

**54 Koivistokade**  
Casper Kraai/4217020

TU DELFT FACULTY OF ARCHITECTURE AND THE BUILT ENVIRONMENT  
2018/19

CHAIR OF ARCHITECTURE & DWELLING  
**DUTCH HOUSING GRADUATION STUDIO**

STUDENT NAME  
Casper Kraai

GRADUATION COORDINATOR  
Pierijn van der Putt

MAIN TUTOR  
Theo Kupers

RESEARCH TUTOR  
Pierijn van der Putt

BUILDING TECHNOLOGY TUTOR  
Ferry Adema



**54 Koivistokade**  
METROPOLITAN HIGH RISE LIVING IN AMSTERDAM



# CONTENT

7	Preface	Virtual Reality Massing Studies
<b>TOPIC RESEARCH</b>		<b>PLAN ANALYSIS</b>
9	METROPOLITAN AMSTERDAM The City The People The Buildings	60 AMSTEL TOWER General Urban Interface Vertical Stacking Dwelling
23	HISTORY OF METROPOLITAN LIVING Rise of Metropolitan Apartment Living The Vertical Metropolis Downtown vs. Suburbia	64 VESTEDATOREN General Urban Interface Vertical Stacking Dwelling
33	METROPOLITAN LIVING NOW Metropolitan housing for today's expat Housing the metropolitan millennial	70 LAKE POINT TOWER General Urban Interface Vertical Stacking Dwelling
<b>MASTER PLAN</b>		<b>DESIGN</b>
40	MANHATTAN AAN 'T IJ Grid Adaptation Block Conditions Zoning Building Use & Heights Diagrams Design Location	78 DESIGN BRIEF 80 CONCEPTUAL DESIGN 82 GRADUATION PLAN
<b>MASSING STUDIES</b>		88 Sources
49	MASSING STUDIES Crash Course	



*“The two elements the traveler first captures in the big city are extra human architecture and furious rhythm. Geometry and anguish.”*

*- Federico Garcia Lorca -*

This is something I have experienced myself numerous times upon arriving in a big city. It is also what has instilled in me a fascination with the metropolis. The controlled chaos and the impressive architecture are the first things that come to mind when thinking about my own experiences in cities like New York, Melbourne, Beijing, Shanghai and Hong Kong. These are the places that have made me appreciate and see the value of the bustle, the density, the congestion and the intense urban life of the metropolis. A desire to turn these personal experiences into a design project, and add some of their architectural qualities and urban life to a changing Amsterdam, has inspired me to choose my graduation topic:  
Metropolitan high-rise living in Amsterdam.





# **METROPOLITAN AMSTERDAM**

# THE CITY

## THE CASE FOR A METROPOLITAN AMSTERDAM

Amsterdam is growing. According to the municipal statistics service (OIS, 2019), the city's population is expected to surpass its previous record number of 872.000 inhabitants set in 1959 this year. Furthermore, the municipality is projected to reach one million inhabitants by the year 2032 and continue its increase long after that (Couzy, 2019b). This growth, which has been especially steep since 2008 (OIS, 2018), can be mainly attributed to the city's attractiveness as a place to move to. Amsterdam is a popular place to settle because of it offers more urban amenities, culture,

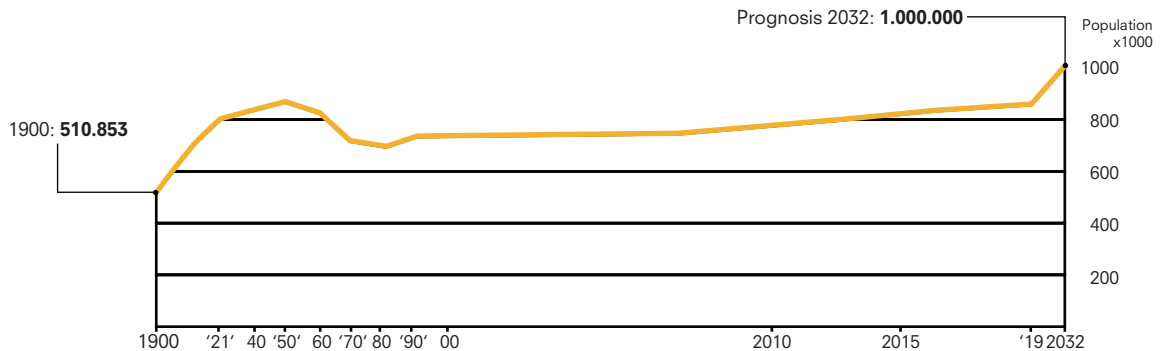
recreation and hospitality than any other city in the Netherlands, but also because it has the highest jobs availability in the smallest radius (Dam & Kist, 2014). The city is a magnet for ambitious young people, successful professionals and opportunity seekers.

This magnet effect is not just a national phenomenon. The 2017 Ipsos City index places Amsterdam in the top 10 worldwide of the most popular cities to live, do business and visit, just behind global centers like New York, London, Paris and Tokyo (Atkinson & Clemence, 2017).



01 The old city center of Amsterdam with new high-rise construction in the background (Adapted from Van Weel, 2015)





02 Population history and projected growth for the Amsterdam municipality (Adapted from Van der Bijl, 2018)

The overall success of the city has inspired Zef Hemel, Professor of Urban and Regional Planning at the University of Amsterdam, to declare that Amsterdam is on the eve of its *Third Golden Age* (Couzy, 2018b). After similar periods of prosperity in the 17th century and at the turn of the 20th century, in which the city saw major cultural advancements and urban expansions such as the Grachtengordel and Plan Zuid, it is now at the start of a new stage of urban growth and development.

At the same time there is a debate in Amsterdam about whether the city should remain the compact city that it is now or if it should fully

embrace its potential for growth and become a true international metropolis. On one side are longtime residents and some political parties that have a hard time coping with the mass influx of tourists and foreign newcomers. They think the city is changing too rapidly and that its construction plans are too ambitious (Couzy, 2018a). On the other side are the progressive political parties and those like Hemel, who argue that growth is inevitable and will only make the city better.

In his book *De toekomst van de stad: een pleidooi voor de metropool*, Hemel (2016) argues for Amsterdam to embrace its growth and become a

## Amsterdammers kunnen het tempo niet bijbenen

(Couzy, 2019a)

## Moet Amsterdam pas op de plaats maken, of doorgroeien?

(Couzy, 2018a)

## Amsterdam te druk? Wat een grote onzin

(Veenhoven, 2018)

## 'Wil Nederland ertoe doen, dan moeten steden als Amsterdam flink groeien'

(Hemel, 2018)

03 Newspaper headlines representing both the pro- and anti-metropolitan sentiment

metropolis with all its metropolitan characteristics. Oxford Dictionaries (2019) defines a metropolis “as a very large and busy city.” Metropolitan can be defined as “of, noting, or characteristic of a metropolis or its inhabitants, especially in culture, sophistication, or in accepting and combining a wide variety of people, ideas, etc” (Dictionary.com, 2019).

Hemel (2016) states the benefits of metropolitanism in the following way: “big cities are better, the biggest even the best this world has to offer to its people. Metropolises are more wealthy, complex, varied, innovative and sustainable than small cities, they offer each person the best opportunities for development, progress, career, meaning, happiness, also when you’re poor.”

Considering the current trends in the city, its projected future growth, increasing internationalization and general political will to welcome these things, the scenario of Amsterdam as a metropolis is plausible.

Now it is time to place the phenomenon of this new metropolis within the Dutch Housing graduation studio and its central question “how do we want to live and what kind of buildings do we need to allow for that?” Part of the assignment of the studio is to investigate new societal ideals and

how these ideals might take shape when applied to the design of our cities and residential areas.

The specific part of Amsterdam where this ideal new residential area should arise is Haven-Stad, a large city intensification plan on the site of a now partly defunct industrial harbor. The key objective of the plan, to be developed and realized between now and 2040, is to create a mixed work-live environment with at least 75.000 dwellings (Van der Putt, 2019).

---

## In Haven-Stad wonen en werken straks 150.000 mensen

---

04 Excerpt from the Haven-Stad development strategy detailing the projected number of inhabitants (Vlaanderen & Scheringa, 2017, p. 11)

The sheer size of the plan, along with its location close to the city center in an area that is relatively free of formal and stylistic constraints invites to be bold and idealistic and allows for more experimental, visionary and eccentric spatial and programmatic development (Van der Putt, 2019).

Considering the aforementioned, Haven-Stad can be the proving grounds where the new metropolis, along with its metropolitan way to live and dwell, takes shape. This research report will investigate the topic of this metropolitan lifestyle and what it means for the design of the buildings we live in. Thus, the central question posed is as follows:

*“What is a contemporary metropolitan living and dwelling environment ?”*

Other questions to further investigate the topic are related to the people and the built form:

*“Who are the people that inhabit the contemporary metropolis, specifically Amsterdam? What do the built environment and residential buildings of a metropolis look like?”*

To get a grasp on contemporary metropolitan living, some background should also be given on its historic developments. Questions posed to investigate this are:

- *“What are the origins and historical developments of metropolitan apartment living?”*

- *“How did local and global actors influence this lifestyle?”*
- *“How does the metropolitan lifestyle relate to the skyscraper?”*

This historic background will form the basis of the analysis of the current situation. To determine what constitutes contemporary metropolitan living the following questions will be answered:

- *“What are the current needs and wishes of metropolitanites with regard to their dwelling, living, working and recreational environment?”*
- *“How do current local and global actors influence the metropolitan lifestyle?”*

The outcomes of the research will then be used to answer design questions and formulate a design brief specific for the next phase of the graduation project. These design questions are:

- *How can a high-rise building be designed to accommodate a contemporary metropolitan lifestyle? How does this building relate to its urban environment? How does this manifest itself in the building program and the individual dwellings?*

# THE PEOPLE

## NEW METROPOLITANITES

Those that live and dwell in the metropolis are called metropolitanites. Essentially, every person that lives in the metropolis is a metropolitanite. The metropolitanites that are the topic of this research, however, are the ones that live a metropolitan life, which Rem Koolhaas describes in his book *Delirious New York* as having a “unique level of refinement, complexity and theatricality” (Koolhaas, 1994, p. 144). This person is what Koolhaas refers to as a ‘metropolitanite’. The dictionary entry that best describes this metropolitanite is:

*“A person who has the sophistication, fashionable taste, or other habits and manners associated with those who live in a metropolis” (Dictionary.com, 2019a).*

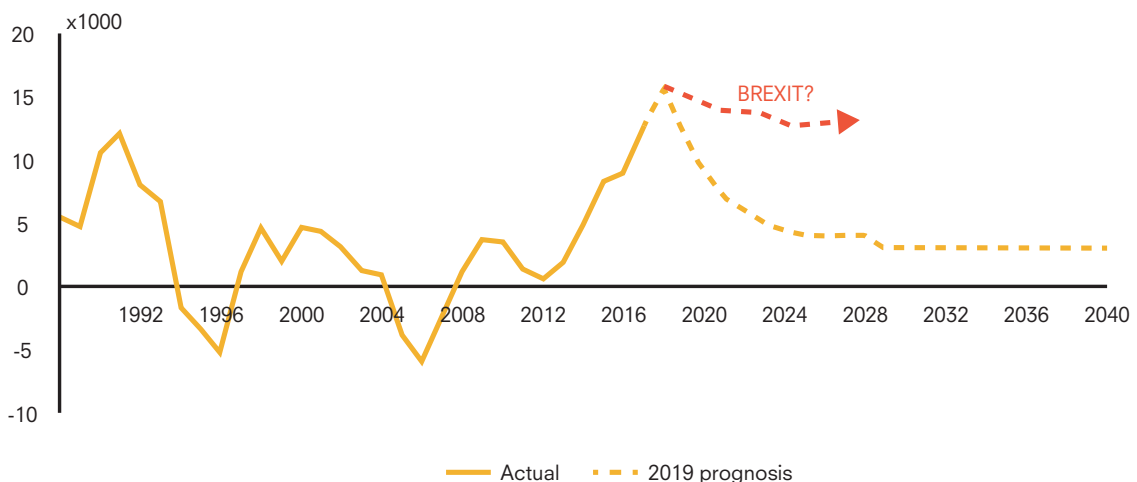
Metropolitanites can come in a wide variety of ages and backgrounds, especially in established metropolises like New York or London. In Amsterdam, the metropolitanites that currently boost the growth of the city and play the biggest role in turning it into the new metropolis, are the knowledge

migrant and the ambitious young professional, i.e. the expat and the millennial. While these two often overlap, the city also has an important influx of domestic millennials.

### THE EXPAT

As Zef Hemel states in his plea for the metropolis, “Successful cities are cities of arrival” (Hemel, 2016, p.113). The more successful the city, he states, “the bigger the influx of migrants”. When looking at both historical and present day examples, this becomes more clear. Take New York for example, a city that has throughout its history been the place of arrival for migrants and a magnet for opportunity seekers. These migrants were - and still are - the motor of its population growth and are an important reason why it is one of the cultural and economic centers of the world today (NYC Planning, 2018).

Traditionally, there has been a distinction in what term is used to define different migrants. The word ‘expat’ is often used to describe western, educated and rich professionals working abroad,



05 Graphic representing the net migration number for Amsterdam with a notable spike in recent years (Adapted from OIS, 2019)

while ‘migrant’ or ‘foreign worker’ are used for those who are less fortunate and prosperous. Today, however, the distinction is less about income or origin. What sets expats apart from refugees or economic migrants is that their decision to live abroad is a lifestyle choice rather than an economic or political necessity (Nash, 2017). The type of employment has also changed. While in the 1950s expats were sent abroad by their long-time employer, often an international enterprise or government, now they are often job hoppers that decide for themselves where they want to work.

The preeminent example of a city that attracts expats in present-day Europe is London. Its cosmopolitan climate, wealth of job opportunities and cultural offerings make it one of the favorite places in the world to live and work abroad. As a result it has around 3 million foreign-born workers

## Amsterdam groeit vooral door komst van expats

06 Het Parool: Amsterdam's growth is mainly attributed to expats (Couzy, 2019b).

## 'What would you like on your pannenkoek?'

07 Het Parool: The inhabitant are increasingly English-speaking (Couzy, 2019d).

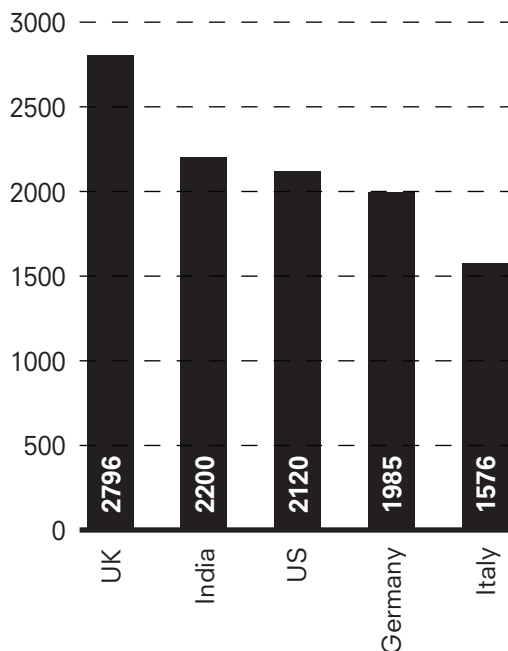
## Expats van de Gouden Eeuw: Amsterdam was altijd al migrantenstad

08 Het Parool: Amsterdam was dependent on expats during its Golden Age (Boon, 2018).

(Kollewe, 2014). However, the looming Brexit has made the city less desirable for international companies and expats alike.

Amsterdam is one of the beneficiaries of this, as companies as agencies like the European Medicines Agency (EMA) recently relocated here and brought many expats with them.

On the other hand, Brexit is not the only impetus for companies and people to move to Amsterdam. There is an overall trend of Amsterdam becoming an increasingly attractive destination for expats. In fact, they are the primary reason for the municipality's growth and without them, the population would actually shrink. In 2018 alone, 38.000 foreign workers moved to Amsterdam, most of them coming from traditional expat countries like the UK, India, US and Germany (Couzy, 2019b).



09 Graph indicating the 5 prevailing countries of origin of new Amsterdam residents in 2018 (adapted from van der Bijl, 2018)

This is not something new, as Boon (2018) explains, Amsterdam has always been an arrival city, especially in its 17th century Golden Age, when its population tripled as a result of a large influx of foreign workers, ranging from Greek merchants to Scandinavian Sailors. At the time, these workers, often temporary, were needed to make Amsterdam into the global trading hub it came to be. After all, there was a lack of natural population growth and a shortage of labor.

In some ways the situation back then is comparable to the situation right now. The craftsmen Amsterdam needed for its economic advancement in the 17th century are like the knowledge workers it needs today. These knowledge workers are what the Dutch immigration service refers to as ‘highly skilled migrants’ (Immigration and Naturalisation Service, 2019). They are highly-educated and well-paid foreigners deemed beneficial to the knowledge-based economy in the Netherlands. Examples are those that work at the EMA or at one of the many start-ups and scale-ups in Amsterdam’s booming tech sector (Stil, 2019)

#### THE MILLENNIAL

Aside from their frequently foreign origins, the majority of the new metropolitanites, both foreign and domestic, belongs to the millennial generation. This generation, born between 1981 and 1997 (Moos, Pfeiffer, & Vinodrai, 2018) is characterized as the first of the modern generations that prefers living in highly urban environments (>250.000 inhabitants) over living in a suburban or rural setting. They are drawn to contemporary

cities because these are safer than before, “offer more and better economic opportunities, afford more chances to make friends or find partners and mates, provide a wide range of amenities, and are more associated with status and “making it.” Millennials also place a higher value on diversity, and cities offer more diversity than other kinds of places” (Florida, 2018). Amsterdam consistently places among the top cities in the world for millennials for many of the reasons provided above, especially job prospects, start-ups, personal freedom and entertainment options (Obdeijn, 2017).

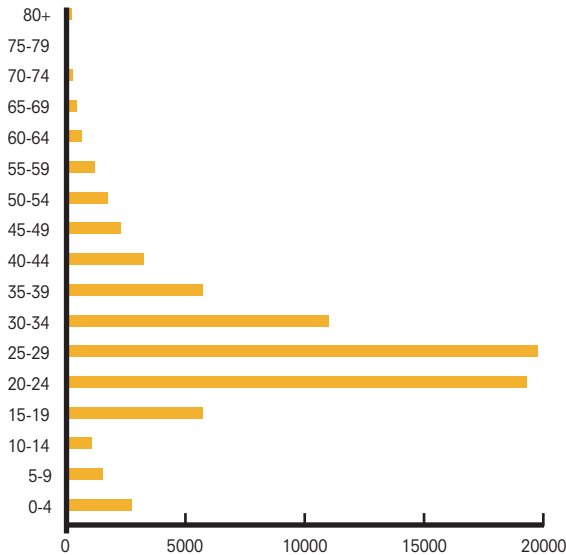
Other important characteristics of the millennial are their desire for flexibility and their preference for a luxury lifestyle without the ambition of ownership (Kooyman, 2018). As a result they are more prone to rent and change jobs, while they are more willing to spend their money on entertainment and hospitality, instead of a TV or a car.

## Voor millennials is Amsterdam de beste stad om te wonen

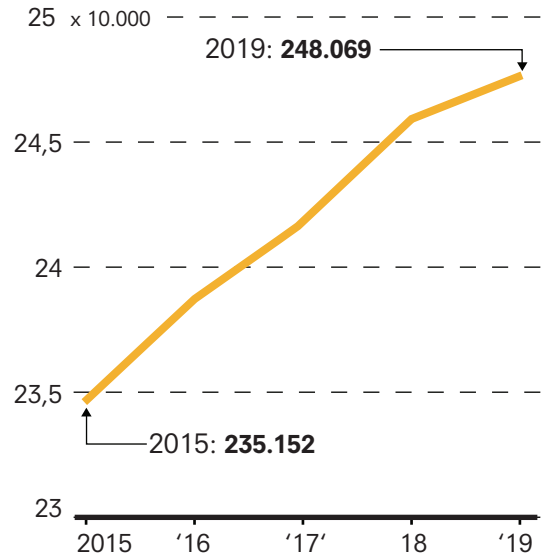
10 Het Parool: Amsterdam consistently places among the best cities to live for millennials (Obdeijn, 2017)

## Amsterdam moet flexibele millennial omarmen

11 Het Parool: The city should embrace the flexible millennial to keep attracting international talent (Stil, 2018)



12 Domestic and foreign net migration in 2017 by age group. Millennials are especially represented (Adapted from Van der Bijl, 2018)



13 The number of singles is growing rapidly in the city (Adapted from Van der Bijl, 2018)

The influx of the expat and the millennial means Amsterdam is changing in a number of ways. While the city will be busier, more international and culturally varied, it will also become more competitive and less socioeconomically diverse (Couzy, 2019c). The population will be made up of more and more singles, which is characteristic of its new inhabitants, often arriving alone and less inclined to start a family at an early age. The more central areas will become increasingly expensive and for the well-off and educated, while the less affluent will be pushed out more towards the periphery. This will exclude some people, but overall the growth is good for the economic success of the city and will provide more jobs for

everybody (Couzy, 2019c).

The continuing success of Amsterdam, however, is not a given. Rudolf de Boer of real estate consulting company CBRE states that there is currently a shortage of appropriate and affordable housing for expats and knowledge workers (Stil, 2019). The flexibility of today's expats and millennials makes them willing to work anywhere they want, as long as the environment suits their demands and lifestyle (Stil, 2018).

To remain competitive globally, Amsterdam needs to cater to this relatively well-off, highly-educated and increasingly international group of people, providing a living and working environment that suits their metropolitan lifestyle.



# THE BUILDINGS

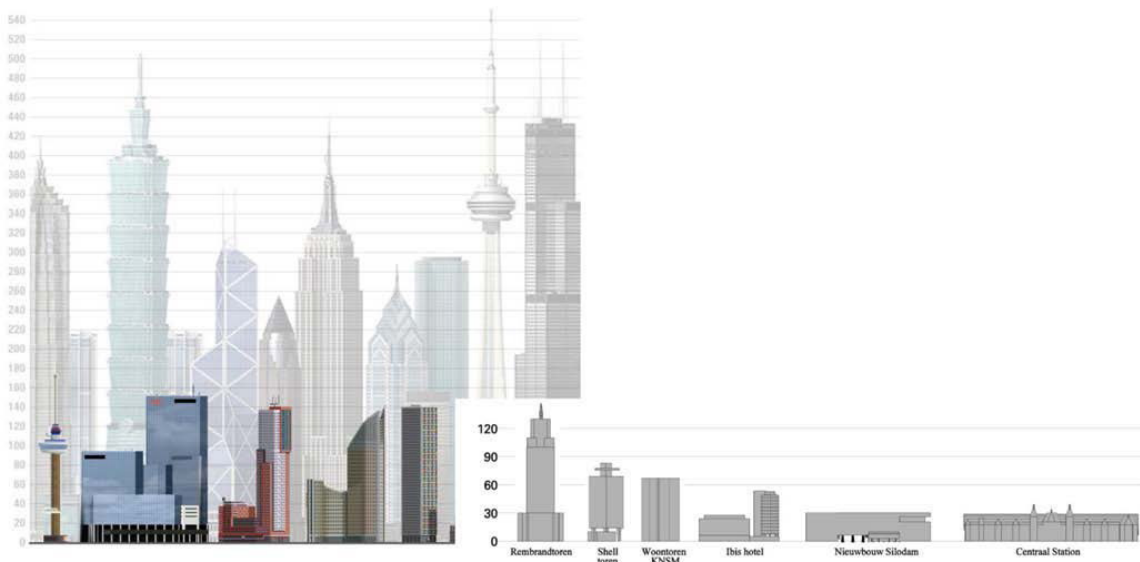
## HIGH DENSITY HIGH-RISE AS A NEW LIVING ENVIRONMENT

The first building that comes to mind when thinking of the metropolis is the *skyscraper*. As Kaan (2012) puts it, since the second half of the 19th century there has been a fascination with the metropolis as a high-rise, high density urban environment, driven by both rational market forces and sentimental public admiration for cities. The large-scale implementation of the skyscraper in cities originated in Chicago, where “for the first time in history scarcity of land, technology and the ego of investors and architects created a critical mass for the high-rise to emerge”(Appenzeller, 2012, p.31). Midtown Manhattan can be seen as the final, most extensive physical manifestation of the high-rise metropolis fascination.

Even today, Daan Zandbelt states, “high-rise buildings are the icons of any self-respecting metropolis” (Zandbelt 2012, p.74). While they

define the cityscape in global metropolises like New York, Chicago, Sao Paulo and many Asian cities, they are, with the exception of Rotterdam, a bit of an anomaly in The Netherlands. What Amsterdam defines as a high-rise, a building taller than 30 meters (Dienst Ruimtelijke Ordening, 2011), is barely considered a mid-rise in some other cities. Even its tallest tower, the 135 meter tall Rembrandttoren is dwarfed by its international counterparts in both height and overall size.

As the city is growing, however, there is a need for more density. Amsterdam has a relatively low population density compared to metropolitan cities like Paris and New York or even cities of its own size, like Brussels and Copenhagen. The municipality’s strategy to accommodate the city’s growth and prevent urban sprawl is to densify within the existing city limits. For Haven-Stad specifically,



14 Height of tall buildings in Amsterdam (bottom right) compared to the rest of The Netherlands (bottom left) and the world (background) (Dienst Ruimtelijke Ordening, 2011)

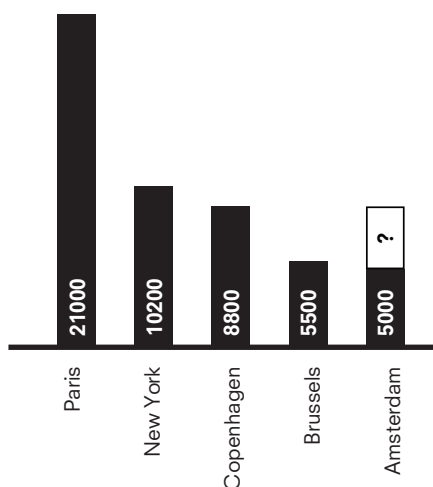


this intensification strategy should produce a high-density urban environment that combines living and working with at least 200 dwellings per hectare (Vlaanderen & Scheringa, 2017). This kind of density enables a high level of amenities and supports an urban lifestyle. The building typology the municipality envisions for Haven-Stad is a mix of 30 meter tall perimeter blocks with frequent tall accents of up to 60 meters and occasional tall accents of up to 150 meters. The plinth and some of the upper layers should be dedicated to work and urban amenities.

