

**Designing Public Spaces for Maritime Mindsets  
Rotterdam as Case Study**

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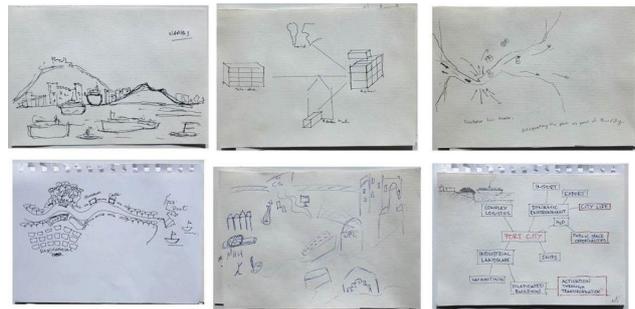
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## ABSTRACT

Port cities exist at the intersection between water and land. They are currently under pressure due to global changes and climate, economic and social transitions. As they face the urgent need to respond to contemporary urgencies, port and city authorities tend to ignore port cities' long history of integration and resilience. Instead, they continue the process that emerged since industrialization and that was reinforced by containerization, a process of disconnected development, divergent tools and visions. Such an approach, however, is no longer viable when port, city and territory face shared water challenges. To address this challenge, the course "Designing Public Spaces for Maritime Mindsets" challenged students to explore the future of port-city relations by rethinking public spaces as hubs where port and city actors can come together to share conversations and visions, engage in dialogues with citizens to develop a common agenda and maritime mindsets. Such gatherings are much needed to stimulate new approaches for future port territories that are no longer characterized by obsolete energy use or polluting industries. This article argues that design education can play an important role in generating new theoretical and practical planning approaches by combining historical analysis and spatial mapping and by developing provocative scenarios.



## Designing Public Spaces for Maritime Mindsets. Rotterdam as Case Study

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## KEYWORDS

Port cities; Public spaces; Culture; Maritime mindsets; Scenarios

# Designing Public Spaces for Maritime Mindsets. Rotterdam as Case Study

## Introduction

Port cities, as places at the intersection of land and water, are nodes of complex maritime and terrestrial flows (Hein, 2018, 2019, 2020, 2021; Diedrich, 2013; Zheng et. Al., 2020; John-Alder & Whiteman, 2022). Their growth is the result of centuries, sometimes millennia, of historical stratifications of spaces, cultures, ideologies and practices aimed at facilitating shipping and other maritime practices, while providing urban spaces for ever-growing numbers of people (ESPO, 2010; De Martino, 2020, 2021, 2023; Hein, 2011; Pavia & Di Venosa, 2012, Hoyle 1984; Warsewa, 2017). Public spaces within port cities have long reflected a particular development and mindset. Think of the form, function and location of stock exchanges, town halls, and coffee shops, market areas, and public squares or boulevards, which represented a continuation of the city into the port (Harteveld, 2021), in line with the concept of the port cityscape proposed by Hein (2011, 2016, 2019). However, urban growth, industrialization and the modernization of port infrastructures in the 20th century disrupted the spatial continuity between port and city, and conceptually this approach continues to exist in the minds of professionals in training (Harteveld, 2021a). As a result, public spaces that cater to port city functions have decreased in visibility and functionality. The relationship between port and city has changed extensively, but it has not disappeared.

Taking the concepts of public space and maritime mindsets as points of departure, the ten-week LDE master-level elective course “Designing Public Spaces for Maritime Mindsets”, 2021/2022 [AR2AA017], coordinated by Prof. Dr-Ing. Carola Hein and Prof. Maurice Harteveld from TU Delft and co-taught with Paolo De Martino (TU Delft), Claudiu Forgaci (TU Delft), Hilde Sennema (EUR), Ryan Holmes (EUR) and Didem Yerli (LU), tackled the question of designing public spaces at the edge of land and water as an opportunity to generate new maritime mindsets for the port city of Rotterdam. For students, studying port cities has meant understanding global economies and how they impact port cities’ highly urbanized and infrastructured territory. Education, as presented here, offers the opportunity to activate design thinking for port city territories.

The course guided students through a seven-step process – understanding, spatializing, visualizing, (re)conceptualizing, (re)orienting, (re)imagining, and (re)designing – aimed at determining actions for adapting to global and local pressures such as climate change and a lack of public space at the interface of land and water. Each week posed distinct questions, asking students to address them through both group and individual assignments: 1. **(Understanding)**: Investigating the significance of port cities in contemporary contexts. 2. **(Spatializing)**: Examining the role of mapping in comprehending port city territories. 3. **(Visualizing)**: Exploring various narratives applicable to port cities. 4. **(Re-conceptualizing)**: Analyzing the implications of public space concepts for port cities. 5. **(Reorienting)**: Assessing the influence of historical perspectives on future developments. 6. **(Re-imagining)**: Considering the role of scenario thinking in envisioning alternative futures. 7. **(Designing)**: Proposing strategies for the (re)design of port cities to address evolving challenges and urban transitions.

The course invited students to combine multiple methods, including mapping, historical research and inspirations from class lectures, to understand the port-city condition and its various scales and stakeholders. The four students introduced in this article are serving an exemplary direction each.

