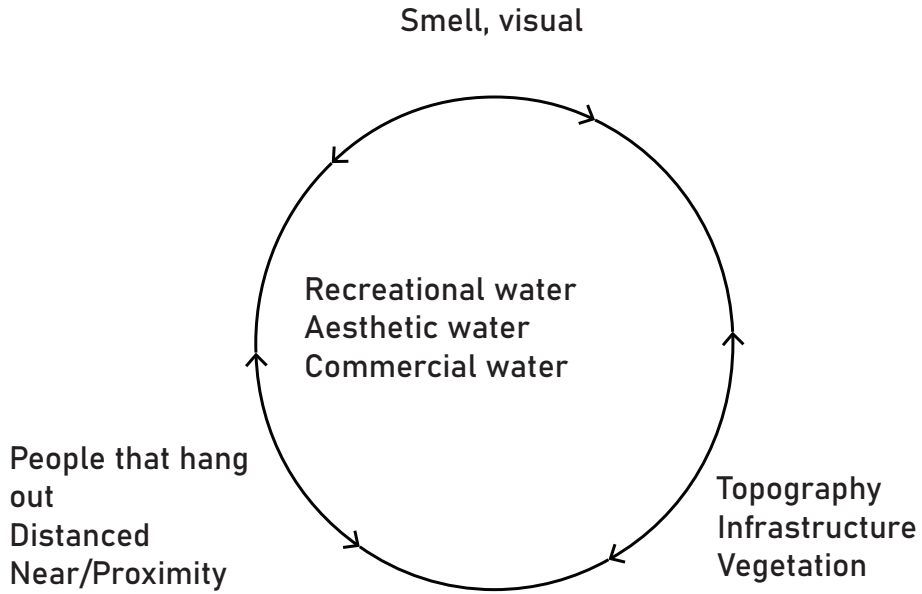


Figure 20. Hydrosocial Cycle - Hanging out, Own drawing adapted from (Linton & Budds 2013, p. 176)

Deciphering The Hydrosocial Cycle

Distanced Engagements

These engagements favoring mainly visual sensory engagement are facilitated through the infrastructure that is the benches at particular places where the users have a connection to the aesthetic quality of the surroundings. These engagements produce **Aesthetic water**.

- People want to look at that which is visually appealing
- The infrastructure has to be so as to facilitate visual connections to the water.
- Areas where the topography and or vegetation obstruct the visual sensory engagement are avoided
- In some instances, people watching is favored over looking at the canal/ water

What can planning do to facilitate distanced engagements on the Malmö canal?

- Use the vegetation to frame views of the water at the places distanced engagement occurs
- The infrastructure can face the direction of the water or in such a way that people and the water can be watched simultaneously
- Remove visible trash from the water

Near/Proximity Engagements

These engagements favor a sensory engagement through sight and smell. In this context the sense of smell can negatively affect near/ proxy engagements. Closer proximity to the water also means clearer

vision of the water consequently producing aesthetic water.

Since instances of proximity/near engagements are places for social gathering, recreational water is created. Business through the direct provision of infrastructure and mediation of the activity of hanging out produces instances of commercial water.

Recreational Water

- The close/ proximity engagement only happens in the instance that there is space for it. This reveals a variation between formal and informal instances of hanging out. In the formal context, hanging out takes place in designed/ planned places while in some instances hanging out happens in unofficial spots.
- The topography of some parts of the canal contributes to whether people can get closer to the water informally.

What can planning do to facilitate proximity/near engagements relative to recreational water on the Malmö canal?

- Secure the existence of informal spaces
- Create smart solutions to access in complex topography.

Commercial Water

- Business activities near the water that have an indirect engagement with the water by allowing for an increased volume of people in the hangout spaces.
- Businesses take over the space near/ in proximity to the water privatizing it and taking away space from the activity of hanging out.

What can planning do to facilitate proximity/near engagements relative to commercial water on the Malmö canal?

- Plan for appropriate sized spaces that in relation to potential influx from those visiting the businesses.
- Businesses that take over the places where near/proximity engagement occurs should compensate for that space so public access is provided for.

An example of the dynamic interrelations represented in the cycle

The aesthetic quality of the water affects people that who hang out. A change in the materiality of the water to create better sensory experience, will affect the people hanging out and narrow the engagement gradient and attracting more people to use the space resulting in technology and topography adjustments that would allow better access and experience of the watery space. This hydrosocial cycle assemblage creates aesthetic and recreational water as a result of the desire to use the water in these ways.

Distanced and proximate water engagements within hangout activities, generate aesthetic and recreational water, emphasizing water's visual characteristics and smell. Commodified water is also produced by businesses attached to some of the hang out places. . It is also important to note that the absence of immersed engagement with the water is because the material quality of the water in the canal is considered too polluted for people to consider swimming or immersing themselves physically into it.

5.2.2.2. BOATING

As I continued my walks, I first noticed the boat docks before the boats. This is mainly because a majority of the boating is seasonal and starts in the late spring through summer. The activity of boating is a classic activity associated with the water environments. The inability of humans to move and or live in or on water without any mechanical assistance is a result of the material properties of water. People use boats to travel along water surfaces and on the Malmö canal today unlike the past where boats carried goods from the harbor to the city.

Boating as an activity is both recreational and commercial. This activity is split between; sport boating like canoeing and kayaking, recreational boating that includes tour boating where people are shown the city from the canal. In relation to this is picnic boating where people can have a picnic on a boat while they go around the canal. The final one is paddle boating where individuals or groups can explore the canal. All these forms of boating on the canal, have one thing in common, they sit behind a paywall. The privatization and monetization is inevitable and maybe even necessary in today's capitalist economy.

