

***the architecture of violence***

*constructing Rotterdam: from the polder parcel  
to urban housing*



**Tommi Hilsee**

*TU Delft*

*22 April, 2019*

*Supervisor: Amy Thomas*

cover image:

Construction of drinking water pipeline on the  
Honingerdijk, 1905. *Rotterdam Stadsarchief*, no.  
4100\_XV-75-01

# Contents

chapter 1. **An introduction to embedded violence** (7-10)

chapter 2. **The project to build a port (city)** (12-23)

Chapter 3. **Ordering the landscape: Bloomersdijk Polder** (24-41)

Chapter 4. **Embodied logics in urban expansion: Oude Noorden** (42-73)

Chapter 5. **Violence of individuation** (74-79)

Chapter 6. **Conclusions on power** (80-81)

**Bibliography** (84-89)

Violence in relation to architecture is typically viewed in relation to sudden cataclysmic disruptions such as war, natural disaster, slum clearances, or attacks of some kind; or as a blatant exercise of containment such as prisons, borders, or surveillance watch towers; or perhaps in the construction of buildings via slave labor, or monuments that serve to legitimize violent authority through building facades, plazas or promenades.

This paper shifts a thinking about architecture and violence to embodied, and accumulated, slow violences that are inflicted upon bodies and social relations within an environment, over long stretches of time. A shift from moment to duration, this paper investigates what the logics embedded and inherited from specific spatial arrangements *does* to the inhabitant. An argument is made that violence is enacted through the built environment, through the (re) production of the maintenance of a particular system of order, that is not unconnected to singular moments of 'violence' but contains these moments, along with the seemingly banal, within a processual unfolding.

This is done by illustrating a case study of the creation of the urban district of the Oude Noorden in Rotterdam, as it transformed into poldered parcel plots and then to housing blocks in the late 19th century, on the periphery of a rapidly expanding colonial port city.

## chapter 1.

### An introduction to embedded violence

The built environment we inhabit is easily taken for granted as a neutral landscape emerging from a succession of ‘natural’ events. The course of which is typically assumed to follow a logical course of development, improvement and responses to the needs and desires of (all) human beings. In this narrative the city is a triumph of human ingenuity and progress, a mode of living in the world which humans have built for themselves; there may be some abnormalities in power imbalances, such as forced migration, slavery and so on, but the image of the city as a space of encounter, at the market, and in social space, typically prevails over a notion of the city as a product *primarily* of power imbalance. As Henri Lefebvre explores in *The Urban Revolution*<sup>1</sup>, the idea of the modern city derives from a romantic vision of the (European) medieval city which is seen to have arisen naturally from the medieval village. In this image the city is seen to be a neutral field where upon actors arrive to the city to engage in the opportunities presented through the clustering of other human beings, and the city is then seen to reflect the changes introduced through those interactions of supposedly even planned actors. From this narrative one can easily view the ‘normal’ built environment: the layout of streets, housing typologies, networks of water and sewage lines, harbors, differently programmed districts, as an emergence of this natural progression of

development, where-upon housing typologies emerge as a natural and obvious response to genuine human needs, innovations or desires. There is not often assumed to be an embodied ideology or power directive incorporated or reflected in the form, dimension and orientation of these environments. Their neutrality is assumed until a deliberate attempt to deconstruct the naturalization of their histories, as deconstructivist philosophers Michel Foucault<sup>2</sup> and Jacques Derrida<sup>3</sup> have explored primarily in relation to social ordering systems, epistemological assumptions and grammars of thought and knowledge, and to begin to reveal these environments as ‘orienting devices’, as Sara Ahmed has explored in *Queer Phenomenology*<sup>4</sup>. In addition, the ‘performative turn’ from what something looks like, towards investigating what something *does*, as put forth by philosophers such as Karen Barad<sup>5</sup>, and Deleuze and Guattari<sup>6</sup>, following from the work of Spinoza, leads towards seeing the agency of materials, forms, soil, objects and structures to carry, and pass along, meaning. The question then rises: what are the forces that originate these environments? What do they orient, direct, or order us towards? And what do these environments *do to us*?

The ‘us’ here is similar to the ‘we’ in the ‘environments we inhabit’. It is similar in that it begins to expose a separation from the false idea of an even-planned field of actors, but at the same time it underlines that the forces that compel the creation and maintenance of these environments are forces that are *directing* (actors to act) more than they are *directed* (by actors designing an environment *tabula rasa*). As Pierre Bourdieu puts forward in *The Field of Cultural Production*<sup>7</sup>, there is a field of forces, but this field “is also a *field of struggles* tending to transform or conserve this *field of forces*.” In Bourdieu’s landscape of actors, agents are present within an environment that is not en-

1. Lefebvre, Henri. (1970) *The Urban Revolution*. (Minneapolis: Univ. of Minnesota Press, 2003) p. 13-15

2. See: Foucault, Michel. *The Archaeology of Knowledge* (1969) and *The Order of Things* (1970).

3. See: Derrida, Jacques. *Speech and Phenomena* (1967) and *Of Grammatology* (1967).

4. Ahmed, Sara. *Queer Phenomenology: Orientations, Objects, Others*. (Durham: Duke University Press, 2006). p. 13-14

5. Barad, Karen. *Agential Realism: On the Importance of Material-Discursive Practices*. (Berlin: Suhrkamp, 2012).

6. See: Deleuze, Gilles and Félix Guattari. *Anti-Oedipus*. (1972) and *A Thousand Plateaus* (1980).

7. Bourdieu, Pierre. *The Field of Cultural Production*. (New York: Columbia University Press, 1994). p. 2

tirelly of their own creation, but that they are compelled to act within it, in particular ways. As Bordieu claims, “The network of objective relations between positions subtends and orients the strategies which the occupants of the different positions implement in their struggles to defend or improve their positions.”

Simultaneously great heed should be taken to underscore that what makes the emergence and condition of the city, or the urban environment, ‘unnatural’ (or non-consensually designed, chosen or implemented, in other words) is what David Harvey has coined, in expansion upon the work of Lefebvre, as “uneven geographical development.”<sup>8</sup> Harvey’s history of the city rests upon a class-relations analysis of geopolitics wherein the city is a product of the compelling forces of capitalism for growth, the realization of surplus value and built responses to crises begot by the uncontrollable growth and ramifications of over extended markets and real estate values. A simplified, but simultaneously nuanced, translation of these class politics is reflected in Donna Haraway’s phrase that assumed norms, histories and perhaps also environments, are produced “at a particular moment in history for a particular group of people.”<sup>9</sup>

This notion of intentionality in the creation of the built environment is explored in this paper specifically in relation to the emergence of the city as in Pier Vittori Aureli’s *City as Project*<sup>10</sup>, wherein the city is conceived not a mere assemblage of chaotic elements, but a result of a political intention and specificity to accomplish specific aims which benefited specific people. Nancy Stieber, in her book on housing reform in Amsterdam in the early 1900s<sup>11</sup> examines how architecture, building regulations and the implementation of municipal services sought to perpetually re-constitute an existing order: “Along with the modernization of water sup-

ply, utilities, urban transportation, and sanitation, the improvement of housing was viewed as an opportunity to fashion and maintain urban order by controlling the physical environment.” Which can be combined with a class based analysis, and a field of forces/actors approach, to illuminate how an existing order is arranged so as to serve the specific interests of specific people. Mabel Wilson takes this specificity of persons and interests to a clear demonstration in her work on the relationship between slavery, race and architecture in the foundation of the architecture and urban built environment of America.<sup>12</sup> She poses us to consider what norms of universality are baked into the environments too often taken for granted. Even while her work tends to focus on the *representation* of power, she says, in relation to the emergence of the modern conception of architecture, that “a very specific, Western humanist notion of the architect”, is “itself inseparable from the problem of race.” She expands by putting forward the coinciding of a universal ideal of the modern man to which architecture served as being exclusively European, and coinciding with the moment in which european colonization was beginning. For Mabel, “race is deeply embedded in the emergence of the modern world and the emergence of modern architecture—which becomes, in part, about the maintenance of racial hierarchy.” Through architectural representation, which is “literally constructing whiteness”, a narrative, and production (or projection) of a (preceived) dominant culture is consolidated and re-constituted. This convergence of a power hierarchy, exploiting colonial subjects, through a projection of universality which is in fact not universal but highly subjective, invented and directed, to uphold the power of a specific group of people, also influences and extends to the creation of the

8. Harvey, David. *Spaces of Global Capitalism: A Theory of Uneven Geographical Development*. (New York: Verso, 2006). p. 121-127

9. Haraway, Donna. “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.” *Feminist Studies* 14.3 (1988): 575-599. p. 580

10. Aureli, Pier Vittorio, ed. *The City as a Project*. (Berlin: Ruby Press, 2016). p. 14-15

11. Stieber, Nancy. *Housing Design and Society in Amsterdam: Reconfiguring Urban Order and Identity, 1900-1920*. (Chicago: University of Chicago Press, 1998). p.17

12. Wilson, Mabel “Changing the Subject: Race and Public Space” *ArtForum*, (2017). Speaking on manuscript in development: *Building Race and Nation: How Slavery Influenced Antebellum American Civic Architecture*. p.32

city as a landscape which services their needs. As Aureli outlines in the political project to construct the city, the production of wealth and the reconstitution of existing (racial) class structures drives the decision making for what the city is to do and who, or what, it is to serve.<sup>10</sup> In the case of Rotterdam the city becomes focused around (colonial) port activity, which benefits a specific class of people.

As Egbert A. Martina writes, “the process of creating ‘our’ environment is not [neutral]. Both architecture and urban planning constitute and mediate a specific mode of being-in-the-world through the production of spatial order.”<sup>13</sup> Meaning an arrangement of space in which power and ownership is encoded into the environment of the city. Martina continues in saying that “the spaces and structures that make up the built environment have generally been designed from the point of view of propertied, able-bodied, neurotypical, heterosexual, working, white male architects, planners, and developers, who do not perform (unpaid) care work. The built environment is planned and regulated to accommodate their daily lives, needs, interests, and activities at the disadvantage of other urban dwellers.” For Martina, the built environment is more than a mere collection of buildings, but it is a translation and acting out, or even the primary means through which, power hierarchies of race, class, gender, etc. expresses, communicates and reifies ‘its’ form, and actualizes, or performs, ‘its’ power, by “prescribing social, economic, and politic relationships” between people, and between the environment. For Egbert, it is through this process that social relations are “mediated and cemented.”

This thesis brings forth a situating of this process of constructing and maintaining an environment, which serves specific interests at the detriment of priorities of other interests

or people, as a slow moving processual unfolding of violence. By showing how this development is a coercive instrument, through how it directs, orders and orients, a long arch of violence is revealed, and the so-considered neutrality of these environments is confronted with hostility. Through investigating what the environment *does*, what or who does it serve, what logics are carried through and embodied in the spaces we inherit and inhabit, the layers of this violence can be unraveled and examined-- histories of the *field of forces* that originate, and compel, not only the initial creation, but the maintainance of this spatial system-of-order/ordering-system.

A working of violence in architecture that shifts towards duration rather than singular moments of violence occurring in or through space differs from the typical conceptions of violence put forth by authors such as Stephen Graham or Eyal Weizman. Graham investigates in his work the militarized city, spaces of control, surveillance and policing, relying often on particular typologies and their specificity in responding or creating specific spatial events.<sup>14</sup> Weizman takes a similar approach in detailing the specifics of how the Israeli government and military utilized architecture and spatial principles in organizing the geography and landscape to be defensible against invading armies as well as to contain, absorb and suffocate Palestinian communities and resistance, at the level of hills and valleys, the routes of highway dividing-lines, the arrangement and orientation of settlements and refugee camps, and even to the red-tiled roofs.<sup>15</sup> This analysis is similar to what Beatriz Colomina and others have outlined in how American suburbs were arranged so as to limit damage from aerial bombardment in the case of attacks during the Cold War, through their de-centralization of populations.<sup>16</sup> Additional

13. Martina, Egbert A. “The Built Environment and Carcerality” *ProcessedLives*. blog. (2017). [<https://processedlives.wordpress.com/2017/04/01/the-built-environment-and-carcerality/>]. Accessed April 17, 2019.

14. Graham, Stephen. *Cities Under Siege: The New Military Urbanism*. (New York: Verso Books, 2011). p. 21-23

15. See: Weizman, Eyal. *Hollow Land: Israel's Architecture of Occupation* (2012) and “Strategic Points, Flexible

Lines, Tense Surfaces, Political Volumes: Ariel Sharon and the Geometry of Occupation”. 7-26. *Territories, Builders, Warriors and Other Mythologies*. (Rotterdam: Witte de With, 2003).

16. Colomina, Beatriz. *Domesticity at War*. (Cambridge: MIT Press, 2007). p. 54-55

commentary is included when considering the amount of materials and products that have been incorporated into the domestic environment from war-produced products, such as plastics. These observations, however, move us towards considering what these materials *do to us*, if they were intended and designed to fulfil functions related to warfare. Feminist architectural historians, such as Colomina, Jane Rendell,<sup>17</sup> Doreen Massey<sup>18</sup> and others have contributed knowledge as to how the domestic and urban environment is arranged so as to service the needs, as Egbert Martina has outlined, of men (typically wealthy and white).<sup>13</sup> This exclusion of women from the decisions over the spatial arrangement of homes, and even the relegating of their positions into the realm of unpaid labor, while simultaneously being surveilled, via the arrangement of floor plans, as exemplified in *Making Space: Women and the Man-Made Environment*,<sup>20</sup> which also reveals an embodied and passed along violence that is inherent in floor plans that appear neutral. Occuring alongside these gendered developments were the well documented and discussed histories of explicit racial segregation of urban and suburban neighborhoods, espically in the United States, during the post-World War II era, via selective home mortgages and bank loans (referred to as ‘redlining’); a legacy which strongly impacts American urban landscapes and wealth disparities today. Stephen Graham opens *Cities, War, and Terrorism: Towards an Urban Geopolitics*,<sup>21</sup> with a line from Marshall Berman’s *All That’s Solid Melts into Air*,<sup>22</sup> that reads: “Arguably, humankind has expended almost as much energy, effort, and thought on the attempted annihilation and killing of cities as it has on their planning, construction, and growth.” In speaking of ‘cities as strategic sites’ and ‘places of annihilation’, Graham puts forth a revealing of

how central cities have been to struggles over geopolitics. This thesis in no ways discounts the importance of such analysis and investigation, but is merely speaking of a *different kind* of violence. When Berman makes notice of the equal attention to the creation and destruction of cities, he is already alluding to, perhaps unintentionally, to the violence that is embodied within the construction of the city.

This thesis is also speaking of a different kind of violence and power encoded into the built environment than what Thomas Markus is primarily speaking about in *Buildings and Power: Freedom and Control in the Origin of Modern Building Types*.<sup>23</sup> Markus focuses on what a building projects, through their form and facade, whereas this thesis focuses on the more performative aspects of how a building, or an environment, is shaping its inhabitants, and what is the power embodied and behind this directing or ordering of bodies. It expands power and violence beyond the visual forms of Markus, and beyond the specific walls, barriers and related typologies of Graham, to include municipal networks of pipes and so on into the discussion of extended control and slow violence.

This approach to analyzing architectural history moves in tandem with emerging conceptions of architectural practice as a field of “consistent transformation”, as Robert Gorny describes in *From Queer Performance to Becoming Trans*.<sup>24</sup> A practice that “foregrounds liminal situations, metamorphosis and transgression,” also shifts architecture towards being “situational, dependent and embedded.” This mode of acting in space, or ‘putting to queer use’, avoids viewing space as a mere container, but utilizes a conception of space as “an inter-relational reciprocity between embedded configurations of bodies and matter, or space as a dependency relation.” Arguably following in

18. Rendell, Jane, Barbara Penner, and Iain Borden, eds. *Gender Space Architecture: An Interdisciplinary Introduction*. (Hove: Psychology Press, 2000).

19. Massey, Doreen. (1994) *Space, Place and Gender*. (Hoboken: John Wiley & Sons, 2013).

20. Matrix (Organization), ed. *Making Space: Women and the Man-Made Environment*. (London: Pluto Press, 1984). p. 79-80

21. Graham, Stephen, ed. *Cities, War, and Terrorism: Towards an Urban Geopolitics*. (Hoboken: John Wiley & Sons, 2008). p. 31

22. Berman, Marshall. *All That is Solid Melts into Air: The Experience of Modernity*. (London: Verso, 1983). p. 99

23. Markus, Thomas A. *Buildings and Power: Freedom and Control in the Origin of Modern Building Types*. (Abingdon: Routledge, 2013). p. 19

24. Gorny, Robert Alexander, and Dirk van den Heuvel. “New Figurations in Architecture Theory: From Queer Performance to Becoming Trans.” *Footprint* (2017): 1-10. p. 1



this line of thinking is the analysis from Simon Springer and Philippe Le Billon in viewing how violence shapes space, through “a processual and unfolding moment, rather than as an ‘act’ or ‘outcome’.”<sup>25</sup> They view the space of violence, following from Lefebvre, as an everyday experience<sup>25</sup> “in which violence is woven through our daily lives, our encounters with institutions, and the various structures that shape our social organization.” Their work seeks to situate and acknowledge “that even the most seemingly place-bound expressions of violence are mediated through and integrated within the wider assemblage of space.” This notion of a perpetual unfolding ‘moment’, mediated through what Foucault identifies as the ‘regulating of the normal’<sup>26</sup> allows us to enter a realm, and a kind of violence, that more aptly describes the slow withering away of agency in replace of an ordered world via coercive apparatuses-- ‘seen’ or ‘unseen’-- both directed and undirected.

The case study of Rotterdam, and specifically the Oude Noorden, serves as a basis to witness the unfolding of these moments, the creation of a city and the effects upon its inhabitants, by asking the questions of what and how is the apparatus and logic of the city operating, and according to whom/what. This thesis tracks the developmental history of particularly the period of transforming the peat landscape into polders, demarcated into parcel plots, and their eventual transformation into districts of mass housing constructed in rapid speculative development in the 1890s. The polder parcel is investigated as a spatial condition deriving from the logics of ecologies, geographies, ownership, control, taxing, surveiling and the production of a commodity to be placed upon the market. This is situated in relation to the growth of the city as a site for colonial trade, and the realization of the value of goods that reach the harbor and cross over the quay wall,

and the pilings adhered to clay soil, upholding that quay wall. A city that forms around the port, and serving the interests of the port and the barons who operate that port, is also situated within a history of geopolitics and ecologies. Wherein technologies such as the soil and timber-pilings are utilized in harmony with the expansion of a municipal network, a logistical apparatus, to facilitate, manage and mediate the growth and expansion of a city that supports the port and the wealth generated via the port. A political project to construct this port(city) is identified alongside a perpetual series of reforms and regulations to maintain and sustain this trade-based urban-system. Meaning that the effects of global trade upon the social, political and ecological landscape are not conceived of within this political plan, but are responded to. For example, farmers from the countryside were forced into the city looking for work in the wake of the agricultural crisis created through the flooding of the markets with cheap international grain, and the city was expanded and municipal networks of water, sewage etc, were established to control and order the population growth. The networks served to reconstitute the existing norms and logics that had been embodied within the spatiality of the polder parcel. The polder parcel, with its elongated rectangular pattern which served for drainage as well as property demarcation, then in turn informed the development pattern of the housing districts, informed where speculators would lay streets, houses, as well as the plot size, shape, and orientation of those houses. The orientation of the individual and the community then followed-- along with their alienation and subjugation to a logic that discluded their agency.

This paper argues that it matters, as Donna Haraway says, “what thoughts we use to think other thoughts.”<sup>27</sup> It is therefore imperative

25. Springer, Simon, and Philippe Le Billon. “Violence and Space: An Introduction to the Geographies of Violence.” *Political Geography* 52 (2016): 1-3.

25. Lefebvre, Henri. (1947) *Critique of Everyday Life: vol. 1,2,3*. (New York: Verso, 2014).

26. See: Foucault, Michel. *Discipline and Punish* (1975) and *History of Sexuality: Vol. 1* (1976).

27. Haraway, Donna . *Staying with the Trouble: Making Kin in the Chthulucene*. (Durham: Duke University Press, 2016). p. 12

that an examination of the logics embedded into 'our' environments we examined and given the ability to be transcended. As in famous phrase from Audrey Lorde: "the masters tools will never dismantle the masters house."<sup>28</sup> Lorde situated this statement in response to a feminist movement that was superficially addressing the multiplicity of experiences of womanhood, but in actuality excluding the experiences of black women through a false consensus. To this Lorde claimed that "we cannot disrupt our oppression using the logic that justifies our oppression." Lorde asked, "What does it mean when the tools of a racist patriarchy are used to examine the fruits of that same patriarchy? It means that only the most narrow perimeters of change are possible and allowable." Her analysis is one that gets to the logics within the tools, and what the tool is being used to promote, project and *do*. She calls for a re-appropriation of the tools, a re-claiming, through knowing, to then become liberatory.

28. Lorde, Audre. "The Master's Tools Will Never Dismantle the Master's House." 1984. *Sister Outsider: Essays and Speeches*. Ed. (Berkeley, CA: Crossing Press. 110-114. 2007). p. 110



chapter 2.

## The project to build a port (city)

To begin unraveling what is happening in a specific district of the city of Rotterdam, we first need to ask: why this city is here in the first place? What constitutes this city? What is at the core of what grounds and directs this city? What makes it a city? From these points we can begin to demystify the city as a phenomena and situate seemingly arbitrary occurrences as existing within, and deriving from, a field of forces. The responses to these questions involve an incorporation of the ecologies of shifting sands, estuaries, soils, river currents, regional politics, ownership, power hierarchies within governance and monarchy, access to trade routes and exploitable resources and defensive mounds against natural disaster. It includes also the simplistic moment of an assemblage of people erecting a dam in a small peat river; the driving of wood that has been milled from trunks into soggy soil at the edge of a marsh. Erecting simultaneously a platform for sustained life and a platform for exploitation. Exploitation in the sense that it became the basis for the affordance for trade actions to occur. These acts, among others, are in deep accord with the geography, material, soil and ecology in which they are among. These ecologies are then put to use, by the act of them being utilized, or engaged with, to support and facilitate the rise of the city, and the trade that follows, and the city that follows from that marketplace.

### Why Rotterdam? Why not Dordrecht?

Plagued by constant flooding in the 12th century, and most notably the 'All Saints Flood' of 1170, a thick layer of clay accumulated, rendering the area uninhabitable and the settlement— a *lintdorp*, or 'ribbon development', of farm houses and traders buildings situated on earthen-mounds to protect them from high-tides at the time referred to as 'Rotta', was abandoned.<sup>29</sup> It was not until 1270 when the Rotte was dammed along what is today the Hoogstraat, or 'High Street', as part of a dike-construction project to protect the Schielands, that the mouth of the Rotte again became inhabited— the beginnings of the city of Rotterdam.<sup>29</sup> It is from this act of damming the river Rotte that Rotterdam gets its name. Situated along a bend in the river Maas, the area which is now occupied by Rotterdam has been protected from the North Sea by the sand dunes to the far west of the city for centuries, and by the nature of the bend it is also where tidal currents are stronger, and thus relatively less siltation occurs.<sup>30</sup> For these reasons early inhabitants were drawn to settle in the area. But other towns such as Vlaaringen and Dordrecht were larger at the time.

Dordrecht which sits deeper into the delta where the Merwede river splits into the Oude and Nieuwe Maas, had become one of the largest cities in the Netherlands in the 13th century partly because of its strategic location along rivers going to the German hinterland and its access to the North Sea, and because of its obtaining of *stapelrecht*, or 'staple right', from count William IV in 1299, which mandated that all goods shipped along the lower Maas be first warehoused and attempted for sale in the port city.<sup>31</sup> It was during the Napoleonic occupation of the Netherlands in the early 19th century that the staple rights were abolished and so began the eclipsing of Rotterdam as the primary port of the Maas delta—

29. Marjolein van den Dries. "Rotta, de voorloper van de stad Rotterdam", Middag aan de Maas: Vergeten Verhalen, RTV Rijnmond, 25 August 2011.

30. Camp, D'Laine and Michelle Provoost. *Stadstimmeren: 650 Jaar Rotterdam Stad*. (Rotterdam: Phoenix & den Oudsten, 1990). p.81

31. Jan van Herwaarden e.a. (red.) *Geschiedenis van Dordrecht tot 1572*. (Hilversum: Uitgeverij Verloren, 1996). p. 74

which was further accelerated by the opening of the Nieuwe Waterweg shipping canal in 1872 which gave Rotterdam direct access to the North Sea via the Nieuwe Maas.<sup>30</sup> Additionally because the delta is characterized as a formation not only from the sediment river deposits but from tidal currents as well, that high tides and storm surges serve a large effect on the shifting estuaries. the St. Elisabeths Flood of 1421 is largely responsible for altering the course of the Maas to where it is today.<sup>30</sup> The variability and constant changes to the water courses, inlets, islands, bays and coastlines Dordrecht was situated within this ever shifting landscape whereas Rotterdam is situated upon more stable, albeit soggy and sinking, soil. It is the arrangement of these ecological conditions that coalesce to give position to the port and city of Rotterdam.

### The arrival of Antwerp merchants

Another reason for the emergence of Rotterdam as the principle port city is also due to the politics of ownership, the location of capital, business alliances, and territorial political jurisdictions. It was in 1350 that the Oude Haven was dug to give shelter for ships and herring boats in the river's bend, and the city's ramparts were built shortly thereafter in 1358.<sup>30</sup> Rotterdam especially grew in the aftermath of the Spanish "Sack of Antwerp" in 1576, in which thousands were killed and the city's market places destroyed. Antwerp had been one of the richest cities in Europe and the central international trading exchange for sugars, spices, cloth and textiles coming from global colonial trading posts, all of which ground to a halt during the Eighty Years War.<sup>31</sup> Rotterdam having been occupied only briefly for three and a half months in 1572 was one of the port towns that Antwerp merchants relocated to—most merchants having relocated to Amsterdam however. The arrival of these merchants

transformed Rotterdam from "unrefined goods" such as herring, beer, wood and hemp to "refined goods" such as wine, oil, spices, dyes and textiles—reflecting the trades of the Antwerp merchants.<sup>30</sup> Also in 1576 Johan van Oldenbarneveldt was appointed city pensioner, or city lawyer, of Rotterdam, in which he accomplished gaining entry of the city into the *Staten van Holland*, or *States of Holland*.<sup>32</sup> The States of Holland, which is not to be confused with the States-General of the Netherlands, as Holland was only one of the seven states, was the governmental body of the newly independent Netherlands—consisting of a *landsadvocaat*, or 'Land's Advocate', later called the 'Grand Pensionary', which essentially acted as a Prime Minister representing the interests of the landed nobility and, nominally, rural farmers, and representatives of eighteen cities.<sup>33</sup> Among the cities from Holland were Dordrecht, Haarlem, Delft, Leiden, Amsterdam, Gouda, Rotterdam, Schiedam, Schoonhoven and Brielle. Johan van Oldenbarneveldt went on from his position as Rotterdam City Pensioner to become Land's Advocate of Holland in 1586, a position which requires previously having been City Pensioner of one of the represented cities.<sup>33</sup> The appointment of Rotterdam into the States of Holland both allowed for the political ascent of van Oldenbarneveldt as well as providing merchants in Rotterdam more influence on a national level. In this period Rotterdam grew to being the second largest city in the Netherlands after Amsterdam, and a textile industry emerged on account of the textile trade, influencing the city government to open the first Commodity Exchange in the newly independent Netherlands.<sup>34,35</sup> This leveraging of political relationships and positions in order to ascend a governance and power hierarchy shows a coalescing of interests between the growth of a city and personal gains. In the sense that Oldenbarneveldt prof-

31. Wijnand, Meijer. "Spanish Furie 4-8 November 1576". *dutchrevolt.leiden.edu* Accessed 18 April, 2019.

32. Edmundson, George (1911). "Oldenbarneveldt, Johan van". In Chisholm, Hugh. *Encyclopædia Britannica*. 20 (11th ed.). Cambridge University Press. pp. 69–71.

33. Israel, J.I. *De Republiek: 1477-1806*, Franeker: Uitgeverij Van Wijnen, 1996).

34. Engelfriet, Aad. "De geschiedenis van de Beurs van Rotterdam, ruim 10 jaar ouder dan de Beurs van Amsterdam..." *engelfriet.net* Sept 10, 2014. <http://www.engelfriet.net/Alie/Hans/beurs.htm> Accessed 18 April, 2019.

35. Capital Amsterdam Foundation (org) "Rotterdam Exchange". *ExchangeHistoryNL* <https://www.beursgeschiedenis.nl/en/moment/rotterdam-exchange/> Accessed 18 April, 2019.

ited in a political career by the appointment of Rotterdam to city status. This illustrates, along with the exploitation of Antwerp merchants who could more easily and quickly gain power in Rotterdam to transform it to service their relocated trade operations, as a political instrument. The city is seen here as a political project to establish a site for personal wealth creation for a few persons, not as the evolution of a 'natural' growth in any sense of an un-nameable population coalescing for a myriad of reasons.

### Expansion of colonial trade

Similarly the history of the city forming around the port, and colonial trade, along with the consolidating power of a few individuals to shape the city can be seen in the founding of the VOC (Dutch East India Company) in Rotterdam. The exchange in Rotterdam, which opened on the Haringvliet in 1598, a few years before the exchange in Amsterdam was founded,<sup>34,35</sup> preceded and ultimately worked in tandem with the founding of the VOC Rotterdam Chamber in 1602 on the Boompjes.<sup>36</sup> There were six VOC chambers in the Netherlands at the time: Amsterdam, Delft, Middelburg, Enkhuizen, Hoorn and Rotterdam. Rotterdam was a quite small chamber, accounting for only 3% of total VOC capital stock.<sup>36</sup> Influential in establishing both the exchange and the VOC chamber in Rotterdam was relocated Antwerp merchant Johan van der Veeken.<sup>37</sup> Van der Veeken was one of the wealthiest persons in Rotterdam at the time, conducting business in textile manufacturing, banking, and in providing capital and ships through the *voorcompagnie* 'Magellanic Company', which he founded to exploit the Americas and Indonesia, bringing back goods for sale in Europe.<sup>37</sup> The *voorcompagnie*'s were privately operated precursors to the VOC,

which was established by the Dutch state in 1602 to consolidate and monopolize trade to the 'East Indies'.<sup>38</sup> Van der Veeken then served as the first director of the Rotterdam chamber of the VOC from 1602 to 1616 and was a close business partner and friend of Land's Advocate of Holland Johan van Oldenbarneveldt.<sup>37</sup> On account of the rapid accension of Rotterdam from a relatively small town trading in local goods to a trading post connected with global colonial trade there was a very small extremely wealthy class of merchants in the city that were involved in essentially all of the political decisions, development strategies, trading and business ventures in the city— recognizing that the increasing influence of Rotterdam as a city was mutually beneficiary to the success of their merchantile ventures.

It was during the era of the VOC that the 'original' harbors of the city (the Haringvliet, the Leuvehaven, the Bierhaven (Beer Harbor), the Wijnhaven (Wine Harbor) and the Scheepmakershaven (Ship Builders Harbor) were excavated, (primarily between 1576 and 1616), which set the early form and organization of the city.<sup>39</sup> Rotterdam was a triangle shape with a large *waterstad*, or the water side of the city, and a narrowing *landstad*, or the area of the city behind the dike on Hoogstraat.<sup>39</sup> The wealthy were situated in the spacious *waterstad*, alongside their merchant warehouses, in stately houses along visually fashionable promenades, such as the Boompjes, whereas working poor were crammed into the *landstad*.

