

## Van Niftrik's City Expansion Plan for Amsterdam

The characteristics of the 19th-century expansion plan in a time of innovation and growth.

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## **Abstract**

This paper investigates the key characteristics of van Niftrik's city expansion plan for Amsterdam in 1866. The plan aimed to improve living conditions by introducing large green spaces throughout the plan, which were accessible for all residents. The plan separated industry and residential areas to create a clear structure. A road connecting all the main public spaces is introduced to connect the different parts of the expansion. Water structures were scarcely integrated, as they were very polluted at that time and a source of disease. The plan integrates features like the radial patterns seen in the southern part of the plan, but also garden-city-like neighbourhoods. In the final chapter, van Niftrik's plan is compared to another 19th-century European city expansion: Hobrecht's plan for Berlin. This will show the differences and similarities in the approaches cities and designers had to their expansions.

## 1. Introduction

In the mid-to-late 19th century, many major European cities began reorganising their infrastructure and expanding to accommodate more residents. The growth originated from the migration of people from the countryside to the city in search of work. This was a time of significant change. The Industrial Revolution and the French Revolution gave the continent new tools and values, which are also reflected in the plans for city expansions.

This research focuses on Amsterdam's mid-19th-century expansion plan and its designer, Jacob van Niftrik. It covers van Niftrik's background and how he became the city engineer of Amsterdam and was asked to design the expansion plan. It describes the plan in detail and shows its characteristics. Primary sources are used, such as *Plan tot Uitbreiding der Stad Amsterdam* (1867), in which Jacob van Niftrik describes his plan and the response of the alderman and other parties involved. In the literature, there has been written about the plan, though not much. This could be due to the plan quickly being disapproved. The most complete source found is *Hoofdstad in Gebreke* (Ida de Jager, 2002), which gives an overview of the public works of Amsterdam from 1851 until 1901.

By focusing on primary sources such as the plan description and maps, the different aspects of the plan are described in more detail. Most secondary sources give a brief overview of the characteristics, but a detailed analysis is missing. By doing this, a better understanding of van Niftrik's vision of how Amsterdam should have expanded is gained. From there, a comparison is made between van Niftrik's plan and another key expansion plan in Europe from the same time: Hobrecht's plan for Berlin.

The central research question is: *What are the key characteristics/ principles of van Niftrik's expansion plan for Amsterdam?*

The research's structure is as follows:

1. Introduction
2. Jacob van Niftrik
3. Amsterdam in the mid-19th century
4. Van Niftrik's expansion plan for Amsterdam
  - A Description of van Niftrik's Expansion Plan
  - B Key aspects of van Niftrik's Expansion Plan
5. Reception of van Niftrik's plan by the city council
6. Comparison with Hobrecht's plan for Berlin
7. Conclusion
8. Discussion

**Key Words:** Jacob van Niftrik, Plan tot Uitbreiding der Amsterdam, Stadsuitbreiding, Amsterdam, publieke werken, stadsingenieur, James Hobrecht, Berlin

## 2. Jacob van Niftrik



Figure 2: Jacob van Niftrik (1877) (Stadarchief Amsterdam)

Jacobus Gerardus van Niftrik (1833-1910) was born on the 20th of June in Nijmegen, where he grew up in a protestant environment.<sup>1</sup> His father was a Dike Admiral of the polder *Circul Van Ooi*, just North of the city of Nijmegen. He became an aspiring scout in 1849, and at the age of 16, van Niftrik gained his first experience with water management works. Soon, he conducted supervision of the renovation of the large dewatering sluice of the polder. It was the first and last time he was under the supervision of his dad, who taught him skills of the trade.<sup>2</sup>

Following in his father's footsteps, he became an extraordinary supervisor at the water department in Noord-Brabant in May 1852. On the side, he attended civil technical school in the evenings to achieve the title of engineer. A big inspiration for him during that time, as he wrote in his memoirs, was Storm Buysings' book: *Handleiding tot de kennis der waterbouwkunde* from 1844. Buysings was, at the time, a teacher of water engineering at *Delft Academie*.<sup>3</sup>

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<sup>1</sup> Van den Hoek Ostende 1968

<sup>2</sup> Jager, 2002

<sup>3</sup> Jager, 2002

In the spring of 1855, van Niftrik passed his supervision exam for *Rijkswaterstaat*.<sup>4</sup> He started working under engineer I.F.W. Conrad, an influential figure who contributed to the Netherlands' first train network and the Suez Canal. However, "Much to his sorrow" he was transferred to *Goes in Zeeland* to work under Conrad on the maintenance of sea dikes. Van Niftrik described his life in *Zeeland* as lonely, with near-zero opportunities to progress his career.<sup>5</sup>

In 1858, van Niftrik joined an exam for the position of aspiring engineer in the Dutch Indies. Three spots were available, of which he obtained the 3<sup>rd</sup> spot. Despite this, the position was given to someone else. A year later, with Congrad's help, he was offered a position in the Dutch Indies nonetheless. By this time, however, van Niftrik was married and turned the offer down.<sup>6</sup> Instead, he started working as head supervisor in *Nieuwediep* for reparation works on the *Groot Noordhollandsch kanaal*. According to him, this contributed majorly to his later nomination in Amsterdam.<sup>7</sup>

In Amsterdam, around a similar time, a proposal was accepted for appointing a city architect, a city engineer and a director of public works. The city engineer took over the tasks of the director of Municipal Waterworks, which it replaced. Petrus van der Sterr was appointed to be the first city engineer in 1856. When van der Sterr moved with his family to Beverwijk in 1864, Jacob van Niftrik replaced him. The following affairs would fall under the job description:<sup>8</sup>

- *All sluices, flood defences, divers, dikes and quay walls,*
- *Streets, paths and roads*
- *Urban parks*
- *Dredging, all earthworks, rubble collection, cleaning of markets, bridges and squares and collecting ash and rubbish*
- *Urban lighting and everything related to gas and water pipes and the water supply, telegraph lines, land surveying and the recording and mapping of terrain*
- *Supervision of the City Water Office, water circulation, city canals, docks, Balkhaven, open harbour front (deepening) and sluice deepening*

Van Niftrik stayed in this position for 37 years until he retired on the 31<sup>st</sup> of December 1900.<sup>9</sup> During his time as city engineer, he worked on many challenges the city faced, such as improving sewage systems, water management and city expansions.

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<sup>4</sup> Van den Hoek Ostende 1968

<sup>5</sup> Jager, 2002

<sup>6</sup> Stadsarchief Amsterdam

<sup>7</sup> Jager, 2002

<sup>8</sup> Stadsarchief Amsterdam

<sup>9</sup> Stadsarchief Amsterdam



### 3. Amsterdam in the mid-19<sup>th</sup> century



Figure 3: Map Amsterdam 1853 (Stadarchief Amsterdam)

The context in which van Niftrik designed the expansion plan has to be understood first to understand the plan itself. The image above shows the map of Amsterdam in 1853. There has not been a noticeable expansion since the 4th expansion from 1658 until 1664.<sup>10</sup> Like many of the larger European cities, the city of Amsterdam was changing quickly during the Industrial Revolution. The jobs created in the factories saw many people from the countryside move to the city. Although the factory work was hard, it was still better paid and relatively easier than on the farm. The city began to grow for the first time in over a century, and it struggled to accommodate its new residents. The living conditions were very poor, and because of overcrowding and lack of hygiene, diseases like typhus, cholera and tuberculosis were spreading fast.<sup>11</sup> (Figure 4)

