Industrial Icons

A study of the dynamics between iconic heritage development and the redevelopment of brownfields

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University Utrecht

Supervisor Peter Pelzer

Ben Endstra (5765161; benendstra@gmail.com)

Abstract

This study has looked into icon development of industrial heritage as strategy in brownfield redevelopment. Icons can be developed in various ways, ranging from strictly conservative preservation to commercial exploitation. This research examines how the application of 'grounded renewal' in icon development contributes to the redevelopment of brownfields. In grounded renewal contemporary adjustments are applied that are anchored in the distinctive local hardware and software. By conducting an empirical study, it was found that the development of the icon contributes to value creation in both the materialization and social construction of the brownfield. Through grounded renewal, the icon development is embedded in the urban environment and thus has a functional position in the brownfield cluster.

Key concepts

Industrial heritage, icon development, grounded renewal, brownfield redevelopment

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Content

1 Introduction

The Guggenheim Museum in Bilbao is a well-known icon. Since the opening of the museum the city's tourist numbers increased immensely, which resulted in a lot of job opportunities and income for the city. The creation of this urban spectacle functioned as a booster to economic and image development, which strengthened their position in the interurban competition. This so-called 'Guggenheim-effect' has since been copied by many cities (Ashworth, 2009). However the indiscriminate copying of this blueprint has led to an abundance of so-called 'white elephants'. This concerns large-scale expensive projects that can be regarded as placeless and dysfunctional (Rius-Ulldemolins, Hernàndez I Martí & Torres, 2016). Where icons are the driving force behind urban development, white elephants are only a burden to the urban area. This raises the question of which application is required for a sustainable and grounded icon development.

1.1 Problem statement

The trend of globalisation made the development of icons more urgent in order to create regional distinctiveness (Verheul, 2015). Icons are distinguished from regular landmarks by its symbolic or aesthetic significance. They are famous objects that are associated with a particular place (Sklair, 2006). Iconic heritage has the potential to create place attachment, drive urban transformation and attract human capital (Van Duijn & Rouwendal, 2013; Marlet & Poort, 2005). According to Verheul (2012) the application of 'grounded renewal' is the key to successful icon development. This concerns applying renewal to adapt to contemporary use of the icon, but meanwhile preserving the embeddedness in the local intrinsic qualities.

Globalisation is accompanied by ongoing urbanization, which increases the urgency for a compact city to keep the city liveable and resilient (Rudolf, Kienast & Hersperger, 2018). However after industry had largely moved away from cities, there was a great deal of vacancy on industrial sites. In order to preserve brownfields as a lively part of the urban area, it was necessary to redevelop these areas. To preserve the abandoned industrial heritage on brownfield sites it was necessary to assign new functions to these locations. Industrial heritage turned out to be very suitable for the establishment of pioneers (Jacobs, 1961). However, brownfield redevelopment has characteristically more risks and costs compared to development of greenfields (De Sousa, 2000). This requires strategies to overcome this, of which several come together in icon development. The following research question has been formulated to analyse how the application of 'grounded renewal' will contribute to the strategy of icon development.

How does the application of grounded renewal in icon development of industrial heritage contribute to the redevelopment of brownfield sites?

The research question is divided in the following subquestions.

How can renewal of icons be grounded in the distinctive local hardware and software?

What role do the various stakeholders have in the development phases of the icon?

What significance do icons have for the brownfield site?

1.2 Research relevance

The research on icons concerns mainly the impact on city(-region) level and the discourse therefore focuses on interurban competition, marketing and globalisation effects (Mathews & Picton, 2014). Especially because of the counter-movement of glocalization, icon development is considered necessary in order to distinguish itself as an urban region in the inter-urban competition. However the development process can be handled in a variety of ways. This has differentiated from a restrictive conservation policy to commercial exploitation (Nasser, 2003). In the current policy climate, the main applied strategy is 'conservation through development' (Janssen, Luiten, Renes & Rouwendal, 2014). By realizing use in heritage locations, the necessary adjustments and investments will be made to ensure conservation. However, this strategy can be implemented in various ways. For certain projects it is decided to engage a prominent architect in order to generate the necessary fame and appearance (Verheul, 2012). Contrarily, there are bottom-up developments with active citizen or user groups. In this spectrum, this study will specifically analyse the application of 'grounded renewal' in the transformation process. This is a specific interpretation by Verheul (2012) that can be implemented in the development of icons. This concerns developments where the icons have been transformed for contemporary use, but such that the development is grounded in the distinctive local software and hardware.

1.3 Methodology

An assessment framework was used to analyse various aspects of hardware and software applied in the 'grounded renewal' of four iconic cases in the Netherlands. Two of the icons are located on former railway sites and the other two are former factory locations on industrial sites. It concerns the LocHal in Tilburg, the Wagenwerkplaats in Amersfoort, the Caballero Fabriek in The Hague and the Van Nelle Fabriek in Rotterdam. For each case, public, private and process representatives were interviewed in order to get a complete overview of the transformation process of both the icon and the brownfield.

1.4 Outline

This thesis consists of a literature review, a methodical framework, four case studies, empirical findings, a conclusion and discussion. The literature review starts off with an overview of heritage preservation, conservation and development. Subsequently, the most common issues and strategies of brownfield redevelopment are discussed. There is a specific focus on the strategy of icon development. The review concludes with an analysis framework that displays the application of grounded renewal in icon development. In the methodical framework a justification of the research process is formulated, whereby the validity and ethics of the research are highlighted. Moreover, the operationalization of research concepts is discussed. In the subsequent chapters the icon development processes and function of the four cases are explicitly analysed. The empirical findings display the similarities and differences of the case studies. In the conclusion, the research questions are answered in detail by means of the synthesis of theoretical and empirical research. Finally, in the discussion there is reflected on the research process, the implications are discussed and the research is placed in a broader context.

2 Literature review

To get an understanding about the dynamics between iconic industrial heritage and brownfields it is important to get a decomposition of these concepts. How have the discourses around these concepts developed over time and which aspects were important in this respect. There have been significant changes in society, planning and heritage development that need to be discussed in order to get a coherent overview on the subject. This concerns firstly the shift in heritage preservation, what is related to societal, political and discourse changes. It should be clear that heritage preservation is constantly subject to change. By its respective history, image and embeddedness in urban structure industrial heritage distinguished itself from other types of heritage. For this reason it could have a key role in brownfield redevelopment. In a globalising world, with trends such as the entertainment economy, glocalisation and social media, icons can be the key to stand out. Icons have significant functions such as anchoring local identity and pride, attracting human capital and businesses, creating buzz and attention. That is why they can be the center of urban transformation. The question then is which factors are important in the development of such icons in order to contribute to the redevelopment of brownfield sites. This will be described on the basis of applying the concept of 'grounded renewal' in the transformation process.

2.1 Heritage; an overview

Heritage is the contemporary use of remains of the past. These remains are a combination of recorded history, existing memories and survived relics (Ashworth, 1997). Based on this it can be concluded 'heritage is whatever people want to conserve, preserve, protect or collect.' (Howard & Ashworth, 1999). There are different kinds of heritage to distinguish, first of all there is the difference between tangible and intangible heritage. Intangible heritage concerns traditions, folklore and other types of social practices. Tangible heritage can be distinguished in different categories like movable heritage such as museum collections, relics and mobile heritage. On the other hand there is immovable heritage such as landscapes, architecture and industrial heritage. Despite the fact that they differ, they cannot be considered separately. Tangible heritage is interpreted through intangible heritage. On the other hand intangible heritage is materialized in tangible heritage. In this way social values are reflected in the physical environment (Verheul, 2015; Xie, 2015).

However not all these heritage objects and practices are of iconic value. To accomplish this it should distinguish itself by its symbolic or aesthetic significance. This depends on the following factors; in- and exterior, function, public access, surroundings and awareness of the historical context. However iconic value is still a matter of personal and cultural perspectives (Sklair, 2006). Use-, market-, cultural-historical, experience and prestige value will change over time. For example, use value will decrease when the object wears or loses its function. Market value will be dependent on supply and demand. Experience and prestige value will change with trends and preferences (Van Dommelen & Pen, 2013). The longevity and resilience of heritage depends on gaining the necessary support, adaptability and sustainability (Verheul, 2012).

2.1.1 Heritage authenticity debate

So it is clear that the valuation of heritage is time and discourse bound. The development of heritage is thus related to the authenticity debate, which has transformed over time. This had to do with changing societal values and schools of thought. Dominant schools of thought that impacted this debate were that of Eugène Viollet-le-Duc and John Ruskin. They had opposite perspectives on how

heritage should be preserved. This can concern the preservation of material, spatial and conceptual aspects of authenticity. Viollet-le-Duc pleaded for restoration of heritage objects. Buildings should be reconstructed with a coherent stylistic unity. Appearance and form were highly valued, but also the structure should be adapted to ensure the viability of the building. In contrast, Ruskin was in favor of anti-restoration. In his opinion restoration was a destruction of original sources, which replaced the truth with a false representation. That is why remains of different historical layers of the object should be conserved separately instead of merging them into one non-existent state (Nasser, 2003). A dichotomy can be observed between preserving the past and development according to changing social values. According to Nasser, heritage should not be seen as static but as continuous. To preserve authenticity a flexible approach will be more suited to maintain continuity than a defensive one. So there must be a management of change in heritage to preserve both bequest value and sense of place (Ruijgrok, 2006).

2.1.2 Heritage commercialisation

A changing perspective on heritage authenticity also had clear consequences for the function it could have. To illustrate this, before the 1960's preservation policies were mainly concerned about the legal statutory protection of heritage objects. Heritage was seen as threatened, so the preservation strategy was mainly defensive and control-based. The aim was often to strive for listing and destination to preserve these heritage objects in the long-term. This strategy assumed a culture of loss, where money was necessary to sustain quality of heritage (Janssen et al., 2014).

Over time heritage was perceived as a product, which caused a shift to a culture of profit, especially with the upcoming experience economy. As a product it was suitable for marketing purposes and easily adaptable to consumer demands. This led to the commercialisation of heritage, with commodification as a result. Despite the benefit of rising revenues from this shift, there are also certain adverse effects. A rapid rise in tourist numbers can exceed the capacity of the location, which will lead to degradation of the product in the long run. Commercialisation can shift the focus to investments in secondary spending facilities, which causes a reduction of available money for the maintenance costs of the actual heritage (Garrod & Fyall, 2000). Therefore a management is needed to create mechanisms that actually reinvest the profits in the heritage so that it will increase its value. Moreover commercialisation is often associated with a trend of 'façadism', where only the visual aspects of a building are retained. The vast majority and mainly older parts of the building are replaced by modern architecture, so authenticity is significantly harmed. This form of development is a case of perceived authenticity, whereby the first impression gives a historical ambience but the most valuable sources are actually gone. It is also important to find the right balance between the needs of visitors and the community in order to limit conflict between these groups. This concerns inclusive access of public space, equal distribution of benefits and community involvement (Nasser, 2003).

2.1.3 Monumentalisation

The monumentalisation of heritage is a common strategy to assure long-term protection. A monumental status is an official protection that can be designated from a local, provincial, national or global scale. A heritage designation goes together with certain legislations and restrictions. It is therefore often used by governments as a tool to control the management of the past. According to Ashworth (1997) 'It has shaped the creation of comprehensive and rigorous legal frameworks and public financial subsidy systems enforced by well-established, and often powerful, state agencies in

most countries as well as internationally, supported by influential private organizations and pressure groups.' However this can stand in the way of certain modernizations and sustainability of the monument (Nasser, 2003). This can be a limiting factor for certain new developments, which can reduce investments and support. Human and creative capital can therefore choose to settle elsewhere. Statutory protection can isolate heritage objects from its environment, consciously keeping itself apart from the urban dynamics. The institutionalization of heritage, with an elite group of experts in control, may conflict with the local community. This limits bottom-up social initiatives, which increases the distance to society (Janssen et al., 2014).

However the role of the government in monument management has changed considerably over the years, with an increasing influence from other types of stakeholders. The current monument policy focuses not only on preservation of the object, but on integral conservation of the ensemble. It is not only about form, but also about both the intrinsic and extrinsic function of the monument. The development around monuments must therefore fall within the comprehensive development plans of the urban area, whereby the urban flows and structures are not disturbed in the conservation area (Nasser, 2003). For monuments that are protected at a higher level, good coordination with local politics is therefore required in order to coordinate the object and its environment.

In addition to the preservation of hardware, the current monument policy also pays attention to the protection of software elements. The monumental status controls change, strengthens the sustainable character and offers long-term perspective. In addition, it offers possibilities by obtaining possible subsidies, tax relief and brand awareness (Aa, 2000). So despite the high maintenance costs listed buildings typically have a higher value compared to regular buildings (Lazrak et al., 2014). This does not apply to vacant heritage without monument destination. Over time these objects will often become a ruin or else will be demolished depending on government policies (Xie, 2015). With this shift in monument management there has been a great increase in listing, including a lot of industrial heritage. This accelerated the process of assigning new functions to vacant industrial locations (Janssen et al., 2014).

2.2 Heritage in urban development

Historically, heritage was mainly owned by institutions as the government or religious authorities. Due to political changes and secularization, heritage is nowadays often regarded as a public good (Howard & Ashworth, 1999; Verheul, 2012). However, heritage ownership and control opportunities of the government have been decreasing over time. As a result, the level of investment will depend on the amount of welfare that heritage generates for society. On the one hand this is economically reflected in real estate prices and by people's willingness to pay for visiting and conserving heritage (Ruijgrok, 2006). On the other hand, this concerns other aspects of quality of life such as liveability, place attachment and social interaction (Rijksdienst voor het Cultureel Erfgoed, 2014).

2.2.1 A renewed preservation strategy

In the 1960's started a paradigm shift where heritage became a more integral part of the planning system (Nasser, 2003). It had become clear that if heritage was 'preserved purposefully' it could be a useful tool in urban regeneration and socio-economic development. Heritage planning can therefore make a useful contribution to place planning (Ashworth, 2013). Instead of controlled preservation, dynamic management of change came into place. A strategy of active intervention with striving for 'conservation through development' stimulates organization of use instead of steering towards

redevelopment (Geevers, 2014). Because of this, heritage becomes constantly subject to change by its users. As a result, the additional development option 'new use' was added to the options of demolition, ruin and monument preservation (Xie, 2015).

By organizing active use of heritage they become part of the integral urban transformation. The embeddedness of the heritage in its urban environment creates a coherent whole. A harmonious scenery where context, history and appearance are connected is referred to as an ensemble. The historic ambience of such an heritage ensemble has various positive externalities. First of all, it will increase the value of nearby real estate significantly (Lazrak et al., 2014). In addition, ensembles will attract more tourists than individual monuments (Dommelen & Pen, 2013).

2.2.2 Glocalisation

Within the shift to glocalisation it has been shown that a local identity is key to stand out. As has been emphasized before identity consist of both local soft- and hardware. A coherent mix between intangible and tangible heritage will create a distinctive local identity. The tangible heritage materialises the intangible history, memories and stories that are associated with a certain place. Local pride is anchored in these objects, it establishes the genius loci, the spirit of a place. With this it can distinguish itself from the uniformity that globalisation has produced (Verheul, 2015). This emphasizes that the demands of consumers that shape the development of heritage should not be all-determining. This will ultimately lead to homogeneity and the disappearance of local individuality. It is therefore endorsed that heritage is place-bound and therefore intertwined with place planning. The planning process will require an external integration that will contribute to collaboration and joint identity-building (Janssen et al., 2014). On the one hand this will create a sense of locality and on the other hand a place product that can be marketed to attract visitors (Ashworth, 2013).

2.2.3 Place marketing

A place product however is hard to define because it is multi-functional, complex and organic. As a social construct it is constantly subject to change. For this reason it cannot be controlled such as regular products. Everyone will perceive a place different because of their personal characteristics, biases and experiences. Marketing however is focused on a small target group with specific demands (Hospers, 2013). The target group mainly concerns visitors that look for a specific experience. Visitors are mobile, but will also have limited time and information in their selection process. For this reason places have to be distinctive to stand out. As a result some urban areas will turn into theme parks in this experience economy (Verheul, 2012). It comes down to that places have to make very specific investments to successfully attract their target group. Marketing strategies will therefore conflict with development for the common good. Also marketing is mainly just applicable to short visitors, to attract people in the long term other factors are important (Hospers, 2013).

2.3 Brownfield redevelopment

To get a grasp on the dynamic between industrial heritage and urban transformation, it is necessary to delve further in urban trends such as densification, brownfield redevelopment and place-making.

The continuing trend of urbanization has put pressure on the housing market in urban areas. Previously urban growth led to urban expansion, where mainly greenfields were developed. This concerned sparsely populated areas that mainly functioned as farmland or open land. The land

prices were relatively low here in comparison to urban areas. Nowadays many municipalities have the ambition of a compact city. This requires urban densification with the redevelopment of brownfields. Besides a compact city there is strived for a creative city with a high level of innovation (Lazrak et al, 2012). The attraction of human capital is therefore a priority, this is deemed necessary to compete on inter-city level. It has been proved that cultural heritage can be a factor in attracting highly educated people and the creative class (Marlet & Poort, 2005). This will result in an adjustment of the supply of services. In this manner, cultural heritage will contribute to urban growth (Van Duijn & Rouwendal, 2013).

2.3.1 Compact City

The process of suburbanization that was accompanied by urban expansion led over time to urban sprawl. On an individual level this seems not directly problematic, but the process of sprawl is often negatively associated with a lot of issues for the common good. First of all it withdrawals investments from the city centre. This reduces liveability, the quality of heritage and architecture and range of facilities. Furthermore sprawl is characterized by uniformity, separated functions and social segregation. For this reason there is a lack of a mixed citylife, local identity and spontaneous social interactions. These circumstances form a poor basis for a breeding ground for creativity and innovation. Due to low population density suburbs do not offer sufficient support for public transport and are therefore car-dominated. This results in congestion, air pollution and encourages an unhealthy lifestyle (Bruegmann, 2006).

This started the counter movement of the compact city that strives for high densities, a modal shift and improving Quality of Life in inner cities (Rudolf, Kienast & Hersperger, 2018). This led to a shift of urban densification, whereby vacant or underutilized industrial areas are redeveloped. In this research context these areas are referred to as brownfield sites. These sites have lost their former function and are often contaminated. For this reason, the development of these sites requires remediation (De Sousa, 2002). However, there is a reluctance to develop such areas, this is due to certain problems and risks related to brownfield sites.

2.3.2 Image

First of all these brownfield sites are associated with a bad image. They are mainly located at the outskirts of the city, and are often isolated by physical barriers such as fencing and railways. For this reason they are perceived as inaccessible and unfamiliar. The years of vacancy have resulted in the decay of buildings and have often attracted shady activities. Therefore they are often indicated as no-go areas (Zaadnoordijk & Claassen, 2011). This is undesirable for a location that over time, due to urban expansion, has occupied an increasingly central position in the city.

2.3.3 Environmental issues

Brownfield sites have to deal with environmental issues like soil pollution, poor air quality and noise disturbance. However brownfields are primarily associated with contamination, despite that is not always the case. It is the capital-intensive legally required remediation that results in restraint by developers. There is often a lack of information on the actual levels of contamination, what makes the development uncertain and risky (De Sousa, 2000). In addition, most of the buildings are poorly insulated and are filled with asbestos. The demolition of decayed buildings will require a lot of time and effort (Mooij, 2017). To overcome the risks an intensive cooperation between public and

private parties will be required. The government needs to provide in sufficient incentives to attract the necessary private investments.

2.3.4 Land ownership fragmentation

Industrial areas are characterized by fragmented land ownership, what complicates a coherent area development. First of all the government often takes a passive role in the development. Due to the lack of leadership and control the process can be difficult and drawn-out (Zaadnoordijk & Claassen, 2011). It should also be taken into account that the development will take place at an uneven pace. A coherent development will then depend on a convincing vision. Besides a sustainable long-term vision, there must also be joint investment in public space in order to create a coherent area. Since plots are developed individually there is a need for an umbrella form of joint investment (Hobma, Heurkens & Van der Wal, 2019).

2.3.5 Complex process

In general industrial area transformations are risky and complex. The development will require a lot of investments, such as acquisition, remediation and process costs. Moreover the potential profit is considerably smaller as compared to expansion sites (De Sousa, 2000). Realizing a positive land exploitation will be complicated. Due to its embeddedness in a compact city, the demand for addition of functions will be high. A mixed densely populated area will result in certain conflicts between functions. To deal with these issues stakeholders have to adapt to new modes of governance. Cooperation can be difficult since there are a high number of parties involved with various interests (Zaadnoordijk & Claassen, 2011).

2.4 Brownfield redevelopment strategies

Different strategies are applied to realize the redevelopment of brownfields despite the problems discussed. Among other things, these strategies will reduce risks, bring parties together and improve the image of such sites. However, this way of developing takes more time than usual and often depends on pioneers who initiate the process.