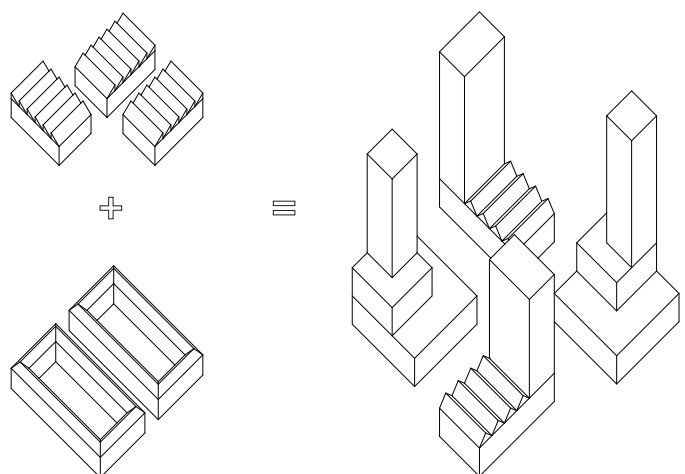
The inclusion of tall buildings in the municipality's development strategy for Haven-Stad shows how it has in recent times warmed up to the idea of the high-rise. There are even plans for an entire high-rise district inspired by North American cities like Vancouver. The plan, called

Sluisbuurt, encounters heavy resistance from residents and some architects, arguing that high-rise buildings are intrusive and a bad fit with the city's characteristic low-rise cityscape (Van den Bergh, 2017). Another argument is that the same residential densities can be achieved with a mid-rise neighborhood.

The former is a case of identity and perception, and while the latter has been proven to be true, the argument for high-rise is not just one of density or existing urban identity. High-rise does not have to overshadow the existing city, but can complement it. It can bolster a city's international position and image (Nicolaou, 2012). When clustered together, they can create a critical mass for a more intense urban life with more amenities, services and public activity. Furthermore, as Zandbelt (2012, p.74) puts it, towers are not only symbolic of density, but



15 Population density of Amsterdam plotted against metropolises and comparable cities. (adapted from Van der Bijl, 2018)



16 Proposed building typology for Haven-Stad, combining working in the building base and living above (adapted from Vlaanderen & Scheringa, 2017, p.28)

also of urban life. They carry out a metropolitan image, provide views or symbolize a new stage of urban development. Those who want to live in high-rise apartments are deliberately opting for an urban setting and lifestyle. “They expect a range of exceptional restaurants, interesting festivals, special boutiques, services and facilities.” What Zandbelt describes are the metropolitanites discussed in the previous chapter.

Moreover, high-rise buildings fit with the projected future housing demand in the city. Dorien Manting, researcher at PBL and professor at the University of Amsterdam, predicts that the appeal of urban living will continue in the future and that the large number of singles and their demand for small rental apartments will stimulate the construction of residential towers with shared amenities like cafes, sports facilities, daycares, libraries, exhibition spaces, community rooms and roof gardens (De Voogt, 2018).

## Amsterdam wil met hoge torens 'Vancouver aan het IJ' worden

17 De Volkskrant: With tall towers on its waterfront, Amsterdam wants to become like Vancouver (Gualthérie Van Weezel, 2016).

## Gemeente Amsterdam gelooft nog steeds in skyline van de Sluisbuurt

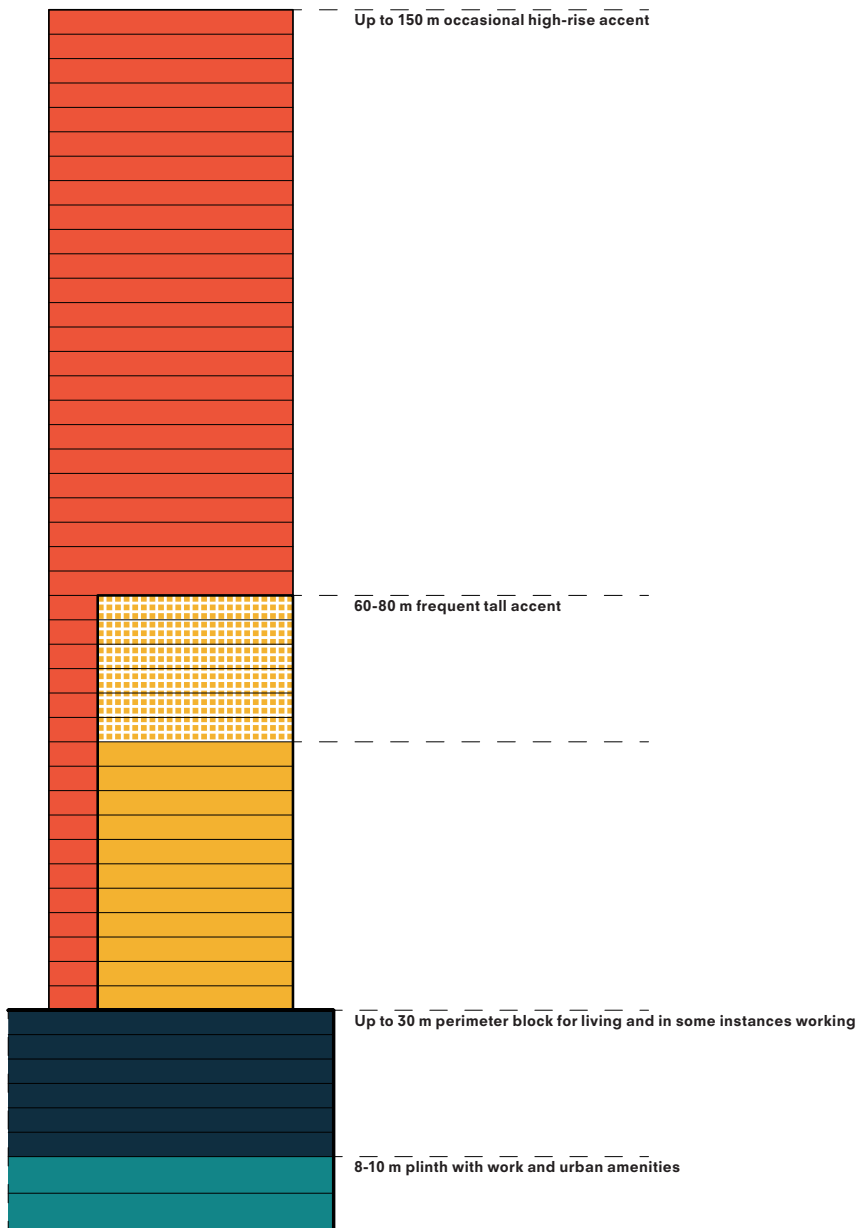
18 NRC: Despite resistance, the municipality still support the plan for the Sluisbuurt high-rise neighborhood (Van den Bergh, 2017).

## In je eentje huren in de woontoren, dat is de toekomst

19 NRC: Residential towers are projected to become a more prevalent form of housing in future Amsterdam (De Voogt, 2018).



20 Photo of the Sluisbuurt site model with several high-rise accents (Alderschoot, 2018)



21 Diagram of Haven-Stad's envisioned building typology and heights (adapted from Vlaanderen & Scheringa, 2017, p.56)





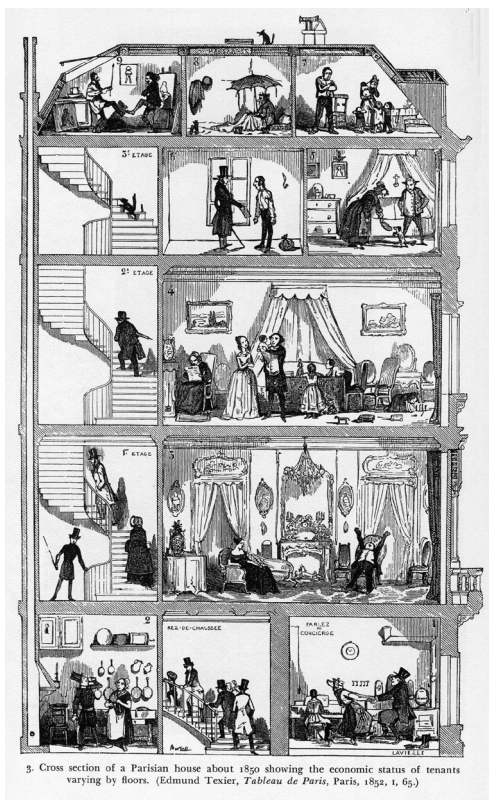


# **HISTORY OF METROPOLITAN LIVING**

# EARLY METROPOLITAN LIVING

The concept of metropolitan apartment living originates in the European capitals of the 19th century, Paris and London. As a result of the Industrial Revolution, these two cities grew explosively and by the mid-19th century they had both surpassed one million inhabitants and become industrial metropolises (Hemel, 2016). As factories became the places of work, living and working became separated in the city and new housing models were required (Jansen, 2005). While apartment houses in London were initially only for the poor, in Paris their appeal reached almost

all parts of urban society. For the metropolitan middle and upper classes apartment living had the luxury and comfort of a “hôtel”. The ‘maison mixte’, a typical Parisian apartment house around that time, combined different socio-economic classes in one building, separating them by floor. The first floor or ‘bel étage’, featuring ‘salons’ to the front and service/servant spaces to the back, was meant for the highest and most affluent social classes, while residents’ wealth and reputation decreased on each floor above it (Jansenn, 2005). In affluent areas there was a



3. Cross section of a Parisian house about 1850 showing the economic status of tenants varying by floors. (Edmund Texier, *Tableau de Paris*, Paris, 1852, 1, 65.)

22 Cross section of a Parisian 'maison mixte' showing the economic status of tenants varying by floors (Texier, 1852)



23 Queen Anne's Mansions (Cassell & Co., 2016)



24 Albert Hall Mansions ( University of Cambridge, n.d.)

similar gradation of socioeconomic class by floor, but with a smaller range. The 'maison mixte' type was standardized and repeated throughout Paris during Haussmann's transformation of the city.

In London, apartment living for the middle classes only became more common from the 1870s onward. At the time, there was a certain resentment in English society against this 'Parisian' form of living. London was a city mostly made up of single houses and only the poor would be housed under one roof with a shared means of access. To the aristocrats and the wealthy, apartment living violated the "basic principles of decency and respectability" associated with the English house (van Gameren, 2009, p.143).

The aversion to apartments began to soften, however as developers realized there was demand for the convenience of a pied-à-terre in town from the middle class, a relatively wealthy, socially mobile section of society, and began using it as a means for speculation. An early example is the Queen Anne's Mansions, a building for cooperative living marketed like an apartment hotel, 'not 10 minutes from all the clubs, combining the advantages of a private house, the freedom of a hotel, and the luxury of a club'." (Latham, 2016) The use of the word 'mansion', 'court' or 'gardens', Van Gameren (2009) notes, was an advertising tool to evoke association with aristocratic status.

Although Queen Anne's Mansions were a

commercial success, their height and appearance were a subject of public controversy, as they were widely regarded as an 'architectural abhorrence' and 'eyesore' (Latham, 2016). Following this backlash, Richard Norman Shaw sought to improve public perception of apartment living with his design for The Albert Hall Mansions, which were completed in 1881. The block contained apartments for small families and bachelors of the affluent middle class. To make the mansion flats socially acceptable, Shaw recreated the spatial and functional characteristics of a country house in the interior of the apartments. By giving the living spaces facing the park more generous ceiling heights than those facing the courtyard, he conceived a split-level, separating service spaces from living spaces (van Gameren, 2009).

On the outside, he made the apartment buildings appear as if they were row of large individual townhouses.

As for Amsterdam, it experienced its period of growth and prosperity later than cities like Paris and London and never truly developed large scale metropolitan apartment living. Plan Zuid, the monumental urban expansion designed by Berlage and built in the early 20th century does introduce apartment living as a fix for the housing shortage along with the occasional pocket of luxury (Kompier, 2009), but is primarily geared toward housing the working class (Hemel, 2016).

# THE VERTICAL METROPOLIS

It was not until the early 20th century that the metropolis came to be symbolized by the skyscraper. In his 1927 movie *Metropolis*, German filmmaker Fritz Lang depicts a future, set in the year 2026, where the fictional city Metropolis is divided into a privileged upper class of businessmen and industrialists that reside in high-rise towers, and a large lower class of workers that live in an underground world. The upper class spends their day doing recreational activities and partying, while the working class slaves away in a factory with machines that power the aboveground realm

(Keyser, 2013).

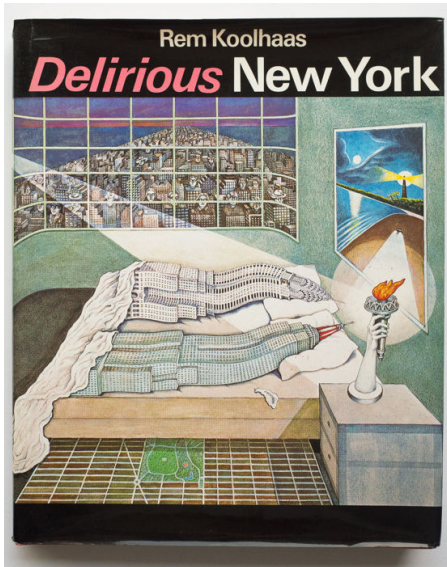
The architecture of the metropolis depicted by Lang was inspired by New York City, especially Manhattan, which he visited in 1924. The mass immigration from Europe in the 19th century had made New York one of the biggest and most populous cities in the world by that time and a breeding ground for new urban forms like the skyscraper. As previously stated, Chicago was the birthplace of this building type, but Manhattan was its incubator.

Rem Koolhaas, in his seminal work *Delirious*

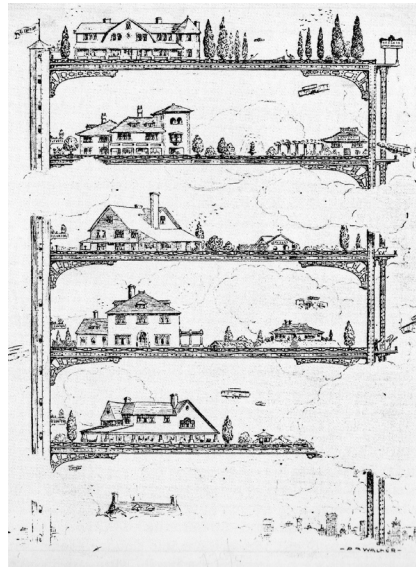


25 Still from the film *Metropolis* (Lang, 2016)





26 Original book cover of *Delirious New York* (Koolhaas, 1978)



27 1909 diagram of the vertical multiplication of the Manhattan block (Koolhaas, 1994)

*Delirious New York* (1978) analyzes Manhattan's urban development of the late 19th and early 20th century and formulates it into a theory, which he calls 'Manhattanism'. Manhattanism or the "Culture of Congestion", Koolhaas (1994, p.10) argues, is "the one urbanistic ideology that has fed, from its conception, on the splendors and miseries of the metropolitan condition – hyper-density – without once losing faith in it as the basis for a desirable modern culture." The skyscraper is a defining element of this ideology.

Koolhaas describes the Manhattan skyscraper as a fusion of three elements: '*the reproduction of the world*', '*the annexation of the tower*' and '*the block alone*', which roughly translates to the vertical stacking of floors in a tower form, with the dimensions of the block serving as a boundary condition. *The reproduction of the world* or the unlimited vertical multiplication of the building site was made possible by two inventions, the elevator and the steel frame structure. Before that, all floors above the fifth floor were considered uninhabitable (Koolhaas, 1994). The potential of this vertical multiplication is illustrated by a 1909 diagram (fig. 25), showing a steel structure supporting 84 stacked horizontal planes with the same size as the original plot. Each plane is treated as a virgin site and displays a different ideology. The levels individually support a range of contrasting activities, but together form one building.

Another element that played an important role

in Manhattan, of all places, becoming the laboratory of skyward expansion was speculation. The supposedly insatiable demands of "business" and the fact that Manhattan is an island, preventing lateral expansion, gave developers, as Koolhaas wittily puts it, "the twin alibis that lend the skyscraper the legitimacy of being inevitable" (Koolhaas, 1994, p.87). This supposed license to build upward initially led to an accumulation of office buildings that were the literal vertical extrusion of their site. An example of this is the Equitable Building, built in 1915, which repeats its plot 39 times. There was even a concept for a *100-story building*. This vertical mammoth was divided into different functional sectors, separated by public plazas. Industry, business, living and hotel were intersected by a general market on the 20th floor, theaters on the 40th, shopping on the 60th, a hotel lobby on the 80th and an amusement park on the 100th floor. This idea from 1911 can be seen as a precursor to today's mixed-use skyscrapers found all over the world.

Straight up vertical reproduction of the plot fell out of grace when it started having adverse financial and environmental effects on its surroundings due to shadows. This led to regulation in the form of the *1916 zoning law*, which allowed the plot to be extruded only up to a certain height, after which the building volume must step back from the plot line at a certain angle to let light into the street. A tower was then allowed to cover 25 percent of

the plot area up to unlimited height (Koolhaas, 1994). The theoretical building envelopes that could result from this law were demonstrated in the work of Hugh Ferriss (fig. 26).

With the 1931 completion of the *Empire State Building*, the ultimate physical manifestation of Ferriss' envelope, the concept of a 100-story building also became reality. The mixed use program of the original, however, was never materialized. The Empire State Building was uniquely dedicated to offices.

Regarding the skyscraper as a residential form, Koolhaas gives special attention to two buildings, The *Waldorf-Astoria Hotel* and the *Downtown Athletic Club*. The skyscraper had quickly become the norm for office buildings, but it had yet to conquer the social domain. Manhattan's well-off metropolitanites had moved up the ladder of different types of independent units, from detached houses to brownstones, flats to apartments, but their definite unit of inhabitation was the *residential hotel*, "a place where the inhabitant is his own house guest, an instrument that liberates its occupants for total involvement in the rituals of metropolitan life" (Koolhaas, 1994, p.144).

The Waldorf-Astoria is such a residential hotel. It combines a short-stay hotel with long-stay apartments and a wealth of entertainment options and services in a 40-story building that followed Ferriss' envelope. The lower floors, which follow the size of the original block, house most of the entertainment and public facilities, such as the ball room, shops and galleries. The hotel guests are accommodated in the 4 parallel slabs that rise to the middle of the total building height. The suites for permanent residents are located in the two towers. A total of 31 elevators, including one that is large enough for cars, organize the vertical circulation. A residential hotel like the Waldorf was in fact a commune in which the public functions of the individual household were separated from the private and placed elsewhere in the building. This, Koolhaas(1994, p.144) states, enabled residents to pool their investments to finance a collective infrastructure for the "method of modern living" and allowed them to not only experience the luxury of a modern hotel, but also supplement and

expand their own living quarters for more sophisticated activities such as banquets and balls. All this combined made the Waldorf Astoria like a city within a city.

Another tower that especially embodied the extent of Manhattan's metropolitan lifestyle and the appropriation of the skyscraper by social activity was the Downtown Athletic Club, built in 1931. This tower, which Koolhaas (1994, p.152) describes as "a machine to generate and intensify desirable forms of human intercourse", was a vertical extrusion of 38 floors, each dedicated to a different activity related to athletics and personal care. The lower floors are for activities like squash, handball and billiards, but as one moves up, the facilities become more unconventional, with floors dedicated to preventive medicine, eating oysters while wearing boxing gloves, and an interior golf course. The middle floors of the tower, containing a restaurant, lounge, dance floor and roof garden, separate the athletic facilities from the bedrooms on the 15 upper floors.

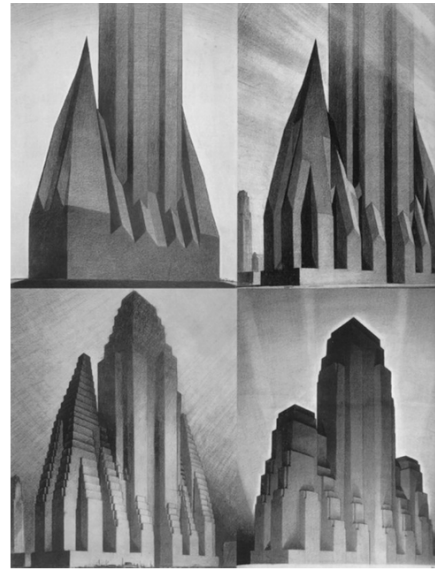
Dedicated to the personal care and development of a clientele of wealthy and male metropolitan bachelors, the Downtown Athletic Club is what Koolhaas calls a social condenser. Similar to the way Fritz Lang portrays the skyscrapers of *Metropolis*, albeit less grim, Koolhaas (1994, p.158) recounts:

"Bastions of the antinatural, Skyscrapers such as the Club announce the imminent segregation of mankind into two tribes: one of *Metropolitanites* – literally self-made – who used the full potential of the *apparatus of modernity* to reach unique levels of perfection, the second simply the remainder of the traditional human race."

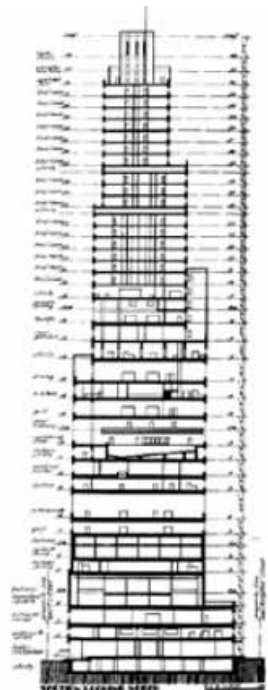
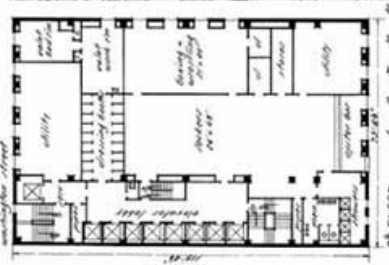
With that being said, the depictions of metropolitan living in Manhattan by Koolhaas are somewhat poetic and romanticized. While the extreme examples of the Waldorf-Astoria and The Downtown Athletic Club give a sense of what the ideal metropolitan life according to Koolhaas could be like, it is more likely that these were outliers than the norm at the time.



28 Axonometric section of the Waldorf-Astoria (Koolhaas, 1994)



29 Ferris' building envelope in steps from zoning regulations (top left) to realistic building form (bottom right) (Ferriss, 1922)



30 Plan, section and impression of the Downtown Athletic Club (Koolhaas, 1994)

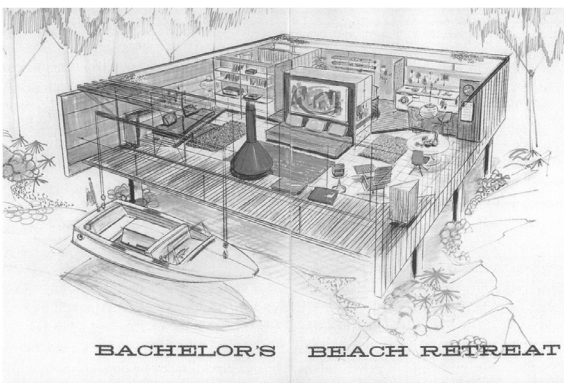
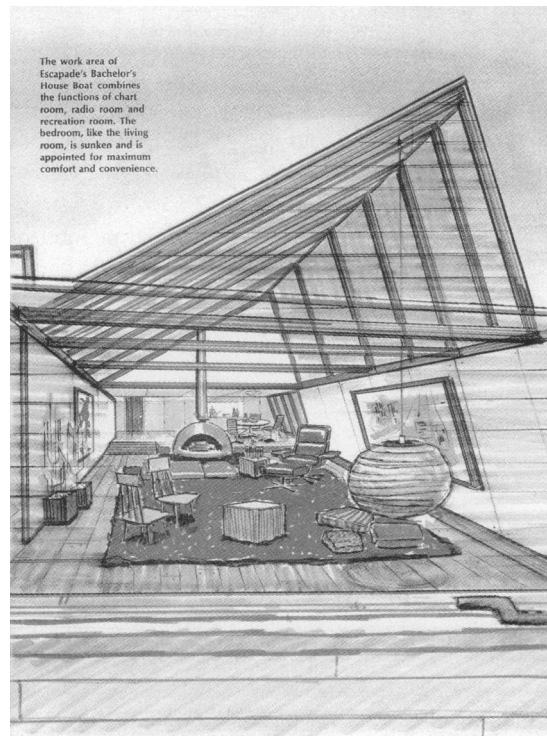
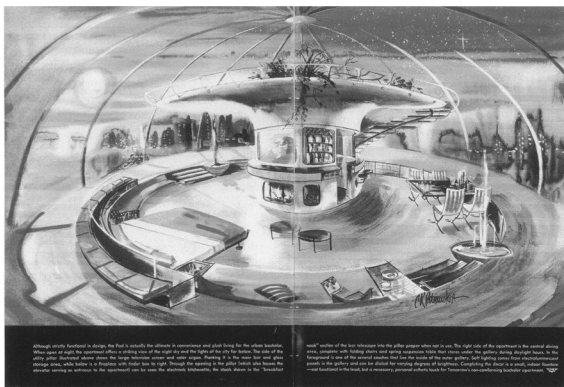


# DOWNTOWN VS SUBURBIA – THE BACHELOR(ETTE) PAD

Whereas Koolhaas’s portrayal of Manhattan in the first three decades of the 20th century shows the metropolis at its apex, the decades after World War II tell a story of decline. While European cities were still recovering from the destruction of the war, American cities faced a different kind of urban corrosion. Disinvestment in urban cores, commercial promotion of suburban homeownership, ‘white flight’ and decentralization caused cities to lose much of their middle class constituency, which in turn led to urban decay and the decline of the central metropolis (Fraterrigo, 2008). As urbanist

Albert Pope states, the history of the metropolis ended when the “urban periphery exploded horizontally, washing forward with a powerful wave of urban sprawl and backward with an even more powerful wave of urban blight” (Hall, 2017).