<sup>10</sup> Jager, 2002

<sup>11</sup> Amsterdam, 2019

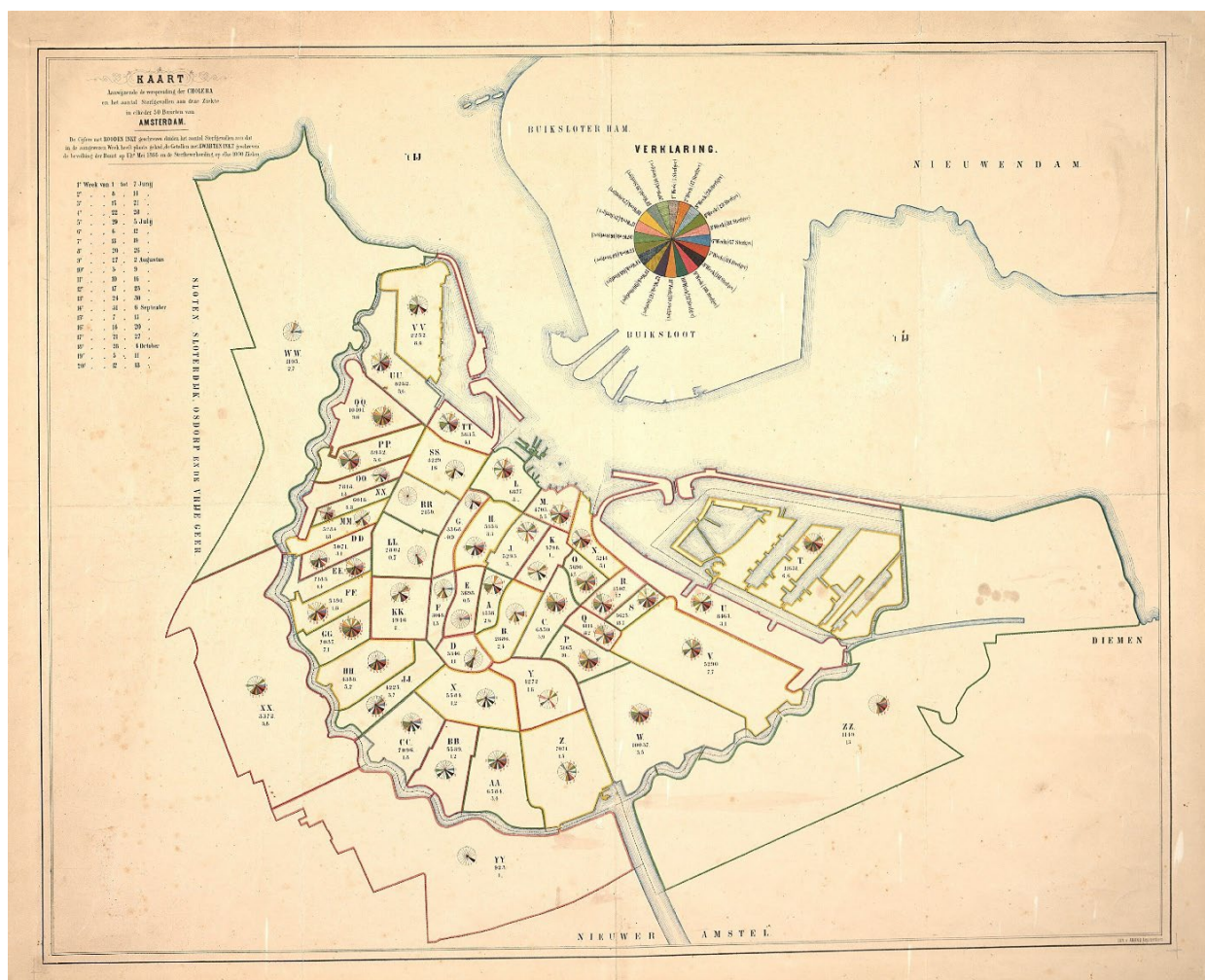


Figure 4: Infections and deaths due to cholera in Amsterdam 1<sup>st</sup> of June – 18<sup>th</sup> of October, 1866 (Stadsarchief Amsterdam)

*De Jordaan* was the most crowded and most miserable neighbourhood of the city. Buildings were divided, and on average, 5 people were living in less than 50 m<sup>2</sup>, often even in a single room.<sup>12</sup> On top of this, the streets were battered, and there was a lack of refreshment and investment in the city.<sup>13</sup>

Nothing seemed to indicate that Amsterdam had the pioneering role it once had, as it entered the second half of the 19<sup>th</sup> century with a yearly interest charge of 800.000 a year. Because of the heavy pressure of debt, the city had to close its eyes to the deteriorated condition and the need for major interventions.<sup>14</sup>

<sup>12</sup> Stadsarchief Amsterdam

<sup>13</sup> Jager, 2002

<sup>14</sup> Jager, 2002

The municipality was known to be conservative. During the 1850s, their policy was characterised by continuously postponing and rejecting proposals and plans for improving the public area. The main focus at that time was an improved water connection with the North Sea. Together with addressing the city's debt, these two subjects characterised these years, according to H.J. Koenen, councillor for public works.<sup>15</sup>

From travel journals, we can tell that visitors from other cities in Europe were shocked by the city's state and how much it had declined. Amsterdam had gotten a reputation for its disgusting fumes.<sup>16</sup> Not only was it lagging behind other European cities, such as Paris and Brussels, but the difference was striking even within the Netherlands. A comparison was often made with Rotterdam, whose strength and life stood in contrast to Amsterdam's miserable sleepiness.<sup>17</sup> (Figure 5)

Because of the municipality's lack of initiative, it often had to come from private parties. In the 1850's ideas were put forward almost every month to improve the wealth and well-being of the working class, infrastructure and hygiene. However, all these plans struggled to leave paper.<sup>18</sup> Instead of taking action, the city sold their land along the banks of the river Amstel cheaply, without even forcing the buyers to build the much-needed houses.<sup>19</sup> It says a lot that the first significant change in the city plan of Amsterdam was initiated by a socially committed doctor rather than the municipality. Samuel Sarphati was one of the most influential people at that time. He contributed to raising awareness and starting to solve the problem that Amsterdam was facing. Sarphati, trained as a general practitioner, was confronted by the poor conditions every day. Together with a group of wealthy entrepreneurs, he founded the *Vereeniging tot opbeuring van het lot der Arbeidende Klasse* in 1852 to organise better conditions for the workers. Work Sarphati did for the city included the organisation of trash collection and offering more affordable bread. He was an influential figure in building the *Paleis voor Volksvlijt* (figure 6), which was seen as a trigger to further expansion and improvement of the city. It was the first project to break through the years of standing still.<sup>20</sup>

After the relatively short period of Van der Sterr as city engineer of Amsterdam, Jacob van Niftrik was appointed in 1864. When he took over the responsibility, he described that "the city had the appearance of an old ugly lady". The city was in bad shape, and the downfall of almost all shipyards in the previous decades was a sign of this. But despite this, the city was showing a surprisingly entrepreneurial spirit, and the factories were prosperous.<sup>21</sup> Searching for a solution for the growing city, van Niftrik saw the need for a large-scale expansion outside of the existing city's border. In 1866, only 2 years after he was appointed city engineer, van Niftrik presented his expansion plan for Amsterdam.<sup>22</sup>