2.4.1 Joint investment

Brownfield redevelopment will not evenly distribute the costs and benefits. For this reason, there are different cost-sharing mechanisms that could contribute to a more equal cost distribution. By cooperation and joint investments risks can be spread and collective value created. To create sufficient support it will be necessary to envision a clear and feasible concept in the governance process to bind the various stakeholders. In addition, public and private parties have different interests so it will be essential to create common goals to ensure alignment. This concept should be guarded during the different phases of the process to prevent stakeholders from pulling out of the project (Scheltens, Van der Voordt & Koppels, 2009).

There are new financial instruments permitted to accelerate or start brownfield redevelopments. Therefore there is the possibility of new forms of public-private partnerships. The political, spatial and organizational conditions determine the appropriate form of cooperation. This regards joint investments in matters of remediation, quality of public space and heritage (Hobma et al., 2019).

2.4.2 Place-making

For parties to work together it will be necessary to create an attracting vision. Creating a connecting story in the governance process can be helpful to form a discourse coalition. This implies "the ensemble of a set of story lines, the actors that utters these storylines, and the practices that conform to these storylines, all organized around a discourse." (Hajer 1993, p. 47). In order to achieve this, an active dialogue between the parties must be conducted during and after the process (Verheul, 2013). The story has to connect the urban identity with the build environment. The tangible and intangible aspects of the urban identity have to reflect in each other and so create a synergy. This identity has to be anchored in the place characteristics and from that build to a desired future identity. To accomplish this, a coherent mix between social, spatial and economic characteristics has to be taken into account. This has to be embedded in the local community to convey this story both top-down as bottom-up. This way stories can be inspiring and make people proud. It reflects the valuable characteristics of the city and the image it wants to convey (Verheul, 2015).

2.4.3 Gentrification

Industrial heritage distinguishes itself from other types of heritage. Due to its unpolished character it is not likely to attract luxury amenities (Xie, 2015). As a result other sectors, than the creative sector, are most of the time not attracted to industrial areas in the earlier phases of urban transformation. For this reason the government often takes certain policy interventions to stimulate a process of gentrification. Industrial heritage objects are often designated as catalysts, with cultural, creative and innovative functions (Hoekstra, van Gent & Boterman, 2018). These objects are known for attracting the creative class because of the history, architecture and character. These characteristics provide a stimulating environment where new ideas can arise (Jacobs, 1961). For this reason they are often referred to as breeding places. The creative class are often the pioneers who move into these buildings first. These buildings offer cheap workspace, which even in some cases is stimulated by the government with favorable conditions.

In the long term the pioneers could pave the way for other activities. This will only take place if the area is revitalized which will take some time (Hoekstra et al, 2018). When the area is perceived liveable, safe and attractive higher income classes and facilities will settle. The area characteristics will gradually shift to meet the needs of the elite. This will be accompanied by displacement effects of the existing local population (Mathews & Picton, 2014; Verheul, 2012). The opinions on the desirability of this process are divided. On the one hand it is seen as a good tool to attract human capital, what is seen as essential to be successful in the interurban competition (Marlet & Poort, 2005). On the other hand it is deemed to be harmful for the development of urban areas. Jane Jacobs describes the consequences of the process as self-destructive for urban neighborhoods. It disturbs the natural urban development and displaces involved residents (Hospers, 2014).

2.4.4 Romanticization

The trend of commercialisation of heritage has resulted in romanticisation of industrial areas. The areas have gradually transformed into spaces of consumption. Consumers demand an aesthetic landscape that associates with their view on the past. In the process of regeneration a historicized narrative is created. During this form of place-making it is tried to get rid of the negatives images that were associated with the industrial area. However it is intended that the landscape retains a perceived authenticity. Tourists will come to gaze and sacralize this historical landscape, so heritage

will provide in cultural and visual consumption (Verheul, 2012). When the development of heritage will be demand-led by consumers this will result in selective and misleading interpretation of the past (Mathews & Picton, 2014). This will result in the commodification of heritage, causing it to be marketed to a niche market of consumers. This is often oriented at an elite group with the purpose of attracting human capital to the city.

2.5 Icons

These strategies are united in iconic heritage development, allowing icons to form the centre of an area transformation. An icon forms the foundation for the local identity, but has an appearance that extends beyond the local scale level. For this reason, it has the potential to create a unifying story for the community and stakeholders as well as to obtain international appeal and attract human and financial capital. This brings up the question what characterizes icons that they generate such an impact. Verheul (2012) identifies four functions that icons have in common:

- A symbolic value for the city, it is inextricably linked with the image of the city. The icon has a high recognition value and creates a certain imagination by the city.
- The 'sacralization' of icons, in the experience economy icons are at the centre of attention. Tourists travel all around the world to gaze at such signs.
- Through interaction with the icons it creates a sense of identity and public pride, what contributes to place attachment.
- It results in urban boosterism, it functions as a catalyst with economic and socio-cultural spill-overs. This can also be considered the so-called 'flywheel effect' which is a large investment in the initial phase that then generates a constant output.

On the one hand, icons have an internal orientation such as meeting place and social anchor, that has a connecting effect that contributes to place attachment, sense of place and topophilia. On the other hand, icons have an external orientation such as showcase, catalyst and breeding place that has an attractive effect on visitors, human capital and investors (Rijksdienst voor het Cultureel Erfgoed, 2014). Icons are characterized by the synergy of tangible and intangible significance (Sklair, 2006). It is both the social as well as the physical construction of the icon that is meaningful. It is constantly subject to framing, value changes and ways of representation. It is therefore not only dynamic in the sense of physical changes of the object and the spatial environment, but also of changing discourses and narrations (Verheul, 2012). Icons can be single objects as well as ensembles of multiple objects. When multiple icons are located in compact urban areas such as inner cities and waterfronts this could result in icon synergy. However this could get out of hand by visual overload which will ultimately lead to icon inflation. Inflation will especially occur when cities are cloning each other's developments, which will result in a process of commodification. This will result in a lack of distinctiveness and authenticity, which will decrease iconic value (Liu, 2013).

2.5.1 White elephants

When the focus is only on the development of the icon, they could become 'Cathedrals in the desert' (Ashworth, 2009). So only object development and marketing is not sufficient, the icon should be integrally part of the broader development of the city. When this is not the case there is the risk of developing so-called 'white elephants'. This refers to large-scale objects with barely any use or value. This often concerns prestigious objects that are developed for international events. The

development of extraordinary flagships are meant to create international appeal and have to overshadow the actual problems in the area. They hope for sacralization of these flagships so new images of the area will be distributed. This makes it a commonly used tool for city branding and marketing. It is therefore a top-down strategy with a lack of participation from the local community. For this reason it is often imbued with political interests and even corruption (Rius-Ulldemolins et al., 2016). These flagships are made for short-term use, so thereafter it will lose its function or will only be functional to a limited extent. The will turn into "modern, underused ruins in the process of degradation" as Auge (2003) typifies the white elephants.

2.5.2 Planning Fallacy

White elephants, but also other types of megaprojects, are historically known for their cost and time overruns. Megaproject processes are risky because of their long duration, complex field of actors and continuous changing context. Decision-makers have therefore to deal with complexity, uncertainty and opposing interests. According to Flyvbjerg (2013) the root cause of this problem is the systematic underestimation and ignorance of the risks of such projects by politicians and decision-makers. It is a purposed optimism to misled governments and public opinion to push through decisions and get approval. This is considered necessary to get an edge of the competition. Because of this costs and negative externalities are largely underestimated and revenues and spill-overs overestimated (Flyvbjerg, Bruzelius & Rothengatter, 2003).

A popular concept that is often applied by decision-makers is Hirschman's 'Hiding Hand'. This concerns the deliberate continuation of projects where it is already known in advance that budget overrun will occur. A Hiding Hand is necessary to gain sufficient confidence and support to get projects started (Flyvbjerg et al., 2003). Such projects would not be started otherwise, decision-makers would be reluctant because of contingencies in the future and scarcity of resources. Unforeseen setbacks that will occur during the process will be anticipated with human creativity (Flyvbjerg & Sunstein, 2016).

According to Flyvbjerg in reality this is often not the case. This makes the concept of the Hiding Hand part of the planning fallacy, where people get tricked by optimism and false pretenses. This damages trust in decision-makers, causing a decrease in community involvement in such projects. A lack of local support will not be conducive to the success of the project. To deal with such risky projects Flyvbjerg pleads for "long-planning for uncertainty". Risk management should be in place so that risks can be identified, allocated to the right parties and so reduced. The decision-making process should therefore be highly flexible and accountable. This requires active citizen involvement and transparency (Flyvbjerg et al., 2003; Flyvbjerg, 2012).

2.5.3 Iconic industrial heritage

It must therefore be emphasized that icons do not necessarily have to be completely new additions to the urban structure. Icon development can also be established in existing architecture, in particular on industrial heritage sites. The modernist style of architecture is not as popular anymore as it was in the nineties. In the postmodern era historic buildings are revalued. The application of reuse architecture on industrial sites is on the one hand a logical consequence of vacancy of brownfields and the demand for urban space. On the other hand, these types of buildings are known to attract creative, innovative and cultural capital. The merge of historic and new elements can potentially create a synergy with which iconic value can be obtained (Verheul, 2012). By both tangible as intangible remains of history, industrial heritage will tell a story about the past. The story

that is associated with industrial heritage is often selective and romanticized, it is meant to evoke nostalgia and pride. To build further on the continuous development of this story, it will be necessary to add new functions to the industrial icons to achieve conservation through development.

2.5.4 The ex-post narrative

So storytelling has an essential role in iconic impact. The discourse of an icon is formed before, during and after its development. This social construction that is being developed concerns conceptual values, imagination and meaning. This construction is inherently linked to the local and urban identity. It is thus influenced by urban policy, visions and marketing. However, the social construction will not only be developed top-down. This is created by stories, images and perceptions of users, visitors and residents. Especially with industrial icon development there will be a lengthy planning process. It is therefore important to respond to changes in urban and social ambitions. This requires regular exchange between the network of stakeholders to transform with the dynamic discourse (Verheul, 2012).

2.6 Grounded Renewal

As discussed earlier, the concept of heritage authenticity has been transformed over time. This has been influenced in particular by several discourses that were leading in certain time periods. Nowadays there is mainly an integrated approach in which the heritage object is developed as part of the ensemble. To ensure that the object does not become isolated from the ensemble, a flexible approach must be used that responds to contemporary preferences. In the event that the applied renewal is linked to the spatial and social-cultural identity of the icon, the continuity of the identity is maintained. According to Nasser (2003) and Verheul, among others, this preserves the authenticity of the icon. The city never stands still, it continuously adapts to changing social needs and values (Verheul, 2015). To maintain the spirit of heritage during urban transformation, it must therefore not present itself as belonging to the past, but rather follow the continuum of urban development. Nasser (2003) states the following: “Any sustainable future for historic contexts, therefore, must be intrinsically linked to its past, not just in the continuity of the built heritage and urban spaces but also in the living culture that created, and is still shaping, the distinct townscape, or genius loci, that characterizes heritage places.”

In this way, the heritage will continue to contribute to local pride and individuality with which the area distinguishes itself. For this, the heritage must not only be presented to the outside world through marketing, local people must be involved through a connecting story. Such a story can unite parties and eliminate certain disagreements. As a result, people can jointly form the basis of the development, which will strengthen the support base.

The development of heritage in which "the design searches for contemporary adjustments and preferences, but is always locally embedded and has references to local individuality" is described by Verheul (2012) as ‘grounded renewal’. By developing heritage for contemporary preferences, new uses can be achieved and thus the preservation of heritage can be guaranteed. By including heritage in the integrated area development, the local community will retain their sense of place (Ashworth, 2013). For this it is important to involve the users and residents of the area in the process of the transformation.

The concept of ‘grounded renewal’ thus consists of aspects of both hardware and software. On the one hand this concerns physical aspects such as architecture and spatial structures and on

the other hand area-specific qualities and social contribution. An important part of this is the dynamic relationship between discourse and materialization, as described by Verheul (2015). Urban identity must be tangible to make it visible, and at the same time it is desirable that social values can be materialized. What constitutes the distinctive identity of a place and how this can be materialized in the transformation through participation will be discussed in the following paragraphs.

2.6.1 Genius loci

The spirit of a place, also often referred to as genius loci, is a concept that refers to the distinctive atmosphere of a location. It is a construct formed by a person's perceptions and interpretation. It is a subjective construction of how a place is experienced and remembered. Hospers (2013) describes this experience as a total experience of the senses that is formed by associations, emotions and memories. Traces from the past as well as the embedding in the environment are part of this. The genius loci is thus an important distinguishing factor between the placeless 'white elephants', and iconic sites. However, this phenomenon remains a personal experience, even the most colorless places can be experienced by individuals as very valuable (Hospers, 2013). The genius loci affects the story-building of a place, the distinctive characteristics can create feelings of pride and inspiration. It is therefore often this spirit that is exhibited by artists and performers. In the dissemination of these stories, the identity of the place is expressed, it's the "stories we are", which strengthens the attachment to the place (Verheul, 2015). When places evoke such strong connections, people will develop love for the place called topophilia.

2.6.2 Participation

The local identity must mainly be propagated by the residents and users of the area. If they can convey their pride and enthusiasm about the area, this is more convincing than ordinary city marketing. Hospers (2013) describes this as "warm city marketing", word-of-mouth marketing is also still today a strong means of propagating. The urban image is in fact a social construction that is formed through the convergence of received information. Verheul (2015) describes this as follows "By sharing and comparing the experiences of groups of people in different places, the relevant meaning of a place is created." These experiences express urban identity. In order to subsequently express this identity in the area transformation, it is important to have the input from a variety of parties. This requires an open dialogue and forming coalitions in the transformation process (Verheul, 2012).

The involvement of these groups can be done in various ways, as indicated in the participation ladder (see Figure 1). However, in most cases this will only be of value to participating groups if the process goes beyond tokenism. Namely, processes with tokenism are mainly symbolic and will therefore maintain the status quo (Frewer, 2000). By involving active and informed residents in the process, it is possible to better respond to the risks that characterize industrial locations (Flyvbjerg, Bruzelius & Rothengatter, 2003).

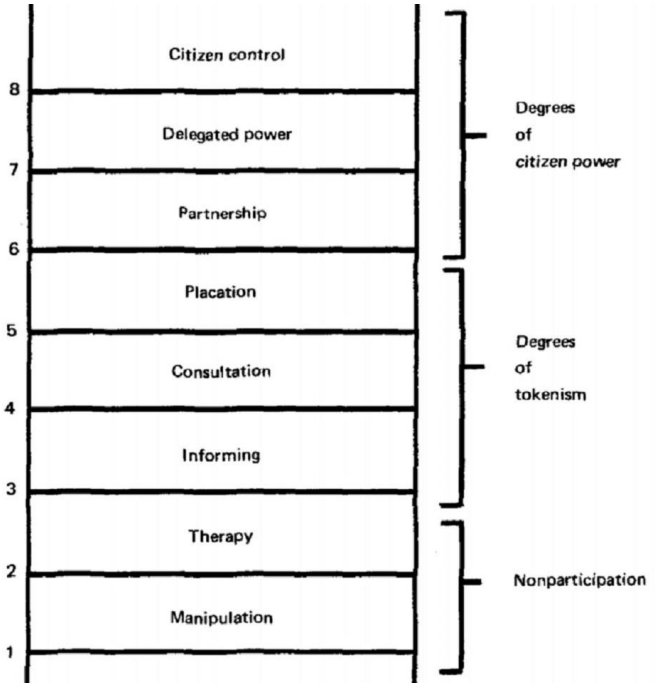


Figure 1. Arnstein's Participation Ladder

2.7 Conclusion

It is clear that the strategy of icon development can certainly be suitable for the redevelopment of brownfield sites. To realize the actual redevelopment of brownfield, a strategy is required that bridges risks and attracts sufficient capital to the area. Icons have proven to be able to evoke a sense of belonging as well as to create a certain imagination for an urban area. This enables them to obtain support for the redevelopment as well as the necessary external investments.

In the dynamic interaction of the development of both the icon and the brownfield, the following aspects must be taken into account. First of all these sites are characterized by fragmented land ownership, which makes it necessary for a party to initiate the process (Zaadnoordijk & Claassen, 2011). In addition, a connecting story and joint vision development are essential to attract and involve investing parties in the process (Hobma et al., 2019; Verheul, 2013). The sustainable development in which the distinctive local qualities are retained requires more than attracting external parties. The transformation of the site must meet both contemporary requirements for new functions as well as anchoring the distinctive local software and hardware. A development in which both are interwoven in the overall process is described by Verheul as 'grounded renewal'.

This concept can be applied in the development of iconic industrial heritage. This will ensure continuity in the development of the icon, thereby maintaining the authenticity of the site (Nasser, 2003). This allows the icon to retain its identity-bearing function. In addition, the new function brings back vibrancy, which will improve both the user experience and the buzz in the urban environment (Janssen et al., 2015; Verheul, 2012).

2.7.1 Analysis framework

The concept of 'grounded renewal' is operationalized by breaking it down into aspects of software and hardware. Where in this framework a clear distinction is made between grounded and renewed aspects, in practice there will often be intermediate forms. For example, in a development it can either be decided that old and new will contrast with each other or that new elements will match the existing elements. These aspects are not a blueprint for the successful application of grounded renewal during the transformation. The main purpose of the concept grounded renewal is to apply 'conservation through development' that is anchored to local soft- and hardware. Each icon is characterized by its own unique characteristics, which will form the basis of its development. So the way in which this concept is implemented will differ per case. One the one hand this will depend on the interests and power balance of the involved stakeholders. On the other hand it will for each iconic development depend on both the historic and urban context which aspects are of greater importance.

Grounding of:

Hardware

- Original elements and material use
- Spatial structure

Software

- Participation of residents and/or users
- Local identity
- Continuity of style and concept

Renewal of:

Hardware

- Design adaptations
- Making locations more sustainable
- Spatial-, green- and infrastructure

Software

- New functions and users
- Increasing cultural, creative and innovative capital
- Safety measures
- Social accessibility

3 Methodical framework

The methodical framework will theoretically substantiate the choices made in the research process. In the process the principles of integrity laid down in 'De Nederlandse Gedragscode Wetenschapsbeoefening' have been applied. The literature has been obtained from reliable sources that have been handled with care. Respondents have given informed consent and are treated respectfully. The audio that has been collected can be requested and checked by third parties. The results have been handled effectively and fairly. These principles will be discussed in more detail in the final part of this chapter. Moreover, the following books were consulted in order to make responsible choices:

- Baarda, B., Bakker, E., Fischer, T., Julsing, M., Peters, V., van der Velden, T., & de Goede, M. (2013). *Basisboek Kwalitatief onderzoek: Handleiding voor het opzetten en uitvoeren van kwalitatief onderzoek.*
- Scheepers, P. L. H., Tobi, H., & Boeije, H. R. (2016). *Onderzoeksmethoden.*

The framework will start off with an operationalisation of the main research concepts. Subsequently, the research process is discussed. This concerns the research method, the selection of the research cases and respondents, and the data analysis. Finally, the ethical issues involved in the research are discussed.

3.1 Operationalisation

The aim of this study is to research how the concept of grounded renewal as an application of icon development can contribute to the redevelopment of the brownfields. As already is shown in the literature review, icon development is one of the strategies that is applied in the redevelopment of brownfields. This can concern the development of an iconic ensemble or object. It has become apparent that icons can have various forms of impact on urban development. In the development of icons, several strategies can come together that stimulate urban development. On the one hand it can persuade stakeholders to make investments in the area and on the other hand it can strengthen the local identity. This is particularly important for brownfields as these areas are typically known to be more risky and complex than other urban areas. However brownfields have in most cases an abundance of industrial heritage, which has a lot of potential for repurposing. The development of iconic industrial heritage can then contribute to overcome these obstacles.

3.1.1 Process inititiation

For icon development it is of great importance to attract the necessary investments and human capital. This could partly be accomplished through marketing and branding, but such a development could also be initiated from bottom-up. For example, processes can be started with a tender or developed organically by temporary use of the location. For successful governance support, it is of importance to set joint goals and to create a coherent vision in the first phase of the process. The first focus in the interviews has therefore been on the initiation of the transformation process. It was examined which considerations have been made regarding the main interests and obstacles.

3.1.2 Icon transformation

After establishing a joint vision, it is important that these principles are actually implemented in the transformation. The specific emphasis was on how the site's distinctive hardware and software have

been deployed in the transformation process of the icon. So an analysis was made of how the vision is translated into the design and the programming of the icon. It was researched how the icon has been made more sustainable and adapted to the preferences of users, within the requirements of the monumental status.