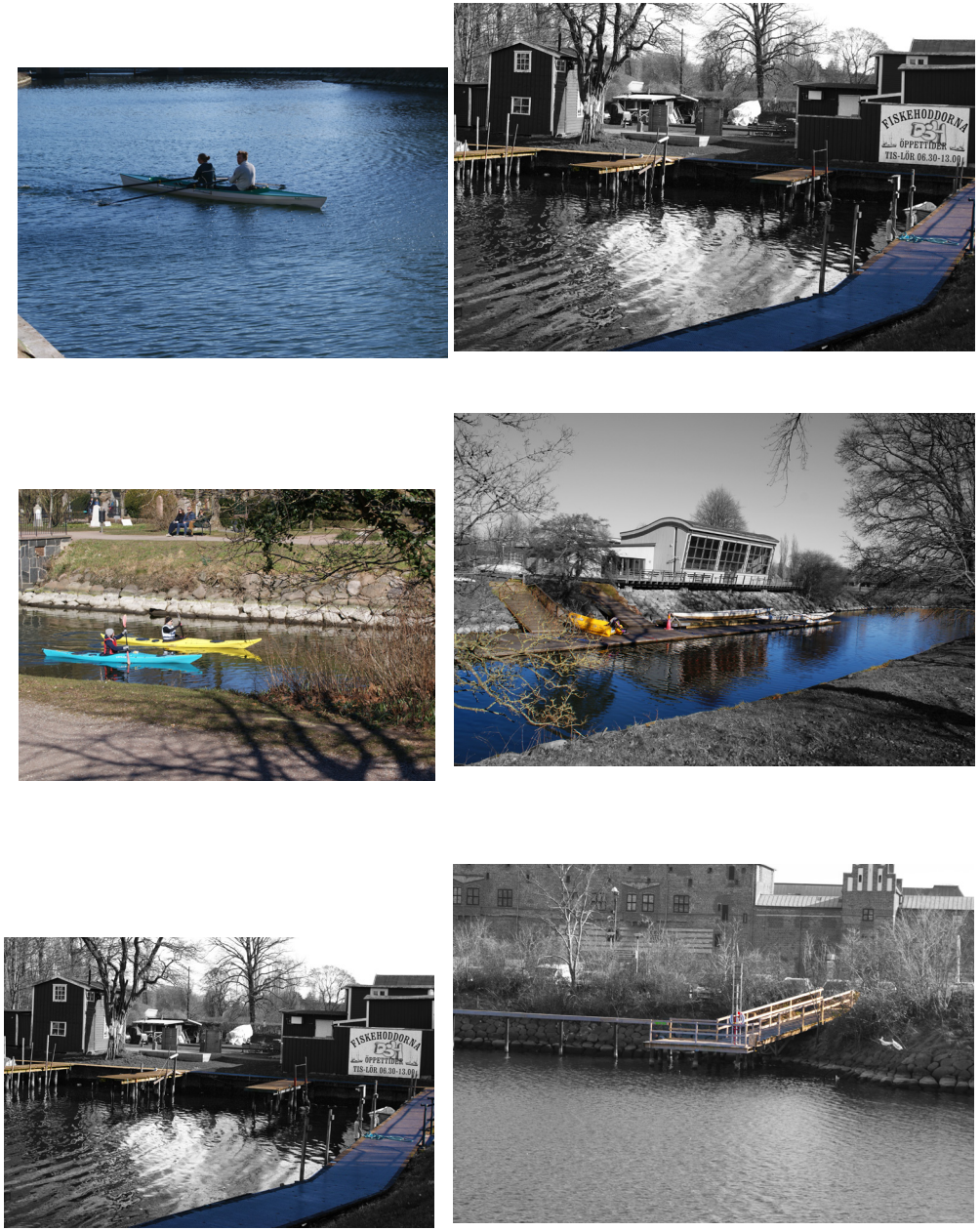


Figure 21. Images showing the different boating and docking spaces

Describing Engagements Within The Activity Of Boating

DISTANCED

Distanced engagement of the water though the activity of boating is not applicable.

NEAR/PROXIMATE

There is an aesthetic engagement particularly with the boaters that use the water as a picnic area and the paddle boaters. Their level of engagement is purely aesthetic as they imagine the water to be a good environment to picnic and explore respectively.

For the sport boaters, the engagement with the water is physical in nature as the idea of the sport is to use the body to propel oneself across the water.

Boating is imaginative through feeling of floating being on the water.

Reflective engagement as the water is viewed from a perspective other than from land.

This engagement is mediated by business owners who provide the boats.

IMMERSED

Immersed engagement of within the water though the activity of boating is not applicable.

Figure 22. Engagement gradient - Boating, Own drawing, created with my interpretation of Strang, 2004

Placing Boaters In The Hydrosocial Cycle.

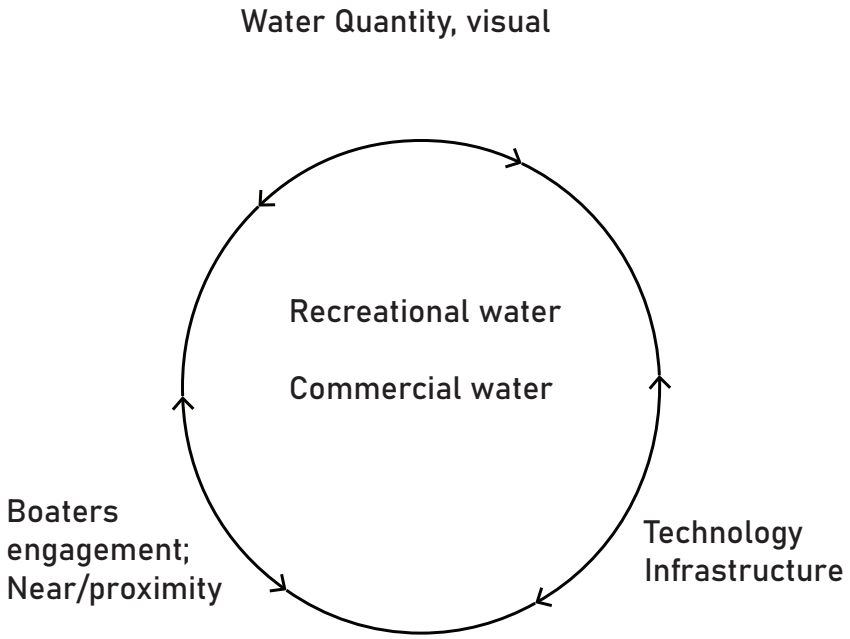


Figure 23. Hydrosocial Cycle - Boating, Own drawing adapted from (Linton & Budds 2013, p. 176)

Deciphering The Hydrosocial Cycle

Near/Proximate Engagements

The imaginative engagement of the boaters, their aesthetic engagement, as well as the engagement with the physical attributes of the water mediated through boating technology gives rise to recreational water

Recreational Water

Compromise towards the visual quality and the smell may be possible but vary among the different kinds of boating as the boats are in motion when engaging in this activity.

- Sensory engagement through sight is focused on the new perspective of the land from the water.
- Boating is a mediated activity provided by private entities and technology except in the case where one has their own boat, then it is only mediated by technology.

What can planning do to facilitate proximity/near engagements relative to recreational water on the Malmö canal?

- Although some boaters may not pay attention to aesthetic quality of the water initiatives to clean up the water can provide for a better all-round boating experience.
- Interventions on land can be in such a way as they are clearly visible from the water as well

A substantial amount of water to support boating, a physical engagement with the water, mediation of the activity of boating through boat leasing infrastructure allows for the commodification of water giving rise to commercial water

Commercial Water

- Compromise towards the visual quality may be possible but not the smell, however, financial power also means that boating businesses have a stronger say on where their businesses in form of boat docks can be located.
- Economics means the boat business can privatize parts of the water and keep others away

What can planning do to facilitate proximity/near engagements relative to commercial water on the Malmö canal??

- Encourage boat businesses to open up for other users during times of the day and season in the year, the boating docks are not being used
- Plan for multi-purpose boat docks that function with other activities on the canal.