## UNDERSTANDING: mental maps to capture port city form and function

Public spaces play a crucial role in fostering exchange and interaction in port cities. It is pertinent to ask, "How can port cities be defined, and what makes their study particularly significant in contemporary contexts?" The course tasked students with identifying methodologies to delineate the interstitial spaces between land and water, port and city, and to find possible new public spaces and opportunities for water-land interactions. Mind mapping was employed as a methodological tool to facilitate this process (Figure 1).

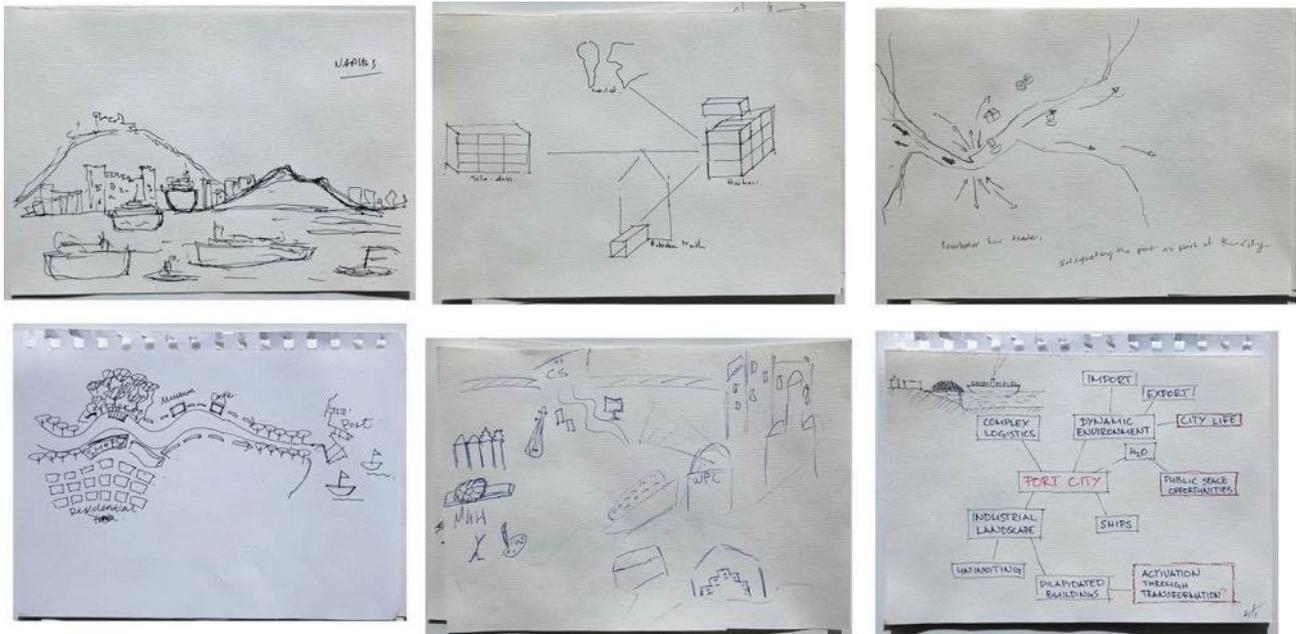


Figure 1. Mental maps of Naples (first image) and Rotterdam (others) developed by students during the course *Designing Public Spaces for Maritime Mindsets AR2AA017*.

Students were tasked with sketching a port city from memory as a method to comprehend, reconceptualize, and potentially reconfigure the intricate system of relations inherent in port-city spaces. Mental maps are unique personal and selective representation of reality, but collectively they help identify the place of collective urban identity. The exercise asked students to identify a range of elements commonly associated with port cities in the collective imagination, like ships, waterways, and containers. Concurrently, these mental maps unveiled additional elements including cultural landmarks, natural landscapes along waterfronts, museums, and recreational venues like cafes and theatres, offering a vision of port cities as hubs of cultural activity rather than solely centers of industry (Harteveld, 2021). Moreover, the theme of scale and the link between global and local contexts emerged prominently. While some maps depicted the local scale, others portrayed ports' global dimension. Conversely, certain mental maps eschewed any explicit scale, envisaging tangible and intangible relationships transcending conventional boundaries and administrative limits. The mental mapping exercise demonstrated that understanding the complexity of port-city relationships requires new approaches and ways of reading the territory.

## SPATIALISING: mapping water and land interactions

Mapping as a research tool offers multiple possibilities for studying port cities, their spaces, economies and societies in time (Figure 2). Lukas Höller, PhD student from TU Delft and member of the PortCityFutures research group, at the beginning of his lecture introduced maps as "selected bi-dimensional representations and more specifically graphic representations drawn to scale

usually on a flat surface of features, for example geographical, geological or geopolitical”. But maps and map-making are always the result of choices, for example, of projection and interpretation. Cadastral maps, topographic maps, naval maps, political maps, and climate maps tell different stories about port cities and their integration in land and water systems. They deal with elements like ownership, political borders and other elements that do not usually seem to change much over time. However, also in those cases maps offer symbolic interpretations of places and highlight the relationship between elements in space and time, either actual or perceived. Therefore, mapping becomes a powerful tool to **find gaps**, but also to **interpret complexities** and design port-city territories in connection with the social dimension (Hein & van Mil, 2020, Hein, 2023).