3.1.3 Iconic function

There are various functions that icons have in the redevelopment of the brownfield. Some of these functions are mainly internally oriented and others will have more of an external orientation. As a result, it will differ per icon whether it mainly fulfills a local function or whether it mainly attracts users, visitors and investors from outside the area. It will be analyzed which functions the icons have. A distinction will be made between these functions; social anchor, showcase, catalyst, meeting place and breeding place.

3.2 Research method

The concept of grounded renewal is operationalised in an analysis framework with aspects of software and hardware to further deepen the application of this research concept. In order to provide insight into these developments, it was necessary to analyze, among other things, the development processes, planning context and area characteristics. To make this empirically researchable, the qualitative method of interviewing has been applied. The analysis framework served as the basis for the structure of the interviews. The interviews were divided into three categories; process initiation, icon transformation and iconic function. In this methodology of grounded theory the empirical data was analyzed inductively. “Inductive analysis means that the patterns, themes, and categories of analysis come from the data” (Patton, 1980, p. 306).

3.2.1 Expert interviews

At the start of the research process, expert interviews were held to refine the relevance and framing. First of all, an exploratory interview took place with Hans Renes, professor at the VU University Amsterdam and Utrecht University. The main goal of this interview was to get an expert insight in the subject of heritage icons and the effects on urban transformation. The interview functioned as an explorative way of finding a research gap within this topic. The obtained knowledge from this interview was used to narrow down the research topic and make some adjustments in the definitions of the research concepts. Some cases that emerged in the interview were eventually selected. This concerns the Wagenwerkplaats in Amersfoort and the Van Nelle Fabriek in Rotterdam. According to Renes “Van Nelle itself is so well known, so appreciated, that it in itself helps to attract activities.”

Subsequently, the theory of icons was discussed in more detail with Wouter Jan Verheul, research fellow and lecturer at the TU Delft. The emphasis in this interview was on the main research concept of grounded renewal in icon development. Verheul emphasized the importance of the programming within the icon. It is important to keep the story of the place alive together with the user groups. In order to operationalise the concept of grounded renewal, an analysis framework was created to research the various icon developments of the cases. After completing the theoretical and methodical framework, a follow-up interview with Verheul was conducted to reflect on the operationalisation of the concept of grounded renewal.

3.2.2 Case selection

The case-selection procedure was based on a diverse-case method. According to Gerring (2006) this is intended to represent the full range of values, which can be categorical. “The logic of diverse-case analysis rests upon the logic of typological theorizing, where different combinations of variables are assumed to have effects on an outcome that vary across types.” (Gerring, 2006, p.96) According to Patton (1990, p.172) this strategy of purposefully selecting on the basis of heterogeneity for a small sample is a strength. This will result in both “high-quality, detailed descriptions of each case, which are useful for documenting uniqueness, and important shared patterns that cut across cases and derive their significance from having emerged out of heterogeneity.” The cases selected for this study were chosen on the basis of a combination of the categories ownership and function of the icon. In terms of ownership, the variables are public and private ownership. In terms of function the variables are a public or private function. These variables will determine how grounded renewal is applied in icon development. On the one hand there is a trend of commercialisation (2.1.2) and on the other hand heritage is perceived as a public good (see 2.2). These interests can conflict with each other. Public or private interests will lead to different choices in the redevelopment and use of the icon, which will determine the function that the icon has.

	Ownership	**Current function**
Van Nelle Fabriek	Investment company Virgata Group	Multi-company building, event and conference location
Wagenwerkplaats	National Railways Real Estate	Workplaces, catering and diverse companies
Caballero Fabriek	Municipality	Multi-company building
LocHal	Municipality	Library, culture and conference location

3.2.3 Respondent selection

For the selection of respondents the same diversity strategy was applied as for the case selection. “By including in the sample individuals the evaluator determines have had quite different experiences, it is possible to more thoroughly describe the variation in the group and to understand variations in experiences while also investigating core elements and shared outcomes.” (Patton, 1990, p.172) So it was analysed per case who the main stakeholders were in the transformation process. This concerns public, private and citizen representatives. In addition, it was examined whether a mediator with an important driving or connecting role has been involved in the process. In the case of the Wagenwerkplaats there was an open interview conducted, with the representative of the Industrial Heritage Foundation of Amersfoort, about the coherence of the industrial heritage ensemble. The need for such an interview, which was conducted on location, was because in this case the entire workplace site is considered an icon. The focus of the interview was on the coherence of train tracks, relics and building elements. This concerned how you can maintain physical structures and sight lines so that the railway and industrial past remains visible in the public space. There was a balanced selection of respondents from these various groups so that an objective analysis of the process was made. In this way, the application of this selection strategy has contributed to the substantive saturation of the empirical data. As the function and use of the icons differ from case to case, different stakeholder groups have been selected. By interviewing the different parties, an analysis was made of the role they have taken in different phases of the transformation process. This gives an overview of the contribution and influence that these stakeholders have had. For example, who took the leading role, who acted as a unifying party and which parties provided a counter-opinion. In addition to the interviews with various parties, the policy and visions drawn up during the transformation process were analysed. In this way, a good overview was obtained of the considerations and choices that have been made in the process and what effects this ultimately had on the area transformation.

3.2.4 Interview structure

The questions were structured on the basis of a topic list that has been deductively compiled based on the literature study. This study involved an integral analysis of mainly peer-feedback articles. The theory derived from this has been operationalized into questions that apply to the context in question. The structure of the interview was structured on the basis of the funnel method, whereby the interview started with general questions and more specific questions were asked during the interview. At the start of the interview, the research goal was briefly explained. Subsequently there was an introduction to the respondent's involvement in the development. The interview was then divided into three main themes, the process initiation, the icon transformation and the function of the icon.

3.2.5 Interview analysis

To analyse the empirical data in a structured manner, a coding scheme had been drawn up (see Appendix III). This scheme consists of open and axial codes. The open codes were derived from themes that emerged during the interviews. “Thematic analysis involves the search for and identification of common threads that extend throughout an entire interview or set of interviews. (...) Once identified, the themes appear to be significant concepts that link substantial portions of the interviews together.” (Morse & Field, 1995). These themes allow a better interpretation of the development context and the development process. The axial codes were based on the operationalization of research concepts.

- Initiation: General vision development, process collaboration, vision development
- Transformation: Conservation, adaptations for new use
- Function: Spillover effects

3.3 Ethical issues

When conducting and processing the interviews, the input of the respondents was treated in a respectful manner. Respondents were already informed in the mail contact of the purpose of the research and the way in which the interview will be conducted. Permission had been requested to record the audio and to name the personal data in the report. The option had been given to be named anonymously in the report. Prior to the interview, it was once again discussed what the research entails and what was expected of the respondent. In this way, informed consent was given by the respondents. Afterwards it was asked whether all questions were clear and whether the respondent wanted to add something or had some questions. There was also given a possibility to the respondents to provide them with the research report, or a summary of the research, if they were interested.

4 Van Nelle

4.1 History

The Van Nelle Fabriek is named after the original coffee, tea and tobacco store owners Johannes and Hendrica van Nelle. This store was founded in 1782 in Rotterdam which was as international port city excellently suited for these colonial wares. As a central trading city, the inner city was at the time already densely built. As a result, various locations throughout the city were purchased to expand the production, which were rebuilt and expanded several times. Around 1880 the firm also expanded with several tabasco establishments and plantations in the Dutch East Indies. In 1900 the demand for coffee and tea increased, as it became affordable for the majority of the population at the time. Van Nelle took advantage of this by setting up a partial mechanization of the packaging process and introducing successful advertising campaigns. As early as the beginning of this century, the factory offered courses to workers, paid attention to health care and even had guesthouses for sick employees. Over time it was through growth necessary to build a new factory. Since the municipality had prohibited further industrial expansions in the city center, a suitable area on the outskirts of the city was purchased. This also made it possible to have the various parts of the business operations come together at one location (Zwikstra, Friskes, Van Giersbergen, Hillebrand & Vredenberg, 2019).

4.1.1 Land purchase

The purchase process of the land was led by Kees van der Leeuw, the co-owner of the factory. Ever since he became involved with the factory, his focus has been on enhancing the company's image. He started designing packaging and invested in advertising (Friskes, 2019, pp. 49-50). His motives were mainly inspired by his involvement in the theosophical religious philosophy. In the Dutch theosophical department he was responsible for the ‘progress in the spirit of cooperation and of profit distribution among the working classes, the relationship between workers and employers, higher socialism and women's labor’ (Kaufmann, 2005, p. 47). He was inspired by the architectural style ‘het Nieuwe Bouwen’. This was a modern style that was popular in the Netherlands, Germany and France during 1910-1960. This style can be characterized as rationalistic, functional and simple.

In 1916 he selected pasture land at the riverside of the Delfshavense Schie that at the time was part of the municipality Overschie. This land was located outside the center of Rotterdam, which offered the possibility to set up the factory in a spacious way so that there was sufficient space and light. The river provided an excellent viewing location over the factory (Rotterdam, 2014). The land prices over here were low and there was the possibility for transport over water, railway and road network. Van der Leeuw's (1914) reasoning was as follows;

> A factory on a very large site, spaciously built, visible from various sides and located on the great railway line Rotterdam-Amsterdam, will mean more as an advertisement than a factory with one front of 60 or 80 meter to the Oostzeedijk. If, moreover, modern facilities are made later on, such as houses for workers, sports fields, a garden, etc., then our ‘standing’ as manufacturers will also be a completely different one than is currently the case.

According to Van der Leeuw, the site was suitable to continue to serve as Van Nelle Fabriek site over a period of up to 100 years without making further land purchases. Despite the fact the factory was located outside the city center, Van der Leeuw considered accessibility of importance. That is why he took into account the travel time zones of the employees. Also at the same time of the factory development the working-class neighborhood Spangen was in the process of construction which was convenient.

4.1.2 Development of the factory site

The development of the factory eventually started in 1925. Van der Leeuw wanted Van Nelle's factory development to distinguish itself from the contemporary factories of that time. "I had this idea of beauty in industry in my mind years ago, but I got disheartened when I came to our old factories which were hopelessly ugly." This also applied to the former factory, taht in 1910 received a negative judgment from the National Supervision of Factories and Workplaces after an inspection. There was no ventilation or heating and not enough daylight in the workplaces. Besides, the steam engines caused a lot of noise and smell. There was also only a single toilet in the complex. (Van Giersbergen, 2019, p. 39; Friskes, 2019, p. 50). In contrast, the Van Nelle Fabriek was designed to stimulate a productive working environment. The aim was to create natural light, healthy air and spaciousness within the complex.

During the factory development innovative techniques were applied such as sand reclamation and pile driving, which were both still quite unusual. Van der Leeuw traveled the world to gain knowledge of modern and innovative applications that could improve factory operations (Van Rotterdam, 2014). The factory development was mainly based on three principles:

- Form follows function, so 'the exterior of a factory should evolve out of the demands of the interior'
- The design must strike a balance between human and mechanical requirements
- 'Extra costs should be spent on the finishings without the need to demonstrate an immediate profit, they are still justified' (Kaufmann, 2015, p. 72; Geurst, 1994).

Based on his analysis of the manufacturing process the design was flexible, efficient and coherent. Within the complex the coffee, tea and tobacco factories were interconnected and had shared facilities. They each had their own signature, yet they were clearly part of the whole. The factories were designed on a vertical manufacturing process so that gravity could be used optimally (Kuipers, 2017). By means of a construction with a mushroom floor, which has more bearing capacity than regular columns, a curtain wall of glass and steel could be placed instead of a load-bearing façade (Van Rotterdam, 2014). The small mushroom columns made it possible to easily adapt the workplace layout to the production process with lightweight room dividers (Vredenburg, 2019, p. 17). Due to this construction, the floors were also less high than usual, which improved the efficiency of the vertical production process (Zwikstra, 2019, p. 65). This also meant there was no need for beams that could obstruct the incidence of light. This design provided the workplaces with natural light, which would significantly improve working conditions. Since the inner walls were also provided with glass, the factory was completely transparent (Vredenburg, 2019, p. 18). This made the Van Nelle Fabriek the first daylight factory in Europe.

The view through the characteristic glass curtain wall (Van Nelle, 2020)

To create a spacious natural environment there was a landscape gardener appointed to construct the factory garden. In the design, a lot of attention has been paid to sight lines and positioning so that the complex really stands out. In this way, the factory with its large neon letters could also be clearly seen from the busy railway line and highway, which was good advertising. Hygiene was considered of great importance to the production process, as smell could affect the quality of the products. For this reason, extensive modern sanitary facilities were installed for the employees. These were separate areas for men and women which included washing facilities, as in many cases they did not have access to them at home (Friskes, 2019, p. 55). To improve the working conditions further Van der Leeuw even studied ergonomics, the emotional value of colors and production setups. For example, the factory spaces mainly had activating colors while the office spaces had calming colors. Besides, attention was paid to the leisure activities of employees. There were various sports fields on the complex that employees' associations could use.

It can be concluded that the Van Nelle Fabriek was clearly designed with a physical deterministic approach. The focus on employee well-being in the design was a very modern and innovative approach at the time. This naturally also contributed to the efficiency of the production process. Van der Leeuw was very well aware of the progressive function of the factory and wanted to show this to the outside world. Ever since he joined the firm, he'd been committed to the power of advertising. His investments in the distancing character and name recognition of Van Nelle had soon paid off. Therefore, he decided to hire a permanent photographer who portrayed the entire design process. The progressiveness in design and workers' prosperity made the Van Nelle Fabriek a pilgrimage site for modern architecture (Van Rotterdam, 2014). According to Gerrit Rietveld, the architect of the Rietveld Schröderhuis, it was “the best that is made as ‘Neue Sachlichkeit’ architecture in Holland.” After a visit to the factory Le Corbusier, an urban planner and pioneer of modern architecture, described it as "the most beautiful sight of the modern age."

4.2 A new purpose

After the production was moved in stages, the factory became vacant in 1995. A new purpose for the complex was sought by the owner Sara Lee/Douwe Egberts. “The owner was aware of the cultural responsibility, so they wanted to cooperate in a decent transfer. They wanted a good price for their land and the buildings, but they did not want to sell it in advance to the highest bidder, if there was no continuity assured for a long-term and appropriate use.” (Interview Kuipers) The municipality was actively involved in the initiation phase when looking for a suitable developer. A consultation platform was set up, the Van Nelle Council, consisting of the national and municipal authorities for monument preservation, the development company of the city and the aldermen of Urban Renewal & Monuments, Spatial Planning & Culture and Ports & Economic Affairs. This group provided the owner with advice over a period of three years. The new purpose of the complex had to both fit and boost the urban development of Rotterdam. It had to be a complex with an international appearance and fit within the business park Spaanse Polder (Backer & Gude, 2005, pp. 228-230).

4.2.1 Cultural-historical exploration

As part of the sales contract, a cultural-historical exploration was executed in 1998, in which future usage possibilities were investigated. This determined which future interventions were authorized. It was the first time such an exploration had been applied to a factory complex. Previously, this was only applied to areas of cultural and historical value such as country estates, since the development opportunities for this were quite broad (Interview de Jonge). This report served as:

> the basis for all parties for future developments, with the understanding that the ultimate buyer who will implement the redevelopment concept will also have to take into account

> the stated in this report and, in view of our policy of safeguarding conservation of monumental value, will be bound by it. (Kuipers, 2005, p. 231)

The developer was expected to be willing to accept UNESCO's maintenance terms (Kuipers, 2017). The exploration was therefore already guiding the possibilities and limitations in the redevelopment, so that this would already be clear in advance of the permit procedure. In this way, the national authority for monument preservation could proactively indicate the possibilities for development prior to the selection procedure. This made the developer able to make a realistic calculation for the redevelopment (Interview de Jonge). A traffic light method was used in which a distinction was made between (Interview Kuipers):

- Red: there you are very limited
- Yellow: there are risks there, but all kinds of interventions can be discussed in consultation
- Green: still act carefully, but more interventions can be discussed there

The method was made clear by means of photos in which the cultural-historical and architectural qualities were indicated. The following matters were explicitly mentioned as fundamental for the redevelopment. In the redevelopment the factory had to retain its function of beacon in the urban environment. Moreover, the park character and the openness of the factory street had to be maintained. In addition, the pioneering technical value and machine aesthetics are appreciated. “The control rooms, with their marble panels and bakelite operating levers, were once (...) as paragons of modernity placed along the factory street.” (Backer & Gude, 2005, p. 228).

Control room in the boiler house (Aarts, 2010)

Strict preconditions were also set for the interior, so that the modern appearance would not be detracted. “New parts have therefore been designed with a businesslike simplicity, in which no aesthetic refinement is sought, but is aligned with the pragmatics of the original design.” (De Jonge, 2005,p. 263) This concerns a dematerialized appearance, which means that decorations have to be kept to a minimum. Movable property did not fall within the monument protection, so the machines have been removed in the factories, which of course was necessary for the transformation to new use. However some original relics are preserved and included in the interior, especially in public spaces such as De Branderij (see 4.4).

In addition to indicating the qualities that had to be preserved, the exploration also described the risk that Van Nelle complex could become an enclave due to the many traffic barriers and the incoherent business development surrounding the site. It was therefore important to coordinate the site development well with the urban development (Kuipers, Visser & Wielinga, 1998). This was still a complex process as this urban area consisted of nine sub-municipalities at the time (Interview Kuipers).

4.2.2 The Design Factory

After a selection of eighteen different concepts it was decided to redevelop the complex to the Van Nelle Design Factory, at the time for mainly small design and communication businesses. The redevelopment was financed by 'CV Van Nelle OntwerpFabriek', a partnership that in the Netherlands is referred to as a 'Commanditaire Vennootschap', which consist of one managing party who makes decisions for the other investing participants who do not have control. The CV was founded in 2000 and had 580 participants. This form of investment had a term of 6 years. Besides, compensation was provided in the form of subsidy processes and favorable tax conditions. In addition, the municipality invested in the infrastructure and in the direct environment of the site.

In the redevelopment the zoning around the site had to be taken into account. The business park Spaanse Polder, of which Van Nelle was a part, was classified in the highest environmental category in the zoning plan. This created certain restrictions on the repurposing of functions on the site. After intensive consultation with the municipality and province, a balance was found in the function mix that could be developed. This consisted of a 50/50 ratio of office and work spaces in the majority of the buildings. In addition, zoning coming from the highway, railway and inland shipping had to be taken into account (Interview De Jonge). This development initially led to resistance from certain companies in the Spaanse Polder, who feared that the development of office locations would conflict with the continued existence of heavy industry.

The municipality wanted to create a cultural breeding place, which was popular at the time and therefore important for the image improvement of the city (Interview Kuipers). For this purpose, an inventory has been made of potential users to gauge what they expect. However, the users were primarily parties looking for something in the short term, so most of them dropped out. However this inventory was used as input for the redevelopment. The fundamental of the masterplan was on the one hand, the concept of the Design Factory in which a specific group of users was targeted. On the other hand, design principles were established based on the qualities of the complex such as transparency, sight lines and factory aesthetics. The factory was thus divided into different modules, so it was mainly a supply-oriented development where the division was already established in outline. Only then were tenants searched, who had to comply with the established requirements. It was "determined that the parts with a very special architecture should be given a destination accessible to the public."

4.3 Van Nelle as a monument

In 1985 the Van Nelle Fabriek was listed as a national monument. It was quite unusual at the time to monumentalize modern architecture, which was partly because there was a fifty-year requirement for the appointment of monuments. For this reason the adjacent Schiehallen and the factory garden were listed in 2001, as they were later added to the complex. There was cooperation between the national government and the municipality throughout the process. This was the case because the possibility of a UNESCO nomination was assumed from the start of the redevelopment process. The complex was in fact placed on the provisional list of world heritage monuments of the Netherlands in 1995, which was also the year that the production process came to an end. So despite the decentralization of monumental preservation in 1988, which meant that the responsibility for granting permits was transferred from state to municipality, the cooperation between the state and the municipality continued. The case was that, in contrast with the national monument status, the preparation of a selection for World Heritage monuments was within the responsibility of the state (Interview Kuipers). A working group was set up where in consultation with the coordinating architect the proposed interventions were discussed and conditional framework permits could be granted when required (Kuipers, 2005, p. 244). At the time, this was a monthly consultation between the national and municipal authorities for monument preservation, the owner and the architect.

This cooperation has continued since then in order to maintain the quality of the world heritage, this still takes place on a quarterly basis (Interview Knibbeler).

4.3.1 Monument preservation debate

The preservation approach of modern monuments differs from traditional preservation. The vision behind the design stands at the basis of protection instead of material authenticity. The reason behind this is that 'form follows function', so material aspects must be able to be adapted to the functioning of the building. A good example whereby this trade-off becomes clear is the issue with natural light in the current working climate. In the original vision a factory with natural light was an improvement to the working conditions. However in the 'new way of working', screens are used intensively, whereby natural light obstructs the visibility. If you hold on to the vision to improve the working conditions, you will install sun protection in this case, while this does change the appearance of the façade (Backer & Gude, 2005, p. 246).