5.2.2.3. FISHING

Mapping The Interactions With The Fishers

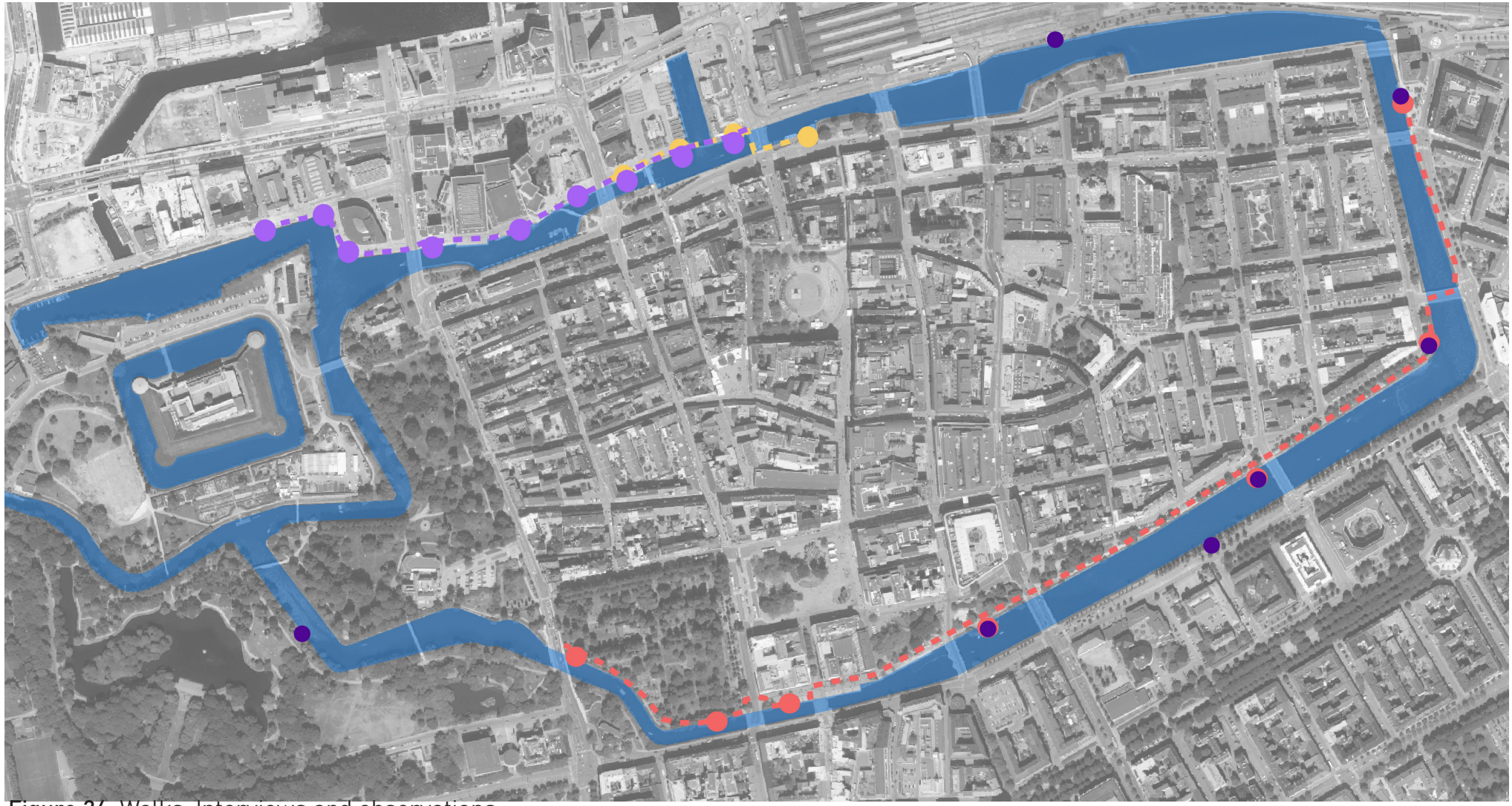


Figure 24. Walks, Interviews and observations

Follow walk -Part of walk 3

Interview walk along 1 - Part of walk 4

Interview walk along 2 - Part of walk 5

Areas I interacted with the fishers

FISHING LAW: ***Lokal ordningsstadga för Malmö kommun, reviderad per KF beslut § 200, 2020-09-24***

19 § "*Fishing in Malmö city's canals around the city center is permitted for the public throughout the canal's stretch within the Turbine Bridge, the Neptune Bridge and the Suells Bridge. Fishing is not allowed in the moat around Malmöhus Castle. Fishing in the canals may only take place with hand gear * (by hand gear is meant a rod, jig and similar mobile gear that is equipped with a line and a maximum of ten hooks). Fishing with a cast rod or fly fishing may not be conducted from bridges that have been leased for public traffic.*" (Translated from Swedish)

During my first walk the activity of fishing was very evident with, traces visible in the landscape. I chose to follow the activity of fishing, observing and interacting with the fishers, to learn about how they navigate and use the landscape. In addition, I observed a varied demographic of people taking part, individually, in pairs and even in groups. My initial visit was at the start of spring which I found out was a good time of the fishing season. A major factor that affects fishing is according to all the fishers that I interacted with, accessibility. "*It is easy to get to the canal by most means of transport from walking right up to using a train*" , said Fisher 1 a 26 year old sport fisher on 2022-04-14. This factor plays a major role for fishers to choose the canal. While this kind of accessibility is positive, there also exists a negative side. "*At some parts, the topography and thick thorny bushes make it hard to get down to the water.*" said Fisher 3 a 57 year old sport fisher on 2022-04-19 who drives into the city of

Figure 25. Images showing traces of fishers in the landscape

Malmö just for street sport fishing as he referred to the activity.

Grouping The Fishers From Knowledge Generated From Observation, Interviews And Walks

Fishing on the canal serves different functions for different fisher groups and they all interact and use the landscape of the canal in different ways. The various fishing groups also possess different knowledge about the water in the canal.

Sport Fishers

This group is does fishing at a near professional level and have a deep understanding of the canal water and the fish behavior. Fisher 2, a 31 year old sport fisher on 2022-04-14 said, "*Depending on the time of the day I will alternate between the areas of the canal where the water is deep and where it is shallow. For example when it is hot the fish retreat to the deeper water*." The sport fishers often move around a lot along the canal and choose specific spots that they know from accumulated knowledge of the canal landscape and waters. Fisher 1 a 26 year old sport fisher 2022-04-14 tells me that he has been fishing on the canal since his late teens and has developed specific spots that he goes to regularly but will check out a new spot if he gets a tip from someone he knows involved in the sport especially on the Facebook Online community 'Abborre Sportfiske i Malmö Kanal.' Fisher 1 talked about fishing etiquette and how one is expected to behave within the landscape where fishing is taking place. For example, it is considered rude to stand close to someone else already fishing, one is expected to give some distance. This group practices catch and release as a rule of thumb and are sensitive to the sensory experience of the water. For example, Fisher 4 a 60 year old fisher on 2022-04-19 ,when asked why he doesn't eat his catch points to a floating piece of trash and says, "*that's why!*" He also poses a rhetorical question to me, "*Do you have any idea of the kind things we fish out of the canal?*" While some of the sport fishers are against consuming the fish because they see the canal water as dirty, others see the kind of species that exists in the canal as inedible, as Fisher 4 clearly points out rhetorically, "*Who would want to eat perch anyway, they are so bony, I myself prefer salmon.*"

Recreational Fishers

This group includes people who fish as a means to relax and spend time with their friends and or family. Though similar to sport fishers they are less mobile and prefer specific spots to multiple movements. Fisher 5 fishing with his son stated, " *This is quality time I get to spend with my son.*" before declining to be interviewed. The activity of fishing is equal to social quality time with their loved ones. This group usually consists of families and those in close relationships. Fisher 6 and 7 along with their baby in a stroller mentioned on 2022-04-23 that fishing is how they spend their time as a couple as it allows them to take their baby outside and enables them to do an activity for themselves. They are however, limited to areas of the canal with good access for their child's stroller and never bring it closer to the canal edge. They favored the park because of the shade from the trees kept the child cool while they fished. I also observed some members

of a fishing group fishing while others kept them company and or did something else. This group of fishers is less interested in the fish than the experience and is sensitive to the visual and olfactory experience of the water. This is evidenced by their choice of fishing spots as they will tend to appropriate areas that are meant for people to hang out by the water.

Socio-economic fishers

This group of fishers mainly consists of those who fish due to socio-economic reasons. Acquiring protein through fishing in the canal circumnavigates the need to purchase highly priced fish. Fishers 9, 10, and 11, I observed placing their catch in a bag. When asked about what they planned to do with it, Fisher 9 on 2022-04-23 replied, "*Fish is expensive.*" before declining further interviews due to language barrier. In addition, there are some who may sell the extra catch to those willing to buy the fish. "*I have my friends who are willing to buy.*" said Fisher 13 on 2022-04-23. I noted that this group of fishers were the least visible and less open about why the fish at the canal.

Describing Engagements Within The Activity Of Fishing

DISTANCED

Distanced engagement in the activity of fishing is not possible as the activity requires different levels of active engagement with the water.

NEAR/PROXIMATE

I consider the act of catching and releasing a proximate engagement because the product of this activity goes back into the water.

There is an **imagined engagement** as the fish is not always visible.

Emotional engagement with the water in that one spares the life of a living creature

Material culture of the demands of fishing presents both **imagined and financial engagement**

Ritualized engagement from the picking of sites to the choice of bait and the catch and release.

Aesthetics of the water contribute to the fishing experience

IMMERSED

The **engagement through consumption** of a water product is **emotionally engaging** in that one cares about the visual and smell of the area they get their food meaning a **sensory engagement** is involved as well.

Olfactory and visual engagement comes into play the former when picking a fishing spot, the latter when trying to see the fish.