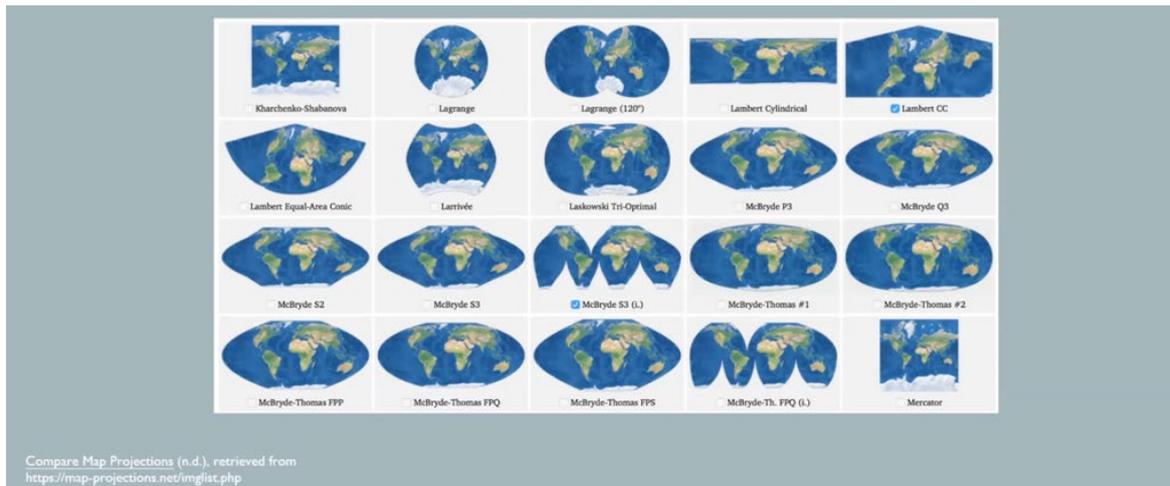


Figure 2. Map projections. Source: <https://map-projections.net/imglist.php/>.

The choice of scale and time is very important in the making of maps; the frame selected also determines the relevant narrative on how the city is perceived. Different locations have their own types of data. Platforms such as Topotijdreis that include Dutch maps from 1850 to 2021 and correct scale. These online platforms are unique and provide an important foundation for analysis (<https://www.topotijdreis.nl>). In this context, Carola Hein and Yvonne van Mil have argued that mapping can help reflect upon the scales of planning within and beyond port city territories to provide a comprehensive understanding of the complexities at stake (Hein & van Mil, 2019).

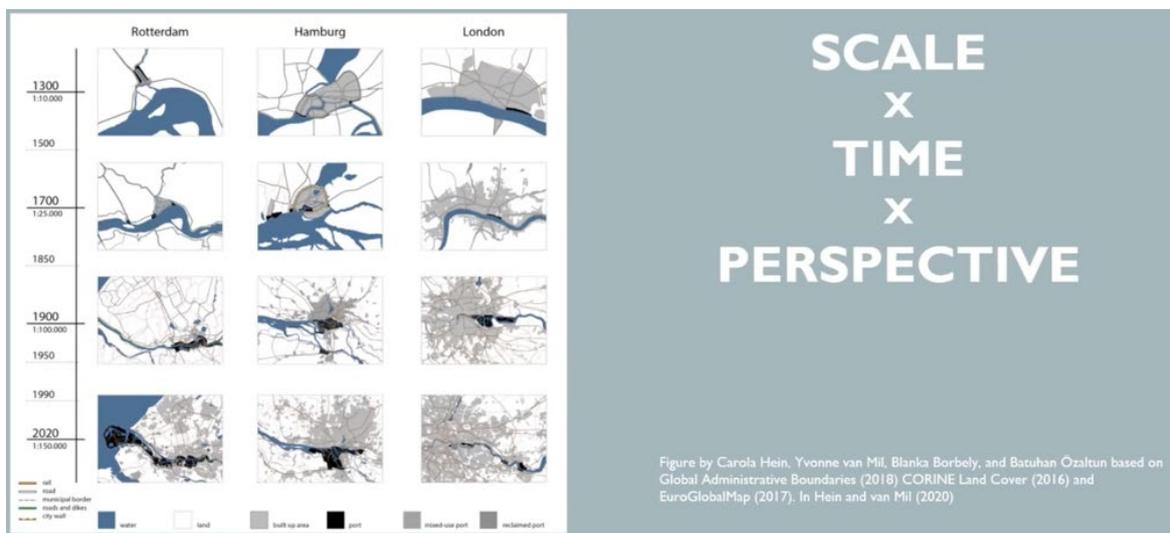


Figure 3. First draft for comparative geo-spatial mapping methodology, with case study of London, Hamburg and Rotterdam. Figure by Carola Hein, Yvonne van Mil, Blanka Borbely, and Batuhan Özaltun based on Global Administrative Boundaries (2018), CORINE Land Cover (2016) and EuroGlobalMap (2017).