### Ecologies and politics of spatial violence

During the 1600s and the 1700s the city did not expand in size, both in population or in terms of space, until a second period of port expansion (and colonial trade) rapidly increased the size of the city. It was during the

36. van de Heijden, Manon and Paul van de Laar (red.): *Rotterdamers en de VOC, Handelscompagnie, stad en burgers (1600-1800)*. (Amsterdam, Bakker, 2002). p.10

37. Engelfriet, Aad. "Johan van der Veeken". *engelfriet.net* 18 March, 2006. <http://www.engelfriet.net/Alie/Hans/veeken.htm> Accessed 18 April, 2019.

38. Grimm, Peter. *Heeren in zaken, De Kamer Rotterdam van de Verenigde Oostindische Compagnie*. (Rotterdam: Walburg Pers, 1994). p.15

39. Camp and Provoost. *Stadstimmeren*. pp 12



Drawing of Rotterdam and all its buildings, 1694; Vou, Johannes deHooghe, Romeyn de (Archives of Hoogheemraadschap of Schieland and the Krimpenerwaard)  
The 'waterstad' can be seen in the bottom portion of the city triangle, south of the Hoogstraat which runs just below St. Laurents Church where the original dam in the river Rote was constructed. Above this line is the 'landstad'.

early 1800s that the effects of the cramped landstad began to become deadly. Living conditions in the landstad became extremely unhealthy from overcrowding and from the canals serving as a water supply and the location for depositing waste.<sup>39</sup> Because of this situation cholera epidemics broke out throughout the 19th century: in 1832, 1849, 1853, and 1866, killing anywhere between hundreds and thousands of people.<sup>39</sup> The cholera epidemics did not affect the waterstad as much however, as the tidal currents from the river kept the water from becoming stagnant.<sup>39</sup> This spatial violence, which works through the ecologies of this environment, was inseparable from the politics of power, decision making, ownership and so on.

The city council even into the first half of the 19th century consisted of members of the upper class and only those who paid a “goodly amount of taxes” could vote.<sup>40</sup> There were no democratic elections and political parties did not yet exist. The city had a 60 member electoral college which nominated city councilors, who were appointed for life.<sup>40</sup> Political power in Rotterdam remained in control of the “three to six percent of men paying more than 50 guilders a year in taxes.”<sup>40</sup> All men that *havenbaron* (port baron) and longtime city councilor Jan Hudig described as “pillars of the exchange.”<sup>41</sup> This concentration of power and geographic isolation of the wealthy decision makers from the effects of the cholera epidemics resulted in the condition not being fully addressed until well into the second half of the 19th century with Willem Nicolaas Rose’s Water Project— a project which was conceived as a reform primarily to create new residential boulevards for the wealthy while simultaneously preserving their class position through making the social differences more sustainable.

The effects of the 19th century crowding and deteriorating health as it relates to an unsustainable city (in terms of the city as an instrument which requires to operate at a specific level in order to function as a site of wealth creation) will be explored later in this thesis, in addition to covering in depth the aspects of how the city was expanded and reconstituted through reforms such as the Water Project, building regulations etc.

The relation between the waterstad and the landstad already points us however to viewing a relation between the geography of class difference and the material effects of this uneven power. It reveals quite starkly why it matters that we investigate the cause behind these spatialities, what originated these forms and what these arrangements do to us, and what further latent potentialities for danger are present. A common narrative emerges of people living within environments that are not of their choosing, or control; they are not built for them, but they are compelled to live and adapt to the consequences of that environment.

### **Soil and technologies put to use to facilitate colonial trade**

Continuing along the thread of a coalescing of ecologies and politics is the utilization of the soil and structural technologies to facilitate the port (city). One of the key features which effects the morphology of Rotterdams development, and subsequent typologies and urban development patterns, is the nature of its soil.

The soil of the north bank of the Maas, which developed into a peat bog, is essentially a sponge. Building upon this ground requires careful consideration, and influences not only the technical aspects of foundation construction, but travels across the realms of policy,

40. Camp and Provoost. *Stadstimmeren*. pp 13

41. Lichtenauer, W.F. “Hudig, Jan (1838-1924)”, *Biografisch Woordenboek van Nederland 1* (The Hague, 1979).





'Pile-driving operations in the damping of the *binnenrotte* [Inner Rotte] to prepare for the railroad viaduct. Hammer hoisted by means of steam power. In front of the New Exchange Building.' 1875 (Rotterdam City Archives)

finance, ownership, and the contradictory duality of temporal residence and fixed positionality. On account of alternating climates, glacial movements, rivers and their deposits changing course, and the periodic flooding and decomposing of forests over a course of thousands of years, the estuary which Rotterdam sits upon in a complex of various soil types. Peat bogs became compressed under layers that formed later— some of which are firmer in some areas than others— but the ground continues to shrink almost everywhere as the weight on the upper layers slowly squeezes out the deeper lying stratum. To reach a firmer level, foundation piles need to go down 15 to 19 meters to the prehistoric sandy plain.<sup>42</sup>

Early pile driving techniques were able to go only roughly 6 meters deep, which was not enough to prevent sinking but did offer some added stability since the pile had adhesive strength with the earth surrounding it— albeit still ‘suspended’ in unstable soil. With the introduction of steam power into pile driving in the 19th century, depths of 15 to 19 meters were possible.<sup>42</sup>

In Rotterdam a cheaper method was used than in the wealthier Amsterdam, wherein only single rows of piles were placed, and the wooden rim joists ran directly over the piles. The Rotterdam method excluded the capping intermediate, which made the foundations less stable than what was to be found in the wealthier Amsterdam.<sup>43</sup> In addition to the potential for buildings to sink if the foundation was not stable enough or the piles were not deep enough, was the risk for streets and other paved surfaces to sink. The subsoil sinks at various rates throughout the city, but on average the sinking is around three to six centimeters per year.<sup>42</sup>

Considering the immensity of the underground lines and cables upon which the city's network relies, extremely meticulous prior planning

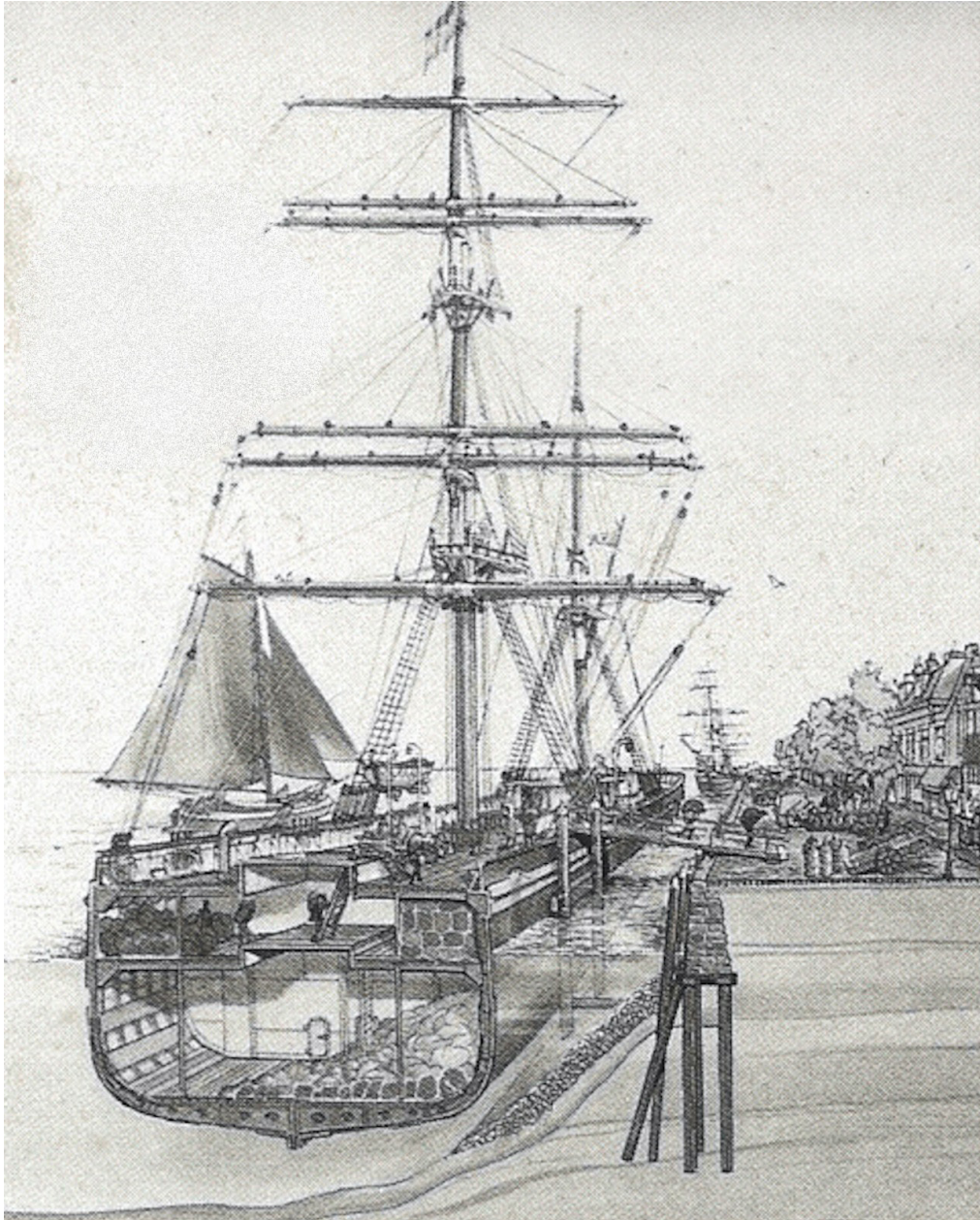
and coordination in monitoring and maintenance is of intense concern. It is on account of this very observant and careful relationship Dutch peat-laden-soil cities have to their subterrain, that the structures and layering techniques required to maintain a stable foundation for the built fabric of the city become an integral part of the logistical apparatus of the city. The pilings become an extension of the urban order and the literal foundation upon which the political order of the city's wealth relies.

The technologies of the connections from soil to piling to foundation wall are an integral political element to the order of the port (city). Wherein the soil is put to use to sustain port activity, and the corresponding supporting city-system.

In the cross section drawing shown here we can see a direct relationship between the pilings holding up the quay wall and the goods in the interior hull of the ship. The structure of the quay wall makes possible the extraction of goods, which have most likely come from colonial-based trade, and their subsequent realization of value upon being placed into the market for purchase. It is in this moment of transfer in which the embodied violence of this colonial theft becomes actualized into a commodity, by its being walked across the gangway and placed into the European city, now ready for consumption. A moment which is facilitated by a collaboration of technologies; from the tactics of slavery-torture, the masts of the ship, the navigators compass and the pilings holding up the quay wall of the harbor— and of course the labor and exertion of exploited bodies to put these technologies in motion. This process of extraction and realization simply cannot occur, in the ways it is occurring, without the technology of the pilings maintaining the quay wall.

42. Camp and Provoost. *Stadstimmeren*. pp 91-93

43. van Bommel, A.J. “The History of Residential Buildings”. *Delft Construction History Reader*. (TU Delft, 2018) pp 10.



'Reconstruction drawing of the quay wall of the Boompjes in 1850' 1984, Rudolf Das (Maritime Museum Rotterdam)

## Relation of colonial trade to the structure of the city at large

It is not to say that these technologies and structures are inherently violent, but it is to say that their construction was implemented to directly fulfil the purpose of allowing goods (historically colonial) to exit the ship and enter the market. And when we extend our understanding of how a port city is centered around this economic transaction (to which all other activities and supports follow), the same technologies to maintain the supporting structures (of distribution networks, housing, utilities and so on), the implication of the technology of the piling as it relates to the quay wall applies also to the implication of that technology to maintain the supporting structures of the rest of the city— as those support structures aid in maintaining the continuation of this port-based economic transaction.

In other words, if the city which surrounds and supports the port transaction is not stable, and is not able to continue to provide its support, if it sinks into the ground, then the port transactions cannot occur and the wealth generated from those transactions cannot be brought into realization. They work together in a total environment, which *acts* and *directs*. The separation between what is and what is not related to colonialism, and the violent power structures of ownership and wealth, cannot be so strictly made, since the urban environment is consistently a product of those relations. These relations permeate all of which dictated the development of the city and are thus embedded within the environments that we inhabit, the environments which have come to be naturalized over time; in opposition to the notion that the quay wall, etc, are a product of ‘natural forces’, we can be quite specific about what those forces actually are.

## Nieuwe Waterweg; 19th century port expansion

The second period of Rotterdams growth, both in the port and the city, didn’t occur until the 19th century, with the construction of a canal (the Nieuwe Waterweg) in 1872, which created a direct and stable connection between the Nieuwe Maas and the North Sea, as the major turning point. The intense period of growth that would follow would transform Rotterdam into one of the largest ports in the world and one of the fastest accelerating cities, in terms of population, in Europe. This period would again be marked heavily by colonial trade, as the first harbors in Rotterdam Zuid (South) would be financed by private businessmen engaged in trade in products exploited from the Congo under slave labor.

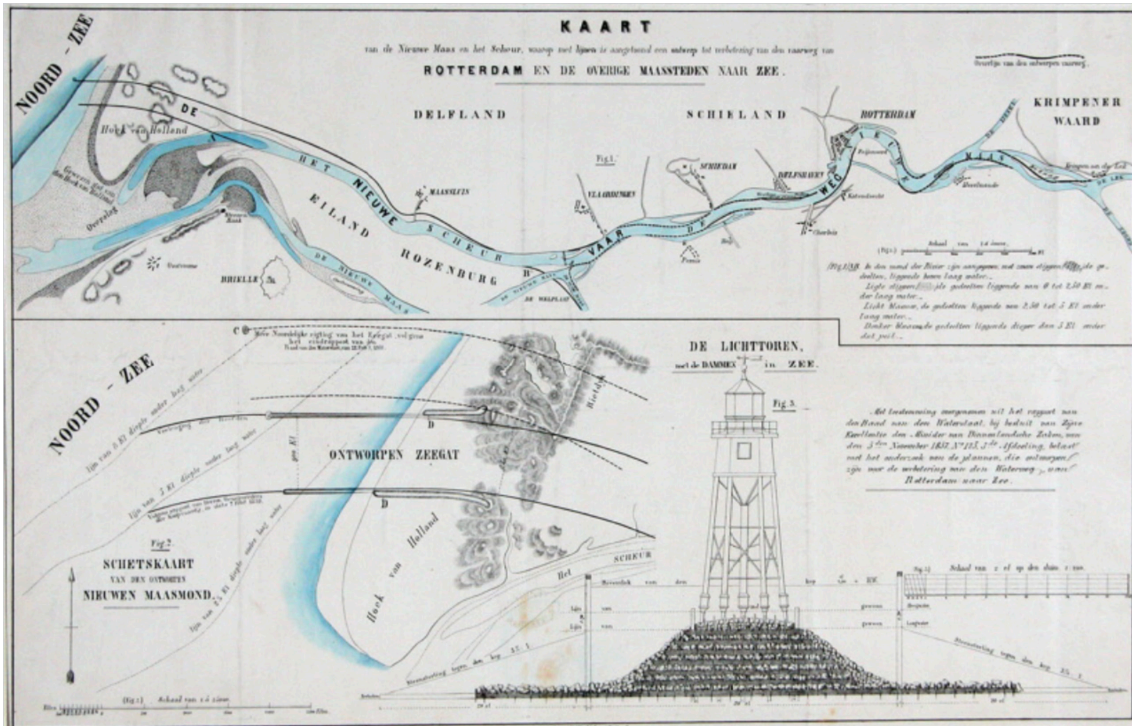
The position of Rotterdam as an influential port city was diminishing in the early 19th century due to siltation building up in the Brielse Maas, (the earlier course of the Nieuwe Maas before the opening of the Nieuwe Waterweg canal), and ships entering Rotterdam had to take a days long detour through Dordrecht via Hollands Diep.<sup>44</sup> Johannes Goldberg, as Minister of Colonies and Commerce, proposed to King William I to build the Voorne Canal from Hellevoetsluis to the Nieuwe Maas, which was dug partially by hand and opened in 1829.<sup>44</sup> This cut down the travel time to a few hours, but became loomingly obsolete as ship sizes gradually increased beyond the breadth of the canal.<sup>44</sup>

During this time global trade was increasing due to repeals of trade barriers and general trends in liberalization, and Rotterdam became a depot for coffee, tea and tobacco.<sup>45</sup> Ship building increased and passenger ship companies such as Holland America began their operations. In 1837 coal began to be ex-

44. Stadsmuseum Hellevoetsluis. "Kanaal door Voorne: met de hand gegraven (1827-1830)" *stadsmuseum-hellevoetsluis.nl* <https://www.stadsmuseum-hellevoetsluis.nl/tijd-lijn/kanaal-door-voorne-met-de-hand-gegraven> Accessed 18 April, 2019.

45. Loyen, Reginald; Buyst, Erik; Devos, Greta (eds.), *Struggling for Leadership: Antwerp-Rotterdam Port Competi-*

*tion 1870 - 2000*, (New York: Physica-Verlag Heidelberg, 2003) p. 24



'Map of the Nieuwe Maas and the Scheur on which the design for the improvement of the waterway from Rotterdam to the sea is indicated', 1857-1863; HF Fijnje, P Caland (Rotterdam City Archives)

plotted in the Ruhr Basin of Germany, coinciding with the rise of industrialized production of iron and steel.<sup>46</sup> The iron blast furnaces in the Ruhr were fueled on coke, a byproduct of coal, but they needed to import better supplies of iron ore from Sweden, with Rotterdam and the Rhine being a fitting port of entry. Rotterdam had to compete however with other north European ports such as Antwerp, Bremen and Hamburg over access to the German hinterland.<sup>45</sup>

Thus the need for reliable and direct access to the port, and rivers, from the North Sea became apparent if Rotterdam was to be a notable site in the emerging field of global trade. The need for a reliable harbor and international connection was also seen by the industrialists in the Ruhr basin that were keen to have access to a port they could exert strong influence and control over.

### **Port barons determine direction of the city**

An influential network of Rotterdam businessmen and politicians were able to solidify Rotterdams place in regional and global trade through a series of key infrastructure projects, most notably the opening of the Nieuwe Waterweg in 1872 and rail connections to Germany.<sup>47</sup> This was also encouraged by the large Duisburg/Essen based steel company Krupp— a notorious arms producer, and the worlds largest industrial company at the time.<sup>48</sup> Krupp founded their own shipping company based in Rotterdam in 1873 to import iron ore via barges on the Waal and Rhine rivers— a practice that continues to today.<sup>49</sup> Their lobbying efforts in The Hague were also instrumental in accomplishing the construction of a rail link from the Rotterdam port to the

Ruhr region.<sup>49</sup> The only rail connection Rotterdam had in the middle of the 19th century was to The Hague and Amsterdam, and City Councilors did not see the need for more rail infrastructure, but instead wanted to focus on water ways.<sup>49</sup> However, Rotterdam businessmen, most influentially Lodewijk Pincoffs, supported the German requests for more storage capacity and faster connections from the port, and a proposal was made to construct a rail-spoor off the existing tracks so that Rotterdam would connect directly to Utrecht, and then to extend the connection from Utrecht to Germany— which was realized in 1855.<sup>49</sup>

In following, Pincoffs together with the banker Marten Mees urged the municipality to build a large number of new ports on the south bank of the Nieuwe Maas.<sup>50</sup> After having spent eight years of business in dyes, Pincoffs had switched his business in 1857 and began making a fortune trading in Africa.<sup>50</sup> His company extracted ivory, palm oil and rubber from Africa while taking cotton, knives, rifles, spirits and powder from the Netherlands.<sup>51</sup> They managed dozens of factories in West Africa and the Congo which at least partially relied on slave labor.<sup>51</sup> Pincoffs joined the Rotterdam City Council in 1856 and began to promote his proposals for port expansion quite emphatically.<sup>49</sup> Coinciding were proposals put forth in 1858 for the Nieuwe Waterweg at Hoek van Holland, which would give more direct and reliable access of Rotterdam to the North Sea directly via the Nieuwe Maas.<sup>49</sup>

The proposal was in part accelerated by the construction of the Suez Canal, (opened in 1869), which would cut the travel times to the ‘Dutch East Indies’ drastically. Both Rotterdam and Amsterdam were to get new canals ensur-

46. Schenk, J. *Havenbaronnen en Ruhrbonzen: Oorsprong van een wederzijdse afhankelijkheidsrelatie tussen Rotterdam en het Ruhrgebied 1870 - 1914*. Dissertation. (Rotterdam: Erasmus University, 2015). p. 12-14

47. Van der Ven, GP, *De Nieuwe Waterweg en het Noordzeekanaal; een waagstuk*, (Research by order of the Deltacommissie, 2008).

48. Manchester, William [1968], *The Arms of Krupp: 1587–1968* (Boston, MA, US: Little, Brown and Company, 2003).

49. Börger, Jacques and Anne Jongstra. “Historische besluiten: luidruchtig luchtspoor dwars door de stad”.

*Vers Beton*. 3 May, 2018. <https://versbeton.nl/2018/05/historische-besluiten-luidruchtig-luchtspoor-dwars-door-de-stad/> Accessed 18 April, 2019.

50. Oosterwijk, Bram. *Ik verlang geen dank: Lodewijk Pincoffs (1827-1911)* (Rotterdam: Uitgeverij Douane, 2011).

51. van Sandick, Onno Zwier. *Herinneringen van de Zuid-Westkust van Afrika: Eenige bladzijden uit mijn dagboek*. (Deventer, 1881) Accessed at [http://www.vansandick.com/familie/archief/Herinneringen\\_van\\_de\\_Zuid-Westkust\\_van\\_Afrika/](http://www.vansandick.com/familie/archief/Herinneringen_van_de_Zuid-Westkust_van_Afrika/) on 18 April, 2019.

52. Camp and Provoost. *Stadstimmeren*. pp 15

ing direct access to the North Sea to be able to exploit the new shipping lines— projects that were mostly funded by profits from exploits of Indonesia.<sup>47</sup> The bill to construct the Nieuwe Waterweg was passed in 1863 and construction completed in 1872— shipping traffic into Rotterdam increased exponentially. In 1870 there were less than 3,000 ships entering the port annually, and by 1900 that number was around 7,500.<sup>52</sup>

The first ports in Rotterdam Zuid came as a result of the formation of the Rotterdamsche Handelsvereniging (RHV) in 1872 by Pincoffs and Marten Mees— who were also partners in founding the Rotterdamsche Bank in 1863, which was set up to be a credit institution for companies that were active in the Dutch East Indies.<sup>50</sup> The RHV, which was headquartered in the newly built, (and famously squatted in the 1980s), Poortgebouw exploited the island of Feijenoord to construct the Binnenhaven and Entrepothaven along with the associated warehouses and trading facilities by leasing land from the municipality.<sup>53</sup> In conjuncture the municipality developed the Konighaven and the Spoorweghaven, also in the 1870s; coming from when Joost van Vollenhoven, who was from an old family of merchants, became *burgemeester*, or mayor, of Rotterdam.<sup>49</sup> He had been a member of the Senate in The Hague for a number of years and knew Pincoffs quite well and they were both members of the Royal Dutch Yacht Club where Rotterdam businessmen met each other.<sup>49</sup> Van Vollenhoven sought to improve the relationships between The Hague and Rotterdam, seeing that it would be beneficial for them both in the long run, and was able to secure national funding for rail, port and waterway infrastructures that would both consolidate control on a

national level and provide capital for private businesses.<sup>49</sup>

Enormous port construction would continue throughout the 20th and 21st centuries. Already at the turn of the 20th century Rotterdam was one of the largest ports in the world and accordingly became one of the fastest growing populations in Europe. Nearly 10,000 inhabitants entered the city yearly in the 19th century. The population in 1810 was 67,200 inhabitants, by 1850 it was already 110,700, 318,500 in 1900 and 586,900 by 1930.<sup>52</sup> During this time Rotterdam was the fastest growing city in the Netherlands and one of the fastest growing in Europe. Coinciding with the agricultural crisis of 1875-1895, a massive influx of migrants from Zeeland, Brabant and the South Holland islands came to industrializing cities in the west of Holland, most particularly to labor in the port of Rotterdam.

This expansion of the port had drastic impacts upon the whole of Rotterdam, as the city followed in supporting the port activity. Any analysis of urban forms of the city cannot be made without being in relation to what they are oriented towards and directed by; which is the (colonial) port activity. Doubly within this reality is the clarity of 'who' is directing this orientation; which is a close network of a small group of persons who are operating in order to sustain their own position within a city, regional and global scale of wealth and power. The city and port are utilized by them to produce wealth. They are compelled towards acting within the *field of forces* of global trade, by building and shaping the environment and ecologies of the river and the city to maintain and expand port activity, to consolidate their position.

53. Engelfriet, Aad. "Lodewijk Pincoffs". *engelfriet.net* 28 December, 2011. <http://www.engelfriet.net/Alie/Hans/51pincoff.htm> Accessed 18 April, 2019.

chapter 3.

## Ordering the landscape: Bloomersdijk Polder

On the periphery of the consolidated pre-20th century urban triangle of Rotterdam was an expansive polder landscape. This polder landscape of course defines most of Holland (the western portion of the Netherlands) historically and presently, and can be found just outside the city of Rotterdam today. The polder examined here (the Bloomersdijk polder) became the basis for urban expansion of the Oude Noorden district of Rotterdam in the 1880s and 1890s, and became depoldered in 1907, as it became incorporated into the municipal water management, shifting administration away from the regional *waterschappen*, or water board. Examined in this chapter is the transformation of peat bogs into productive, arable, ordered, controlled, demarcated, owned (as property, as a marketable real estate commodity, rentable and taxable), measured, recorded, ecludian space, with specific rectangular dimensions, functions and mechanisms (as it relates to the practices of draining and farming).

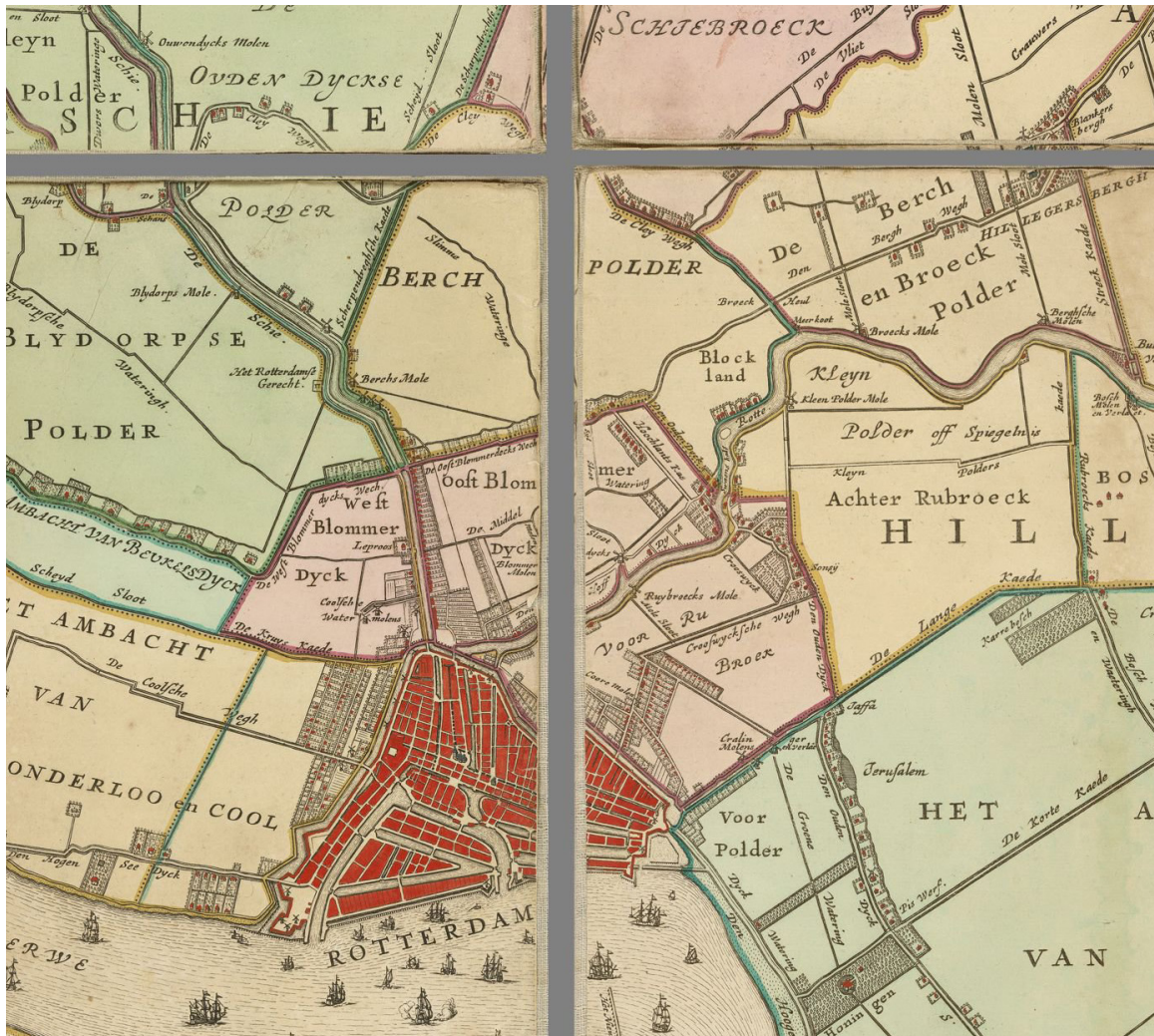
The Bloomersdijk is taken as a case study to illustrate larger patterns of political ownership, contestations, juridical geographies of management, administration, and so on, as well as serving to enter the specifics of how the logics of these environments have translated to residential districts. When polders, which have very specific patterns of ditches which are used to maintain the proper water level in

the polder, have been translated to urban districts, the ditches have often informed almost one-to-one the pattern of street layouts, the dimensions of blocks and individual property plots. Additionally the dikes between polders typically become the major arterial roads between urban districts. This in large part derives from the nature of the ditches of polders to not merely serve to drain the polder in an efficient manner, but to serve as demarcating lines for property; accordingly the differentiated sections of the polder are referred to as parcels.

This continues along the thread of seeing the soil and pilings as a geography and ecology which are put to use to facilitate the colonial trade of the port, to work together with the politics of wealth creation as a total environment which *does* something. Here the landscape at large is utilized to extend control over the productive interior, which is arranged to be controlable and extractable (in terms of farming production, and in terms of rents/taxes from farmers to lords, and eventually to the state). A separation exists in pre-19th century Holland between the landed nobility and the merchant classes in the city (which begin to dissolve and intermingle in the 18th century), but an argument can be made for mutually beneficiary relationships wherein the logics embedded within the construction of the port (city) coincide with the logics embedded within the rural landscape-- in that they both seek to put space in order, and use, directed towards clearly demarcated, consolidated ownership and wealth generation.

The rural landscape can also be seen as part of a political project, which coalesces quite firmly with the political project of the city during its expansion. That the expansion of the city meshes so finely with the spatial arrangement and property logics of the polder demonstrates the similarity of language within these pro-





“Wall map of the Hooge Heemraedtschap van Schieland” 1684, Jan Jansz. Stampioen the Elder. *National Archives*, 4.ZHPB4 file no. 95. Seen just above the Rotterdam city triangle is the Bloomersdijk Polder split into an east (oost) and west by the Schie. The Rotte can be seen dividing the Oost Bloomersdijk polder from the Rubroeck Polder. The Blokland Polder can be seen just above and to the right of the Oost Bloomersdijk Polder.

jects. We can ask here as well: what does this landscape do? What is it directing towards, what is it emerging from, and what does it do to the inhabitant of it (as a rural site, or a converted urban landscape)? A response to these questions again brings us towards an understanding of these landscapes not as neutral patterns that have emerged naturally from a democratic succession of interactions between even-planed actors, but are also the result of tensions of actors acting within a field of forces, oriented towards maintaining and expanding upon structures of power. They are produced also “at a particular moment in history for a particular group of people.”