According to Kuipers there is a paradox for the modern monument. As they strived for eternal youth and future-proofness of their buildings, they experienced monuments as memories of the past, which were associated with decay and without purpose. Restoration was an issue for the modern ideology because continuous change was the standard and reconstruction was out of the question. Moreover, "the idea that ongoing modernization was not only in accordance with the ideas of Nieuwe Bouwen, but also indispensable for energy saving and comfort improvement." So from the style Nieuwe Bouwen came a very strong resistance to the museumization of the complex, renewal was deemed necessary to keep the site alive. Dynamic monumental preservation and new use better reflect the forward-looking ideals of the style. For the renewal of the Van Nelle site was a clear interpretation: "A critical distance must be maintained from the visual language and materialization, so that old and new remain sufficiently distinct from each other, but also that there is a certain harmony." (Kuipers, 2005, pp. 218-223)

4.3.2 UNESCO designation

The combination of modern architecture, a functional work environment and attention to work ethic, that was unique at the time, was the reason for UNESCO designation in 2014. The Van Nelle Fabriek meets both the cultural criteria of "to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design" and "to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history" (UNESCO, 2005). The former concerns the application of Modernism, with both european and north-american influences, in the design of the complex. With its successful and aesthetic design the Van Nelle Fabriek is an excellent example of a precursor in industrial modernism. The latter concerns the rational architecture and linkage with the direct environment, which created an efficient and pleasant working climate. "It expresses the values of clarity, fluidity and the opening up of industry to the outside world." Besides these two criteria, the complex was valued for its authenticity and integrity. The ensemble was mainly kept intact, as well as the functional relations within the complex. The designation covers 6.94 hectares of the complex, with a circumjacent buffer zone of 87,57 hectares.

Figure 2: General map showing the adjusted boundary of the proposed buffer zone surrounding the nominated property

Figure 2. Monument and buffer zone boundaries (RCE, 2014)

4.4 Realisation

In the realisation certain adaptations were required to make the factories suitable for the new use. De Jonge states: “At building level there are many challenges (...) it is not ideal in terms of building physics and acoustics (...) it does not have the specifications of a normal office, we have devoted a lot of time and attention to that.” First of all there was hardly any experience of how to properly restore these industrial complexes. One of the few redevelopments known was that of Lingotto in Turin, a former Fiat factory, which was heavily government-driven and characterized by financial difficulties.

It was therefore important to properly map out the options in advance. A foundation for this had already been laid in the cultural-historical exploration. Since the expectation was set for a rapid first redevelopment phase, separate architect teams were appointed. A structure plan was drawn up in order to maintain a uniform appearance between the various complex components. In order to limit preparation time, a building-historical investigation was carried out at the same time in order to develop on the basis of a well-founded investigation. The existing archives were examined in which the original and current conditions of the building components were determined. A color study was also carried out, as this was originally an important design specification. On this basis, the building components received a valuation on this basis, the building components received a valuation that was the foundation of the redevelopment. Adaptations and additional elements could thus mainly be applied in the low-valued building zones.

Due to the modern design, there was a repetition on all floor layers. It was therefore deliberately chosen to keep showing the original state in a few specific places, such as in ‘De Branderij’, but to apply the box-in-box construction in the rest of the factory.

> The core of the modern movement, is architecture focused on efficiency and use, not on representativeness and monumentality, in that sense you can afford certain freedoms with these types of buildings (Interview De Jonge)

Restaurant ‘De Branderij’ (Endstra, 2020)

This pragmatic approach in the redevelopment has ultimately resulted in an emphatic appreciation for the ‘working monument’, which is also specifically mentioned in the UNESCO nomination. This

has to do with the fact that the majority of the World Heritage monuments do not have such a commercial function. De Jonge states:

> You can walk a route through the complex where you can see how it was originally, but if you open another door you will see how it turned out, and that's where the euros are earned.

With this commercial function in mind it was advocated in the structure plan to reserve space for new construction at the back of the site. This was considered necessary to complete the revenue model. This space was determined on the basis of an analysis of the sight lines, so that the new constructions would not be visible. Ultimately, the piece of land that has been designated for new construction has not been developed, it is therefore still a strategic land position that can be developed by the developer in the future.

4.4.1 The box-in-box construction

The original façades of the factories consisted of single glass, which was not necessarily problematic at the time due to the intensive work that took place. With the function change of the factory, it was necessary to adjust this due to noise pollution and comfort requirements. The glass façade of the daylight factory had a high monument value so in the redevelopment the façades had to be kept fully intact. A box-in-box construction was designed to improve the isolation and sustainability of the factory. This concerns a climate façade on one side and a hallway on the other that serves as a climate buffer between the façades. According to De Jonge, in case you made the hallway in the middle, you could parcel out on two sides. However, a climate buffer will still be needed on both sides, so that less rentable square meters would be available than is currently the case. This box-in-box construction functions thus as a climatic transition zone, allowing the temperature to be controlled indoors. The heat can be captured in this zone and subsequently stored in the ground for later use. The construction also functions as a buffer for external noise, which improves work conditions in the building. The pipe systems are incorporated into both the façade and the floor in order to keep them out of sight. Insulation has also been incorporated into this newly laid floor layer.

4.4.2 Transparency and sight lines

In the design of the complex the factories are positioned so that they function as an important landmark in the environment. From the road as well as the railway there was a clear view on the glass façade and the neon letters of the factories. Besides from the entire factory there was a good view of the spacious outdoor area (Rijksmonumenten, 2001). There are therefore four forms of transparency that are considered of value in the redevelopment. The view on the buildings, the view from the buildings, the view through the buildings and the view from the outside of the interior.

The Schiehallen, which were added to the complex after the original storage space in the city center of Rotterdam was destroyed in WWII, were at the time deliberately kept low so as not to interrupt the view of the factory. Due to the UNESCO designation a buffer zone could be established, so that sightlines could be maintained in the long term. In order to maintain the visual quality of the factory complex, a number of adjustments have been made in the redevelopment. In the redevelopment the sight lines in the outdoor space were restored. Medium-height trees were planted, of which the height did not disturb the view (Molenaar, 2005. p. 256).

4.4.3 New users

In the process of attracting new tenants the conceptual consideration was given priority over the commercial interest. Tenants had to stay within the framework of a protocol, so that the factory retains its uniform appearance. As a result, certain parties could be rejected who did not fit within

the vision for the complex. The execution of this strategy depended on the initial rental succes, since in the end a profitable revenue model had to be created (Kuipers, 2005, p. 246). In order to quickly fill up the vacancy and thus create liveliness within the factory, there was a low initial rent with a supply of basic facilities such as electricity, heating and data infrastructure (Backer & Gude, 2005, p. 238). From the outset it was a sought-after location, both due to the factory's reputation and the new concept of clustering design companies (Interview Knibbeler). The strategy worked out well since 95% of the complex was already rented to circa fifty companies in 2005. Initially small units were in high demand, but it was difficult to implement this in the design in the factories. This was partly due to the fact that small units would interrupt the sight lines within the factory (Kuipers, 2005, p. 243). Ultimately, small workspaces were developed in other buildings in later phases of development, which created growth opportunities for start-ups. The renting out of singular workplaces, which has become a popular concept, has eventually been implemented in the 'Expeditiegebouw' (Interview De Jonge). To specifically stimulate the cultural programming of the Design Factory, a foundation was set up in 2003 to raise funds for this (Kuipers, 2005, p. 243).

The design principles also caused the exclusion of specific sectors. Knibbeler gives an example of photography companies that had a demand for darkened spaces, however this was contrary to the basic principle of transparency. So there was no room for such companies in the factory itself, so they were given a destination in the basement of the complex. De Jonge indicates that printing companies could not accommodate themselves in the factory because of the floor load. At the time, the plan was to allocate such companies to the yet to be developed new-build locations, in order to program a diverse conglomerate of companies. Ultimately, this was not realized. In a later phase of the development, the original concept of Design Factory was abandoned and it became a more general collective building for companies. After the zoning plan of the complex was adjusted, events and conferences could also be organized.

4.5 Brownfield redevelopment

The relocation of Van Nelle in 1916 from the full city center to the location of the Spaanse Polder on the outskirts of the city was a conscious choice by Kees Van der Leeuw at the time. This location could provide a long-term guarantee for further development of the factory, which is why the design was also made as timeless as possible so that it could remain functional for at least a period of 100 years. In addition, the open space around the complex was purchased in order to create both a green open work environment for the workers and a viewing location on the factory. The development of the factory complex has subsequently been the driving force for the further development of the Spaanse Polder as an industrial site, where various heavy industries settled in the following decades.

However, as indicated in the cultural-historical exploration, the surrounding infrastructure and incoherent establishment of business locations does not benefit the development of the Van Nelle complex. These serve as physical barriers between the Van Nelle complex and the urban area of Rotterdam, which does not benefit accessibility from the city. Moreover it does not contribute to the appearance of the industrial ensemble.

Aerial view of the Van Nelle Complex (Keuzenkamp, 2008)

4.5.1 Zoning plan

During the initiation of the redevelopment, intensive coordination took place about the new use of the complex so that this would not conflict with the possibility of heavy industry in the Spaanse Polder. However during the development process, the municipality waited to change the zoning plan for the location. According to De Jonge, this wait-and-see attitude can be explained by the fact that the municipality wanted to utilize the completion of the redevelopment for the development of the Spaanse Polder. There was a period of 10 years in which the preconditions were not official, which meant there was no legal certainty for the continuation of certain developments on the complex. Ultimately, UNESCO's nomination process ensured that the various existing 'scraps' of zoning plans were merged into three plans for different sub-areas (Interview De Jonge). In addition, this nomination process served as a means of creating a common vision between the various administrative parties in the area for the buffer zone.

> That was a big task, we had to use that nomination to get all those parties together, because one of the elements was to limit further high-rise buildings. (Interview Kuipers)

According to Knibbeler "all developments in that area were frozen to the situation when the zoning plan was established". It is mandatory to inform UNESCO every six years about what is happening in the area, which is why it is important to continue to monitor developments in the buffer zone.

4.5.2 Business park Spaanse Polder

The development of this business park has for a long time mainly focused on the establishment of heavy industry that fell into environmental category 3 to 5. It was the only large-scale location in the region where such industry could establish itself. However, this monofunctional use meant that little or no investment was made in the quality of public space. The site used to consist of many different sub-municipalities, and part of the industrial area is located in the municipality of Schiedam. Due to the administrative fragmentation of the area, it lacked a clear general vision for the site. Moreover the site it is surrounded by infrastructure and other industrial areas, the Business Park Rotterdam Noord-West in the north, the channel Delfshavense Schie in the east, the railway line south of the Van Nelle complex and the Schiedam industrial area 's-Graveland in the west of the Spaanse Polder. In addition, the A20 highway runs right through the site. These form physical barriers with the urban area. This is not problematic from a functional point of view, the site is easily accessible for the supply of goods. However, it is from a safety perspective.

Previously, little safety management took place. This resulted in many criminal activities on the site, this varied from “money laundering, illegal rental” (Interview De Bok) and “wrong car companies, cannabis plantations, bizarre things that happened” (Interview De Jonge). This was a problem, which was getting out of hand. In order to tackle this the municipality, in consultation with the businesses council, initially took the following measures. A ‘city marine’ has been appointed who is intensively present in the area and enters into dialogue with users. In addition, it has been important “to ensure that the network of entrepreneurs becomes stronger, because when the social network is stronger, as a government you will hear more quickly if something is wrong, entrepreneurs are more willing to bring up something” (Interview De Bok). However, De Bok states that for the further brownfield redevelopment it will be necessary to invest more in the physical aspect of the urban environment, both in public spaces as a more selective approach to business locations.

4.5.3 Initiation of the Van Nelle Node

In recent years, the municipality of Rotterdam has focused on a densification strategy. De Bok states:

> The pressure on the city, as an area to be developed, has increased, since five years there has been a clear change of course that we are really going to fulfill the urbanization in urban areas.

For the densification of this urban area there are certain development challenges, which are characteristic for such brownfield sites. First of all, the area has poor accessibility, in terms of public transport, the complex is only accessible by a bus line. In addition, for the development of a mixed urban area it will be necessary to invest in the quality of the public space, which is difficult since the land is owned by various private parties. The search for a suitable developer is complicated by the fact that there are restrictions on the development of housing, which means that potential returns for such a development are relatively low. On the other hand there is potential in the area:

> An icon with such quality sets the tone, which determines the atmosphere and ambition that will reflect in the area development, on the Wilhelminapier you have hotel New-York, which was located in a deserted, desolate area, for Van Nelle that kind development still has going to happen. (Interview de Bok)

Moreover, the locations ‘Het Kasteel’ and ‘Blijdorp’, respectively a football stadium and zoo are important landmarks that on the one hand can be used in the branding of the development of the urban area Rotterdam Northwest, of which Spaanse Polder is part. On the other hand these locations can spatially be the core of the urban transformation.

The vision for densification concerns the area around the Van Nelle Fabriek, between the A20 highway and the railway. In this sub-area are opportunities for the development of a mixed urban environment. So the transformation in question will mainly take place on the edge of the business park Spaanse Polder. The area will therefore largely retain its function as a location for high-category heavy industries within the urban area. This guarantees that no housing construction will take place on that part of the site in the long term. In order to actually realize a mixed urban environment, the accessibility of the area must first be significantly improved. That is why there are plans to develop a station junction, the ‘Van Nelle Node’. For many years now, there has been a significant lobby from the municipality that has established this ambition, and has substantiated this with various studies into the densification and transport potential of the urban area Rotterdam Northwest. Interventions in the railway network must be decided at a national level, so there must also be a willingness to invest in this project. Subsequently, a suitable financial strategy must be

sought in which investments can be made in public space. This is a difficult issue as the municipality cannot recoup these investments because they do not own land positions. However such financial constructions also had to be made in the city center, so the municipality does have experience with such situations. Moreover, knowledge is exchanged about such developments with other large-scale urban areas in the Netherlands. According to De Bok (interview), the approach is as follows:

> That perseverance is important at the Van Nelle Fabriek, you cannot determine the pace yourself, you have little financial strength, you have to improve accessibility in the first instance before we can make an ambitious plan here.

The described urban densification should take place between the A20 highway and the railway, which is also UNESCO's buffer zone (see Figure 2). Within this buffer zone, interventions are possible if they meet the condition that the "view of the factory is preserved, restored or brought back in all possible ways" and it will benefit "the image value of the factory" (Interview Knibbeler). There is a debate about which conditions the developments should then actually meet. According to De Bok the spatial quality of the surrounding area of Van Nelle is far from optimal. In that respect, 'locking in' the buffer zone area in question does not benefit the image of the ensemble. That is why the possibilities are being explored to develop certain buildings in this area in the long term, opinions differ about to what extent this should fit in with or deviate from the style of the factory. Initially, urban facilities could be developed. At a later stage, the possibility of housing construction in this sub-area could be considered in order to obtain a mixed urban environment with a 24-hour economy. However this is a complex planning process, as it must be coordinated with various administrative authorities.

4.5.4 Citymarketing

The photogenic imposing complex with its international appearance is suitable for the marketing of the city. As a pioneer project in the redevelopment of modern architecture, it was illustrative of the image the city wanted to convey. They made advertisements with slogans like 'Rotterdam dares!' and 'Rotterdam Works!' (Interview Kuipers). The branding of Van Nelle was stimulated by the many advertising companies located on the complex, as the factory is often used as an advertising location. Moreover, the shift to an event and conference location resulted in more buzz and publicity. It is one of the main landmarks in the tourism sector of Rotterdam, which has been increased by the specific modern architecture and UNESCO tourism flows. However, the complex is not a regular tourist location, it is a 'working monument', so it applies that tourism can only take place under supervision so that this does not hinder the business activity (Interview Knibbeler).

4.6 Conclusion

The redevelopment of the Van Nelle Fabriek was a pioneering project. At the time the renovation and allocation of a new function to young monuments was still very unusual. There was therefore no blueprint for this kind of development. In the transition phase from a functional industrial factory to a new factory concept, the cultural-historical exploration has proven to be an important instrument for establishing a clear framework for the redevelopment possibilities. By assuming a UNESCO nomination from the starting point of the process, a regular consultation was started between the architect, governments and authorities of monument preservation. These consultations have continued ever since to continue to monitor adaptations to the factory complex and to adhere to conceptual values.

4.6.1 Application of grounded renewal

The continuation of the modern style of the complex with the corresponding design principles of transparency, sight lines and factory aesthetics. The surrounding area was kept clear of buildings that would disturb the sight lines and the interior was matched to the modern appearance. The main feature of the daylight factory is the glass façade, which gives the factory a clear and transparent appearance. This façade was kept intact by the development of the box-in-box construction. In this way, the necessary sustainability and working comfort were achieved that were required for the new function. This construction is a fitting example of how a monument can be made suitable for contemporary use while retaining its authenticity. The repurposing to the Van Nelle Design Factory was a clear concept that focused on a select group of users within the design and communication sector. A participation process preceded the redevelopment. However, due to the monument status, strict principles applied to the developed units, so that the new use was primarily supply-oriented. Facilities such as restaurant ‘de Branderij’ have to facilitate interactions between the entrepreneurs. Since under new ownership, there has been a shift towards the development of an event and conference location, however the factory remains a 'working monument' so accessibility for visitors will be limited to organized activities.

4.6.2 Function of the icon

The icon mainly has a symbolic value for the image of the city, as a working monument in the 'city of modern architecture'. Sacralization of the Van Nelle complex has been a priority since the original construction, it is a photogenic building, which comes into its own due to the open outdoor space and the sight lines. The development of the factory complex was from the outset captured in images by a permanent photographer, which could thus be used in the marketing and name recognition of the complex. This was a successful strategy as this led to architectural tourism, which later increased as a result of world heritage tourism. It has contributed to bringing parties together in the creation of a joint vision for the brownfield. Due to the fact that the complex is spatially isolated from the urban area, it has not led to any other spillovers. The initiation phase of the brownfield redevelopment has only started in recent years due to obstacles such as fragmented private land ownership, environmental-, noise-, safety restrictions and poor accessibility. The area development will depend on the possibility of developing a node location in order to open up the area, in which the icon is pivotal. Due to its location and function, it has little impact on place attachment. This is reflected in the lack of interaction with the adjacent residential area Spangen.

5 Wagenwerkplaats

5.1 History

The ‘Wagenwerkplaats’ in Amersfoort was a working site for railway equipment of the Dutch Railway Company, the ‘Hollandsche IJzeren Spoorweg-Maatschappij. Amersfoort first train station was built in 1863 when it got its first connection to the rail network. In 1901 a new working site was designated to the west of the new station that became operational that same year. Workers mainly came from the Amsterdam and Haarlem region after they were forced to work at the Wagenwerkplaats after the railway strike in 1903 (USINE, 2004). This growth in employment had to be accommodated so the working-class neighborhood Soesterkwartier was further developed, even with help from the workers from the Wagenwerkplaats. Through this shared growth and connectedness, the neighborhood and working site were historically inherently linked (NS Stations, 2019). In 1908 the workplace was expanded with two workshops, a boiler house and a blacksmith shop. The original buildings with this extension form the characteristic factory street that has remained the core of the complex ever since. The Wagenwerkplaats became the largest employer of the city around 1930.

Aerial view of the Wagenwerkplaats (2019)

5.2 A stationary landscape

By outsourcing and centralization since the 60’ the production and maintenance decreased. By 1990, the National Railways [NS] had already more than halved their possession of freight wagons. Ultimately the Wagenwerkplaats was closed in 2000 because it was no longer profitable. National Railways Real Estate remained the land owner of the complex. The business premises, the buffer department, storage sheds and the porter's house were already demolished. In the first instance National Railways Development wanted to develop the site independently. At the time, however, the state instructed them to limit themselves to their core tasks. So then an inventory was started into the possibilities for the site for which a private developer was sought. This process took place in consultation with the municipality, which also had ideas for the area development. However at the time redevelopment was restricted for security reasons. On the still functioning railway yard shunting of dangerous substances took place. This concerned shunting with Liquefied Petroleum Gas (LPG), which involved a risk of explosion. Due to the environmental permit that came with this, housing development was excluded in the coming years. Work locations could be developed, this

permit was based on the former function, which concerned workplaces for about 500 to 600 people (Interview Abrahams). The location next to the traintrack and the shunting yard also caused noise nuisance, which limited further developments. Due to these circumstances, the Wagenwerkplaats remained fenced off for the time being and became a stationary landscape.