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<sup>15</sup> Jager, 2002

<sup>16</sup> Hoogewoud, 2004

<sup>17</sup> Jager, 2002

<sup>18</sup> Jager, 2002

<sup>19</sup> Hoogewoud, 2004

<sup>20</sup> Jager, 2002

<sup>21</sup> Jager, 2002

<sup>22</sup> Amsterdam, 2019



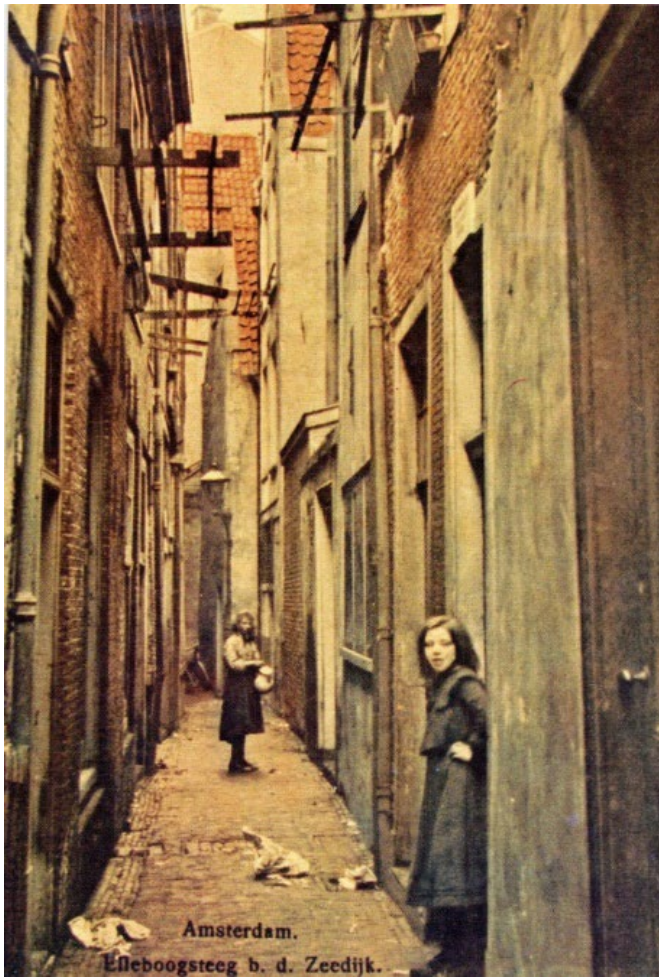


Figure 5: Elleboogsteeg b.d. Zeedijk, Amsterdam (around 1850) indicates the cramped living conditions in the city. (stadarchief Amsterdam)



Figure 6: Sarphati's Paleis van Volksvlucht was a trigger for further expansion and improvement of the city (stadarchief Amsterdam)

#### 4A. Characteristics of van Niftrik's expansion plan

On the 20<sup>th</sup> of October, 1866, van Niftrik presented his expansion plan for Amsterdam. He designed this remarkably quickly since he was asked only 7 months before (29<sup>th</sup> of March 1866), and also focused on his other day-to-day work. Van Niftrik argued that the existing city had “no space left to build, outside of filling up a few useless canals.”<sup>23</sup> Because of that, the expansion had to be outside its current borders. Building the city on polder level meant that the ground of the entire area needed to be raised before the building could start. This was an expensive and labour-intensive exercise in the 19<sup>th</sup> century. The proposed plan is a belt of 648 hectares around the city, which would double the city’s size. He presented the plan on a scale of 1 to 1.250 and a scale of 1 to 10.000, both showing the entire city and a small part of the neighbouring municipalities.<sup>24</sup> Important to note is that in the measuring system used, 1 el equals 1 meter. Even though the Dutch el once was around 0,69 meters, with the introduction of the metric system in the Netherlands in 1820, the el was equated with a meter.

Amsterdam, at that time, saw many informal buildings outside of the city borders without any cohesion or order. This was seen as undesired and problematic by the municipality. Therefore, for the plan's design, van Niftrik thought of these as non-existent, so he had an empty terrain to work with.<sup>25</sup> Looking at the height of the terrain, the plan can be divided into 5 sections (figure 7), according to van Niftrik. The water levels in these sections range from being at level with the city’s water to being 1.8 meters below it. A relation can be noticed between the sections and the program by looking at the map. Van Niftrik describes his plan according to these 5 sections, this chapter will follow this approach.

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<sup>23</sup> Niftrik, J. G. v. 1867

<sup>24</sup> Niftrik, J. G. v. 1867

<sup>25</sup> Niftrik, J. G. v. 1867



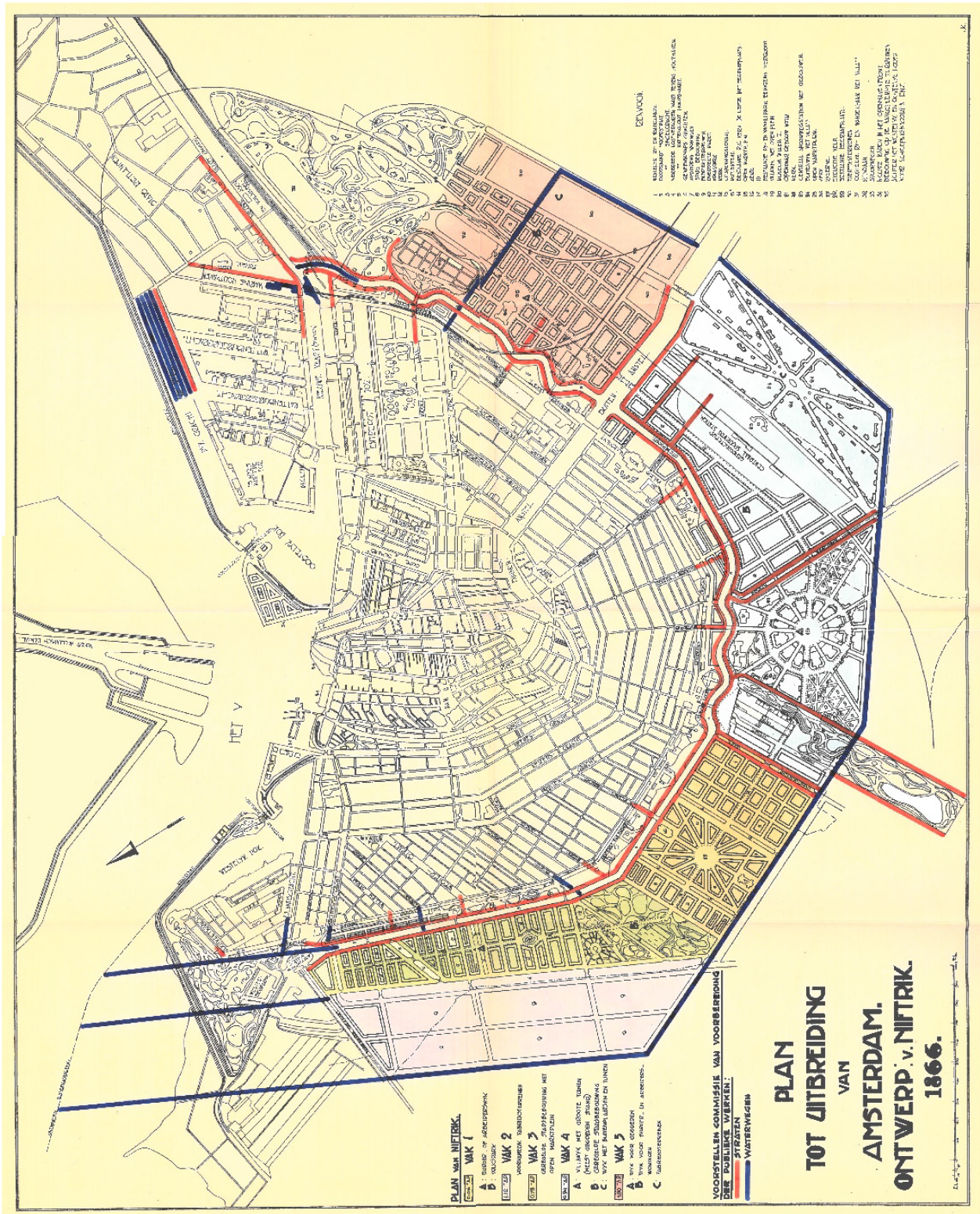


Figure 7: Van Niftrik's *Plan tot uitbreiding van Amsterdam* 1867 divided 5 sections (Gemeentelijke Woningdienst Amsterdam)