### **Historical processes: Putting the land to use**

The Netherlands has reclaimed roughly 18,000 kilometers of land from the sea (about half of the country's size), in constructing some 3,000 polders.<sup>54</sup> The traditional polder construction began in the 12th century and continued through the 20th century, mostly located within the west of the Netherlands in North and South Holland, as well as some in Friesland and Zeeland. Situated behind a ring of sand banks deposited by glaciers during the last ice age, frequently flooded and marshy peat bogs formed the basis from which the reclaiming of land took place.<sup>54</sup>

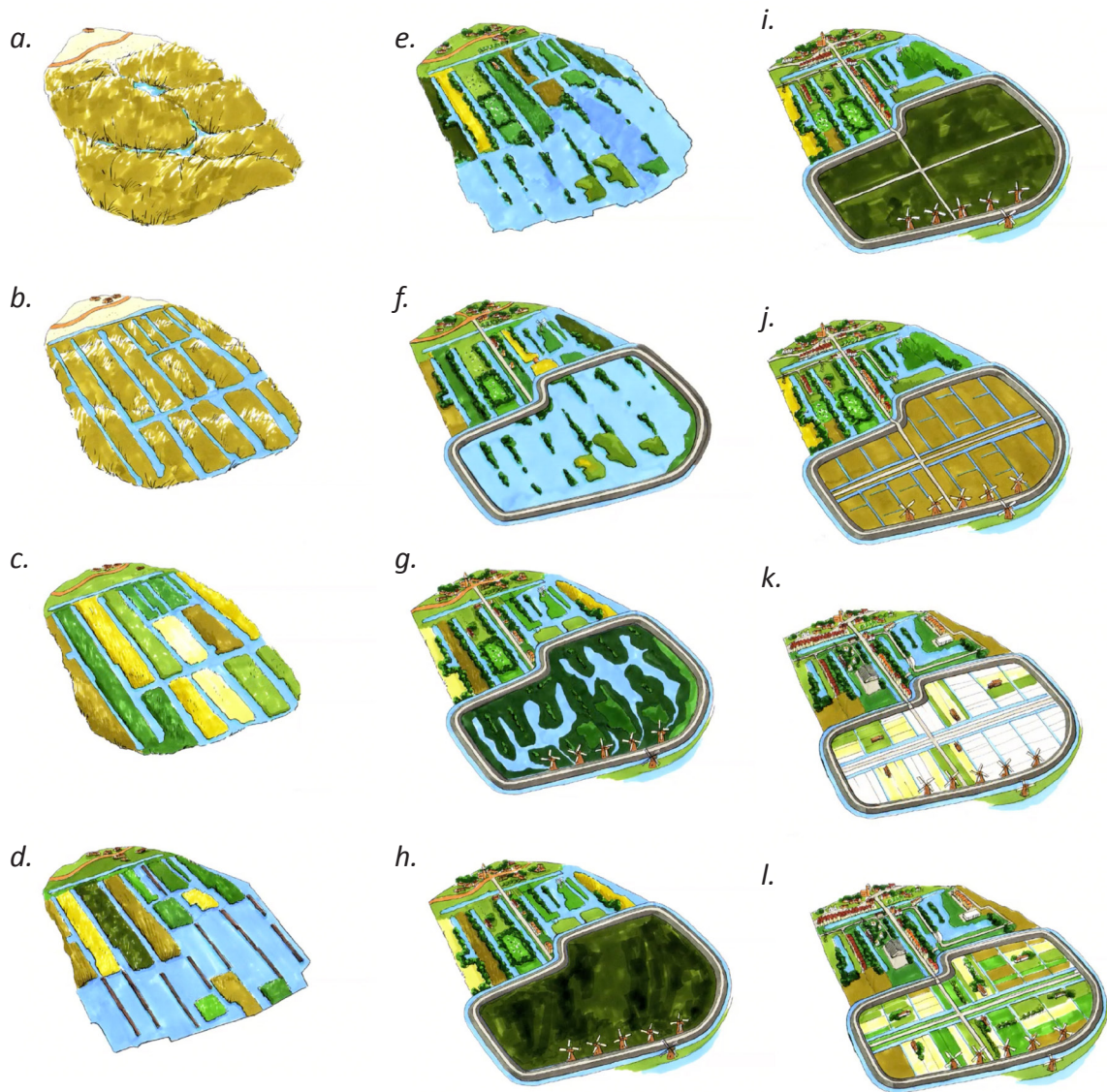
The process of making this land arable has actually made the soil sink below that of the surrounding rivers and the North Sea. It is from this process of sinking that it became necessary to construct dikes to prevent further flooding. Most historic city centers in Holland however are situated upon relatively high ground ‘islands’ of sand deposits that were scattered from the post ice age flows of the rivers.<sup>54</sup> Historically polders were created for farming in the adjacent peat laden soils, and it was not until the expansion of cities during the era of

industrialization in the late 19th century and in the housing construction boom post World War II that large scale development was common place on polder lands.

To briefly give a description of the the process of draining the swampy land for arable uses, which goes back a few thousand years, we can look to the included illustration: plots would be made in long rectilinear shapes with ditches on either side [b], a pattern that influenced the layout of early and subsequent settlements where access to river-front (especially in trading towns) was prized not only to be able to construct docks but also for having access to a drainage source. However it was through the act of allowing the water in the peat-soil to drain away that the peat started oxidizing and condensing, therefore lowering the level of the soil [d]. This would result in the re-flooding of the lands from river or sea water [e]. Relatively large(er) scale agriculture and the necessary infrastructure works, such as dikes, did not emerge until the 12th century— the types of landscape elements we inhabit today.<sup>54</sup> A complex network of drainage ditches and canals emerged as farmers’ plots went more and more inland, and the water needed to travel longer distances to get to a drainage source such as a river. Due to the gradual sinking and reoccurring flooding, natural drainage no longer sufficed and pumping became required. Early pumping was done by hand, but by the 15th century most pumping was done by *poldermolen*, or windmills that specifically served to carry water from a lower water course to a higher water course.<sup>55</sup> This process was accompanied by dike construction, which gives the basis for what constitutes the boundaries of a polder [f]. The dikes, which were needed to keep the tidal waters out, were originally constructed by individual farmers or small communities.<sup>55</sup>

54. van Schoubroeck, Frank. “The remarkable history of polder systems in The Netherlands”. *Agricultural Heritage Systems of the 21st Century*. Conference paper. (M S Swaminathan Research Foundation, 18 February 2010 in Chennai, India)

55. Pleijster, Eric-Jan and Cees van der Veecken. *Dutch Dikes*. (Rotterdam: nai010, 2014).



'How to make a polder' for the exhibit: 'Polders'. 2005  
 (Netherlands Architecture Institute)

## Dike building and political bodies: water boards

The piecemeal nature of the ad-hoc method of individual farmers building dikes as they had the need soon revealed to be in need of coordination as a dike bursting in one location would endanger all of the farms within the dike. In some areas coordination failed and the area became permanently flooded, and in others the coordination was formalized into a top-down structure of *waterschappen*, or ‘water boards.’<sup>56</sup>

Initially the water boards controlled only a very small area, sometimes even just a single polder chaired by the local nobility. The establishment of polders in this way were simultaneously a physical demarcation and a territorial, jurisdictional, and legal, demarcation.<sup>56</sup> The responsibilities of the early water boards were to maintain the dikes around the local polder, the various waterways within the polder and to maintain the water levels both inside and outside the polder as well as the quality of the surface water.<sup>56</sup> The original organization of the water boards varied substantially in power relations, structure and in how much area they controlled— often dependent on whether they were located inland, or upon a rivers of various sizes and the likelihood of being affected by storm surges.

The maintainance of the dikes themselves were undertaken by the farmer designated to the specific portion of the dike in question— with periodic inspections from the wa-

ter board.<sup>54</sup> This responsibility of the farmers included all aspects of maintainance, from technical construction to financing. It was not uncommon that a farmer could go bankrupt from having to repair a breached dike. And for this reason in 1297 it was declared that the leasers of land be sufficiently wealthy enough in order that repairs could be made to the dike in event of an accident.<sup>57</sup> The water boards also maintained the ability to levy fines and punishments for lack of maintainance or for the depositing of waste into canals— even being documented that the death penalty was implemented on more than one occasion.<sup>56</sup>

Due to the decentralized nature of governance in the Netherlands prior to the establishment of the Dutch Republic in 1581, and especially prior to the Batavian Republic (Napoleonic) in 1795, the water boards are the earliest forms of governmental political bodies in the Netherlands.<sup>54</sup> Typically described contemporarily as a ‘consensus-based’ model, or the ‘Polder Model’, and to be an example for democratic political structures, the water boards were however were not democratic as the members of the boards were represented mostly by the nobility and landowning class, not the farmers who leased land in the polders— akin to the political make-up of city councils, which lasted late into the 19th century (and arguably remain so when analyzed by who/what has influence/priority over city development).<sup>58</sup>

This uneven power within the orienting and administering of the landscape reveals the

56. Dolfing, B. “Vroegste ontwikkelingen in het Waterschap”, in: J.C.N. Raadschelders and Th.A.J. Toonen (Eds.), *Waterschappen in Nederland: een bestuurskundige verkenning van de institutionele ontwikkeling*. (Hilversum: Uitgeverij Verloren, 1993). p. 5-6

57. van der Laan, Gerrie. “Het Oude Noorden van Rotterdam”. *engelfriet.net* 6 Feb. 2016. <http://www.engelfriet.net/Alie/Aad/oudenoorden.htm> Accessed 18 April, 2019.

58. The ‘Polder Model’ was used in 1980s and 1990s to promote “cooperation despite differences”, following on the false-premise of the original water board polder politics as being consensus-based, and in which ‘all voices are heard’. The ‘Polder Model’ was a tri-partite cooperation of employer’s associations, such as VNO-NCW, labor unions, and the Dutch government. These talks were aimed mostly at avoiding strikes, and worked in parallel with neoliberal economic policies of privatization and budget cuts. (Sanders, Ewoud. “Polder Model”. *NRC Handelsblad*, 1 July 1999.) These new waves of liberalization derived from the liberal theories of John Locke which were in direct accordance with the conception of

land and value held within the construction of polders. In the Lockean conception of private property, land was only seem to be valueable if it was productive, and only claims that coincided with being productive were seen as valid. This was most notoriously utilized to justify the dispossession of natives in the US from the land as their claims were seen as invalid compared to white settlers who were to convert the land to stable fixed locations of agriculture production. (Harvey, David. “The Future of the Commons.” *Radical History Review*. no. 109. 2011. p. 104)

The Polder Model promoted false ideas of non-democratic institutions, such as the water boards, as democratic, in order to embrace more emphatically systems based on individual property ownership within a hierarchical structure of power; wherein ownership of the land is structurally uneven, whether it is a Lord or a corporation possessing un-due proportions of control, and yet institing on cooperation.



William II of Holland granting privileges in 1255 to the Spaarndam *dijkgraaf* (chair of water board) and *hoogheemraden* (aldermen of water board), the organisation that would evolve into the *Hoogheemraadschap van Rijnland* (*Water Board of Rijnland*). 1654, Cesar van Everdingen, Pieter Post (Hoogheemraadschap van Rijnland)

non-neutrality and un-democratic origin of the most common basis of spatial arrangement in the Netherlands. It reveals that at the core of these forms are the interests of a specific class of people, tied almost from the beginning to efforts to bring into centralized order the maintainance of land that is not equally distributed but overseen by a hierarchy of power.

### **Jurisdictional establishment of the Bloomersdijk Polder**

The Bloomersdijk polder was situated with the water board of Schieland, which was created in 1273, on a declaration from Floris V.<sup>59</sup> The Schieland water board included the area between Rotterdam, Gouda and Zoetermeer, and has now been merged with the Krimpenerwaard water board.<sup>59</sup> The administration of the Schieland water board was from the classically designed Schielandshuis, from notorious colonial era architect Pieter Post, situated in the center of the waterstad of Rotterdam.<sup>60</sup> A building which served as a monumental representation of power, with close proximity to the headquarters of the Rotterdam VOC chamber, and other wealthy Rotterdam merchants houses. It makes a clear proclamation that the wealth generated in the port is strongly in control of the rural landscape on the cities periphery.

By roughly 1280 the polders Bloomersdijk and Blokland were created.<sup>57</sup> Specifically speaking the Blokland polder would constitute the very upper part of the Oude Noorden, and the Bloomersdijk would be split into an east and west portion by the implementation of the Schie in 1348.<sup>61</sup> The Schie was covered in the early 20th century to make way for the Schiekade; presently one of the most major traffic thoroughfares in Rotterdam. The Oost Bloomersdijk would become the Agnieseburt and the Oude Noorden, whereas the West

Bloomersdijk would become the Provenierswijk. [see illustration]

The polder was bounded by the ‘summer dike’ Bloomersdijk, (now the line of the Bergweg) and the ‘winter dike’ Hofdijk (now the line of the Zwanshals). The term ‘winter dike’ meaning the more primary line of defense, as it was positioned along the Rotte. Both of these dikes were constructed around 1280 at the inception of the polder, and laid the basis for the boundaries of the district that remain until today, as well as further development within and in relation to these boundaries.<sup>61</sup> The Bergweg also remains one of the primary routes in Rotterdam today, connecting from the north to the west (from Hillegersberg to the Blijdorp Zoo). Whereas the Zwanshals remains one of the key shopping streets in the Oude Noorden— and, as is also along with the Bergweg, consistently at the cultural center of the ever-changing district.

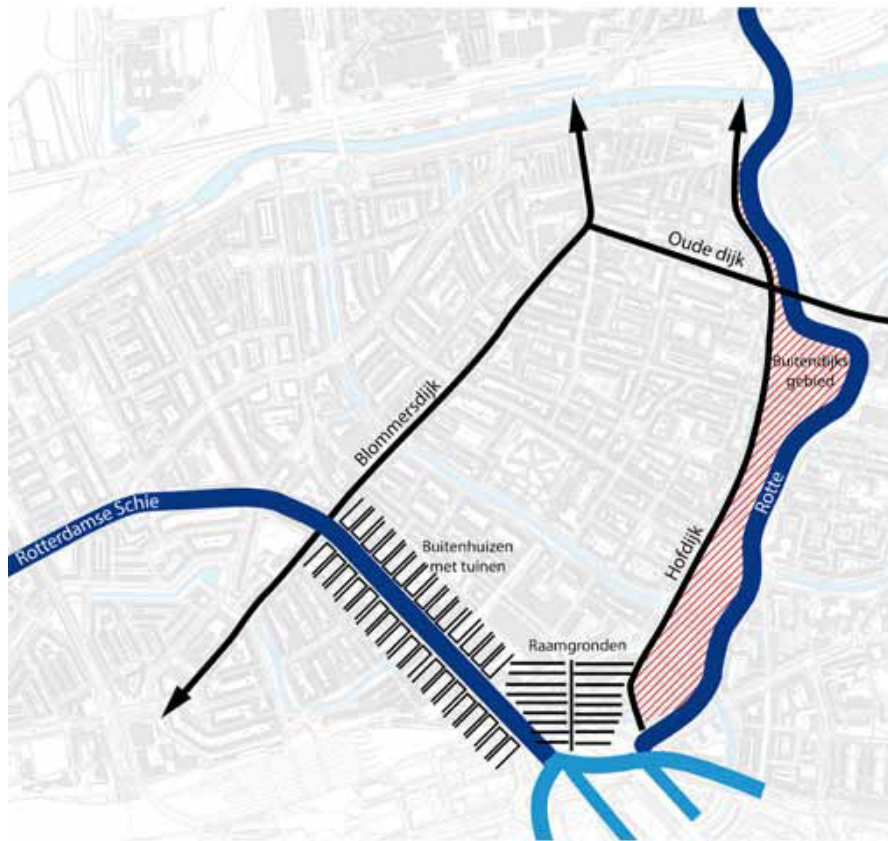
The creation of the Blokland polder, which contains the most northern part of the Oude Noorden, came from the construction of the Oude Dijk, (along the line of current day Hooglandstraat), sometime around 1610.<sup>61</sup> It was at this point that the Rotte was dammed and a sluice implemented for maintainance— most likely due to differences in water drainage patterns. It was from the granting of city rights by the Count William IV in 1340 that spurred Rotterdam to dig the Schie in order to improve its connection to the hinterland, including Delft.<sup>57</sup> The Schie, and the resulting Delftse Port (located where Hofplein is today) allowed for a commercial juncture at the base of the Bloomersdijk polder where the Schie intersected the Rotte. As a result business and trades developed along the Rotte and Schie, in addition to a few country estates of wealthier merchants. The developments in these areas, outside but on the perimeter of the city, oc-

59. Schieland District Water Board and Krimpenerwaard, Rotterdam. Access 106, archive of Polder Blommersdijk, 1848-1907 (1937) Accessed 20 April, 2019.

60. Schielandshuis (org.) “History of the Schielandshuis”. <https://schielandshuis.nl/verhaal-schielandshuis/geschiedenis/> Accessed 20 April, 2019.

61. van Es, Evelien. “Cultuurhistorische Verkenning: 19e-eeuwse wijken in Noord: Oude Noorden, Agniese-

buurt en Provenierswijk”. Gemeente Rotterdam, commissioned by Deelgemeente Noord. (25 Oct. 2013).



'The allotment forms deviating from the polder landscape as manifested from the end of the sixteenth century' 2013 reconstruction diagram (Rotterdam Municipal Cultural History Report)

Bloomersdijk (current day Bergweg) serves as the border of Oost Bloomersdijk and Bergpolder. Hofdijk (current day Zwanshals) serves as the polder boundary from the Rotte. Oude dijk (current day hooglandstraat) serves as the boundary of the Oost Bloomersdijk and Blokland polder. Along the Schie is indicated to be of wealthy houses with gardens. At the former Hof van Weena is the *raamgronden*, or *lakenramen*, for the textile industry. Between the Hofdijk and the Rotte is an industrial area. The Rotterdamse Schie will be filled in to become current day Schiekade.

cured somewhat piecemeal as there was no central town planning or direct incorporation into the city's laws.<sup>57</sup>

Ditch patterns and building construction began at the dikes and would fan out from there towards the interior. Plots, which also acted as dividing lines of property, could be bought and sold to create larger or smaller plots—and from this a great variety of uses emerged, from pastures, to ropewalking, timber mills, cloth bleaching, *hofjen*, (or communal housing centered around courtyards—which could either be a wealthy estate or 'charity' housing for the poor), or other polluting industries such as white lead production.<sup>61</sup>

What can be seen from this developmental history is the relational aspects of changes to the physical landscape (via dredging canals for trade routes, or the construction of dikes, etc) and political or trade based motives (such as businesses, manufacturers, etc making use of the affordances from the physical changes to the landscape and responsive alterations to city laws and zoning). This relational back-and-forth moves together in a processual unfolding of the total environment assuming, passing along, and continually reifying the logics of an ordered landscape oriented towards productive aims.

### **Property ownership regimes: The Lords of Hof van Weena**

Investigating the specifics of embodied systems of measurement, legality, and recorded ownership into space brings us to the political structure of property ownership. The arrangement and distribution of such, as well as the physical practice of parceling, can be complex as it varied greatly across the Netherlands.

At the lowest level were the *heerlijkheid*, a type of landed estate similar to a manor.<sup>62</sup> These were the lowest administrative and judicial

units in rural areas before 1800, and were essentially the predecessors of the modern municipality system.<sup>62</sup> A *Heerlijkheid* consisted of a manor house and the lands surrounding it, and was administered by a *heer*, or lord, who served as the landowner.<sup>63</sup> However, *Heerlijkheden* varied in size as well as in the portion of the land the lord directly owned. In some cases the lord may not own any of the land directly, as a *Heerlijkheid* was not land in-itself, but the ability to control and manage the land, and see to its distribution and proper use.<sup>63</sup> A lord typically did also own large portions of the land within the *Heerlijkheid*, and may even own multiple *Heerlijkheden* across the Netherlands.<sup>63</sup> Additionally it was not at all uncommon that lords would sell their lands and estates, essentially creating an early real estate market, and incorporating the logics of markets and trade into the landscape.<sup>64</sup>

The land of the Oost and West Bloomersdijk, along with the Beukelsdijk, Bleiswijk, Boeckel, and Cool polders, were owned by the lords of Hof van Wena, a castle at the intersection of the Schie and the Rotte, near current day Hofplein.<sup>65</sup> The Hof van Wena was built by Christiaan van Wassenaer in 1136.<sup>65</sup> Van Wassenaer received the lands from his father, viscount of Leiden, as a wedding gift.<sup>65</sup> The first charter of ownership however is found from a document dated April 6, 1306 wherein Dirk Bokel dedicates the lands to Nicolaas van Putten, before receiving them back as a loan.<sup>66</sup> The ownership would remain in the Bokel family until it passed through marriage in the mid 15th century to the Van Boekhorst family.<sup>66</sup> The lands and castle were then owned by the Van Almonde family from 1498 until Jacob van Almonde sold it to the city of Rotterdam in 1590.<sup>66</sup> The following year the lands were removed from lordship and rents to the lord were released as the land began

62. Prins, Maarten and Henk Looijesteijn. "Heren, heerlijkheden en heerlijke rechten" *herenvanholland.nl* 2018. <https://www.herenvanholland.nl/heren-heerlijkheden-en-heerlijke-rechten/> Accessed 20 April, 2019.

63. Price, J.L. *Dutch Society, 1588-1713*. (Harlow: Longman, 2000). p. 27

64. van Bavel, Bas. "The Medieval Origins of Capitalism in the Netherlands". *BMGN: Low Countries Historical Review*, 125(2-3), pp.45–79. (2010). p. 53-54

65. van Weenen, Jan Christiaan de Leeuw. "Het Hof van Weena: Geschiedkundige Beschrijving". *deleeuwvanweenen.nl* 7 April, 2010. <http://www.deleeuwvanweenen.nl/Webpage/Genealogie/Kasteel.htm> Accessed 20 April, 2019.

66. Renaud, JGN "Archaeological Investigations in Rotterdam" *Rotterdam's Jaarboekje*, 1942, p. 121-125. Accessed via <http://rjb.x-cago.com/> 20 April, 2019.



to be converted to private ownership within the municipality and the grounds of the former castle and estate were transformed into peripheral industries, namely linen production, bleaching and drying.<sup>61</sup> Illustrating both the centrality of a single fixed location (the castle) and small group of persons (wealthy families deriving from nobility) to control and direct large stretches of land, as well as that land being negotiable for purchase and value assessment.

The lords of such Heerlijkheids were typically and initially appointed by the Count of Holland, who reigned supreme within Holland, in a system similar to feudalism found elsewhere in Europe.<sup>62</sup> The creation of a noble class to manage the lands, and their subsequent appointments, typically followed from having given political support to the count or aided in a military struggle.<sup>62</sup> The lords could vary quite widely in how much political power they had, despite the different levels of power above them, such as dukes and so on. The lords were to some degree independent of the reign of the Count due to the difficulty of centralizing state powers such as taxation and judicial law.<sup>63</sup> Besides the carrying out of law enforcements, and appointing officials to take on administrative duties required on a local level, the lord was able to give fines and collect taxes.<sup>63</sup> The most substantial tax was that of *cijns*, (mostly similar to modern property taxes), which was calculated as per the size of the property in question.<sup>67</sup> The lords largest source of revenue however was from the collection of rent from the tenant farmers of the land.<sup>68</sup> Tenant farmers were allowed to give their land as inheritance upon their death, but the lord would extract a 5% tax of the real property value in order to do so, and retained the ability to confiscate the best chattel of the farm in question.<sup>68</sup> The Heerlijkheids them-

selves did not technically operate on a hereditary basis, but often remained within a family lineage.<sup>62</sup>

All of which point to an inherent and assumed coercive relationship between the lord, who can levy taxes, rents, and fines, as well as exact punishments, evictions and alterations to the landscape. All of which are reflected in how the spatiality of the parcel and the polder are oriented; to the efficiency of supervision and administration to such ends.

### **Establishment of the parcel plot; land created to be owned**

There was not as much a history of commons being enclosed or appropriated into private land ownership in Holland as there were in other parts of Europe, or even in the east of the Netherlands, as there was not a strong presence of common lands prior to the parceling of the land into plots.<sup>64</sup> But rather that the creation, or reclamation, of the land itself coincided directly with the creation of the parcel—the establishment of the parcel as a propertied section of land, with dimensions and instilled ownership—the leasing of that land, and the placement of the land onto the market.

Most of the land in Holland, and especially in the *Groene Hart* and Schieland, were reclaimed from marshes and lakes on *copen* agreements between the Count, the landowners, and the *ontginners*, or ‘reclamators’ that would ‘explore’ and reclaim new areas by digging ditches and constructing dikes.<sup>69</sup> (These ‘reclamators’ were also sometimes referred to as *kolonisten*, or ‘settlers’ or ‘colonists’.) The reclamators were given ownership of the land and given the status of ‘free farmers’ in exchange for converting marsh lands and lakes into arable land.<sup>70</sup>

The period between 1100 and 1300 is referred

67. Paping, R.F.J. “De Groningse verpondingsregisters”. *Broncommentaren 4: Bronnen betreffende de registratie van onroerend goed in Middeleeuwen en Ancien Régime*. Instituut voor Nederlandse Geschiedenis, 2001. pp. 310-340

68. de Vries, Jan. *The First Modern Economy. Success, Failure, and Perseverance of the Dutch Economy, 1500–1815*. (Cambridge: Cambridge University Press, 1997).

69. Classens, Michael. “The Matter of Matter: Making Prop-

erty in the Holland Marsh”. *Society & Natural Resources*, 31:2, 246-259, (2018). p. 254

70. Buitelaar, ALP. *De Stichtse ministerialiteit en de ontginningen in de Utrechtse Vechtstreek*. (Hilversum: Uitgeverij Verloren, 1993). p. 12-13

71. This in part led to the battle of Vlaaringen in 1018 during the earliest phases of the land reclamations, in which an alliance of nobles from throughout the empire attempted (unsuccessfully) to invade Holland.

to as the ‘Great Reclamation’ to reflect this campaign encouraged by the Counts of Holland and the Bishop of Utrecht to attract settlers to convert the land.<sup>70</sup> The Counts had actively recruited settlers from across the Holy Roman Empire (of which Holland and Utrecht were a part), likely lured by the promise of land ownership and the exemption of taxes during the reclamation phase. These ‘unexplored areas’ were issued by the landowners (typically the lords of *heerlijkheden*) according to a fixed size.<sup>70</sup>

The size of a plot was typically 1250 meters in length by 113 meters in width. Parallel ditches were dug to drain the water, and a system of quays and dikes would be constructed as reclamation took place so as to also prevent flooding into neighboring plots that were still under construction, and to integrate into the drainage system of polders and canals.<sup>69</sup> The long rectilinear plots followed the pattern which operated best for drainage, but also conveniently worked to demarcate easily the bounds of property, and to assess sizes for taxing.

The rational logic of an easily planned, leaseable, efficient and calculable space has become the defining characteristic of the Dutch landscape. The majority of the Schieland landscape that we see today is constructed during this time, or has been built upon spatial patterns that derive from this period, carrying along the embodied logics of measurable, propertied space.

Once this land was created, it was also able to be sold to others— to be put on the market.<sup>64</sup> In addition to this the *heerlijkheid* itself, which managed the land, could also be sold (as it was not uncommon for nobles to sell their *heerlijkheid* to other nobles, or to wealthy merchants or regents who began to accumulate wealth in the trade-liberalized cities in the 17th and 18th centuries).<sup>64</sup>

It is somewhat unique in the history of primi-

tive accumulation in Europe, that in Holland, the history of land creation is one of creating (reclaiming) the land at the very same moment that the land becomes a commodity on the market as a dimensioned (ordered) space. The markings and the intentionality of constructing this space, and constructing it in the ways and shape it is constructed, (and relation to surrounding space), is inherently then tied to this campaign of creating leaseable, taxable, governable, agriculturally productive land— and simultaneously as property (commodity) to be placed upon the market. The bodies that inhabit these spaces are too then oriented towards the market, the dimensions it reads, and the productivity it assess as possessing value.

### Measuring space— recording into the ledger and the *kadaster*

The tax system within the Dutch Republic followed closely in many ways to the precedents set in the Habsburg period, (further illustrating the monarchical origins of systems of governance), and taxation remained somewhat decentralized and localized.<sup>72</sup> Holland was one of the heaviest taxed nations in Europe, and the ability for this to be sustained was due in part to that the municipal and provincial authorities possessed more legitimacy than the central authorities. The taxation system was in many ways what underpinned the strength of the Dutch Republic.<sup>73</sup>

Whereas rent money was the largest source of income for the lords and landowners, the largest source of revenue for the state came from transaction taxes, followed by the *verponding*, or real property tax— a tax which takes into consideration the total real value, and potential to create value, from the land.<sup>67</sup> This would take occur as a rate placed upon the rental value of the property, and would reference to land registers which would have surveyed the provinces at select moments in time.<sup>67</sup> The *verponding* were taxes placed upon

72. Wakker, Willem Jan; Paul van der Molen and Christian Lemmen. “Land registration and cadastre in the Netherlands, and the role of cadastral boundaries”. Netherlands Cadastre and Land Registry Agency. *Journal of Geospatial Engineering*, Vol. 5, No.1 (June 2003), pp.3-10.

73. Sillem, Jérôme Alexandre. “Jaargang 41”. *De Gids*. (Amsterdam: P.N. van Kampen & Zoon, 1877). [https://www.dbnl.org/tekst/\\_gid001187701\\_01/\\_gid001187701\\_01\\_0017.php](https://www.dbnl.org/tekst/_gid001187701_01/_gid001187701_01_0017.php) Accessed 20 April, 2019.



'Map of the Hoogheemraadschap [water board] of Delfland, measured by the surveyors' 1712, C.Na Nicolaa (Archives of Schieland and the Krimpenerwaard Hoogheemraadschap)

The long rectilinear parcel plots can be seen running perpendicular to the drainage canal of the Schie, and situated within the larger polder areas, which are labeled as such. Seen in the bottom is an illustration of the manor house of this area.



Measuring chain used for determining *verponding* (land tax) "made of sections of galvanized iron or steel wire, 3 to 4 millimeters thick. The ends of the sections (links) are fitted with eyes and linked together with rings." 1850-1900 (Rijksmuseum Boerhaave)

the landlords, who would often pass them along to the tenants.

Within this model the taxing and leasing of land required systems of measuring, recording and archiving the land into *kohiers* within a *maatboek*, or documents within registers, that could serve as a reference tool, or technology— a legitimizer of the given rate.<sup>72</sup> Not only was the physical space measured, but also the value of that space within this financial market was also measured, and demarcated— written down. The act of recording this measurement, bringing it into existence even, allows it to be upheld and enforced as the procedure, the law, of the land.