5.2.1 Organic development

Due to the restrictions and high risks there were no specific plans for the site. Since the stationary landscape would certainly last for a few more years there was an abundance of time. These were favorable conditions for organic development. Since the development was characterized by complicated files for both the National Railways and the municipality, they did not create opposition at this stage. The opportunity was created for temporary rental of certain buildings. This concerns an 'Article 17 procedure', which means that a temporary possibility for a change of destination can be made. At this time residents were involved through the provision of information, as it was possible to object to such a procedure. Since this went well the first pioneers settled on the site, which concerned among others, an architectural firm, and a culture and events organization. The buildings were also partly occupied by squatters, some of whom were tolerated by both the NS and the municipality. Later unwanted squatters arrived who were removed from the site by the municipality (Interview Abrahams). This process was characterized by an 'an formal old system that is dying off, which offers an opportunity for new informal spontaneous activities happening under the radar' (Interview De Vries).

5.2.2 Green infrastructure

There were various initiatives of the open space. The organisation ‘Het Groene Spoor’ (The Green Railway) uses this space with green initiatives such as city farming, park spaces and natural playgrounds. This organisation is one of the working groups of the Sustainable Soesterkwartier Association (see 5.5.3). The green spaces in the Wagenwerkplaats are part of a green zone through the urban area. This concerns both temporary fallow and designated green areas where greenery has been laid out. The management of these spaces is mainly coordinated by citizens. This zone has both ecological and recreational functions.

Entrance to the Wagenwerkplaats from the train station (Endstra, 2020)

5.2.3 The threat of demolition

However during this period there was still a lot of vacancy and there were not many ‘eyes on the street’. So on a regular basis there were issues with vandalism, theft and squatting of buildings. This was the reason for the municipality to put it on the agenda to improve enforcement within the area. The deterioration of the complex resulted in the demand for demolition by certain parties. However this led to resistance from the local community. This mainly came from residents from Soesterkwartier, who were emotionally attached to the complex. The movement was led by ‘Siesta’, the Industrial Heritage Foundation of Amersfoort. Founder of this foundation Joke Sickmann played a key role in the citizens' initiative to preserve the Wagenwerkplaats. She created publicity for the site and actively involved stakeholders in this process. In doing so, she constantly promoted the value of the site and its heritage.

She had already been active in the Soesterkwartier neighborhood since 1991. When she participated in the neighborhood management team, she noticed that the Wagenwerkplaats was not part of the vision of the neighborhood. She found this striking since most of the employees lived in this district. During her participation in a course on the history of Amersfoort, she noticed that there was already an existing climate of people who were concerned about the decline of industrial heritage in the city. However, there was still the belief that nothing could be done about it (Interview Sickmann). This was reflected in the case of the demolition of the porter’s house in 2003:

> People were told by the town hall: you can make an objection, but that makes no difference. (...) The demolition of this building was a bitter experience, but also a good lesson for observant and committed Amersfoorters. (Sickmann, 2018)

This was a 'dynamic moment' that triggered her active involvement in the Wagenwerkplaats. This was the first moment for her that she came into contact with people who felt involved in this industrial heritage and were therefore also indignant when it was demolished. She then continued to explore the site and started looking for allies.

> Amersfoort had to be kissed awake as the ‘Sleeping Beauty’ to see the value of its industrial heritage. (De Vries & Barendregt, 2011)

She then started investigating the permits for the site, which showed that a demolition permit had also been issued for the carriage shed. It then became clear to her that the demolition would continue. This was for her reason to make a request to the city council not to demolish this building until an valuation research has been carried out. She describes this expert research as ‘the rescue of the Wagenwerkplaats’ (Interview Sickmann).

The carriage shed ‘Rijtuigenloods’, nowadays a national monument (Endstra, 2020)

5.3 PPP(P)-Partnership

Due to the stationary landscape after the closure of the railway site the first development initiatives originated mainly from local residents and business pioneers. The initiating phase was clearly a bottom-up process. According to Van der Heijden (2011), the initiative to oppose demolition, can be identified as the third generation of citizen participation. This implies that citizens themselves take the initiative in the public domain. It was the foundation Siesta that actively promoted the involvement of new parties. This foundation originated from the network that Sickmann had built up, which consisted of people who had both knowledge and influence in the city. She mentions this as an important aspect to end up in this network where there was involvement with the politics of the city (Interview Sickmann). Since the site was previously not publicly accessible and therefore largely unknown, the active use of the Public Heritage Days contributed to an increasing interest in and attention for the location. This expanded the network, which serves as a catalyst for the further development of the vision of the Wagenwerkplaats.

5.3.1 Werkgroep Verkenningen

After some time this network was formalized in the partnership 'Werkgroep Verkenningen' (exploration work group) in 2006 which initially consisted of representatives of citizens, social organisations and the municipality. This working group was initiated by Habiforum, an expertise network that was engaged in the optimal use of area development, in the context of resident participation. From this method, a financial contribution was expected from all parties based on a commitment. So the municipality contributed and the residents still had access to a subsidy that could be claimed. Besides this fact Habiforum saw the benefit of the existing initiatives, so they also contributed to the working group (Interview Abrahams). The partnership was based on shared responsibility without a hierarchy. The process was led by, independent process supervisor, Cees Anton de Vries to ensure equality during the process. De Vries (interview) indicates two stepping stones for this process:

- The identity of the area, in which history and stories are interwoven
- The personal passion from which the first steps are taken

Initially, this took place on an informal personal basis as the parties could not yet formally make commitments about the location where restrictions were still in place. Since the potential of the site was already recognized at that time among the different representatives, this was nevertheless reason to start with the vision development. The period during the stationary landscape offered the opportunity for this collaboration to actually develop.

In the process the multi helix method was applied. With this method there is an exchange of knowledge from everyone's sectoral qualities. This involves the government, businesses and education as well as citizens. So there was deliberately chosen to involve students in the process. This turned out to be beneficial for both the students and the working group. On the one hand it was a practical experience for students and on the other hand they were able to create publicity and dialogue during the development process. For a successful process it was important that everyone put their interests on the table. There had to be no negotiations, each other had to be helped. It was important that joint responsibility was taken, that this was emphatically in the middle. This emphasizes the essence of a process supervisor (Interview De Vries).

The working group came regularly together, which catalyzed the process and promoted collaborations. According to De Vries this intensive contact was necessary to actually develop a community. Since there were many uncertainties during this period and the cooperation depended on trust, this was a vulnerable process. On the other hand, if this started to work, it could be a very powerful process with irrevocable enthusiasm. During these meetings it turned out that the established entrepreneurs were dealing with the same issues, such as vandalism and theft, which enabled a joint approach. Since this was a collective interest, this was addressed first. The

effectiveness of this approach gave those involved confidence that their interests had been taken seriously and that it was possible to actually realize an impact together (Interview De Vries). From this partnership various temporary workgroups were organised with delegates from each party. This special citizens' initiative the Wagenwerkplaats received a lot of attention and was one of the twelve national standout projects of citizen participation (Gebiedsontwikkeling, 2011).

5.3.2 Involvement National Railways

The owner of the site, the National Railway company, joined at a later stage. In the first instance they chose not to be involved due to the development restrictions. This changed in 2006 partly due to the renewed organizational form of the railway company with more focus on an integrated approach to station areas. It had become clear that the ensemble value of station areas could benefit the land prices and the experience of travelers. In addition, the owners were aware that the support of the neighborhood could be beneficial for the development of the site. With this support, there were fewer risks of objection and delays which makes the process cheaper. Besides at the time, the organization had expressed that they wanted to do business in a socially responsible manner, for which this project was ideally suited. According to Abrahams (interview) the vision of the NS was closely in line with the vision that the working group had drawn up that year.

5.3.3 Steering group formation

So a steering group was created which was a partnership of the National Railways, the municipality and the ‘Werkgroep Verkenningen’. This group was labeled as a PPP(P)-partnership, with private (owner NS), public (government), public (citizens/social organisations) and (process) representatives. This steering group was called ‘Kleine Regie’ (a small steering group), in which the representatives came together every two weeks. If at times further action was required, the network was temporarily expanded from within the group to realize this. However the group was always the one in control, which still stands to this day (Interview Abrahams). In this way, many of the ideas are presented to Siesta, via the Advisory Committee Wagenwerkplaats, the successor of the ‘Kleine Regie’. So the heritage foundation is already involved in the planning process in the preliminary phase and can provide advice based on their expertise (Interview Hekking).

5.4 National monument status

The foundation Siesta had explicitly submitted a request to the municipality to investigate the value of the buildings in order to prevent possible demolition. Consequently at the request of the municipality an inventory study was conducted by USINE, the Utrecht Foundation for Industrial Heritage, to the monumental value of the complex. Following this inventory, an application was made for inclusion on the National Monuments List. In 2007 this led to the designation of the complex and five buildings as national monuments. The ensemble of national monumental buildings on the Wagenwerkplaats concerns the following objects: Hoofdgebouw, Veerensmederij, Ketelhuis, Wagenloods, Rolbanen. The latter are two separate roller conveyors on the complex, with the corresponding train tracks also included in the status.

In the monumental valuation of the complex as a whole, the railway relics that are still present on the site are also appreciated. As well as the entrance to the complex with its tree-lined avenue connecting the neighborhood to the site. The porter's lodge built in 1961 when the new entrance was allocated is also still present here (RCE, 2020). The industrial architecture of the Wagenwerkplaats is designed by D.A.N. Margadant, who was the architect of the National Railway Company at the time. It was inspired by the architectural style of Berlage, with influences from rationalism and renaissance. The ensemble of monuments is valuable for the functional spatial coherence and is characteristic for the industrial architecture of the early twentieth century

(Rijksmonumenten, 2020). The buildings have since been renovated and by means of various repurposes they are preserved in the long term.

De Vries (interview) denotes this status acquisition as an essential moment of solidification. He emphasizes that in such processes you have to switch between a Mode 1 and 2. Mode 1 consists of formal decision-making, procedures and laws. Mode 2 is about identity and personal interests. In this process, the first phase focused very intensively on Mode 2. However, after some time it is necessary to switch to Mode 1 to solidify this process. According to Van Der Heijden (2011) this switch is essential for the materialisation of such processes.

> The risk of the deep belief in dialogue, also called deliberation, is that it is formally full, but materially empty. (...) Most processes of dialogue do not go that far and are limited to planning and making them more beautiful. They do not get to the realization, let alone the exploitation.

The monument status functioned both as an 'anchor' and a 'showcase'. It was an 'anchor' in the sense that the area would be preserved in the long term as there was no possibility of demolition anymore. From this certainty a vision could be formed that concerns the new use of the various monumental buildings. The 'showcase' functioned to create buzz, which attracted a lot of people to the site. The formal status involved parties in the collaboration who would not normally have contributed. In addition, the status also brought subsidies and money from funds with it, which brought more possibilities to the development.

5.5 Vision formation

In the initiation phase the parties were aware of the fact that it would be a long-term development process, so there was created a guideline in advance, which covered several stages that were concluded with joint agreements. The first goal that was formulated was to jointly formulate a vision for the Wagenwerkplaats. This vision was completed in 2007 and presented to the municipal council in 2008. First of all, the vision mentions the stationary landscape as a guideline for the possibilities for temporariness and experimentation.

5.5.1 Breeding place

The objective for the location is to develop a multifunctional breeding place for creativity and culture. This concerns both the domains of entrepreneurship and education. In the first instance cheap business space had to be created for cultural enterprises. However "if you have to renovate a monument or just carry out maintenance, then you have to meet so many requirements (...) a whole group of artists will already drop out." (Interview Abrahams) In the end, the rental price of these spaces had doubled from what was envisaged. With this progressive insight, this space has been filled by other small businesses such as ICT companies. The original cultural pioneers, who were located in buildings now destined for demolition, will be kept in the area by the development of a new workshop that can accommodate different users. The specific goal that was formulated was that there should be co-responsibility between users. So it was stated in the jointly drawn up vision, which was included in the lease agreement for new users, that isolated and individualistic businesses were not desired (Wagenwerkplaats, 2007). To actually realize this an active user association was established afterwards (Interview De Vries). This association is responsible for joint initiatives, management and promotion of the site.

5.5.2 Node location

For the municipality it was fundamental that the location of Wagenwerkplaats near the railway junction was utilized. On a national scale, the city of Amersfoort was seen from a mobility point of

view as the eastern access point of the conurbation the ‘Randstad’. Amersfoort had direct train connections with almost the entire country. So in this node network, the city was an economic business location. This meant that the site had to remain well connected with the train station both spatially and functionally. As a result, the aim was to develop supra-urban cultural facilities in addition to the breeding place.

5.5.3 Neighborhood interdependence

On a local scale the interdependence with the former working-class neighborhood Soesterkwartier had to be strengthened. From residents of the neighborhood it was expressed in the vision of 2007 that they wanted to take an active role in this. It was clear that the development of the Wagenwerkplaats, and in particular the construction of 800 to 1000 houses, would also impact the neighborhood. On the one hand this creates a certain tension by the residents (Interview Sickmann), on the other hand it also could be a driving force for developments in the neighborhood (Interview Abrahams). As example, there would be no retail facilities developed, so that new residents of the Wagenwerkplaats would use the current facilities in Soesterkwartier. Based on this idea, an attempt has always been made to make use of existing businesses in the neighborhood when organizing public events at the Wagenwerkplaats. The initiative of the traffic garden has arisen from parents from the neighborhood itself, who also take care of its maintenance. An important contribution generated by the development of the Wagenwerkplaats is the organisation of a pilot in the context of resident participation. From the reputation that the PPPP-partnership had generated, the Association of Dutch Municipalities had decided to invest in this neighborhood initiative to investigate whether the residents could take care of the long-term management (Interview Abrahams). The pilot, that started in 2009, focused explicitly on energy and consequently the Sustainable Soesterkwartier Association was founded. Van Der Heijden (2011), instigator of this association, states "The Sustainable Soesterkwartier Association is a good way to guarantee continuity from the perspective of citizens. Whatever the municipality does, this is stated." This association has remained active ever since and has carried out several projects both inside and outside the neighborhood over the years.

5.5.4 Masterplan

The next phase was to create a masterplan. NS Poort, the organizational unit dealing with the exploitation, management and development of station areas, ordered Buro MUST Stedebouw to draw up a master plan in 2008. According to De Vries (interview) this was done independently of the process of the working group, but the representative of the municipality Heino Abrahams shuttled between both processes. The masterplan’s content was ultimately coordinated in close consultation with the municipality and the citizens' initiative. De Vries describes this was a way to use the energy of the other to advance our own interests. As a result, a large part of the agenda of the working group was formalized in the master plan and thus also approved by the National Railways.

5.6 Brownfield redevelopment

This was followed by phased realization of the masterplan. The zoning plan was drawn up in consultation with citizens. De Vries (interview) describes this as an unique situation where this was put together in three days with a group of about 60 people on location. Due to the security restrictions the development of the Wagenwerkplaats takes place in phases in a western, central and eastern area. The special thing about this spatial division was that it was already proposed at the time in the student groups that Abrahams supervised in the preliminary phase of the development. The central area is the cultural heart with the monumental buildings. The western area is suited for housing in a green area. This area is also located next to the Soesterbuurt, so the development is

adapted to the scale and character of the neighborhood. To strengthen the physical connection the former noise barriers were removed at this part. The buildings in this area have a maximum construction height of three floors. The eastern area had yet to be remediated, so no developments took place at this stage. The owner National Railways will allocate the land to developers in phases. The municipality subsided and invested in some of the redevelopments. For example, they invested and renovated the monumental building 'Veerensmederij' as a location for Holland Opera. This form of high-quality culture was used as an important catalyst to develop the site.

5.6.1 Implementation of new functions

New buildings have already been developed on the site, some of which are temporary. In addition, there is space reserved for the development of a mix of amenities, services and events. A large part of it will be offices. The landowner National Railway will outsource these developments in several stages to private developers. The scale of these buildings will be in line with the monuments. In the vision it is clearly stated that further developments have to fit in both the railway and industrial character of the Wagenwerkplaats. To ensure this, there is a spatial quality team that will advise initiatives during the development process. This team consists of both the urban planner and landscape architect who also wrote the master plan, as these parties are also located in the area, they are well aware of the developments and the context of the location. They will assess the developments on aspects such as image quality, spatial coherence and sustainability (NS Stations, 2019). This already takes place in the initial phase so that it is included in the Program of Requirements. According to Abrahams (interview) this was necessary for ensuring the coherence and quality in both architecture and spatial structure. It is important to continue to develop the site in its total context, whereby the railway history keeps clearly visible.

This therefore requires a certain robustness in the architecture of new buildings such as the Railcenter. In the interview with Hekking it emerged that the heritage foundation had already started an exploration to also give these recent buildings a provisional protection so that they could also be retained in the ensemble in the longer term. Besides the architecture quality the rectilinear structure of the train tracks had to remain visible in the current urban structure. This applies to both the sight lines and the infrastructure that is being developed (Interview Abrahams). The still present 'Rolbanen' (roller conveyors) in the public space are expressly illustrative of the original functional structure. However, due to changes in the paving, the track connection of the roller tracks, which were originally perpendicular connected to the tracks of the east-west connection, is interrupted at the present-day. From a heritage point of view, in future developments such relics should be preserved and then reused on the site at a later stage. In the case of the citizen's initiative the traffic garden, such railway relics have been included in the development. The reuse of train tracks would, for example, be suitable for the development of footpaths according to Hekking (interview). Abrahams states that specific requirements for the outside space of the Wagenwerkplaats have been included in the catalog, which sets the outdoor space apart from the rest of the city.

5.6.2 Housing development

From the initial phase of development, it has been a goal of the municipality and the NS to develop houses on the site. This development was ruled out in the early years because shunting was still done with LPG. Due to the development of a nationally designated network for the transport of dangerous goods, which was called the 'Basisnet', the transport of LPG was no longer transported in Amersfoort. This network entailed the following:

> The 'Basisnet' lays down rules for determining and controlling the risks for the transport of dangerous goods. (...) The 'Basisnet' aims to create a long-term balance between the interests of the transport of dangerous goods, the built environment and the safety of

> people who live or stay close to the infrastructure where this transport takes place. (Kenniscentrum InfoMil, 2019)

The municipality was in close contact with the Ministry of Infrastructure and Environment and Railinfra at the time to coordinate the safety contours surrounding the transport and shunting of dangerous goods. To this end, the municipality also had external safety investigations carried out to investigate the possibility of construction. Through the close consultation with the higher authorities, this ambition was communicated at an early stage, so that the government took into account the adaptation of the right preconditions to this development. The most important thing was the amendment of the environmental permit, after years of investing time in this, a draft application was submitted in 2013, which was ultimately only approved in 2017. This emphasizes the long planning horizon that should be kept in mind in such developments (Interview Abrahams). The Sustainable Soesterkwartier Association already had plans to develop houses around 2010 through a 'Collective Private Commissioning'. This can be defined as follows:

> It is a new way of building; a group of individuals develop their neighbourhood by themselves. As future neighbours, these home-makers organise themselves into collectives and jointly acquire a plot of land, employ an architect and then, without adopting a developer as an intermediary, develop a residential complex that meets their personal housing specifications. (Boelens & Visser, 2011)

According to Abrahams these houses should be the sustainable showcase for upcoming housing projects at the Wagenwerkplaats. Due to the long lead time and financial conditions, many people from the neighborhood eventually dropped out of this residential group. The houses will not be delivered until the end of 2020, which means that it did not become the original showcase that was envisioned at the time.

5.6.3 Embedding in urban development

Where previously the train yard functioned as a demarcated island within the city, due to the development with an supra-urban scope, this eventually resulted that the Wagenwerkplaats was included in the city center of Amersfoort. The development had resulted in a strong functional interdependence with the city. This concerned not only the geographic hub function that Abrahams described, but also the passion that had arisen for the area (Interview De Vries). The interest of the city of Amersfoort was therefore always at the forefront of the development of the Wagenwerkplaats from the point of view of the municipality. So in addition to developing local facilities it has always been their goal to develop facilities on an (supra-)urban level (Interview Abrahams).

According to De Vries the development of the Wagenwerkplaats was an important link in the previously mentioned 'string of beads' of redevelopments of young monuments. Since then, several breeding places have been established in Amersfoort based on the insight that this could be successful. For example, the redevelopment of the ‘Prodentfabriek’, a former toothpaste factory complex, originated from stakeholders in the working group of the Wagenwerkplaats.

5.7 Conclusion

The Wagenwerkplaats was characterized in the first phase of the redevelopment by risk and restrictive factors. There was a restrained attitude on both the part of the government and the owner NS, which resulted in a period with limited top-down developments. In this phase the stationary landscape that had emerged created opportunities to start bottom-up initiatives and partnerships. The reluctance of top-down parties and the transition period had laid the foundation for organic development. By means of active promotion and provision of information, a network was gradually formed of parties who had a passion for the Wagenwerkplaats. The first priority for the pioneers who settled on the property was the safety of the site. Because the partnership had tackled this successfully, they gained the necessary confidence to continue the collaboration. In this initiation phase of the collaborative collective, it was therefore important to increase the network quantitatively through promotion and to strengthen the network qualitatively by building trust.