While the focus of society shifted to suburbia and the white, middle-class nuclear family, there was a countermovement of young, male bachelors who resented the suburban family values and the ‘feminization’ of the domestic sphere (Fraterrigo, 2008). In response to the family-oriented suburban way of life, they promoted a more



31 Various bachelor pad proposals from the 1960s (Osgerby, 2005)



32 Floor plan of Playboy's Penthouse (Branham, 1956)



33 Bachelorette pad portrayed in *Breakfast at Tiffany's* (Edwards, 1961)

masculine, urban lifestyle that centered around living and entertaining oneself in the city. The city became the playground of the bachelor.

Their answer to the suburban home was the *bachelor pad*, a domestic space dedicated to the metropolitan lifestyle of the affluent and single urban male and geared to the expression of the masculine image (Fraterrigo, 2008). The advertising and publishing industry played a major role in this new portrayal of the urban male bachelor and his habitat. Various magazines at one point produced their own version of the bachelor pad (Osgerby, 2005). The most notable was *Playboy's Penthouse*. Situated in a high-rise building, the Playboy Penthouse allowed the metropolitan bachelor to be "an active part of the city's excitement and sophistication, and yet to know a measure of isolation from its frantic tempo and noises" (Fraterrigo, 2008, p.756). The penthouse was characterized by an open floor of six interconnected spaces and divided into an active zone and a quiet zone. The active zone consisted of a living and dining room with an open kitchen that could be partitioned off. The quiet zone contained a master bedroom with oversized bed and a study. Floor to ceiling windows provided views of the "winking towers of the city". The penthouse was furnished with modern design furniture, built-in cabinets and the newest technology "geared to

to suit the desires and leisurely pursuits of the bachelor" (Fraterrigo, 2008, p.758).

While much of the developments of metropolitan living in this period were based on the male image and masculine culture of consumption, a female driven depiction is shown in the 1961 movie *Breakfast at Tiffany's*. The bachelorette pad inhabited by the main character consists of a living room with a small open kitchen, rarely used for cooking, and a separate bedroom. The domestic space of the woman here is not based on the post war ideal of the nuclear family, but on the young metropolitan bachelorette lifestyle of going out in the city, hosting parties and having men over.

Meanwhile, European cities were still rebuilding from the physical and economic destruction caused by the Great Depression and subsequently World War II. Amsterdam tried to develop a metropolitan culture in late 19th and early 20th century, but this was cut short by the 1929 economic crisis. According to Zef Hemel (2016), Amsterdam's metropolitan culture and ambitions were more or less destroyed by the National government's decision to centralize tax revenues and redistribute them equally among municipalities, leaving Amsterdam without much of its income and reserves. The post-war focus on dispersal and distribution of the population to the urban periphery and new towns only led to further decline.



**METROPOLITAN LIVING NOW**  
TARGET GROUP PREFERENCES  
& DESIGN CONSIDERATIONS

# METROPOLITAN HOUSING FOR TODAY'S EXPAT

The present-day knowledge migrant on average has a relatively high income and, from experience living in more expensive cities, is willing to spend more than an economically comparable Dutch person on accommodation (Holle, 2018). While the top ten percent of foreign knowledge workers, given the designation 'highly skilled migrant', earn more than four times the average Dutch income (Raspe et al., 2014, p.61), the first 90% makes just 1.5 times the mean. This signifies that today's expats are not all the wealthy Metropolitanites like those that could afford to live in the splendor exhibited by examples like the playboy penthouse and the Waldorf Astoria hotel.

## NEIGHBORHOOD

The majority of expats consists of single households or two-person households (Raspe et al., 2014). These households, usually young, prefer a lively and central neighborhood, well connected by public transport. Parking is less important to them (Holle, 2018).

For expat families that move to Amsterdam, the proximity of their dwelling to international schools is of key importance. This is evident when considering that of the first group of employees of the European Medicines Agency that moved to the Netherlands, the majority settled outside of Amsterdam proper, due to the low availability of international schools in the city. (Meershoek, 2018)

## DWELLING

According to statistics by PBL (Raspe et al., 2014), the duration of stay for expats in the Netherlands has been decreasing steadily the past 20 years. 50% of both Western and Non-Western foreign knowledge workers leave the Netherlands within 5 years of their first arrival. This number

is even higher for the top ten percent earners (Raspe, et al., 2014, p. 65) As a result, foreign knowledge workers are more likely to rent than to buy an apartment/condominium. Once they know they will stay longer or if they have a significant amount of savings, they are more likely to buy (Holle, 2018). Because the majority of knowledge migrants consists of one and two-person households, their typical dwelling is a one-bedroom apartment.

## LUXURY

The historic analysis of metropolitan apartment living shows that it is characterized by a certain degree of luxury and sophistication. The luxury apartment market in Amsterdam is not as developed as that of cities like Berlin or New York. Luxury in Amsterdam is defined by the location and size of the dwelling, but not so much by the quality of it's finishes, services and amenities. This results in what Vincent Kompier (2009) calls 'mediocrity at a high price'.

To develop a more refined kind of contemporary luxury apartment building, there are a few points, described throughout *DASH: The Luxury City Apartment* (Klijn et al., 2009) to focus on:

### *Exterior appearance*

The exterior of the building emanates luxury through its formal expression and its materials. Stone, polished metal and glass are often used.

### *Entrance, plinth and lobby*

The luxury entrance and lobby are spacious, often tall, well materialized and detailed, furnished with design furniture and art. The lobby is an area to enter as well as to hang around. It gives off an aura of status to those who enter or pass by. Depending on the level of luxury, the lobby has



a doorman, for part of the day or for 24 hours.

#### *Dwelling*

The layout of the dwelling plan should be spacious and flexible, with tall ceiling heights. An example of this is the loft apartment. The materials are of high quality. The finishing and outfitting of the kitchen and bathroom are also important. For Americans, a bathroom for each bedroom is a must. Bespoke design and variation in dwelling types are other characteristics.

#### *Amenities and services*

Common luxury amenities include communal gardens, roof terraces, grill areas, a health club with gym, pool, sauna and other sports and care facilities like yoga. For entertainment there are screening rooms, activities rooms. Also caretakers, laundry service and separate guest rooms are often featured.

Home and building automatics play an increasingly important role

For extra comfort serviced apartments offer temporary housing with luxury amenities in a fully furnished residence. There is also the option of

the apartment in a residential hotel, which can make use of its services and amenities.

#### UNCOUPLING OF PRIVATE AND PUBLIC

The introduction of the high-rise brought with it the uncoupling of the private and public sphere. Metropolitanites can choose to physically isolate themselves from the Metropolis and watch it from up in the sky in the luxury of their private sphere, or they can become an active part of the excitement and sophistication of the city in the public sphere, which happens on the ground floor and the lower levels of the building.

To include the knowledge migrants with a more modest budget that do aspire a metropolitan lifestyle, the design for metropolitan housing should include dwellings that cater to the regular segment as well as the luxury segment. The clear separation of the private and the public means that the metropolitan living standard is still achievable for the more modest incomes. The sophisticated public sphere can complement a more compact and plain apartment.

# HOUSING THE METROPOLITAN MILLENNIAL

## LEARNING FROM BROOKLYN

While Manhattan used to be the heart of the metropolis where the young Metropolitanites converged, it is now Brooklyn that is at the forefront. Gentrification and urban renewal have made the borough across the river a hotbed for the current generation of young urban dwellers, millennials.

Former industrial waterfront neighborhoods like Williamsburg have been redeveloped and have become a home for many of America's leading technology, advertising, media and information companies (Stuart, 2017). This in turn has drawn even more affluent millennials to the borough, as

well as knowledge migrants working in the tech sector.

The extreme popularity of Brooklyn has caused housing prices to skyrocket. This, combined with millennial's increased preference to rent for the sake of greater mobility and convenience (Pinnegar, 2018), has produced a market for new high-end rental developments.

One such development is the Domino Sugar Refinery, which has become an emblem of the Brooklyn's new economy. "What was once the largest sugar refinery in the world, the Williamsburg



34 Domino Sugar Factory redevelopment (Schulz, 2016)



35 325 Kent by SHoP Architects (Jarvie, 2018)

**Dwellings:** 500 studios, 1-bedroom & 2-bedroom units

**Amenities:** 24-hour concierge, a garage that is two floors underground and three above, room for 266 bikes, a 700m<sup>2</sup> roof deck with grills and cabana, 200m<sup>2</sup> courtyard on the second floor, valet service with cold storage, residents' lounge with fireplace, chef's kitchen and billiard tables, storage.



36 Denizen Bushwick by ODA (New York Times, 2018)

**Dwellings:** 492 studios, 1-bedroom & 2-bedroom units

**Amenities:** Collective courtyard, coffee shop, tenant lounge, co-working space, conference rooms, library, fitness center, rooftop pet run, beer/wine brewery, pet space, kids' room with rock climbing, bike parking, demonstration kitchen, 6000m<sup>2</sup> roof deck with landscaped walking areas, seating areas, faux lawn area to walk pets, mini-golf sets, hydroponic urban farm, swimming pool.

complex is now home to a redevelopment project that will offer 600,000 square feet of office space, 2,000+ apartment units and 6 acres of new parkland” (Stuart, 2017).

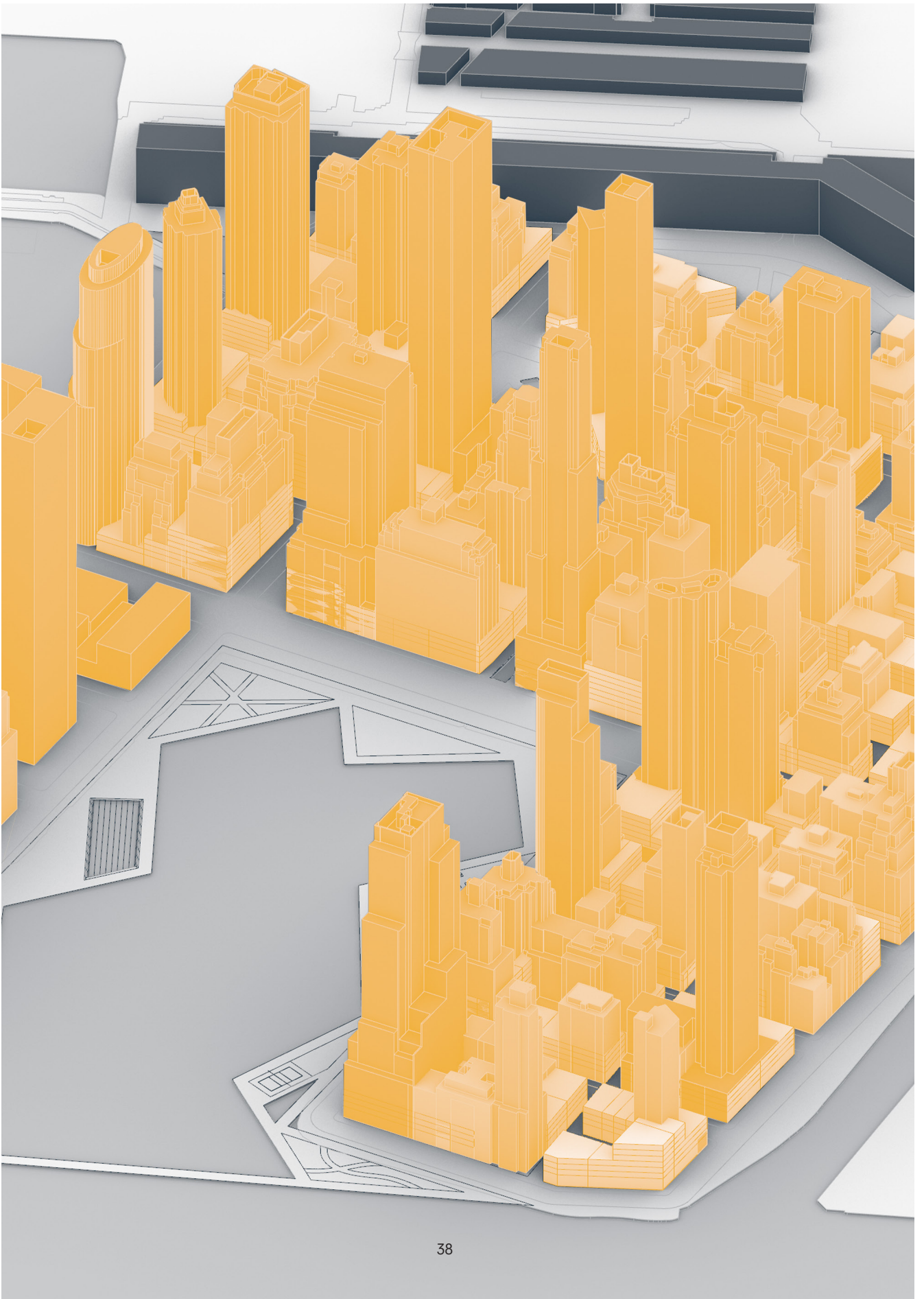
Characteristic of the new residential developments is their sheer size and density, as well as their focus on providing luxury through the convenience of amenities and services.

Fully furnished and serviced small dwellings like studios and one-bedroom apartments are the norm. In addition to these there is a wealth of facilities. These are no longer limited to a fitness room and pool, but now include a health club, yoga studio, dog park, vegetable garden, daycare, guesthouse, etc.

The millennial generation’s propensity for sharing and desire for social contacts adds to this new wave of shared amenities like (rooftop) lounges, co-working spaces, shared appliances and building event managers. The rapid development of tech has added a new dimension to this. Some buildings now offer an integrated experience with a smartphone app giving access to all building services (Sisson, 2019).

Considering this, the new form of metropolitan living for millennials is a consolidation of Brooklynism and Manhattanism. The manifestation of this is the experiential quality of living in a high-density high rise setting similar to Manhattan, with the focus on amenities and convenience of Brooklyn.







# MASTER PLAN

The Manhattan aan het IJ master plan, as the name suggests, is a high-rise high density urban plan based on that of Manhattan in New York City. The most important characteristics of the plan are the grid, the high-rise and the zoning rules.

The grid is derived from a literal superimposition of Manhattan's grid on the Minervahaven site. Using the same system of 30 meter wide avenues, 18 meter wide streets and 60 meter deep blocks, the block length, street positions and rotation of the plan are adjusted to the geographic conditions of Minervahaven.

The high-rise buildings are an element that is commonplace in Manhattan, but fairly rare in Amsterdam, especially as a residential form. The

housing market and the municipality's ambition to create a new type of high density live-work environment in Haven-Stad make it a viable and desirable type of building to introduce to Minervahaven.

The zoning rules, adapted from those of Manhattan, make the master plan prescriptive in height, density and function, but leave the formal characteristics of each building up to the architect.

I chose this plan because it is uniquely suited for my graduation topic. Manhattan itself is the epitome of metropolitan living and the high density high-rise component of the plan, combined with the ample zoning for urban amenities, make it fitting to introduce this form of living and dwelling to Minervahaven.



Total Area 29,3 Ha



Recreation 8,2 Ha



Dwellings 10450



FSI 4,76

GSI 0,46

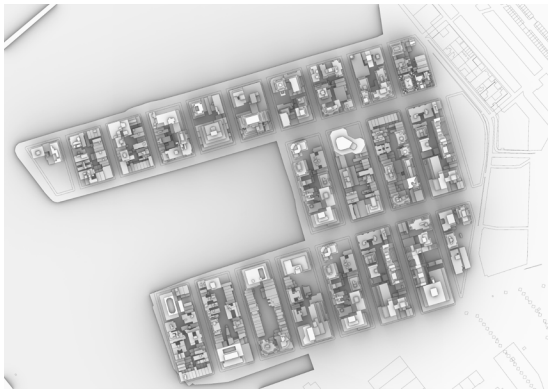


38 Animated master plan (own image)

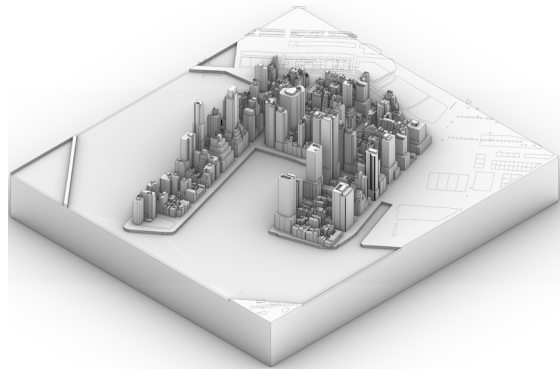
Scale 1:4000



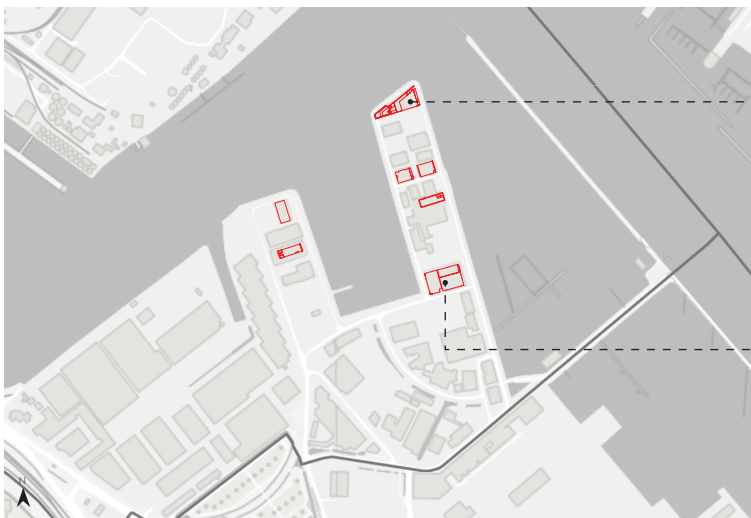
# GRID ADAPTATION



39 Plan showing literal superimposition of Manhattan on site (own image)



40 Isometric showing literal superimposition of Manhattan on site (own image)



41 Existing buildings fit for preservation (own image)



DANZIGERKADE 181  
Current function | Office  
State of building | Excellent



KADE 11  
Current function | Office  
State of building | Excellent

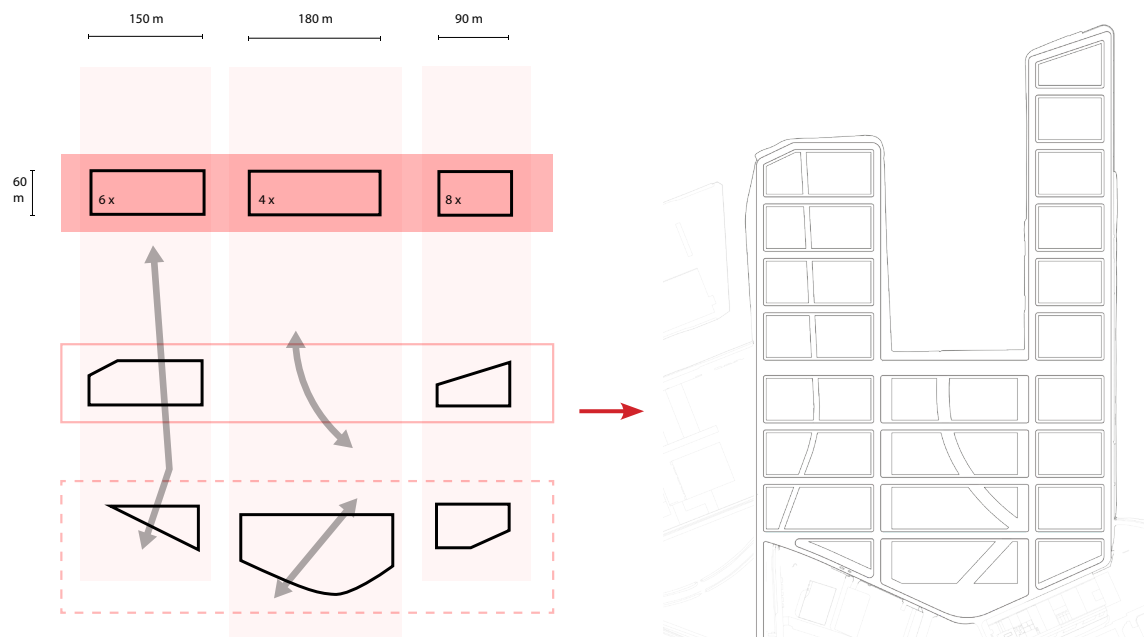


42 Grid adjusted to existing buildings and site geography (own image)

- o According to the most logical grid for the site, the decision has been made whether to keep the existing buildings or demolish them
- o The Manhattan grid is the leading point of this urban plan, which has (almost) no exceptions of buildings within the grid
- o In order to reach a high dense urban environment like in Manhattan, many buildings in the current situation don't meet the demands of minimum heights
- o Some of the existing buildings have the potential to be transformed into taller buildings or have the opportunity to build around them without disrupting the grid

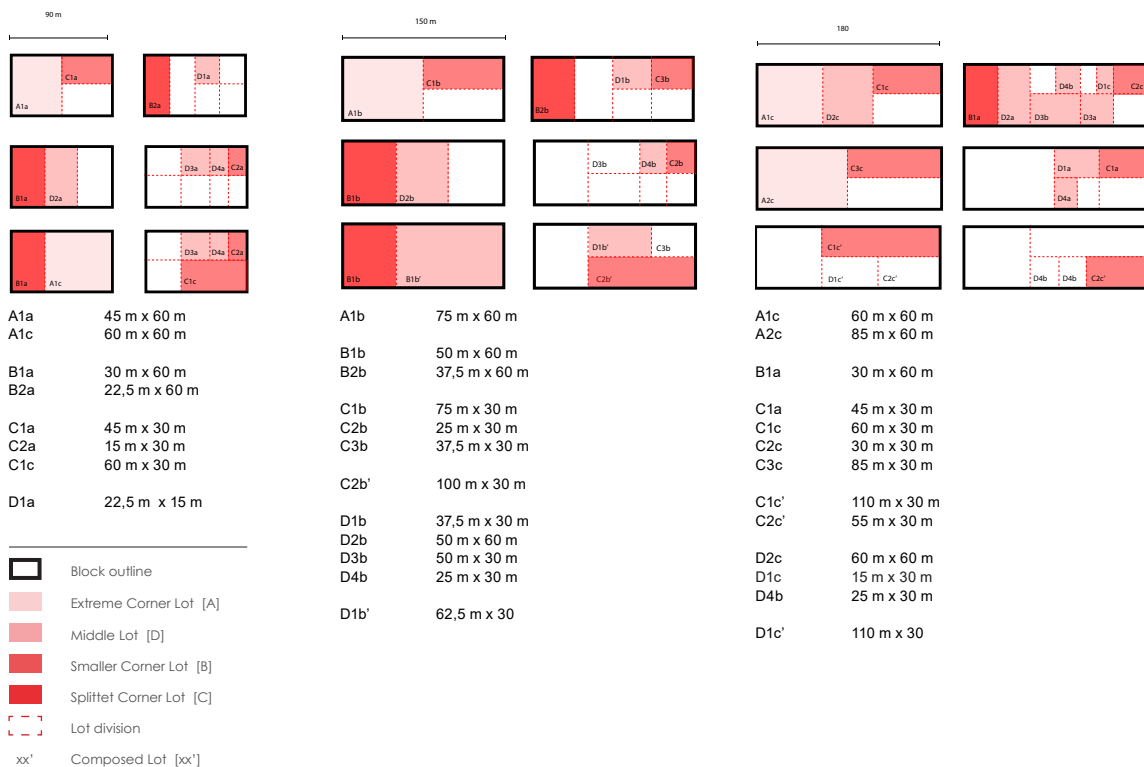


# BLOCK CONDITIONS

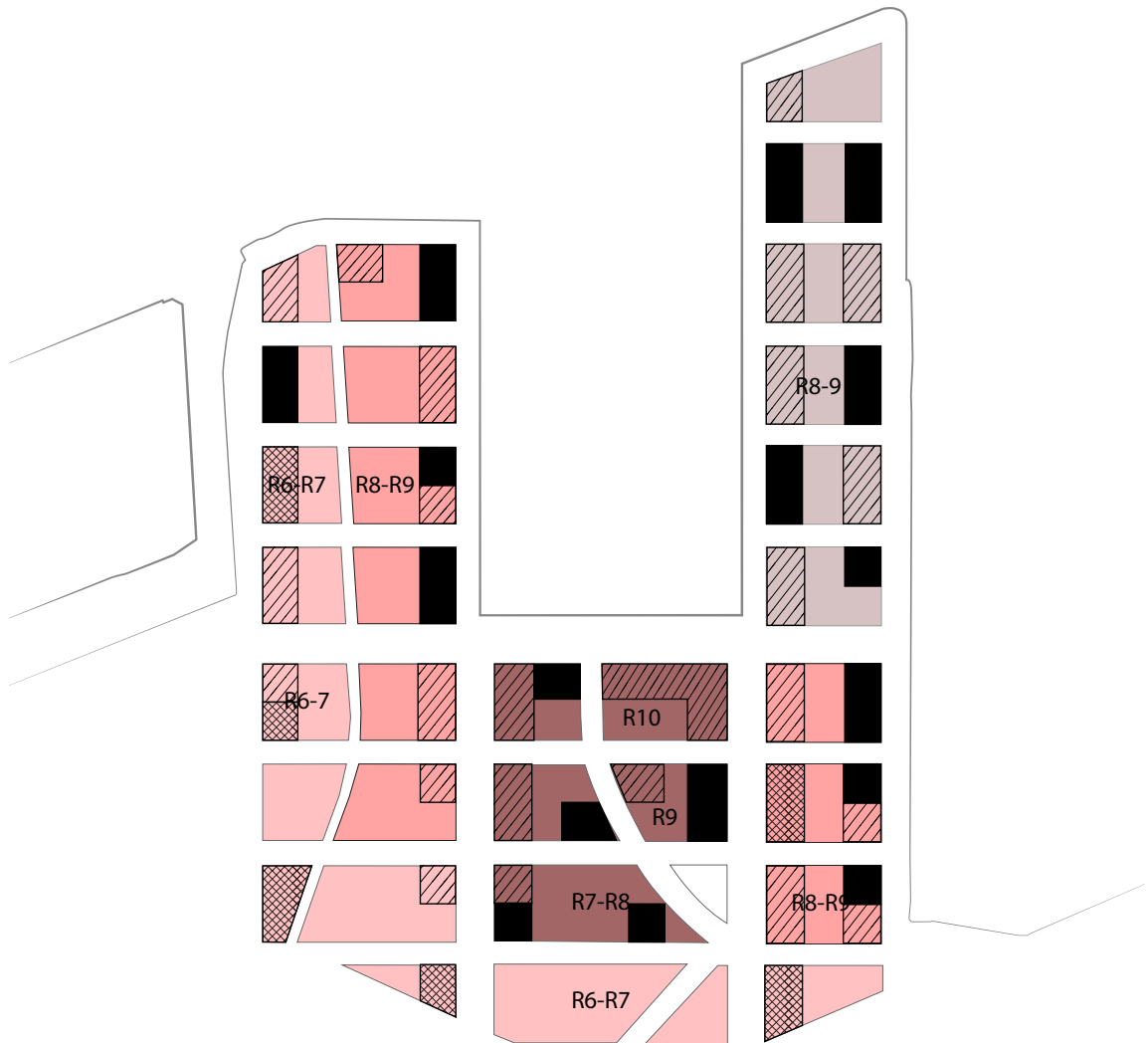


## 43 Block types (own image)

- o Main grid system which can be applied on the overall plan of Minervahaven
- o Adaptation of the grid with the characteristics of Minervahaven such as the streets and the historical Danzigerbocht