The first tools used by the Land Registry were quite analog: simple ropes and knots, before being replaced by measuring chains.<sup>74</sup> Prior to the implementation of the meter each Dutch region used a slightly different measuring technique which caused for confusion and inefficiencies within the system.<sup>74</sup> It was during the Batavian Republic (1795-1806), a de facto client state of Napoleons French empire, that massive centralization overhauls took place in governmental administration.<sup>67</sup> It was during this time that the *verponding* was replaced by the land tax within the *kadaster* system, which simply sought to unify the existing system into a coherent whole. The books and maps became more standard, the measuring devices became more standard and the metric system was introduced as universal.<sup>72</sup>

The *kadaster* served to be a more efficient and uniformly understood language that could move laterally across space— necessary as the centralization occurred over a massive territory now: the French Empire. In 1810 and 1811 an attempt was made to map the entire territory of the Netherlands, recording data about each plot, owner and the *oppervlakte*, or ‘surface’— meaning the shape, size, use and appearance.<sup>72</sup> It wasn’t until 1832 however, after the French rule, that the first *kadaster* cards were put

into place— coinciding with the implementation of the civil code and the introduction of the relationship between land accounting and mortgage accounting.<sup>72</sup> A coinjoining becomes visible between the structure and dimensions of the landscape with the operating system of these recording mechanisms, tools, logics and apparatus.

The power behind this taxation of course is simply force— military power— the ability to raise an armed force to intimidate by compulsion the paying of rents and taxes. This show of force goes back to the earlier periods of the Counts, and continued through the republic. Power needed to reassert itself only in brief moments, but was otherwise ‘absent’— experienced merely as a potential of exerted sovereignty and ownership— exemplified in moments in which tax rebellions were put down with force, wherein persons were killed or publicly executed.

Most notoriously was the *Pachtersoproer*, or the Tax Farmers Rebellion of 1748, in Amsterdam, in which tenant farmers displayed their extreme dissatisfaction with the wealth the regents and landed nobility accrued from their taxes.<sup>75</sup> The uproar began in Groningen where nobles houses and tax collectors were attacked, and in Amsterdam stones were thrown at administrative buildings and porcelain goods thrown into the canal.<sup>75</sup> As a result two men and one woman would be hung publicly— which stirred up more outrage which was quelled with direct attacks from the *schutterij*, (a private police force mainly consisting of wealthier citizens of the city), killing nearly 50 people.<sup>75</sup>

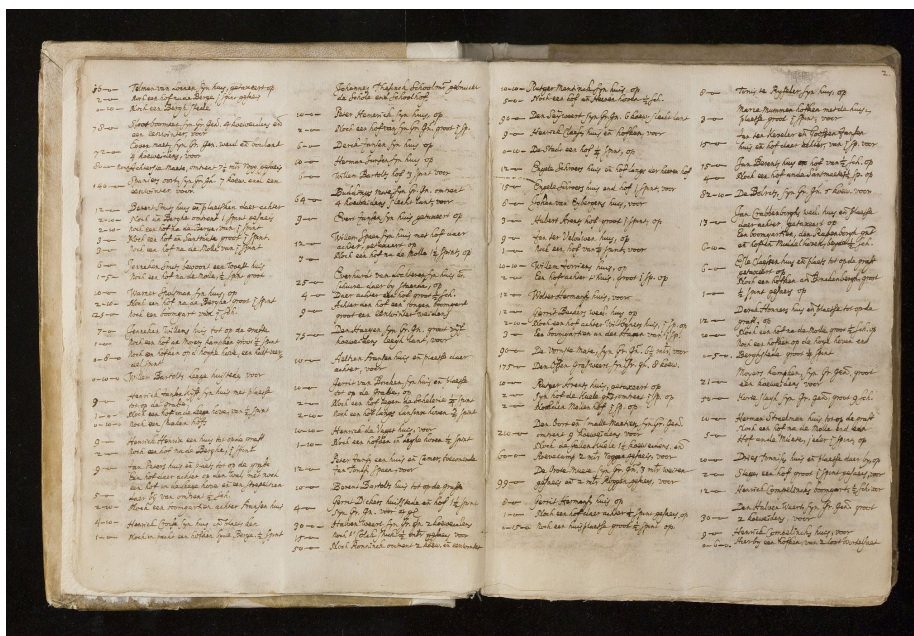
This spectacular violence is embodied and enacted on an everyday basis not through the demonstratable show of force, but through the structuring and ordering of the landscape. When the arms return to the *Binnenhof*, the parcels remain— confining, binding, the tenant to the dimensioned space— the space one

74. *Permanent Collection*. Belasting en Douane Museum, Rotterdam.

75. Brugmans, H. *Geschiedenis van Amsterdam*. (Utrecht: Spectrum, 1972). p. 1662-1669



'Quelling the riots in Amsterdam after the execution of rioters in 1748' 1748, J. Smit (Tax and Customs Museum) The 'Tax Farmers Rebellion' was a series of revolts across the country that escalated in Amsterdam and resulted in the killing of nearly 50 people by the private city militia, the *schutterrij*.



'Copy of *verpandingskohier* [land tax registry] of the county of Zutphen over the period 1643-1651' ca. 1690 (Archives of Erfgoed Centrum Zutphen)

"Listing the names of persons that are subject to taxation and the amount of tax owed."

can be found, the space one cannot leave, the space (soil) the tenant relies upon for their subsistence. The tenant is recorded into the ledger.

### **Peat extraction, farmer evictions; land as energy commodity**

A trending development of Holland between the 12th and 19th centuries is the merging and dissolving of distinction between landed monastic nobility, the merchant class of the port cities, the administration of cities, and that of the state;<sup>74</sup> in both senses that the wealth accumulated via inheritance and that accumulated through trade held access to power, and that decisions made on a national or city scale involved close collaboration, or overlap, between public officials and private business. One of the most dominant examples of the implementation of this top-down power, and collaboration of merchant-business leaders and noble political leaders, was the appropriation of land, including that of farmers, for peat extraction—to be mined as a commodity and energy source.

Between the 16th and 17th centuries large scale peat extraction occurred in poldered lands all across the Netherlands (especially in Holland, Friesland and parts of Groningen), turning formerly reclaimed land into large lakes.<sup>75</sup> It was already old knowledge that dried clogs of peat were a good source of fuel and everyday people were already scrapping off the tops of the land to heat their homes.<sup>75</sup> As markets became more prominent, top peat surfaces were removed more and more rapidly and the groundwater began to lay in the fields. Beyond that the lower layers of peat, the drag peat, would be removed and then large pools of water would cover what used to be arable land within the polder.<sup>75</sup>

Many farmers would be evicted as the land-

owner could make more money from peat extraction than from leasing the land. Farmers would then be re-employed as peat diggers and peat transporters. Large swaths of poldered land to the north of Rotterdam, surrounding the villages of Hilleegersberg, Schiebroek and Kralingen were transformed into this fractured extracted landscape.<sup>76</sup>

The landowners encountered a problem however; when the land had been entirely mined for peat it no longer had much value, or the potential to create value—it was nothing more than a diked in pool of water.<sup>76</sup> Therefore this flooded polder landscape north of Rotterdam sat abandoned during the 17th and 18th centuries. Adjoiningly, the peat diggers lost their source of income, on top of the diminished ability to become a farmer hence the amount of farmland available had been drastically reduced.<sup>76</sup>

So much peat had been removed from the area that it began to cause concern for the foundational structure of nearby roads and villages. The ground was sinking all around and increasingly prone to flooding.<sup>77</sup> On account of this, and in conjuncture with the perceived value of the land as the city of Rotterdam seemed likely to expand, plans were made to re-polder the lands.<sup>77</sup>

Wealthy merchants from Rotterdam, in active collaboration with city officials (who also had strong ties to trade and business in the city) put up the capital for the projects.<sup>76</sup> In roughly 1780 large swaths near Hilleegersberg were re-drained with the help of a plethora of windmills.<sup>76</sup> Draining of nearby lands would continue throughout the next hundred years, the largest project, the Prins Alexanderpolder, was completed in 1874.<sup>76</sup> The drainage pattern of parallel ditches, canals and parcels were drawn up all over again, and the land put back on the market—but with the advan-

74. See: Hoekse en Kabeljauwse Conflicten: a series of wars and battles in the County of Holland between 1350 and 1490 fought over the title of count of Holland, acting out a power struggle between the merchant class in the cities and the ruling landed nobility. (Brand, Hanno. *Over macht en overwicht: stedelijke elites in Leiden: 1420-1510*. Universiteit Leiden. Dissertation. 1996.)

75. Gerding, M.A.W. "Vier eeuwen turf winning, De verenigen in Groningen, Friesland, Drenthe en Overijssel tussen 1550 en 1950". *Landbouwniversiteit, Wageningen*. Dissertation. 4 Sept. 1995.

76. Camp and Provoost. *Stadstimmeren*. pp 84-85

77. Hoogheemraadschap Schieland en de Krimpenwald. (org.) "De Gschiedenis van het Hoogheemraadschap van Schieland". 2015. <https://www.schielandendekrimpenerwaard.nl/ons-werk/historie/schieland> Accessed 20 April, 2019.



'New Map of Schieland and the Krimpenwold' 1750 (Archive of the Hoogheemraadschap of Schieland and the Krimpenerwaard) Seen to the north of Rotterdam are 'peat lakes' created from the extraction of such an extensive amount of peat from the polders, to be sold as a fuel source, which sunk the land below ground water levels.



'Turfwinning [peat extraction], via baggerbeugel [dredge bar] in a peat bog' 1734, J. Spruytenburgh (Regional Archive Gooi en Vechtstreek in Hilversum)

tage now of being more centralized, ‘planned’ and orderly than before.

Through this absurdist exploitative “creative destruction”, as Joseph Schumpeter elaborated in his 1942 book *Capitalism, Socialism and Democracy*,<sup>78</sup> the land around the Rotte is noticeably lower, by a few meters, than the surrounding land and water.<sup>77</sup> Schumpeter describes this perpetual bullying of the landscape and those who are made to be reliant upon it (the farmers, who became the peat diggers), as a “process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one.”<sup>78</sup>

A very potent example of the ability of power to utilize the landscape as a tool in the creation, negation and recreation of value— completely undeterred, and even in stark rebutal to Locke’s famous understanding of the value of the land being a product of the labor of the person who tills it.

Here the landscape, the ordering, the eradication of order, and the reassertion of planning and reordering, become a game exercised from power— the actions to dictate the environment not arriving from the product of labor, but from the movement of capital. The tenants of the land are responsive in this situation— they are evicted, employed, unemployed and then made back into renters.

### **Appropriation of recreation; Kralingse Plas peat lake**

Strategically left un-repoldered within this landscape were the ponds in Hillegersberg and the Kralingse Plas.<sup>79</sup> Both areas being the historically wealthy suburbs of Rotterdam in the 20th century, and remain so today. These city-park lakes are direct offspring of the peat bogs— an intentional design to serve as recreational areas for affluent residents to enjoy from their villas— in addition to it being too expensive to drain Kralingse Plas as it was the

deepest of the peat ponds.<sup>79</sup>

Later the urban planners GJ de Jongh, (who presented plans for the expansion of Rotterdam into the neighboring polders in the late 19th century), and Marinus Jan Granpré Molière, proposed developments for the Kralingse Bos, or forest, to turn the Plas into a semi park-like recreational area. First developed by de Jongh in 1910, utilizing land extracted from the Waalhaven, but refined by Molière in the 1920s, the park was conceptualized to be a park not for the elite but for the common folk who were in deperate need of green spaces as a respite from the urbanizing city.<sup>80</sup> Molière explicitly distanced himself from the Romantic landscape style, intending not to construct a winding bourgeoisie false nature, but something more akin to a forest.<sup>80</sup> Albeit that the language used was democratic, in reality the park, much like Olmstead’s famous parks in the US, reflected and served the needs of the upper class more than the stated aims of serving the common city dwellers. The Bos retained grand tree lined boulevards, spaces of display and simultaneously designed villas dotting the landscape— all drawn, pre-meditated, planned and structured from architectural renders.<sup>80</sup>

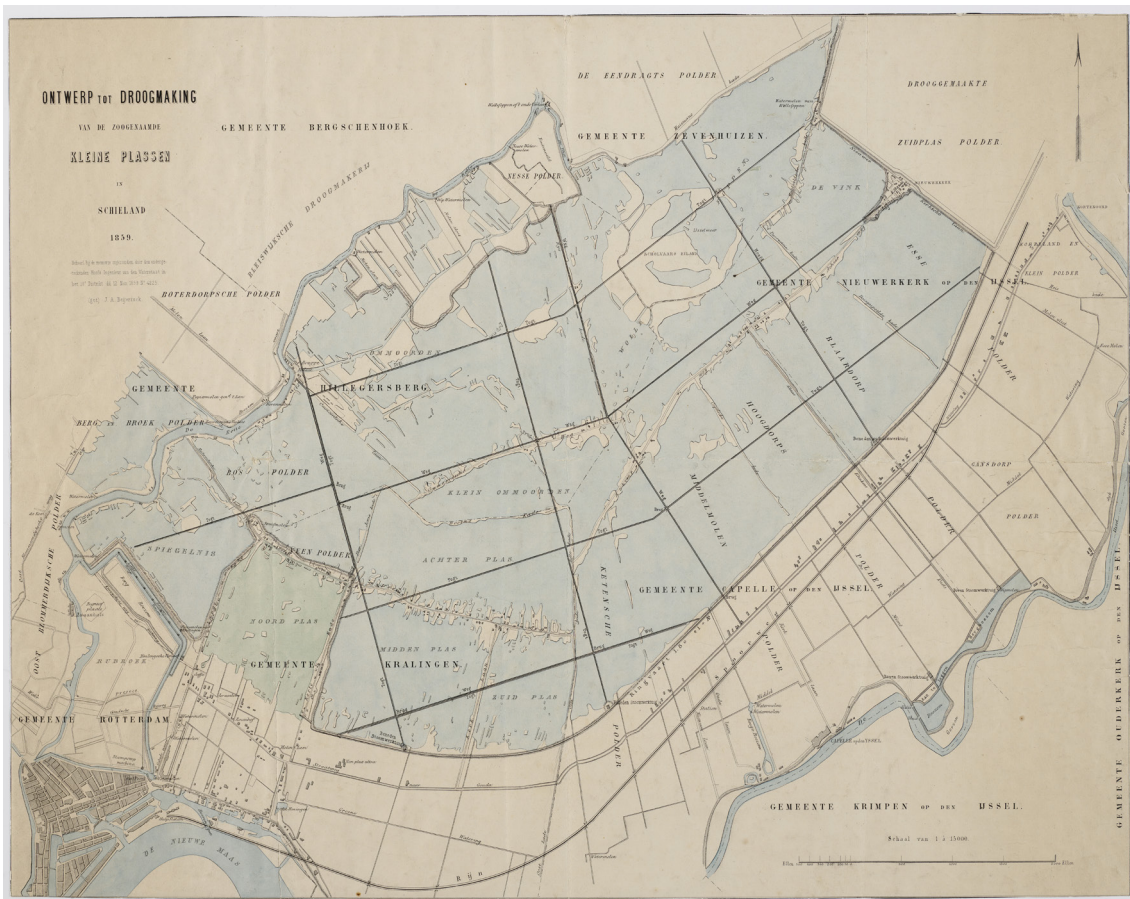
Not to mention that the park was exclusively bordering the wealthiest areas of the city, Kralingse Plas acted similar to Rose’s Water Project in that it appropriated the concept of hygiene and improvements for the working class in order to reconstitute and accumulate additional spaces of display and leisure for the upper class. When seen within the creative destruction lineage of these sites of extraction and recreation, the Kralingse Plas and the ponds of Hillegersberg constitute the other mode of reproduction— that of the social production of space, as contrasted to the commodification of space as per the re-parcelling and eventual construction of modernist housing blocks in Alexander Polder.

78. Schumpeter, Joseph. *Capitalism, Socialism and Democracy*. (New York: Haper & Brothers, 1942). p. 81

79. Nederlands Architecture Institute (org.) “Prins Alexander Polder: 1865-1874”. *Polders: The Scene of Land and Water*. 7 Sept. 2005. [http://static.nai.nl/polders/e/polders/alexander\\_e.html](http://static.nai.nl/polders/e/polders/alexander_e.html) Accessed 20 April, 2019.

80. Foundation Natuur Centrum Rotterdam (org.) “Kralingse Bos: De geschiedenis”. 5 Jan. 2018. [http://natuurcentrum-rotterdam.nl/natuur/natuurgebieden/parken/parken%20rotterdam/kralingse\\_bos/kbontst.htm](http://natuurcentrum-rotterdam.nl/natuur/natuurgebieden/parken/parken%20rotterdam/kralingse_bos/kbontst.htm) Accessed 20 April, 2019.





'Diking-up and draining of the Kleine Plassen in Prins Alexander Polder in Schieland' 1859, J.A. Beijerinck, Principal engineer of Public Works (Archive of the Hoogheemraadschap of Schieland and the Krimpenerwaard) The repoldering pattern that will dictate the new layout of the Prins Alexander district. On the left side of the map, highlighted in green, is the Noord Plas, the only lake left undrained, which will become Kralingse Plas.



'Empty Prins Alexander Polder, showing the new district Het Lage Land in background, by architect Lotte Stam-Beese' 1968, H.M. Vrijmoet (Rotterdam City Archives)

## chapter 4.

### Embodied logics in urban expansion: Oude Noorden

When the polder areas on the periphery of Rotterdam began to urbanize, especially in the later half of the 19th century, the logic of the ditches became the basis for the layout of streets and parcel plots for housing. This chapter outlines in detail what has been described in previous introductions: the carrying over of logics embedded within the structure of the dimensioned space of the polder parcel. This continues our examination of what does the space, that derives from the logics of property ownership and ordering, to be in accordance with and orientation towards wealth production, *do* to the inhabitant of that space, even, and especially, as it transforms across time into other spatial arrangements.

Here we see the logics embedded within the polder parcel be the basis for mass housing developments and street patterns of urban expansion, along with the technologies of water, sewer and other lines, that serve to fix spatial arrangements and systems of order. By what extension do these ordering systems continue this logic, and these assumptions, in explicit ways, and also in ways that are less visible on the surface. This returns us to a reflection on the slow and unfolding violence of space, and the related networks of technologies of pipes, upon the relations within a landscape. By that, a question is asked about how relationships between inhabitants of an environment to each other, to themselves or to the envi-

ronment around them, is mediated by these inherited spatial logics and network of technologies. If these arrangements are oriented not to their benefit, but either to others, or by 'other things' which are not in their control (things that are ambiguously directed/undirected, such as the dimensions of the polder parcel and the assumption, the compelling force, that things should work in order from a central point) then what does this environment do to them?

Also seen here again is a field of forces in which actors, such as the City Architect, and other municipal engineers, speculative developers and so on, are acting within a landscape that is compelling itself to be reconstituted and its life sustained. Many of their actions and designs are oriented towards making the functions of the city (and the wealth generation of the port) continue and sustain. This involves in the 19th century massive plans to expand the city (alongside the port expansion, and population increase), and a wide array of municipal services to oversee and consolidate the management of this expanded, and more complex, urban system.

#### Peripheral jurisdictions: 'Polder Republics'

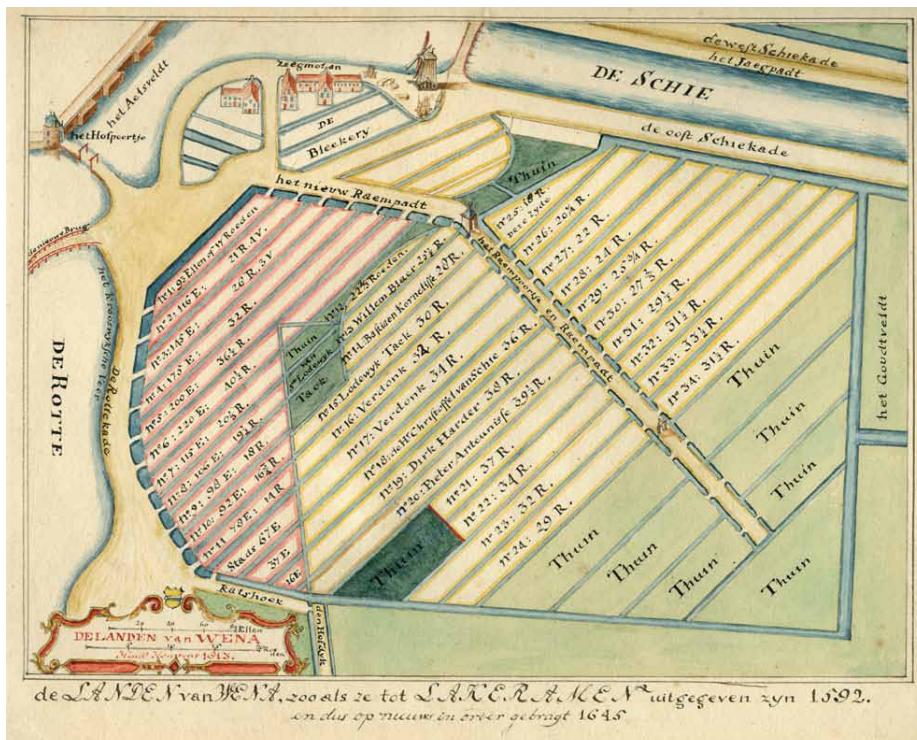
In 1412 Count William VI granted Rotterdam more elaborate 'city rights', that made it possible for the city to prohibit any business from operating within a zone of 1100 meters outside the city.<sup>81</sup> In 1593 it was added that no tree may be placed within 375 meters of the city walls, for military purposes.<sup>82</sup> This 'rural character' of this *banlieu*, or outside border, remained until 1590 when Rotterdam moved the *lakenramen*, (a textile industry that used wooden frames to bleach and dry sheets and linen), to the Weena by current day Hofplein.<sup>82</sup> The city had for the next few centuries attempted to manage and control the development of

81. van der Laan, Gerrie. "Het Oude Noorden van Rotterdam". *engelfriet.net*

82. Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955, uit de geschiedenis van van de dienst van gemeentewerken te Rotterdam*. (Rotterdam: Geemete Rotterdam, 1955).



'Drawing of Rotterdam and all it's buildings' (inset) 1694; Vou, Johannes deHooghe, Romeyn de (Archives of Hoogheemraadschap of Schieland and the Krimpenerwaard) Seen here is the meandering Rotte with businesses along its edge. In the center is the *lakenraamen* of the Weena, with countryside estates and gardens.



'Territory of the former Hof van Weena arranged as a *lakenraamen* for the textile industry' 1645 (Rotterdam Municipal Archive)

the so-called 'Polder Republics' while needing also to find space for auxiliary and necessary industries. A dense development arose between the Hofdijk and the Rotte, which was parceled in 1643 into 38 plots, each 30 to 39 feet wide and 126 to 232 feet deep.<sup>83</sup> The city struggled against this 'unplanned' and polluting area of which the bleaching and lead production were most notorious. The city was attempting to manage the growth of these industries in and around the historic triangle, but still faltered in centralizing, locating and enforcing restrictions upon them. The pushing of them out of the city, into the legal gray zones of the 'polder republics' merely dislocated the polluting industries upon which the city was still dependent.<sup>82</sup>

It was not until the plan in 1590 for the lak-enramen district in Weena was made that the city first attempted, by purchasing areas outside the city triangle, to centralize the location of a specific industry. From this moment the city council had taken over the control of the Bloomersdijk polder from the water boards. It was not until 1719 that all restrictions were completely removed on industries being able to practice in the area, which persisted a somewhat ambiguous policy and jurisdiction over the area in the intervening centuries.<sup>82</sup> Alongside these polluting industries which found their place along the waterways of the Rotte and the Schie were the so-called 'country houses' that were situated also along the waterways, with views out across the mead-

ows.<sup>86</sup> These holiday houses developed linearly on the outskirts of Rotterdam in the Bloomersdijk, Rubroek, Cool and Kralingen polders. Some larger than others, they differed from the more urban bourgeoisie houses in that the garden was in the front, the house was wide and shallow and was situated in the rear of the lot.<sup>86</sup> Landowners were typically wealthy merchants or in some associated trade or business, such as timber, and were looking for a spacious country lifestyle. Because there were only a few roads in these polders the houses would develop in long linear lots facing the road, which was also typically a dike.<sup>86</sup>

As development increased in the 19th century 'country lanes' began to appear, which were essentially footpaths that ran perpendicular to the dike, between the fences and ditches that bordered the properties of the country houses.<sup>86</sup> Off of these lanes would develop small one room dwellings which were built not leisurely residence, but because the inner city was crowded and land was cheaper in the polder. These dwellings often took on the form of *hoffe* houses, except without the courtyard. As a result, and in combination with a lack of sewage or drainage systems, the polder ditches became the site for depositing of waste and thus cholera outbreaks began.<sup>86</sup> This began to lead towards housing reform and institutionalization of planning processes and regulatory oversight. Areas within the inner city were quickly becoming slums as people, with few means, were drawn to living in the city, which

83. Recihenfeld, Loes. *Het Oude Noorden: Het ontstaan van een Rotterdamse wijk 1870-1910*. Dissertation. (Rotterdam: 1987). 1 Rotterdam foot is equivalent to 0.2823 meters.

84. Bleaching would be done by spreading laundry over what was called a bleaching meadow. The industry was seasonal, as it relied on good weather, but in addition to the natural bleaching of the sun, chemical agents were added which accelerated the process. The linen would be treated with lye, and then boiled with potash, using peat as fuel. Leftover lime residues were then removed by treating the textiles with acidified milk, and from 1784 onwards, sulfuric acid. The lye and acid would contaminate the fields and would eventually make their way into the water. (Schrama, Gerard. "Blekerijen en wasserijen" 22 Jan. 2016. <http://www.genealogie-stamboom-schrama-gravenmade-bollenstreek.nl/Blekerijwasserij.htm> Accessed 20 April, 2019.)

85. White lead was one of the oldest artificial pigments used for the paint industry. In the 1600s the production of this expanded widely in the Netherlands and most notably in

Rotterdam. In Rotterdam it was easy to import the raw materials and then to again export the finished product, most of which went to France. The lead ore coming from England, Wales or the Rhineland, was melted and cast into long strips. Once cooled these bars would be placed inside of barrels full of beer, vinegar or urine, stacked five barrels high inside of warehouses and then covered in manure. The manure served to ensure the urine vapor would penetrate the lead and yield the lead white. After five weeks the remnants would be whipped and left to dry in the open air before being ground and mixed with chalk. The final form was as small balls that would then be sold. These balls could be mixed with linseed oil to make white paint, used for traditional oil paintings or for the painting of house exteriors and window frames etc. (Herweijer, Cees. "Rotterdam Centrum Voor Loodwitindustrie". *RTV Rijnmond*. 21 July 2016. <https://www.rijnmond.nl/nieuws/144343/Rotterdam-centrum-voor-Loodwitindustrie> Accessed 20 April, 2019.)

86. Camp and Provoost. *Stadstimmeren*. pp 50-53



'Bergweg leading out of the city' 1910 (Rotterdam Municipal Archive) Seen are the remnants of wealthy 'country houses' on the former Bloomersdijk leading to Hiligersberg.



'Bloomersdijk windmill' 1875 (Rotterdam Municipal Archives) Seen along the Rotte in the industrial section near current day Noordplein. Shortly after this photo is taken the windmill will be demolished and replaced with a steam powered pump.

provided hardly any space for them to be. Developers took advantage of this and built back-to-back houses and basement dwellings which were extremely poor on ventilation, light and adequate living space. There were neither building regulations or inspectional services to monitor conditions. The Board of Health had its earliest origins as an initiative of documents and engineers in 1854 who made reports on the situation in order to file complaints with the municipality.<sup>87</sup>

As a result of these increasing efforts as well as the water project from W.N. Rose, two types of planning emerged. One was the de-densifying of the inner city in which slums were destroyed, wide roads created, and canals filled in. The second was to expand the city into the nearby polder republics to replace the ad-hoc collage of workers houses, country houses and businesses into a more structured and directly administered section of the city.<sup>88</sup>

It was around this time that formalized professions of architects, engineers, doctors, planners and so on emerged.<sup>88</sup> That what was within the city and the professions direct control increased, and urban order could be reconstituted through an array of institutional tools and devices. This reconstituted urbanism was entirely more sustainable, and was a response to the deterioration of the city which expanded beyond the capacity of the more laissez-faire approach of the 18th and early 19th century city administration.

### **Technology of urban expansion: steam powered drainage**

To expand into the new polders required a technical force however. The draining of the polders had up to that point relied on manual labor from farmers and thus remained too wet and soggy for construction on a mass scale. It

became possible only when mechanical draining devices were introduced.<sup>89</sup>

The first attempts at constructing a device that operated on a power level stronger than that of a windmill was the introduction in 1776 of a steam powered pumping mill in the Oostpoort of Rotterdam.<sup>89</sup> Steven Hoogendijk, one of the founders of the Batavian Society for Experimental Philosophy— an organization to develop and promote new science and technology that could be implemented in industrial purposes— designed the steam pumping station.<sup>90</sup> While the engine worked but the wooden pumps were not able to withstand the pressure and failed. Roughly ten years later James Watt, the famous English engineer, developed a similiar but improved steam pumping station at the Blijdorpse Polder, which neighbored the Bloomersdijk Polder.<sup>91</sup> The constant flooding that occurred in these polders could be drained in a radically decreased period of time with the functioning pump, however the agricultural gains from being able to drain the polder were not enough to sustain the costs of running the pump and was therefore decommissioned again in 1791.<sup>91</sup>

But being the first instance of a successful mechanical pump, it set the precedent for future pumps that would come later in the 19th century when the polders most certainly had to be drained for the mass construction of housing. The pumping devices were otherwise wind powered watermills— the site of the oldest mill, from 1442, at the current day Noordplein, discharged the excess water from the Bommersdijksepolder and polder Blokland into the Rotte.<sup>89</sup> This mill became the site of a new steam pumping station, which was completed in 1894— further augmented in 1924 by an electric motor which was built next to the pumping station.<sup>89</sup>

87. Rigter, R.B.M. "Met raad en daad: de geschiedenis van de Gezondheidsraad 1902-1985" *Erasmus University Rotterdam*. Dissertation. (23 Sept. 1992).

88. Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955* pp. 29-35.

89. *ibid.* pp. 81-85

90. van der Aa, A.J. "Biografie Steven Hoogendijk", *Biographisch woordenboek der Nederlanden*. 1867. [https://www.dbnl.org/tekst/aa\\_\\_001biog10\\_01/aa\\_\\_001biog10\\_01\\_0518.php#h1915](https://www.dbnl.org/tekst/aa__001biog10_01/aa__001biog10_01_0518.php#h1915) Accessed 21 April, 2019.

91. van Es, Evelien. "Cultuurhistorische Verkenning" pp. 21-23



'The steam pumping station of the Blijdorp polder' ca 1820; J.Z.S Prey (republished in: K. van der Pols & J .A. Verbruggen "Steam drainage in the Netherlands 1770–1870" 1996)



'Korte Lijnstraat' ca 1900; H. Berssenbrugge (Rotterdam Municipal Archives) With little building regulations and ability for the city to expand dense slums emerged.

### **The 1854 Water Project; appropriation of hygiene**

City Architect W.N. Rose's 1854 Water Project of singels which would form a belt around the city center connecting the polder districts would augment the mechanical draining and serve as a spatial division and basis from which development could occur.

Rose's Water Project plans were developed in 1841, approved in 1854, and implemented by 1862.<sup>88</sup> The most critical technical aspect of the Water Project however was to demarcate the jurisdiction of the city by making the water of Rotterdam independent from Schieland.<sup>88</sup> To accomplish this drainage patterns were rerouted, an independent inlet was created at Oostplein, and many of the ditches were filled in and replaced by sewers and drainage pipes that eventually lead to the Boezem via the singels.<sup>88</sup> The drainage lead to the eastern pumping station at Boerengat wherein the water could then be discharged directly into the Maas.<sup>88</sup>

Thereby the flow of water in the city, and especially in the new polder areas, was ordered and controlled within the cities jurisdiction—albeit through a dense underground network of pipes. It was through this system of integrating the polders to the municipal system that the polders were 'depoldered' and the Bloomersdijk polder essentially ceased to be a separate entity.