This group of allies wanted to prevent the demolition of the historic industrial buildings. The cultural-historical value of these buildings was determined by having experts carry out value-assessing research. After some time this resulted in the designation of a monument status. This was an important moment that anchored the preceding dialogue in a formal status. The developed discourse around the identity of the Wagenwerkplaats, that was cherished by the network of stakeholders, was now materialized by the conservation of the buildings in the long term (Verheul, 2015; De Vries). The anchor and showcase function of monumentalisation resulted in trust and investments that laid the foundations for further development. During the stationary landscape the site was characterized by cumbersome files, which made it difficult to find developing parties. This has gradually shifted over the years to a site seen as a publicity opportunity where parties could show their good intentions. This is expressed in the involvement that NS has shown over time, where they usually keep distant from such developments, with Corporate Social Responsibility in mind they went along with the PPP-partnership. The special collaboration was recognized and appreciated by external parties, which has resulted in the launch of various pilots.

The process initiated by a local public network of Amersfoorters, turned out to provide value creation and accelerate development processes. External parties realized that this form of cooperation had actually laid the foundations for the redevelopment of the brownfield. Since then, on the basis of initiatives such as the pilots, investments have been made in the area to use and organize this collective energy and intelligence for the long term.

5.7.1 Application of grounded renewal

There is physical anchoring of both the various monuments and the spatial structure of the workshop site. Preserving the sight lines through the factory street is considered important in this respect. Besides, various rail-related relics have been relocated on the site. The infrastructure is embedded in the original spatial structure of the workshop area and the green infrastructure is part of an urban green zone. In terms of social accessibility, the entrance to the Soesterkwartier neighborhood has been maintained, in the public space of the site there is a playground that is maintained by local residents and there are walking areas in the green zone. Improving security was the first aspect that was addressed in order to create a safe environment for temporary users. The transformation of the Wagenwerkplaats ranks high on citizens power on Arnstein's Participation Ladder (see Figure 1). It is a network that originated from the bottom-up and gradually expands with top-down parties, which also shifts the power balance. In the initiating phase it starts with the citizen initiative that is regarded as third generation citizen participation, which is followed by a two-year equal partnership, which then leads to a steering group to which the owner NS joins. In the realisation phases citizen power is slightly toned down, but they still have an equal position in the steering group.

5.7.2 Function of the icon

Due to the intensive involvement of residents in the redevelopment process, the Wagenwerkplaats has become a strong social anchor, with a strong connection with the Soesterkwartier neighborhood. A diverse cluster has emerged, including cultural, ICT and urban development sectors. Due to its supra-urban functions and location near the station, it has taken on an important node function and has become part of the city center. The mix of local and supra-urban functions has given the Wagenwerkplaats both an internal and an external orientation.

6 Caballero Fabriek

6.1 History

The Laurens cigarette factory located in the Hague was one of the multiple factory locations of international producer Ed Laurens, that originated in Egypt. As a court city The Hague matched the image of the elite brand Le Khedive that Laurens produced. The industry area Binckhorst was assigned as an extension site where the construction of the factory started in 1950. This factory consisted of an office building, a boiler house and several factory halls. At the time the newly constructed port 'Binckhaven' was a convenient location for water and train transportation. The Laurens factory became over time the second largest factory in the Netherlands, with at its peak 600 workers employed and a market share of 14% in the '60s. Since then the demand gradually decreased, resulting in a forced relocation of the production to the city Zevenaar and closure of the factory in the Hague in 1995 (Busio, 2018; Havelaar, 2019).

Caballero Fabriek in the Binckhaven (Endstra, 2019)

6.2 Temporary repurposing

After some companies settled temporarily in the factory for a short period of time, the municipality decided to buy the factory site in 2001. This was a deliberate purchase with the aim to katalyse the redevelopment of the Binckhorst area as a whole. At the time it was already an objective to transform the monofunctional industry area to a mixed urban area. Initially, this was intended as a strategic purchase from the Development Company of The Hague. The purchase of this location in a privately owned area served as an instrument for the municipality with which they could direct the area development. With this strategy in mind, the initial plan was to demolish the factory. According to Pijnenborg (interview) "repurposing and preservation was not really interesting yet", this had to do with the fact that:

> The monument preservation authority of The Hague paid very little attention to post-war heritage, the factory was not on the monument list, the entire handling of monuments was different at that time.

However, this was not yet possible in the existing zoning plan, so that no demolition permit could be issued. That is why the possibilities for temporary use were investigated to prevent vacancy of the

factory. The municipality engaged with architectural firm GROUP A in 2004 to create a spatial concept for the building. This included visualizations that were well received by the municipality at the time. A process was then started where they were involved in discussions with stakeholders such as art clusters and IT companies. This was a kind of market research in which the interest and expectations of these companies were measured. Ultimately the factory was assigned the function of a multi-company building. It had to accommodate small and medium-sized enterprises in the creative and innovative sector. As telecom company KPN was located in the Binckhorst, the focus was initially mainly on IT companies. This concept was later adapted to a focus on culture, ICT and media businesses. The architectural firm was thus involved in the process at an early stage and was therefore able to help determine the Program of Requirements. This was quite unusual as the architect is usually involved at a later stage in the process, so they had more influence on the preconditions for their design. Subsequently they made a preliminary design, which examined what kind of workspaces could be made in the factory (Interview Linders).

Initially the plan was that the municipality, in collaboration with the architect, would submit the plan to a developer. However, there were no parties willing to invest in this project. This was due to the bad image of the Binckhorst. There were only parties who wanted to purchase the location, but the municipality wanted to remain the owner as it was a strategic land position (Interview Pijnenborg). Thus, the municipality continued the project itself in the role of developer. Funding for the project was partly completed with a grant from the European Regional Development Fund in 2006 (Gemeente Den Haag, 2006). This was a fund to support projects that will improve the economic development of cities.

> The project fell within the scope of stimulating business activities and employment in the Binckhorst (Interview Pijnenborg)

6.2.1 Cross fertilization

In the concept development it had become clear that a mix had to be sought between start-up and established companies. First of all, this was considered necessary to fill the rentable square meters and to spread the rental risk. Moreover, a mix in unit sizes offers the opportunity for businesses to grow within the factory. A mix of company sizes and work sectors should lead to partnerships and cross-fertilization within the factory. Using a network model, it was analyzed how this mix could contribute to a diverse and broad network in which this interaction and collaboration could arise. Therefore, a strict selection of tenants had to take place.

> By broadening the target group, not everyone will only work parallel to each other, but the network will become stronger. If you build a network, you get more nodes if you have more directions. (Interview Linders)

In the initiation process two of the first major tenants were involved. They came up with ideas on how the start-up cluster should be implemented in the redevelopment of the factory. Such as how flexible workspaces had to relate to small workspaces within that cluster. According to Pijnenborg (interview) this coordination with users is important in such processes.

> Try to connect actual tenants to the redevelopment assignment as soon as possible, to enter into a dialogue with them, how can we ensure that you can find a suitable place here, it is in your interest that you make it for the end user, that is demand-driven development

In the design cross-fertilization had to be stimulated with the inclusion of meeting spaces. A working climate should be created that suited young people and liveliness within the factory. The concepts of encounter, transparency and spaciousness were fundamental in the redevelopment. In addition to these internal measures, there was also the objective of stimulating external cross-fertilization. For this reason, space has been added to the factory for rentable assembly rooms, public meeting areas and event spaces. This also served as a supplementary earnings model in addition to renting the regular business units (Interview Linders).

6.3 Realisation

The factory consisted of multiple factory halls and an adjacent boiler house. The architecture was characterized by an open structure and a column division of the halls. The former boiler house now has the function of a public restaurant that is designed in an industrial style in which even the former boilers are incorporated.

Old and new intertwined in the interior of the restaurant (De Horecafabriek, 2015)

The original halls are preserved, but the halls of a later period have been partially demolished. The loading dock was in a bad condition and prevented daylight from entering the other parts of the factory, so this part of the building was demolished. On this location a central entrance was created with the construction of a raised terrace. This was an outdoor meeting place with a view of the water, which would enhance the liveliness upon arrival. The promotion of a creative environment, with social interactions and cross-fertilization, is implemented in the design with hallways that are six meters wide and various meeting spaces. Moreover, basic facilities such as toilets and coffee machines are deliberately placed in the hallway. As a result, entrepreneurs will actually have to leave their workplace, so that spontaneous meetings will take place around these places. Despite the fact that the factory space is divided into smaller workunits, the openness has been maintained through the use of glass transparent walls. All the units are connected to the wide hall, so that they are actually displayed. To create possibilities for businesses to grow, units were designed in such a way they could be easily connected to each other. Since the goal was to apply risk diversification through accommodating many entrepreneurs, a split level has also been added to realize more units. With the addition of new elements to the building it has been taken into account that it fits within the industrial style. For example, the steel ventilation channels have been deliberately laid out in a visible manner.

Adjacent conference, working and meeting spaces in the hall

6.3.1 Short exploitation term

At the time, the redevelopment was intended as a temporary function. The predetermined exploitation period did not match the plan for a breeding place, according to Pijnenborg (interview) this was a sliding scale during the process where the period was extended from 2 years, then 3 years, 5 years, 10 years and finally it was 20 years. Such a short exploitation period, of only several years, would have been possible for temporary users such as the garden center and the DIY market who had initially established themselves in the factory. However for the development of a breeding place for the creative and innovative industry a longer period was required. On the one hand, these kinds of users had higher quality requirements and on the other hand they expected certainty for a longer establishment period. Since the higher requirements also required more interventions, the developer also had to deal with long-term depreciation periods of certain new parts that had to be installed.

This had to do with the fact that the redevelopment, for the municipality as a developer, was a pioneer project. On the one hand, the municipality of The Hague had little experience as a developer, such locations were normally exploited by the art foundation 'Stroom' or anti-squat organizations. On the other hand, there was no blueprint yet on how to successfully redevelop such industrial locations. During the initiation period, similar developments had started in other cities such as the Westergasfabriek, the Lichtfabriek in Haarlem and the Van Nelle Fabriek. Such locations did serve as inspiration, it must be prevented that such characteristic locations are not given a function (Interview Pijnenborg).

The short exploitation period was the reason that the budget was relatively low. As a result, conscious choices had to be made in the type of investments that could be made. Since the focus was on a cluster of innovative and creative companies the necessary investments were made to create a good data infrastructure (Gemeente Den Haag, 2005). Consequently few interventions were made in insulating the building. For example, not all window frames were replaced as this was not profitable within this period. As a solution, a large sun protection fabric was placed in front of the façade at the front of the office area.

6.3.2 New users

Ultimately, the redevelopment was split into two phases with the first completed in 2006 and the next in 2009. The first phase was mainly focussed on office space and small businesses, while the second phase also created spaces for medium-sized companies. To stimulate a creative climate there was a strict admission policy, only businesses in the creative and innovative sector could rent units in the building. This was deemed necessary to actually create crossovers between the several entrepreneurs. In order to reach this target group, the database of the Chamber of Commerce (KvK) was used to inform the entrepreneurs by email (Interview Pijnenborg). In addition, a communication agency was engaged to develop a logo and website, which was important for marketing and brand recognition of the breeding place concept of the Caballero Fabriek. Consequently the units of the multi-company building were quickly rented, which was partly due to the low rent, the active recruitment of companies and the attractive appearance of the factory. Due to this success in the first phase, there were more options for sustainability in the second phase, as there was more certainty about the future of the factory at that time (Interview Linders).

6.4 Brownfield redevelopment

When the factory was purchased by the municipality in 2001, the Binckhorst industrial area did not have a good reputation. The area had a lot of vacancy and the public space was poorly maintained. There was little control over the existing industrial activities that took place, which consisted of mainly car companies. Despite the close distance to the central station of The Hague, the relative distance to the urban area was great. Many residents were not familiar with the Binckhorst and did not visit it often (Zaadnoordijk & Claassen, 2011). In 2006, an exploration of the redevelopment of the area was started. For this purpose, a consortium was formed between the municipality of The Hague, BPF Bouwinvest and Rabo Vastgoed. They worked in consultation on a masterplan for the development of 'Nieuw Binckhorst' (Municipality of The Hague, 2008). This had to become a highly urban mixed area with substantial housing construction. An important part of this vision was to make the Binckhorst the 'entrance to the city'. The urban area has become better accessible with the development of the 'Rotterdamsebaan', which consist of a tunnel with double lanes and two-way traffic. This urban development does mean that certain heavy industry, such as the asphalt plant next to the Caballero Fabriek, will eventually have to make way for housing development.

6.4.1 Catalyst function

The development of the Caballero Fabriek was therefore ahead of the general redevelopment of the Binckhorst. Since the industrial area had fragmented private land ownership, the factory complex was a strategic purchase. This enabled the municipality to acquire a land position in the area and in this way steer the development (Interview Pijnenborg; Zaadnoordijk & Claassen, 2011). However, since the factory was first planned to be demolished, the intended temporary development was separated from the area development. It was seen as a development that would take place in the short term, while for the Binckhorst a long plan horizon was envisaged.

For that reason, the temporary development was not initiated as a catalyst (Interview Pijnenborg). However the municipality did focus on 'stimulating start-up activities in the knowledge-intensive sectors, which is a key point of economic policy (...) to support both groups by creating opportunities for cooperation between existing and starting entrepreneurs. " (Gemeente Den Haag, 2005) This general policy of the municipality is well reflected in the network model of the tenant selection procedure in which this was explicitly promoted. The municipality therefore sees it as their responsibility to contribute to such projects, as the market would not initiate this. Linders (interview) confirms that this has led to other choices in the design.

> Since it was a municipal project, these kinds of requirements can be set and made possible, they have opted for cross fertilization, thereby freeing up space for meeting places. A developer has another interest in developing as many rentable square meters as possible.

The successful rental of the workspaces received a lot of attention and praise on a national level. The Caballero Fabriek is often cited as a paragon of a successful factory transformation.

> As a result, it eventually turned out to be a catalyst, which is in line with the theory of Richard Florida, you need flywheel locations that you have spinoff from, that is how it worked in practice. (Interview Pijnenborg)

The utilization of vacant industrial complexes has since become a more common practice in the Netherlands. There was therefore a great demand for guided tours to see how the redevelopment had been realized. The development has contributed to a greater appreciation of post-war industrial heritage.

6.4.2 Creative climate

The creative climate around the factory complex has been further developed on a local scale. Secrid is the first scale-up that originated in the Caballero Fabriek and is now located in the hall opposite the factory complex. After they had grown too big for the unit in the factory, they had consciously decided to stay in the area because of the partnerships they had with other companies. In order to give more space to scale-ups in the future, the building 'de Titaan' that is located next to the

complex will also be redeveloped to accommodate innovative businesses. This will be part of the Impact Economy program that the municipality has started. Within this program, the ‘Apollo14’ breeding place was established in 2018 in the Binckhaven, that is the sub-area in the Binckhorst which also includes the Caballero Fabriek. This breeding place was thus established top-down and consists of various (international) innovative companies. Also the bottom-up breeding place ‘De Besturing’ has been developed at this location, where a mix of artists and craftsmen carried out the restoration themselves. So over the years there has been a lot of business activity around the Caballero Fabriek in the innovative and creative sector. This has also resulted in more liveliness, with the establishment of a beer brewer, which originated in ‘De Besturing’. This has benefited the maintenance of the public space, while consciously retaining the industrial character (Binckhaven, 2018).

Apollo14 & De Besturing (Endstra, 2019)

The Binckhorst also has two other large breeding places, MOOOF and BINK36. MOOOF is located at the former headquarters of the Royal Netherlands Air Force. The breeding place is a temporary development of the complex, as the construction of offices and houses is planned on this location. BINK36 is located on the complex of the former national telecom and postal company. The transformation of this complex started in 2006 and is now the largest multi-company building in the city.

6.5 Conclusion

The redevelopment of the Caballero Fabriek was originally based on temporarity, which at the time offered the possibility to actually realize this type of function. As a result, the financial resources were limited, so that the factory complex was developed in phases so that the risks could be spread and there was more certainty about the future of the complex. The factory has been a pioneer in the successful filling of vacant industrial heritage. It can be concluded from the dynamic process of this development that in order to accommodate certain types of users, you must be able to guarantee a longer time horizon, for certainty and profitability. Since the market was not open to such a redevelopment at the location in question, the municipality was the developer of the factory. As a result, the vision of cross-fertilization was implemented in the design, which benefited the collective interest of the entrepreneurs.

6.5.1 Application of grounded renewal

The original factory structure was preserved. The complex had no monument status during the transformation process, so the interior of the factory has been given a contemporary look, in which certain elements have been deliberately left unfinished in order to preserve the industrial character. Due to the temporary nature of the redevelopment, this meant that there were restrictions on making the site more sustainable. Since the ambition was to promote a start-up climate, the first users were involved in the design process to take their needs into account. The quality and safety of the public space has been organically improved to create a vibrant creative climate on the industrial site, which was important to attract human capital.

6.5.2 Function of the icon

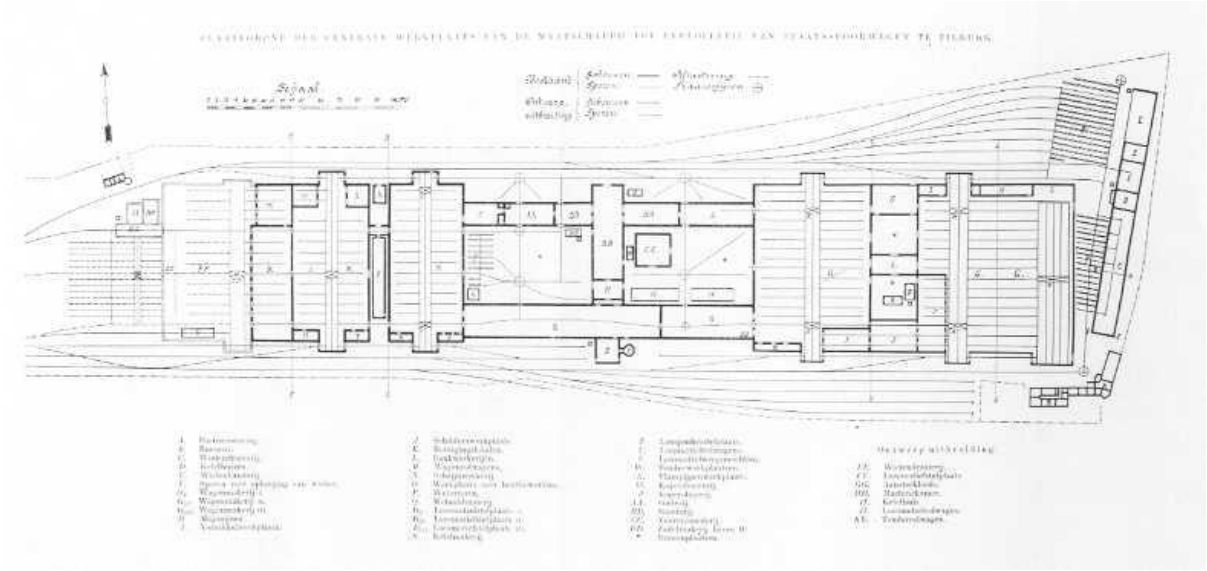
The transformation of the Caballero Fabriek has primarily resulted in a breeding place function. The priority was to stimulate a start-up climate with a mix of startups and established companies, in order to create a solid network. Cross-fertilization was stimulated by promoting encounters in the complex. It has also proved to be an important catalyst for the development of related businesses around the complex. The complex's appearance with its location on the water is considered as a showcase which improved the image of the industrial site. This was an important aspect in Binckhorst's ambition to become the entrance to the city, thereby also reducing the ‘relative distance’ to the urban area. Since the Caballero Fabriek is entrepreneur-oriented it has no public function, except for the restaurant in the boiler house. The industrial site used to have little connection with surrounding residential areas, so the development of the complex does not influence place attachment. This aspect could increase due to the large addition of housing in the future, in that case the attachment value of the complex would not be functional, but relate to the characteristic appearance.

7 LocHal

7.1 History

The railway zone in Tilburg originated when the national government around 1860 had plans to develop a railway connection in the south of the Netherlands. Tilburg was designated as a stopover location and as a workplace for the repair and maintenance of train equipment. The site became officially functional in 1870, which at the time also led to the rise of the metal sector. The location expanded quickly and was in the early 20th century the largest employer in the city. For this reason in the thirties a large-scale renovation of the railway workshop took place, which was particularly a modernization. The architectural style of 'Nieuwe Bouwen' that at the time was popular in the Netherlands was implemented in the renovation. This was reflected in mainly steel and glass constructions, with characteristic open spaces with a lot of natural light (Spoorzone013, 2015).

