

MIGRATING WATERFRONTS

A methodological self-assessment

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Thesis "Migrating Waterfronts: the meaningful potential of waterfronts in urban densification"



I A PROFESSION OF PROCESS

Architecture is often thought of as a goal-oriented profession, but we as architects are occupied with *the process* for most of our lives, rather than the results. After all, our edifices often live a life of their own upon completion. In other words: architects are nearly always *in the process*.

Understanding *the process* is therefore crucial for architects, and understanding this process is only possible by understanding the epistemological foundations of our designs (and research). A thorough understanding of systems of inquiry, schools of thought and methodology (including strategy and tactics)¹ is therefore necessary to become a better architect. As a 'Master of Science', it is therefore critical to acquire these "necessary skills in acquiring knowledge"², for a master of the process is the master of the outcome.

Understanding the various aspects of the design process also allows for one which is faster and more efficient. At the current stage of our professional lives we lack experience, which is why being methodologically aware will allow us to identify and choose the appropriate methods for the desired goal and basically "climb multiple steps at a time".

This course allowed us to put a mirror to ourselves and orient us in the field of design and research. After all, self-knowledge is the beginning of wisdom. Being able to position yourself between various design methods allows for an in-depth understanding of the profession by taking a step back to a higher level. The understanding of such methods opens a whole set of new design insights: suddenly you are elevated to new forms of design/research/exploration by the mere realization of possibilities and approaches. Being able to "shift" paradigms, schools of thoughts, strategies and tactics and combine them makes new design methods possible, and allows you to experiment and adapt to the given brief³. The awareness of the levels of *paradigm* and *school of thought* was the biggest contribution of this course to my research.

In this essay, I have tried to explore how suitable my mixed research design was in investigating the meaningful potential of Rotterdam's waterfront for the densification of Rotterdam. This thesis is conducted as part of the Hotel New York studio of the chair of Complex Projects and fits within the overarching goal of the chair to investigate "settlements around the world which are ambiguous in their development and embedded in the process of change".

Specifically for this semester, the theme of the studio focuses on the concept of migration. The city center of Rotterdam is developing as a new high-rise and mixed-use center, where a migration is visible from the old port functions to new mixed-use development. By engaging with the relatively untapped potential of the waterfront, it is possible to not only densify the city, but also engage with the Maas river as a central public space in a more meaningful way.

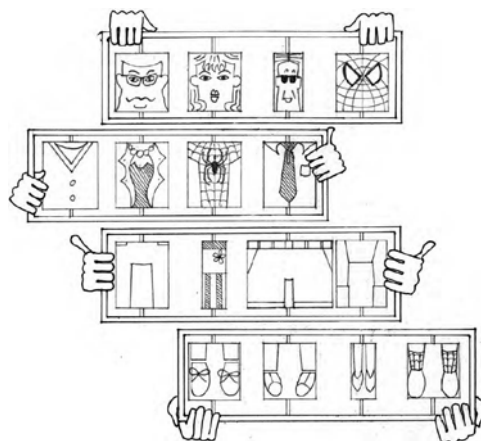


Figure 1 The example of a children's puzzle as mentioned by Groat and Wang can also be used to illustrate how we can combine various paradigms, schools of thought, strategies and tactics. Courtesy of Kush Patel.

¹ Linda Groat and David Wang, *Architectural Research Methods*, Second Edi (Hoboken, New Jersey: John Wiley & Sons Ltd, 2013).

² Jorge Meija Hernandez, "On Heuristics, Research and Design" (Lecture at Delft University of Technology, Lecture Series Research Methods, 2020).

³ Groat and Wang, *Architectural Research Methods*.

II THE 'COMPLEX' METHODOLOGY

The approach taken towards understanding the potential of the waterfront for a meaningful densification of Rotterdam's city center is largely situated within the overarching methodology-led⁴ research of the Complex Projects studio. The studio emphasizes a framework to which all students adhere in their individual and group parts. A heuristic approach is preferred with usage of communication mediums (sketches, models, presentations, reports) and a product-based design development paves most of the path of graduation. Every student is free in filling in the gaps between the studio-defined approach, as long as the individual topic is related to studio theme of migration.