The newly planned network of streets followed closely to this sewage and water drainage network, which had in turn followed closely—or directly—from the pattern of the ditches between parcels of land within the polder.

Among the most visual representation of the Water Project are the stately singels: the Westersingel, the Spoorsingel, the Noordsingel, the Crooswijkseingel, and the Boezem. The singels got their stately appearance from the design of landscape architects Jan David Zocher

and his son Louis Paul Zocher.<sup>92</sup> The designs of which were also made in 1854, and also constructed for 1862.<sup>92</sup> They gave provisions for a varied allotment of trees and shrubs in order to articulate an experiential environment of mixed open and secluded zones, in line with the stylistic approach of the time. There existed no parks department at the time, so the maintenance fell under the baggerwerken, or dredging department, and thus accumulated an unkempt appearance until 1880 when horticulturalist D.G. Vervooren was appointed to oversee the landscaping.<sup>92</sup> Vervooren further articulated and realized the romantic vision of the singels as well as expanding their development with the construction of the Proveniersingel, complete with picturesque walking bridges.<sup>92</sup>

The first building construction on the Noordsingel would be the Noordsingel penitentiary, which was built in 1872.<sup>93</sup> This would be followed by the construction of a stately neo-renaissance courthouse, designed by J.F. Metzelaar, which was built in front of the Noordsingel penitentiary in 1899, hiding the penitentiary from view from the singel.<sup>93</sup> Residential development would begin in the 1880s and an amendment to the municipal building ordinance in 1887 stipulated that working class housing would be prohibited from the Noordsingel, reinforcing the meandering romantically landscaped singel, with its stately buildings, to be a representation and site for Rotterdam's wealthy who were seeking more spacious urban housing in the expanding city.<sup>94</sup>

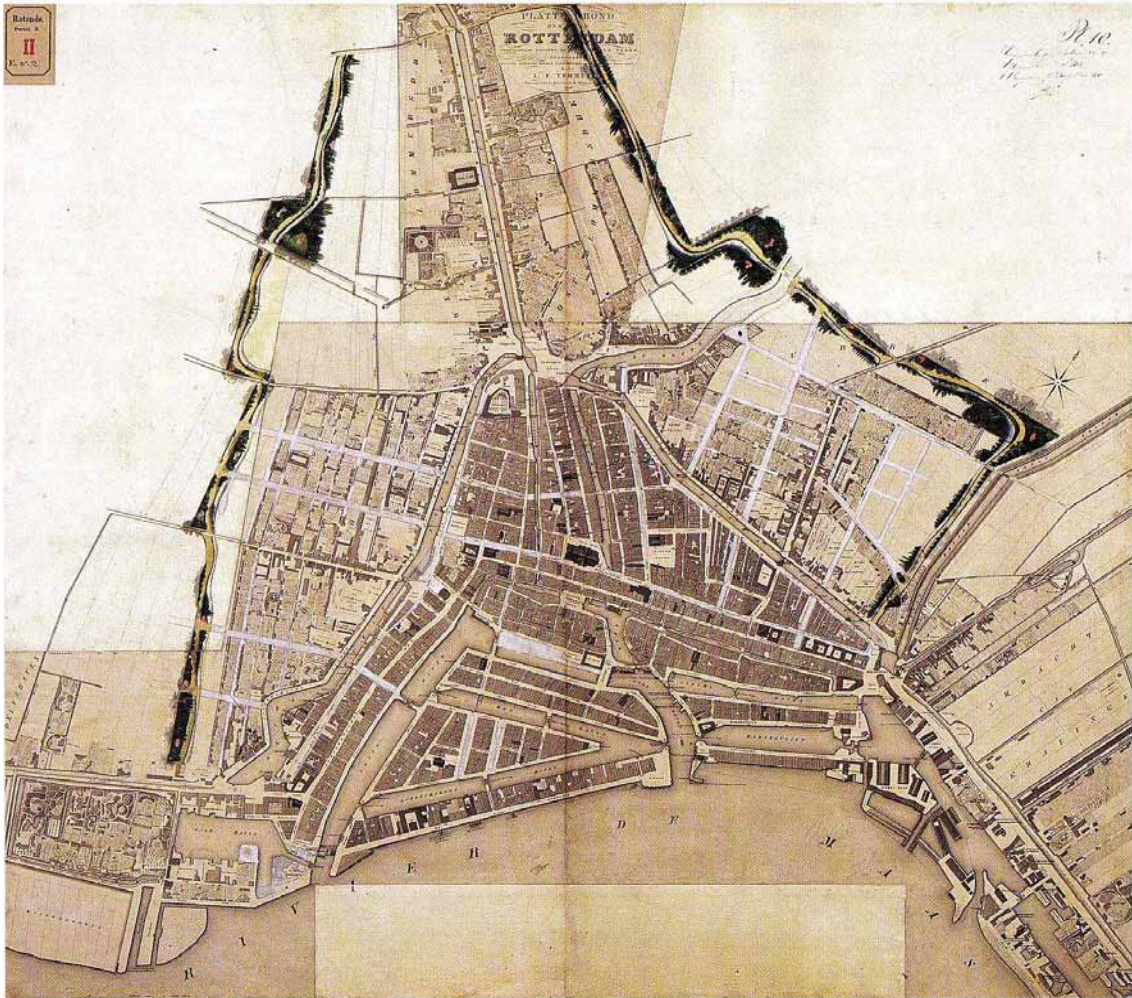
The Water Project was thus the first realized attempt at a coherent urban development strategy in Rotterdam combining the improvement of urban hygiene, water management, an infrastructure for urban expansion, and an arrangement and beautification of space to service a performative and visual metropolis to be enjoyed by the wealthy.

92. van Es, Evelien. "Cultuurhistorische Verkenning" pp. 29-30

93. Gemeente Rotterdam (org.) "Noordsingel, gevangenis en gerechtsgebouw" <http://www.stadsarchief.rotterdam.nl/noordsingel-gevangenis-en-gerechtsgebouw> Accessed 21 April, 2019.

94. Recihenfeld, Loes. *Het Oude Noorden*. pp. 8





'Design for the Water Project' 1854; W.N. Rose (Rotterdam Municipal Archive) On the left is the Westersingel and Spoorsingel. On the right is the Noordsingel, Crooswijksesingel and the Boezem.

## Role of the City Architect

To give some investigation into the actors within this reform movement, one of the most vital would be to look at the first city architect of Rotterdam W.N. Rose (and his successor G.J. de Jongh), who had entered into the position in 1839 at a time when the city was in a dire situation.<sup>95</sup> The population had increased 40% in the first 40 years of the 19th century. The living conditions were increasingly miserable for the non-wealthy, with overcrowding occurring to such an extent that 15 persons could be found to be living in a house intended for only one family.<sup>96</sup>

The power brokers in the city had long delayed a response to the crisis, plans had been postponed, and it eventually became apparent that something had to be done, almost all at once. Rose entered the position at 38 years old, having previously served as a military officer-engineer designing fortifications.<sup>95</sup> During the Belgian uprising he was working in Liege, and in Maastricht in the years after. He then took a position as a teacher at the military school in Delft, where he taught architecture, and then later at the military academy in Breda.<sup>95</sup> His position as city architect appointed him responsible over all the properties of the city: buildings, land, transportation, fire prevention, bridges, locks, dams, roads, dikes, plantations and dredging.<sup>95</sup> An entire staff of carpenters were put under his management. He needs approval for purchases, but is responsible for arranging any needed materials for all projects. He is responsible for making all plans, drawings and specifications for any

projects that are to be carried out.<sup>97</sup>

Rose walked a fine line between delegating powers to the 'bosses' and maintaining authority over even small projects. To push back on the influence of bosses Rose mandated that the bosses provide reports on the status of projects and the number of those employed, as well as prohibiting the beginning of projects without a proper budget being delivered to the architect who had the final say in the decision.<sup>95</sup> In this way Rose was able to consolidate and reinforce the power of the architect in deciding the course of the city's built environment.

Rose left the position as city architect after one of the quay walls he designed for the Boompjes collapsed in 1855.<sup>95</sup> He then went on to be the Chief Government Architecture for the Netherlands.

He was preceded, not directly, but in principal, by G.J. de Jongh who was appointed as head of Public Works in 1879.<sup>98</sup> The position that De Jongh took on was formally headed by Van der Tak before him, but took on unprecedented levels of power under De Jongh as the period in which he operated this position saw a massive increase in both the port and the city of Rotterdam.<sup>97</sup> The cities technical infrastructure grew so rapidly during this time that the design and maintenance of it was to be the single most influential aspect to shaping the city's built environment.

Many of the roles taken under Public Works were aspects that had once lied with the City Architect. Like Rose before him, De Jongh also came from military experience.<sup>98</sup> He had lead a torpedo company in building the mod-

95. Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955* pp. 17-21.

96. Camp and Provoost. *Stadstimmeren*. pp 51

97. It is also stipulated that he must work only for Rotterdam, not any other municipality or private commission— and he must live within the city, (in a house provided to him by the city), and may not even leave without giving prior notice or gaining permission. He is obliged to provide reports to the Management Committee from the City Council on all his work, in addition to managing the archive. His job is all encompassing of almost every duty related to the built environment, of which he has considerable control over, despite his strict supervision from the city. His permanent staff was roughly 80 men, mainly carpenters, masons, and other labor related to the construction and maintenance of streets. In addition he had a bookkeeper with four clerks, draftsmen and

those in charge of maintaining the oil lamps on the city streets. The hierarchies within the department were quite rigid, with 'bosses' maintaining a heavy hand over the laborers, who could quite often work 12 hour days. At one point a strike broke out among the dredgers and they were all fired on the spot. To repair the situation Rose implemented reforms which allowed for promotions depending on the skill of the worker, which defused the strikes into incentivizing hard work. The status of workers would be made visible through embroidered uniforms which would represent their rank within the department. (Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955* pp. 17-21.)

98. Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955* pp. 87-93.

ern fortress in Uitermeer.<sup>98</sup> He studied at the military academy in Breda where Rose had once taught. He designed fortresses, barracks, camps, military hospitals for both government and private commissions, and quickly climbed ranks from second lieutenant to captain and First Engineer at Amersfoort.<sup>98</sup> Not only were both Rose and De Jongh of military experience prior to city building, but also Wittop Konin, the assistant of Van der Tank— illustrating the dominance of military knowledge in the early formations of the architecture and city planning professions.<sup>98</sup>

The efficiency of the planning of Rose, de Jongh and der Tak would prove instrumental in revolutionizing and centralizing the city with urban restructuring plans unlike any that had been attempted in the city previously. By the time De Jongh left his position in 1910 the city had been utterly transformed into a mechanized total system.

### **Drinking water, sewage, and electrical systems**

Coinciding with Rose's Water Project were brief proposals made by Rose for a drinking water system, which was seen as a crucial element in improving city health and hygiene. This wouldn't be implemented for a few more decades however.<sup>99</sup> In 1869 Van der Tak would propose a steam-operated pump and water-filter to be located on the Honingerdijk near the Oude Plantage in Kralingen.<sup>99</sup> This followed from Rose's early plans for a pumping complex to convert water from the Maas to be drinkable and connected with a city-wide network, augmented by a series of wells and corresponding pumps.<sup>99</sup>

According to one of the early drinking water directors, FFM Wirtz, the plans may have been implemented earlier if someone more powerful than the city architect had promoted the plans, as the concept of a municipal water supply remained quite unfamiliar and seem-

ingly unnecessary in the mid-19th century.<sup>99</sup>

The realized plans would consist of four steam engines within a complex complete with a water tower, a boiler house, and a reservoir with a capacity of over one thousand cubic meters.<sup>99</sup> The realization did not occur however until a private operator was found to provide capital for the project. Attempts were made by Gerald Scholten, Director of Public Works, to persuade the Commission of Local Works to work with the private company B. & W. in 1858, but the amount of capital required was not ascertained until 1869.<sup>99</sup> It was then that B. & W. proposed a system under their own management company D.W.Z., with the condition that the municipality would dedicate a portion of their own resources for maintenance.<sup>99</sup>

Upon completion of the deal two of the steam engines were constructed immediately, with the other two to be built as needed. A storage basin of 18,000 cubic meters was built, with provisions for another two for future expansions.<sup>99</sup> Four filters would purify the water— 5,000 cubic meters of water a day. The entire complex would be surrounded by a dike four meters high. The water would then be distributed through a network of iron pipes throughout the city— a total of 50,000 meters in length, with 21 collection points from the river.<sup>99</sup> By 1874 the water supply system was fully implemented, by a cost of 1,855,000 guilders (20 million euros in today's value),<sup>99</sup> and thus the network of underground pipes which further solidified the street network increased in complexity.

Following a cholera epidemic in the late 1870s, Director of Public Works G.J. de Jongh, developed a plan for a city wide sewer system.<sup>100</sup> His plan called for the capacity of the pumping stations built during the Water Project to be increased so that they could pump sewers as well as drain canals.<sup>100</sup> The sewer system would by-in-large follow the same network of pipes used to drain the water into

99. Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955* pp. 81-89.

100. Recihenfeld, Loes. *Het Oude Noorden*. pp. 16-17

the canals. To do this would require filling in part of the Noordsingel—the section that ran between Hofdijk (the former dike line along the current day Heer Bokelweg). The path of the Noordsingel had then extended in a bend to current day Noordplein where it connected with the Crooswijksesingel via the Rotte.<sup>101</sup> A brickwork conduit sewer would be placed along this line in 1891, connecting with a sewage pumping station, and disinfection station, alongside the already existent steam pumping station at Noordplein.<sup>101</sup>

The filling in of the singel was what led to the clearing of space for Noordplein, which was originally conceived to be a landscaped park. By 1899 it had become clear however, on account of the traffic, that the plein would be better utilized as a market square.<sup>101</sup> Thus the vegetable market was moved from Hofplein to Noordplein as this catered more easily to the transportation of produce from the hinterland via the Rotte. The market was expanded in 1910 and planted with elm trees so as to protect the vegetables from the sun.<sup>101</sup> Thus the implementation of a sewage system corresponding to the conversion of open space into a market zone.

Coinciding with these developments were the quickly increasing needs of the port— of which De Jongh was to dedicate most of his attention during his tenure.<sup>102</sup> The modernizing port was in need of electricity to operate its cranes, winches and other machinery, which were still running on hydraulic steam power.<sup>102</sup> The enormous scale of the port needed an energy network that could spread over large distances.

In 1890 construction began on an electricity grid and electrical machinery— which was quite unique in the world's ports at the time.<sup>102</sup> Electricity would not only power the cranes but would also illuminate the harbors, making it possible to work the port 24 hours a day.<sup>102</sup> The electricity would be generated by means

of steam in a site along the Oostzeedijk, sent to large accumulator stations on the Westersingel and the Wilhelminakade to be further distributed.<sup>102</sup> The energy network that would supply the port would also extend to service the whole of the city.<sup>102</sup>

Active by 1891, the electrical system was drastically expanded in 1905 with the construction of a new power station between Schiehaven and Parkhaven.<sup>102</sup> This station would provide power to the Waalhaven and simultaneously to new tram cars in the city.<sup>102</sup> The modernization of the port and the city were conducted simultaneously as a network of harbors, water lines, electric cables, sewer lines, railroad tracks, roads, gas lines and their corresponding buildings, pumps and machinery.

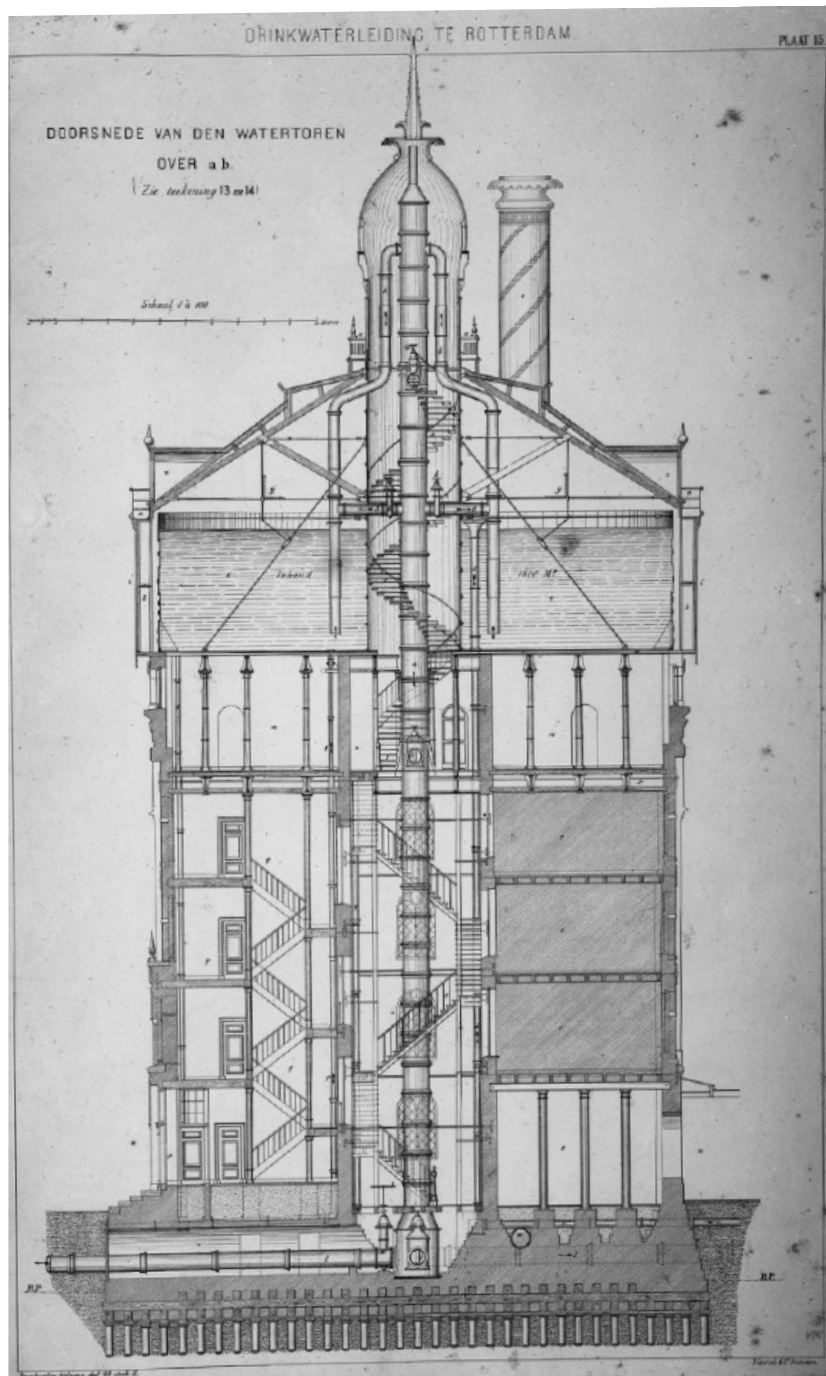
In many aspects this network overlapped municipal and private companies. The arrangement of municipal services under De Jongh allowed for the array of different projects to be managed as a more-or-less coherent project.<sup>103</sup> The municipal works were still housed in one building, from which the parks, harbors, residential housing districts, public buildings, rail tracks and municipal utilities were managed.<sup>103</sup> Additionally the city was successful in the cooperation of private companies in the funding, and in some cases the upkeep, of the infrastructure. The operating of the city laid more in the Municipal Works building and the headquarters of private businesses then in City Hall.<sup>103</sup> The development of the city was all of these parties working as an ensemble.

The expansion of the city and the port operating as a fluid interconnected process in which the mechanization of the urban soil by means of water, sewer, gas and electric lines are integral to the operation and expansion of the port. The soil which connects the buildings to this network, and holds the pilings which maintain their position, and is accumulated and shaped into being the dikes which house the pumps and maintain the water level, is a

101. van Es, Evelien. "Cultuurhistorische Verkenning" pp. 30-31

102. Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955* pp. 117-120.

103. *ibid.* pp. 163-165.



'Water Tower for Drinking Water System in De Esche, Rotterdam' 1972 reproduction drawing; J. Rozema (National Service for Cultural Heritage)

technological device. The soil, a deliverance of politics, becomes an increasingly technological soil.

### **Fixed lines; systems of dependency**

The municipality now had the ability to connect each house, each address, each property to this network of water supply and sewage—a system which ran along the lines of the former ditches—the original demarcation line of property boundaries.

The pipes run underneath the streets, and from here the limits of connection are made—the streets are fixed as the effort and cost to alter the network of pipes is too large. The houses must face the street, the network, the logistical apparatus of the city and its property regime—its orientation, in service of the colonial port.

By facing the street the house, and the inhabitants it holds within it, can be identified, can be written into the records. The place for the house is already given, it fits within the plot which sits upon the street, where it can connect to the pipes, of which the tenant pays for not only the occupation of the space but the access and use of the pipes. The pipes and the water that flows through the pipes is centralized and regulated by the municipal authority—the basic element of everyday life is put into order, controlled from a point, and monitorable.

This is followed by underground gas lines later in the 1870s, telephone lines in the 1880s and electric lines in the 1890s.<sup>104</sup> It was from this movement of reform to make the city more sustainable—sustainable in its drive towards continuing its existence as a site for the depositing of colonial trade, the preservation of privately owned leasable land, and the spatial hierarchy of that becomes into being as the result of those practices. The landstad and polder republics full of crowded slums inhabited by persons who did not own land in the

countryside for lease, and who did not own shares in any merchant company, were the persons and the sites which beared the brunt of the cholera epidemics.

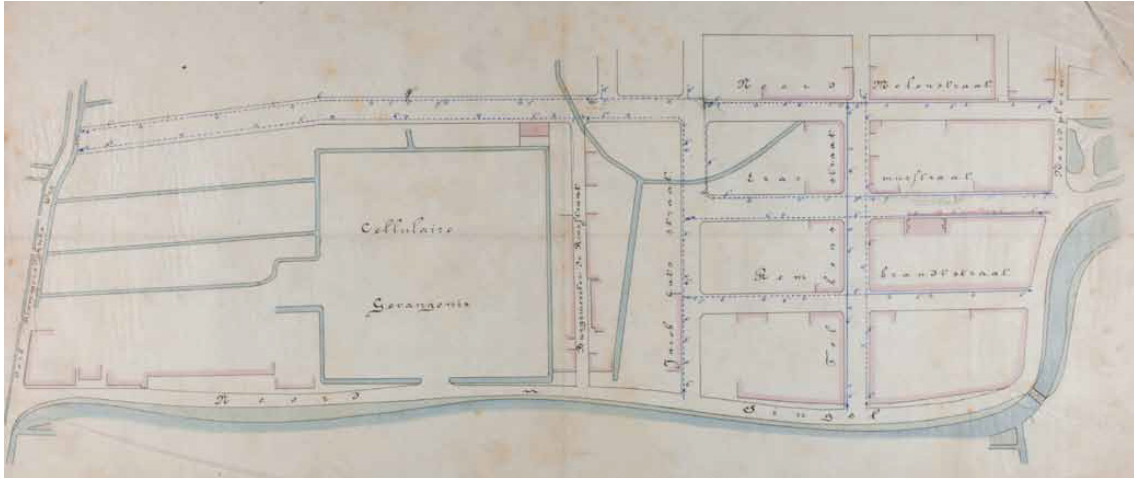
The city expanded and grew, the outskirts became unordered, and industrial businesses worked on the basis of exceptions and informalities. Reform brought the area into order—it recuperated a system which had order and began to lose order back into order. By being in order the businesses could be made more efficient and incorporated more directly within a system of (wealth) production. All the while simultaneously creating new ground for real estate speculation—the realization of value of the demarcation of land, and setting a framework for an environment to house new industrial workers—an environment which connects the worker to a system of dependence and surveillance (by means of being locatable). Logics inherited and perpetuated, by the compelling forces of ordering and orienting towards the maintenance of an ownership hierarchy and the wealth generation of the port.

### **Noorsingel Penitentiary as basis for urban expansion**

Alongside the logistic apparatus of the urban expansion plan and its related network of lines and pipes deriving from the dimensions of the polder parcel, is the ideological influence of the neighboring prison architecture. The Oude Noorden neighborhood would grow around the Noordsingel prison as it was the first state or municipal directed building construction placed in the area of the Oost Bloemerdijk. Designed in 1866 by A.C. Pierson, and constructed in 1872 within a meadow field, the penitentiary was the first of its kind in the Netherlands.<sup>105</sup> The development plans of both the neighborhood and the landscaping of the Noordsingel would take the position of the prison into direct account and would use

104. Laan, Jan. *Werkstad: 30 Industriële monumenten in Rotterdam*. (Rotterdam: Stichting Industrieel Erfgoed Rijnmond, 1985.)

105. de Wolf, Meijer. "Monument Noordsingel Gevangenis". *Ons Rotterdam*, 38e jaargang no.1 2016. pp. 18-19.



'Plan for the exploitation of real estate' 1877; Rotterdam Company for the Exploitation of Real Estate (Rotterdam Municipal Archives) Showing the street layout of the Erasmus Quarter along the Noordsingel and in relation to the penitentiary.



'View of cellblocks 8 and 9 from central rotunda at Eastern State Penitentiary' c. 1897 (Eastern State Penitentiary Historic Site, from State Prisons, Hospitals, Soldiers' Homes and Orphan Schools Controlled by the Commonwealth of Pennsylvania)

the footprint of the prison as a basis for those plans, just as much as the dikes, as if it was a stone in a stream upon which everything flows around. Beyond the prison as a merely an object informing development patterns, is the relational aspects of what the prison was intended to *do* to the prisoner, and what the space of the polder parcel and the housing plot would *do* to the resident, the tenant.

Similarities can be found in how the reform movement in urban planning mirrored the reform movement which was taking place in regard to prisons. A star-shaped, so-called ‘wagon wheel’ design, the Noordsingel prison followed in the Pennsylvania, or ‘separate system’, model set forth by the Eastern State Penitentiary from Philadelphia, Pennsylvania in the United States.<sup>106</sup> The design of the penitentiary, or place of penance, was based on wings that departed from a central point, each wing connected to the other, but isolated as they departed— each wing then full of isolated cells, each with their own individual ‘garden plot’. Additionally the entire penitentiary was intentionally located in what was then still countryside, which was also a means of isolation.<sup>106</sup>

The construction of the cellular penitentiary was followed in 1882 by the construction to the west side of a separate *Huis van Bewaring*, or house of detention, which later became to be used as a womens prison.<sup>106</sup> Both the penitentiary and the house of dentention were built in the *Rondboogstijl*, a sober eclectic building style very commonly applied in the mid-19th century for utility buildings, and especially prisons.<sup>107</sup> The final additions to the complex, built in 1900, after the construction of the stately court house building along the Noordsingel in 1899, were the fire-proof notorial archive and the semi-detatched house for the prison director and asylum doctor.<sup>106</sup> All of which were behind the tall brick walls

enclosing the complex and hidden from view from the adjacent neighborhood— with the exception of the top peak of the central dome connecting the wings of the penitentiary.

### **(re)forming through isolation**

The Eastern State model came in response to the increasing popular resistance to public executions and torture in the late 17th and 18th centuries, especially in regards to petty crimes such as theft. Governments sought ways to instill order and obedience through means which were not such a public specter of violence.<sup>108</sup>

Two types of thought developed as a result; one (the Auburn system) which continued the punishment methods, albeit in a less public manner, of which prisoners would be subjected to hard labor as a means of deterrence for committing crime.<sup>109</sup> The other (the Pennsylvania system) being more focused on reforming the individual, and was based on religious views that equated crime with sin. In this method the prisoner would be made to be a productive member of society through the instruction of morality, obedience and proper christian behavior.<sup>109</sup> The prisons were seen less a brute state tool, but were an institution akin to hospitals, schools, churches, charities and other aspects of a welfare state that would serve to correct individuals.<sup>109</sup>

The precursor to this model was the ‘house of corrections’ which arose in England in the 1600s as a way to instruct loose, disorderly, poor and idle vagrants to work for a living through forced labor.<sup>110</sup> Houses of correction became incorporated into local prisons in the 18th century, but imprisonment was hardly used as a punishment or reform in its own right however.<sup>110</sup> People held in prison were often only awaiting trial or punishment, or in the case of debtors, until their debts were accounted for through labor or outside funds.<sup>110</sup>

106. de Wolf, Meijer. “Monument Noordsingel Gevangenis”. pp. 18-19.

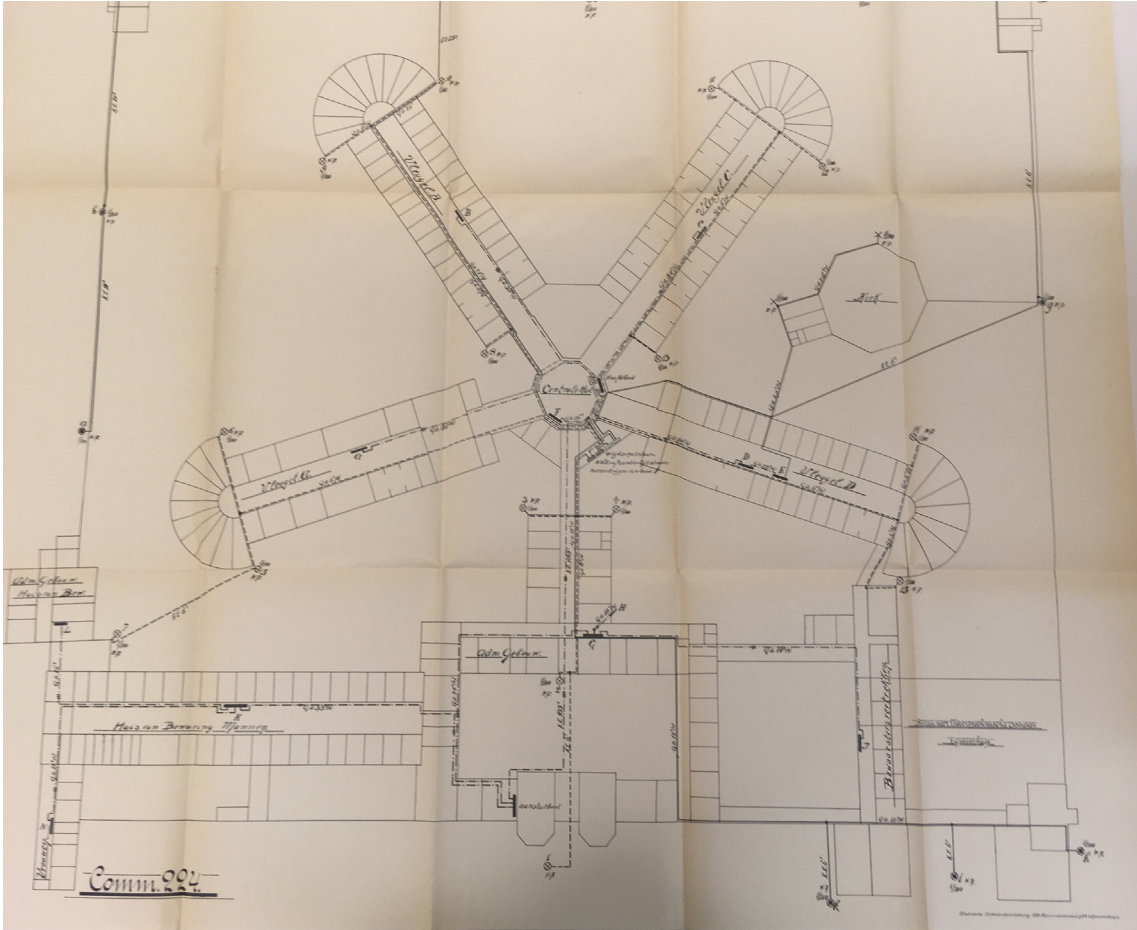
107. van Es, Evelien. “Cultuurhistorische Verkenning” pp. 32

108. Foucault, Michel. *Discipline & Punish*. pp. 7-8

109. Hirsch, Jay Adam. *The Rise of the Penitentiary: Prisons and Punishment in Early America*. (New Haven: Yale University Press, 1992). p. 72-73

110. Hitchcock, Tim and Robert Shoemaker. “Houses of Correction.” *London Lives: 1690 to 1800*. Humanities Research Institute, University of Sheffield. <https://www.londonlives.org/static/HousesOfCorrection.jsp> Accessed 21 April, 2019.