## 44 Possible lot division per block (own image)



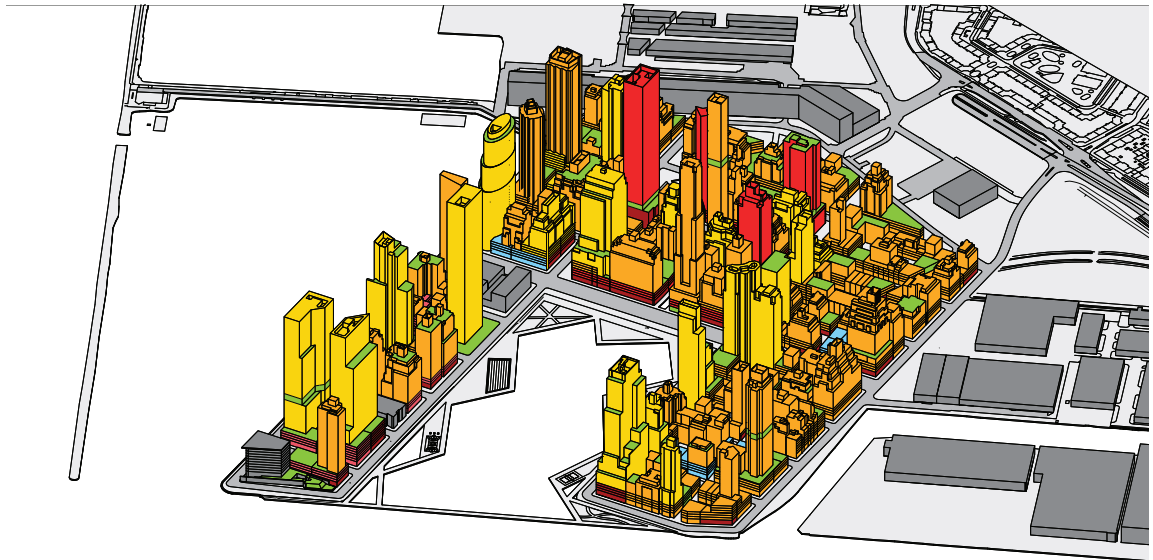
## LEGEND



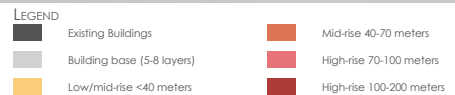
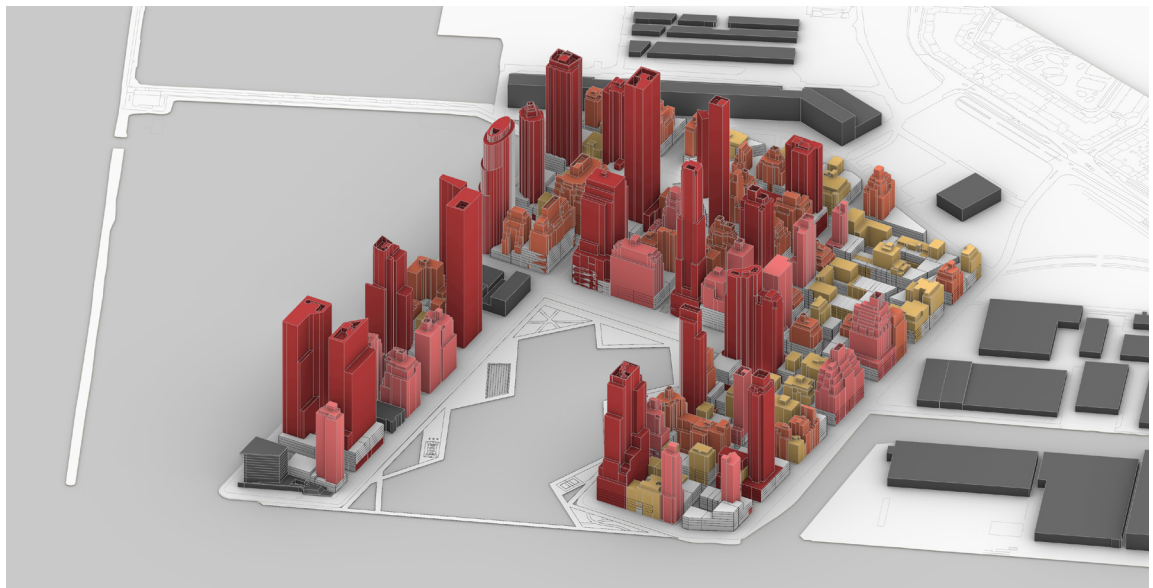
	Accents on the block ends up to 150+ m		Mixed use commercial and R8/R9 8-9 stories with Setback
	Accents on the block ends up to 100m		Commercial District: first 2 stories for commercial use > offices. R7-R10
	Accents on the block ends up to 70m		Creative zone; Mixed use with offices. R8
	Residential area R6/R7 approx 5-7 stories with Setback		

45 Zoning plan (own image)

# BUILDING USE & HEIGHTS

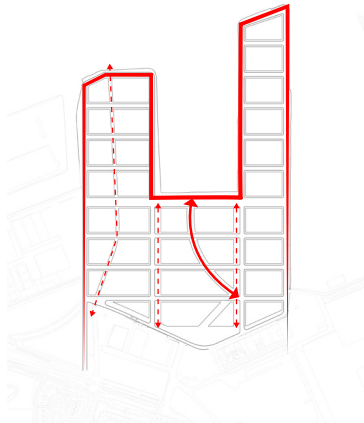


46 Isometric view of functional zoning (own image)



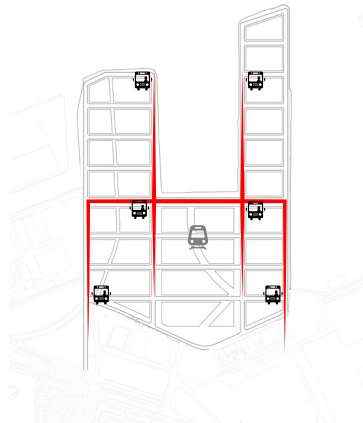
47 Isometric view of proposed building heights (own image)

# DIAGRAMS



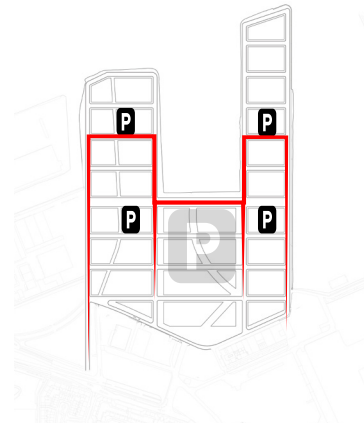
48 Pedestrian circulation (own image)

- o Borders designed as boulevards
- o Narrow street profiles within the gridlines
- o Danzigerbocht highlighted as the Broadway of Manhattan aan het IJ



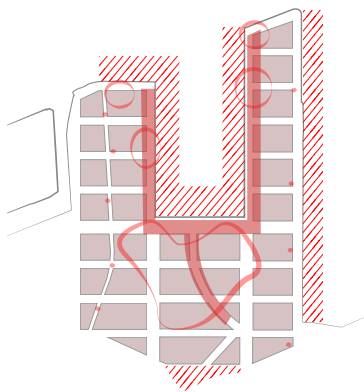
49 Public Transport (own image)

- o Good connection within the grid by several bus stops
- o Avenues as the circulation nerves
- o Possible future subway station in center of area



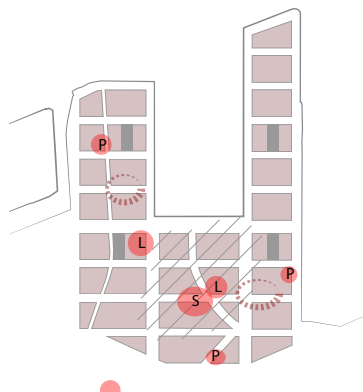
50 Car circulation (own image)

- o Integrated parking garages within the grid
- o Commercial district combined with an underground parking area
- o Circulation border towards the parking areas to preserve the harbor borders as the leisure area



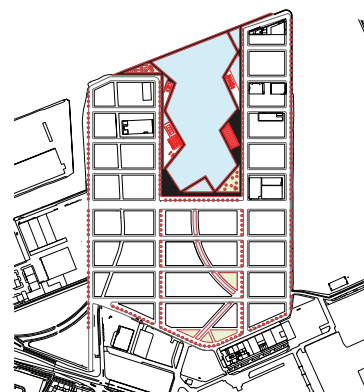
- o Cultural hub
- o Cultural zoning
- o Catering industry
- o Catering industry
- o Leisure

51 Culture & entertainment zoning (own image)

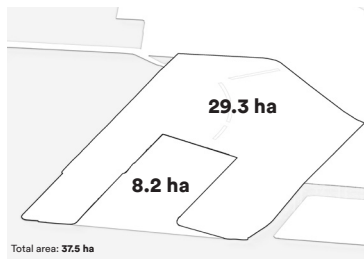


- o Library
- o Primary School
- o Secondary School
- o Parking garage
- o Underground
- o Health facility

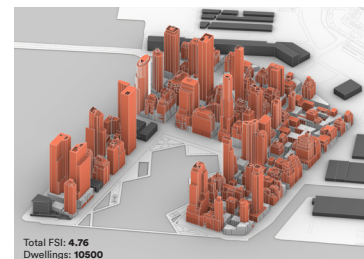
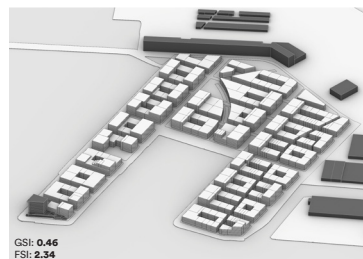
52 Primary services (own image)



53 Proposed landscaping (own image)



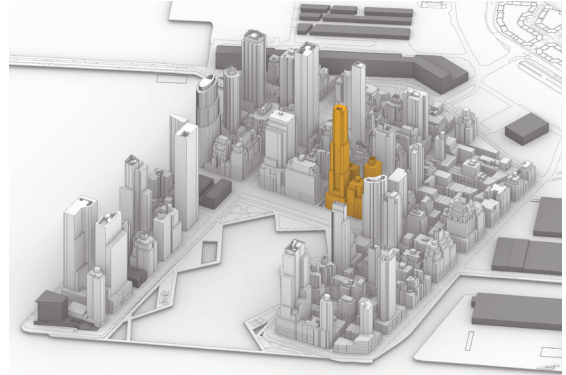
54 Density diagrams (own image)





# DESIGN LOCATION

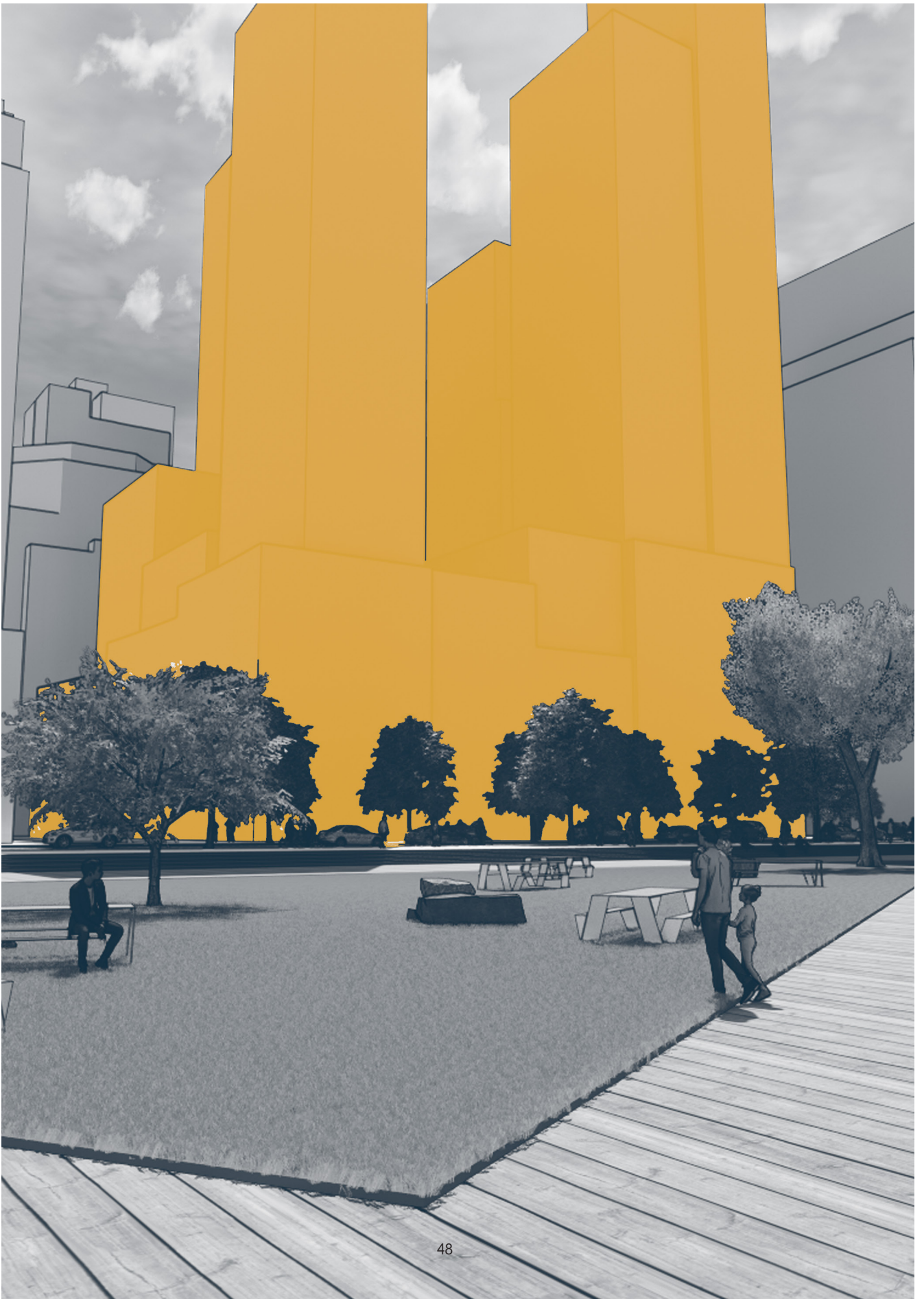
The chosen design location in the Manhattan aan 't IJ master plan is a 60 by 65 meter block with a maximum density zoning designation. The block is located at the crossing of the waterfront boulevard and the busiest avenue, which is the site of a potential future subway station. It is situated in the commercial zoning district, nearest to all the commercial, cultural and recreational amenities. This location was chosen because the high density and proximity to all urban amenities make it most suitable for metropolitan living.



55 Master plan axo with design location highlighted in in yellow (own image)



56 Master plan with design location highlighted in in yellow (own image)



# **MASSING STUDIES**

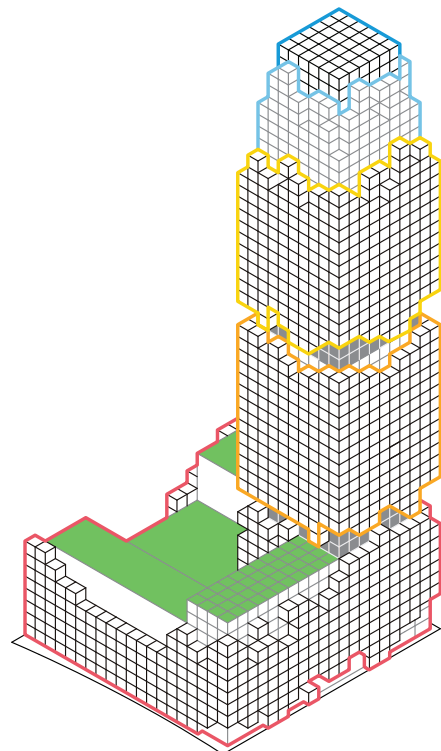
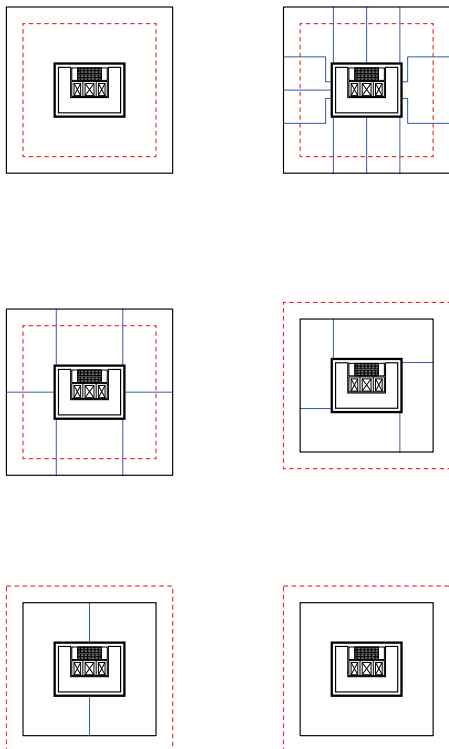
# CRASH COURSE

The crash course was a first attempt at a design for the graduation project. By incorporating floor plans and other principles from case studies a 'quick and dirty' scheme was made. The results of this exercise could serve as a preliminary design or provide takeaways for the development of a different scheme.

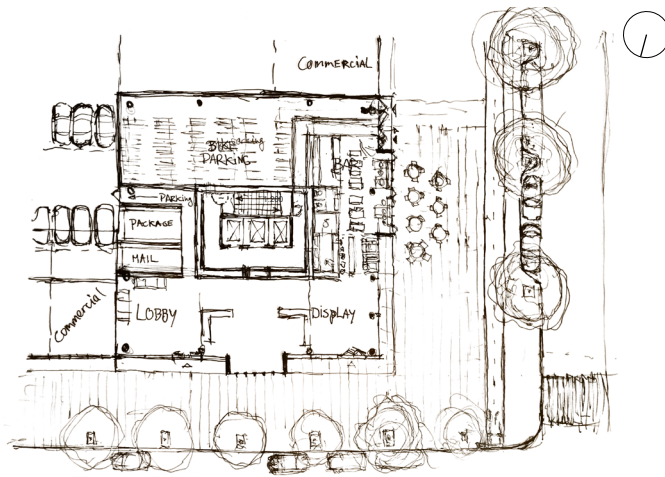
In my case, the floor plans of my case studies were not compatible with the building form I wanted to design. So I started the other way around, by first designing the desired exterior envelope of the building. From this envelope I developed

floor plans, sections, facades and impressions.

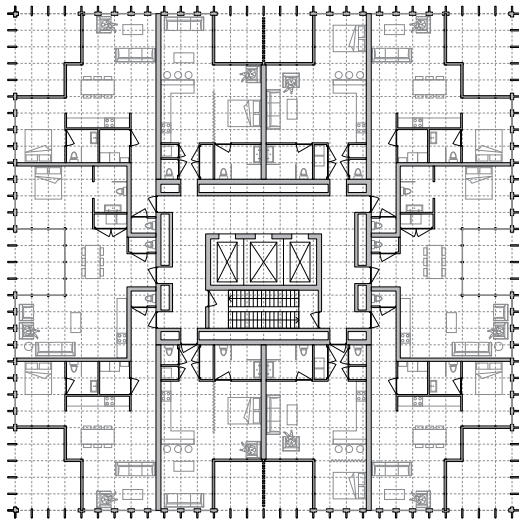
Although I decided not to continue with the design I produced, it did provide me with some lessons I could apply to my later scheme. The singular square tower was rather bulky and not very well balanced with its podium and the site dimensions. Its form and composition also did not embody the metropolitan environment my project required and because of the large dimensions of the tower, its floor plans were also rather large and inefficient. The crash course made me recognize my design required further massing studies.



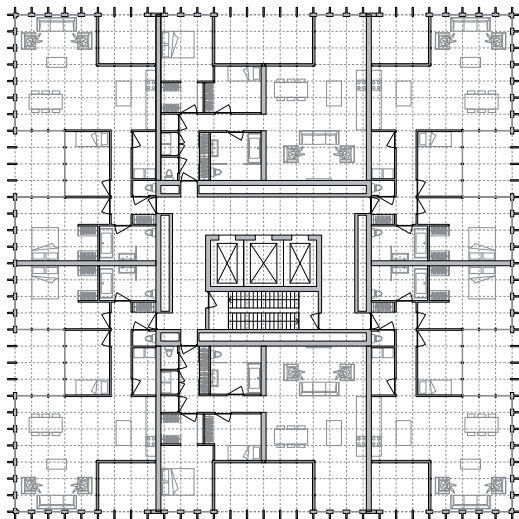




58 Ground floor plan (own image)

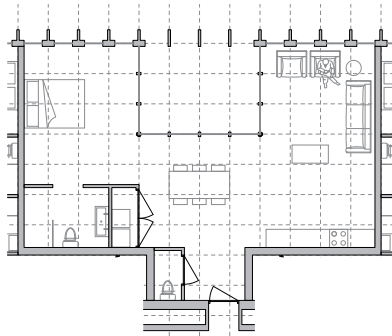


59 Typical floor plan 1 (own image)

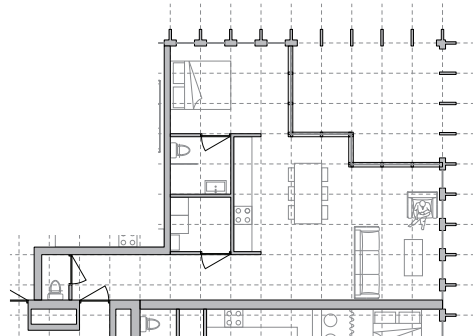


60 Typical floor plan 2 (own image)

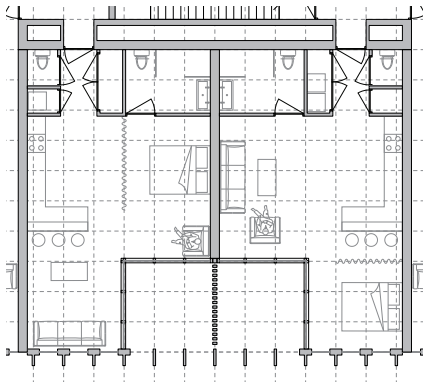
# CRASH COURSE



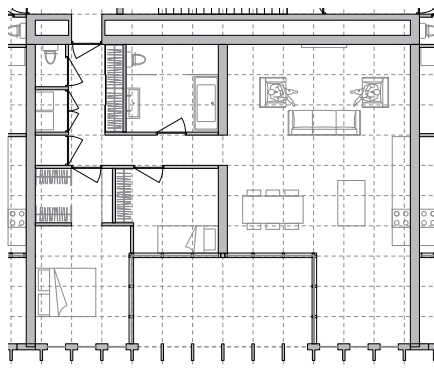
FLOOR 1 DWELLING TYPE A



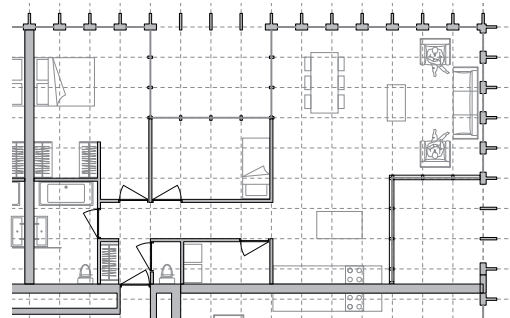
FLOOR 1 DWELLING TYPE B



FLOOR 1 DWELLING TYPE C

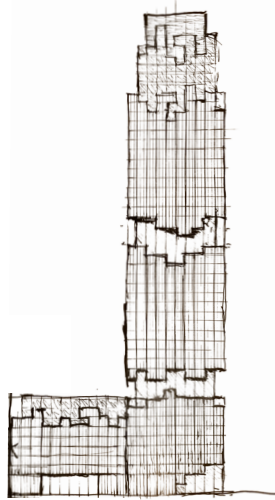


FLOOR 2 DWELLING TYPE E

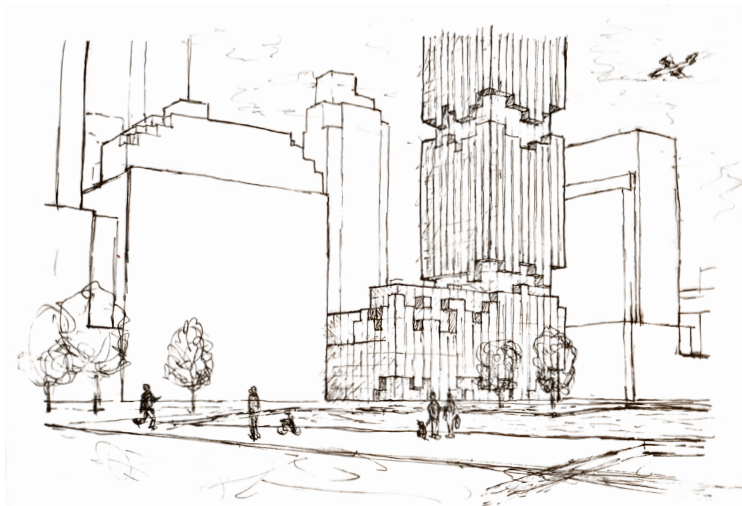


FLOOR 2 DWELLING TYPE D

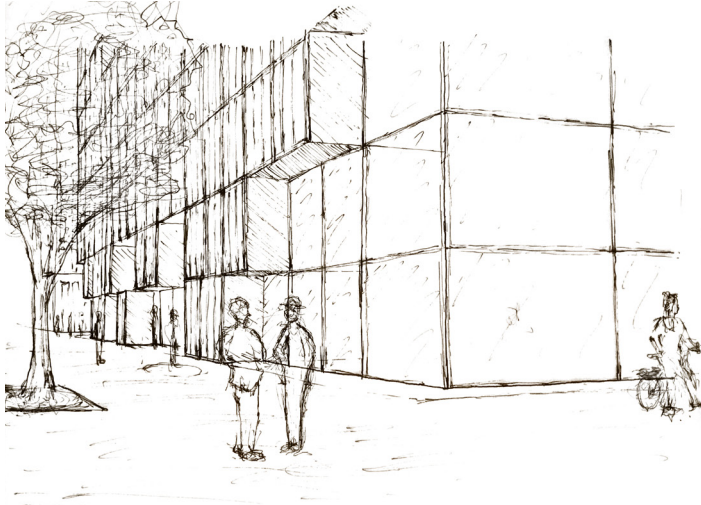
61 Dwelling types (own image)