Imagined engagement in the belief that there is something to catch

Figure 26. Engagement gradient - Fishing, Own drawing, created with my interpretation of Strang, 2004

Placing Fishers In The Hydrosocial Cycle

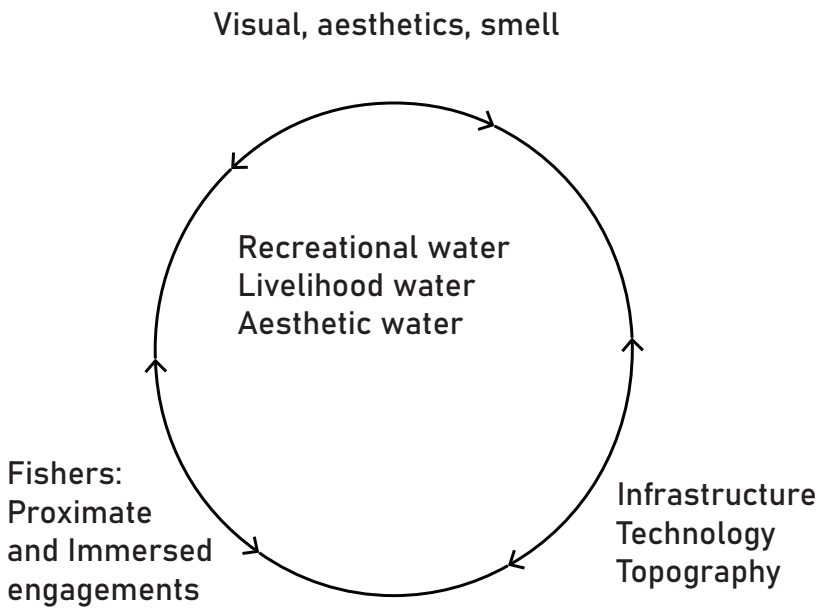


Figure 27. Hydrosocial Cycle - Fishing, Own drawing adapted from (Linton & Budds 2013, p. 176)

Deciphering The Hydrosocial Cycle

Near/Proximate Engagements

Sensory connections, the ritualized engagement of the catch and release together with the imagined visual engagement, mediated through infrastructure and material technology possessed by the fishers create **recreational water**

- The idealized spot or way of moving between spots generates detailed knowledge of fishing spots.
- Material requirements of fishing present inequality between the various fishers and their equipment.
- Emotional connection creates a concern for the well being of the fish species.
- More inclined to cleanup initiatives.

What can planning do to facilitate proximity/near engagements on the Malmö canal?

- Provide equipment sharing places where fishers can borrow equipment and return it after use.
- Formalize the fisher trails and provide planned designated spaces for fishing.
- Identify strategies for improved water quality

Catch and release consideration for water aesthetic, sensory and imagined engagements with the water lead to the production of Aesthetic Water

- Clear water allows one to see the fish increasing the excitement of

trying to catch and bait a specific fish one can see.

- A level of care is built up through repeated engagement.
- Topography can act as a mediator for water aesthetics by creating shadows and reflections.

What can planning do to facilitate proximity/near engagements relative to aesthetic water on the Malmö canal?

- Strategies for water cleanup e.g. “a fishing for rubbish campaign”
- Dredge the canal

<u>Immersed Engagements</u>

Immersed engagements through consumption of the life from the water creates an emotional engagement with water by “vulnerable groups” . The water engagements of these groups create water for livelihood.

- Visual quality of a food source is often favored
- Emotional engagements produce a level of care for the water environment and the fixation to a particular area imagined to offer the best opportunity to catch the fish.
- Material character often limited to the basic requirements for fishing.

What can planning do to facilitate immersed engagements on the Malmö canal?

- Continued plans towards improvement of the water quality
- Provision of material requirements to increase the possibility to use and learn about different parts of the canal.

An example of a sequence in the cycle: The visual quality and pollution of the water affects the fishers. A change in the material quality of the water to create better sensory experience, will affect the specific group that identify as recreational fishers and some sport fishers in that they might be more inclined to consume their catch. This would then trigger a change in behavior among the fisher groups and possibly an increase in their number consequently calling for alterations in topography and better access. This hydrosocial cycle creates livelihood, recreational and commercial water as a result of the desire to the product from fishing in these ways. Value is then created and this value will determine if the visual quality and pollution is maintained or destroyed by this activity triggering the cycle again. The knowledge from the analysis of this constant flux can help planners predict effects through hypothetical alterations in this cycle to better plan for fishing activities on the canal.

5.2.3. Conflicts On The Canal

There exist conflicts between the different user groups and also within the user groups. However, it is important to point out a major conflict that exists and has been present throughout much of the canal's history, which is its function as a drainage system. This conflict is evidenced by the perception of the canal's water as polluted and or dirty. This conflicts with its function as an outdoor social space shown by the minimal or no activity in the areas where sewage discharge pipes are.

In addition, there are numerous conflicts that occur between the different activity groups on the canal.

Between the fishers and the people who hang out by the water: There is a wariness/ level of care from the fishers. This is due to the knowledge that fishing equipment like hooks can cause harm and it also goes against the fishing laws that prioritize safety of other users of the canal.

Between the boaters and the fishers: The conflict is more complex as boat docking areas create claim and domain over these areas as private property and thus have the right to deny access to protect their business interests. In relation to that, the fishers always have to retract their fishing lines when the boats are coming through often scaring away the fish in the case the boats cause major disturbances in the water.

Figure 28. Photos of the waster water outlets into the Canal

Adding Conflicts On The Canal To The Hydrosocial Cycle.

The examples of the hydrosocial cycle illustrated in this section reflect my interpretation of water politics on the Malmö canal. Previous illustrations of the hydosocial cycle show different kinds of water defined by the social structure, water materiality and physical structure by which they are made available to the canal users. I also presented how different instances of water are created through the different hydrosocial assemblages. From these I would classify; aesthetic, livelihood and recreational water as 'water as a public good' and commercial water as commodified water.

To address conflicts in the canal waterscape through the hydrosocial cycle, Figure 22 shows how the use of the Malmö canal as a fishing space sustains water as a public good simultaneously producing a kind of public/citizenship or body public which all members of society have equal access to. The canal's provision of fish rich water and the public itself are sustained by the vested interests of the fishers on maintaining this service. If there is no interest in fishing from the public, it wouldn't exist as an activity on the canal in the same way that if there was no fish in the canal, the activity of fishing on the canal would not exist either.

The interruption of this cycle by the strategic placement of commercial boating spaces is illustrated in Figure 24 to show how the diversion of water through private channels has the effect of producing a different kind of access consequently producing individual consumers rather than a body public. A social political

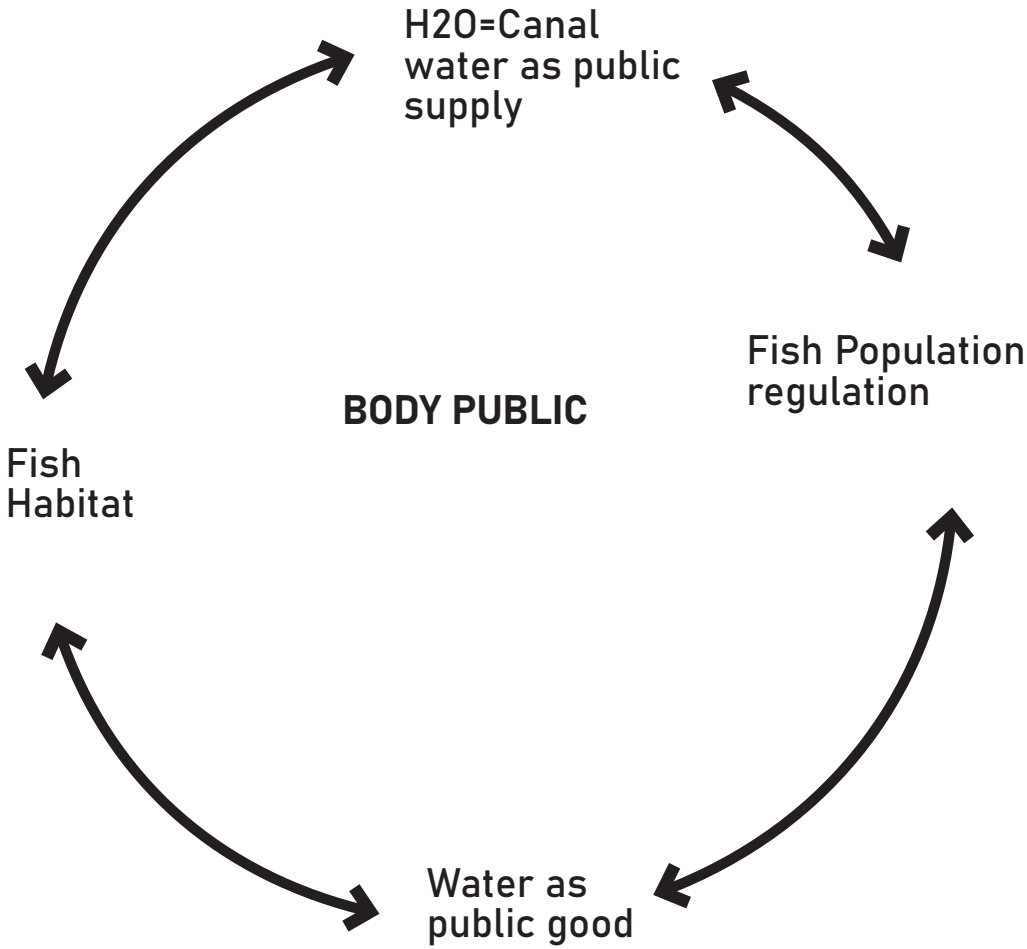


Figure 29. The cycle of public water and the production of the body public in the Malmö canal as a fishing area,Own drawing adapted from (Linton, 2010, p. 232)

effect of sustaining the flow of water through commercial boating is hypothetically suggested by considering how people who provide such a private supply may be reluctant to fund public water infrastructure that supports fishing activities through their taxes. The value of fishing as an activity on the canal can thus be analyzed as a function of change in the hydrosocial cycle.