Hein and Van Mil argue that maps can be used as “gap-finder” and to reinterpret territory (Figure 3). This is what students were asked to do with the mapping exercise. They mapped out historical developments in different parts of the port city of Rotterdam such as the Kop van Zuid area and Maasvlakte 2 to understand how these territories have changed, what the role of public space has been and what narratives and mindsets have been present in the area.

In the course, mapping served to highlight diverse approaches, such as the role played by water as a large public space as in the analysis proposed by Marwa Al KA'ABI, or water as a barrier as proposed by Wenting Gao. Student Elodie Fabre mapped the port area of Maasvlakte 2 and identified large areas of conflict between port and landscape and potential public spaces to build new forms of relationship. Finally, Matteo D'Agostino looked at mapping from the perspective of the actors, identifying the key actors involved in urban development of the the port city of Schiedam and how they have impacted the spatial dimension.

## VISUALISING: a story made of images

The next part of the course focused on the theme of visualization, not as a beautification tool, but as a research tool to capture the city and its many relationships with the port. Visualization aims to recognize the intricacies and capture key narratives for a possible transformative intervention at the identified gaps in the port city interrelations.

Students were challenged to experience the port city territory on their own. Visualization processes such as **Port City Instawalks**, can help with (re)discovery of the rich maritime port city culture (Jansen, 2020). Following a lecture by Maurice Jansen on Instawalk, students selected a specific area in the port city territory of Rotterdam (e.g. M4H, RDM, Delfshaven, Kop van Zuid, Feyenoord or even an industrial port like Botlek, Europoort or Maasvlakte). As part of the exercise, students used pictures on Instagram, supported by background information, to explain what they saw and how they perceived the spaces. The result was a set of fascinating and unexpected stories made of images (Figure 4). Marwa Al KA'ABI told a story using iconic buildings, including the Maritime Museum and the Erasmus Bridge, to better understand the role architecture has played in defining a new identity for the Kop van Zuid area. In addition, she analysed the role played by water and the possibility of introducing new visions of water-land interaction.

The Instawalk by Wenting Gao highlighted the physical presence of maritime memories in the city: port as cultural icon, port as urban image, port as new place to live. In her story, those memories are currently disconnected from each other, and her project was to reconnect them, giving a new role to water as a catalyst for integration.

Elodie Fabre's Instawalk took the form of an urban novel, as did her entire design process. Fabre looked at a different scale of the port by travelling to the area of Maasvlakte 2. She understood this space as shaped by both industry and nature; two dimensions that are very much in conflict. Matteo D'Agostino argued that different stories coexist in the territory of Schiedam. One story might be about the port itself, with its flows and economies, another about the spaces that have been redeveloped for living from a societal angle, and finally one about the historical port with its heritage and tourism and other cultural angles. Activating the different spaces requires different design actions from different standpoints.