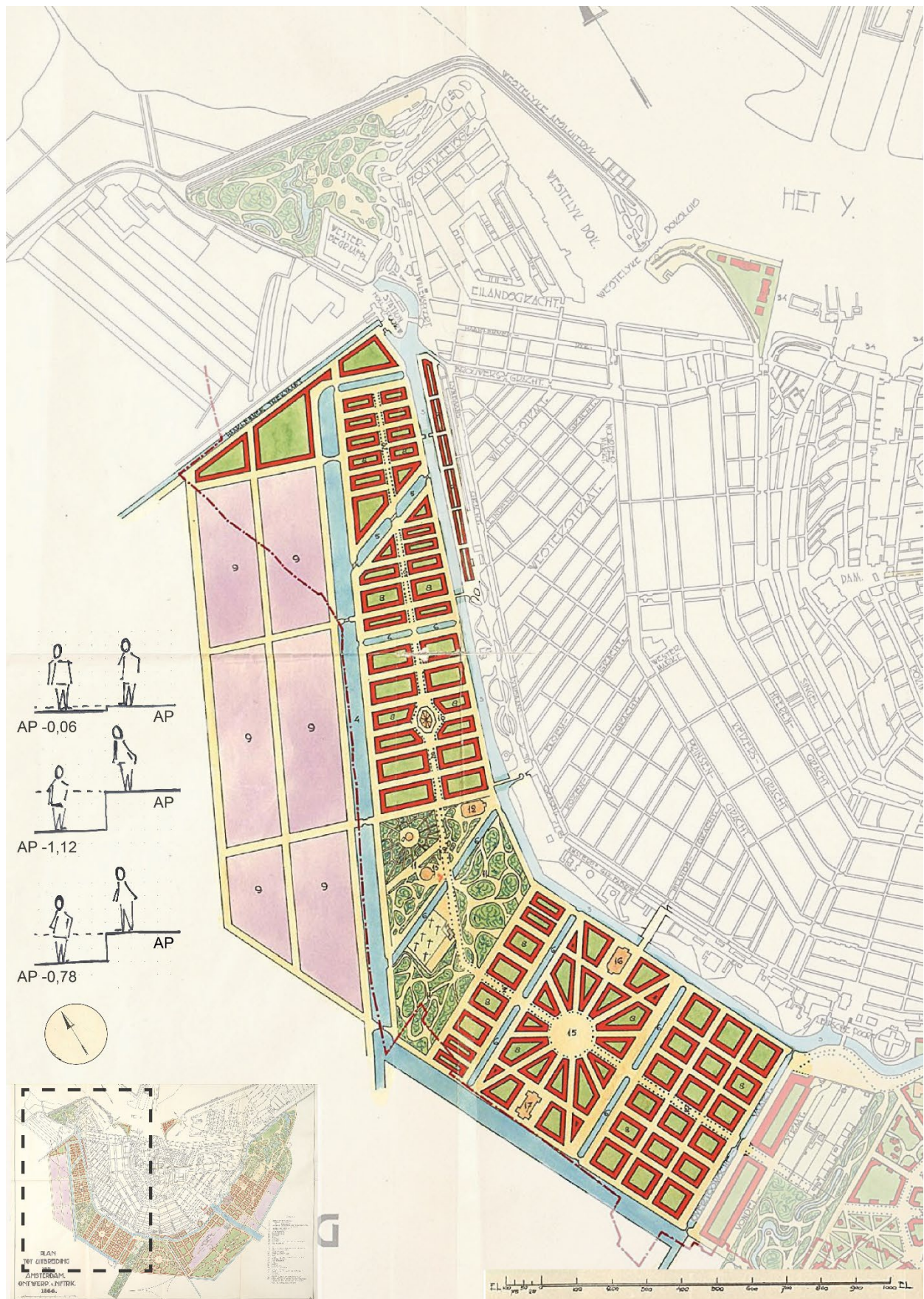


Figure 8: Expansion plan, sections 1 to 3 (stadsarchief Amsterdam, modified by author)



### *Section 1A: Middle-class or working-class neighbourhood (0,06 meter below AP)*

In section 1A, the designed extension borders the *Jordaan*, one of the poorest neighbourhoods in Amsterdam at that time, where a lot of the workers from the factories and their families were living. In this section, a working-class neighbourhood, spanning from the *Haarlemmerstraat* to the *Zaagmolenspoort*, was designed. The building blocks are slightly smaller and closer together compared to the rest of the plan, creating a higher density. 3 canals cross the neighbourhood, and through the centre runs the continuing main street, which spans the length of the entire expansion plan. In the southern part, the main street curves around a covered market. It connects to the existing city road network as well as the industrial estate by 3 bridges. The working-class neighbourhood is separated from the factories by the widened *Kostverloren Vaart*.<sup>26</sup>

### *Section 1B: Public park (0,03 meter below AP)*

South of the middle-class and working-class neighbourhood, a 33-hectare public park is planned. In this park lies an existing church with garden (*R.K. Kerk de Liefde*) and cemetery (*R.C. begraafplaats*). These functions are integrated into the design. "The goal of the designed public park is to provide an opportunity for appropriate relaxation to the workers and their families near the middle-class or working-class district, thereby compensating for the relatively large distance to other walking areas."<sup>27</sup> This shows van Niftrik's intent to improve living conditions and give the working class a place for leisure.

### *Section 2: Mainly industrial estate (1,12 meter below AP)*

On the other side of the *Kostverloren Vaart*, an industrial estate is proposed which is purposely planned on a main waterway "to fulfil to all parts to the demands of the factory business".<sup>28</sup> The other programs present in this section are two building blocks. These are noticeably larger than the other building blocks designed for the middle and working classes. Van Niftrik, however, does not further explain this in his plan description.

### *Section 3: Regulated urban development with market square (0,78 meter below AP)*

Bordering the other side of the public park, a neighbourhood with regulated building blocks is designed. Even though van Niftrik does not explicitly name it in his plan explanation, the urban structure in this section is characterised by the star-shaped street plan. Central in this structure lies a large open market square of 17662 m<sup>2</sup>. On both sides of this neighbourhood, there is a churches planned. The one connection with the existing city is designed so that the *Elandsgracht* connects to the central axis on which lie both the churches and the market square.<sup>29</sup> The size of the building blocks and the width of the streets are similar to those in section 1A.

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<sup>26</sup> Niftrik, J. G. v. 1867

<sup>27</sup> Niftrik, J. G. v. 1867

<sup>28</sup> Niftrik, J. G. v. 1867

<sup>29</sup> Niftrik, J. G. v. 1867



Figure 9: Expansion plan, section 4 (stadsarchief Amsterdam, modified by author)

*Section 4A: Villa neighbourhood with large gardens (most wealthy class) (0,94 meter below AP)*

The existing buildings east of the waterway *Overtroomse Vaart* are kept, just as the *Vondelpark*, which was developed in 1865 by a group of private individuals. This public riding and walking park gives quality to the surrounding areas, and this has likely contributed to why the neighbourhood for the most wealthy class was designed here. Besides this, there are designated locations for *Museum Willem I*, a new theatre and a grand church.<sup>30</sup> Van Niftrik envisioned this to be the new cultural centre of the city. It is also where the museum square and the concert hall are located today. Just like section 3, but also not mentioned in the plan explanation, the neighbourhood is characterised by the star-shaped street structure, dividing the plots with villas. Central in this lies an open square, with the main street running through, as seen in other parts of the plan. The existing city connects to the central axis of this section of the extension plan, on which lie the public buildings and the market square.