Among other buildings, a new locomotive workshop was built that replaced the former halls. The workshop consists of multiple halls, a roller conveyor, a locomotive depot and a boiler repair shop. The 'LocHal' was located at the centre of the site within a transversal arrangement of the ensemble. So it fitted into the systematic logistics setup that characterizes the railway zone. The coherent infrastructure was essential for successfully shunting the train components between the various workshops and depots.



Floor Plan railway site 1906 (De Ingenieur)

7.1.1 Purchase railway zone

During the 1990s, talks were taking place between the maintenance company of the National Railways and the municipality about the future of the workshop site. Initially, this concerned the possibility of reducing the size of thesite. The municipality then considered the possibility of adding the site to the urban area. When the reduction of the workplace did not proceed, the municipality nevertheless continued to investigate this possibility of relocating the workshop. After conducting various studies into the potential and possibilities for such a development, a vision has been drawn up. After a period of lobbying, this resulted in the buyout of the maintenance company, by means of a voluntary expropriation. This was a lengthy and costly process. However, due to its central location and as a barrier between the north and south of the city, the municipality saw the location as essential for future urban development.

> The reason that Tilburg wanted to develop the location was to give the center of Tilburg more urbanity, to be able to give more panache to the city (...) to remove that barrier, in order to better connect the city. (Interview Kuijsters)

The workplace moved in phases between 2011 and 2012 to the industrial site Loven which is located in the east of the city. Since then the site became accessible, when it formerly was fenced off for residents. The entire transformation took place on an area of 75 hectares, of which the core area was the former workplace site of 13 hectares.

7.2 LocHal transformation

After the preliminary process of the area development came to a standstill, an analysis was made of how this process could be restarted. It was then decided to use the LocHal as a catalyst. "The Lochal will act as a locomotive for the train." (Interview van der Pol) At the time developments were already taking place at the edges of the area. However, the development of the LocHal should serve to set an ambition for the entire area. Due to the large-scale building, the central library was approached as a suitable user. On the one hand they would be able to fill the space with their program and on the other hand they attracted a number of visitor numbers that were unmatched with other types of users. This was also entirely in line with the vision to use the area development of the Spoorzone to connect the city, as the library is the public domain of the city that is accessible to everyone. The arrival of the library in the Spoorzone was therefore important for the ambition to add this area to the center of the city (Interview van der Pol).

7.2.1 Living Lab & Participation

In anticipation of the relocation, the library has already established itself in the Spoorzone with the living lab "Kennismakerij" (Knowledge Workshop). The Kennismakerij functioned as “an experimental place where the library was looking for new ways to connect people and to develop the library's stage function.” (LocHal, 2020) This place was therefore a precursor in the transition to a programming library. By already being present in the area, collaborations could already be initiated with the existing users of the area and the inhabitants of the city could be involved in the development of the library (Interview Thijssen).

In this phase, the collaboration project 'out of the library' with artists was started to collect internationally inspiring concepts that could be included in the development. This collection served as a means of entering into a conversation with visitors about the development. Subsequently, residents participated in the process in various forms. Sessions were organized to inform, inspire and co-create. The municipality and the architect team have also been involved in the participation process. In order to realize the ambition of approachability and accessibility, specific elements of the library were discussed with various target groups. That is why flexibility has been a process principle, in order to be able to respond to changes in society (Interview Thijssen; Van der Pol).

7.2.2 Design

After a selection procedure of various architectural firms, the combination of three parties was ultimately chosen. This combination had various expertise that fitted in well with the redevelopment. Braaksma & Roos had a lot of experience with the redevelopment of heritage, the Cloud Collective collective was well able to implement the program in the design and Inside Outside had a lot of experience with the interior and had already carried out previous projects with large textiles (Interview Van der Horst).

An important proposal from this architect combination was to use the hall in its entirety. The Program of Requirements focused on dividing up the hall. In that case a box-in-box construction had to be made. In this way you would lose the incidence of light and the spaciousness. That is why the

architect team devised a different concept for this. In order to use the space efficiently, a dynamic staircase landscape with movable elements has been developed.

> So that you could experience it in its entirety in height (..) that you really make the connection between the new architecture and that industrial structure of the hall, with new elements literally touching the structure. (Interview Van der Horst)

The steel and single glass construction has been retained to preserve the monumental value. Just like the existing construction, new additions are from elementary materials and adapted to the respective scale. For the preservation and replacement of materials and elements in the building, there has been a coordination between the municipal authority for monument preservation and the architect team from the start.

7.2.3 Climate zones

As the hall was up to 18 meters high and the single glass construction was preserved, controlling the climate within the hall was a challenge. A box-in-box construction was deliberately not chosen and the realization of an indoor climate within the entire hall was not realistic. Consequently, a strategy of 'heating the people, not the space' was applied. This has been realised by using five different climate zones, depending on the function of the room in question. For example, around the square at the entrance there was an outdoor climate as people came here from outside with coats on. The workplaces and the labs were closed rooms where an indoor climate was realised so that you could work well in those places. In this way energy is used efficiently and the interventions on the building were limited (Interview Van der Horst). Large textile curtains have been placed that can demarcate spaces and improve the acoustics. This has been realised with cooperation with the Textile Museum of Tilburg. Besides the functional aspect, the addition of these curtains in the design of the hall was important for the storytelling of the development. It is a reference to the large-scale textile industry for which the city is known.

> Ultimately, the essence was we want an open hall that requires intimacy and flexibility. There is a modesty in the city, in such a hall you can do something ambitious. We have to make those textiles, if you want to embody the story of the city of Tilburg, you just have to do it. (Interview Van der Pol)

Stair landscape with movable textile curtains (Ossip van Duivenbode, 2019)

7.2.4 Culture and knowledge workplace

The LocHal had to retain the function of a workshop in the redevelopment. So this has been implemented in both the design and the new use of the hall. In this way, the value that the area used to have for the city would be translated into a new function that would be of value to the city as a whole.

> The Spoorzone was important to Tilburg as a job provider, the LocHal lived in collective memory, so it was important to continue the concept of workplace as a knowledge workplace. (Interview Van der Horst)

So the LocHal should not just be a regular library, but also a space for working, meeting and learning. This was the reason that the library had already indicated in the exploration of the relocation that they only wanted to move to the Spoorzone if this meant that they could settle with other parties in a building that could contribute to the transition to a 'programming library' (Interview Thijssen). In line with the knowledge profile, this eventually became a combination of Seats2Meet, a community of knowledge sharing and the cultural sector with Kunstloc, which was a fusion of various cultural organizations.

These parties have participated in the process from the outset to include the concepts of ‘New Style Library’ and ‘Collaboration Workplace’ in the redevelopment. The role of ‘kwartiermaker’ was important in this to include the concepts of the users in the various selection procedures and thus translate this into design and realization. This indicates the importance of an intermediary who can convey the essence of a redevelopment in the ‘language’ of the various parties involved in such a development process. This new concept of ‘New Style Library’ did result in adjustments to the existing collection of the library in order to make room for programmatic functions.

> Workshop, stage & collection, these are different carriers of knowledge, the labs connect them. (Interview van der Pol)

The staircase landscape can serve as a grandstand for events, where the square on the ground floor and the 'Kennismakerij', the former living lab of the library, can serve as a stage. Besides there are various thematic ‘labs’ where one can learn, experiment and create. These labs can be flexibly arranged for socially relevant themes. Applying different functional atmospheres can contribute to diversification within one building. In this way, the library can actually become a place for everyone, because it appeals to different target groups (Interview Thijssen).

7.2.5 (Inter)National appreciation

The transformation of the former locomotive workshop to the New Style Library quickly came to national and international attention. The LocHal is both appreciated for its design and its public function. In terms of the design it was, among other thing, praised for “the thoughtful mix of untouched artifacts from the old building and the new additions and spaciousness”, “the exploitation of local traditions of textile production” and “the way in which a building of this magnitude is logically exploited” (Dutch Design Awards, 2019; World Architecture Festival, 2019; NRP Gulden Feniks Award, 2019). Moreover the LocHal is appreciated as a public domain, it is “a social condenser” which offers the “opportunity for the creation of new knowledge” and “has become the beating heart of the district” (THE PLAN Award, 2019; Europa Nostra Award, 2020). Since many parties had been involved in the redevelopment process, you had many ambassadors, which benefited the promotion of the project (Interview Van der Horst). This has contributed to initiating collaborations as well as attracting visitors and tourists. Initially, mainly users within Tilburg made use of the Spoorzone. The appreciation and attention that these prices generated has resulted in many parties outside Tilburg who want to use the LocHal (Interview Thijssen).

7.3 Brownfield redevelopment

The aim of the municipality was to densify the area with the addition of new housing construction in combination with the redevelopment of the existing heritage. High densities had to be built in order to meet the housing requirement, and thus also to recoup the investments in the long term. From the outset, the focus was on users within the knowledge sector, which had to contribute to strengthening urban development. According to Kuijsters (interview), the following ambition was set for the area development:

> Ultimately, in terms of appearance, the location will be a mix of the Westergasfabriek and the Paleiskwartier in Den Bosch, of industrial heritage and urban density.

The municipality requested the central library to establish itself in this area. The function of the library has several advantages for the repurposing of such a large-scale building as the LocHal. The library attracts a large number of visitors that other types of functions cannot provide. It was of great importance that the building actually had an urban function and scope, in order to attract residents from all over Tilburg to the area.

7.3.1 Organic transformation

After the purchase of the area, there were certain restrictions regarding external safety and soil contamination. Hence, the realization of housing could only be carried out at a later development phase. Investments first had to be made in the remediation, accessibility and safety of the area. This also required investments from third parties to be able to finance it. In order to initiate the area development, the focus was initially on temporary use.

> It has often been argued that it should not be filled with housing at once, then you will get a dated neighborhood, let it grow organically. The Spoorzone is never finished, buildings are filled in differently, the city has to keep reinventing itself. (Interview Kuijsters)

In order to actually fill the buildings, the rent was initially low. There has been an active search for suitable users. Subsequently, a tender was started to develop that location, which eventually became the developer VolkerWessels. The development was on a 50/50 risk basis. VolkerWessels would mainly focus on the development of new buildings, while the municipality would realize the redevelopment of the industrial heritage. This gave the municipality a lot of control in the exploitation, which ultimately allowed certain temporary functions to settle permanently in the area. Public ownership has contributed to the development of a mixed urban area for different target groups rather than an elite high-urban area. Such organic development requires a different approach from the developing parties.

> Unpredictability and dependence on uncertain events is the practice here. It means that there must be plenty of room for adaptation, flexibility and new initiatives. A fixed final image with a planned real estate development is therefore not sufficient. (Spoorzone Tilburg, 2019)

7.3.2 Citizen participation

The interests of residents of the adjacent neighborhood Theresia was represented by the 'Belangengroep (Interest Group) Spoorzone Tilburg' foundation which was founded in 2002. They created a vision on their own, as a counteraction, in which the revitalization of the Spoorzone would not conflict with the liveability of the neighborhood. They saw that the development had the potential to connect the city both literally and figuratively. On the other hand, the scale of the development should not cause nuisance in the neighborhood. They regularly consult with the municipality to actually implement the ideas of the residents in the vision and plans (Spoorzone Theresia, 2010).

7.3.3 Transverse structure

As is shown in the Floor Plan (7.1) the railway working site was characterized by a transverse structure. In the urban design plan it was intended to preserve this as an element that had to remain visible. Because certain ensembles with accompanying railway infrastructure had been assigned a monument status, this structure could be kept partially intact. The preconditions of the urban design are included in the Program of Requirements, so that these are also included in the design choices at building level (Interview Van der Pol). In the LocHal these included the 125 ton crane and the roller track that have been preserved as important elements that were perpendicular to the track direction of the working site in order to move the locomotives to overhaul them. Besides, various elements of the railway industry have been incorporated into the public space such as a train track at the northern square of the Spoorzone. The former shunting terrain was transformed into a large-scale park (Spoorzone Tilburg, 2019).

Train track incorporated in the public space and in the design of the LocHal
(Van Vulpen, 2018; Ossip architectuurfotografie, 2019)

7.3.4 Tilburg back on track

The decline of the textile industry in the 1960s had resulted in high unemployment in the city. Since then Tilburg has been looking for strategies to reinvent the city, to give it a new economic profile. Initially, a major redevelopment of the city center took place. However, a lot of heritage was demolished in this development. Around the 1990s plans arose to make the Spoorzone part of the city center. On the one hand, this would remove the barrier between the north and south of the city. On the other hand, a new function could be given to the industrial heritage. That is why the municipality has had various buildings designated as monuments since the land purchase.

> To prevent it from being demolished for financial reasons, this can be a lucrative approach in the short term, but we have tried to think in the longer term, by protecting those buildings as much as possible. (Interview Kuijsters)

The focus was on a number of monumental ensembles, such as the LochHal, that were considered of value as carriers of the identity of the development. An important aspect of these ensembles was their magnitude. Where Tilburg was previously considered ‘small-scale’, these buildings had potential for a large-scale urban program. Tilburg is often referred to as the ugly duckling among the cities. Within the city there was therefore a certain modesty with large-scale developments. In particular the LocHal has led to self-awareness and pride that projects with such an ambition are possible within the city. It has thus been an important catalyst for the development of the Spoozone, and this ambition is reflected in other developments in the city (Interview Van der Pol; Kuijsters; Van

der Horst; Thijssen). The development of the Lochal thus makes an important contribution to the city that wants to reinvent itself.

> The Lochal is a reflection of the city's intangible heritage. It is the identity of the city that has to search for its future, that has to work on its own opportunities, that has to innovate again and again to remain relevant, to progress economically, to remain socially connected, you can feel that in the Lochal, that's what it's iconic for. (Interview Van der Pol)

The redevelopment of these large scale buildings was in line with the urban ambition to develop several high residential towers, including in the Spoorzone. These landmarks contribute to the leap in scale with which Tilburg wants to maintain its central role in the 'Heart of Brabant' region (Gemeente Tilburg, 2015). Within this urban network it was a common interest to invest in Transit Oriented Development. With the mix of high-urban construction and the conservation of industrial railway heritage Tilburg created a distinctive profile within the network of station locations.

7.4 Conclusion

Tilburg wanted to reinvent their urban identity after the decline of the textile industry. Within this new course, the Spoorzone has been acquired to add to the city center. This was to become a mixed urban area with high-rise buildings, industrial heritage and a knowledge cluster in the vicinity of the station. This densification with a new economic profile was intended to contribute to revitalizing the city. Within this cluster, the central library had to play a central role as a public domain and knowledge workplace. Due to the presence of the LocHal, many residents would visit the area, so that the redevelopment would connect the city of Tilburg both spatially and socially.

7.4.1 Application of grounded renewal

The original construction of the LocHal has been largely preserved. Due to the large-scale urban program of a user such as the library, it was possible to fill the hall as a whole with this function, so that the spaciousness was put to good use and visitors from all over the city could be attracted to the area. The spaciousness of the hall has been utilized by the staircase landscape. In terms of sustainability, various spaces have been developed within the building with different degrees of comfort. As a public domain, the social accessibility of the library was very important. So users were consulted to investigate their needs on various aspects. Differentiation has been implemented in both the design and the program to appeal to different target groups. The origin transversal structure of the Spoorzone has been the basis for the area development. The municipality had control over this because it had a shared exploitation and ownership of the heritage. The track history is clearly reflected in the preservation of various municipal monuments and in the implementation of various relics in the public area. In the LocHal the textiles refer to the textile industry past. The economic profile of the Spoorzone had to specifically become a knowledge cluster. The temporary use of the buildings created 'eyes on the street' and liveliness in the area. The municipality considered it important to maintain certain of these temporary functions in the area. A bottom-up initiative has emerged from the Theresia neighborhood, resulting in a master plan parallel to that of the municipality. Subsequently, a synthesis of these plans was made through regular consultation with these residents.

7.4.2 Function of the icon

The LocHal has an important symbolic value. There were negative associations with the city's former image. Tilburg has a clear strategy with a high-urban ambition with new icons, with references to the railway, industrial and textile past. The LocHal has made the city proud of this location, which contributes to the development of the local identity and the place attachment of the residents. As a public domain, the LocHal is an important meeting place and social anchor for the entire city. As part of the Spoorzone's knowledge cluster, it is also an important place for knowledge sharing and knowledge creation. The many prizes that the LocHal has received was a showcase that promoted the location, as a result of which more external parties have started using the LocHal. In addition, the large number of visitors creates a lot of activity in the area. It was an important catalyst in the organic development of the Spoorzone, it has set a strong ambition for the area as a whole.

8 Empirical findings

This chapter provides an overview of the main empirical findings and case similarities. First of all, the urban ideals that were decisive for the identity construction and spatial structure of the brownfields will be discussed. Subsequently, an overview is given of the public and private interests and positions of power. This determines the course of the participation process and the use of the icon. As Verheul (2015) stated, icon development consists of dynamics between discourse and materialization. In organic development, temporality and narrative formation are essential for the icon's identity construction. Finally, an overview is given of the main findings from the application of grounded renewal and the significance of the icons.

8.1 Urban ideals

Icons are part of urban identity constructions and are therefore subject to discourse (Verheul, 2012). Urban ideals can be temporary phenomena that can rise in popularity and decline later. Since these ideals are inherently linked to the icons, the iconic value can also increase or decrease over time. In the case studies three urban ideals emerged explicitly; the Compact, Connected and Creative City.

8.1.1 Compact City

The redevelopment of brownfields is part of the ideal of a compact city. The aim of the redevelopment is to build in high densities and to develop a mix of functions. However, in the initial phases of the redevelopment there are restrictions on housing construction. In order to attract developers to the area development, it is essential that investments are made in advance in safety, public space and facilities. For this reason, large-scale residential construction will take place in later stages of the brownfield redevelopment.

In Tilburg, the municipality has acquired the entire planning area of 13 hectares in order to realize this ambition. The densification strategy was based on a mix of high-rise buildings and functional industrial heritage. The large-scale LocHal has an important function in attracting a large number of visitors to the site. The municipality of The Hague has strategically purchased a number of sub-areas on the industrial site as a means of steering the area development. The redevelopment of the Caballero Fabriek was a precursor and a driving force of the overall development. The densification with housing will result in the disappearance of certain heavy industry on the site. In Rotterdam the densification around Van Nelle has yet to be initiated. The industrial site will largely be maintained as such as this is the only large-scale area for heavy industry in the region. In Amersfoort densification takes into account the scale of the adjacent residential area.

8.1.2 Connected City

Industrial sites often have their origin at strategic locations on the edges of the city around infrastructural water, road or rail junctions. However, due to urban expansion, these locations have become surrounded by urban agglomerations. These sites have taken up a central place in the urban area, but they have also become a physical barrier between city districts. Due to its central location near interchanges the focus is often on a mixed supra-urban redevelopment, which is known as Transit Oriented Development. This is in line with the ambition to strengthen the position within the urban network. The external orientation of the icons generates an attraction that exceeds the local level. In doing so, they contribute to the reach of the city's network. Moreover, the icons contribute

to the distinctive character of the city. This will give them a stronger position within the urban network.

The Wagenwerkplaats and Spoorzone are located near the train station due to their former function as railway workshop locations. The Binckhorst is also located near the train station, but the area is still mainly car-oriented. The development of a light rail connection should make the area more accessible for public transport in the future. The Spaanse Polder is not well connected to the urban area due to the many infrastructural barriers. The initiation of the Van Nelle Node, with the development of a train station, should result in a densification of the area around the Van Nelle complex.

8.1.3 Creative City

The redevelopment of brownfields in many cases has an supra-urban function. For this reason, these locations are often assigned a specific economic profile. A characteristic of brownfields is that in the initial phase they mainly attract the creative and innovative sector. This goes hand in hand with the ambition of many cities to form creative and innovative clusters. This was mainly the case during the period when Florida's theory (2002) of the Creative City was popular. Within such clusters, breeding and meeting places are considered important for the development of a creative climate. In the initial phase, pioneers and temporary activities are attracted. In later phases, there is more top-down influence and creative and innovative entrepreneurs establish themselves in the area.

The breeding places Caballero Fabriek and the Besturing in the Binckhaven were initially developed on a temporary basis. These developments were part of the start-up policy of the municipality, but there was little municipal involvement in this. The Caballero Fabriek focused explicitly on a mix of start-up and established companies in order to create a diverse and solid network. Moreover, cross-fertilization was the foundation for the design. In a later phase of the area development the municipality linked the Impact City program to the Binckhaven. This is a start-up program with a mainly international orientation. The temporary developments in the area caused spillover effects. This ultimately resulted in the anchoring of creative and innovative profiling of this sub-area. At the Wagenwerkplaats there was a period of temporary nature for the entire planning area. The stationary landscape offered the opportunity for various pioneers to settle in this area. During this phase it was partly tolerated that certain buildings were squatted. In a later phase of the development, the focus was on supra-urban cultural facilities in order to utilize the site's node location. The ambition is to maintain this mix of cultural and social functions, so that it remains an attractive area for both local residents and visitors. Since there were already many design companies in Rotterdam, it was decided to repurpose Van Nelle as the cluster Design Factory. In the Spoorzone the focus was on a knowledge cluster that also included cultural facilities. Within this cluster it is stimulated to actively acquire, share and create knowledge.