Need to fish?

Sorry, boaters only

Figure 30. Interruption of the cycle of public water: Fishing activity blocked by commercial boating docks

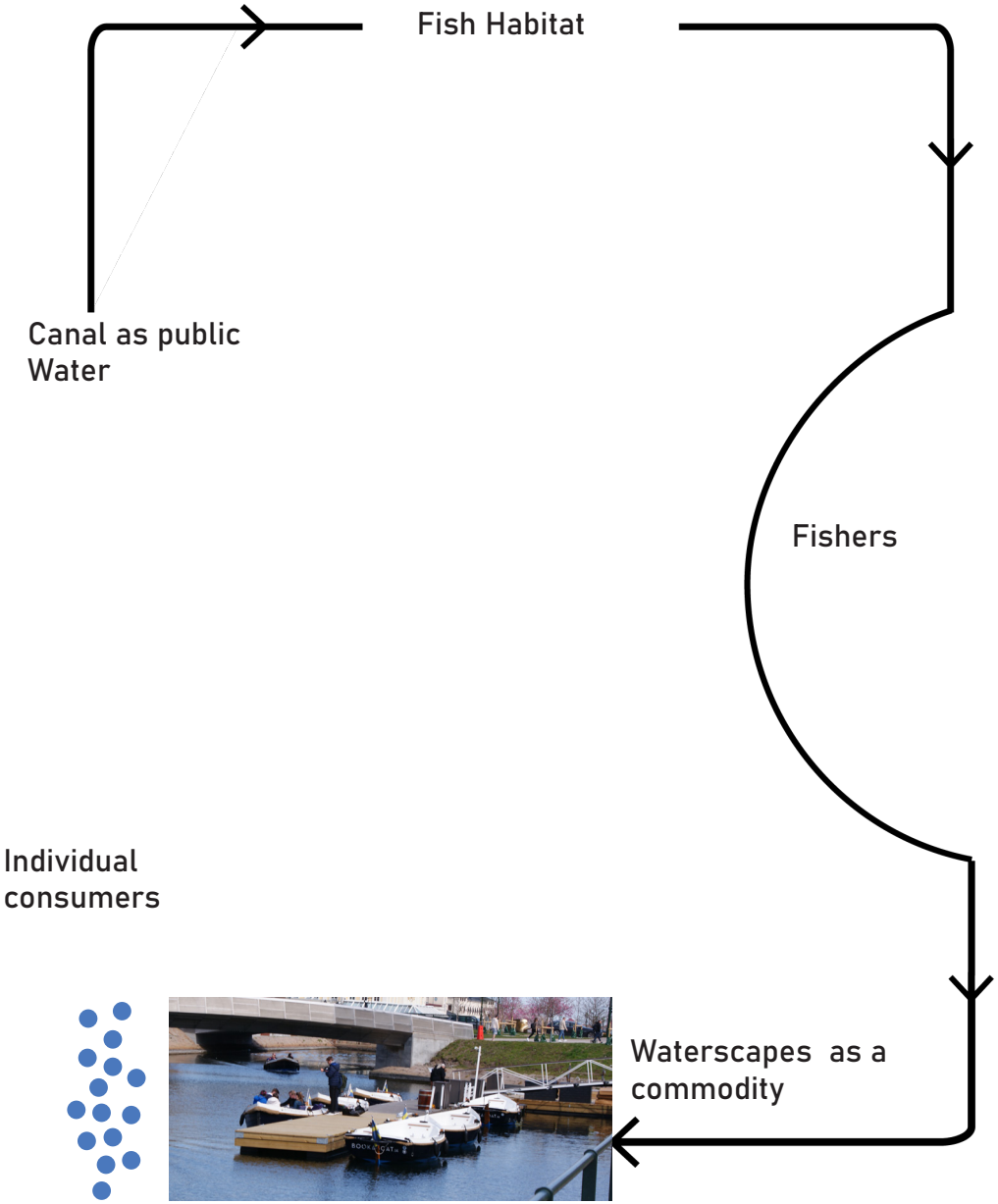


Figure 31. Diversion from the public water cycle towards a private boating space and the promotion of individual consumers, Own drawing adapted from (Linton, 2010, p. 235)

Summary Of Framework

The engagement gradient clusters and describes engagements in activities from distanced to immersed. The hydrosocial cycle is then used to understand what waters the different activities produce. My findings show that there are a range of different water engagements within each activity. Each activity produces many different waters, with some waters more dominating than others. For instance:

Hang-out activity: Recreational water dominates
Boating activity: commercial water dominates
Fishing: recreational water dominates

My findings indicate that immersed water engagements provide for richer and more detailed knowledge of the water environment. My findings also show that water engagements often are mediated by actors with commercial interest, for instance access to cafés, boats and fishing equipment.

5.3. DOCUMENT ANALYSIS
How is water knowledge valued within planning?

According to Malmö stad (2014, p. 3), the aim of the program for developing Malmö's canal spaces (Program för utveckling av Malmös kanalrum) "is to show the opportunities that exist to better use and develop the canal space as an identity creating element and as a space for outdoor living and recreation." The following goals are mentioned in the program:

- Identify and describe the character of the areas of the city center and the harbor that are adjacent to the canal.
- Suggest guidelines for what to take into account when repairing or rebuilding in connection with the canal
- Show examples of measures that can improve accessibility to, and increase the use of the canal for recreation and outdoor activities.

According to the landscape architect, who was part of the team developing the plan document, in-house expert knowledge was mainly used. Local water knowledge was not at the forefront with the focus being identity creation and the spaces around the water. Recommendations and subjects specific to water were limited to water quality with data acquired from an environmental analysis of the canal done by COWI and VBB in 2000. Knowledge for the creation of the planning document was gathered and analyzed through walks, observation, taking photos, notes at the canal supplemented with the study of maps to document the character of the canal. Most of the descriptions of the canal are about its surroundings and the happenings on the land adjacent to the canal. The document seems to based on thorough observations. Hannah Smekal, however, mentioned during a follow up conversation on 09/05/2022 that local stakeholders like the canoe club and other business interest were consulted. The locals were consulted through a newspaper announcement requesting for their thoughts about the canal and was not very specific about user groups. A keyword search of water in the document revealed; water quality(7x), Water surface(4x), Water edge(5x) and water contact(3x) and no mentions of knowledge in reference to water.
I follow how different uses of the canal are paid attention to as well as the different descriptions of water in the document.

Aesthetic Water

According to Malmö stad (2014), the urban character through which the canal flows influences how the canal space is experienced. The infrastructure and the architecture provide different conditions for how the canal is used and experienced (Malmö stad 2014). The document advocates for the development of the canal in harmony with the aesthetic quality of its surroundings i.e. from the medieval stone town, through the 1800s industrial city, the 1970s rational city and the current contemporary modernism. The aesthetic water however, is proposed through beautification of the surrounding land and the canal's edges through highlighting its materiality and advocating for

new tree plantings and modification of the walkways along the canal promoting the canal as 'a green space' with a focus on the pedestrian experience. In addition, the document mentions using lighting to make the water noticeable and "*appear as something beautiful and magnificent*." (Malmö stad 2014, p. 26)

Water quality and its materiality are also described in the document with good water quality as something that can attract people to the canal and make them stay. The canal is described as a unique water environment that alternates between low flow and high flow, as well as displaying marine(salt water), fluvial(river/stream) and limnic(fresh water) characteristics. The document goes on to state that the water is not of a good quality to facilitate swimming because of the periodic bad smell, algae and rubbish in the canal especially the area furthest from inlets (Rörsjö and Östra Förstads canals). Improving the quality would require dredging the canal which according to the document has not been done since the 1970s. Water runoff that brings with it traffic pollutants, untreated sewage that is emptied into the canal approximately 50 times a year as well as waste from birds are mentioned as major contributors to the poor water quality of the canal. Redirection of wastewater, technical as well as ecological treatment solutions are proposed to remedy the problem of water quality in the canal.