62 Facade impression (own image)



63 Urban impression (own image)



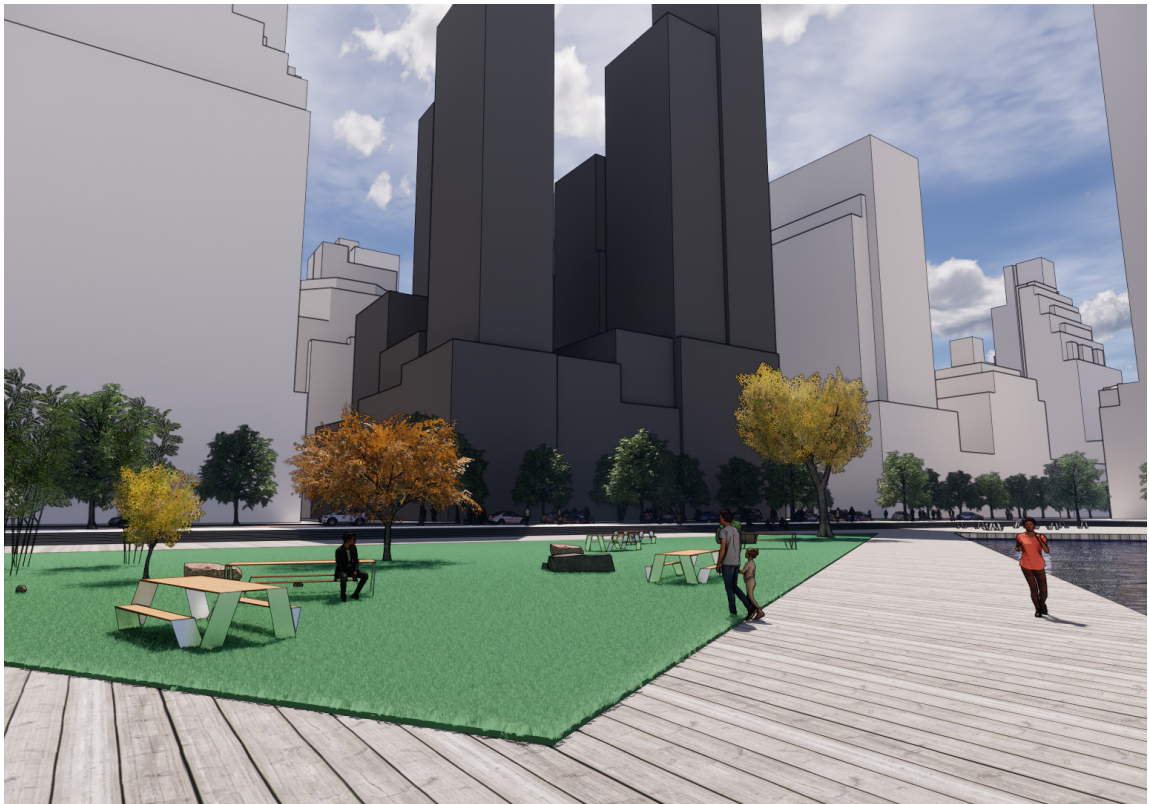
64 Entrance impression (own image)

# HIGH-RISE MASSING STUDIES IN VIRTUAL REALITY

This paper is a reflection on the research tutorial for the Dutch housing graduation studio. The main aim of this course was to introduce the use of virtual reality in the design process and for presentation purposes. Having used the 3d modeling program Rhino in combination with Enscape to create a virtual environment, the first part of this paper reflects on this process and its outcome.

In the second part, I will reflect on the possible use of VR in the rest of my graduation studio. I will also discuss the lessons I learned from this course that can be applied in my future design process.

Lastly, I will reflect on the structure and use of the course itself and give some recommendations on how it might be improved.



65 Eye-level impression of final building mass (own image)



## Process Reflection

Initially, I wanted to use VR as a tool to design and evaluate the plinth and entrance of my building. Having never used virtual reality, I figured it would be most useful as a design tool from an eye-level perspective.

However, as I was in a phase of my design process where I did not yet have a defined building mass, but just a master plan suggestion (01), it was not very effective to go straight into designing this specific part.

For my graduation theme, I aspire to design a dense and dynamic high rise building. The crash course for the graduation studio was a first step towards developing the building mass. The resulting mass was a bit too clunky and unbalanced, with a tall bulky tower and a short and low base (02). Subsequent massing options with two towers also did not give the desired result, especially when viewing them in the virtual environment (03).

Thus, I decided to use virtual reality to design my building mass. VR was used in two ways: as a design tool and as a presentation tool. Some steps in the design process were not directly influenced by virtual reality, whereas others were.

In the first few steps (04-08), I established the boundary conditions for the massing, based on the site, master plan and personal considerations. Using the site dimensions, I set up a base grid with a grain size that allowed for small tweaks to the building mass (04). Rectangles with a depth of 12m and a minimal width of 19,2m were drawn from this base grid to have usable floor space (05). These rectangles were extruded up to a base height of 7 layers in accordance with the master plan (06). From this base I extruded vertical accents to increase the density and form towers of various heights, leaving open space in between.

VR was not actively used as a design tool in these first few steps, but did prove valuable

as a presentation tool to diagrammatically clarify my early design decisions from a birds-eye perspective.

After setting up the boundary conditions for the building mass, I started using VR more actively and from an eye-level perspective (09-15).

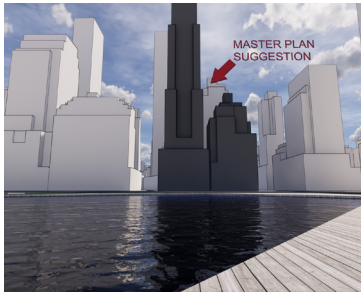
At a distance and perspective that showed the whole building mass from its most representative side, I adjusted the massing vertically according to the 12m rectangles to make it more varied and dynamic (10). I then used the base grid to make small adjustments to the setback of the different volumes (11). At each step, I used the virtual environment to see how these adjustments would be perceived at eye-level.

While there now was a building mass, it was not yet legible as a building. More detailed adjustments were needed to achieve this.

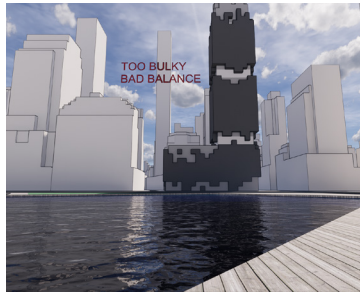
Using VR, I first added the animated environment with people, vegetation, furniture, street detail and vehicles (12). From a closer perspective, I then added more detail to the building mass. First, the building layers were made legible by adding horizontal accents and a double height plinth in a different color (13). More detail was then added by making some parts of the facade transparent or double height, placing vegetation and people on the building and highlighting the building entrance (14&15).

For presentation purposes I added location markers to the model. The person wearing the VR-headset can teleport to these locations to see the building from different angles, the same angles I used to make some of my design decisions.

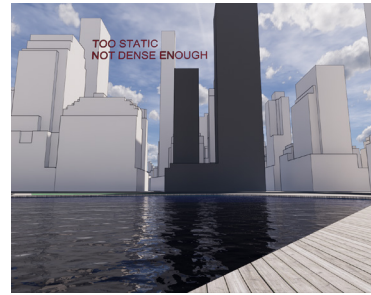
In retrospect, VR was most potent in these last few steps: in the virtual environment I could best see which adjustments would be effective.



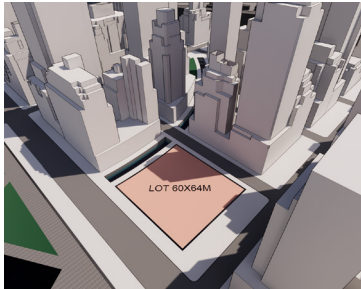
01 Master plan suggestion



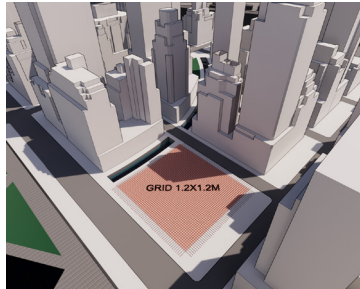
02 Initial design for quickstart



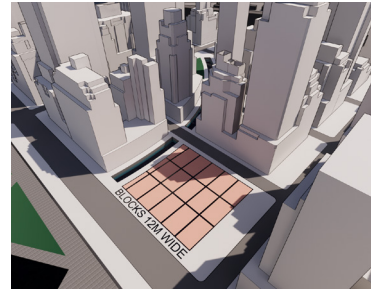
03 First two tower design



04 VR Step 1: Lot size and outline



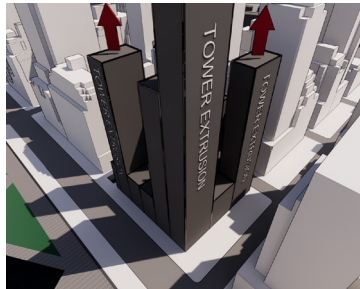
05 VR Step 2: Base grid



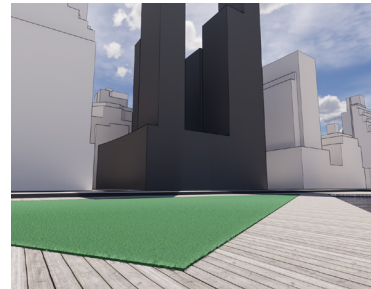
06 VR Step 3: Usable rectangles



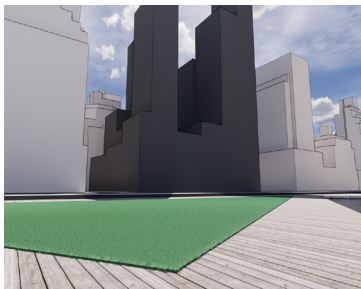
07 VR Step 4: Building base extrusion



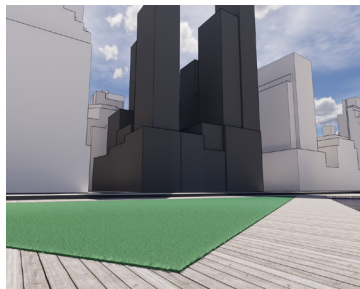
08 VR Step 5: Tower extrusions



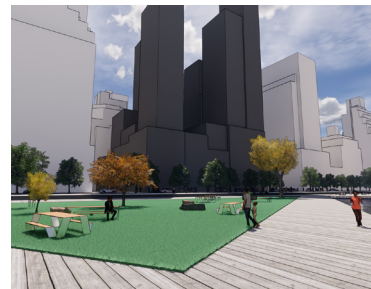
09 VR Step 6: Tower extrusions at eye level



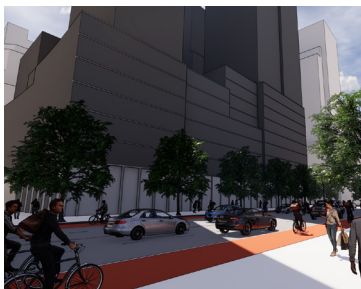
10 VR Step 7: Vertical adjustments



11 VR Step 8: Setback adjustments



12 VR Step 9: Addition of people, vegetation, etc



13 VR Step 10: Addition of building scale details



14 VR Step 11: Further detailing of building plinth



15 VR Step 12: View markers from different angles

66 Massing study steps (own image)

## Course Reflection

Introducing virtual reality as a viable tool for design and presentation purposes, this course certainly opened my mind to new possibilities. Initially, I was not aware of the possibilities of VR and at beginning of this course I was not sure how to use it in such an early stage of my design process.

As mentioned before, I found virtual reality most useful when designing more detailed aspects of my building, because it really gave a sense of how these aspects would be perceived at eye-level by actual people.

Previously, I had used eye-level views in my design process, but in general, most of my design decisions came from a top-down, bird's eye perspective. Virtual reality, by allowing me to see and experience the design in a way that is closer to real life, gives me a new tool to make different design choices or assess previous design choices from a different perspective.

The massing that I designed so far with the use of VR will undoubtedly change as the graduation studio progresses. Whether I will use virtual reality or different tools to further develop my building mass is still undecided, but it will likely be a combination. VR can be especially useful to test the effect of small adjustments to the massing from an eye-level perspective, which would not be possible using more traditional means.

Other areas in which I think virtual reality can be fruitful, are the experience of the interior of the dwellings, the experience of the collective space and the experience of the building entry/lobby.

During this course I have also learned to use VR as a presentation tool. When there is a coherent story with a clear sequence to tell, VR can be powerful. Something that I personally struggled with, however, is how to combine both abstract diagrammatic images and more realistic ones in a virtual environment. In my own presentation I went from a diagrammatic bird's eye diagrams, to more realistic eye-level views. This change in perspective and style made my story less coherent than I would have liked. For future presentations, I should put some more thought into how to make this transition, or focus on just one style.

All in all, by introducing a different way of designing and presenting that can give people new insights into the design process and product, this course was a valuable addition to the curriculum.

I have some recommendations, however, with regard to the structure of the course. Having only a few weeks for this course at an early stage of the design process, combined with the regular program of the graduation studio and its crash course, made everything a bit hectic. To me, this course can add more value either by integrating with the crash course and specifically focusing on the development of a building mass in a few weeks, or by being more spread out over the semester or quarter. In the more spread-out format, VR can help students develop their scheme over a longer period of time. That way, it is more integrated with the studio and design decisions made during this course won't be redundant for the P2 presentation.







# PLAN ANALYSIS

The plan analysis is a study of 3 projects that each represent metropolitan high-rise living in a different context. Lake Point Tower and Vestedatoren are both part of the luxury segment. One is set on the waterfront of an American city, while the other is located in a Dutch city center. The Amsteltoeren is part of the mid-priced rental and is located next to a train station in a Dutch city.

Each project is analysed on 4 aspects:

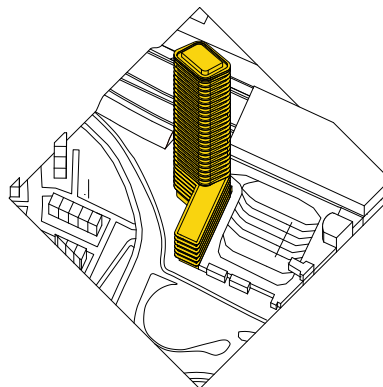
- Relation to the city
- Entry
- Vertical stacking
- Dwelling floorplans

# AMSTEL TOWER

ARCHITECT: Powerhouse Company  
 LOCATION: Amsterdam, NL  
 SETTING: Transportation Node  
 COMPLETION: 2018  
 NUMBER OF DWELLINGS: 192 apartments

FLOOR AREA: 43-55 m<sup>2</sup> apartments  
 NUMBER OF FLOORS: 32  
 BUILDING HEIGHT: 103 m  
 MARKET SEGMENT: Mid-priced rental  
 AMENITIES: Parking, hotel, restaurant, bar

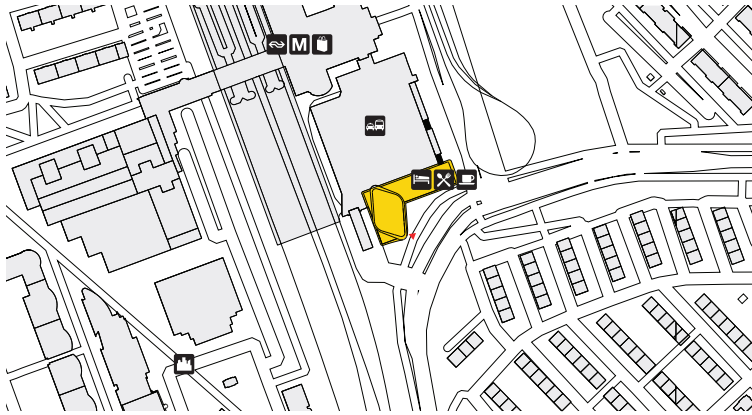
Amstel Tower, designed by Powerhouse Company, is a residential tower situated next to Amstel Station, a major transportation node in Amsterdam. The building consists of three parts: a tower with apartments, a podium with hotel and a raised parking garage. Its design introduces a new form of living to Amsterdam: a compact mid-priced rental apartment that corresponds with the budget and lifestyle of young urbanites. The all-around awnings and floor to ceiling windows provide each dwelling with private outdoor space and sweeping views of the city.



67 Urban building mass (own image)



68 Amstel Tower in urban setting (Rietberg, 2018)



69 Relation to urban amenities scale 1:5000 (Own image)

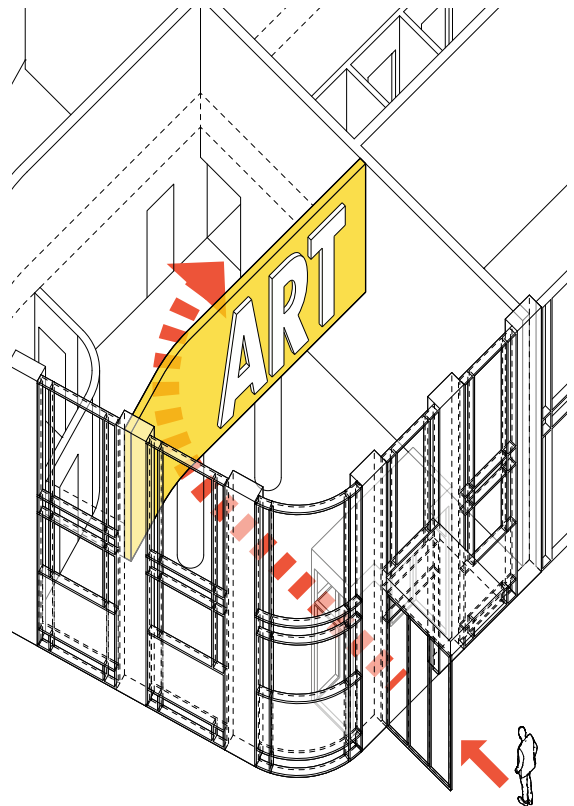


70 Entry (Google, n.d.)



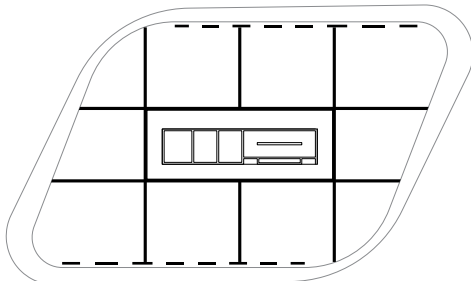
71 Lobby (Top, 2018)

Next to a major transport node, Amstel Tower is connected to a variety of urban amenities. The hotel, coffee place and bar in the podium of the building add life to the public domain. Residents enter the tower either from a parking garage or by foot from a public plaza that is shared with the adjacent hotel. The entrance is defined by a canopy that extends beyond the plane of the facade. The front of the lobby is double height and is marked by artwork symbolic of the building's location. The lower part of the lobby guides towards the elevators.

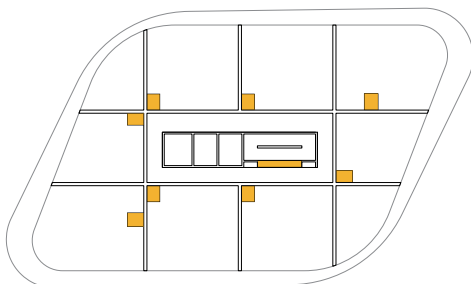


72 Building entrance and lobby ground level interface 1:200 (own image)

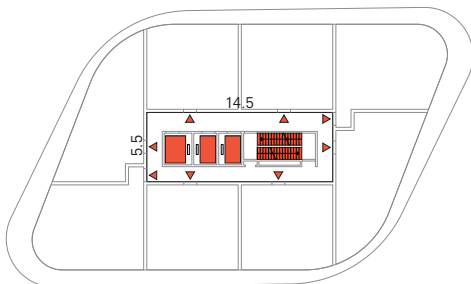
# Vertical stacking



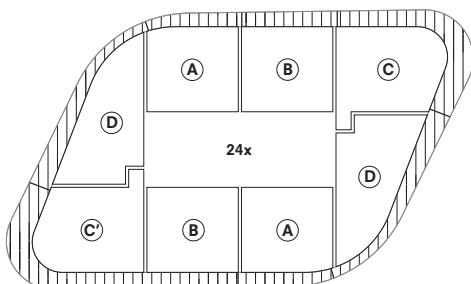
73 Vertical structure



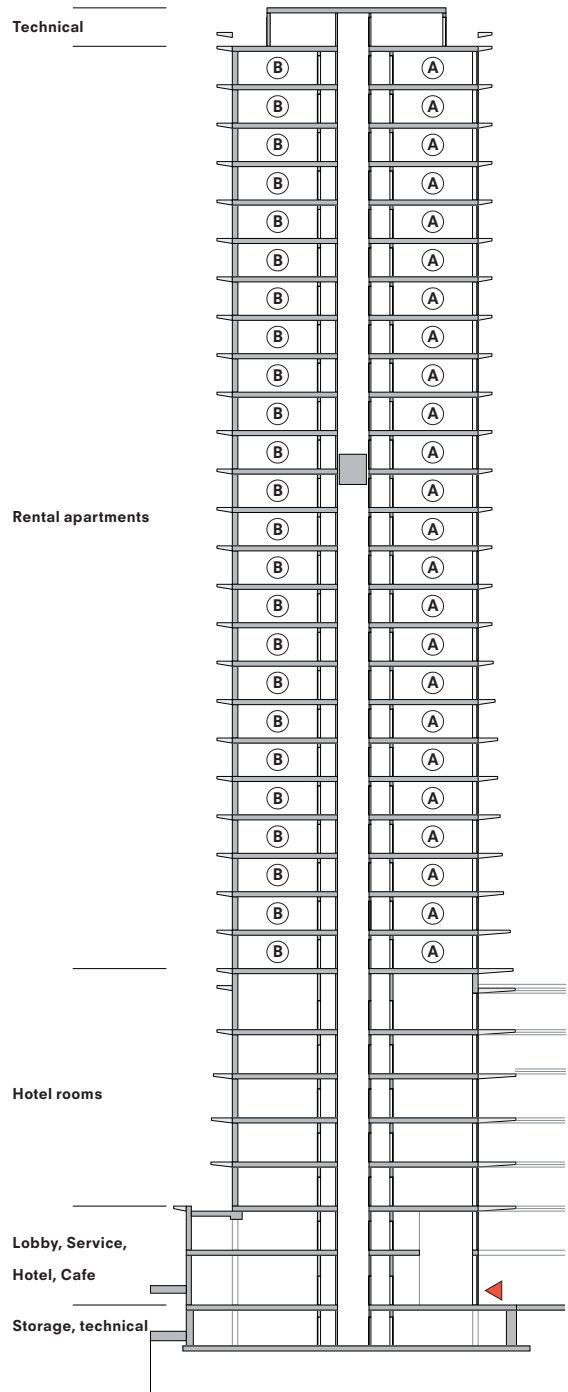
74 Vertical ducts



75 Vertical access

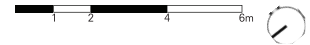


76 Apartment types stacking

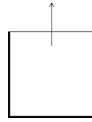


77 Vertical stacking section (own image)

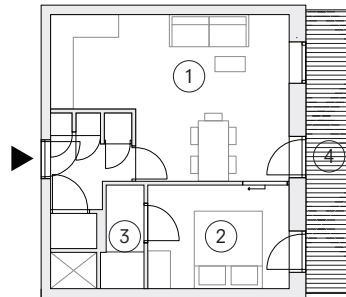




TYPE: A (&B)  
 FLOOR: 8-31  
 AREA: 44 m<sup>2</sup>  
 BEDROOMS: 1



1. Living area with open kitchen 24 m<sup>2</sup>
2. Bedroom 10 m<sup>2</sup>
3. Bathroom 3 m<sup>2</sup>
4. Outdoor space 9 m<sup>2</sup>

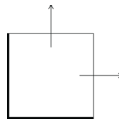


78 Type A (own image)

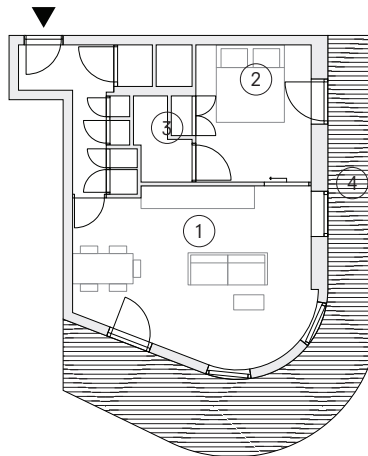


81 Type C interior (Powerhouse Company, 2016)

TYPE: C  
 FLOOR: 8-31  
 AREA: 55 m<sup>2</sup>  
 BEDROOMS: 1



1. Living area with open kitchen 27 m<sup>2</sup>
2. Bedroom 11 m<sup>2</sup>
3. Bathroom 3 m<sup>2</sup>
4. Outdoor space 27 m<sup>2</sup>

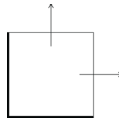


79 Type C (own image)

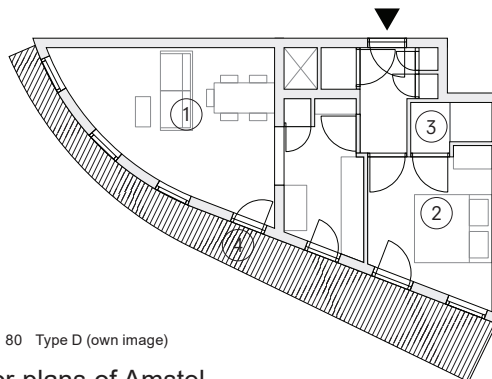


82 Open interior with outdoor space and views (Musch, 2018)

TYPE: D  
 FLOOR: 8-31  
 AREA: 51 m<sup>2</sup>  
 BEDROOMS: 1



1. Living area with semi-open kitchen 26 m<sup>2</sup>
2. Bedroom 12 m<sup>2</sup>
3. Bathroom 3 m<sup>2</sup>
4. Outdoor space 16 m<sup>2</sup>



80 Type D (own image)

The compact and efficient floor plans of Amstel Tower make it possible to have affordable high-rise housing with a metropolitan character in a prime location. The small floor area is compensated by large balconies.

