OPEN WATERFRONTS OR CLOSED WATER FORTRESSES?

New Ways of Mapping the Accessibility of Redeveloped Waterfronts

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Accessibility, mapping, waterfronts

Introduction

Geospatial analysis of port cities quickly reveals one thing: ports cluster along bodies of water, across international industrial regions, and within national boundaries (Hein et al. 2023). The cluster dimension of ports also trickles down to small-scale levels: traditionally, port infrastructure clustered along urban waterfront zones for optimal access to water and warehouses for the (un)loading of ships. Overarching narratives of waterfronts' decline and redevelopment have become well established by now (Hoyle 2000), and the historical diversity of port districts has not been lost sight of either (Meyer 1999). Nevertheless, the overall transformation of the dominant industrial character of a local waterfront zone into a residentially and culturally reinvigorated one is rarely examined on a fine-grained, longitudinal, and structural level. While historically insightful accounts of waterfront transformations abound, spatial analysis often occupies itself with rather abstract approaches, such as comparing waterfronts based on morphology and typology (Aouissi et al. 2023) or examining conditions of porosity (Hein 2021).

We argue that geospatial mapping approaches can be brought a step closer to the lived experiences of waterfront zones (Van Mil and Baptist 2021). This is all the more important in light of continuing development efforts for waterfront futures, which remain high on policy agendas ever since the "10 Principles for Sustainable Development of Urban Waterfront Areas" were set up at the start of the twenty-first century (Dal Cin et al. 2021; Giovinazzi and Moretti 2010). These principles have specified the character of waterfronts,

but also echo key points that urban experts are already familiar with since Jane Jacobs' seminal town planning treatise (1992 [1961]), such as the importance of historical character, mixed use, and public accessibility. Consider how these aspects are reflected in the following quotes, illustrative of opposing perceptions of waterfront transformation in the port peninsula of Katendrecht, Rotterdam:

> For me, Rotterdam is the port and its industry. On the waterfront, the building reflects the scale of the factories, the concrete blocks with the large silos. The formal language of the Havenkwartier is perfectly suited to a city that is about big gestures, not small details (Don Murphy, architect of the new residential Havenkwartier project; see Kuit 2023; authors' translation).
>
> We, the neighbourhood's old guard, think all the new developments along the waterfront are beautiful, but Katendrecht should not become a fortress either (former Katendrecht resident during a neighbourhood interview; see Baptist 2024; authors' translation).

The quotes express differing views on current waterfront redevelopments in this port city district. Created at the start of the twentieth century as an artificial peninsula almost exclusively devoted to harbour activities, Katendrecht has become one of the most popular residential areas in Rotterdam over the past decades, with new high-rise projects clustering along its watersides. However, the resident's remark about the spatial dominance of these new structures contrasts with how the architect perceives the buildings' alignment with historical industrial infrastructure. Who of these parties is right when pointing at the height of Katendrecht's new buildings and their repercussions on the public space and accessibility to the surrounding water? Was former port infrastructure more open and less clustered along the waterfront, or do the new building densities aptly mimic past spatial layouts? While we may be familiar with the general historical trajectories of waterfront zones, these quotes and ensuing questions problematise how well we understand locally embedded intricacies.

There is potential to further investigate the shifting qualities of public space, accessibility, and composition on the waterfronts of port districts that have undergone transformation processes. We take up Rotterdam's Katendrecht district as an illustrative case to explore by means of newly combined mapping approaches and to identify longitudinal changes that have defined its waterfronts. We aim to

bring more practical applicability to recently coined creative mapping methods (Bodenhamer et al. 2022; Coomans et al. 2019), while letting our final mapping outcomes illustrate the potential for fostering more dialogue and nuanced understanding among seemingly opposed local stakeholders.