In the first part of studio, we started with mainly group efforts using heuristic methods that were context-led: a physical and 3D model of the site is produced, while multiple maps of the city are made ranging from larger to smaller scales. In tandem, diagrammatic analyses of the city are drawn, based mainly on data collection with observations, mapping and archival and literature review. At P1.5 this is supplemented with a movie of the group vision on the future of Rotterdam, made possible by a site visit with fieldwork to the previous studio's research area of New York⁵.

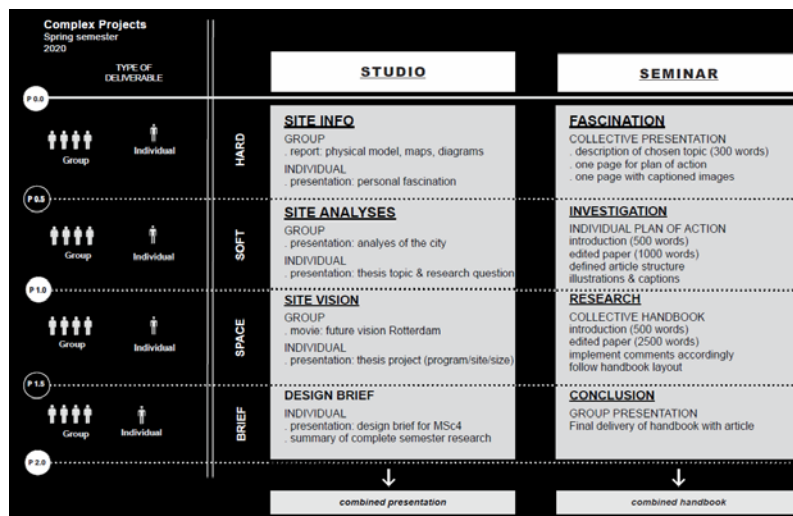


Figure 2 An excerpt from the Hotel New York Syllabus, where the studio methodology until P2 is explained.

Towards the P2, the amount of individual work increases, and more varied methods are possible, albeit all context-led. I analyzed the importance of water in shaping cities, and how important water is in both the physical as well as socio-cultural domain of Rotterdam. Therefore, this had to be a strongly historical and ethnographic research using both quantitative and qualitative data collection. Afterwards, the waterfront of Rotterdam and other global waterfronts were mapped on various scales using axonometric and 2D diagrams, in order to better understand both the physical space as well as practices at the waterfront (a praxeological approach). The water sub and superstructure of Rotterdam was also identified and mapped, leading to the overall conclusion that Rotterdam is a city that is shaped by water in both physical and social terms. Finally, a typological study is performed into waterfront buildings, investigating their program, topology and relation to water, in order to help defining a program for my own design.

The aforementioned mixed research strategy contains a variety of tactics, which are mostly heuristic. While the overall studio is methodology-led, all approaches under it are context-led. They contain a mixture of qualitative and quantitative data collection, as both hard and soft aspects are tackled extensively. The position also shifts between the emic and etic: as I both live in Rotterdam and am active user of its waterfront, a large part of especially the qualitative descriptions are emic, while the quantitative data collection and heuristic approaches of mapping were made as an outside observer (etic). The approach itself is interdisciplinary, integrating and synthesizing heuristic, historical

⁴ Ray Lucas, "Introduction: What Is Architectural Research?," in *Research Methods for Architecture* (361-373 City Road London: Laurence King Publishing Ltd, 2016), 12–14.

⁵ Sadly, due to the coronavirus this fieldwork in New York was canceled.

and qualitative research. It would not be possible to call this transdisciplinary, however, for the applied methods fall within the wide discipline of the architecture.