# VESTEDATOREN

ARCHITECT: Jo Coenen

LOCATION: Eindhoven, NL

SETTING: City Center

COMPLETION: 2006

NUMBER OF DWELLINGS: 44 apartments, 2 penthouses

FLOOR AREA: 135 m<sup>2</sup> apartment, 220 m<sup>2</sup> penthouse

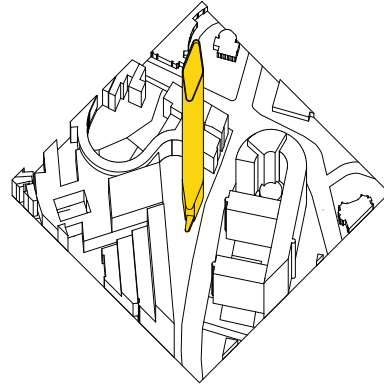
NUMBER OF FLOORS: 28

BUILDING HEIGHT: 90 m

MARKET SEGMENT: High-end rental and condominium

AMENITIES: Private parking, health club, home automation, short stay housing, commercial space

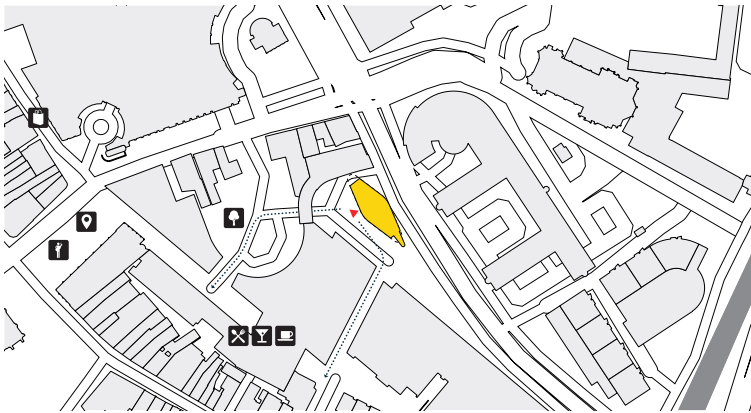
The Vestedatoren, designed by Jo Coenen, is a residential tower in the Dutch city of Eindhoven. Its rhomboid shape (14x42 m) with filleted corners borrows inspiration from the Flatiron Building in New York. Further emulating this city, the design introduces a new form of living to Eindhoven: private luxury in the sky. It contains large apartments with high levels of luxury, refinement and amenity. The building shape and setting, plus the multi-oriented apartments, offer varied views of the city and its surroundings, depending on the floor and side of the building.



83 Urban building mass (own image)



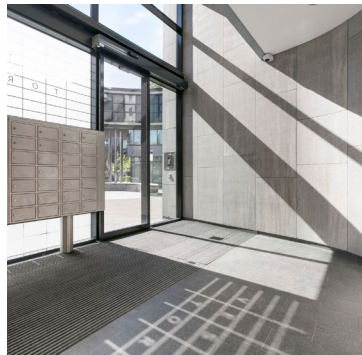
84 Vestedatoren (FaceMePLS, 2007)



85 Relation to urban amenities scale 1:4000 (own image)



86 Entry (funda, 2018)

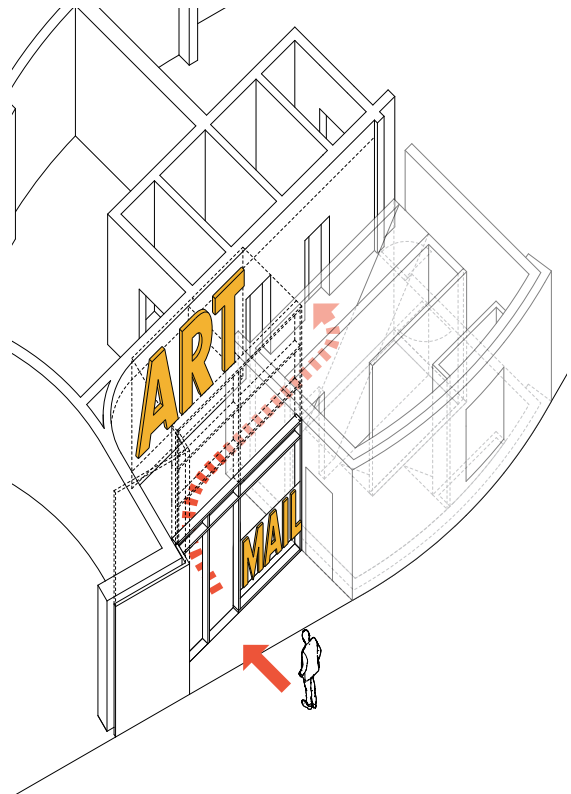


87 Lobby (funda, 2018)

The building is situated in the city center, within short walking distance of most urban amenities like coffee bars, restaurants, nightlife, shops, a market and a park.

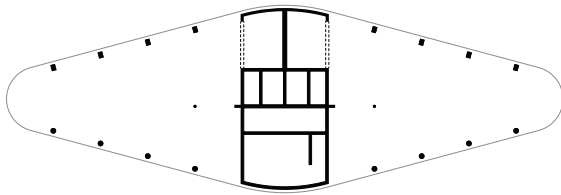
One enters the tower either by car from a parking garage or by foot from a public plaza. The entrance is defined by a setback with a two-storey curtain wall.

Artwork highlights the height of the front part of the lobby, while a curved wall guides residents and visitors to the elevators.

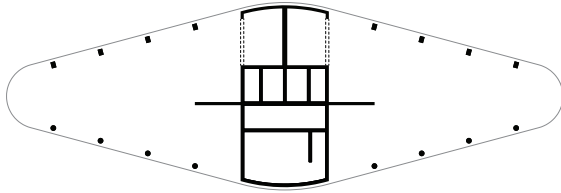


88 Building entrance and lobby 1:200 (own image)

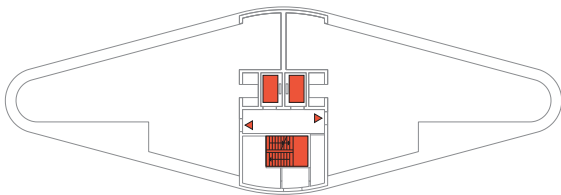
## Vertical stacking



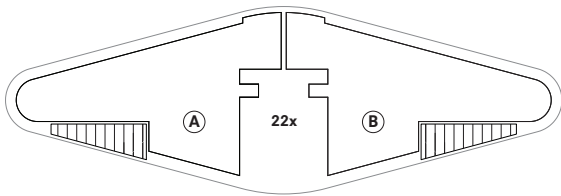
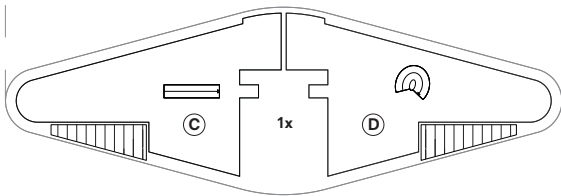
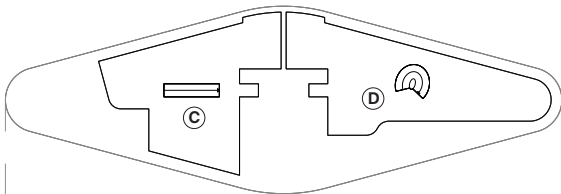
89 Vertical structure (own image)



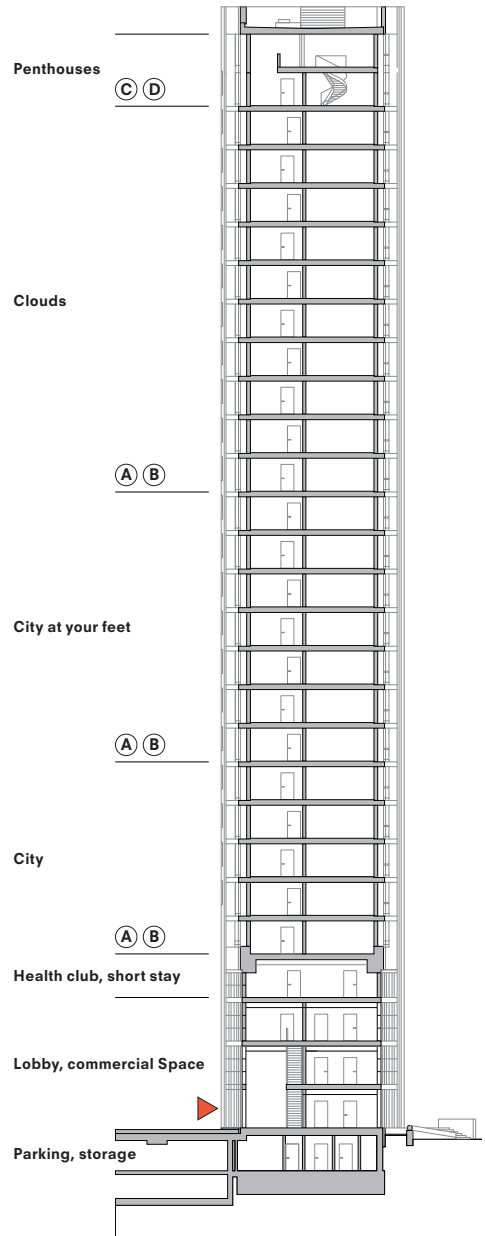
90 Vertical ducts (own image)



91 Vertical access (own image)



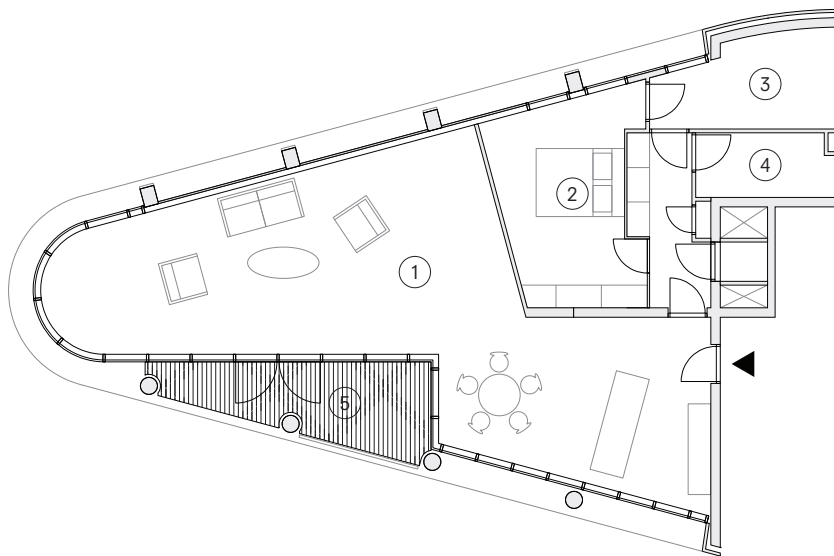
92 Apartment types stacking (own image)



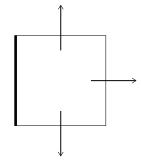
93 Stacking section (own image)



## Dwelling

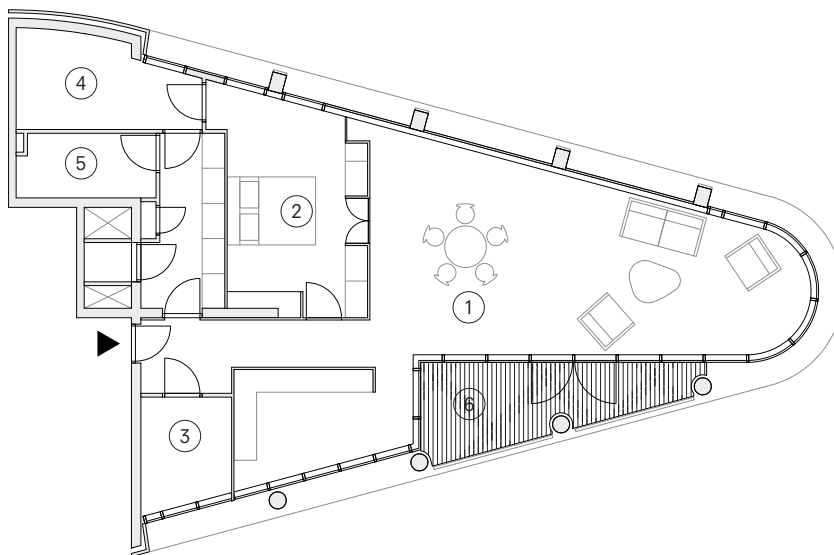


TYPE: A  
FLOOR: 4-25  
AREA: 135 m<sup>2</sup>  
BEDROOMS: 1

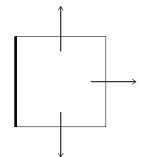


1. Living area with open kitchen 81 m<sup>2</sup>
2. Bedroom 21 m<sup>2</sup>
3. Bathroom 11 m<sup>2</sup>
4. Storage 6 m<sup>2</sup>
5. Outdoor space 13 m<sup>2</sup>

94 Dwelling type A (own image)



TYPE: B  
FLOOR: 4-25  
AREA: 135 m<sup>2</sup>  
BEDROOMS: 2



1. Living area with semi-open kitchen 75 m<sup>2</sup>
2. Bedroom 21 m<sup>2</sup>
3. Bedroom 7 m<sup>2</sup>
4. Bathroom 11 m<sup>2</sup>
5. Storage 6 m<sup>2</sup>
6. Outdoor space 13 m<sup>2</sup>

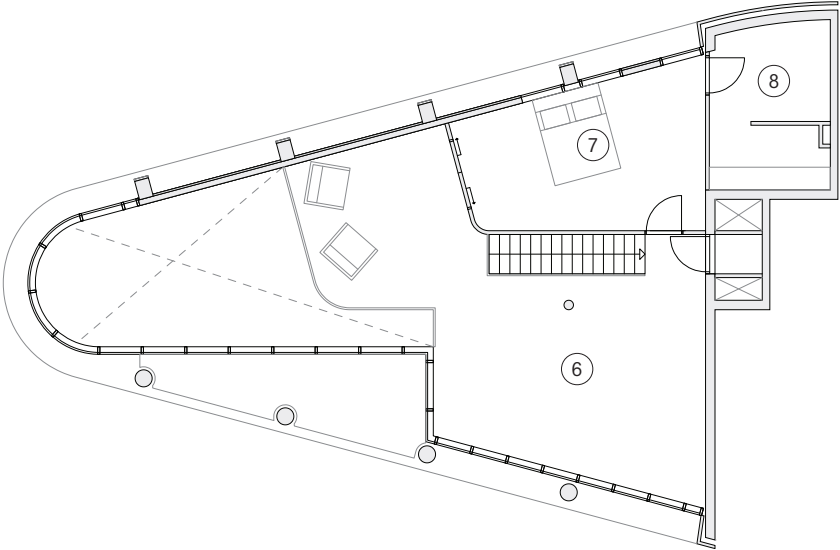
95 Dwelling type B (own image)

Spacious open floor plans (135 m<sup>2</sup> for a 1-bedroom apartment), luxurious bathrooms, a bespoke interior and panoramic windows convey the high-end character of Vestedatoren.

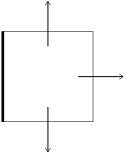


96 Living room with floor-to-ceiling windows and panoramic views of the city (funda, 2018)

Dwelling

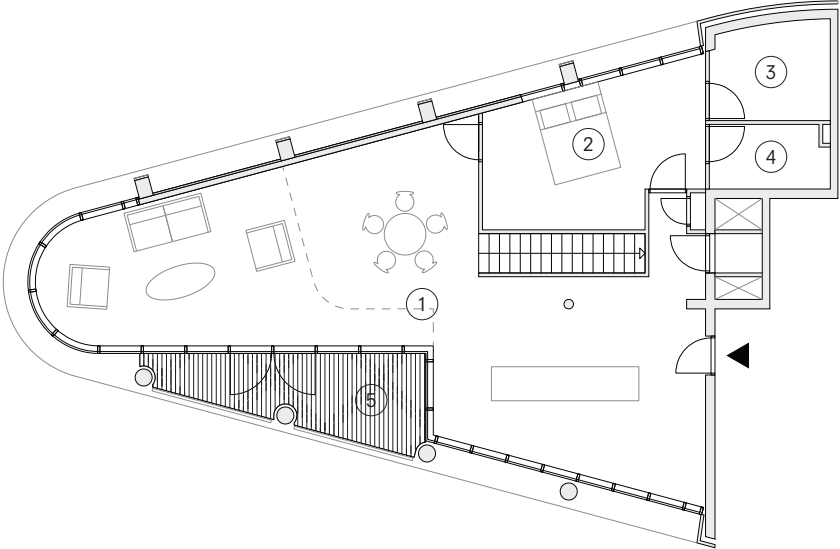


TYPE: C (duplex)  
 FLOOR: 26-27  
 AREA: 220 m<sup>2</sup>  
 BEDROOMS: 2



- 1. Living area with open kitchen 90 m<sup>2</sup>
- 2. Bedroom 21 m<sup>2</sup>
- 3. Bathroom 8 m<sup>2</sup>
- 4. Storage 6 m<sup>2</sup>
- 5. Outdoor space 13 m<sup>2</sup>
- 6. Living area 58 m<sup>2</sup>
- 7. Bedroom 25 m<sup>2</sup>
- 8. Bathroom with wardrobe 14 m<sup>2</sup>

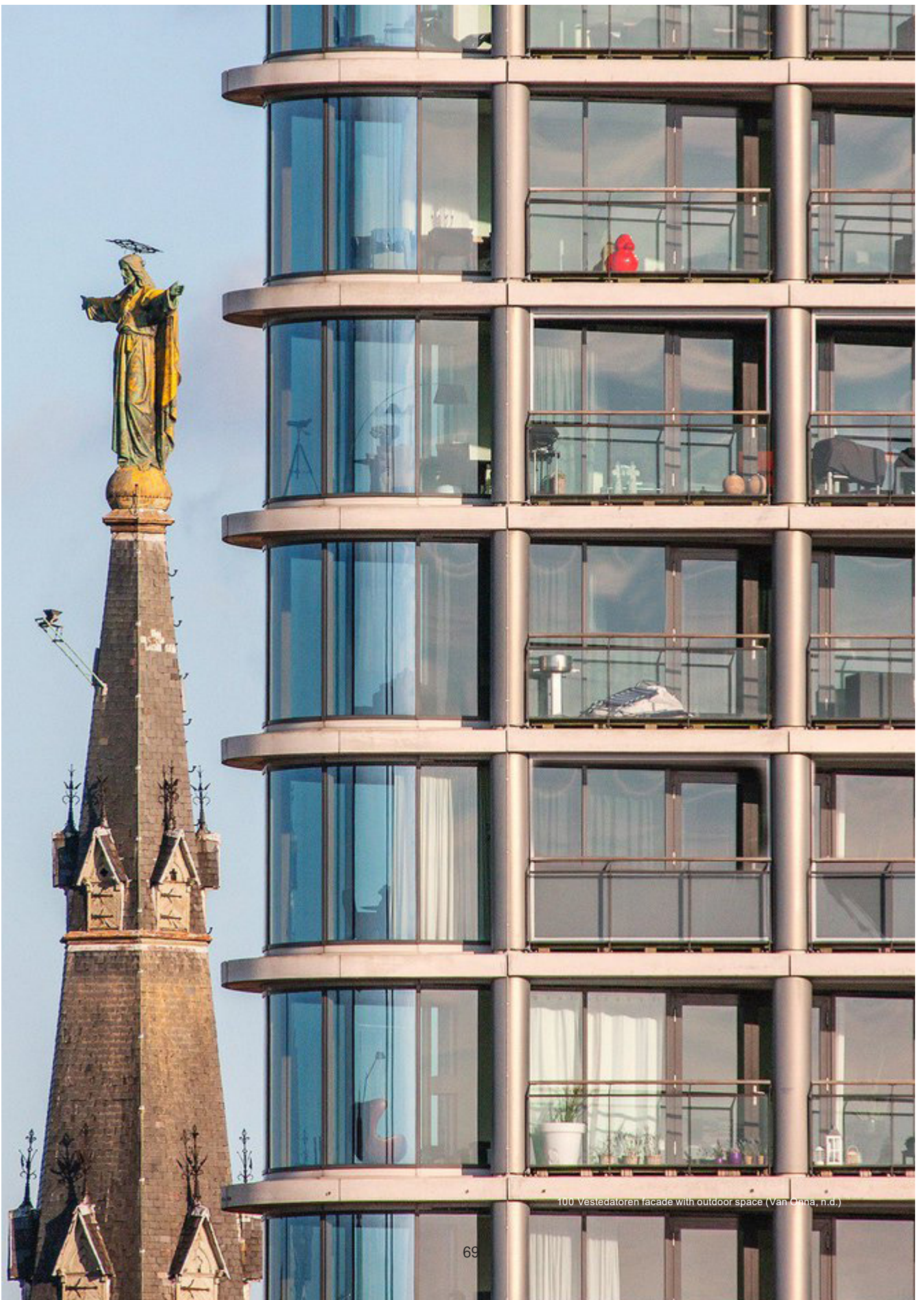
97 Dwelling type C upper level (own image)



98 Dwelling type C lower level (own image)



99 Penthouse with open floor plan and two-story living area (Brison, n.d.)



100 Vestedatoren facade with outdoor space (Van Omma, n.d.)



# LAKE POINT TOWER

ARCHITECT: George Shipporeit & John Heinrich Associates

LOCATION: Chicago, USA

SETTING: Downtown Lakefront

COMPLETION: 1968

NUMBER OF DWELLINGS: 811 apartments

FLOOR AREA: 75-345 m<sup>2</sup> apartments

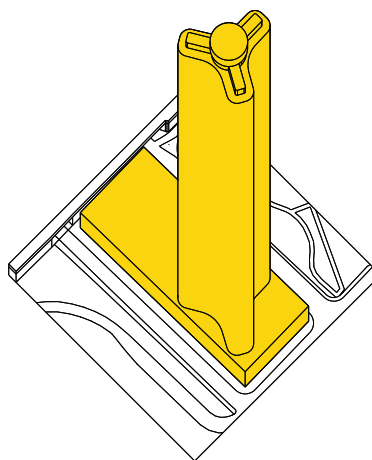
NUMBER OF FLOORS: 70

BUILDING HEIGHT: 197 m

MARKET SEGMENT: High-end rental and condominium

AMENITIES: Parking, lobby, 24h porter, restaurant, health club, indoor/outdoor pool, park, bike storage, leisure room, laundry/dry-cleaner, commercial space, beauty salon

Lake Point Tower, designed by George Shipporeit and John Heinrich, is a Y-shaped tower on top of a three story podium with parking a collective landscape garden and various other amenities. The building is situated on Chicago's lakefront and helped pioneer a new kind of downtown living for the more affluent at a time when Chicagoans were fleeing to the suburbs. The rational design, inspired by Mies van der Rohe, is characterized by its vertical stacking, level floor constructions, plan libre apartments and undulating glass shell.