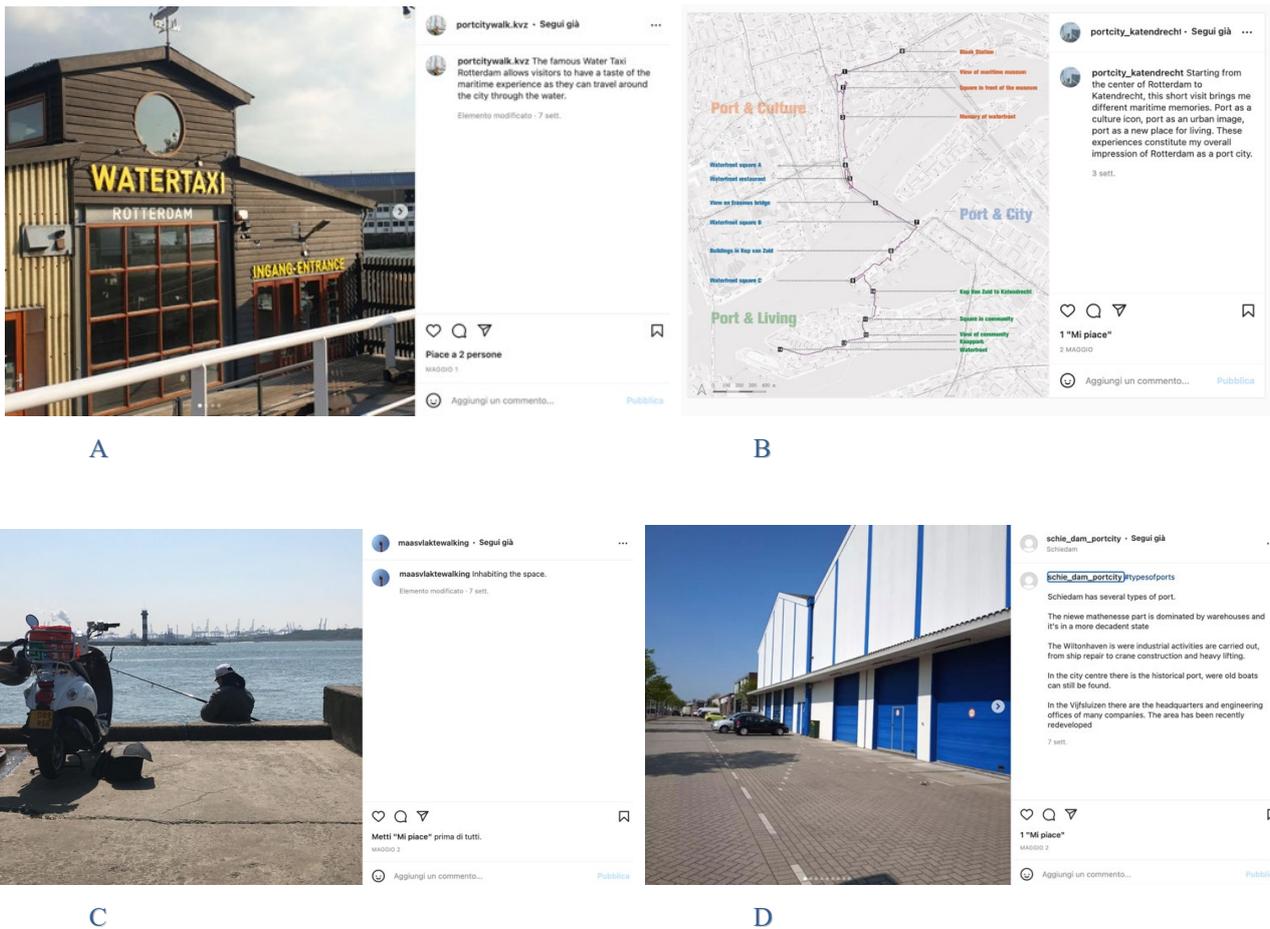


Figure 4. Instawalks produced by students. A - Port city walk by Marwa Al KA'ABI; B - Port city Katendrecht by Wenting Gao; C - Maasvlakte walking by Elodie Fabre; Schiedam port city walk by Matteo D'Agostino.

## (RE)CONCEPTUALISING: ports as urban spaces?

Port city areas are at the forefront of current challenges; they are also hubs of global transport flows, migration, and cultural exchange and integration. Because of their key role in the world today, port cities need new visions and adaptive strategies to help decision makers plan port cities differently in the years to come.

When we asked students to think about shifting port cities towards new maritime mindsets their attention immediately focused on identifying potential spaces for intervention in line with the above observations. Spaces in between, leftover areas, and marginal lands are spaces for architectural and urban designers to take action. This was also one of main arguments coming from the designer in practice Agate Kalnpure (De Urbanisten) who was invited to give a lecture. Kalnpure talked about the concept of “sponge” a concept for design which integrates water management, green infrastructure, and climate adaption, as and presented the project of Rotterdam’s Tidal Park. The project is an attempt to reconnect two fragments of the city through a linear park that becomes a new element which reconnects the port city with its river, while adding the viewpoint from environmental sustainability (Figure 5).



Figure 5. Research by design "River as Tidal Park" by De Urbanisten.

Elodie Fabre presented a matching narrative to approach the reunion of territory (Figure 6). She introduced a supplementary way of reading the space focusing on people and culture too. She identified zones of conflict in her story could be changed into public spaces between land and water.