'Plan for electrical wiring of Noordsingel Prison in Rotterdam' 1913 (National Archives in The Hague) Showing overall layout. Below is an aerial photo taken in 2015, from RHO real estate developers.



The Penitentiary Act of 1779 in the United Kingdom proposed a state run network of prisons which operated on the basics of reforming individuals through solitary confinement, religious instruction and manual labor.<sup>111</sup> The system, proposed by John Howard, was ultimately not put in place, but would lead to further movements.<sup>112</sup> Also during this time Jeremy Bentham proposed the ‘Panopticon’— a completely radial structure in which a central guard tower is able to see to the interior of each cell, which holds only one person, but that the prisoners are not able to see if the guard is actually inside the guard tower so that they alter their behavior through the omnipresent threat of being watched.<sup>113</sup>

Among the movements that emerged following Howard’s proposals were the ‘Auburn system’ and the ‘Pennsylvania system’; the former being based on forced labor and the latter being based on moral reform. Both of which began in the United States as prisons there, which held people in communal rooms, were becoming riotous and prone to escapes.

The Auburn system, which started in upstate New York, was based on reforming individuals through a mix of collective labor and solitary confinement in individualized cells in which the prisons would stay in.<sup>114</sup> Silence was enforced at all times and the work was seen to be a model for family life and the organization of school, as it promoted ideas of work, property, discipline and hierarchy.<sup>114</sup> This system was a way in which the state could maintain the degradation and abuse of the prisoner out of the eyes of the public— as prisoners would work behind closed walls rather than on public works projects such as forts and roads.<sup>114</sup> The main mechanism for reform in this model was the attempt to deconstruct the individual

identity of the prisoner— of which enforced silence was key— so that the prisoner would be more obedient and then able to be remade into the idealized productive member of society.

The Pennsylvania system took this further in isolating the prisoners entirely, even in labor. The Quakers, who had a strong presence in Pennsylvania, imbued the system with heavy religious overtones. The first penitentiary designed in this system was the Eastern State Penitentiary in Philadelphia in 1829.<sup>115</sup> The halls of which, wherein the prisoners would enter their cells from, were intended to give the feel of a church, and the cells themselves were devoid of any windows— only a skylight from above which served to emulate the ‘eye of god’.<sup>115</sup>

The penitentiary followed in some of the aspects of the panopticon in that the guard tower in the center of the design could look down each of the wings, essentially giving the guard the ability to see all cell doors from a single point.<sup>115</sup> The omnipresence of being watched however, extended beyond the guard and into the notion that god was always watching the prisoner. The doors to the cells at Eastern State were thick and sealed so that light and sound would not be able to pass through— only a small slot for receiving meals.<sup>115</sup> The cells would open onto a small exercise yard with walls surrounding, too high to be able to communicate or see beyond the yard. The routines of exercise were planned so that no two neighboring prisoners would be outside at the same time.<sup>115</sup>

The architect, John Haviland, wrote that he choose a design founded on “watching, convenience, economy, and ventilation”.<sup>116</sup> Additionally each cell would had its own dedicated

111. “Penitentiary Act, 1779”. Supervisors’ Records. London Metropolitan Archives: City of London. Ref ACC/3648. <https://discovery.nationalarchives.gov.uk/details/r/bd7861bf-6f01-4945-8218-68eec54966c1> Accessed 21 April, 2019.

112. “Howard, John (1726?-1790)”. *Dictionary of National Biography*. London: Smith, Elder & Co. 1885–1900. [https://en.wikisource.org/wiki/Howard,\\_John\\_\(1726%3F-1790\)\\_\(DNB00\)](https://en.wikisource.org/wiki/Howard,_John_(1726%3F-1790)_(DNB00)) Accessed 21 April, 2019.

113. Bentham, Jeremy. *The Works of Jeremy Bentham*. published: John Bowring (Edinburgh: William Tait, 1838-1843). 11 vols. Vol. 4. 4/22/2019. <https://oll.libertyfund.org/titles/1925> Accessed 21 April, 2019.

114. Ryder, Judith Anne. “Auburn State Prison”. *Encyclopedia Britannica*. 18 June, 2013. <https://www.britannica.com/topic/Auburn-State-Prison> Accessed 21 April, 2019.

115. Kahan, Paul. *Eastern State Penitentiary: A History*. (Stroud: History Press, 2008). p. 45

116. Johnston, Norman Bruce; Kenneth Finkel, Jeffrey A. Cohen. *Eastern State Penitentiary: Crucible of Good Intentions*. (Philadelphia Museum of Art for the Eastern State Penitentiary Task Force of the Preservation Coalition of Greater Philadelphia, 1994). pp. 35



'Detainee in his cell at the Noordsingel Prison in Rotterdam' 1964 (Rotterdam Municipal Archive)

pipes for water and sewage so that prisoners could not send messages to each other—and the toilets would be flushed remotely by guards twice a week.<sup>115</sup>

It was through this isolation with god that prisoners were expected to engage in silent self reflection and repenting of their sins. The reformers believed quite sincerely that if the criminals, or sinners, were simply exposed to isolation and silence that they would become penitent.<sup>116</sup>

The ideology of isolation, individuation, watching and utilitarian efficiency would appear also in the development plans of the new city block, as well as the interior plan of the working class dwelling. Bringing us again to a reflection on what is embodied within the environments taken for granted as neutral, and a recognition of forces that make their way into our landscapes, perhaps without our direct recognition, or even without being (in some cases) directly and intentionally translated. A slow violence upon reforming and ordering bodies expands into the everyday environment, a perpetual carcearality.

### **Haussmann-esque plans for new districts**

The translation into urban district would first be attempted to be mediated through grand and perhaps idealic visions. This attempt followed the very first street network development which was drawn in partnership between private developers and the municipality; wherein the main concerns, besides pipe systems, was the breadth of streets, and the price of the houses to be built upon the streets.<sup>117</sup> These plans were not binding however—they had no legal status, and the only political device determining their form was the building code—which remained very limited in its scope until the early 20th century.<sup>118</sup> Within this plan the land was to be expropriated from the current owners— be it

farmers, businesses, charity houses or upper class estates. This process was expensive and lengthy however, and with no municipal funds available the plans remained undeveloped in the Oude Noorden until the 1890s.<sup>118</sup>

Once the plans for city extension became more realizable, G.J. de Jongh, director of the Municipal Works Department since 1879 and responsible for all municipal services at the time, with the exception of drinking water, lead the project by proposing a Haussmann-esque grand plan.<sup>117</sup> All large scale infrastructural projects were within the domain of the municipality: from urban development plans, sewage, trash removal, water drainage, roads, canals and the construction of green areas.

Working off of Rose's plans, De Jongh designed both the northern and western extensions of Rotterdam in 1883, linking the two districts with a wide beltway boulevard.<sup>117</sup> The plan was not much more than an infrastructure project however, not entering into the scope of designing or setting a framework for how the individual plots would be developed. The interpretation of the plots would be left to private developers and landowners.<sup>117</sup> Both the Oude Noorden and Oude Western were proposed to have a radial shape street design with large circular squares in the center from which streets would fan out from.<sup>117</sup>

De Jongh, heavily influenced by Parisian planning, especially the wide boulevards and connected squares of Baron Haussmann, saw the squares as the “lungs of the new city”, and stressed the importance of a coherent hierarchy and connection between the city's districts.<sup>117</sup> This echoes the values of Haussmann whose plans are widely considered to be in part influenced by military strategy, writing in his memoirs of how the boulevards facilitated the “gutting of old Paris, of the quarter of riots and barricades.”<sup>119</sup> The primary concerns of Haussmann and the French government however were, similar to those of De Jongh, con-

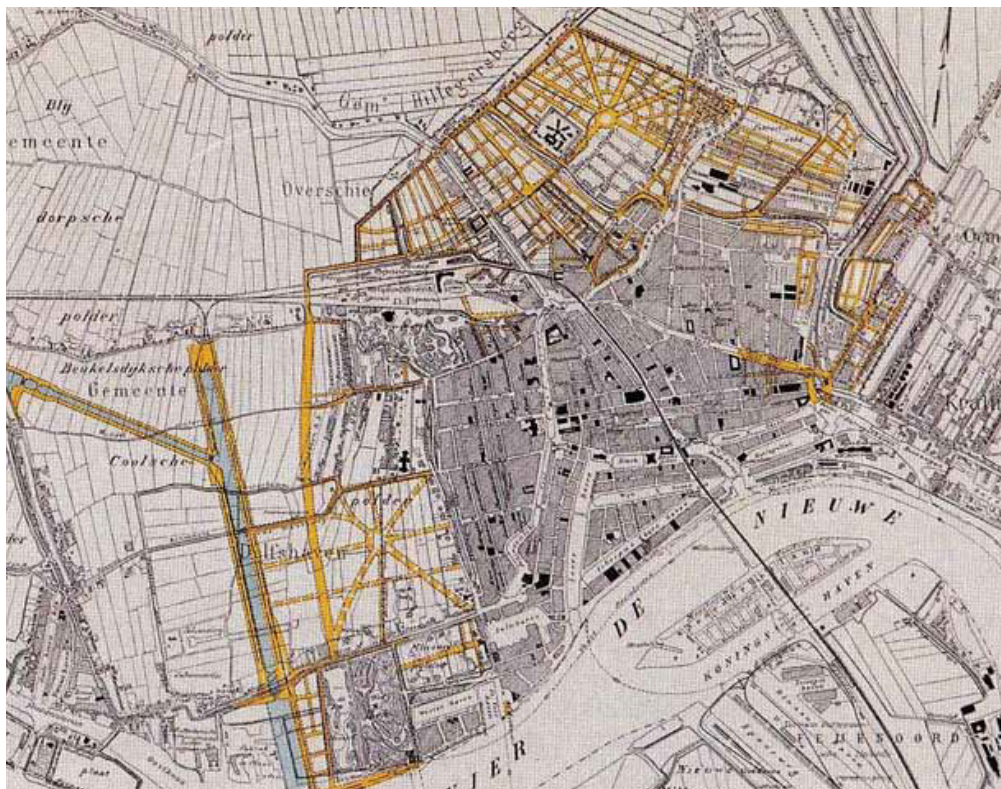
117. Recihenfeld, Loes. *Het Oude Noorden*. pp. 18-19

118. van Es, Evelien. “Cultuurhistorische Verkenning” pp. 23

119. Moncan, de Patrice. *Le Paris d'Haussmann*. (Paris: Les éditions du Mécène, 2009). pp. 34.



'Map of Rotterdam' 1869 (Rotterdam Municipal Archives) Showing the Noordsingel Penitentiary as the only built construction along the Noordsingel and the future Oude Noorden neighborhood.



'Expansion plan of "Polder City" 1883; G.J. de Jongh (Rotterdam Municipal Archives) Shows an unrealized radial design for the Oude Noorden with a center square near to where current day Pijnackerplein is located.

cerned with creating a modernized, orderly, presentable and beautiful city—to serve as a sort of showcase for powerful visitors, as well creating a space of display for wealthy city residents.

De Jongh's plan was in direct conflict however with the wishes of the private developers, who would not be able to fully maximize the utility of the land under this plan—there would be left over too many small and triangular plots.<sup>117</sup> Developers had rushed to purchase land in the area predicting an expansion of the city, and in negotiations the municipality decided not to advance De Jongh's plan.<sup>117</sup> The municipality favored the financial feasibility of a more rectilinear development lead by private capital and did not see the need for the working class neighborhood to have such clarity in a grand design, and accepted the piecemeal development that was to follow—wherein streets haphazardly dead-end and connect in unexpected ways. De Jongh reflected that “Rotterdam has different demands than a luxury city such as The Hague, ... people do not come here to consume money they earned elsewhere, but they come here to make money.”<sup>117</sup>

### **Speculator driven development**

Resultantly the development of the district was succession of private street plans. In most cases, the street pattern followed the pattern of the plots and the ditches of the polder, which also served as the property boundaries. The building blocks would typically be longitudinal in line with the shape of the parcel—developers would typically build on both sides of the street, leaving the housing-block open in the rear, available for further development.<sup>120</sup> This period of speculation driven building was referred to as *revolutiebouw*, or revolution building, as the pace was so breakneck as to have brought on a ‘revolution’.<sup>120</sup>

The speculation was driven by an expansion in bank activity lending.<sup>121</sup> From the 1870s banks started to provide credit mortgages to finance

the building process and for the first time cheap mass construction could be made.<sup>121</sup> All that one would need was access to land and creditworthiness—the land and the building then serving as collateral to the bank. Speculators and investors would cite the shortage of housing and the population booms as a means to ensure financing.<sup>121</sup>

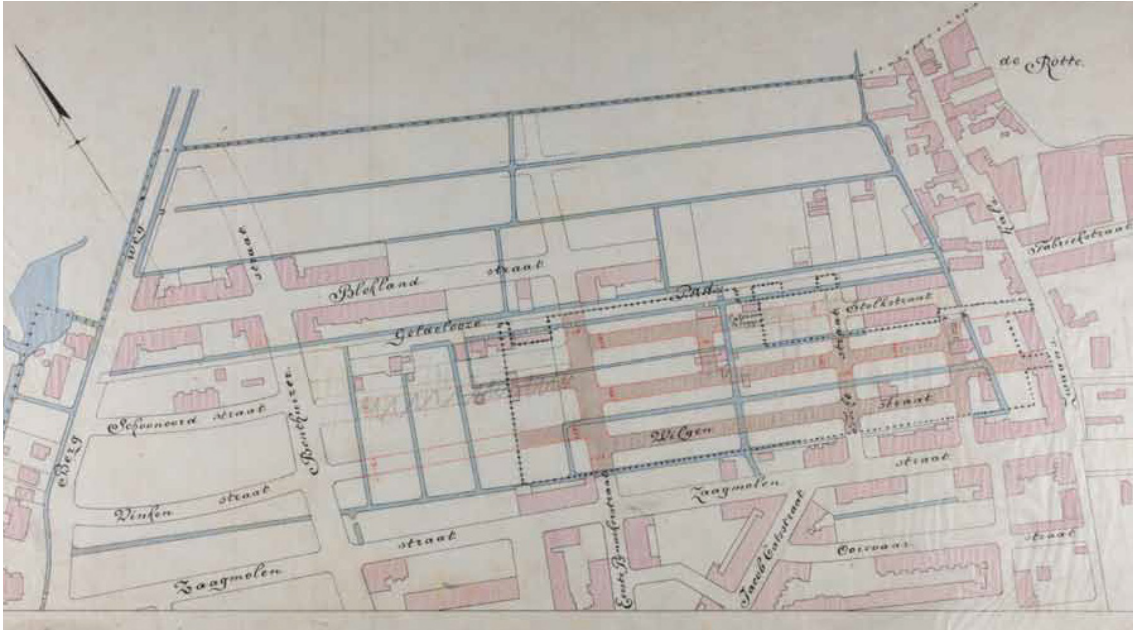
Out of the 24 street plans that were developed in the former Bloomersdijk polders, fourteen different private developers were involved.<sup>122</sup> Some were small developers that would develop only a single street, whereas other larger developers such as the Rotterdam Company for the Exploitation of Real Estate, H.J. van den Berg, M. Zaaier and M. Vermeer would develop entire sections and developed other areas of the city as well.<sup>122</sup>

The first section developed in the Oude Noorden, the Erasmus quarter, near the Noordsingel prison, was only able to be developed once the Bloomersdijk windmill on the Rotte near current day Noordplein was bought off by private landowners and removed in 1870.<sup>122</sup> The wind law had prevented the construction of any buildings in its vicinity so as not to block the wind.<sup>122</sup> The quarter was owned by the municipality and in 1873 sold the entire section to the bank association Rensburg and Van Witsen—operated by the Rotterdam Company for the Exploitation of Real Estate.<sup>122</sup> The street plan that followed, from 1877, was the first that was approved for the area—and was actually drawn up by Gerard Scholten, at that time the Deputy Director of Public Works.<sup>122</sup> Which demonstrates an early and consistent relationship of the municipality and private capital to exploit, order and develop the land—and with it the necessary alterations to infrastructure—in this case the shift from wind powered water drainage towards steam powered drainage—(a shift already occurring to facilitate a more stable ground for building foundations).

120. Tol, Barend “De ontwikkelingsgeschiedenis van de Agniesebuurt en het Oude Noorden”. (Rotterdam: dS + V, 1997). p. 110

121. de Vree, Joost. “Revolutiebouw”. <http://www.joostdevree.nl/shtmls/revolutiebouw.shtml> Accessed 21 April, 2019.

122. van Es, Evelien. “Cultuurhistorische Verkenning” pp. 95-97



'Street plan for the Blokland Straat' 1899; Rotterdam Company for the Exploitation of Real Estate (Rotterdam Municipal Archives) Showing the relation of street layouts to the former ditch pattern of the polder. The ditches would typically be in the middle of the block, with the developer making a row of houses on either side with the road serving as the center of their property parcel.



'Noordsingel in Rotterdam' 1915 (Rotterdam Municipal Archives) The Noordsingel was restricted to wealthy residents only.

### **Building regulations as political manipulation device**

As the plans proposed and approved held little in the way of provisions for the character and quality of the buildings to be built, the building regulations as well as the municipal services were utilized as a meter between the municipality and the developers. It became common practice for the Public Works Department to construct the streets on behalf of the developer for a fixed cost.<sup>123</sup>

This gave the assurance that the municipality would maintain the streets, however if the houses constructed did not meet the building regulations the municipality could refuse to construct or maintain the street, including the connection of water, gas and sewer lines.<sup>123</sup> The municipality could also take property in serious cases, but would be hesitant to exert these powers as there was a need for cheap housing and the city wanted the high pace of construction and bidding to continue.<sup>123</sup> The building regulations did remain to be a somewhat powerful tool of the municipality in order to shift the private street plans into a more or less coherent expansion plan.

It was from the Municipalities Act of 1851 that the municipality had decided in 1857 to draw up the first building regulations.<sup>124</sup> There had previously been approvals that regulated important aspects of building, but had remained unconsolidated. The increasingly dense and uncontrollable conditions that lead to cholera outbreaks necessitated some sort of reappraisal. The Building Ordinance of 1857 thus prohibited attics and cellars to be used as living areas, and sleeping areas had to be at least 2.2 meters high and receive direct light and air from outside.<sup>124</sup>

This was further amended in 1860 that sleeping alcoves (essentially raised up-right beds inside of cupboards) did not have to receive direct light and air from outside but would instead have clear-story windows that opened into the hallway.<sup>124</sup> These regulations were

quite limited and remained as such until 1887 when additions were made to take into account newly implemented water and sewage lines.<sup>124</sup> This proscribed that streets had to be built at a certain level in relation to the Rotte so as to maintain a proper flow and no flooding via backup.<sup>124</sup>

Also proscribed was that streets had to connect to existing streets, and a distinction had to be made between arteries (wider than 24 meters), main streets (16 to 22 meters) and residential streets (narrower than 15 meters).<sup>123</sup> A through road had to be constructed every 180 to 200 meters, and parallel walking streets had to be at least twenty meters apart. It also set a minimum width (from facade to facade) of the street, as well as a maximum building height— even stated that the street corners had to be chamfered.<sup>123</sup>

### **Singels restricted to wealthy residents**

Most notoriously, the 1887 revisions to the municipal building ordinance stated that no workers' housing could be constructed along the canals, singels, or upon the central square in the Oude Noorden.<sup>125</sup> (The square being the left over from De Jongh's proposal— albeit a rectangular square rather than his proposed circle, and hidden in between local streets rather than wide boulevards that would cut across the whole city. The square in question is the current day Pijnackerplein.) Reinforcing that the Water Project of Rose and the master plan of De Jongh were aimed at the construction of social space for wealthy Rotterdam elites.

These plans had appropriated the urgent need for sanitary, safe and hygienic living conditions— which were made in specific response to the deteriorating condition of slums and cholera outbreaks which affected poor persons at drastically higher rates than wealthy persons. The plans to respond to those crises were not merely a delayed response, but served as an excuse to reconstitute the sta-

123. Recihenfeld, Loes. *Het Oude Noorden*. pp. 8-11

124. van Revesteyn, L.J.C.J. *Rotterdam tot het Einde van de Achttiende Eeuw: De Ontwikkeling der Stad*. (Schiedam: Schie-Pers, 1974). pp. 130-136.

125. van Es, Evelien. "Cultuurhistorische Verkenning" pp. 25



bility of an urban environment, to allow for the expansion of the cities domain and order, while creating picturesque boulevards for the wealthy, under the guise of universal improvement. The landscaped image of the healthy city is a mirage.

### **1901 Housing Act; consolidating authority**

It was not until the Woningwet, or Housing Act, of 1901 that there was a consolidated national policy on housing regulations, wherein the authority of local municipalities was increased sharply and public housing was established.<sup>126</sup> Prior to this the limits on poor health and sanitation in housing remained rather weak. Egregious conditions were still possible, and quite often existed, and urban poor were often dependent on privately funded progressive liberal charity organizations for assistance.<sup>126</sup> The 1901 act had followed closely from an 1896 report for the *Maatschappij tot Nut van 't Algemeen*, or the Society for the Benefit of the General Public, which called for legal protections to public health and the “removal of the moral inferiority of the workers”.<sup>127</sup>

The 1901 Housing Act, which was passed alongside the 1901 Health Act, came from a progressive turn in Dutch politics that recognized that the worst conditions of the city would not be addressed by the market alone.<sup>128</sup> The state had to actually push the cities to enact the law however as the law threatened to become irrelevant through inaction. Therefore the national government made funds available for the construction of social rental housing, with close inspection from Public Health officials to ensure the funds were not misallocated.<sup>128</sup> The state did however maintain that housing would primarily remain a task for the market to address.

The Housing Act mainly addressed that: fi-

nancial support would be available for those working primarily in public housing construction, municipalities were obligated to draft housing ordinances, the prohibition for new construction without building permits, more obligations upon landlords, giving the municipality the power to declare a dwelling uninhabitable—including the ability to evict or expropriate a house or block, and the obligation for municipalities to draft expansion and zoning plans to be revised every 10 years.<sup>129</sup> In addition municipalities were given the power to expropriate land for the creation of public housing.<sup>129</sup> The supervision of these measures were assigned to the Public Health departments and their regional delegates. This had more or less put a damping on the rapid pace of speculative building and the power that speculators had begun to develop in the city. The private construction entrepreneurs, who in some cases were merely craftsmen who had started their own businesses to benefit from the boom, had been able to have a substantial influence on the economic and political life of the city. The plans and constructions were typically not carried out by skilled architects, but by carpenters, masons, builders and merchants who were active in building materials.<sup>126</sup> The 1901 Housing Act was instrumental to the profession of architecture, especially the obligation that all new construction was to have building permits.<sup>128</sup> It was within the auspices of funding for social housing and all of the associated regulations that many of the early 20th century Dutch architects found themselves flourishing in.

### **Speculative housing typologies**

Almost the entirety of the Oude Westen and Oude Noorden neighborhoods would be constructed before the 1901 act came into place however. And many of these houses remain

126. Camp and Provoost. *Stadstimmeren*. pp 53

127. Mijnhard, W.W. and A.J. Wichers (red.), *Om het algemeen volksgeluk: Twee eeuwen particulier initiatief 1784-1984*. (Amsterdam: Society for the Good of General, 1984).

128. Stieber, Nancy. *Housing Design and Society in Amsterdam*. pp. 17-19.

129. Dutch Housing Institute (org.). *Dutch Housing Legislation*. (Amsterdam: J.H. de Bubby, 1961).

130. Many of the famous projects from the Amsterdam School were public housing projects funded through provisions within the 1901 Housing Act; as well as many of the public buildings of Willem Dudok and Hendrik Petrus Berlage that also came during this time and benefited from this reform movement. Thus the regulations of housing reform served to reconstitute and reinforce the domain of professional design services. (Stieber, Nancy. *Housing Design and Society in Amsterdam*. pp. 23-24.)

today, despite large scale urban renewal movements in the 1980s and 1990s to aimed to replace large amounts of the *revolutiebouw*.<sup>131</sup> Of this typology the form was dictated in large part not only by the economic efficiency of rectilinear plots, but also the material costs of what was being built.

In the polder the foundation costs were high, and in order to build cheaply the widths of the houses were chosen so as to minimize the amount of piles that would need to be driven.<sup>132</sup> Repetitive construction was also preferred—the alcove house being the most common to sell and rent out. Low rent was desired as there was a limit to how much a worker would be able to pay, so an abundant of cheap and small houses were preferred.<sup>133</sup> For this reason also the widths of houses would be kept narrow. The earliest houses had separate entrances for the upper and lower floors—to be rented separately.<sup>133</sup>

As housing quickly densified later types would be built with shared entrances and developers would decide to add floors rather than to build more low rise— thus maintaining low rents, despite the lack of health plan for the increase in density.<sup>133</sup> The incentive was to build fast as the fixed mortgages taken out from the bank on credit could not be closed until the land was built on— and interest rates were high.<sup>133</sup> Banks would encourage developers to contract out aspects of the job for the lowest bid available and would even apply extra pressure by closing the funding and forcing sales of unfinished constructions.<sup>133</sup>

In this way the financiers were able to keep a high pace within the housing market full of large price increases. In some cases the land would be speculatively sold and expropriated (in coordination with the municipality) multiple times before even being built upon.<sup>133</sup>

The first and oldest housing type within this speculative *revolutiebouw* was the so-called *rug-aan-rug woningen*, or back-to-back

house— wherein two workers houses shared the back wall as they faced away from each other with the rear house facing the interior of the block.<sup>132</sup> The house consisted of a *kamer*, or living room, with a sleeping alcove, a stove-cupboard and a toilet-cupboard. (The cupboards were essentially closets from which a stove or toilet would be placed, and would be accessed directly from the main room.) Upstairs would be a *slaap kamer*, or sleeping room, which would sleep up to 10 persons.<sup>132</sup> Bathing would occur in municipal or charity-run bathhouses. This living arrangement was clearly unsanitary as ventilation was almost non-existent, overcrowding was rampant, essentially all living functions occurred in a single room, and there was only one wall of windows in the entire dwelling.<sup>132</sup>

An improvement to the back-to-back home was the *dubbele alkoofwoning*, or double alcove house, which had an addition of an extended *privaat*, or toilet, that connected as a separate small wing to the rear.<sup>132</sup> The house occupied an entire floor consisting of a front room, a *keuken*, or kitchen, extended off the rear and a *privaat* in the hallway.<sup>132</sup> Both rooms in this model were equipped with alcove beds. The double alcove house was then replaced by an alcove with bedrooms instead of the bed boxes that had been typical of earlier sleeping alcoves— but there remained two dwellings per floor, one in the front and another in the rear.<sup>132</sup>

Eventually the entire floor became one alcove house, known as an *alkoofwoning*, with a front and back room connected, and a rear veranda, to be used by a single family— with sleeping alcoves dividing the two rooms.<sup>132</sup> This model became the dominant type developed in the Oude Noorden during the 1890s.<sup>133</sup> Early in the development of the neighborhood, when the price of the land was not altogether too high, builders were able to build houses of just one or two floors within what was called

131. Stouten, Paul L. M. *Changing Contexts in Urban Regeneration: 30 Years of Modernisation in Rotterdam*. (Amsterdam: Techne Press, 2010). p. 83

132. van Revesteyn, L.J.C.J. *Rotterdam tot het Einde van de Achttiende Eeuw*. pp. 130-136.

133. van Es, Evelien. "Cultuurhistorische Verkenning" pp. 25-27

the *drieslagmodel*, or 3-stroke model.<sup>132</sup> The 3-stroke model was a relatively spacious street layout, with 12 meter wide streets and 50 meter depths to the housing block.<sup>132</sup> As speculation and land prices increased, four housing blocks would be developed within the same sized area that three had fitted in. Coinciding with this was an increase in the height of the buildings and houses began to share entrances and stairs to save space.<sup>132</sup>

### **Financial (rent) metrics dictate form**

Land prices ranged from 6,00 to 10,00 guilders per square meter, or from roughly 82,00 to 137,00 euros by today's value.<sup>134</sup> The foundation costs per building would amount to 3500,00 guilders, or roughly 48000,00 euros in today's value, and a house could be rented for typically 2,80 guilders per week, or 38 euros in today's value.<sup>134</sup> It was due to the low land prices, and inexpensive construction, that low rents could be realized.