*Section 4B: Regulated urban development (0,94 meter below AP)*

“On the east side of the waterway, *Boeren-Wetering*, the design is controlled by the designed central train station. According to the ideas of the Chamber of Commerce and Factories, the establishment at this location was considered most desirable for the municipality in the council meeting of March 28, 1866.” The preference from the city seemed to be most influential in locating the central station here.<sup>31</sup> Even though it was thought that the central government preferred the location of the open harbour front.<sup>32</sup> North of the station, regulated building blocks were proposed. Some of these blocks are remarkably large, like the ones designed in section 2. Again, no explanation was given for the size of these blocks. On the other side of the *Singelgracht* lies the *Paleis voor Volksvleit*, which was completed only 2 years before the expansion plan. The design of this building includes the area around it as well, for which a permit was already given.

*Section 4C: Neighbourhood with country estates and gardens (0,94 meter below AP)*

South of the central train station, van Niftrik designed a neighbourhood with country estates and gardens. Like section 4B, this neighbourhood borders the western shore of the *Amstel*. Here, van Niftrik envisioned a star-shaped street pattern as well, with a central square for activity, although this is not further explained in the plan explanation.

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<sup>30</sup> Niftrik, J. G. v. 1867

<sup>31</sup> Niftrik, J. G. v. 1867

<sup>32</sup> Lagerweij, 2017





Figure 10: Expansion plan, section 5 (stadsarchief Amsterdam, modified by author)



“The neighbourhoods on the east side of the Amstel are partly arranged according to the direction designed by the Chamber of Commerce and Factories for the state railway.”<sup>33</sup> Unique to this part of the plan, section 5 is characterised by multiple railways cutting through it.

*Section 5A: Neighbourhood for the wealthy (1,80 meter below AP)*

On the border of the existing city, between the *Singelgracht* and the railway, van Niftrik designed a neighbourhood for the wealthy. This section of the plan includes a smaller train station, a church on a market square, barracks with an exercise field and an existing cemetery.<sup>34</sup>

*Section 5B: Middle-class or working-class neighbourhood (1,80 meter below AP)*

South of the railway, van Niftrik envisioned a middle-class and working-class, bordering an industrial estate.<sup>35</sup> The size of the building blocks and urban structure is similar to that seen in section 1A. Similarly, the residential area is near the industrial estate. As opposed to the other side of the plan, there is no waterway separating the two areas.

*Section 5C: Industrial estate (1,80 meter below AP)*

The industrial estate planned here is located on the edge of the river *Amstel*. This is a strategic location since the waterway is used to import and export materials to the location efficiently.<sup>36</sup>

Finally, the expansion plan is concluded by a large riding and walking park. This park includes a running track, and villas are placed throughout.<sup>37</sup> It is a part of the plan for the wealthy, although van Niftrik did not go into further detail in his plan description.

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<sup>33</sup> Niftrik, J. G. v. 1867

<sup>34</sup> Niftrik, J. G. v. 1867

<sup>35</sup> Niftrik, J. G. v. 1867

<sup>36</sup> Niftrik, J. G. v. 1867

<sup>37</sup> Niftrik, J. G. v. 1867

#### 4B. Key aspects of van Niftrik's expansion plan

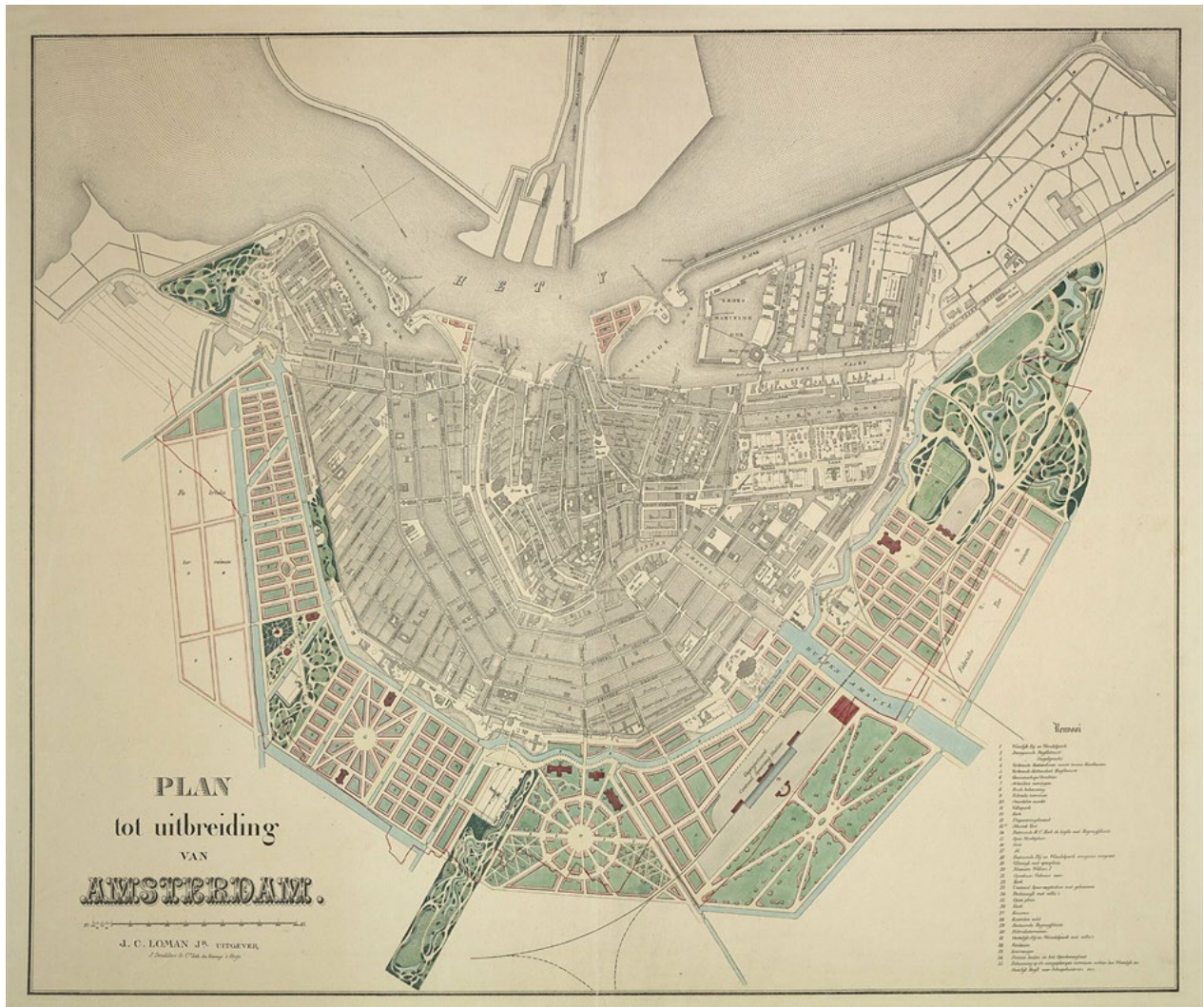


Figure 11: Plan tot uitbreiding van Amsterdam, van Niftrik (Stadsarchief Amsterdam)

Some key aspects of the plan have been briefly mentioned in the description per section. In this part of the research, these aspects will be named and explained. Van Niftrik touched on different themes of the design in the expansion plan (the following were named: *roads and streets, canals, connections with the old city, bridges, embankments, water management, border regulation with neighbouring municipalities, water changes, sewage*).<sup>38</sup> The fact that they were highlighted means that these were key aspects of his design. The themes, mostly civil, show that he pragmatically approached this task. In his plan description, too, he seldom uses imaginary speech and rather sticks to a factual explanation. However, the plan does show interesting design features and other special strategies to modernise the city. This chapter will show the key aspects as seen in the plan description.