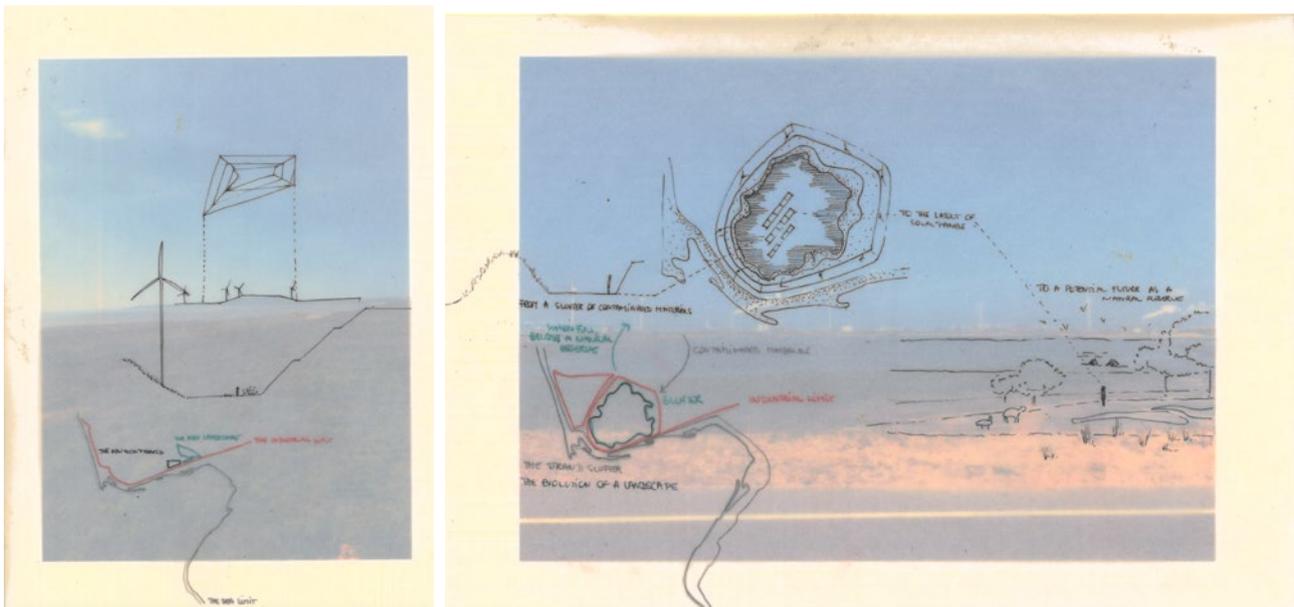


Figure 6. New narratives for Rotterdam by Elodie Fabre.

## (RE)ORIENTING

Several speakers from practice, such as Erfan Farahmand (Mecanoo Studio), discussed how to (re)orient knowledge of the past to transform and/or prepare the public spaces and heritage for the futures to come. Students understood that the history they select to focus on influences how they design the future. The vision proposed by Mecanoo for Rotterdam South, for example, is to conceive public spaces as culturally rooted places for exchange and flows, and as social and ecological infrastructures that can finally bring the two sides of the river back together. Yet, students also realized that the concept of 'public space' has evolved, and that people today request more democratic, inclusive, agential and thus flexible public spaces. (Harteveld 2019).

In this reorientation, students then worked on the understanding of design for the future by using the past and the value of its heritage. The analysis proposed by Wenting Gao is emblematic. Gao argued that namely water has historically represented a fracture and barrier within the territory. However, such a separation can become an opportunity to reflect on the possibilities for port cities in the future by imagining new ways of public living in conversation with nature. Matteo D'Agostino stretched the theme of historical heritage once again from the perspective of the actors traditionally present in port cities. That becomes an important step to take before planning for any possible transformation. In his vision the future should take the form of a meeting space, a physical arena where people can come together to co-design the port city of the future.

## (RE)IMAGINING: Building scenarios

In week 7, students were introduced to the concept of design as a generator of knowledge through the formulation of speculative projections about the future, namely “scenarios.” How can scenarios be constructed? Why are they necessary, and who stands to benefit from them?



A



B



C

Figure 7. Scenarios developed by students. A - What happens to the anthropocentric landscapes of the harbour facilities when they are re-discovered out of context? by Elodie Fabre; B - What if web 3.0 and augmented reality technology take over the world and changes how we perceive public space and water bodies? by Marwa Al KA'ABI. C - What is we will start leaving on water? by Wentig Gao.

One response lies in the designers' desire and imperative to speculate on the future of port cities, which are increasingly uncertain. Scenarios are conceived here as a mechanism for projecting ideas forward in time, pinpointing potentialities within the landscape to inspire designs capable of accommodating forthcoming changes. The scenario thus challenges the traditional notion of design, becoming a tool for assessing possibilities in light of extreme and unpredictable circumstances.

Scenario thinking is often framed as a series of "what-if questions." Students presented several scenarios that explored extreme conditions to stimulate alternative planning methodologies and maritime mindsets (Figure 7): a. How do anthropocentric port landscapes transform?; b. What if Artificial Intelligence becomes ubiquitous, altering our perception of public spaces and water bodies?; c. What if human habitat begins to shift onto water?

Those scenarios fit perfectly within contemporary design approaches and the idea of spaces that philosopher Zygmunt Bauman describes as liquid (Bauman, 2011). In a liquid and porous society, different visions coexist and collide and the role of the scenario is that of defining a vision, a fascination, an image capable of tracing a direction, leading the current, in a context made up of differences, complexities, and conflicts. Scenarios become reflections, points for a discussion. They are not meant to be implemented but to create awareness and generate new narratives for the future.

## DESIGNING

Design in itself is a complex process. Designers often use approaches, strategies, as well as tools and principles to better understand the territory, conflicts and hidden potentials, relationships between things and the capacity each element has in terms of transformation. Claudiu Forgaci (2018) walked students through a design workshop by applying a four-step process represented by four instruments which were presented earlier in the course: 1. the Connector, 2. the Sponge, 3. the Integrator and 4. the Scaler. The four instruments were used to tell the story of fragments of Rotterdam and trigger a design that looks at socio-ecological integration as a fundamental step for building new hybridisms between land and water. As introduced by Forgaci (2018), the **Connector** is used to identify *existing or potential elements of connectivity in the three networks of the urban river corridor in question*, namely the traffic network, the water network and the ecological network. The **Sponge** makes *an inventory of all open spaces and amenities and highlights potentials of increased spatial capacity and attractiveness in the elements of social (public) space, ecological (green) space and water space*. The **Integrator** is used to identify *conflicts and synergies between the social and ecological elements identified with the Connector and the Sponge*. *The Integrator aims for multifunctionality, hybridity, complementarity and reciprocity between those elements*. Finally, the **Scaler** *establishes or reflects on the spatial and temporal scales of the project, and it identifies interdependencies across those scales*.