Recreational Water

The document briefly describes the potential for using the canal water for recreation activities like fishing and boating and points to the land around the canal as suitable for small scale interventions to create spaces for recreation as a supplement to the limited open space in the city, particularly the old city. Hanna Smekal, through email correspondence 11/05/2022 mentioned that she went rowing together with a colleague who was also part of the planning team. She acquired knowledge from the rowing team and knowledge about the experience of the canal from the water. Attention is given to water as an avenue for recreation.

Safe water

This is presented in two ways. Firstly the document mentions barriers in the form of railings and chains to prevent people from accidentally falling into the water. However, some places have no barriers and the focus is placed on areas that are considered high-risk for accidents. Secondly this concept comes up in the form of lighting so as to make people feel safe when using the canal at night and during the winter months where darkness falls early. A secondary consequence to this is that lighting allows for activities on the canal to take place at different times of the day and during different seasons.

Commercial Water

The document mentions companies that do business on the canal through boats trips and boat rentals. Attention is given to commercial uses of the water.

The Activities Identified In The Planning Document

According to Malmö stad (2014), in order facilitate more water activities, a continuous maneuverability along the water, a sufficient water depth and a usable water quality are required. Closeness to the water is a recurring factor throughout the document which can be realized through stops and seating but also through the various activities that can occur by an on the water. This description corresponds with levels of engagement from distant to proximate. The document classifies indirect and direct activities.

Indirect activities are described as those that can take place in proximity to the canal. They include;

Walking and cycling: These activities take advantage of the good access routes and the imaginary engagement of doing things close to the water and the water's attractive immediate environments

The document goes on to describe direct activities along the canal

Boating: Malmö stad (2014) points out the presence of different clubs that promote professional boating, water sports and water excursions for fun

Fishing: Malmö stad (2014) also points out fishing as an activity that attracts people to the canal. Catch and release is the key focus as the experience of fishing is the primary objective and not acquiring fish to eat or sell. Fishing on the Malmö canal is one of the most common activities on the canal and yet little is mentioned about it in the plan for the development of the canal outside of mentioning the existence of sport fishing being one of the outdoor activities on the canal. During my fieldwork I noticed that fishers appropriated places intended for other activities along the canal. I also noticed that the activity of fishing in some instances conflicted with designed elements along the canal. For example the places described as sitting places in the document were sometimes occupied by fishers who took over the parts closest to the water's edge leaving other users to occupy those areas further away from the water.

The document identifies different activities on the canal but how different activities and users interact is something not covered by the document.

In conclusion the document presents a wealth of knowledge on aspects that can facilitate the use of the canal and improve access to it. Accessibility to the water is significant in the document highlighting the importance of pedestrian access to the water and the variation in the canal's edges and topography which both hinder and offer potential accessibility to the water. The subject of accessibility is tackled in great detail with recommendations for pedestrian and cyclist experience and access. The document, however, does not go into detail on the activities directly related to water and the stakeholders/users and their contribution to the functioning of the canal space as an activity area.

6. DISCUSSION

The journey this thesis has taken exploring the different themes of water has been long, winding and intertwining various philosophies with different knowledge resources. A lot of this knowledge, I acquired from the literature that I read. However, a great deal of knowledge was acquired when doing fieldwork on site i.e. local knowledge about the waterscape gained through observing people's engagement with water in the form of water-related activities. In this study I've sought to identify a framework to capture people's local knowledge of their water environments, and in this section I'll discuss the capacity of this framework. I also discuss the abductive research approach that I've used.

6.1. WHAT CHARACTERIZES LOCAL WATER KNOWLEDGE?

From my literature study I came up with a framework to help identify and characterize local knowledge. The engagement gradient and the hydrosocial cycle, I propose as a means to capture local water knowledge. This framework describes the waters generated by different water engagements. . The engagement gradient maps water related activities and seeks to cluster and describe the water engagements involved. This contributes to characterizing local water knowledge by linking information gathered from users in the field and categorizing it. The structure of the engagement gradient focuses on both what is apparent(water engagement based on physical position to the water) and that which is not immediately apparent (water engagements based on the intangible). Spirn (2005) points out that ignoring that which is not apparent results into a blindness of the consequences of the present. Describing levels of water engagements in nuanced ways proved difficult particularly with intangible elements of engagement which are difficult to estimate and or separate. Combinations of these gradients result into an even more complex engagement gradient that is difficult to both comprehend and decipher.

The hydrosocial cycle seeks to describe the waters generated from different types of water engagements. Descriptions of water engagements together with descriptions of waters generated, are suggested in this study as a way to describe local water knowledge and its effects. Local water knowledge thereby depends on how users of the canal choose to engage with the water. The hydrosocial cycle places water engagements in a larger context, and sheds light on the dynamic interdependencies the engagements are part of. Spirn (2005) points out the landscape is always changing and never remains same. This flux is also mirrored in water engagements and the value attached with water that too changes over time.

According to Kapferer (2016), local knowledge can be recognized as something that has intrinsic value in order to deal with social relations. Measuring and placing value on the knowledge is one thing the framework identified in this study does not take into consideration, but instead treats all knowledge as equally valuable.

As an outsider, the engagement gradient and the hydrosocial

cycle allow one to look into the life-worlds of different user groups and how they engage with their environments. Thus an important aspect of this framework is the necessity to be on site and engage/ communicate directly with the local community in order to get the kind of data that can be useful for the engagement gradient and the hydrosocial cycle. The knowledge is unbiased and a real world account, therefore, it can be used to produce more fair and equal planning outcomes. Haraway (1988) discuses bias in science based knowledge something that the engagement gradient and hydro-social cycle address by combining both local and scientific knowledge into a framework that is dependent on local knowledge.

The engagement gradient and the hydro social cycle create a way to understand the link between the water related activities and local water knowledge. The framework takes information from activities identified from reading the landscape, situates them in form of an engagement gradient from which the hydrosocial cycle combines the identified engagements, the materiality of the water and the means by which the different engagements are made possible to identify resulting waters. Identification of the local water knowledge seeks views and inputs from less known sources, which is something Haraway (1998) encourages as a way to construct worlds that are less dominated are more just and equal.

The hydrosocial cycle collects knowledge through reading the water-landscape and the uneven distribution of local knowledge makes it difficult to be fully satisfied with the sample space chosen with the feeling that the ones left out may possess more insightful knowledge, than this study was able to capture.

Lastly, the engagement gradient describes people's engagements with water. These engagements influence how people come to know their water environments. The hydrosocial cycle places these engagements in a larger setting, describing the waters produced, and sheds light on the dynamic dependencies these engagements are part of. Local water knowledge can be said to depend on water engagements, and is accumulated through practices. Water engagements influence the waters produced, in a dynamic manner, as seen with help of the hydrosocial cycle.

Limitations Of The Engagement Gradient And The Hydrosocial Cycle

The hydro social cycle is complex and time consuming and the knowledge it collects from the different user groups might be oversimplified when it is categorized within the types of water that are produced. Changes in one aspect of the hydrosocial cycle trigger a domino effect e.g. change in the material quality of the water can affect changes within user groups, changes which are open to interpretation of the one reading the hydro-social cycle, subsequent changes in the other aspects and the continuous flux in the type of water produced can also be difficult to keep track of. A possible remedy could be a system for prioritization of what changes to track and when, as a starting point to reduce the information overload. .

6.2. IN WHAT WAYS CAN LOCAL KNOWLEDGE ENRICH THE DEVELOPMENT OF URBAN ENVIRONMENTS?

Local water knowledge could potentially be said to represent the users' power to contribute to the planning of urban water environments. . There is more of an advantage than a negative thing for more people getting involved in the decision-making process of water environments/landscapes. People's different engagements with water, can also be seen as a kind of participation, by which people make different waters rather than making decisions about water, indirectly contributing through their local knowledge to better urban environments for themselves and consequently for others (Linton 2010).