The Case of Katendrecht, Rotterdam

Katendrecht is a well-known case in the port city of Rotterdam and even the broader Dutch context. Katendrecht's recent history is punctuated by cultural markers that have made it easy to construct a bite-sized narrative of the district, often going like this: modern Katendrecht came into existence at the start of the twentieth century when ambitious port expansion plans in Rotterdam ordered the digging of two basins – the Rijn- and Maashaven – on the city's southern riverside, reshaping the original polder settlement of Katendrecht into a peninsula. Katendrecht became encapsulated by harbour activities, but its spatially isolated location also led to the development of a Chinatown community before WWI and a red-light quarter after WWII. The latter grew out of control, inciting local protests during the post-war era. After both the port and sex industry disappeared from Katendrecht, the impoverished neighbourhood underwent an arduous redevelopment process. This only picked up momentum in the twenty-first century, when municipal councillors and project developers rebranded Katendrecht as a new, desirable residential and cultural district.

This neighbourhood account offers an appealing, stereotypical narrative, but as Katendrecht's watersides are currently displaying an increasing heterogeneity, with repurposed historical industrial complexes on the one hand and new swathes of dwellings on the other, past assumptions and blind spots about the district's development become even more relevant to examine: in which different phases were industrial buildings constructed on Katendrecht's watersides? To what extent have more recent buildings with other uses been established in accordance with past spatial layouts? How have developments impacted access to the water over time? As Katendrecht's waterfronts are eagerly debated by municipal, port, and real estate parties (Programmabureau Stadshavens Rotterdam 2011; RED Company 2020), its past can be mapped and investigated anew to go beyond stereotypical claims and to support future-oriented discussions.

Combined Mapping Approaches for Katendrecht's Redeveloped Waterfronts

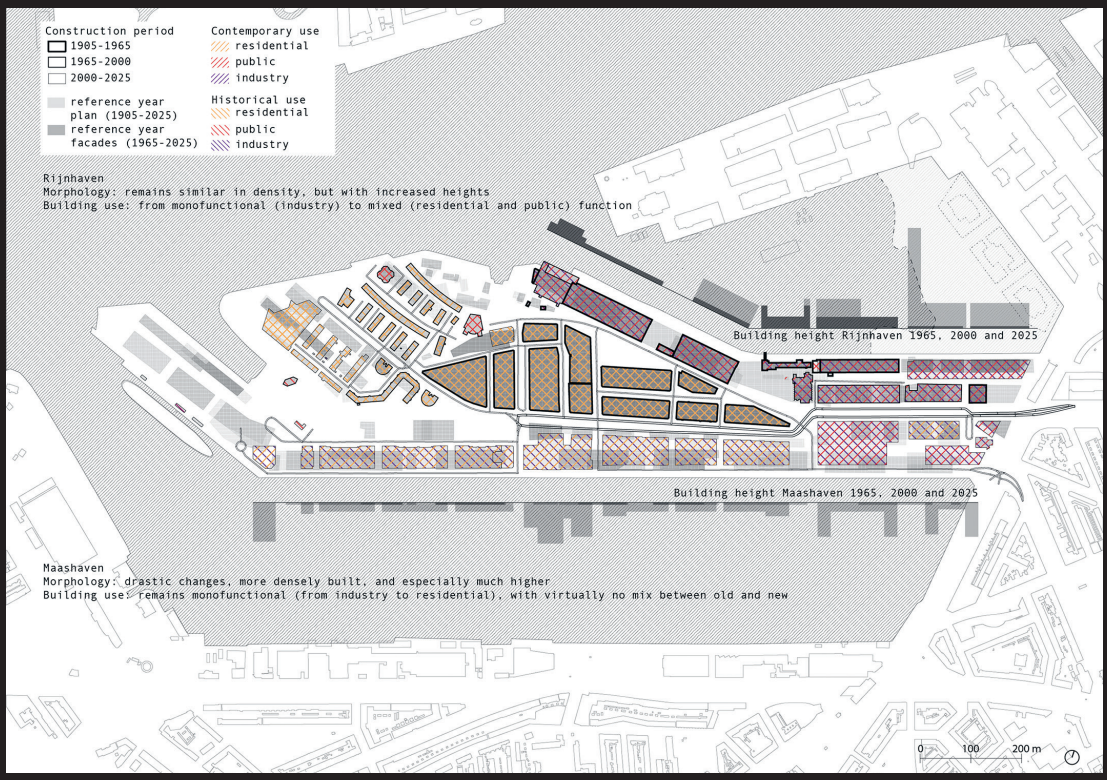
Mapping experiments of public urban landscapes often concentrate on contemporary spatial configurations and functions. As such, studying the evolution of public space can tend to simplify historical transformations into linear processes and focus on a single aspect of the urban landscape due to the complexities involved. Visually, such simplifications often result in chronological map sequences or other well-known representations, rather than capturing historical layering and complexity within a single map image (Furlan 2019; Hein and Van Mil 2019). To shed new light on conflicting assumptions about urban waterfront redevelopment and accompanying port city clustering tendencies as in the Katendrecht case, we need alternative mapping methods that allow us to visualise the historical change of multiple spatial elements characterising waterfront spaces in all their complexity. To accomplish this, we draw upon several existing and influential concepts and ideas.