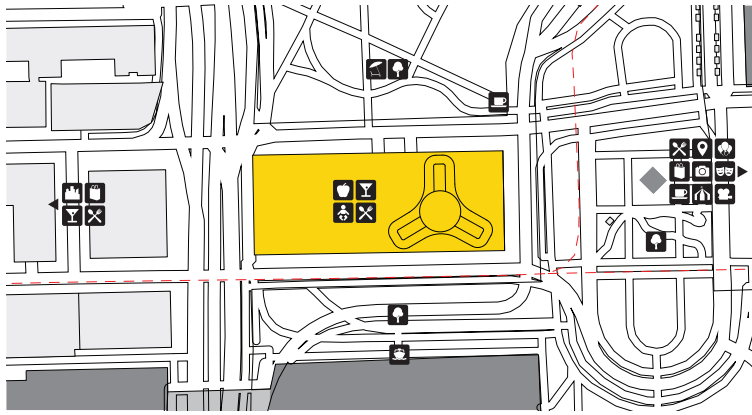


101 Urban building mass (own image)

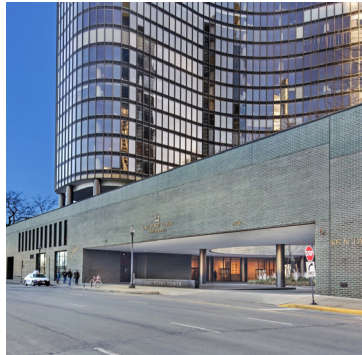


102 Lake Point Tower (Krishnan, n.d.)

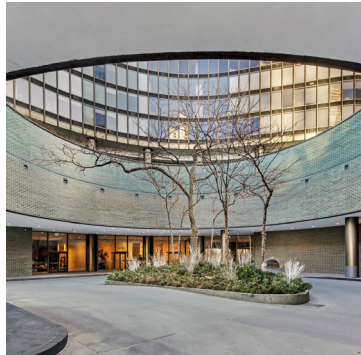




103 Relation to urban amenities scale 1:5000 (own image)



104 Podium and entrance from the street (Chicago Top Condos, 2018)



105 Inner rotunda (Chicago Top Condos, 2018)

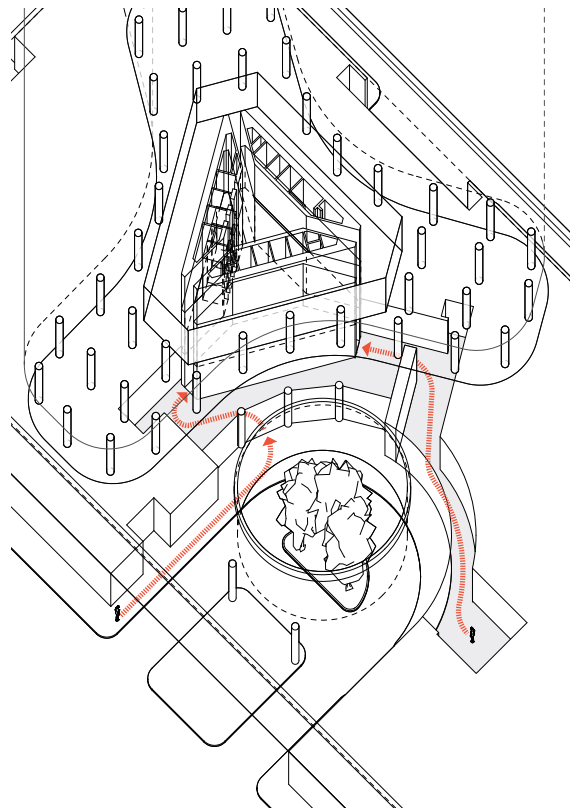


106 View of tower from inner rotunda (Chicago Top Condos, 2018)

As the only tall building ever allowed to be built east of Chicago's Lake Shore Drive, Lake Point Tower stands physically isolated. This aura of self-containment is reinforced by the tower's placement atop a three-story glazed-brick podium with mostly blank facades. Residents enter through one of the sparse openings in this solid pedestal, which leads to an internal rotunda. Looking up from here, the tower is visible in all its glory. The rotunda gives access to the lobby with doorman on one side and parking garage on the other.

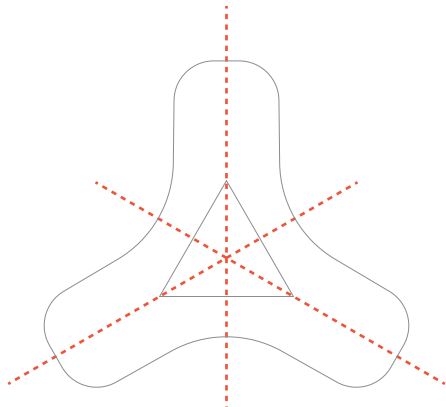
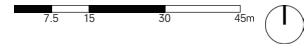
Originally intended as a city within a city, the building's base contains a variety of amenities, including a health club with beauty salon, an indoor pool and multiple commercial spaces. The roof of the podium is covered by a 'skyline' park with a swimming pool, pond, playground and forest. A restaurant caps off the 66 story tower.

When Lake Point Tower was built, the area around it was characterized by decaying docks, factories and warehouses. Urban regeneration, however, has caused the surrounding city to become more residential and vibrant. As a result, the building is now set amongst amenities and entertainment options for urbanites.

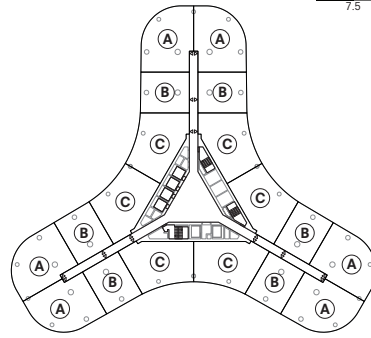


107 Building entrance and lobby ground level interface 1:1000 (own image)

## Vertical stacking



108 Radial symmetry floor plan (own image)



112 Dwelling types floor 5-23 (own image)

### TYPE A

Area: 95 m<sup>2</sup>

Bedrooms: 1

### TYPE B

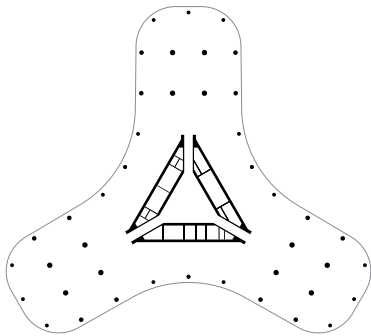
Area: 60 m<sup>2</sup>

Studio

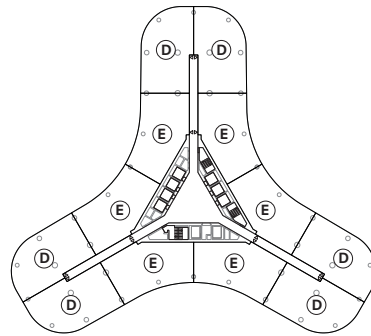
### TYPE C

Area: 90 m<sup>2</sup>

Bedrooms: 1



109 Vertical structure (own image)



113 Dwelling types floor 24-51 (own image)

### TYPE D

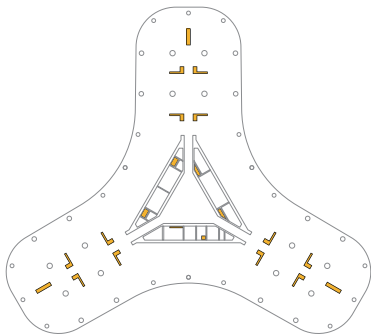
Area: 125 m<sup>2</sup>

Bedrooms: 2

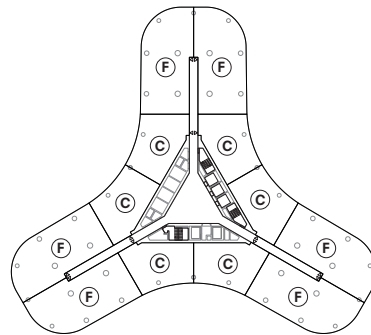
### TYPE E

Area: 120 m<sup>2</sup>

Bedrooms: 2



111 Vertical ducts (own image)



114 Dwelling types floor 52-65 (own image)

### TYPE F

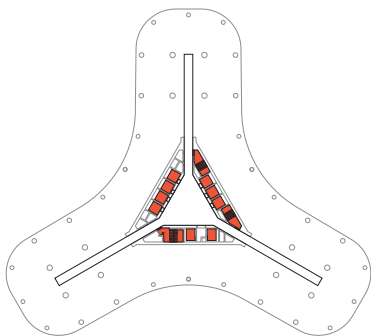
Area: 160 m<sup>2</sup>

Bedrooms: 3

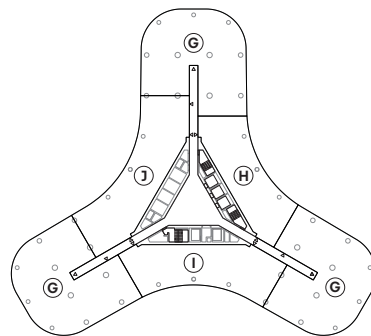
### TYPE C

Area: 90 m<sup>2</sup>

Bedrooms: 1



112 Vertical access general (own image)



115 Dwelling types floor 66-68 (own image)

### TYPE G

Area: 285 m<sup>2</sup>

Bedrooms: 4

### TYPE H

Area: 180 m<sup>2</sup>

Bedrooms: 2

### TYPE I

Area: 210 m<sup>2</sup>

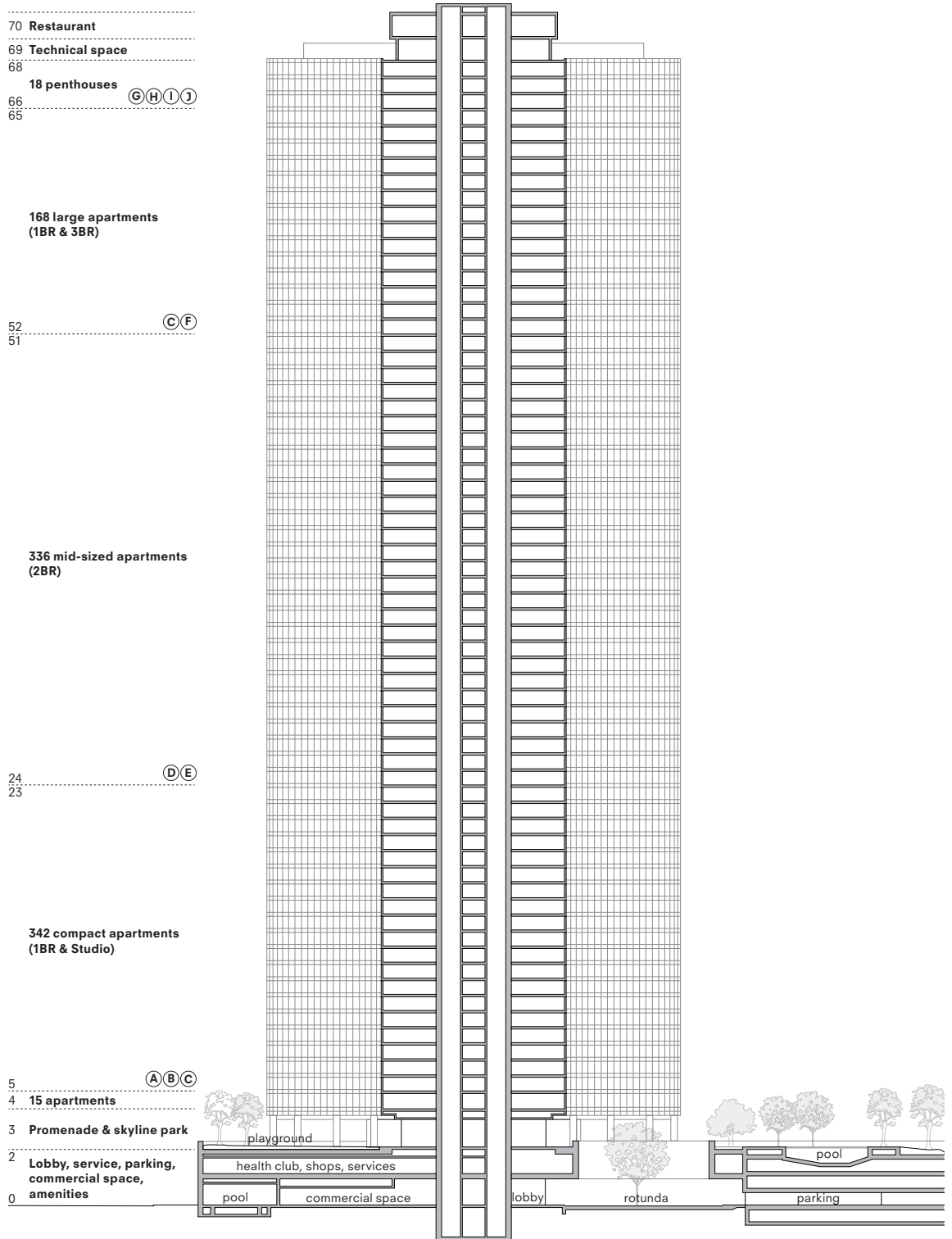
Bedrooms: 2

### TYPE J

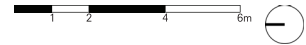
Area: 245 m<sup>2</sup>

Bedrooms: 3

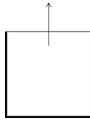
# Vertical stacking



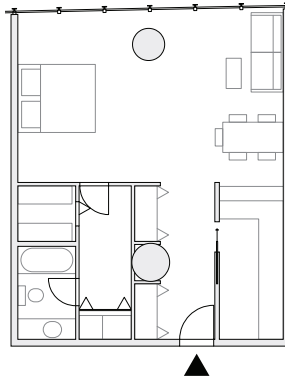
116 Vertical stacking section (own image)



TYPE: B  
 FLOOR: 5-23  
 AREA: 60 m<sup>2</sup>  
 STUDIO

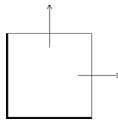


1. Living and sleeping area 32 m<sup>2</sup>
2. Kitchen 7 m<sup>2</sup>
3. Bathroom 4 m<sup>2</sup>
4. Dressing room 5 m<sup>2</sup>
5. Walk-in closet 2 m<sup>2</sup>

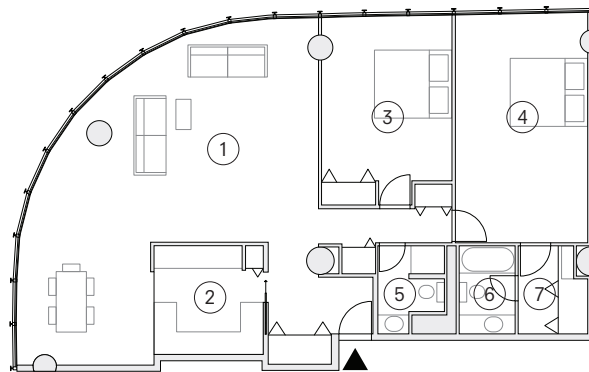


117 Dwelling type B (own image)

TYPE: D  
 FLOOR: 24-51  
 AREA: 125 m<sup>2</sup>  
 BEDROOMS: 2



1. Living and dining area 48 m<sup>2</sup>
2. Kitchen 8 m<sup>2</sup>
3. Bedroom 16 m<sup>2</sup>
4. Bedroom 21 m<sup>2</sup>
5. Bathroom 3.5 m<sup>2</sup>
6. Bathroom 3.5 m<sup>2</sup>
7. Walk-in closet 4 m<sup>2</sup>



118 Dwelling type D (own image)



119 Every apartment has a wide-angle view on the skyscrapers of the city or the grandness of the lake (Lake Point Tower Condo Association, n.d.)

Built for the American high-end market of the 1960s, Lake Point Tower's floor plans are rather roomy. There is little differentiation in bedroom size and each has its own bathroom.



# CONCLUSION

The 3 towers each represent a different form of metropolitan living in a different context. What unites them is their role as visual icons in the city and the views they create of the city. These two characteristics are defining elements of metropolitan high-rise living.

Individual takeaways from each for my own design are the compact floor plans of the Amstel Tower, the spaciousness of the Vestedatoren and the distinction between private and public sphere of Lake Point Tower



# DESIGN

# DESIGN BRIEF

The design brief is a result of the findings from the topic and target group investigation, historical analysis, masterplan, plan analysis and massing studies.

- The contemporary metropolitan living environment is a high density high-rise building in an active neighborhood with other high-rise buildings.
- The Manhattan aan het IJ master plan is well suited for this type of development.
- Location chosen in master plan allows for tower up to 150 m
- The people that live and dwell in this metropolitan environment are primarily the overlapping groups of the expat/knowledge migrant and the millennial.
- Private sphere in towers and public sphere in podium, following from historical analysis
- Sophistication and luxury expressed in design of collective spaces. Representative lobby
- Contemporary amenity standard
- Dwelling types reflect target group requirements. Majority 1- and 2-person households: small apartments
- Larger apartments on corners, higher parts of the building. Suited for more affluent residents, knowledge migrants with families.
- Short-stay apartments on lower levels.
- Compact mid-segment rentals from Amstel tower in lower parts of building



**Target Group**

Expats (knowledge migrants)  
Millennials (young professionals)  
High-middle to high income 45.000-100.000+

**Building mass**

Two identical towers on podium

**Building height**

18 m podium  
132 m tower (following master plan)

**Dwellings**

±100x Studio - 30 m<sup>2</sup>  
±200x One-bedroom apartment - 45 to 60 m<sup>2</sup>  
±80x Two-bedroom apartment - 80 to 110 m<sup>2</sup>  
±30x Three-bedroom apartment - 110 m<sup>2</sup>  
4x Penthouse

**Podium**

Lobby with concierge  
Mail and package room  
Co-working space  
Bike storage  
Commercial space  
Café  
Storage  
Service entry  
Parking

**Access type**

Elevator core with 3 elevators + corridor  
Fire Stairs in core and at end of corridor

**Parking**

Automated parking in central part of podium  
parking ratio of 0.1 + Shared cars

**Structure**

Structural core + columns  
Standard bay width: 7200 mm

**Facade**

Formal facade with industrial look

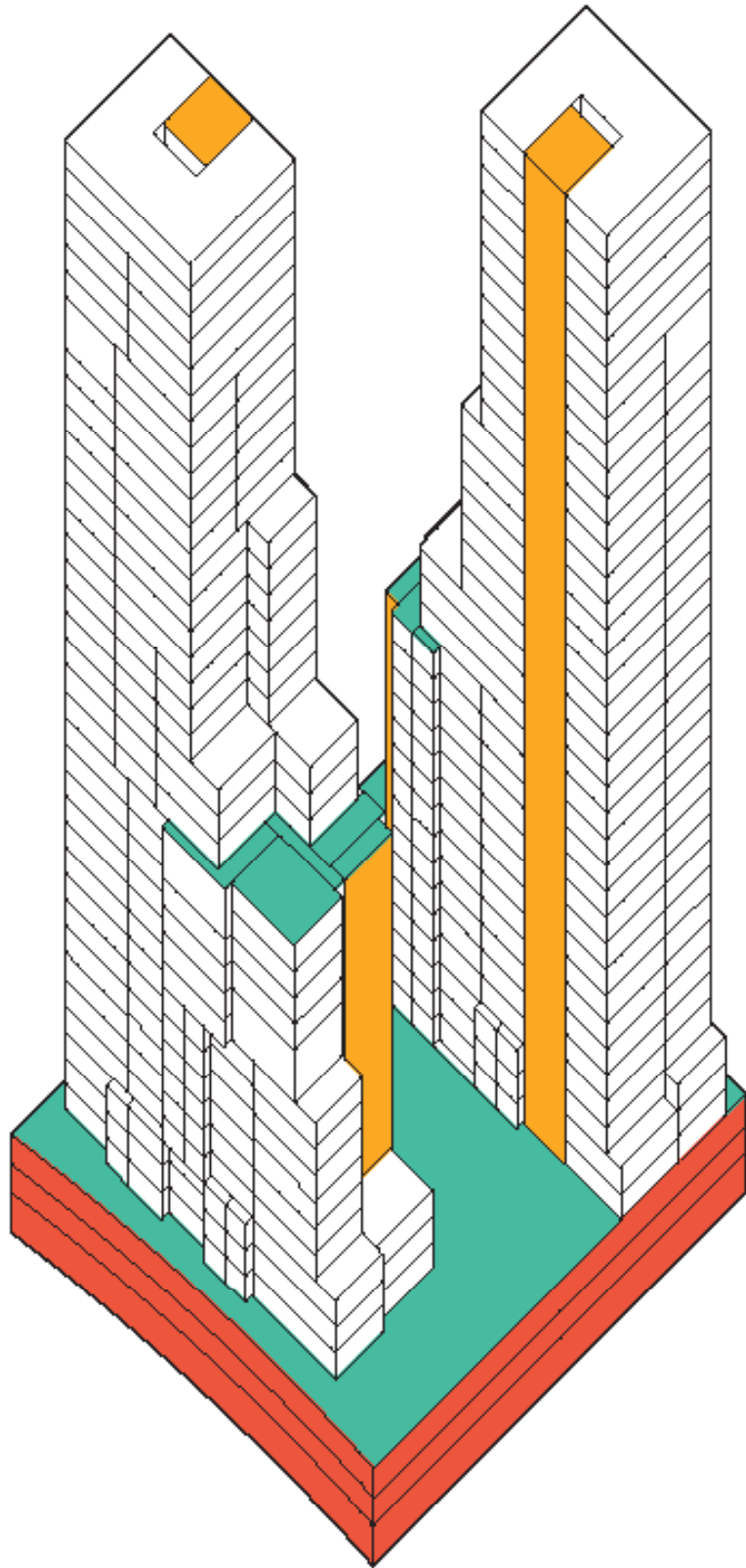
**Other Amenities**

Roof garden on top of podium  
Sky deck on 24th floor of both towers  
Resident lounge  
Health club with pool  
Storage

# CONCEPTUAL DESIGN



120 Floor Plans (own image)



121 Axonometric view (own image)

# Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



## Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners ([Examencommissie-BK@tudelft.nl](mailto:Examencommissie-BK@tudelft.nl)), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Casper Arend Simon Kraai
Student number	4217020
Telephone number	+31639431959
Private e-mail address	casperkraai@outlook.com

Studio	
Name / Theme	Dutch Housing Graduation Studio
Teachers / tutors	Theo Kupers, Pierijn van der Putt, Ferry Adema
Argumentation of choice of the studio	Personal affinity for housing design and the city of Amsterdam. Interest in the current housing market and its challenges and opportunities for new design. Using studio as a preparation for work at a Dutch architecture firm.

Graduation project	
Title of the graduation project	54 Koivistoakade: metropolitan high-rise living in Amsterdam
Goal	
Location:	Minervahaven, Amsterdam
The posed problem,	<p>Amsterdam is growing rapidly and is projected to surpass 1 million inhabitants by 2032. This growth is primarily the result of the city's international popularity as a place to live and work. In fact, the municipality has negative net migration within the Netherlands.</p> <p>The sustained growth resulting from the influx of young, relatively affluent and mostly international people, will change the city in a number of ways. Amsterdam will become more international and culturally diverse, more wealthy, more competitive and more crowded. These trends coincide with the municipality's ambition to densify the existing city and make</p>

	<p>Amsterdam into an international metropolis.</p> <p>With this continuing international popularity, increased density and metropolitan ambition in mind, new housing forms and living environments should be designed that embody the new metropolis and accommodate the lifestyle of the new metropolitan dwellers.</p>
<p><b>research questions and</b></p>	<p>The main question that follows from this problem statement is:</p> <p>“What constitutes a contemporary metropolitan living and dwelling environment?”</p> <p>Other questions to further investigate the topic are related to the people and the built form:</p> <p>“Who are the people that inhabit the contemporary metropolis, specifically Amsterdam? What do the built environment and residential buildings of a metropolis look like?”</p> <p>To get a grasp on contemporary metropolitan living, some background should also be given on its historic developments. Questions posed to investigate this are:</p> <ul style="list-style-type: none"> <li>• “What are the origins and historical developments of metropolitan apartment living?”</li> <li>• “How did local and global actors influence this lifestyle?”</li> <li>• “How does the metropolitan lifestyle relate to the skyscraper?”</li> </ul> <p>This historic background will form the basis of the analysis of the current situation. To determine what constitutes contemporary metropolitan living the following questions will be answered:</p>

	<ul style="list-style-type: none"> <li>• "What are the current needs and wishes of metropolitanites with regard to their dwelling, living, working and recreational environment?"</li> <li>• "How do current local and global actors influence the metropolitan lifestyle?"</li> </ul> <p>The outcomes of the research will then result in a design assignment and a design brief specific for the next phase of the graduation project.</p>
<b>design assignment in which these result.</b>	<p>The design of a high-rise building that embodies a contemporary metropolitan living environment, on the scale of the individual dwelling and building as a whole, within the new urban development of Minervahaven, Haven-Stad and the city of Amsterdam</p>
<b>Process</b>	
<b>Method description</b>	
<p>The method of research will be:</p> <ul style="list-style-type: none"> <li>- Literature study of books, articles, newspapers and websites to define and analyze the target group, investigate the phenomenon of the metropolis, metropolitan apartment living and their historic background.</li> <li>- Case studies: plan analysis of reference projects and studies of other precedents to define functional and formal characteristics of high-rise buildings and metropolitan living environments</li> </ul> <p style="padding-left: 40px;">These are: Lake Point Tower – George Shipporeit Amstel Tower – Powerhouse Company Vestedatoren – Jo Coenen</p> <ul style="list-style-type: none"> <li>- Research through design by virtual reality massing studies, physical modeling and drawing</li> </ul>	
<b>Literature and general practical preference</b>	
<p><b>BOOKS:</b></p> <p>Van Gameren, D., Kuitenbrouwer, P., &amp; Bemont, J. (2009). <i>Het luxe stadsappartement: The luxury city apartment</i> (Dash, 2). Rotterdam: Nai Uitgevers.</p> <p>Hemel, Zef. <i>De Toekomst Van De Stad: Een Pleidooi Voor De Metropool</i>. Amsterdam University Press, 2016.</p> <p>Koolhaas, R. (1994). <i>Delirious new york : A retroactive manifesto for manhattan</i>. Rotterdam: 010.</p> <p>Leupen, B., Mooij, H., Uytengaak, R., &amp; Brinkman, E. (2011). <i>Het ontwerpen van woningen : Een handboek</i> ([2e, herz. ed.] ed.). Rotterdam: NAI Uitgevers.</p> <p>Meyer, H., &amp; Zandbelt, D. (Eds.). (2012). <i>High-rise and the sustainable city</i>. Amsterdam: Techne Press.</p>	

## JOURNAL ARTICLES:

Fraterrigo, Elizabeth. "The Answer to Suburbia: Playboy's Urban Lifestyle." *Journal of Urban History*, vol. 34, no. 5, 2008, pp. 747–774., doi:10.1177/0096144208316712.