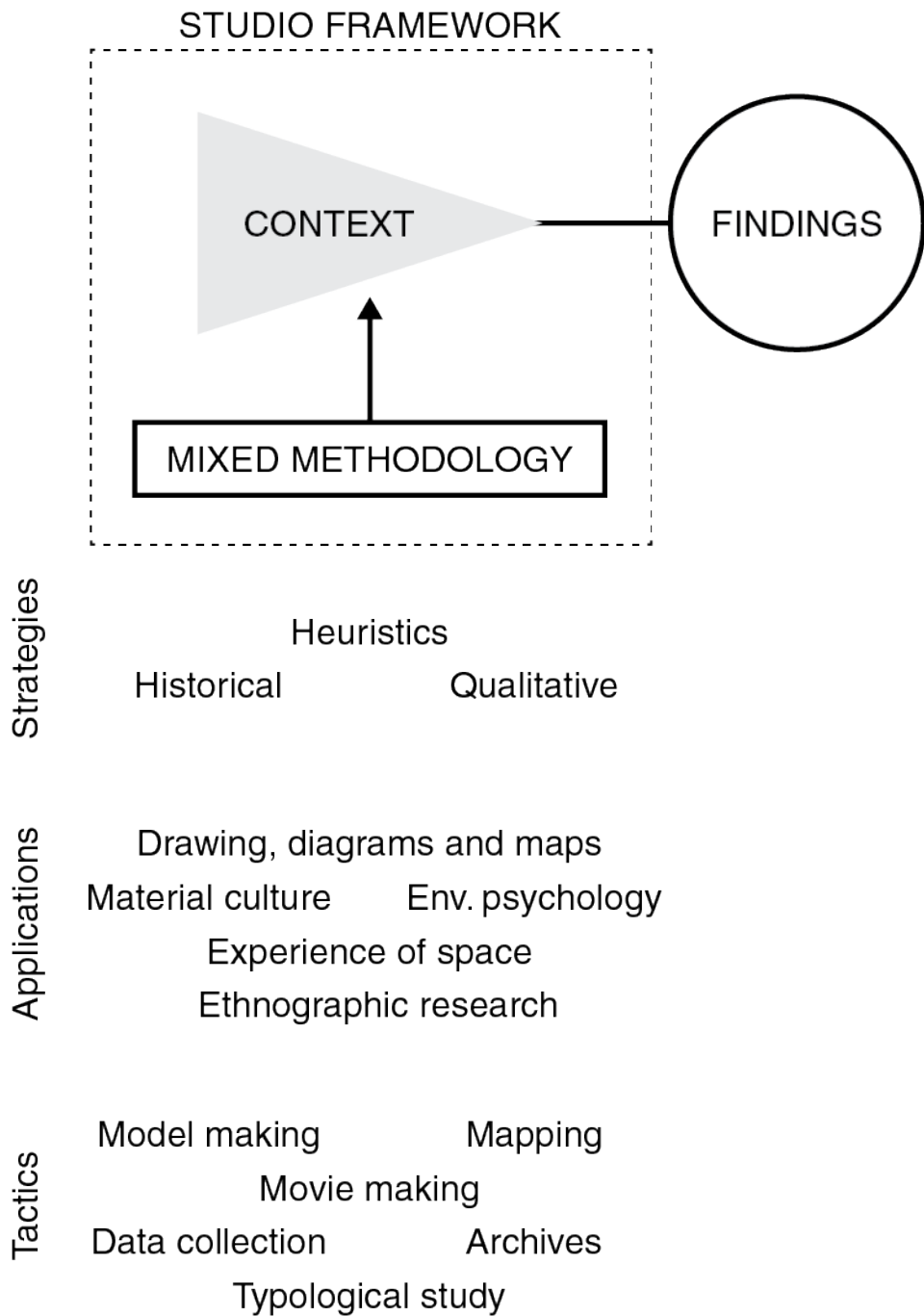


Figure 3 An adaptation of Lucas' diagram on context-led research to highlight the specificities of my own research methodology. The whole endeavor is also a mixture of etic and emic viewpoints and a mixture of qualitative and quantitative methods and could be classified as intersubjective in Groat and Wang's continuum of research paradigms.