While the Connector and the Sponge look more at the physical space such as axes, infrastructures or parks and their capacity to absorb water, the Integrator and the Scaler are more concerned with relationships. The goal of using these principles during a workshop was to inform the design and for students to identify potential places for change. The greatest conflict emerged at the intersection of land and water and the infrastructure that moves along the water.

The idea of using water as a potential connection element emerged from Wenting Gao's map, where the edge between the water and the quay becomes a relevant space capable of accommodating transformation (Figure 8).

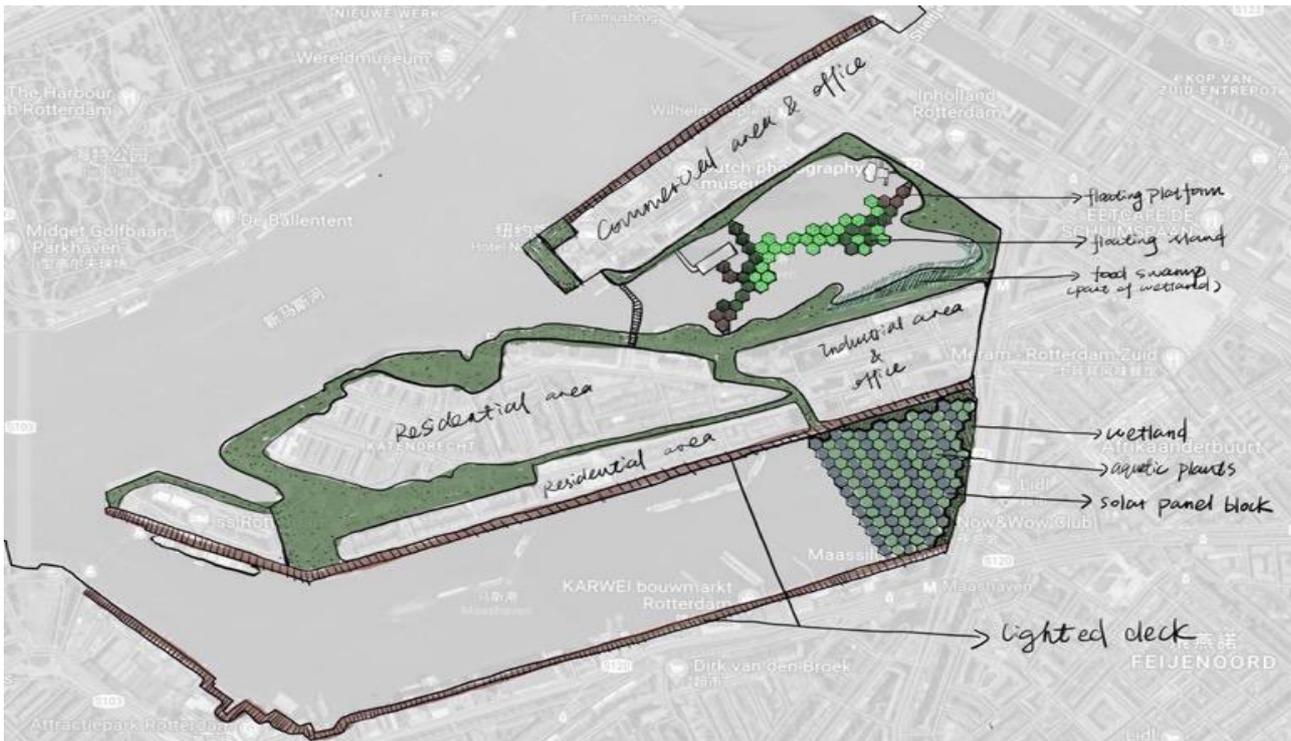


Figure 8. Water as connector, by Wenting Gao.

## DEBATING: design proposals

The outcome of the final projects took the form of schematic plans, collages, visualizations, actor analysis and illustrated narratives.

Elodie Fabre's project took the form of a novel that questions the way designers look at the spaces of the infrastructure. She proposed a new poetics of the industrial landscape that in some way is called to coexist with nature and people. Conflict zones have been transformed into potential areas. Five towers are the new public spaces within Maasvlakte and these identify new relational spaces in which to build unexpected observation points along the man-made and industrial landscape.

Marwa Al KA'ABI proposed a system of diverse public spaces in the Rijnhaven, introducing new spaces related to culture and entertainment with the ambition to restore value and identity to the Kop van Zuid and Katendrecht neighborhoods. An art park, a marine amphitheater, a beach and a water walk revolve around the theme of water, which becomes a space of reconnection and opportunity to respond to a primary need people have to get back to water (Figure 9).