According to Kapferer (2016), accepted and robust social transformation requires the input of local knowledge, thus suggestions that arise from the framework could prove to be more socially sustainable because this input is based on the users and what they know about their environments. Local water knowledge could help planners to understand different waters and the relations and conflicts involved with them. Consequently using this knowledge to support informal recreational use, access to non-commercial boating, access to fishing equipment, could for instance be a way for planning to counter commodifying interests.

The framework identified in this study, with the hydrosocial cycle shedding light on how different waters are produced, could potentially help planners to identify less dominant groups. Supporting waters of less dominant groups, such as for instance fishers' water for livelihood, could also be a means to ensure a diversity of uses in urban water environments.

Lastly through the framework for understanding and identifying local knowledge; an understanding of dynamic relationships in urban water environments is made possible. In addition, the framework invites complex readings of the water landscape as well as having the potential to identify areas of intervention to achieve more just access to water environments.

6.3. HOW IS PEOPLE'S LOCAL KNOWLEDGE OF WATER VALUED WITHIN PLANNING?

Through document analysis as well as historical review of the evolution of the canal, it was found in this study that local water knowledge was rarely taken in to consideration. Expert opinions were found to often be favored when it comes to planning water environments because of the efficiency of the process. Local stakeholders like business owners and group leaders seem often to be thought to posses representational knowledge of those they represent.

The engagement gradient and the hydrosocial cycle direct attention to people´s water knowledge, and including people's own knowledge of their water environments to a larger extent in planning, has potential to result in more socially sustainable outcomes.

6.4. METHOD DISCUSSION

The Abductive Research Approach

I chose an abductive research approach, weaving between empirical and theoretical findings, in order to deal with this topic, as the subject of water is very broad. I found the theorizations of water to be very complex and extremely time consuming to grasp. In a cyclical manner, sometimes the empirical work took the lead, sometimes the explorations of water related theories. The theoretical part required a lot of exploration in order to make sense in relation to the empirical findings. This repeated exploration into different water theories took a lot of time because they are as vast as they are complex and sometimes similar theories may have varied interpretations. This back and forth between the two may also have created a bias particularly when looking at the same empirical data through various theoretical lenses. For example the numerous theoretical descriptions of engagements through fishing could have influenced how I saw the activity in the field. The vastness of water theory also meant that I had to take parts of different theories and combine them to acquire a workable theoretical framework.

Walking As A Method To Gather Knowledge

My study involved two kinds of walking;

Walking where I was on my own following selected paths and found trails. With this kind of walk, the knowledge gathered was very general and could not be tied to a specific activity unless it was very obvious. For example the existence of a boat dock signified the presence of boating as an activity. However, finding trails next to the water did not specifically point to the activity of fishing until I had made the observation of the fishers in this landscape and the activity they were doing. Given that the fishers were absent at this point, these could have been traces from other user groups, that might want to get as close as possible to the water.

This type of walk allowed for the exploration using other senses for example the feeling of walking on a planned/ designed surface in comparison to trail or squeezing through thorny bushes and ducking under low hanging branches to get to the edge of the water which would; test one's balancing abilities and eye for potential disturbances in the canal landscape to allow for a makeshift fishing spot.

Through these walks I experienced the water environments of the canal users, the fishers in particular. The memory of these walks stayed with me making it influential when coming up with the different levels of engagement associated with the different activities on the canal.

Walking Where I Followed A Specific User Group.

This kind of walk involved me following fishers unannounced in one instance but announced in the others. During these walks my focus was on the fishers and how they navigated and used their landscape. My experience was mainly visual as I did not have to follow them physically to every point as that would have been slightly awkward given the tightness of some of the fishing spots that could only allow

for one person or two at most. I later learned that the distancing could also have been as a result of the fishing etiquette and not the inability of the particular landscape area to hold more than one fisher at a time. Looking at the fishers try to get their footing and balancing hoping they do not fall in, generated the desire to make this maneuver easier and safer already giving me an idea of what to consider when planning places for fishers on the canal.

Observation

Observation played an important role in collecting data for the framework, identifying activities and traces of activities in the landscape. Observation however, is open to interpretation and my conclusions from the observation of particular activities may have been biased towards the information that I had read about the particular activities

Interview

Interview as a method proved to be the most difficult to carry out because it involved interrupting people in the middle of a leisure activity. However, it provided the richest type of data from which I learned a lot from the perspectives of people actively engaging in their water environments. It was interesting to compare what assumptions I had about fishing from what I've read, observing the fishers and actually talking to them. Interviewing help to ground these assumptions and contextualize them. The fear involved in potentially losing an eye to a swinging hook was taken away by the careful consideration for me by the fishers who I interviewed. Interviewing people in a cultural context that is wary of strangers was also difficult as a few people declined to be interviewed and just wanted to enjoy their activity. In relation to this, coming up with questions that I thought would be relevant was also rather challenging, I had a lot of questions and would have benefited more from making the interviews more concise.

Literature Study

For the theoretical base of this study, there is limited research on water relating specifically to local water knowledge and non that I could find relating specifically to the field of landscape architecture. Most of the research was in other related fields like human and natural geography, water management and even urban planning to mention but a few. This created a challenge when putting information that is created separated and together and then contextualizing it to the filed of landscape architecture.

7. CONCLUSION

To conclude, I shall summarize and briefly answer the questions that were posed at the beginning of this study.

What characterizes local water knowledge?

Local knowledge is situated and site specific. It is the result of a conscious adaptation to an environment, taking people's skills, capabilities and experiences into account. Findings from this study indicate that;

- Local knowledge requires interaction with user groups.
- The way people engage with water affects the water knowledge generated.
- Describing water engagements can be a way to uncover people's local water knowledge, as for instance exemplified in the descriptions of the water engagements of the fishers in this case study. To fully grasp these engagements requires interaction with the users.
- A variety of different waters exist, waters that are created from engagements with the material qualities of water and the means that make these engagements possible.
- The more immersed the water engagement, the richer the water knowledge produced. This though is inconclusive
- Immersed water engagements (multi-sensory engagements, physical contact with water) seem also to cater for care for the water environment.
- Distanced and proximate engagements, tend to limit water knowledge to visual aesthetic aspects.
- Mediated water engagement (boats, equipment, gear) the higher the price, the more limited the access, resulting in fewer people gain ing access to immersed engagements in the activity of boating.

How is people's local knowledge of their water environments valued within planning?

- Planning relies to a large extent on professional expert knowledge. Involves actors representing various interests. Direct engagement with user groups more time consuming.
- The impact of local knowledge on the water produced, as illustrated by the hydrosocial cycle, perhaps not thoroughly understood in planning practice.
- Local water knowledge of those that have commercial/business interest is taken into consideration
- Non-specific general knowledges related to opinions about a place are sometimes considered but as to how and if they are used is hard to determine.

In what ways can local water knowledge enrich the development of urban water environments?

- Local water knowledge can guide planning and design decisions to support immersive engagements through provision of accessible infrastructure and equipment, places for formal/informal use, cleaner water, to mention but a few.
- Potential to guide planning in a socially sustainable direction

through the inclusion of a variety of voices.

- Local knowledge can help secure a diverse set of uses along the canal.

The analytical framework to capture local knowledge proposed in this study, directs attention to the role of local knowledge in the different waters produced, and the relations and conflicts that exist between and within various user groups and their waters. Both challenges and opportunities to using this framework exist as the framework can be valuable for planners as a means to capture local water knowledge and identify sites to intervene to push towards publicly accessible waters of good quality. On the challenge side, the framework also brings in challenges in terms of avoiding making too simple or too complex descriptions

7.1.Perspectives For Further Studies

To refine the framework identified in this study, the engagement gradient and the hydrosocial cycle, would be relevant for further studies. Depending on how it is used it is either an over simplification or overtly complex. Further research needs to be done to find a middle ground that balance out the over simplification and over complication of the framework.

To explore how the framework can inform planning and design proposals for urban water environments, is also a topic for further research.

8. REFERENCES

Andersson, M. (2019) 'Kanalen – en bouquet av fekalier och industriavfall', *Sydsvenskan,* 13 july. Available at: https://www.sydsvenskan.se/2019-07-13/kanalen--en-bouquet-av-fekalier-och-industriavfall (Accessed 2022-02-18).