MIGRATING WATERFRONTS: A METHODOLOGICAL SELF-ASSESSMENT

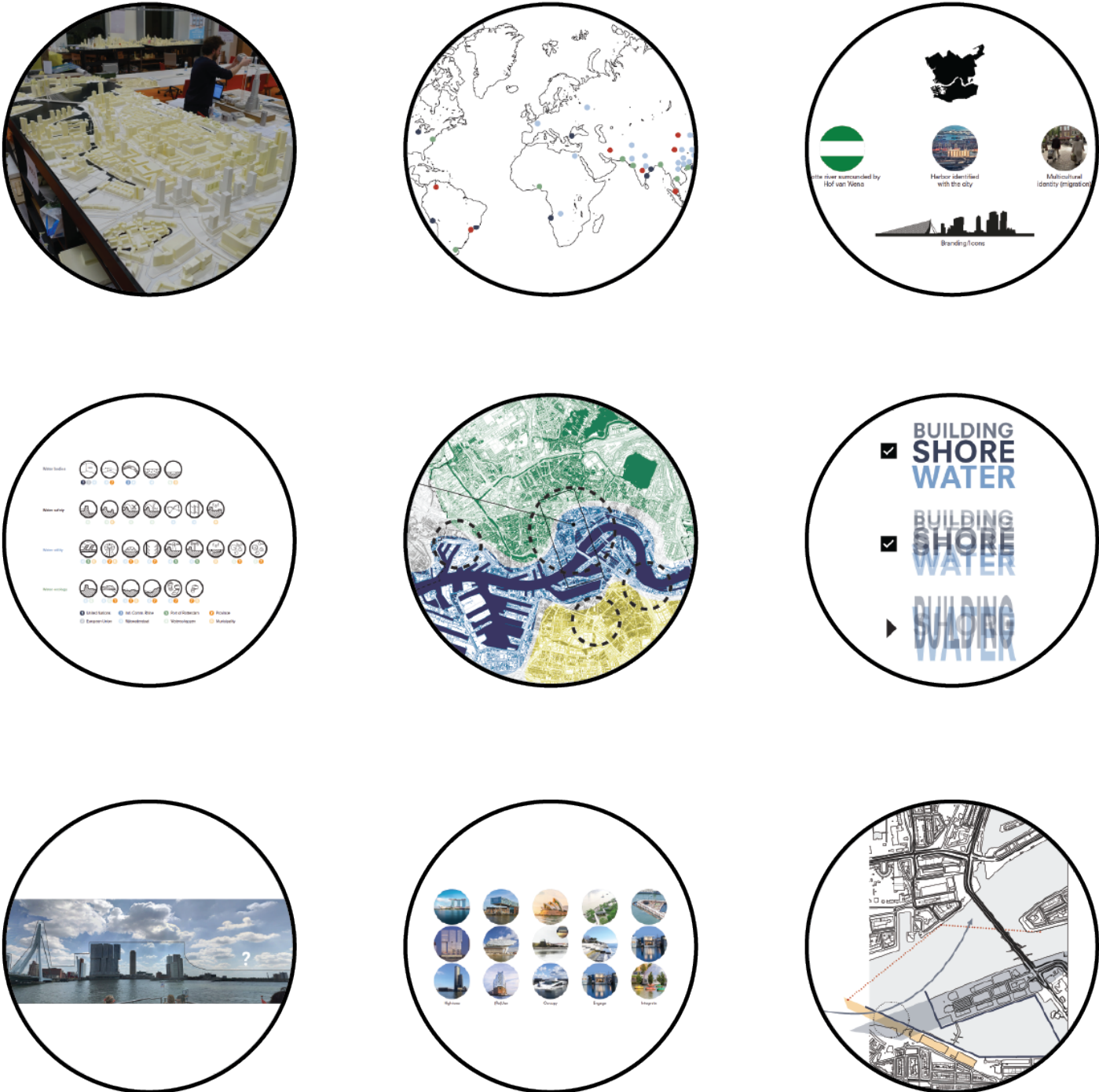


Figure 4 Some of my individual work for studio, highlighting the various tactics employed before P2.

III REFLECTION ON THE COMPLEX

As mentioned, the mixed research strategy draws on mainly heuristic, but also historical and qualitative methodologies to understand the meaningful densification potential of the waterfront of Rotterdam.

Admittedly, most of the heuristic approaches used for the studio have existed within the field of architecture for a very long time, while in my particular case the change in the *tool* (computer versus hand drawing) has had little impact on the overall method and methodology.

Historically speaking, however, the advent of parametric computer-based analyses and simulations have had a large impact on the way heuristics is applied in the field of architecture⁶. This simulation-based methodology has proven to be able to not only accelerate the processing of larger quantities of data or visualize them faster, but also change the way in which data is gathered and interpreted.

Before touching upon the topic of simulations, however, it is important to mention the large amount of quantitative data that has been made available by public GIS. Acquiring height maps of the site has been made possible by the open-source sharing of AHN3 measurement data⁷, for instance. Similarly, other GIS services by the Waterschappen makes it possible to identify all water-related sub and superstructures on the site⁸, and this is also the case for other public infrastructure such as sewage or electrical systems⁹.