8.2 Power balance and ownership

Brownfields have in many cases fragmented private land ownership. This is one of the challenges in the redevelopment of these areas. It is a complex issue to realize a qualitative coherent development if the public and private interests are too far apart. In case of icon development, private parties will benefit less from spillover effects than the public parties. In order to nevertheless distribute the costs and benefits of such a development, various options for joint forms of investment are possible (Hobma et al., 2019). Public parties can also steer such developments by means of subsidies or strategic land purchases.

Due to the strategic land purchase of the Caballero complex, the factory transformation was ahead of the area redevelopment. It turned out to be a catalyst for the creative and start-up climate in the Binckhaven. The public exploitation of the Caballero Fabriek has made it possible to maintain this climate. Despite the success of the concept, the rents could be kept low and the mix of companies maintained. The municipality of Tilburg has acquired the entire 13 hectares of the Spoorzone, while also exploiting the industrial heritage. These buildings could be preserved through the gradual granting of monument statuses to the majority of the heritage. As a result, the municipality had control over the type of users who would settle in these buildings. In this way, the knowledge cluster could be implemented and certain pioneers could establish themselves in the area for the long term. At the Wagenwerkplaats social responsibility is shown by private parties such as the owner NS and the operator of the buildings. This offers the opportunity for an initiative such as the development of a new building for the cultural and social pioneers. By means of a joint contribution, the rent is kept low in order to maintain such functions in the area. The Van Nelle factory has come into the hands of an investment company. The working monument mainly has a commercial function, which is why events and conferences have been organized since then.

8.2.1 Participation

The participatory process depends on ownership and purposes of the development. For the repurposing process of the Van Nelle Fabriek a consultation of various stakeholders was started. The complex had a national monument status and there was the possibility of UNESCO nomination. Hence, both the municipal and national preservation authorities were involved in the process. The development of the complex was considered of great importance for the development of Rotterdam, which is why various departments of the municipality have provided advice during the process. The design process was coordinated by a coordinating architect as the different buildings were developed by different architectural firms. Since there was no clear purpose for the Wagenwerkplaats during the stationary landscape, bottom-up initiatives could develop. The network that has formed during this period has worked together to draw up vision for the site. In a later phase, a steering group was formed where the owner NS, the municipality and citizens were represented. In the development of the Caballero Fabriek the municipality was both owner and developer. The purpose was to create a location for creative and innovative start-ups. The first users to settle in the factory were consulted for advice on developing the start-up climate. Since the LocHal was assigned to the library and public knowledge and cultural institutions, the users were intensively involved in the development process. The municipality, the library and the architects consulted citizens to adjust the design and program accordingly.

	Participation levels
Van Nelle Fabriek	Consultation consisting of the general partner of the CV, municipality, monument preservation authorities and the architect
Wagenwerkplaats	Partnership consisting of municipality, private owner and citizen representatives
Caballero Fabriek	Consultation of users
LocHal	Partnership with users Consultation of citizens

8.3 Organic development

Due to the risks and limitations, brownfields are often developed organically. After a period that is characterized by vacancy and deterioration, a pioneering period starts with various bottom-up activities. These functions are often temporary and there is little top-down influence on them. A process of gentrification takes place with investments in safety, public space and facilities. Due to fragmented land ownership and zoning, these developments happen at different speeds. Housing construction takes place in later stages of the redevelopment.

8.3.1 Temporality

In the initial phase of brownfield redevelopment temporary functions will contribute to prevent vacancy and deterioration of the area. It contributes to 'conservation through development' of the industrial heritage. From a safety point of view these temporary activities are the eyes on the street, which is some form of social control. However not all temporary activities will be equally desirable, so it will be important to monitor this. These activities provide liveliness and often result in refurbishing buildings and public space. In this way, value is created and the redevelopment process is accelerated. The temporary use can function as a bridging period, which reduces the risks of the area development. Due to the gradual transformation, local identity can adapt to urban and social trends. Within this transformation, pioneers can be important identity carriers of the area. For this reason, attempts are often made to anchor such temporary functions for the longer term.

In the period when the Wagenwerkplaats was a stationary landscape, there were various temporary activities. These pioneers raised the issue of safety in the area, which was addressed in the early stages of the process. Due to their valuable social and cultural functions, they will be assigned a new building where they can establish themselves as a collective. In the Spoorzone several temporary pioneers have also been given a permanent place at the location. By establishing many collaborations within the area over time, including with the library, they have anchored their value to the city. Because the municipality actually has control over the exploitation, they can reserve space for such functions in the area despite the densification that takes place. The Caballero Fabriek has been developed with a temporary exploitation period, the success of the concept has resulted in it being conserved for a longer period of time. By developing a start-up cluster, start-ups are offered the opportunity to grow into scale-ups within the area. Due to the focus on networking within the breeding places and the Binckhorst, users often remain in the area because they have built up valuable partnerships.

8.3.2 The ex post narrative

The development of the social construction is essential for the experience and functioning of the icon. The narrative that arises around the icon can be promoted by developing, public and user parties. The pioneers and drivers of the development can be the ambassadors of the development afterwards, they can keep the story and passion for the location alive. So building a qualitative and quantitatively strong network during the process will benefit the promotion of the location. In addition, receiving prizes is a promotional tool that can be used to attract visitors and new users. The distinctive appearance of icons is suitable for sacralisation, so images will be distributed easily in (social) media. For this reason it is used in city marketing, it coincides with the identity that the city wants to convey. But over time, new users and residents will arrive who do not have the same connection with the area, which will change the local identity. Certain values are anchored because they are included in the monument status or in the lease contracts. These values can be actively promoted and monitored by an active user association.

The LocHal clearly promoted the redevelopment concept of the city's living room and knowledge workshop. The building received many different awards, both for its design and for its public function. Due to the large number of visitors, there was a large potential audience that could cast votes. In addition, the large architectural team that had worked on the redevelopment of the LocHal have been able to register for many prizes, which is a time-consuming activity. The network initiated during the stationary landscape in the Wagenwerkplaats has expanded over time in both number and diversity. Regular consultation is still taking place between the different parties and there is an active user and residents association present. The cooperation values envisaged in the first vision is therefore still maintained in this way. In the redevelopment of the Van Nelle complex the possibility of a UNESCO nomination has led to regular consultation between architect, government and monument authorities from the start of the process. A clearly defined concept has been drawn up with strict principles. Since then, monitoring has taken place and new adaptations to the complex are still being assessed within this consultation. A supervising architect has been appointed to ensure the quality of the working monument. It was ultimately a lengthy process, which made it difficult to leverage the momentum of the active development team, before being granted UNESCO status. In the Van Nelle and Caballero Fabriek, design concepts such as the transparency of units are laid down in the lease.

8.4 Grounded renewal

In the application of grounded renewal in icon development, both software and hardware aspects have been developed. In this overview, the main aspects have been identified.

	Software development	**Hardware development**
Van Nelle Fabriek	-The continuity of the modern architecture style -The site was repurposed as Design Factory, for users in the design sector	-The glass façade is preserved -The surrounding area is kept free from buildings that disturb the sight lines
Wagenwerkplaats	-The safety on the site was addressed in the initial phase of the development -An intensive partnership of private, public, citizen and user representatives was fundamental for the development	-The coherence of the ensemble has been preserved -The development of green infrastructure was one of the main initiatives from the residents association
Caballero Fabriek	-Encounters and cross-fertilization were main concepts to stimulate the start-up climate in the factory	-The original structure of the factory is preserved -The interior is completely adapted to contemporary use
LocHal	-As a public domain, social accessibility was a priority -Various collaborations have been initiated for the function of knowledge workplace and programming library	-The construction of the hall has been preserved, so that the spaciousness could be utilized -The visual coherence of the LocHal ensemble within the transversal structure of the Spoorzone has been preserved

8.4.1 Function and form

Industrial buildings are designed on the principle of form follows function. However, in the case of ‘conservation through development’ the function has to follow the form. Although certain adaptations can be made to make the icon suitable for contemporary use, the options for use depend on the building-specific properties. The Lochal's high spacious hall is used in its entirety. Different climate zones have been created for different uses. At the Van Nelle Factory the conceptual qualities transparency and sight lines were the foundation for the redevelopment. As this limited the possibilities of use, the rental of space was mainly supply-oriented. The redevelopment of the Caballero Fabriek was assumed to be temporary exploitation. At the time there was no monument status and conservation was not the goal. So in this case the form did mainly follow the function. At the Wagenwerkplaats, just like in the Spoorzone and the Van Nelle complex, the coherence of the ensemble is important. Despite the fact that there is no longer the same functional coherence, the visual coherence must be preserved.

8.5 Icon significance

In the development of the icon, the ultimate use of the icon is important for the function it will have for the brownfield site. The use depends, among other things, on the categories ownership and function of the icon. Public and private parties have other interests, which determine the development and usage choices of the icon. The use of the icon can be imposed, attracted or organized. In many cases, icons have a central position within a cluster that has been given a specific economic profile. The Caballero Fabriek has become a creative and innovative breeding place within a start-up climate. The LocHal is a 'knowledge workplace' within a knowledge cluster. The Van Nelle Fabriek is a working monument for the design and event sector in an active industrial area for heavy industry. The Wagenwerkplaats has both local facilities, due to the social interdependence with the neighborhood Soesterkwartier, as well as supra-urban facilities as a node location.

	Main Significance
Van Nelle Fabriek	A showcase of modern architecture as working monument
Wagenwerkplaats	A social anchor for local residents and a diverse cultural breeding place
Caballero Fabriek	A breeding place for creative and innovative start-ups
LocHal	A mix of a meeting and breeding place as public knowledge workplace

9 Conclusion

By analyzing icon development on brownfield sites, the contribution of the application of grounded renewal has become clear. The development of industrial icons is grounded in the distinctive local hardware and software. A network of stakeholders will develop who are jointly committed to the transformation of the icon. The icon is of great significance for both the internal as external orientation of the brownfield. Based on these findings, an answer to the research question is formulated.

9.1 Industrial Icons

The repurposing of industrial heritage has only taken place on a large scale in recent decades. In conservation through development of industrial icons, grounded renewal is applied in both the physical and social construction (Verheul, 2012). Since there was no blueprint for such redevelopment processes, many of the industrial icon developments were pioneering projects. The adaptations that had to be made to make the locations suitable for contemporary use were made on the basis of the distinctive conceptual qualities of the icon. Determining software and hardware-related qualities is a continuous process that requires a network of stakeholders with different types of expertise. Therefore, active participation of users and citizens will be necessary to adapt to contemporary preferences and social needs. The development must be anchored in the local historical and urban context in order to preserve its distinctive character.

9.2 Icon transformation

There are several overlapping phases in the development of icons where different stakeholders have a role. In the first phase, brownfields sites are characterized by empty and derelict buildings. This will initially only attract a limited group of users, which are the pioneers in the area development. These kinds of industrial buildings will mainly attract the creative class. These old characterful buildings are seen as stimulating and inspiring places for these types of users (Jacobs, 1961). Using the buildings will prevent further deterioration, so it contributes to conservation through development (Janssen et al., 2014). The pioneers bring liveliness and are the eyes on the street, which benefits the safety of the site. It is therefore a bridging period for other types of developments in the area. The temporality of this period is of great importance in the application of grounded renewal, since the local identity is gradually transformed according to social needs and urban ambitions.

In brownfield redevelopments there is often a reluctance from the market and the government. For the further development of the icon, it is necessary to form a network of key stakeholders who recognize the potential of the location and actively commit themselves. The diversity of expertise and the investment of time are essential to drive the process and keep the ambitions alive. Within this network it is required to build trust and set goals together in order to maintain this cooperation in the long term. It is important not only to maintain a dialogue, but also to anchor the vision in formal processes. Therefore, involve parties early in the process to convey the vision and thus prevent development delay due to objections. By involving active resident and user associations in the process, the collective interests can be represented and joint activities can be organized. It turns out that not only the public parties put this common good first, private parties can also demonstrate social responsibility. To receive top-down support for such collectives, it is required that a solid social network has already been built up in advance.

At the end of the development process it is important to safeguard the concept of the icon. The narrative afterwards is important in giving meaning to the icon. The liveliness and activities that arises around the icon will contribute to the sacralization and in the image of the icon. As new users or developers are attracted over time, conceptual values will transform. This is common within the continuum of such a development. However, by maintaining a strong network you can hold on to the conceptual values that are considered important.

9.3 Icon significance

Industrial icons are both of internal and external significance for brownfield sites. The sites are former industrial areas where many residents of the city have worked. However, due to the physical barriers and poor image, these sites largely lost their functional interdependence with the urban area. In the development of icons, a new urban function is assigned to the location. This will restore the connection of brownfields sites to the city. Regaining the functional urban value is the main internal significance of icon development.

Since the icon is embedded in the urban environment through the application of grounded renewal, there is a strong place association. For this reason, icons are central landmarks in the development of nodes. Node development is important for the competitive position of cities in the interurban competition. The external significance of icons contribute to cities expanding their reach and strengthening their position within the urban network.

9.4 Research implications

On the basis of these findings, an answer to the research question can be formulated.

> *How does the application of grounded renewal in icon development of industrial heritage contribute to the redevelopment of brownfield sites?*

The research shows the strategy of icon development has several functions for brownfield redevelopment. Depending on the ownership and use of the icon, the emphasis will be on an internal or external functional orientation. The contribution of the application of grounded renewal is reflected in the gradual transformation of both the material and social construction of the brownfield site. The network of stakeholders that invests time, knowledge and expertise during the development ensures resilience and value creation. The organic development of the buildings and public space will result in liveliness, security and the attraction of human capital. The icon development is embedded in the urban environment through grounded renewal. As a result, the icon has become functionally central in the profiling of the brownfield site. Within this cluster, icon and brownfield will mutually contribute to each other.

10 Discussion

The discussion consists of a brief reflection on the research process, the relevance of the research will be discussed and recommendations for follow-up research will be given.

10.1 Reflection

First of all, after a preliminary study and an exploratory interview the research concepts were well framed by means of extensive literature research. This resulted in an analysis framework of grounded which was the foundation for empirical research. Due to the diverse case selection, certain similarities in icon developments could be distinguished within the different types of developments. Conducting interviews has proven to be a suitable method to study the development and function of the icons. Due to the diversity in respondents, different perspectives on the development emerged from different expertises and experiences. In this way a comprehensive overview was created, resulting in substantive saturation. A limitation was that due to the COVID-19 situation, hardly any interviews could be conducted on location. In some cases, the digital or telephone interviews did not benefit the quality. There was a high response when contacting respondents, their enthusiasm about the developments was clearly expressed in the interviews. The empirical findings are structured chronologically in order to properly represent the development process. This is because it is a dynamic process with a long duration and several overlapping phases. By presenting the results in this way, it has been possible to distinguish similarities and differences between the cases in order to draw a general conclusion.

10.2 Research relevance

The research contributes to the operationalization of the concept of grounded renewal that is introduced by Verheul (2012). The research shows that the icon's significance that Sklair (2006) discusses can have various contributions to the redevelopment of brownfields. A relevant finding for such developments was the value of a strong qualitative and quantitative area-oriented network. Despite the uncertainty that characterizes the development, by continuing to actively engage in both dialogue and formal processes, value will often be created in the long term. If private parties consider this network to be of added value, they will eventually also contribute to this in the context of social responsibility. If certain forms of temporary use become part of this area-oriented network, it will be possible that such uses will be anchored for the long term.

The research makes it clear that, as with other types of urban developments, brownfield redevelopments copy successful strategies from other areas. This concerns, for example, the romanticization of the sites with the establishment of beer brewers (Mathews & Picton, 2014). The distinctive identity of the brownfields will therefore mainly be determined by the significance of icons.

10.3 Follow-up research

This research deliberately only focused on industrial icons, as icon development is seen as a strategy in brownfield redevelopment. Since other types of icons are characterized by a different planning process and urban context, they will have a different urban function. It could be interesting to investigate how grounded renewal is applied to these icons.

The function of icons has been studied at the scale of a brownfield site. However, due to the external orientation of icons, the impact can reach much further. As was shown in theoretical and empirical research, icon development is often intertwined with node development. Through the development of nodes, cities will both distinguish themselves and connect with other cities. This will enable them to strengthen their competitive position as well as expand their reach. It would be interesting to study the function of icons in this urban network.

The studied industrial icon developments were pioneering projects. It would be interesting to repeat this research in the future where developments of a later period would be examined. This would reveal whether certain development principles from the pioneering period have been adopted. Moreover, it could be researched how different urban ideals determine the course of the planning process.

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Appendix I- List of interviewees

Transcript and coding files are included in the attachments

General Expert Interviews

Wouter Jan Verheul: Research Fellow & Lecturer at the TU Delft.

Hans Renes: Professor at the VU University Amsterdam and Utrecht University.

Case Interviews

The description only indicates the role of the interviewee during the redevelopment.

Van Nelle

Wessel de Jonge: Coordinating architect at Wessel de Jonge Architecten

Marieke Kuipers: Co-author of the cultural-historical exploration and UNESCO nomination file for the National Agency for the Preservation of Monuments/Cultural Heritage Agency

Jeroen de Bok: Senior Urban Planner at the Urban Development Department of the Municipality of Rotterdam

Thieu Knibbeler: Senior Policy Advisor at the Monuments & Cultural History Office of the Municipality of Rotterdam, Co-author of the UNESCO nomination file

Wagenwerkplaats

Cees Anton de Vries: Process supervisor Habiforum

Heino Abrahams: Municipal Official of the Municipality Amersfoort

Joke Sickmann: Founder of SIESTA and the residents initiative Wagenwerkplaats

Sjoerd Hekking: SIESTA representative in Collaboration Collective Wagenwerkplaats

Caballero Fabriek

Sylvia Pijnenborg: Project Manager for the redevelopment of the Caballero Factory of the Municipality of The Hague

Suzanne Linders: Architect at GROUP A

LocHal

Bas van der Pol: 'Kwartiermaker' LocHal

Pieternel Thijssen: Project Manager LocHal of the Library Midden-Brabant

Lucia van der Horst: Architectural Historian at architect firm Braaksma & Roos

Lucien Kuijsters: Program Manager Spoorzone of the Municipality of Tilburg

Appendix II- Topic List

Inleiding

Wat was voordat u bij het project betrokken raakte uw ervaring met de locatie?
Hoe bent u actief betrokken geraakt bij het transformatieproject?

Initiatiefase

Welke impact heeft de beëindiging van de voormalige functie van de locatie op het gebied gehad?
Hoe is nadien in de eerste periode de invulling van de locatie geweest?
- Wie heeft hier destijds de leiding/initiatief van gehad?
- Welke partijen zijn destijds bij het proces betrokken geweest?
- Hoe is de participatie van bewoners/nieuwe gebruikers in deze periode ingevuld?

Wat was destijds de visie voor de locatie?
Welke verschillende belangen speelden er bij de betrokken partijen?
- Hoe is men toen tot een consensus gekomen?

Is er destijds gestuurd op een specifiek type gebruik(ers) van de locatie?
- Hoe heeft dit zich voltrokken?
- Wat was de visie hierachter?

Welke uitdagingen speelden er op de locatie in deze eerste fase?
- Hoe is hier destijds mee omgegaan?
- Welke maatregelen zijn er toen genomen?

Transformatiefase

Wat waren de voornaamste uitgangspunten/prioriteiten bij de transformatie?
Welke aspecten van de locatie zijn nadrukkelijk behouden gebleven?
- Wat was de visie hierachter?

Welke invloed heeft de monumentstatus van de locatie gehad op de transformatie?
Welke adaptaties moesten er gemaakt worden om de locatie geschikt te maken voor nieuw gebruik?
Hoe is de verduurzaming van de locatie gerealiseerd?

Functie & Impact Icoonontwikkeling

Welke gebruikersgroepen trekken de nieuwe functie(s) van de locatie voornamelijk aan?
- Wat is het ruimtelijk bereik waar gebruikers vandaan komen?

Wat is de impact van de uitstraling van de locatie op lokale schaal?
Wat voor gevolgen heeft de ontwikkeling gehad voor de lokale identiteit?
- Hoe worden bewoners betrokken bij de ontwikkeling/gebruik van de locatie?

Wat voor gevolgen heeft dit teweeg gebracht voor de ontwikkeling van het omliggende gebied?

Appendix III- Code scheme