Andersson, M. (2019) 'Kanalen gjorde Malmö till en öppen stad', *Sydsvenskan* 7 July. Available at: https://www.sydsvenskan.se/2019-07-07/kanalen-gjorde-malmo-till en-oppen-stad (Accessed 2022-02-18).

Brink, A. (2017) *Research in landscape architecture.* London: Routledge.

Burmila, S., Daniel, T.C., Hetherington, J.D. (1999) 'Human values and perceptions of water in arid landscapes', *Landscape and Urban Planning,* 44(2-3), pp.99-109. doi: https://doi.org/10.1016/S0169-2046(99)00007-9

Chen, C. (2013) 'Mapping Waters: Thinking with Watery Places', in Chen, C., MacLeod, J., Neimanis, A. & Trudel, E.G. (eds.) *Thinking with water*, Canada: McGill-Queen's University Press pp. 274-298.

Council of Europe, (2000). *Definition and legal recognition of landscapes*, Available at: https://www.coe.int/en/web/landscape/definition-and-legal-recognition-of-landscapes (Accessed 2022-03-17)

Haraway, D. (1988) 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies*, 14(3), pp. 575–599. doi: https://doi.org/10.2307/3178066 (Accessed 2022-04-13)

Ingold, T. (2010) 'Footprints through the weather-world: walking, breathing, knowing', *The Journal of the Royal Anthropological Institute*, 16, pp. 121–139. Available at: http://www.jstor.org/stable/40606068 (Accessed 2022-03-12)

Kaika, M. (2005) *City of flows : modernity, nature, and the city*. New York: Routledge.

Kapferer, E, Koch, A, & Sedmak, C. (2016) *Appreciating local knowledge*. Newcastle:

Cambridge Scholars Publisher.

Krause, F. & Strang, V. (2016) 'Thinking Relationships Through Water', *Society & Natural Resources*, 29(6), pp. 633-638. doi: https://doi.org/10.1080/08941920.2016.1151714 (Accessed 2022-02-08)

Kvale, S. & Brinkmann, S. (2009) *Interviews: Learning the craft of qualitative research interviewing*. 2nd Edn. California: SAGE Publications.

Linton, J. (2010) *What Is Water? : The History of a Modern Abstraction*, Vancouver: UBC

Press.

Linton, J. & Budds, J. (2013) 'The hydrosocial cycle: Defining and mobilizing a relational-dialectical approach to water', *Geoforum*, (57), pp. 170-180. doi: https://doi.org/10.1016/j.geoforum.2013.10.008, (Accessed 2022-03-02)

Löfgren, S. (2020) 'Knowing the landscape: a theoretical discussion on the challenges in forming knowledge about landscapes', *Landscape Research*, 45(8), pp. 921-933, doi: https://doi.org/10.1080/01426397.2020.1808962 (Accessed 2022-04-18)

Macpherson, H. (2016). 'Walking methods in landscape research: moving bodies, spaces

of disclosure and rapport. *Landscape Research*, 41(4), pp. 1-8, doi: https://doi.org/10.1080/01426397.2016.1156065 (Accessed 2022-03-15)

Malmö stad, (2014) *Program för utveckling av malmös kanalrum*, Malmö: Gatukontoret. Available at: https://docplayer.se/68129124-Program-for-utveckling-av-malmos-kanalrum.html (Accessed 2022-02-05)

McCarroll, M., Hamann, H. (2020). 'What We Know about Water: A Water Literacy Review', *Water*, 12(10), p. 2803, doi: http://dx.doi.org/10.3390/w12102803. (Accessed 2022-03-15)

Rydin Y. (20017.) **Re-Examining the Role of Knowledge Within Planning Theory**, *Planning Theory*, vol. 6(1), pp. 52-68. DOI:10.1177/1473095207075161, [Accessed 2022-04-15]

Spirn, A. (2005) 'Restoring Mill Creek: Landscape Literacy', *Environmental Justice and City Planning and Design, Landscape Research*, 30(3), pp. 395-413, doi: https://doi.org/10.1080/01426390500171193 Acceessed: (Accessed 2022-03-30)

Stake, R. (1995) T*he art of case study research*. California: SAGE Publications.

Strang, V. (2004) *The Meaning of Water*. Oxford, UK: Berg publishers.

Strang, V. (2005) 'Common Senses: Water, Sensory Experience and the Generation of Meaning', J*ournal of Material Culture,* 10(1), pp. 92–120, doi: https://doi.org/10.1177/1359183505050096 (Accessed 2022-02-17)

Strang, V. (2013). 'Conceptual Relations: Water, Ideologies, and Theoretical Subversions', in Chen, C., MacLeod, J., Neimanis, A. & Trudel, E.G. (eds.) *Thinking with water*, Quebec: McGill Queen's University Press pp. 185-211.

Whallev, J. (1988) 'Water in the landscape', *Landscape and Urban Planning*, 16(1-2), pp. 145-162, doi: https://doi.org/10.1016/0169-2046(88)90040-0 (Accessed 2022-03-08)

LIST OF FIGURES

NB: All photographs are taken by the author

Fig. 1 adapted from: Linton, J. & Budds, J. (2013) 'Hydrosocial Cycle' (Drawing) in Linton, J. & Budds, J. (2013) 'The hydrosocial cycle: Defining and mobilizing a relational-dialectical approach to water', *Geoforum*, (57), p. 176. doi: https://doi.org/10.1016/j.geoforum.2013.10.008, (Accessed 2022-03-02)

Base for Figures 3, 4, 9,11, 12, 13, 14, 24: Swedish Land Survey (2022) Malmo, SWEREF 99 TM, RH 2000, Aerial Photograph (Map) https://minkarta.lantmateriet.se (Accessed 2022-02-15)

Fig.5; Lander, I.A (1923) *Malmoe Fästningsverken 1650 c:a* (copy), original by Heer, C.(1650) in Det Kongelige Bibliotek,Copenhagen, (Historical Map) Available at: (http://kartor.malmo.se/wwwroot_data/dokument/kartarkiv_data/pdf/584M.pdf (Accessed 2022-03-08)

Fig. 6; Iselberg, A.U. (1850) *Karta öfver Malmö Stad i forna och nuvarande dagar, Malmö 1720*, (Historical Map). Available at http://kartor.malmo.se/wwwroot_data/dokument/kartarkiv_data/pdf/148M1.pdf (Accessed 2022-03-12)

Fig 7; Angell, C. (1811) *Förnyad plan öfver Malmö stad*, (Historical Map). Available at: http://kartor.malmo.se/wwwroot_data/dokument/kartarkiv_data/pdf/3M.pdf (Accessed 2022-03-09)

Fig 8; Liunggren, G. (1853) *Karta öfver Staden Malmö med dertill lydande egor*, (Historical Map). Available at: http://kartor.malmo.se/wwwroot_data/dokument/kartarkiv_data/pdf/22M1.pdf (Accessed 2022-03-12)

Fig 29 adapted from; Linton, J. (2010) 'The cycle of public water and the production of the body public: a drinking fountain', (drawing and photograph) in Linton, J. (2010) *What Is Water? : The History of a Modern Abstraction*, Vancouver: UBC Press, p. 232.

Fig 31 adapted from; Linton, J. (2010) 'Diversion from the public water cycle to private vending machine and the production of individual consumers', (drawing and photograph) in Linton, J. (2010) *What Is Water? : The History of a Modern Abstraction*, Vancouver: UBC Press, p. 234.

9. APPENDIX

9.1. INTERVIEW QUESTIONS

What is the most important skill/asset you feel a fisher in the Malmö canal should possess?

Describe your abilities as a fisher?

Describe a typical fishing session?

How long do you usually fish?

How far do you have to travel to get here?

Why do you fish in the Malmö canal?

What challenges do you face when fishing in the canal

What do you do with your catch? Why?

What is the biggest disappointment about fishing in the canal?

What do you think about the landscape and water of the canal?

How would you describe your contribution to the quality of the fishing experience in the canal?

Do you know about any plans by the city with regards to fishing on the canal?

Do you feel that the city has planned and designed for fishing in the canal?

Where do you usually fish

Who do you fish with?

When do you fish?

What would you say is important for fishers to know about the Malmö canal landscape?

Who taught you how to fish?

Are there specific places that are popular or unpopular? Why?