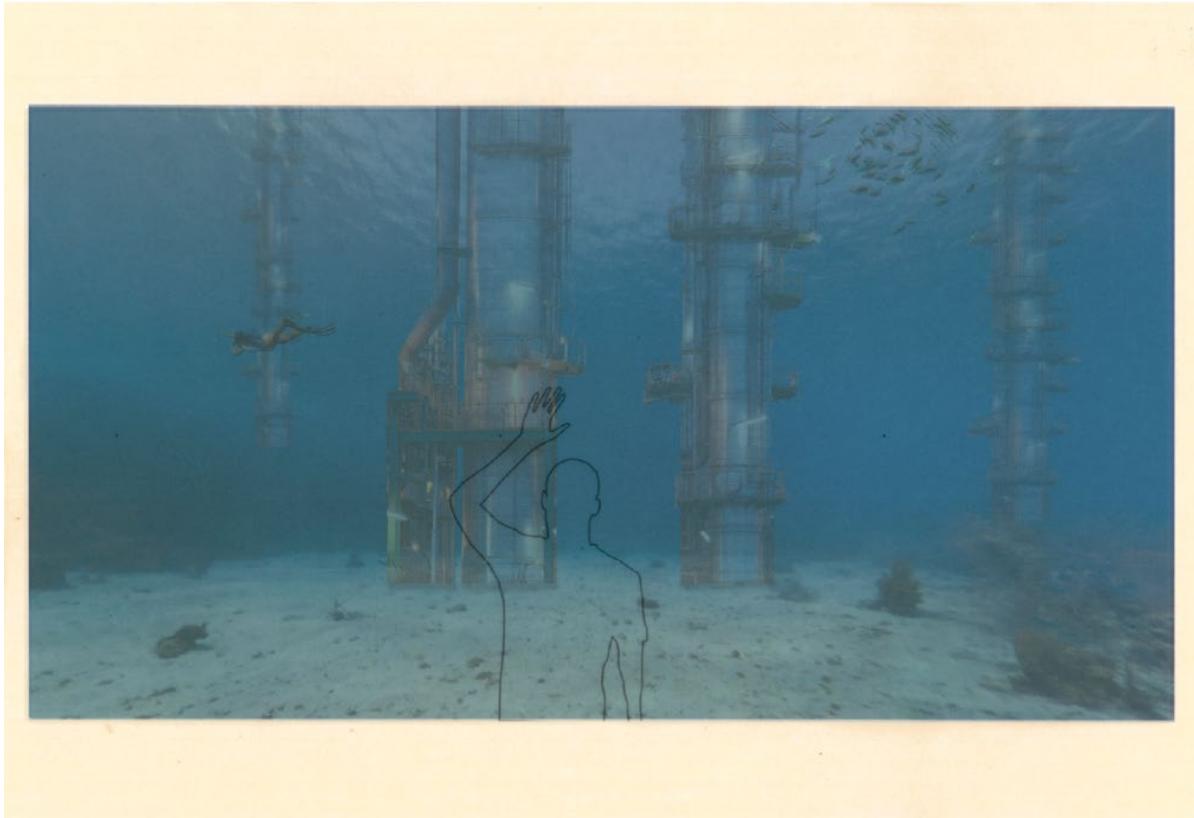


Figure 9. A new poetic of the industrial landscape of Maasvlakte 2, by Elodie Fabre.

Wenting Gao's proposal starts from a different argument. She argued that we need to learn how to live with water. Historically it was considered a barrier and it is now perceived by people as a place that can be urbanized. The proposal identified the two most important problems of the site to be a lack of port memory and the need for continuous public spaces. For the Rijnhaven, a container community is proposed because of the working, living, and recreational needs of this complex area. The container is used as a basic floating module where people can carry out a variety of activities on the water.

Matteo D'Agostino questioned whether Schiedam can be defined as a port city, arguing that the port is so far from the collective imagination of citizens that they believe companies should leave the area due to their negative impact on the city. It is necessary to develop a process where actors are aware of each other's interests, as a prerequisite to building a respectful vision of Schiedam as a port city. This involves the co-design of an encounter space where companies, the port authority, the municipality, and citizens can meet to talk about the port, the enhancement of the area's maritime historical heritage, and organize recreational and educational activities. Finally, Matteo imagined a port city center, where people can give shape to new maritime mindsets.

## Conclusions

By describing the activities and results of the course "**Designing Public Spaces for Maritime Mindsets**" this article has addressed the role of design in port planning research through education in port city planning. The article analyzed student designs, advocating for the reintroduction of the cultural dimension in port city discourse. While Rotterdam served as an emblematic example, the conclusions drawn are applicable to other contexts and design/educational experiences.

The resulting solutions varied in approach, scale, and visual representation but shared a common goal of granting prominence to human and environmental elements within the port-city landscape. This vision of future port cities, depicted as “port cityscapes”, envisions harmonious coexistence between people, nature, and new post-industrial infrastructures, fostering a new aesthetic appreciation of the industrial landscape.

Diverse perspectives enriched discussions and problem-solving, as designers and anthropologists brought unique insights and methodologies to the table. This interdisciplinary exchange not only enriched the learning experience but also underscored the value of holistic approaches in education that allow for addressing complex urban challenges, such as the ones that port cities are facing.

## Acknowledgments

### Note about visual materials

As for the images used in the articles, we have made diligent efforts to reach out to the original owners. While most have confirmed permission for use, there are a few from whom we are still awaiting responses despite multiple attempts to contact them. We believe that our usage is permissible under fair use guidelines, but if anyone has concerns or objections, we encourage them to contact us directly so that we may address their preferences accordingly.

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