The same holds true for the gathering of qualitative data as well. Rotterdam's municipal archives are digitalized¹⁰, making archival research a fast and easy endeavor compared to what it used to be. Literature on the historic development of Rotterdam is mostly available online too, as is the documentation of the non-physical relationship of Rotterdam to water: as this city branding has mainly occurred in the last twenty years, it has only been accelerated and even made possible by digital media.

These computational advances have caused a shift in the way we processed quantitative and qualitative data, placing a higher importance on the categorization, filtering and ordering of sources rather than finding them. After all, finding sources nowadays is relatively easy and fast: the careful selection, evaluation and sorting of these sources has now become more important than ever. *Data aggregation* has superseded *data collection*.

Although such computational advances are nothing new, the possibilities that simulations offered so far remained untapped in my methodology. For instance, the mapping of human flows on the site is something that could have been observed, but also simulated, in order to inform the selection of the site and program. This is for instance something that FOA performed in the design of the Yokohama Terminal, in which computational methods were utilized to not only map pedestrian flows but then also model the design itself as well¹¹. UN Studio performed something similar in the design of the Mercedes Benz Museum¹². Similarly, simulation on solar radiation and outdoor wind comfort (two parameters considered by the high-rise vision of Rotterdam)¹³ could have given new design insights for the waterfront, other than the *hunch* that I had on these topics.

A computational approach could also have informed the selection of the site, which focused extensively on the perception of an enclosed space when viewed from the Willemskade and on the perceived space upon approaching Rotterdam from the sea. A similar concept -albeit not computational- was employed by Rem Koolhaas on the design of De Rotterdam, in which the massing

⁶ Yasser Zarei, "The Challenges of Parametric Design in Architecture Today: Mapping the Design Practice," *MSc Thesis*, 2012.

⁷ <https://www.ahn.nl/ahn-viewer>

⁸ <https://wshd.maps.arcgis.com/apps/Viewer/index.html?appid=6803a257663944ecbad43a1706fec47>

⁹ <https://www.rotterdam.nl/wonen-leven/leidingenbureau/>

¹⁰ <https://stadsarchief.rotterdam.nl/>

¹¹ Tom Avermaete, Kleske Havik, and Hans Teerds, eds., *Architectural Positions*, 1st ed (Amsterdam: SUN Publishers, 2009).

¹² UN Studio, "Mercedes Benz Museum," accessed May 14, 2020, <https://www.unstudio.com/en/page/12482/mercedes-benz-museum>.

¹³ Gemeente Rotterdam, *Hoogbouwvisie 2019* (Rotterdam: Gemeente Rotterdam, 2019).

of the massive complex was deliberately broken to give a shifting perspective of the massing as one passes over the Erasmus bridge by car¹⁴.

On the other hand, the qualitative research that was performed on the more social importance of the waterfront has also seen great changes over the course of history. The understanding of praxeology did not develop as a field in architecture until the early half of the previous century¹⁵, when especially efforts by the Deutsche Werkbund established it as a separate field with an effort to standardize building dimensions. Combined with ethnographic methods that rose in prominence after the Second World War, architecture shifted from dictating usage to understanding usage. Arguably, the methods employed within the scope of this thesis have not been different from how architectural ethnography has been practiced by Jane Jacobs, Jan Gehl, Aldo van Eyck or Tsukamoto and Kajijima.

It would be fair to admit that understanding these insights actually did not per se change the methods with which I performed my research design, but rather have informed me to pursue a more varied methodological approach to the design. Examples from others did not directly influence therefore the tactics involved, but rather the strategy that decides on which tactics to use even in the first place.

IV EXPANDING TO THE 'PAN-STRATEGY'

In the lectures, various epistemological frameworks were presented, including heuristics, territorial investigation, praxeology and ethnography, spatial narratives, typological analysis and material cultures. In the studio, we very much applied heuristic methods and typological research, while individually we performed those and also used elements from territorial investigations (quantitative data gathering and mapping), praxeology (investigating the waterfront usages in Rotterdam), and a more core ethnographic and material culture study into the significance of the Maas for Rotterdam and how it is used in both its immaterial and material culture.

The usage of spatial narratives lied at the background in the mixed research design that I used. This is because the overall heuristic and relatively tangible approach of the studio left little space to explore more 'narrating' explorations of the Maas river. Additionally, waterfronts in literature are mainly tackled in this technical and economical way: climate change, rising water levels, and undeveloped land with high value are all concepts that are mentioned most dominantly in literature¹⁶. People and the possibility to relate with total space and experiencing a meaningful relation between the materiality of the urban and the materiality of water lie at the background of such approaches.