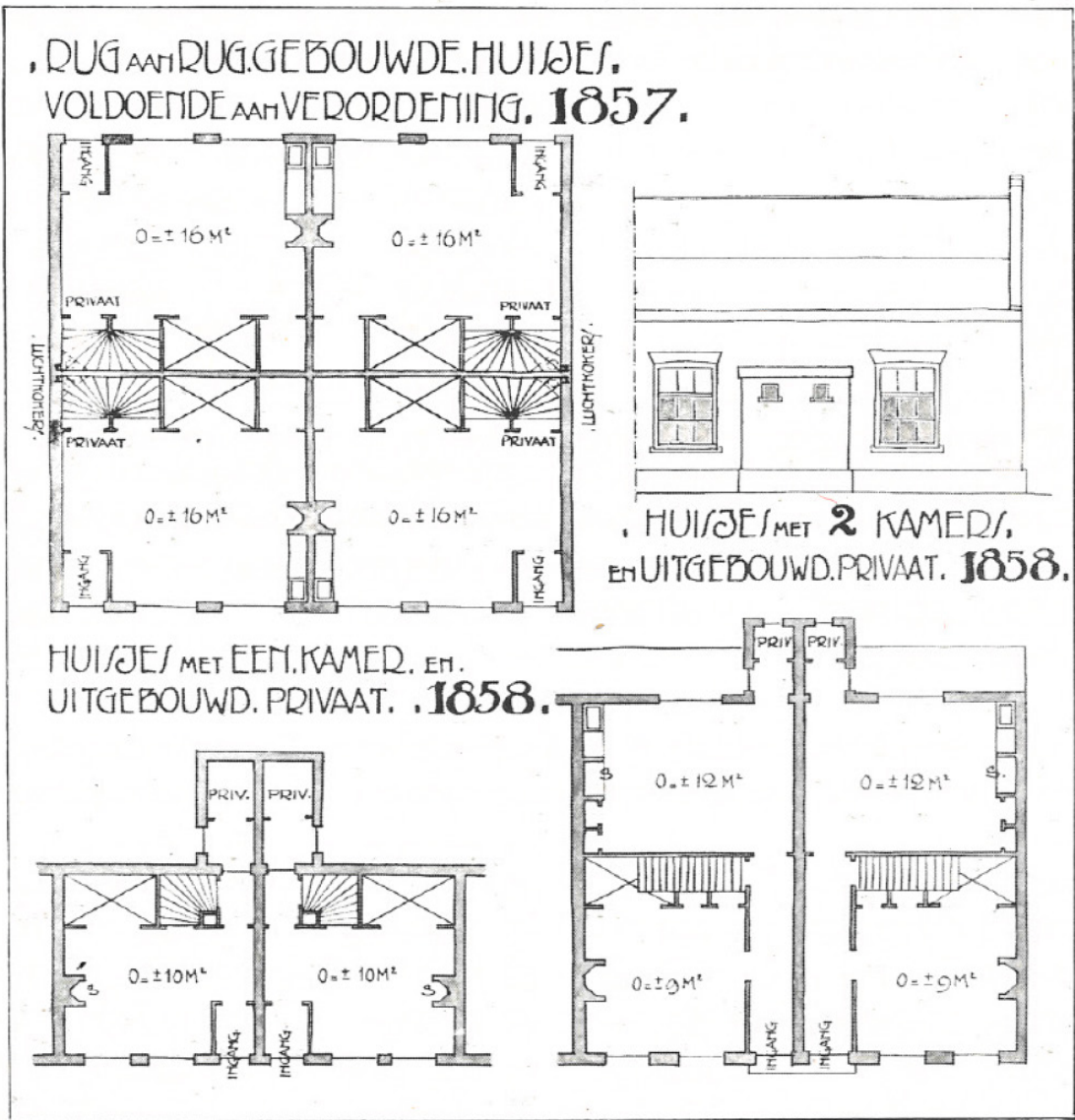
Alongside the increase in demand was also the rising cost of materials and wages of construction workers, which also forced for the more efficient construction of denser housing with more floors.<sup>134</sup> This also happened in a somewhat patchwork fashion and some streets would have multiple housing types on the same block as adaptations by developers were made somewhat ad hoc. The double alcove houses with shared stairs also decreased the overall width of the house (including the stairs) from 9 meters to 8 meters.<sup>134</sup>

The houses along and nearby Pinjnackerplein, devoted only to middle and upper class persons, were considerably more spacious and with decorated facades. These also consisted of a front and rear room divided by a sleeping alcove, but with a wider width, larger windows, a larger kitchen and intended for a smaller family— having less sleeping alcoves and bed boxes.<sup>134</sup> These houses would be typically rented for roughly 18,00 guilders

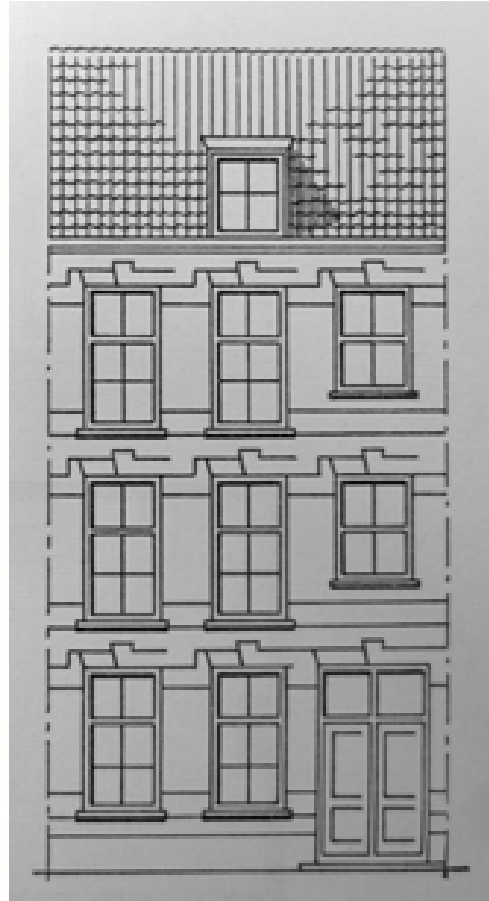
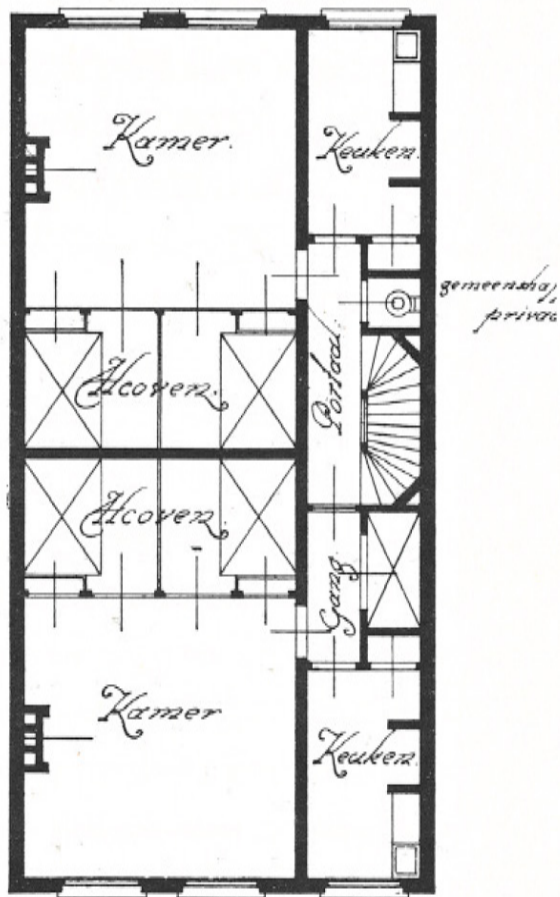
per month, or 257,00 euros in today's value.<sup>134</sup> This contrasted with the weekly payments for renting a working class house— which typically amounted to roughly 11,00 guilders a month, or 150 euros in today's value.<sup>134</sup> Slums in the inner city would be rented for even less, roughly 1,50 guilders per week, amounting to roughly 6 guilders per month.<sup>134</sup>

Again the logics of ownership and wealth generation dictate the forms and arrangements of space-- the tenant is excluded from the decision making process and the ability for choice is limited, if existing at all. The space is not neutral, it is tied directly to the financial metrics of what will return an efficient production of wealth, based on the demarcation and plotting of land. The land continues to be a commodity, as it was when it was parcelled for lease and taxation, and when it was excavated for peat fuel. The spatialities, and assumptions about the role of space (to be owned and to generate wealth through rents), carry through to the layout of floor plans and sizing of rooms. The space is oriented to be a commodity, to house people who will pay a rent. The stairs are arranged so the renter can enter the space in which they are obliged to consume-- the space in which they can be found (by the authorities). The stairs are incorporated so as to fulfil this function without interfering with the space of rent. Doubly the renter is individuated by being placed within confined space, connected to the municipal network, in a square room which contains them. They are obliged to live in a room as they are obliged to live in the city. The field of forces overcomes and suffocates the ability to control one's own environment. Their bodies are not accounted for in the financial metrics, so long as they fit into the room and can survive. A slow disruption and exile occurs through the partition of autonomy.

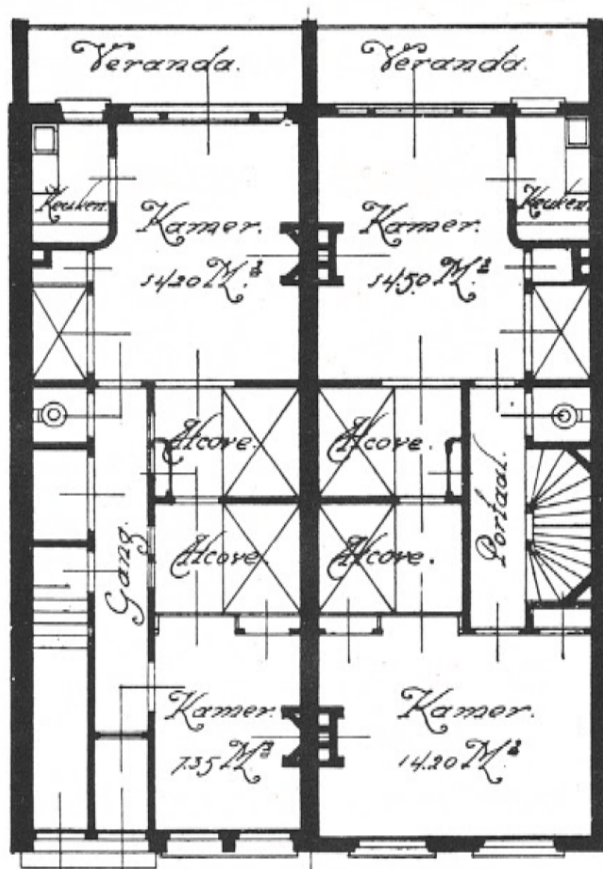
134. Recihenfeld, Loes. *Het Oude Noorden*. pp. 8-11. Currency conversion via <http://www.iisg.nl/hpw/calculate.php> International Institute of Social History. Accessed 21 April, 2019.



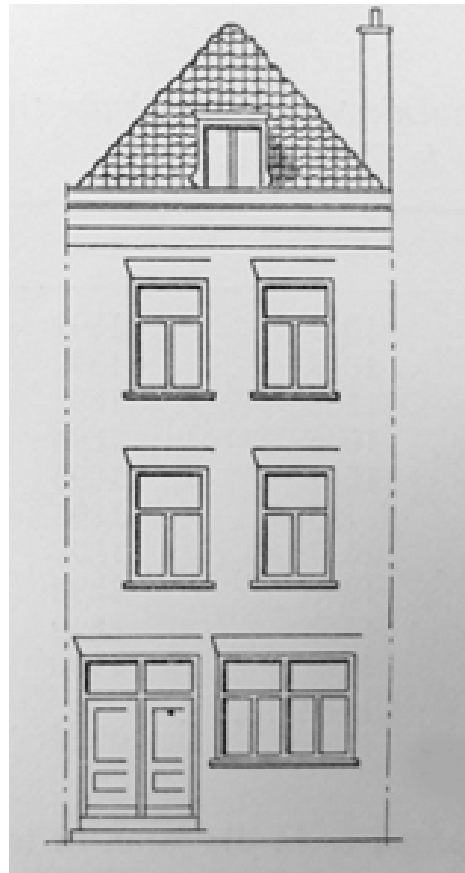
'Rug aan Rug Woning' Back-to-Back Houses (showing variations of the type) (reproduction drawing, published in: Rotterdam at the End of the 19th Century, L.J.C.J. van Ravesteyn, 1974)



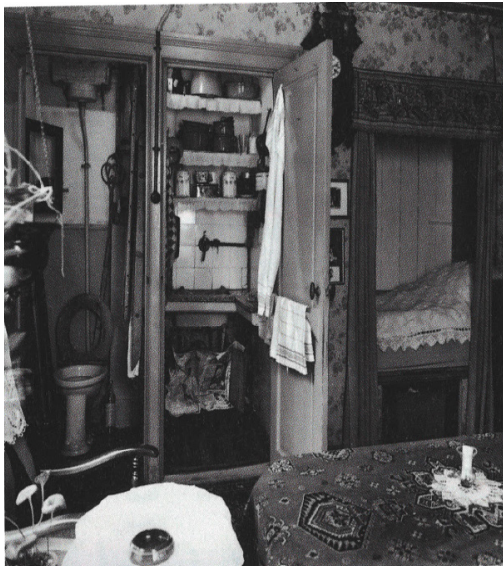
'Dubbele Alkoofwoning' Double Alcove House (reproduction drawing, published in: Rotterdam at the End of the 19th Century, L.J.C.J. van Ravesteyn, 1974)



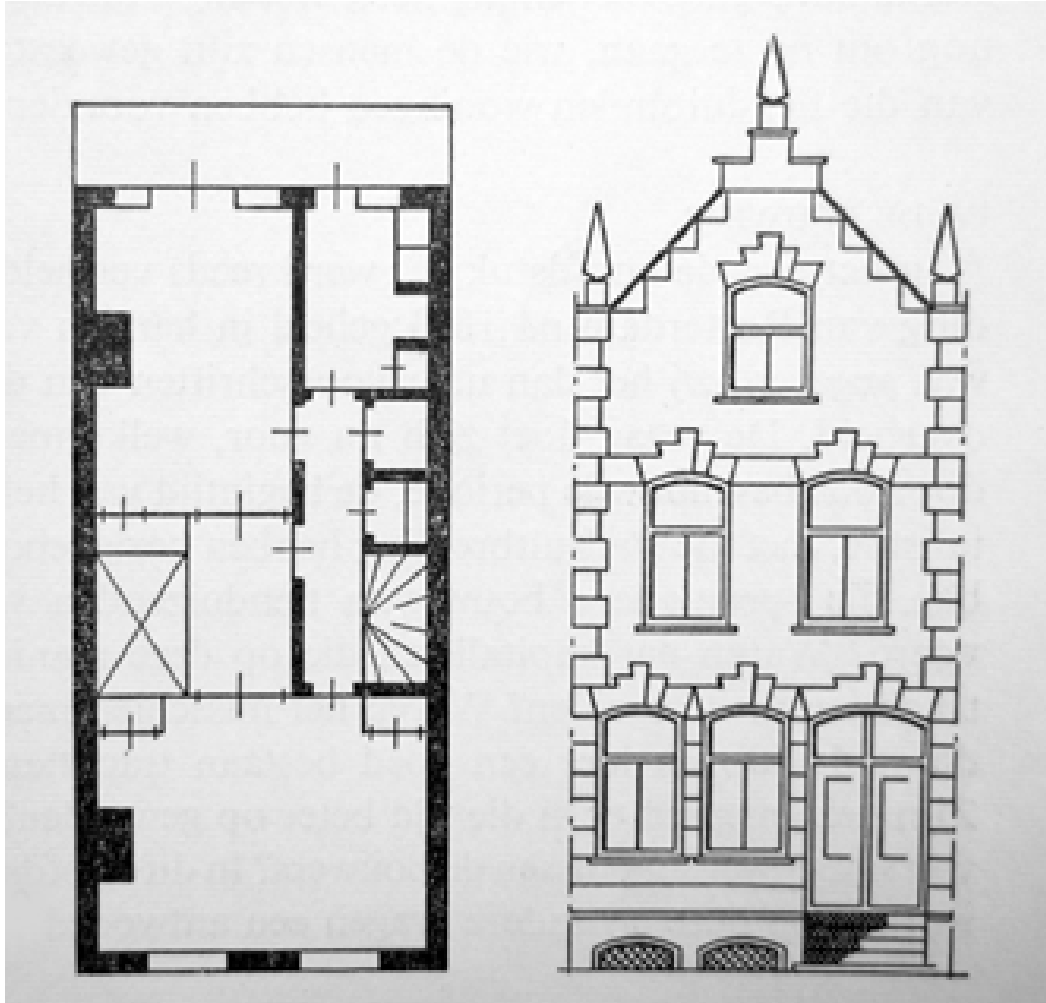
Begane grond. Verdiepingen.



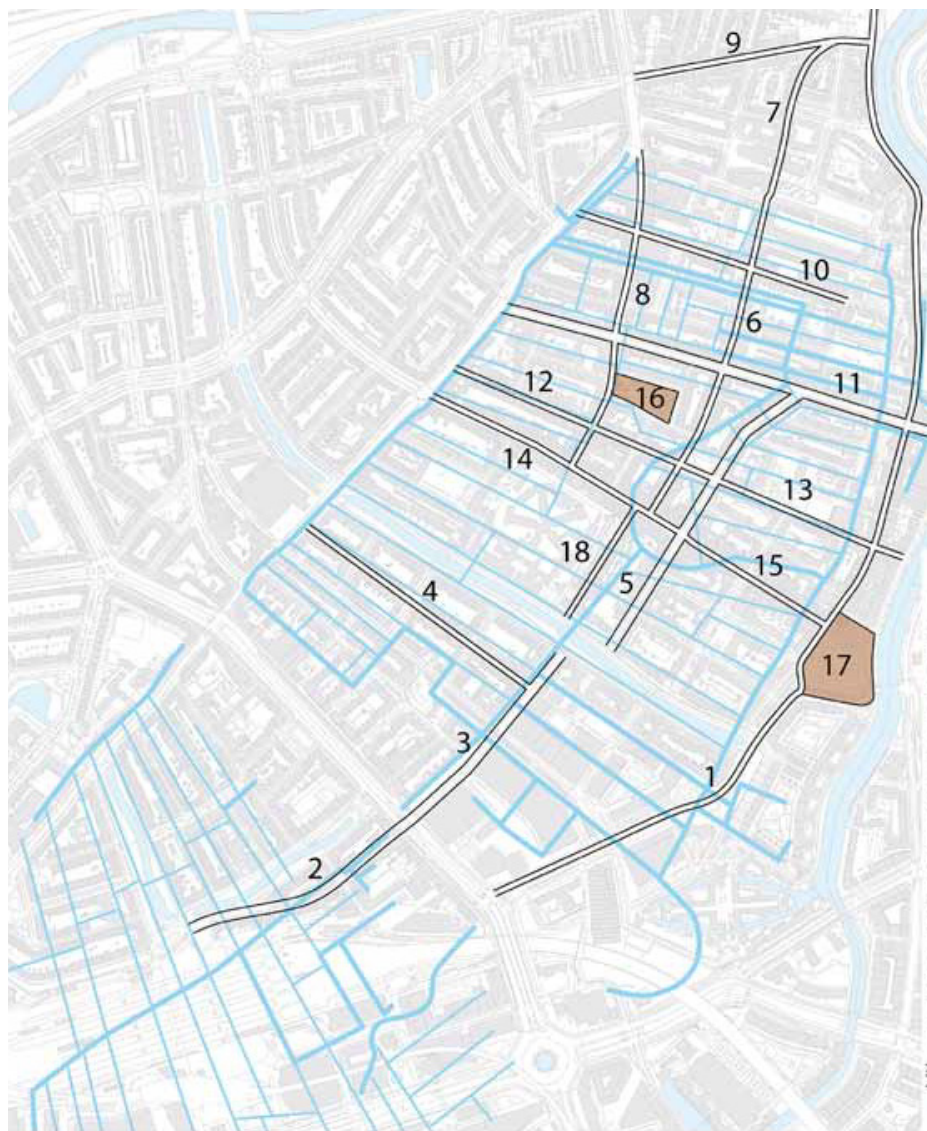
'Alcovewoning' Alcove House (reproduction drawing, published in: Rotterdam at the End of the 19th Century, L.J.C.J. van Ravesteyn, 1974)



'Toilet, Kitchen and Bed Box in an Alcove House' 1906 (National Archives)

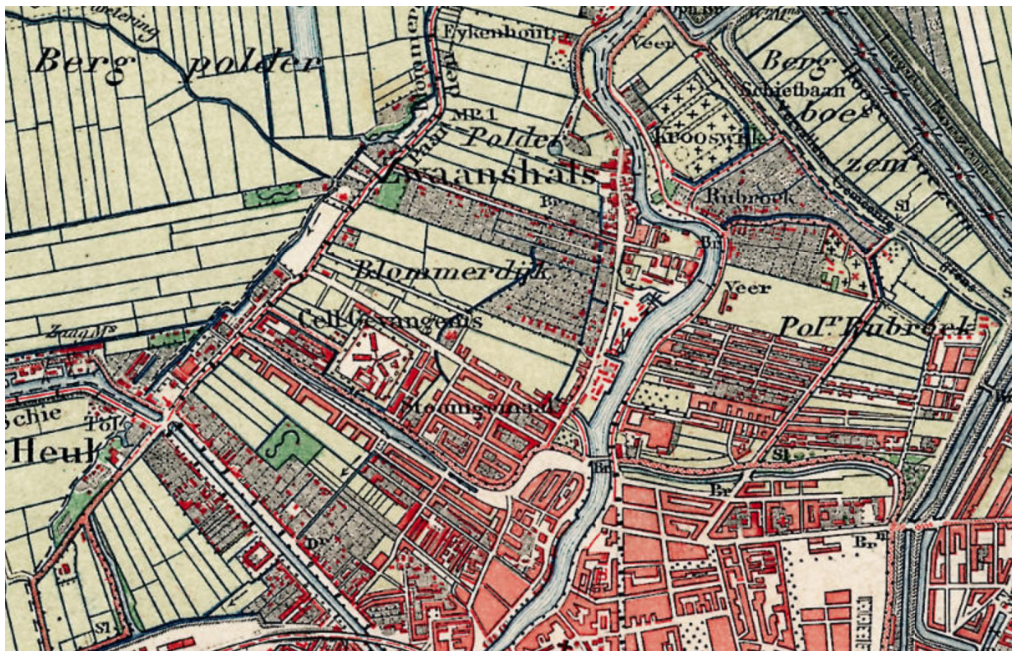


'Upper Middle-Class Alcove House' (reproduction drawing, published in: Rotterdam at the End of the 19th Century, L.J.C.J. van Ravesteyn, 1974)



'Street pattern overlaid with former ditch network of the former Bloomersdijk polder' 2013 reconstruction diagram (Rotterdam Municipal Cultural History Report)





1896 [top], 1901 [bottom] (Kadaster: Nederlands Topographisch Bureau) Showing extent of speculative housing boom in the Oude Noorden during the last five years of the 19th century.

## chapter 5.

### Violence of individuation

At the core of the slow violence examined in this paper has been a narrative of individuating the person; into a tenant, a worker, a consumer, a settler, a person not necessarily in control of their environment, and subjected to the compelling forces of orientation towards things not of their own direction. What this paper has explored is the ways in which space is a key instrument in this disorientation, ordering, alienation and individuation. The space can be seen as having a sort of agency of its own, reproducing logics that it carries through from previous arrangements, and the compelling forces of actors, or tools, to continue and maintain those logics and systems of wealth generation and power consolidation. The environment is both directed and undirected, and the space does something to the inhabitant of these environments. Principally it individuates the inhabitant, as an individuated inhabitant melds more easily within the logics of control, ownership, production and so on. An individual can be contained, written into the ledger, found, punished, compelled to do labor and so on. A bed is made for one, the room contains, and the house has an address. The ditch surrounds the parcel. The coerced labor of another brings a crate to the harbor to be walked across the quay.

#### Rural immigration to industrial port cities; agricultural crisis

In the course of the 1880s and 1890s the population of Rotterdam increased dramatically, with the majority arriving from the coun-

tryside, namely Zeeland and North Brabant, from effects of the *landbouwcrisis*, or agricultural crisis, of 1878-1895, wherein the price of grains fell drastically because of the introduction of cheap grains from abroad (mostly the US and Canada) to the market.<sup>135</sup> Dutch farmers couldn't compete and were forced to leave the rural areas to search for work in the industrial port cities. In 1880 the population of Rotterdam was 150,000 persons, and by 1900 that number had more than doubled to 319,000 persons.<sup>136</sup> The population rose most drastically between 1896 to 1899, wherein there was an increase of over 43,000 persons—nearly half of which were immigrants.<sup>136</sup> In those four years over 12,000 houses were built, an average of 3,000 a year.<sup>137</sup>

In the Oude Noorden specifically there were 26 streets in 1880 containing 751 houses.<sup>136</sup> By 1900 the district expanded to 73 streets and 3979 houses.<sup>136</sup> This translates to roughly 15,000 persons in 1880 and 75,000 by 1900, in the Oude Noorden alone.<sup>136</sup> In 1880 already 17% of the residents in the Oude Noorden were born outside of Rotterdam or South Holland, 8% of that number coming from Zeeland and North Brabant.<sup>136</sup> The percentage of rural immigrants in the neighborhood would increase until 1900 but not drastically as most immigrants from the south of the Netherlands settled in new neighborhoods constructed in Rotterdam Zuid on the south bank of the Maas and worked mostly in the port.<sup>138</sup>

These were the areas most associated with the incoming of farmers seeking work in the industrializing cities in the wake of the agricultural crisis. The rural economies of the Netherlands had been suffering already since the 1840s, the production of home weaving and spinning had also declined due to trade liberalization and competition from foreign markets.<sup>135</sup>

Immigration was offset for a few decades by the expansion of territories and the increasing efficiency of the land—through enclosing commons, the introduction of fertilizers, and

135. Kok, Jan. "Flight from the land? Migration flows of the rural population of the Netherlands, 1850-1940". *Espace populations sociétés*. 2014. <http://journals.openedition.org/eps/5631> Accessed 21 April, 2019.

136. Recihenfeld, Loes. *Het Oude Noorden*. pp. 26-36.

137. Camp and Provoost. *Stadstimmeren*. pp 54

138. *Ibid.* pp 74-77

the increased connection to markets through canals and railroads.<sup>135</sup> It was in the sandy and clay based soils along the coast and rivers, such as in Zeeland and North Brabant, that grain production was most dominant and where commercialization and mechanization remained most stagnant.<sup>135</sup> It was for these reasons that these areas became most susceptible to the crisis of cheap grains flooding the market.

Dispossessed farmers and agricultural workers moved to regional urban centers, such as Groningen, but also to cities in the west of the Netherlands such as Rotterdam and Amsterdam, and to cities in North America.<sup>139</sup> For awhile dairy farms benefiting from the cheaper grains to feed the animals but eventually also affected by lower prices for their sales.<sup>135</sup> The strengthening of market-oriented production affected also the natural rhythm of life that was in conflict with the demands of the market— cows produce milk irregularly for instance, and milk would need to travel daily sometimes 20 to 50 kilometers.<sup>140</sup> And directly a result of this specific condition of being forced into a regimented, efficient, and mechanical production for the market.

Coastal areas were also affected by the introduction of steam ships and other industrializations in the fishing industry which diminished their ability to work in shipping.<sup>135</sup> Agrarian inheritance patterns also affected migration patterns. Land was typically passed on to one of the children while the others would be fi-

nancially compensated.<sup>135</sup> In some parts of the east and south it was unclear if compensation would be given and if the rights to remain on the land were certain— which would increase the likely hood for migration.<sup>135</sup> Others that could remain on the land were more likely to remain as there remained more opportunities by working in communities that they had familiarity and the ‘social capital’ of being known by others in the region.<sup>135</sup> Reflecting a perpetual anxiety and precarity in the relationship to the land and the uncertainty in the ability to stay, upon ones own terms.

During the 19th century there remained still a strong variance across the Dutch countryside of cultures, practices, dialects and local customs which would tend to make migration even within the country disjuncting and difficult and the prospect of remaining where one already was much more preferred.<sup>135</sup> The most likely to migrate were persons working for the government or large companies— persons whose income depended more on skills they possessed in administrative type employment rather than on fixed capital such as a shop or a farm.<sup>141</sup> The ones that remained and had access to some land and capital invested in agricultural machinery which made their production more efficient but also further decreased employment in the rural agricultural industry.<sup>141</sup>

A hand in hand cause and effect occurred between the growth of cities through increased port activity and its connected industrial

139. The growth of the shipping industry, and the related activities, including bridge construction, port excavations, city infrastructure and house construction, demand large amounts of physical labor. Mostly employed as day laborers, the displaced farmers had to unload all goods by hand in the 19th century, carrying baskets of grain or coal on their backs down the gangway. This led to the formation of the boat workers' association 'Cardinal Manning' in 1891 and later in the year, at Feijenoord, the RK-Havenworkers Association 'Leo XIII', followed in 1893 by the Dutch Boatworkers' Union, based on the London federation of Dock, Wharf, Riverside and General Laborers Union. The first major successful strike of dock workers came in 1889— the largest that had yet occurred in the Netherlands— in which their demands for increased wages and decreased working hours on Sundays were met. But still working for 30 to 40 hours at a time to unload a boat is a normal phenomenon. Excesses of up to seventy hours of continuous work occur. Labor resistance is challenged by the mechanization of the port, which begins with the introduction of electric harbor cranes in 1896, and grain elevators in 1904. Both of which was

met with strikes, and accordingly confrontation with strike breakers and soldiers. By 1907 grain elevators, electric cranes, coal conveyors, and loading bridges are a reality of port routine and labor is gradually reduced. Despite this strikes are almost constant throughout the 20th century, often spontaneous 'wildcat' strikes, and often set the tone of labor relations and union organizing across the country— sometimes going against the wishes of trade unions, and being led by different groups within the dockworkers that experienced different levels of exclusion based on race and so on. (Smit, E. J. *De Syndicale Onderstroom: Stakingen in de Rotterdamse Haven, 1889-2010*. Amsterdam: Vossiuspers UvA, 2013).

140. Farmers then had to devise ways to preserve excess milk. From this they discovered that the rennet from the cow's stomach was able to extract solid parts from the cows milk which could be used to make cheese— a sort of weird using of the dead animals body parts in order to further commodify the other extracts from the animals body. (van Schoubroeck, Frank. "The remarkable history of polder systems in The Netherlands". 2010.)

production which directly caused the dispossession of rural persons from being able to compete with a globalized high efficiency market-based production. This trend led them directly into the industrial port cities which caused their dispossession. And they found themselves then at the mercy of the speculative housing and disjointed urban planning of the city. Sucked into the logistical apparatus of the city. Public services to cater to, manage and control this population increased during this urbanization— institutions such as the city police, postal services, public transport, consolidated and expanded health and education systems, churches, bathhouses, and eventually parks and recreational sports centers and gymnasiums.<sup>142</sup>

Most of the population in the Oude Noorden were working not in the port directly, but in industries that exist in relation to the port or upon the economy created in the ports wake.<sup>143</sup> In 1990 38% worked in industries such as book printing/binding, construction, textiles, leather processing, ship-building, metals etc, and 37% worked in economic services such as in sales, department stores, or general office work.<sup>143</sup> Another 11% worked in social services such as education, housekeeping or other governmental professions. On top of that 8% were unemployed.<sup>143</sup>

### **City and house as individuation machine**

The industrial city served as a sort of dormitory for the individual, and the individuated family, to be able to sell their individual labor power within the cities industrial economy. The private individual room becomes the product and the container of the individual subject— the subject that is created through the act of having to commodify oneself in the new city. The private room, as a value and as a performance, comes about as a site for the reproductive labor— meaning that early divi-

sions of domestic space created only privacy in the bedchambers for the wealthy, and that the rest of the house was arranged to support the management of the household, and most particularly the raising of children.<sup>144</sup>

The idea of the individual is created in the bourgeoisie liberal culture— in which one possesses ones own things, needs and desires. From this notion of individuality and privacy associated with wealth and control comes the value of wanting to be alone, to have a space of ones own— to be private.<sup>144</sup> This combines with specific conditions that encouraged kin to break down into nuclear family units, and for individuals to also live outside this family— to migrate to new cities, uprooting themselves from communities, culture and familiarity.<sup>144</sup>

It is during this time also that single room apartments and individuals living alone in the urban city reached numbers completely unprecedented. From this condition was born our modern understanding of the private room, and its connotations of alienation.<sup>144</sup> Alienation both in the sense of isolation and also in the Marxian sense of being removed from ownership over the goods one produces— the real estate value and/or the product of their wage employed labor. The tenant does not own the walls that binds them, or the land that sits beneath them— full of pilings, pipes, financial calculations and ledger-book recordings.

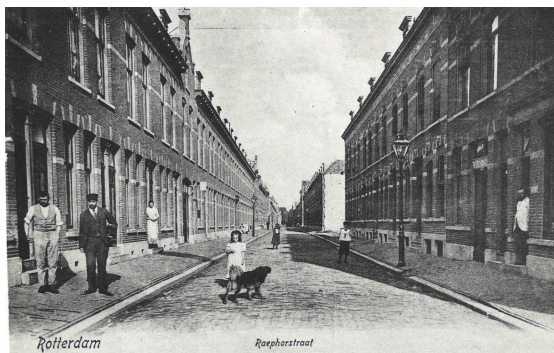
Not only is this reinforced between the separation of the inside and the outside— the room and the city— but also within the house. The separation of one room to another, and the separation by isolating, or removing, stairs, entry ways and other public spaces from that of the private space— the room. A concept that developed not in a linear fashion, which complicates the narrative— as some forms of kinship and communal living persist within the overcrowded houses, the bathhouses etc.<sup>144</sup> But the notions of privacy, and the vir-

141. Kok, Jan. "Flight from the land? Migration flows of the rural population of the Netherlands, 1850-1940". *Espace populations sociétés*. 2014. p. 3

142. Couperus, Stefan. "Building Democracy Anew: Neighborhood Planning and Political Reform in Post-Blitz Rotterdam". *Journal of Urban History* Vol. 42(6) 992–1008. (2016).