<sup>38</sup> Niftrik, J. G. v. 1867

### *Streets and roads*

The primary street in the expansion plan is the main street, running through the plan from start to finish. The street is 30 meters wide and has a length of 6.235 meters. Like the plan itself, it follows the contours of the old city. Van Niftrik's strategy was to string the neighbourhoods and important public functions together with one wide road. In his plan description he said the following "The following main points in the project are united (along the shortest route): 1. the covered market in the middle-class or working-class neighbourhood, 2. the public park, 3. the market square in the area between the public park and the Overtoomse Vaart, 4. the centre of the villa district, 5. the central railway station, 6. the market square in the area between the Amstel and Oetewalerweg, 7. the barracks with exercise field, and 8. the eastern park."<sup>39</sup>

This approach stands in contrast to the existing urban structure of the old city. Whilst referring to the form of the city and the *Heren*, *Keizers* and *Prinsengracht*, van Niftrik saw this main road as a way to connect main public functions and order the infrastructure. Similar to the main street, another street runs the whole way through the plan along the *Singelgracht*, ranging between 20 and 30 meters wide depending on the section of the plan. Most other primary streets in the plan are 30 meters wide, and secondary streets are 20 meters wide. The design of streets is an important tool to bring in hierarchy and ensure good living standards. As opposed to the streets frequently seen in the old city at that time, the newly designed streets were wider, allowing for more daylight and air circulation.

### *Waterways*

Another tool for van Niftrik to structure his design was the canals. Whilst the old city is characterised by water and canals, the expansion plan does not include nearly as much water: 61 hectares compared to 198, in a total area roughly the same. The primary reason for this is health concerns. The canals in the old city were polluted, and the water was carrying diseases. Van Niftrik says in his plan description: "The new canals and waters will be connected to the waters of the old city and therefore share the same water change (...) I do not need to point out the insufficient water appearance, and there can therefore be no doubt that an improvement must be made in this regard at some point."<sup>40</sup> The sanitary committee of the city was still working on a design to change and clear the water at the time of the expansion plan. The rainwater, as well as the water used in the houses, was still dumped directly into the canals. "Moreover, in the design of the new city, the digging of canals has been done as sparingly as possible, only where they are urgently required by the needs of trade, industry, and shipping."<sup>41</sup> It becomes clear that van Niftrik was trying to prevent a similar situation in the new city as seen in the old city, by only integrating waterways where needed. This majorly impacted the design and characteristics of the expansion plan.

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<sup>39</sup> Niftrik, J. G. v. 1867

<sup>40</sup> Niftrik, J. G. v. 1867

<sup>41</sup> Niftrik, J. G. v. 1867

The *Singelgracht*, built in the early 17<sup>th</sup> century, encircled the old city and was used for centuries as a defence barrier to protect the city from its enemies.<sup>42</sup> Characteristic of the *Singelgracht* was the curved lines, which allowed for better positioning of defence. Halfway through the 19<sup>th</sup> century, this defence barrier was becoming outdated, and the profile of the *Singelgracht* could be rationalised. It would get a continuous width of 30 meters.

The *Kortverloren vaart* bordering the industrial area in section 2 would get a width of 50 to 60 meters, making it suitable for boats to transport the materials from and to the factories.<sup>43</sup> The proposed activities concerning water are mainly changes to the existing waterways. Van Niftrik does introduce a small number of new canals and a ring of water around most of the expansion, with the water level as the primary reason.

### *Civil works*

A major part of the plan description is the civil works. Ground needed to be raised significantly in nearly the entire planned area to make sure the new buildings would stand on dry ground.<sup>44</sup> In the 19<sup>th</sup> century, this was an expensive undertaking. Especially with a section of the plan that needed to be raised 1,80 meters. With a changed ground elevation, the water level would change as well, impacting the water defence systems. In the North of the city, van Niftrik advocated for an improved harbour, which was of great importance for trade. The current condition was insufficient and limiting its potential, and thus the economy.

### *Connections with the Old City*

In van Niftrik's plan description, the connections between his expansion and the old city are recited. Most of the existing connections are being kept, and new ones are proposed. Even though from the plan itself, these connections seem to be well thought out with an underlying reason, the plan description merely names the locations. Looking at the plan, it can be understood that van Niftrik made most of these connections to connect with the main public functions on the axis of the expansion plan. Especially in sections 3 and 4, where it connects to the star-shaped road network with public functions like churches, a museum, a theatre and market squares. A total of 6 bridges were proposed by van Niftrik to connect with the old city, one of them (opposite the *Palmgracht*) had to be moveable to let ships sail through.<sup>45</sup>

### *Urban structure*

A few things stand out in the expansion plan, looking at the urban structure. First of all, the star-shaped street structures with a market square in the middle. This feature was seen more than a decade before in Paris, with Haussmann's redesign of the city in 1853. This renovation of one of Europe's largest cities was well known and has been taken as inspiration many times.

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<sup>42</sup> Eck, J. v. 1948

<sup>43</sup> Niftrik, J. G. v. 1867

<sup>44</sup> Niftrik, J. G. v. 1867

<sup>45</sup> Niftrik, J. G. v. 1867



Therefore, it is possible that van Niftrik used the same approach in his design to create a clear structure in the plan.

Secondly, the Garden City concept is taking shape in this expansion plan even before the official concept existed. Due to the industrial rise in cities, the living conditions were often poor. This resulted in the wealthier class wanting to move further out of the city to live in a cleaner and healthier environment. This is also seen in van Niftrik's plan, in which he creates large green spaces with villas on the edges of the expansion for the most wealthy to live. These neighbourhoods are near cultural facilities, parks and public transport.

### *Zoning*

The 19th-century city expansions saw the introduction of zoning and rational design to bring order to the often chaotic and cramped cities. In van Niftrik's plan, workers' districts were in proximity to, yet separated from, the industrial areas. These areas were placed near the railway or water to efficiently move goods from and to the factories. Green spaces for the working class were introduced to improve living standards, and designing for hygiene to limit the spread of diseases was a priority.

## 5. Reception of van Niftrik's plan by the council

After the plan description was submitted, there was an initial response from the municipality: "The alderman responsible for public works presented this plan at our meeting with the following explanatory memorandum."<sup>46</sup> The response of the councillor for public works, van Lennep, was clear from the first paragraph: "I do not wish to deny that, with all the grandeur that is inherent to this plan, some aspects may lead to the opinion that they will never be implemented. That many will call the whole thing a pipe dream, and that people will doubt the possibility of even implementing a single part. That even those who are in favour of it will discover gaps or consider significant changes necessary."<sup>47</sup> The main reasons named for this were the financial situation of the city, the limited power of the municipal government, and the opposition of many. One key to successfully executing van Niftrik's plan was a large-scale expropriation of land, which was considered impossible. Moreover, it was often labelled more of an aesthetic than a practical plan. Another major critique was on connections to the old city, which was hardly present according to the council. The road network was called unfortunate as the star structure was seen as a feature for a nice drawing rather than for the actual quality of living. One politician argued that the structure made future expansion after van Niftrik's plan more difficult.<sup>48</sup>

Despite this, van Lennep thought that, if modified, the plan could serve as a base for future expansion of Amsterdam and that this expansion was soon needed. There were 2 main aspects he took into account for his view on van Niftrik's expansion plan:

1. The history of Amsterdam
2. The current developments in other cities

First of all, the history of the city should serve as an example of how, in the past, challenges were handled and overcome. The process of the 17th-century city expansion was described. The city needed to expand after the East India Company was founded, and due to the incoming wealth, the population of the city grew. There were some similarities seen between them and the mid-19th century: the growing population and the need for planned expansion. But also an important difference: the defence infrastructure was no longer needed. The shifting of the Buitensingel, the canal around the old city, was necessary to modernise the city. Relevant examples that were brought up in the reviews were the Paris renovation by Haussmann and Rotterdam's *Nieuwe Werk*, which was being constructed in 1958 under the management of city architect Rose. This shows the scope of relevant city planning examples.