The approach towards understanding water as an important material element that forms an image of Rotterdam finds its roots in the seminal work of Kevin Lynch, who identified how we could experience the city in terms of paths, edges, districts, nodes and landmarks¹⁷. Water and the waterfront can be considered a path, but also an edge condition within his framework. Free from the landmarks situated at the waterfront or on the Maas river, one could even argue how the river itself is perhaps the biggest landmark.

The same approach towards engaging and reading the city in terms of its physical environment is also legible in the Rotterdam Waterstad 2035 vision of the Municipality of Rotterdam¹⁸. The Maas river is defined as the 'biggest attraction of the city' with a focus on the large amounts of public events that occur there, while the waterfront is characterized as a location with great densification potential and possibility of integrating water into architecture. In essence, heuristic mapping and qualitative data collection combined to result in a vision devoid of subjective meanings.

¹⁴ Bernard Hulsman, "De Rotterdam: Bigness in Glas," NRC, accessed May 14, 2020, <https://www.nrc.nl/nieuws/2013/11/22/de-rotterdam-bigness-in-glas-1320374-a366079>.

¹⁵ Marieke Berkers, "Practices" (Lecture at Delft University of Technology, Lecture Series Research Methods, 2020).

¹⁶ Citta d'Acqua, "10 Principles for a Sustainable Development of Urban Waterfront Areas," n.d., <http://www.chaplin.ee/english/ware/images/stories/resources/10-principles.pdf>.

¹⁷ Kevin Lynch, *The Image of the City* (The MIT Press, 1960), <https://doi.org/10.1525/sp.1960.8.3.03a00190>.

¹⁸ Pieter de Greef, ed., *Rotterdam Waterstad 2035* (Rotterdam: edpisode publishers, 2005).

The employed paradigm in my research however was more intersubjective¹⁹, acknowledging the necessity for both quantitative and qualitative data, and accepting both an overarching overall objective reality (the image of Rotterdam as a waterfront city) as well as multiple constructed sub-realities that are formed by people's own experiences (the experience of the waterfront by individuals). The material and immaterial reinforce and influence each other. The employed strategy therefore transcended Lynch's statement that "environmental images are the result of a two-way process between the observer and his environment"²⁰: for only through the combination of material and immaterial elements, the image of Rotterdam as we know it today has been constructed.

In essence however, the mixed research approach with a main focus on heuristic approaches and mixed research strategies falls in line with the Complex Projects chair's overall working methodology. The *process of change* in Rotterdam is defined, in this case linked to the migration of Rotterdam's waterfront, after which a mix of research methods are employed within a set framework by the studio professors. Spatial narratives are not part of this set framework, which is why especially that aspect lagged behind in comparison to other frameworks.

In hindsight, using spatial narratives on trying to understand how water can play a meaningful role in the city center of Rotterdam could have been a possible addition, resulting in a broad 'pan-strategy'. Such a narrative could discern further uses of water, and elaborate on how the waterfront and city is perceived as one for instance moves through the city. It would definitely support the quest for the *meaningful* in my research question, which I realized later to already hint at the desire to not only incorporate objective quantitative and qualitative data into my design, but also a subjective notion of feelings and experience of space.

As a conclusion, it is possible to say that the chosen mixed research methodology was adequate in covering a wide range of aspects related to the meaningful potential that waterfront development can play in the densification of Rotterdam. Driven by the studio requirements, a mainly heuristic methodology was followed, aided by additional historical and qualitative strategies. Methods included modeling, mapping, diagramming, typological analysis, movie making and quantitative and qualitative data collection. In hindsight, the usage of more advanced computational simulations could have aided in the selection of the site and faster mapping, while focusing on spatial narratives could have increased the meaning of *meaningful* stated in my research question. Notwithstanding, the wide range of applied methods is something that every architect should be comfortable with, which is why I am happy to have had the opportunity to be able to work with such a wide variety of them. After all, one who controls the process, becomes the master of the outcome.

¹⁹ Groat and Wang, *Architectural Research Methods*.

²⁰ Lynch, *The Image of the City*.

- Avermaete, Tom, Kleske Havik, and Hans Teerds, eds. *Architectural Positions*. 1st ed. Amsterdam: SUN Publishers, 2009.
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