143. Recihenfeld, Loes. *Het Oude Noorden*. pp. 26-36.

144. Aureli, Pier Vittorio and Martino Tattara. "A Short History of the Private Room". *The Room of One's Own*. (London: Black Square, 2017). p. 7



'Farm workers arrive in Rotterdam port' ca. 1900 (Rotterdam Municipal Archives) Thousands of rural farmers arrive in Rotterdam as a result of the agricultural crisis, many working as dockworkers.

'Bloklandstraat', 'Wilgenstraat', 'Raephorstraat'  
[from top to bottom] 1906 (Rotterdam Municipal Archives)

tues of individuality and separation persist, first most dominantly on the street level, but become reintroduced the more the neighborhood is 'improved'. A healthier standard of living, a more spacious life, is connected with having an individual private room— to be separated from others. A model which works not only to aid in the monitoring and ordering of the population and the built environment, but what also conceals the work of domestic labor.

### **Gendered space; home as site of unpaid labor**

The family, the house and the room are presented, as inherited from bourgeoisie notions, as being refuges that are outside of work, outside of the exploitation of waged labor that occurs at the factory and in the port. The family home was to be a site of care, comfort, and leisure with each other— an apolitical, un-economic site.<sup>145</sup> And in this way the politics of gender separation could run uninhibited. Unpaid domestic labor is then thus also outside of the public economic and political realm of the city— despite that the city remained extremely dependent upon that unrecognized labor.

That unpaid labor was given a place in the plans, and was designed to be monitored, and ensured to continue at a certain pace. The kitchen, if accounted for at all, is typically a small space isolated from the rest of the house, designed to be functional, efficient and unglamorous.<sup>145</sup> It is not a space for appearance and publicity, as the living room is— and it is most surely assumed to be the domain of the woman. These values were also promoted through 'model dwellings' for the working class, in which such morals that were associated with privacy, gender roles and nuclear families were promoted through the proposal of floor plans.<sup>145</sup>

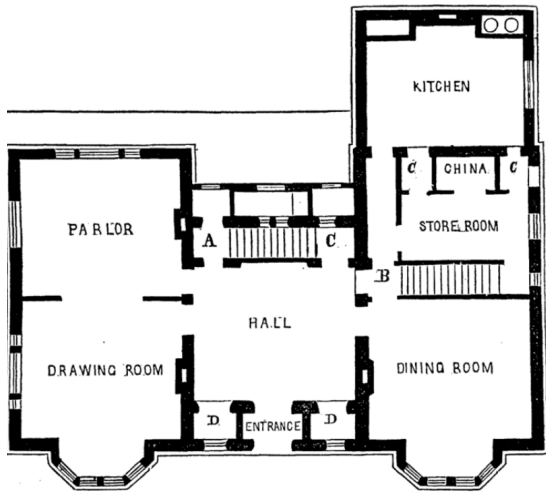
These models of morality were inextricably tied to the disciplining of social behavior in order to make good urban citizens and pro-

ductive workers.<sup>145</sup> A woman outside of the house, outside of her house-making duties— the spaces to which she is bound— was met with suspicion.<sup>146</sup> Yet women, who spent most of their hours doing exhaustive, heavy lifting work of laundry, preparing meals and so on, were excluded from design decisions about these spaces.<sup>145</sup> The ownership was not theirs. Ownership over ones body, especially the female body, was also alienated. For this reason there is an ominous relationship to the disciplining, regulating and reforming of bodies happening also within the neighborhood at the Noordsingel prison. Wherein the spatial organization is predicated upon a system of isolation and forming the individual, through the space, to conform to the morals set out by the productive society.

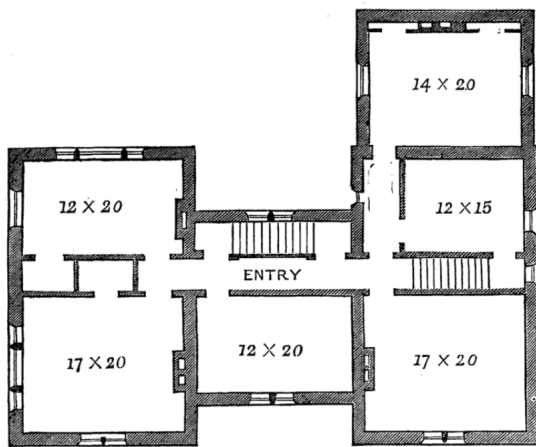
This movements towards difference is both directed and undirected. Patriarchial norms compel towards their reproduction and continuance by actors (designers) acting (designing) within a landscape they inherit and reinforce. The political project to maintain hierarchies of power, wealth (and gender) direct towards the ordering of the city, its inhabitants and its productive goals. It is less concerned with the effect upon individuals bodies or livelihoods, only in so far as the productive city is sustainable. Efforts to maintain the port city coincide with the need to have the city continue to function-- by expansion, implementing building regulations and municipal services. The political project is planned and reactionary-- it continues the landscape in which it is already situated. Design becomes a perpetual reform and continance of the normal.

145. Matrix (org.), ed. "House design and Women's roles". *Making Space: Women and the Man-Made Environment*. (1984). pp. 55-70

146. Camp and Provoost. *Stadstimmeren*. pp 77



[Fig. 131. Principal Floor.]



[Fig. 133. Second Floor.]

'Designs for Country Villas' 1850; Andrew Jackson Downing (The Architecture of Country Houses; D. Appleton & Company; Library of Congress) Designs for bourgeoisie houses, showing the individuation of rooms and the isolation of the kitchen to the rear of the house, a site of concealed labor, assumed to be the role of the woman. Plans demonstrate the bourgeoisie values of domestic space and the association of luxury with individuated separation.

## Chapter 6.

### Conclusions on power

#### **Normalization of rupture, and the wearing of spatial abuse**

The values of rupture, through assumptions encoded into spatial organizations, become an immanent condition of everyday life. The house reinforces gender separation and division—hierarchies and ownership are set within the family, and between the family and the authorities that oversee the neighborhood like a parent—and these assumptions carry on and become normal.<sup>147</sup> Through this normalized lack of autonomy over one's own environment—the normalization that the spaces that one inhabits do not belong to them—through this habitual harassment, abuse and monitoring—the sense of self and community becomes eroded.

Rupture becomes a state of existence. Agency and community become exceptions. We inherit these houses, these streets, these infrastructures and all of their embodied and encoded logics, values and intentions—in the same way those constructions inherited the structure, pattern, logics, values and intentions of the parcel plot and its ditches within the order—a structure we also still inhabit.

The structure itself carries with it the boundaries that bind us into its framework—a framework that was designed and designated to function in a specific way—to perform a specific task. It lives and acts through that value system—in this case one of ordering, proper-

ty, market value, rent, ownership, demarcating, registering, monitoring, taxing, recording and so on. The structure itself has an agency to carry along and perpetuate this legacy. It continues, in relation to the state, to serve as a locating device<sup>148</sup>—where the state can come and find us. To find us in that location, but also to find us residing in such a way that we are expected to be found residing and behaving—within the roles that the space has afforded to us.

This bearing down to conform to the space has an unquestionable affect upon us, it slowly, but violently, shapes us into its form. These legacies even continue into later reforms and regenerations, such as modernist regenerations, socialist inspired city improvement and welfare movements, social housing and urban renewal.<sup>149</sup> It calls for us to be wary of what we are propagating.

#### **Design as reform; maintenance of power structures, ownership**

Each of these reform movements reconstituted urban order<sup>149</sup>—meaning who owns what, and who directs what to move in which direction—just as the reform movements before them, such as the Water Project and the urban expansion, reconstituted an order within the city. The order remains to represent ownership. The principle feature of the city is the solidification of ownership—ownership over the land and the realization of the wealth of trade and production. It remains to be, through all of the reform movements, that true autonomous ownership over one's own environment is not truly available to the city dweller.

Seen in this way, the construction of the city is nothing more than a processual unfolding<sup>150</sup> of reform movements—a perpetual reconstitution of power and ownership. Design work becomes the task of designing a remedy, or the ability for the existing order to continue,

147. Matrix (org.), ed. "House design and Women's roles". *Making Space: Women and the Man-Made Environment* (1984) p. 69-70

148. Manning, Erin. *Politics of Touch: Sense, Movement, Sovereignty*. (Minneapolis: Univ. of Minnesota Press, 2007). p. 24-25

149. Stieber, Nancy. *Housing Design and Society in Amsterdam* (1998). 18-19

150. Springer, Simon, and Philippe Le Billon. "Violence and Space" (2016). p. 2



to sustain itself longer. Design becomes maintenance work. The actors who design these reforms, these continuances and extensions forward of what is already existing, are operating, not creating, the environments, the fields of forces<sup>151</sup>, they already find themselves in.

Their position as professionals, as planners, is directly tied to their access within this hierarchy— as the city official, connected with the port baron, as the landowner, or as the private developer. The plans they make continue the assumptions about ownership and control and maintenance over the built environment because they will seek to benefit from the continuation of that ownership model:<sup>152</sup> they are compelled towards defending their position. The city is designed principally by these wealthy white men to serve the purpose of creating more wealth for themselves— principally in the avenues of trade production or real estate value. The city developed to allow for colonial trade to be realized— it was a premeditated strategy, not necessarily a response to ‘natural’ processions. And it is not neutral. It reflects a very specific mode of production, and orientation.<sup>153</sup>

The city is a project.<sup>154</sup> At each point in its growth the need for the city to fulfil its role or duty in trade came first, and then it was constructed in order to realize that role. The developments and refinements to continue this role are not as premeditated. The expansion of the economic growth of the port is not combined with an analysis of how it will impact farmers who rely on stable grain prices, and how they will move to the city and how the city will be able to house them all. Those ramifications are dealt with as they appear. The project for wealth creation is planned, but the repercussions and resistances to that plan are responded to through design.

Design becomes maintenance work. And the environment maintains and projects itself, but what it embodies and furthers, by what it does. It holds the legacies of its directedness within it; the amalgamation of non-neutrality, layers of hierarchies, assumed logics and values of power, perform a slow moving, perpetual, exiling, rupturing, individuating violence upon the inhabitants.

151. Bourdieu, Pierre. *The Field of Cultural Production*. (1994).p. 2

152. Martina, Egbert A. "The Built Environment and Carcerality" (2017).

153. Ahmed, Sara. *Queer Phenomenology* (2006). p. 16

154. Aureli, Pier Vittorio, ed. *The City as a Project*. (2016). p. 14



'View of construction of the Bergpolder and Blijdorp neighborhoods' 1935 (Rotterdam Municipal Archive)



## Bibliography

- Ahmed, Sara. *Queer Phenomenology: Orientations, Objects, Others*. (Durham: Duke University Press, 2006).
- Aureli, Pier Vittorio and Martino Tattara. "A Short History of the Private Room". *The Room of One's Own*. (London: Black Square, 2017).
- Aureli, Pier Vittorio, ed. *The City as a Project*. (Berlin: Ruby Press, 2016).
- Barad, Karen. *Agential Realism: On the Importance of Material-Discursive Practices*. (Berlin: Suhrkamp, 2012).
- Bentham, Jeremy. *The Works of Jeremy Bentham. published: John Bowring* (Edinburgh: William Tait, 1838-1843). 11 vols. Vol. 4. 4/22/2019. <https://oll.libertyfund.org/titles/1925> Accessed 21 April, 2019.
- Berman, Marshall. *All That is Solid Melts into Air: The Experience of Modernity*. (London: Verso, 1983).
- Börger, Jacques and Anne Jongstra. "Historische besluiten: luidruchtig luchtspoor dwars door de stad". *Vers Beton*. 3 May, 2018. <https://versbeton.nl/2018/05/historische-besluiten-luidruchtig-luchtspoor-dwars-door-de-stad/> Accessed 18 April, 2019
- Bourdieu, Pierre. *The Field of Cultural Production*. (New York: Columbia University Press, 1994).
- Brand, Hanno. *Over macht en overwicht: stedelijke elites in Leiden: 1420-1510*. Universiteit Leiden. Dissertation. 1996.
- Brugmans, H. *Geschiedenis van Amsterdam*. (Utrecht: Spectrum, 1972).
- Buitelaar, ALP. *De Stichtse ministerialiteit en de ontginningen in de Utrechtse Vechtstreek*. (Hilversum: Uitgeverij Verloren, 1993)
- Camp, D'Laine and Michelle Provoost. *Stadstimmeren: 650 Jaar Rotterdam Stad*. (Rotterdam: Phoenix & den Oudsten, 1990).
- Capital Amsterdam Foundation (org) "Rotterdam Exchange". *ExchangeHistoryNL* <https://www.beurgeschiedenis.nl/en/moment/rotterdam-exchange/> Accessed 18 April, 2019.
- Classens, Michael. "The Matter of Matter: Making Property in the Holland Marsh". *Society & Natural Resources*, 31:2, 246-259, (2018).
- Colomina, Beatriz. *Domesticity at War*. (Cambridge: MIT Press, 2007).
- Couperus, Stefan. "Building Democracy Anew: Neighborhood Planning and Political Reform in Post-Blitz Rotterdam". *Journal of Urban History* Vol. 42(6) 992– 1008. (2016).
- de Vree, Joost. "Revolutiebouw". <http://www.joostdevree.nl/shtmls/revolutiebouw.shtml> Accessed 21 April, 2019.
- de Vries, Jan. *The First Modern Economy. Success, Failure, and Perseverance of the Dutch Economy, 1500–1815*. (Cambridge: Cambridge University Press, 1997).
- de Wolf, Meijer. "Monument Noordsingel Gevangen". *Ons Rotterdam*, 38e jaargang no.1 2016. pp. 18-19.
- Deleuze, Gilles and Félix Guattari. *A Thousand Plateaus* (1980).
- Deleuze, Gilles and Félix Guattari. *Anti-Oedipus*. (1972).
- Derrida, Jacques. *Of Grammatology* (1967).
- Derrida, Jacques. *Speech and Phenomena* (1967).

- Dolfing, B. "Vroegste ontwikkelingen in het Waterschap", in: J.C.N. Raadschelders and Th.A.J. Toonen (Eds.), *Waterschappen in Nederland: een bestuurskundige verkenning van de institutionele ontwikkeling*. (Hilversum: Uitgeverij Verloren, 1993)
- Dutch Housing Institute (org.). *Dutch Housing Legislation*. (Amsterdam: J.H. de Bubby, 1961).
- Edmundson, George (1911). "Oldenbarneveldt, Johan van". In Chisholm, Hugh. *Encyclopædia Britannica*. 20 (11th ed.). Cambridge University Press. pp. 69–71.
- Engelfriet, Aad. "De geschiedenis van de Beurs van Rotterdam, ruim 10 jaar ouder dan de Beurs van Amsterdam..." *engelfriet.net* Sept 10, 2014. <http://www.engelfriet.net/Alie/Hans/beurs.htm> Accessed 18 April, 2019.
- Engelfriet, Aad. "Johan van der Veecken". *engelfriet.net* 18 March, 2006. <http://www.engelfriet.net/Alie/Hans/veecken.htm> Accessed 18 April, 2019.
- Engelfriet, Aad. "Lodewijk Pincoffs". *engelfriet.net* 28 December, 2011. <http://www.engelfriet.net/Alie/Hans/51pincoff.htm> Accessed 18 April, 2019.
- Foucault, Michel. *Discipline & Punish*. pp. 7-8
- Foucault, Michel. *History of Sexuality: Vol. 1* (1976).
- Foucault, Michel. *The Archaeology of Knowledge* (1969)
- Foucault, Michel. *The Order of Things* (1970).
- Foundation Natuur Centrum Rotterdam (org.) "Kralingse Bos: De geschiedenis". 5 Jan. 2018. [http://natuurcentrum-rotterdam.nl/natuur/=natuurgebieden/=parken/=parken%20rotterdam/=kralingse\\_bos/kbontst.htm](http://natuurcentrum-rotterdam.nl/natuur/=natuurgebieden/=parken/=parken%20rotterdam/=kralingse_bos/kbontst.htm) Accessed 20 April, 2019.
- Gemeente Rotterdam (org.) "Noordsingel, gevangenis en gerechtsgebouw" <http://www.stadsarchief.rotterdam.nl/noordsingel-gevangenis-en-gerechtsgebouw> Accessed 21 April, 2019.
- Gerding, M.A.W. "Vier eeuwen turf winning, De verveningen in Groningen, Friesland, Drenthe en Overijssel tussen 1550 en 1950". Landbouwwuniversiteit, Wageningen. Dissertation. 4 Sept. 1995.
- Gorny, Robert Alexander, and Dirk van den Heuvel. "New Figurations in Architecture Theory: From Queer Performance to Becoming Trans." *Footprint* (2017): 1-10.
- Graham, Stephen, ed. *Cities, War, and Terrorism: Towards an Urban Geopolitics*. (Hoboken: John Wiley & Sons, 2008).
- Graham, Stephen. *Cities Under Siege: The New Military Urbanism*. (New York: Verso Books, 2011).
- Grimm, Peter. *Heeren in zaken, De Kamer Rotterdam van de Verenigde Oostindische Compagnie*. (Rotterdam: Walburg Pers, 1994).
- Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14.3 (1988): 575-599.
- Haraway, Donna. *Staying with the Trouble: Making Kin in the Chthulucene*. (Durham: Duke University Press, 2016).

- Harvey, David. "The Future of the Commons." *Radical History Review*. no. 109. 2011.
- Harvey, David. *Spaces of Global Capitalism: A Theory of Uneven Geographical Development*. (New York: Verso, 2006).
- Herweijer, Cees. "Rotterdam Centrum Voor Loodwitindustrie". RTV Rijnmond. 21 July 2016. <https://www.rijnmond.nl/nieuws/144343/Rotterdam-centrum-voor-Loodwitindustrie> Accessed 20 April, 2019.
- Hirsch, Jay Adam. *The Rise of the Penitentiary: Prisons and Punishment in Early America*. (New Haven: Yale University Press, 1992).
- Hitchcock, Tim and Robert Shoemaker. "Houses of Correction." *London Lives: 1690 to 1800*. Humanities Research Institute, University of Sheffield. <https://www.londonlives.org/static/HousesOfCorrection.jsp> Accessed 21 April, 2019.
- Hoogheemraadschap Schieland en de Krimpenswaard. (org.) "De Geschiedenis van het Hoogheemraadschap van Schieland". 2015. <https://www.schielandendekrimpenerwaard.nl/ons-werk/historie/schieland> Accessed 20 April, 2019.
- "Howard, John (1726?-1790)". *Dictionary of National Biography*. London: Smith, Elder & Co. 1885-1900. [https://en.wikisource.org/wiki/Howard,\\_John\\_\(1726%3F-1790\)\\_\(DNB00\)](https://en.wikisource.org/wiki/Howard,_John_(1726%3F-1790)_(DNB00)) Accessed 21 April, 2019.
- Israel, J.I. *De Republiek: 1477-1806*, (Franeker: Uitgeverij Van Wijnen, 1996).
- Jan van Herwaarden e.a. (red.) *Geschiedenis van Dordrecht tot 1572*. (Hilversum: Uitgeverij Verloren, 1996).
- Johnston, Norman Bruce; Kenneth Finkel, Jeffrey A. Cohen. *Eastern State Penitentiary: Crucible of Good Intentions*. (Philadelphia Museum of Art for the Eastern State Penitentiary Task Force of the Preservation Coalition of Greater Philadelphia, 1994). pp. 35
- Kahan, Paul. *Eastern State Penitentiary: A History*. (Stroud: History Press, 2008).
- Kok, Jan. "Flight from the land? Migration flows of the rural population of the Netherlands, 1850-1940". *Espace populations sociétés*. 2014. <http://journals.openedition.org/eps/5631> Accessed 21 April, 2019.
- Laan, Jan. *Werkstad: 30 Industriële monumenten in Rotterdam*. (Rotterdam: Stichting Industrieel Erfgoed Rijnmond, 1985.)
- Lefebvre, Henri. (1947) *Critique of Everyday Life: vol. 1,2,3*. (New York: Verso, 2014).
- Lefebvre, Henri. (1970) *The Urban Revolution*. (Minneapolis: Univ. of Minnesota Press, 2003)
- Lichtenauer, W.F. "Hudig, Jan (1838-1924)", *Biografisch Woordenboek van Nederland 1* (The Hague, 1979).
- Lorde, Audre. "The Master's Tools Will Never Dismantle the Master's House." 1984. *Sister Outsider: Essays and Speeches*. Ed. (Berkeley, CA: Crossing Press. 110-114. 2007).
- Loyen, Reginald; Buyst, Erik; Devos, Greta (eds.), *Struggling for Leadership: Antwerp-Rotterdam Port Competition 1870 - 2000*, (New York: Physica-Verlag Heidelberg, 2003)
- Manchester, William [1968], *The Arms of Krupp: 1587-1968* (Boston, MA, US: Little, Brown and Company, 2003).

- Marjolein van den Dries. "Rotta, de voorloper van de stad Rotterdam", *Middag aan de Maas: Vergeten Verhalen*, RTV Rijnmond, 25 August 2011.
- Markus, Thomas A. *Buildings and Power: Freedom and Control in the Origin of Modern Building Types*. (Abington: Routledge, 2013).
- Martina, Egbert A. "The Built Environment and Carcerality" *ProcessedLives*. blog. (2017). [<https://processedlives.wordpress.com/2017/04/01/the-built-environment-and-carcerality/>]. Accessed April 17, 2019.
- Massey, Doreen. (1994) *Space, Place and Gender*. (Hoboken: John Wiley & Sons, 2013).
- Matrix (org.), ed. *Making Space: Women and the Man-Made Environment*. (London: Pluto Press, 1984).
- Mijnhardt, W.W. and A.J. Wichers (red.), *Om het algemeen volksgeluk: Twee eeuwen particulier initiatief 1784-1984*. (Amsterdam: Society for the Good of General, 1984).
- Moncan, de Patrice. *Le Paris d'Hausmann*. (Paris: Les éditions du Mécène, 2009). pp. 34.
- Nederslands Architecture Institute (org.) "Prins Alexander Polder: 1865-1874". *Polders: The Scene of Land and Water*. 7 Sept. 2005. [http://static.nai.nl/polders/e/polders/alexander\\_e.html](http://static.nai.nl/polders/e/polders/alexander_e.html) Accessed 20 April, 2019.
- Nieuwenhuis, Jan. *Mensen maken een stad 1855-1955, uit de geschiedenis van van de dienst van gemeentewerken te Rotterdam*. (Rotterdam: Geemete Rotterdam, 1955).
- Oosterwijk, Bram. *Ik verlang geen dank: Lodewijk Pincoffs (1827-1911)* (Rotterdam: Uitgeverij Douane, 2011).
- Paping, R.F.J. "De Groningse verpondingsregisters". *Broncommentaren 4: Bronnen betreffende de registratie van onroerend goed in Middeleeuwen en Ancien Régime*. Instituut voor Nederlandse Geschiedenis, 2001. pp. 310-340
- "Penitentiary Act, 1779". *Supervisors' Records*. *London Metropolitan Archives: City of London*. Ref ACC/3648. <https://discovery.nationalarchives.gov.uk/details/r/bd7861bf-6f01-4945-8218-68eec54966c1> Accessed 21 April, 2019.
- Permanent Collection. *Belasting en Douane Museum*, Rotterdam. Visited 20 Sept. 2018.
- Pleijster, Eric-Jan and Cees van der Veeken. *Dutch Dikes*. (Rotterdam: nai010, 2014).
- Price, J.L. *Dutch Society, 1588-1713*. (Harlow: Longman, 2000).
- Prins, Maarten and Henk Looijesteijn. "Heren, heerlijkheden en heerlijke rechten" *herenvanholland.nl* 2018. <https://www.herenvanholland.nl/heren-heerlijkheden-en-heerlijke-rechten/> Accessed 20 April, 2019.
- Recihenfeld, Loes. *Het Oude Noorden: Het ontstaan van een Rotterdamse wijk 1870-1910*. Dissertation. (Rotterdam: 1987).
- Renaud, JGN "Archaeological Investigations in Rotterdam" *Rotterdam's Jaarboekje, 1942*, p. 121-125. Accessed via <http://rjb.x-cago.com/> 20 April, 2019.
- Rendell, Jane, Barbara Penner, and Iain Borden, eds. *Gender Space Architecture: An Interdisciplinary Introduction*. (Hove: Psychology Press, 2000).

- Rigter, R.B.M. "Met raad en daad: de geschiedenis van de Gezondheidsraad 1902-1985" *Erasmus University Rotterdam*. Dissertation. (23 Sept. 1992).
- Ryder, Judith Anne. "Auburn State Prison". *Encyclopedia Britannica*. 18 June, 2013. <https://www.britannica.com/topic/Auburn-State-Prison> Accessed 21 April, 2019.
- Sanders, Ewoud. "Polder Model". *NRC Handelsblad*, 1 July 1999.
- Schenk, J. *Havenbaronnen en Ruhrbonzen: Oorsprong van een wederzijdse afhankelijkheidsrelatie tussen Rotterdam en het Ruhrgebied 1870 - 1914*. Dissertation. (Rotterdam: Erasmus University, 2015)
- Schieland District Water Board and Krimpenerwaard, Rotterdam. Access 106, *archive of Polder Blommersdijk, 1848-1907 (1937)* Accessed 20 April, 2019.
- Schielandshuis (org.) "History of the Schielandshuis". <https://schielandshuis.nl/verhaal-schielandshuis/geschiedenis/> Accessed 20 April, 2019.
- Schrama, Gerard. "Blekerijen en wasserijen" 22 Jan. 2016. <http://www.genealogie-stamboom-schrama-gravenmade-bollenstreek.nl/Blekerijwasserij.htm> Accessed 20 April, 2019.
- Schumpeter, Joseph. *Capitalism, Socialism and Democracy*. (New York: Haper & Brothers, 1942).
- Sillem, Jérôme Alexandre. "Jaargang 41". *De Gids*. (Amsterdam: P.N. van Kampen & Zoon, 1877). [https://www.dbnl.org/tekst/\\_gid001187701\\_01/\\_gid001187701\\_01\\_0017.php](https://www.dbnl.org/tekst/_gid001187701_01/_gid001187701_01_0017.php) Accessed 20 April, 2019.
- Smit, E. J. *De Syndicale Onderstroom: Stakingen in de Rotterdamse Haven, 1889-2010*. (Amsterdam: Vossiuspers UvA, 2013).
- Springer, Simon, and Philippe Le Billon. "Violence and Space: An Introduction to the Geographies of Violence." *Political Geography* 52 (2016): 1-3.
- Stadsmuseum Hellevoetsluis. "Kanaal door Voorne: met de hand gegraven (1827-1830)" [stadsmuseum-hellevoetsluis.nl https://www.stadsmuseum-hellevoetsluis.nl/tijd-lijn/kanaal-door-voorne-met-de-hand-gegraven](https://www.stadsmuseum-hellevoetsluis.nl/tijd-lijn/kanaal-door-voorne-met-de-hand-gegraven) Accessed 18 April, 2019.
- Stieber, Nancy. *Housing Design and Society in Amsterdam: Reconfiguring Urban Order and Identity, 1900-1920*. (Chicago: University of Chicago Press, 1998).
- Stouten, Paul L. M. *Changing Contexts in Urban Regeneration: 30 Years of Modernisation in Rotterdam*. (Amsterdam: Techne Press, 2010).
- Tol, Barend "De ontwikkelingsgeschiedenis van de Agniesebuurt en het Oude Noorden". (Rotterdam: dS + V, 1997).
- van Bavel, Bas. "The Medieval Origins of Capitalism in the Netherlands". *BMGN: Low Countries Historical Review*, 125(2-3), pp.45-79. (2010).
- van Bommel, A.J. "The History of Residential Buildings". *Delft Construction History Reader*. (TU Delft, 2018) pp 10.
- van de Heijden, Manon and Paul van de Laar (red.): *Rotterdamers en de VOC, Handelscompagnie, stad en burgers (1600-1800)*. (Amsterdam, Bakker, 2002).



- van der Aa, A.J. "Biografie Steven Hoogendijk", *Biographisch woordenboek der Nederlanden. 1867*. [https://www.dbnl.org/tekst/aa\\_\\_001biog10\\_01/aa\\_\\_001biog10\\_01\\_0518.php#h1915](https://www.dbnl.org/tekst/aa__001biog10_01/aa__001biog10_01_0518.php#h1915) Accessed 21 April, 2019.
- van der Laan, Gerrie. "Het Oude Noorden van Rotterdam". *engelfriet.net* 6 Feb. 2016. <http://www.engelfriet.net/Alie/Aad/oudenoorden.htm> Accessed 18 April, 2019.
- van der Ven, GP, *De Nieuwe Waterweg en het Noordzeekanaal; een waagstuk*, (Research by order of the Deltacommissie, 2008).
- van Es, Evelien. "Cultuurhistorische Verkenning: 19e-eeuwse wijken in Noord: Oude Noorden, Agniesebuurt en Provenierswijk". *Gemeente Rotterdam*, commissioned by Deelgemeente Noord. (25 Oct. 2013).
- van Revesteyn, L.J.C.J. *Rotterdam tot het Einde van de Achttiende Eeuw: De Ontwikkeling der Stad*. (Schiedam: Schie-Pers, 1974). pp. 130-136.
- van Sandick, Onno Zwier. *Herinneringen van de Zuid-Westkust van Afrika: Eenige bladzijden uit mijn dagboek*. (Deventer, 1881) Accessed at [http://www.vansandick.com/familie/archief/Herinneringen\\_van\\_de\\_Zuid-Westkust\\_van\\_Afrika/](http://www.vansandick.com/familie/archief/Herinneringen_van_de_Zuid-Westkust_van_Afrika/) on 18 April, 2019.
- van Schoubroeck, Frank. "The remarkable history of polder systems in The Netherlands". *Agricultural Heritage Systems of the 21st Century*. Conference paper. (M S Swaminathan Research Foundation, 18 February 2010 in Chennai, India)
- van Weenen, Jan Christiaan de Leeuw. "Het Hof van Weena: Geschiedkundige Beschrijving". *deleeuwvanweenen.nl* 7 April, 2010. <http://www.deleeuwvanweenen.nl/Webpage/Genealogie/Kasteel.htm> Accessed 20 April, 2019.
- Wakker, Willem Jan; Paul van der Molen and Christian Lemmen. "Land registration and cadastre in the Netherlands, and the role of cadastral boundaries". *Netherland's Cadastre and Land Registry Agency. Journal of Geospatial Engineering*, Vol. 5, No.1 (June 2003), pp.3-10.
- Weizman, Eyal. "Strategic Points, Flexible Lines, Tense Surfaces, Political Volumes: Ariel Sharon and the Geometry of Occupation". 7-26. *Territories, Builders, Warriors and Other Mythologies*. (Rotterdam: Witte de With, 2003).
- Weizman, Eyal. *Hollow Land: Israel's Architecture of Occupation* (2012)
- Wijnand, Meijer. "Spanish Furie 4-8 November 1576". *dutchrevolt.leiden.edu* Accessed 18 April, 2019.
- Wilson, Mabel "Changing the Subject: Race and Public Space" ArtForum, (2017). Speaking on manuscript in development: *Building Race and Nation: How Slavery Influenced Antebellum American Civic Architecture*