In conclusion, van Niftrik's plan was too grand and ambitious for Amsterdam at that time. Besides that, there was a critique of the design. It was seen by the municipality that it was not practical and more of an aesthetic plan. The city of Amsterdam did not have the perseverance as seen in Paris, for example, where the city put itself in a large debt to realise the ambitious plan. Eventually, the expansion of Amsterdam would be a phased approach, which would start with the expansion plan Kalff.

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<sup>46</sup> Herman J. van Lennep, 1867

<sup>47</sup> Herman J. van Lennep, 1867

<sup>48</sup> Jager, 2002

## 6. Comparison to Hobrecht's plan for Berlin

Amsterdam started initiating its 19th-century expansion later than other European cities. This was mainly due to the poor economic conditions the city found itself in. Surprisingly, van Niftrik never went outside the Dutch borders to look at other expansion plans in cities such as Brussels, Paris or Vienna. At that time, it was difficult for officials to convince the city council to go on such excursions. It was only possible in specific circumstances if there was a clear, immediate benefit for the city. He did go abroad for other purposes, as he went to Hannover and Berlin to look at new pavement types, which were later applied to some of the streets of Amsterdam.<sup>49</sup> Van Niftrik did take inspiration from Rotterdam; the expansion designed by W.N. Rose was the most ambitious plan seen in the Netherlands at that time. He was informed by C.B. van der Tak, director of municipal works in Rotterdam.<sup>50</sup>

Van Niftrik might not have been on an excursion to city expansions outside the Dutch borders, but there were some notable expansions in the years before van Niftrik submitted his plan. This part of the research looks at one of the main city expansions outside the old city borders of that time: Hobrecht's plan for Berlin (figure 12).

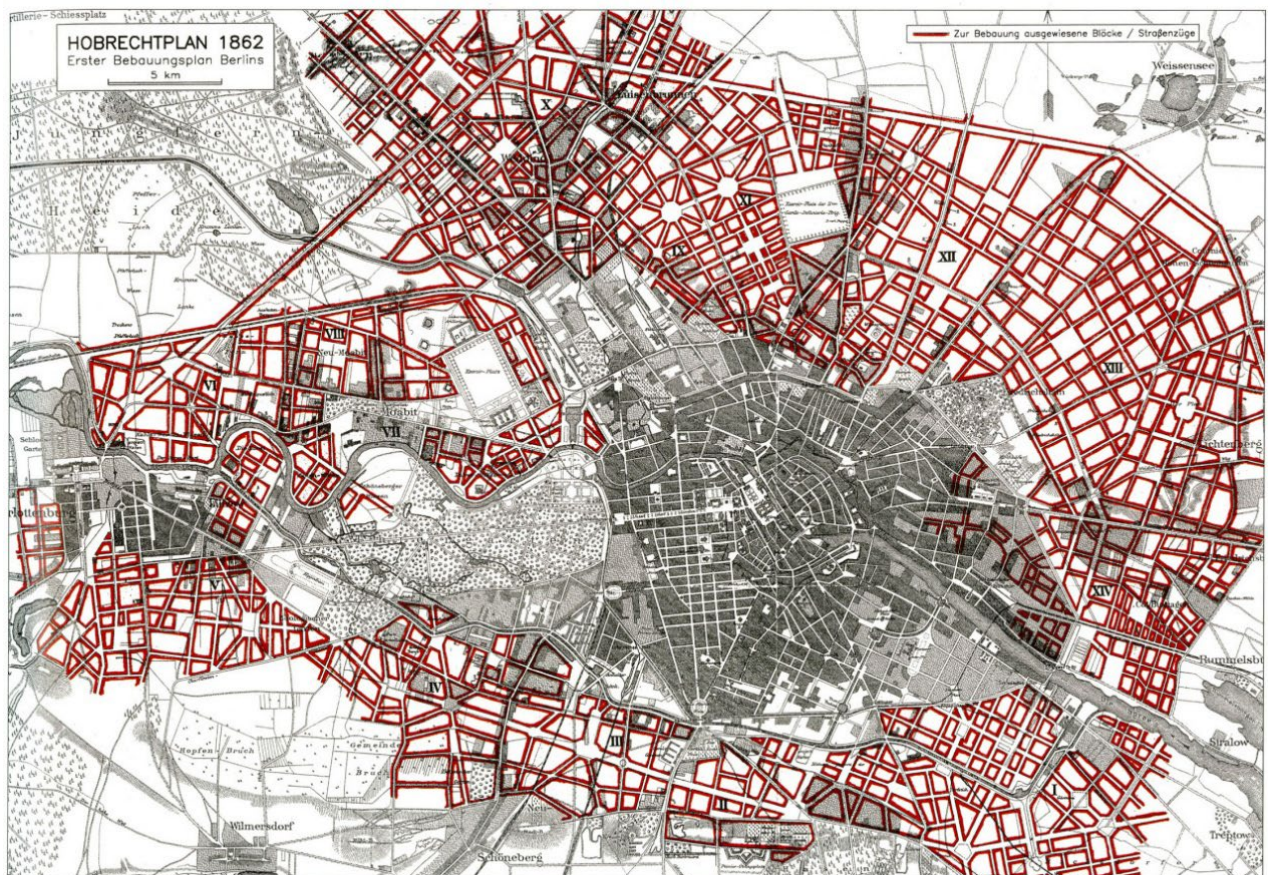


Figure 12: Expansion plan for Berlin by James Hobrecht 1862 (Bentlin, 2023)

<sup>49</sup> Jager, 2002

<sup>50</sup> Hoogewoud, 2004

Different to Amsterdam, Berlin (like Barcelona and New York) opted for an expansive state-organised approach to its expansion.<sup>51</sup> In 1862, 4 years before van Niftrik's plan, James Hobrecht designed the expansion plan for Berlin, which faced similar challenges to Amsterdam. Even though the approach of planning for the expansion was more minimalist, as Hobrecht's plan was more of a street plan, there are similarities between the two. This chapter compares the two plans and shows the similarities and differences.

Hobrecht had a similar civil background to van Niftrik. He followed an 11-year course of practical planning and had taken two master builder examinations. Afterwards, he became involved in railway construction in Brandenburg, and after only a few months, he was trusted by the police department to create a new street plan for Berlin.<sup>52</sup> He came in charge of a small team which had been examining the urban development issues since the mid-1850s. During Hobrecht's work on the development plan, he visited London, Paris and Hamburg as well as other Western European cities.<sup>53</sup> Similar to the Netherlands at the time, urban planning as a scientific discipline had not been invented yet in Germany. This is why planning could not be developed on a theoretically based foundation.<sup>54</sup> In a way, the plan was conceived as a "compendium of local police regulations, which lots were to be developed with buildings and which lots were to be classified as public streets and squares and thus left to be undeveloped."<sup>55</sup> Hobrecht ended up planning an area twice the size of the existing city. The expansion lies, like van Niftrik's plan, as a belt around the existing city.