The first one is the classic eighteenth-century Nolli map of Rome, the design of which allows us to observe changes in both built and unbuilt space (Tice 2022). An adaptation of Giambattista Nolli's map that further reflects the nuances of public space in urban areas is that of Barcelona's Old Town by Joan Busquets (2005). This map uses a rich coding system of different shades, colours, and hatches to represent different types of spaces, buildings and monuments. While static and two-dimensional, the map nevertheless represents and conveys an understanding of the historic city as being constantly changing, revealing the complexity of its public spaces.

An approach to further represent historical transformations of different spatial characteristics in one map image is the so-called "thick map" (Presner et al. 2014). Thick maps can be seen as a means to address the "thickness" of urban reality in analysis (Furlan 2019). The term is derived from Clifford Geertz's popular "thick description" concept (1973) – a way to describe cultural context and human practices in space. If we consider mapping as a specific form of description and analysis, thick mapping then corresponds to the complexity of the mapped features and processes encountered in urban reality. For the Katendrecht case, we also build on the concept of thickness in a literal sense, namely as a way to collect and superimpose different historical layers of highlighted urban waterfront characteristics, to subsequently bring them together in one map. This

also intuitively links to the clustering dimension inherent to port city environments, where certain types of infrastructure and building layers have been grouped together, stacked up, and sometimes torn down again to meet fluctuating industry demands over time. Methodologically, this approach was also partly inspired by cases in data-driven film analysis, in which the overlaying of all shots of a film creates "summary visualisations", allowing dominant stylistic clusters and patterns to be identified (Olesen et al. 2016: 96–100).

We present a map of Katendrecht that overlays semi-transparent layers – ten layers with base year 1905 for the neighbourhood map, three layers with base year 1965 for the waterfronts' building height profiles – bridging Katendrecht's first industrial layout to its most recent and near-future developments. The result is a complex canvas showing the spatial morphology of one hundred years of transformation. Through a combined "thick Nolli" mapping approach, the grey colour gradations of the overlaid layers accentuate building clusters based on the extent to which particular sites have been built on, or not, through time. In addition, varying line weights indicate the construction period, and thus the mix of old and new buildings in the area, while accompanying colour hatchings indicate their historical and contemporary functions. Combined with two unfolded contour views to visualise building heights along the Rijn- and Maashaven, the map comprehensively illustrates changing age, use, and size of building blocks, giving new insights into Katendrecht's waterfront set-up and accessibility over time. Overall, Katendrecht's industrial building clusters remained quite stable during the twentieth century. Its current "fortification" primarily results from recent, rapidly increasing building density and less open waterfront access by the Maashaven, while height increases on both sides echo an earlier pattern of industrial building height accents. Both the aforementioned Katendrecht resident's and architect's perceptions are therefore confirmed in this map, which, in its holistic nature, could help bridge, rather than divide, future neighbourhood conversations.



Thick Nolli map of Katendrecht: spatial and functional evolution of the waterfronts between 1905 and 2025. Building heights are derived from Flexus AWC 2018, archival photographs, and real estate project websites. Building morphology and use are derived from BAG and national topographic maps. Source: Authors

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