The plan was designed to allow for growth and movement. As seen in Amsterdam and throughout Europe at that time, there was a need for railways and industry. Similarly, the industry was located as close to the periphery of the plan as possible to make sure they have a minimal impact on residential areas. Only one main road leads through the industrial areas to keep them free for future developments.<sup>56</sup>

Many aspects of the plan were pre-determined. The building heights and street widths were set by the Prussian building code, and there was little room for aesthetic guidelines. This was not important for Hobrecht as he sought to develop a street pattern for future urban development. According to Hobrecht, the aesthetic design was not the task of planning, but was to be left for individual architects.<sup>57</sup> This is where Hobrecht's plan is different to that of van Niftrik, as he did not design the building blocks or the public spaces in between. The expansion of Amsterdam is detailed, as van Niftrik even zoomed in on certain areas to show possible designs. However, some critics argued that this should be the task of the city architect, not the engineer.<sup>58</sup>

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<sup>51</sup> Bentlin, 2023

<sup>52</sup> Bernet, 2004

<sup>53</sup> Bentlin, 2017

<sup>54</sup> Bernet, 2004

<sup>55</sup> Bernet, 2004

<sup>56</sup> Bernet, 2004

<sup>57</sup> Bernet, 2004

<sup>58</sup> Jager, 2002



Comparing the building blocks of the two plans, van Niftrik's plan is characterised by finer-grained, more regulated blocks. In Hobrecht's plan, the scale of the blocks is larger and the structure more irregular. The blocks vary in size and are mostly without right angles, whilst the blocks in the expansion plan of Amsterdam were predominantly square. (Figure 13)

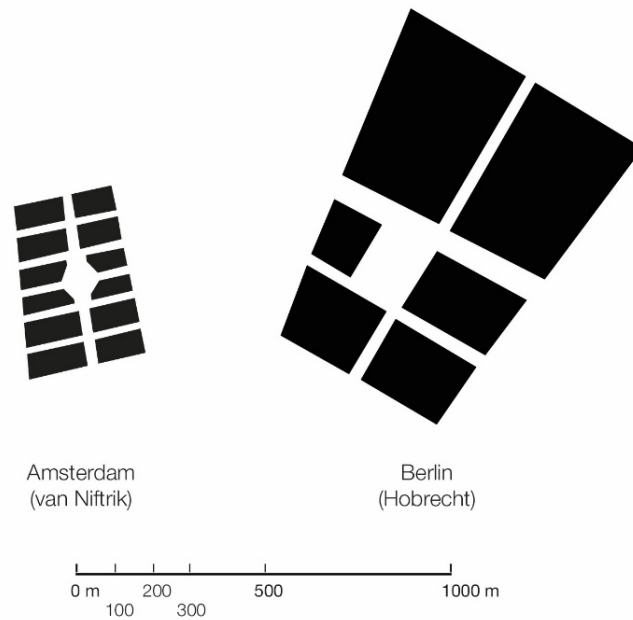


Figure 13: Comparison in size and structure of building blocks (own image)

Even though the structure and size of the building blocks were quite different, both plans are integrating a star-shaped or radial pattern (figure 14). This is a striking feature, also seen in Haussmann's renovation of Paris around 10 years prior, in 1853.

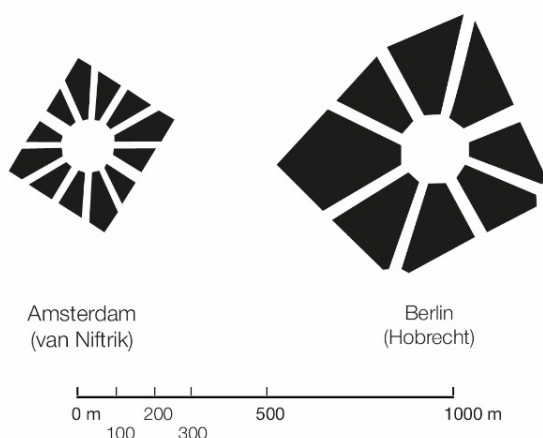


Figure 14: Similarities between radial structures (own image)

Besides ordering the urban fabric by integrating these star-shaped networks, another strategy found in both plans is the ring boulevard. Like van Niftrik's design, Hobrecht's plan saw a ring road throughout most of the expansion plan. For a city with a fast-growing population and a need for a structured, large-scale expansion, this is a way of efficiently connecting the different parts of the city.

A key aspect of both plans is the wide integration of public space throughout the city. Hobrecht does this mainly through the design of smaller city squares, which he designed as an inner-city orientation point and neighbourhood-centred area.<sup>59</sup> Van Niftrik, on the other hand, designed large green areas, serving a larger section of the plan.

In conclusion, the conditions of both plans were quite different. Hobrecht's plan for Berlin was more of a street design and public space plan, and van Niftrik's plan went into more detail about the program and the design. The building blocks created were also different in both plans. Van Niftrik designed uniform blocks with similar dimensions (with a few exceptions), whilst the blocks created by Hobrechts' street network were more varied in shape and size. Generally, Hobrecht's building blocks were much larger than van Niftrik's. Some similarities can be found as well. First of all, the context was similar. Both plans are an expansion in a growing city in which industry and railway infrastructure had to be implemented. Both plans aimed to improve living conditions for all classes by designing wider roads and public spaces, as well as using zoning to organise the different functions. A ring road is implemented in both designs to connect the expansion area and create a clear structure.

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<sup>59</sup> Bentlin, 2017

## 7. Conclusion

The main question this research aimed to answer is: *What are the key characteristics/principles of van Niftrik's expansion plan for Amsterdam?*

Van Niftrik's plan is designed for a time of change. The Industrial Revolution created new tools, but also new challenges. The population in cities grew quickly, as people from the countryside moved to the cities. Because of the poor conditions in most of these cities, there was a rise in awareness of social values and quality of living for workers. This was also true for Amsterdam, where overcrowding and a lack of hygiene led to poor living conditions. Van Niftrik's approach to the challenges the city was facing was pragmatic. With his background in water engineering, he was skilled in designing sewage systems, infrastructure and waterways. The plan was ambitious and aesthetic; van Niftrik aimed to transform Amsterdam back into the city that many admired. He proposed a green belt around the existing city, which would double the city's size. The plan saw an intent of zoning to organise the city and to create a better living environment for all classes by widely introducing green spaces. In contrast to the existing city, he avoided the integration of water wherever possible, since it was a source of pollution and the spread of diseases. The expansion plan has experimental features like the integration of a garden city-like concept and radial pattern structures as seen in Haussmann's renovation of Paris. It was the ambition of the plan that saw it denied by the city council. The required land expropriation, in combination with a large amount of green space, was seen as not feasible for a city in debt and struggling to invest. Eventually, it became a less ambitious but more feasible phased approach that started with Plan Kalff.

The city expansion in Berlin had a different approach. Hobrecht's expansion plan for the city, which covered twice the size of the old city, was less detailed than van Niftrik's plan. He designed a street plan in which the blocks remained un-designed.. Similarities in the design of the plan can be found in the way of zoning and the street plan. Both designers integrated star-shaped street structures in their plan, as seen in Haussmann's plan for Paris a decade before, but also implemented a ring road connecting most of the expansion. Both plans were characterised by the wide integration of public space, though in different ways. Hobrecht designed many smaller neighbourhood squares throughout the plan, whilst van Niftrik designed grand parks serving a larger section of the plan.

The 19th century was a fascinating time for city expansions. They were designed as a result of industrialisation and were of a scale that had not been seen before. Cities approached this in different ways, with many still standing as examples of good urban planning to this day.

## 8. Discussion

For this research, the main sources used are primary sources such as van Niftrik's plan description and maps, as well as the city archive of Amsterdam and Hoofdstad in Gebreke by Ida Jager. Van Niftrik's plan is often summarised as an ambitious plan, with a lot of green, but not feasible because of this aspect and land expropriation. However, in the literature, a more detailed description of the plan was missing. The 19th-century city expansions are interesting because, in many ways, they were still pioneering and implementing new concepts. Most of the build city expansions have been widely discussed and researched. However, the plans that were not executed might be just as interesting. Hobrecht's plan for Berlin has been selected because of its expansion outside the city's border and proximity to the Netherlands. Other expansion plans that would be suitable to compare to van Niftrik's plan are Vienna, Brussels, or possibly Rotterdam, as it was the most ambitious expansion plan seen in the Netherlands at that time. Future research could focus on a more elaborate comparison between 19th-century city expansions and their key characteristics.

The 19th century was a time when the world was quickly changing, and there was a lot of pioneering in city planning. This was before Urban Planning became a scientific discipline and before Joseph Stübben wrote his books about city design. Yet many of these expansion plans have a lot of quality and are still used as examples of good city planning. In today's society, where the percentage of the population living in cities is still growing, policymakers and designers can still get inspired by the rich history of 19th-century city expansion plans.

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