Oserby, Bill. "The Bachelor Pad as Cultural Icon: Masculinity, Consumption and Interior Design in American Men's Magazines, 1930-65." *Journal of Design History*, vol. 18, no. 1, 2005, pp. 99–113., doi:10.1093/jdh/epi008.

Latham, P. (2016, July). Richard Norman Shaw's hidden legacy. *Context*, 145, 26-28. Retrieved June 13, 2019, from <http://ihbconline.co.uk/context/145/30/>

## WEB ARTICLES:

Boon, Lex. "Expats Van De Gouden Eeuw: Amsterdam Was Altijd Al Migrantenstad." *Het Parool*, 28 Jan. 2018, [www.parool.nl/nieuws/expats-van-de-gouden-eeuw-amsterdam-was-altijd-al-migrantenstad~bfd8da77/](http://www.parool.nl/nieuws/expats-van-de-gouden-eeuw-amsterdam-was-altijd-al-migrantenstad~bfd8da77/). Accessed 11 June 2019.

Couzy, M. (2019, March 09). 10 gevolgen van de bevolkingsgroei in Amsterdam. *Het Parool*. Retrieved June 09, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>

De Voogt, Sam. "In Je Eentje Huren in De Woontoren, Dat Is De Toekomst." *NRC*, 21 Dec. 2018, [www.nrc.nl/nieuws/2018/12/21/in-je-eentje-huren-in-de-woontoren-dat-is-de-toekomst-a3126746](http://www.nrc.nl/nieuws/2018/12/21/in-je-eentje-huren-in-de-woontoren-dat-is-de-toekomst-a3126746). Accessed 11 June 2019.

Florida, Richard. Millennials Really Are an Urban Generation. 29 June 2018, [www.citylab.com/life/2018/06/millennials-are-happiest-in-cities/563999/](http://www.citylab.com/life/2018/06/millennials-are-happiest-in-cities/563999/). Accessed 11 June 2019.

Hall, A. (2017, February 03). Brooklynism: The Logic of Junkspace. Retrieved June 14, 2019, from <https://medium.com/@alechall/brooklynism-the-logic-of-junkspace-ca6e6f2dbceb>

## Reflection

### Relevance

Most housing design graduation projects are about solving a societal problem or helping the vulnerable. This one is not. Instead it is about embracing a new reality and designing with it. In an ever more competitive and more globalized market, Amsterdam's best chance for economic progress and growth is to go along with the rest of the crowd of global cities. In order to do that the city needs to continue to attract and retain young and international talent that wants to work and live there. Naturally, this also requires adequate housing. This project seeks to add a different type of housing to Amsterdam that is specifically dedicated to this new metropolitan demographic.



## Time planning

<b>Week</b>	
<b>21/06</b>	<b>2.45-3.45 P2 Presentation</b>
1.1	Discuss current design after holiday break
<b>1.2</b>	<b>Finalise concept</b>
1.3	Development design (concept, diagrams, plans, building technology)
<b>1.4</b>	<b>Development design (unit plans, facades, sections)</b>
1.5	Development design (unit plans, facades, sections, details, building technology)
<b>1.6</b>	<b>Prepare P3 presentation (drawings, model, presentation)</b>
1.7	P3
<b>1.8</b>	<b>Evaluate P3, improve according to comments</b>
1.9	Development design (plans, facades, sections, details, diagrams, building technology)
<b>1.10</b>	<b>Development design, Finalise Revit model</b>
2.1	Produce final presentable drawings (plans, facades, sections, details, diagrams)
<b>2.2</b>	<b>Produce final presentable drawings, make model</b>
2.3	Prepare P4 presentation (finalise products, practice presentation)
<b>2.4</b>	<b>P4</b>
2.5	P4
<b>2.6</b>	<b>Improve design according to comments P4</b>
---	(Holidays) Improve design/finalise design for P5
---	(Holidays) Improve design/finalise design for P5
2.7	Finalise design for P5
<b>2.8</b>	<b>Finalise design for P5/prepare P5 presentation</b>
2.9	P5
<b>2.10</b>	<b>P5</b>

## Sources

### BOOKS

- Appenzeller, M. (2012). High-rise - Genesis and Exodus of a Type. In D. Zandbelt & H. Meyer (Authors), *High-rise and the sustainable city* (pp. 30-43). Amsterdam, The Netherlands: Techne Press.
- Hemel, Z. (2016). *De toekomst van de stad: Een pleidooi voor de metropool*. Amsterdam: Amsterdam University Press.
- Kaan, K. (2012). Sustainable High-rise in Dutch Cities. In H. Meyer & D. Zandbelt (Authors), *High-rise and the sustainable city* (pp. 148-165). Amsterdam, The Netherlands: Techne Press.
- Kompier, V. (2009). Amsterdam versus Berlin. In *The Luxury City Apartment* (Vol. II, DASH, pp. 16-27). Rotterdam: NAI Publishers.
- Koolhaas, R. (1994). *Delirious New York: A retroactive manifesto for Manhattan*. New York, NY: Monacelli Press.
- Moos, M., Pfeiffer, D., & Vinodrai, T. (2018). *The millennial city: Trends, implications, and prospects for urban planning and policy*. Abingdon, Oxon: Routledge, an imprint of the Taylor & Francis Group.
- Van Gameren, D. (2009). Mansion Flats and Middle-Class Living. In *The Luxury City Apartment* (Vol. II, DASH, pp. 126-155). Rotterdam: NAI Publishers.
- Van Gameren, D., Kuitenbrouwer, P., & Bemont, J. (2009). *Het luxe stadsappartement = The luxury city apartment* (Vol. 2, DASH). NAI Publishers.
- Zandbelt, D. (2012). Citius, Altius, Fortius. In D. Zandbelt & H. Meyer (Authors), *High-rise and the sustainable city* (pp. 66-77). Amsterdam, The Netherlands: Techne Press.

### DICTIONARIES

- Dictionary.com. (2019). Metropolitan. In *Dictionary.com*. Retrieved June 09, 2019, from <https://www.dictionary.com/browse/metropolitan>
- Dictionary.com. (2019). Metropolitan. In *Dictionary.com*. Retrieved June 6, 2019, from <https://www.dictionary.com/browse/metropolitan>
- Oxford Dictionaries. (2019). Metropolis. In *Oxford Dictionaries*. Retrieved June 9, 2019, from <https://en.oxforddictionaries.com/definition/metropolis>

### DOCUMENTS

- Van der Putt, P. (2019). Between Standard and Ideals: The future of housing in the Netherlands [PDF]. Delft: Chair of Architecture & Dwelling.

### JOURNAL ARTICLES

- Fraterrigo, E. (2008). The Answer to Suburbia: Playboy's Urban Lifestyle. *Journal of Urban History*, 34(5), 747-774. doi:10.1177/0096144208316712
- Latham, P. (2016, July). Richard Norman Shaw's hidden legacy. *Context*, 145, 26-28. Retrieved June 13, 2019, from <http://ihbconline.co.uk/context/145/30/>
- Osgerby, B. (2005). The Bachelor Pad as Cultural Icon: Masculinity, Consumption and Interior Design in American Men's Magazines, 1930-65. *Journal of Design History*, 18(1), 99-113. doi:10.1093/jdh/epi008

### GOVERNMENT PUBLICATIONS

- Dienst Ruimtelijke Ordening, & Bureau Monumenten en Archeologie. (2011). *Hoogbouw in Amsterdam* (Netherlands, Gemeente Amsterdam, Dienst Ruimtelijke Ordening). Amsterdam, The Netherlands: Gemeente Amsterdam, Dienst Ruimtelijke Ordening.
- Onderzoek, Informatie en Statistiek (OIS). (2018, June 27). Bevolking Amsterdam, 1 januari 1900-2018. Retrieved June 06, 2019, from

<https://www.ois.amsterdam.nl/feiten-en-cijfers/amsterdam/?20050>

Onderzoek, Informatie en Statistiek (OIS). (2019). Bevolkingsprognose 2019-2040 (Netherlands, Gemeente Amsterdam, Onderzoek, Informatie en Statistiek). Retrieved June 11, 2019, from [https://www.ois.amsterdam.nl/downloads/pdf/2019\\_factsheet%20bevolkingsprognose%202019-2040.pdf](https://www.ois.amsterdam.nl/downloads/pdf/2019_factsheet%20bevolkingsprognose%202019-2040.pdf)

Raspe, O., Groot, S. P., Boschman, S., Beckers, P., Sleutjens, B., Boterman, W., . . . Langeweg, S. (2014). *Buitenlandse Kenniswerkers in Nederland: Waar Werken En Wonen Ze En Waarom?* (Netherlands, Planbureau voor de Leefomgeving). Retrieved June 13, 2019, from [https://www.pbl.nl/sites/default/files/cms/PBL\\_2014\\_Buitenlandse%20kenniswerkers%20in%20Nederland\\_684.pdf](https://www.pbl.nl/sites/default/files/cms/PBL_2014_Buitenlandse%20kenniswerkers%20in%20Nederland_684.pdf)

Vlaanderen, B., & Scheringa, M. (2017). *Ontwikkelstrategie Haven-Stad* (Gemeente Amsterdam). Amsterdam, -: Gemeente Amsterdam.

## LECTURES

Jansen, M. (2005). *The 'Maison Mixte' and the Great Cities of the 19th Century*. Lecture presented at UIA 2005 Istanbul Congress: Cities – grand bazaar of architecture, Istanbul. Retrieved June 11, 2019, from [https://www.academia.edu/26613443/The\\_Maison\\_Mixte\\_and\\_the\\_great\\_cities\\_of\\_the\\_19th\\_century\\_The\\_apartment\\_house\\_building\\_as\\_a\\_constituent\\_for\\_the\\_emergence\\_of\\_the\\_western\\_metropolis](https://www.academia.edu/26613443/The_Maison_Mixte_and_the_great_cities_of_the_19th_century_The_apartment_house_building_as_a_constituent_for_the_emergence_of_the_western_metropolis)

## NEWSPAPER ARTICLES

Boon, L. (2018, January 28). Expats van de Gouden Eeuw: Amsterdam was altijd al migrantenstad. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/expats-van-de-gouden-eeuw-amsterdam-was-altijd-al-migrantenstad~bfd8da77/>

Couzy, M. (2018a). Moet Amsterdam pas op de plaats maken, of doorgroeien? *Het Parool*. Retrieved June 9, 2019, from <https://www.parool.nl/nieuws/moet-amsterdam-pas-op-de-plaats-maken-of-doorgroeien~b599bb88/>

Couzy, M. (2019b). Amsterdam groeit vooral door komst van expats. *Het Parool*. Retrieved June 10, 2019, from <https://www.parool.nl/amsterdam/amsterdam-groeit-vooral-door-komst-van-expats~b450c816/>

Couzy, M. (2019c). 10 gevolgen van de bevolkingsgroei in Amsterdam. *Het Parool*. Retrieved June 09, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>

Couzy, M. (2019d). 'What would you like on your pannenkoek?' *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/amsterdam/what-would-you-like-on-your-pannenkoek~b8a333c2d/>

Dam, Y., & Kist, R. (2014). Waarom iedereen in Amsterdam wil wonen, en niemand in Emmen. *NRC*. Retrieved from <https://www.nrc.nl/nieuws/2014/06/04/waarom-iedereen-in-amsterdam-wil-wonen-en-niemand-in-emmen-a1501489>

De Voogt, S. (2018, December 21). In je eentje huren in de woontoren, dat is de toekomst. *NRC*. Retrieved June 11, 2019, from <https://www.nrc.nl/nieuws/2018/12/21/in-je-eentje-huren-in-de-woontoren-dat-is-de-toekomst-a3126746>

Kollewe, J. (2014, October 6). London voted most desired place in the world to work. *The Guardian*. Retrieved June 10, 2019, from <https://www.theguardian.com/uk-news/2014/oct/06/london-voted-most-desired-place-work-world>

Kooyman, J. (2018). Elke dag brunchen, lunchen, uit eten: Waarom is de jonge stadsmens zo horecaverslaafd? *NRC*. Retrieved June 12, 2019, from <https://www.nrc.nl/nieuws/2018/09/26/een-generatie-van-uitreTERS-a1810652>

Meershoek, P. (2018, December 29). Expats EMA kiezen niet voor wonen in Amsterdam. *Het Parool*. Retrieved June 14, 2019, from <https://www.parool.nl/nieuws/expats-ema-kiezen-niet-voor-wonen-in-amsterdam~b97e0e4c/>

Obdeijn, L. (2017, April 19). Voor millennials is Amsterdam de beste stad om te wonen. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/voor-millennials-is-amsterdam-de-beste-stad-om-te-wonen~bf1416f6/>

Pinnegar, R. (2018, May 08). Forget owning, renting is becoming the end game for many millennials and baby boomers. *The Washington Post*. Retrieved June 14, 2019, from [https://www.washingtonpost.com/news/where-we-live/wp/2018/05/08/forget-owning-renting-is-becoming-the-end-game-for-many-millennials-and-baby-boomers/?utm\\_term=.dca8f38b924d](https://www.washingtonpost.com/news/where-we-live/wp/2018/05/08/forget-owning-renting-is-becoming-the-end-game-for-many-millennials-and-baby-boomers/?utm_term=.dca8f38b924d)

Stil, H. (2018, February 4). Amsterdam moet flexibele millennial omarmen. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/amsterdam-moet-flexibele-millennial-omarmen~b58f6192/>

Stil, H. (2019, February 25). 'Amsterdam moet oppassen dat het imago bij bedrijven niet verliest'. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/amsterdam-moet-oppassen-dat-het-imago-bij-bedrijven-niet-verliest~bf1fd8aa/>

Van den Bergh, T. (2017, April 8). Gemeente Amsterdam gelooft nog steeds in skyline van de Sluisbuurt. *NRC*. Retrieved June 11, 2019, from <https://www.nrc.nl/nieuws/2017/04/08/soeters-creert-eeN-spoekbeeld-7845945-a1553508>

## WEBSITES

Atkinson, S., & Clemence, M. (2017). Ipsos Top Cities 2017. Retrieved June 09, 2019, from <https://www.ipsos.com/ipsos-mori/en-uk/ipsos-top-cities-2017>

Couzy, M. (2018b). 'Amsterdam groeit naar 2 miljoen inwoners'. Retrieved June 09, 2019, from <https://www.destadamsterdam.nu/amsterdam/een-ding-is-zeker-amsterdam-groeit-naar-2-miljoen-inwoners/>

- Florida, R. (2018, June 29). Millennials Really Are an Urban Generation. Retrieved June 11, 2019, from <https://www.citylab.com/life/2018/06/millennials-are-happiest-in-cities/563999/>
- Hall, A. (2017, February 03). Brooklynism: The Logic of Junkspace. Retrieved June 14, 2019, from <https://medium.com/@alechall/brooklynism-the-logic-of-junkspace-ca6e6f2dbceb>
- Holle, R. (2018). Amsterdamse makelaars: 'Steeds meer kopers komen uit het buitenland'. Retrieved June 13, 2019, from <https://vastgoedjournaal.nl/news/37334/amsterdamse-makelaars-lsquo-steeds-meer-kopers-komen-uit-het-buitenland-rsquo>
- Immigration and Naturalisation Service. (2019, February 25). Highly skilled migrant. Retrieved June 12, 2019, from <https://ind.nl/en/work/Pages/Highly-skilled-migrant.aspx>
- Nash, K. (2017, January 20). Capital - The difference between an expat and an immigrant? Semantics. Retrieved June 11, 2019, from <http://www.bbc.com/capital/story/20170119-who-should-be-called-an-expat>
- NYC Planning. (2018). Current and Projected Populations. Retrieved June 9, 2019, from <https://www1.nyc.gov/site/planning/data-maps/nyc-population/current-future-populations.page>
- Sisson, P. (2019, March 26). In the apartment amenity arms race, service and technology win out. Retrieved from <https://www.curbed.com/2019/3/26/18281713/rent-apartment-amenity-residential-real-estate>
- Stuart, K. (2017). Millennials, Techies and the Brooklyn Multifamily Boom. Retrieved June 14, 2019, from <https://www.jpmorgan.com/commercial-banking/insights/millennials-techies-brooklyn>

## IMAGES

01. Van Weel, K. (2015, November 21). Beurs van Berlage opent vernieuwde Beurs [Photograph adapted from ANP, Amsterdam]. Retrieved June 9, 2019, from <https://www.anpfoto.nl/search.pp?page=3&ShowPicture=35087967&pos=69> (Originally photographed 2015, November 21)
02. "Bevolking Amsterdam". (2018). Adapted from L. Van der Bijl (Ed.). Retrieved June 9, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>
03. Couzy, M. (2019a). Amsterdammers kunnen het tempo niet bijbenen. *Het Parool*. Retrieved June 12, 2019, from <https://www.parool.nl/columns-opinie/amsterdammers-kunnen-het-tempo-niet-bijbenen~b06d97d6/>
- Couzy, M. (2018a). Moet Amsterdam pas op de plaats maken, of doorgroeien? *Het Parool*. Retrieved June 9, 2019, from <https://www.parool.nl/nieuws/moet-amsterdam-pas-op-de-plaats-maken-of-doorgroeien~b599bb88/>
- Veenhoven, P. (2018). Amsterdam te druk? Wat een grote onzin. *De Volkskrant*. Retrieved June 12, 2019, from <https://www.volkskrant.nl/columns-opinie/amsterdam-te-druk-wat-een-grote-onzin~ba965bf8/>
- Hemel, Z. (2018). 'Wil Nederland ertoe doen, dan moeten steden als Amsterdam flink groeien'. *Het Parool*. Retrieved June 12, 2019, from <https://www.parool.nl/columns-opinie/wil-nederland-ertoe-doen-dan-moeten-steden-als-amsterdam-flink-groeien~b698e41b/>
04. Vlaanderen, B., & Scheringa, M. (2017). *Ontwikkelstrategie Haven-Stad* (Gemeente Amsterdam). Amsterdam, -: Gemeente Amsterdam.
05. Onderzoek, Informatie en Statistiek (OIS). (2019). *Bevolkingsprognose 2019-2040* (Netherlands, Gemeente Amsterdam, Onderzoek, Informatie en Statistiek). Retrieved June 11, 2019, from [https://www.ois.amsterdam.nl/downloads/pdf/2019\\_factsheet%20bevolkingsprognose%202019-2040.pdf](https://www.ois.amsterdam.nl/downloads/pdf/2019_factsheet%20bevolkingsprognose%202019-2040.pdf)
06. Couzy, M. (2019b). Amsterdam groeit vooral door komst van expats. *Het Parool*. Retrieved June 10, 2019, from <https://www.parool.nl/amsterdam/amsterdam-groeit-vooral-door-komst-van-expats~b450c816/>
07. Couzy, M. (2019d). 'What would you like on your pannenkoek?' *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/amsterdam/what-would-you-like-on-your-pannenkoek~b8a333c2d/>
08. Boon, L. (2018). Expats van de Gouden Eeuw: Amsterdam was altijd al migrantenstad. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/expats-van-de-gouden-eeuw-amsterdam-was-altijd-al-migrantenstad~bfd8da77/>
09. "Bevolking Amsterdam". (2018). Adapted from L. Van der Bijl (Ed.). Retrieved June 9, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>
10. Obdeijn, L. (2017, April 19). Voor millennials is Amsterdam de beste stad om te wonen. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/voor-millennials-is-amsterdam-de-beste-stad-om-te-wonen~bf1416f6/>
11. Stil, H. (2018, February 4). Amsterdam moet flexibele millennial omarmen. *Het Parool*. Retrieved June 11, 2019, from <https://www.parool.nl/nieuws/amsterdam-moet-flexibele-millennial-omarmen~b58f6192/>
12. "Bevolking Amsterdam". (2018). Adapted from L. Van der Bijl (Ed.). Retrieved June 9, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>
13. "Bevolking Amsterdam". (2018). Adapted from L. Van der Bijl (Ed.). Retrieved June 9, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>
14. Dienst Ruimtelijke Ordening, & Bureau Monumenten en Archeologie. (2011). *Hoogbouw in Amsterdam* (Netherlands, Gemeente Amsterdam, Dienst Ruimtelijke Ordening). Amsterdam, The Netherlands: Gemeente Amsterdam, Dienst Ruimtelijke Ordening.



15. "Bevolking Amsterdam". (2018). Adapted from L. Van der Bijl (Ed.). Retrieved June 9, 2019, from <https://www.parool.nl/nederland/10-gevolgen-van-de-bevolkingsgroei-in-amsterdam~bb3309d9/>
16. Vlaanderen, B., & Scheringa, M. (2017). *Ontwikkelstrategie Haven-Stad* (Gemeente Amsterdam). Amsterdam, -: Gemeente Amsterdam.
17. Gualthérie Van Weezel, T. (2016, November 12). Amsterdam wil met hoge torens 'Vancouver aan het IJ' worden. *De Volkskrant*. Retrieved June 11, 2019, from <https://www.volkskrant.nl/nieuws-achtergrond/amsterdam-wil-met-hoge-torens-vancouver-aan-het-ij-woorden~b536130f/>
18. Van den Bergh, T. (2017, April 8). Gemeente Amsterdam gelooft nog steeds in skyline van de Sluisbuurt. *NRC*. Retrieved June 11, 2019, from <https://www.nrc.nl/nieuws/2017/04/08/soeters-creert-een-spoekbeeld-7845945-a1553508>
19. De Voogt, S. (2018, December 21). In je eentje huren in de woontoren, dat is de toekomst. *NRC*. Retrieved June 11, 2019, from <https://www.nrc.nl/nieuws/2018/12/21/in-je-eentje-huren-in-de-woontoren-dat-is-de-toekomst-a3126746>
20. Aldershot, R. (2018). *A model showing the possible look of Amsterdam's new high-rise neighborhood on Zeeburgereiland*. Retrieved June 11, 2019, from <https://www.citylab.com/design/2018/09/amsterdam-zeeburgereiland-residential-tower-heights-plan/571258/>
21. Vlaanderen, B., & Scheringa, M. (2017). *Ontwikkelstrategie Haven-Stad* (Gemeente Amsterdam). Amsterdam, -: Gemeente Amsterdam.
22. Cross section of a Parisian house about 1850 showing the economic status of tenants varying by floors. (2019). In E. Texier (Author). Retrieved June 11, 2019, from <https://earthymission.com/cross-sections-of-paris-buildings-from-the-1800s/> (Originally photographed 1852)
23. Cassell & Co. (2016). *Queen Anne's Mansions, c1898* [Photograph found in LMA Record 167794, LCC Photographic Library, London]. Retrieved June 11, 2019, from [https://www.designingbuildings.co.uk/wiki/Richard\\_Norman\\_Shaw\\_and\\_the\\_construction\\_of\\_Albert\\_Hall\\_Mansions](https://www.designingbuildings.co.uk/wiki/Richard_Norman_Shaw_and_the_construction_of_Albert_Hall_Mansions) (Originally photographed 1898)
24. *Albert Hall Mansions* [Photograph]. (1898). University of Cambridge Department of Architecture, Cambridge In University of Cambridge (Author).
25. *Metropolis*. (2016). In F. Lang (Author). Retrieved June 12, 2019, from [http://www.olgaponjee.nl/WordPress/?page\\_id=1979](http://www.olgaponjee.nl/WordPress/?page_id=1979) (Originally photographed 1927)
26. Koolhaas, R. (n.d.). *Delirious New York*. Retrieved June 11, 2019, from <https://oma.eu/publications/delirious-new-york> (Originally photographed 1978)
27. Koolhaas, R. (1994). *Delirious New York: A retroactive manifesto for Manhattan*. New York, NY: Monacelli Press.
28. Koolhaas, R. (1994). *Delirious New York: A retroactive manifesto for Manhattan*. New York, NY: Monacelli Press.
29. Evolution of a City Building Under the Zoning Law [Photograph found in New York Times, New York]. (2016). In H. Ferriss (Author). Retrieved June 12, 2019, from <https://gvshp.org/blog/2016/08/16/hugh-ferriss/> (Originally photographed 1922)
30. Koolhaas, R. (1994). *Delirious New York: A retroactive manifesto for Manhattan*. New York, NY: Monacelli Press.
31. Osgerby, B. (2005). The Bachelor Pad as Cultural Icon: Masculinity, Consumption and Interior Design in American Men's Magazines, 1930-65. *Journal of Design History*, 18(1), 99-113. doi:10.1093/jdh/epi008
32. *Floor Plan of Playboy's Penthouse Apartment* [Photograph]. (2008). In R. Branham (Author), *The Answer to Suburbia: Playboy's Urban Lifestyle* (p. 755). (Originally photographed 1956)
33. Edwards, B. (Director). (1961). *Breakfast at Tiffany's* [Motion picture]. United States: Paramount Pictures.
34. Schulz, D. (2016, November 28). Live in SHO's Domino Sugar Refinery tower for \$596/month, lottery open for 104 units. Retrieved June 14, 2019, from <https://www.6sqft.com/live-in-shops-domino-sugar-refinery-tower-for-596month-lottery-open-for-104-units/>
35. Jarvie, P. (2018). *325 Kent*. Retrieved 2019, from <https://www.flickr.com/photos/jarvie1949/42794329505> (Originally photographed 2018)
36. New York Times. (2018). *Denizen Bushwick*. Retrieved 2019, from <https://static01.nyt.com/images/2018/08/26/realestate/26highend-rheingold2/26highend-rheingold2-superJumbo.jpg?quality=90&auto=webp> (Originally photographed 2019)
- 37-66. Own image
67. Own image
68. Rietberg, B. (2018). *Realisatie woon- en hoteltoeren Amstel Tower*. Retrieved 2019, from <https://www.jpvanesteren.nl/nl/projecten/realisatie-woon-en-hoteltoeren-amstel-tower> (Originally photographed 2018)
69. Own image
70. *S111* [Photograph found in Amsterdam]. (n.d.). In Google (Author). Retrieved June 8, 2019, from <https://www.google.nl/maps/@52.3455111,4.9194001,3a,75y,302.82h,78.91t/data=!3m6!1e1!3m4!1s3cMaU9P12Dkac9mDk3gl2e0!7i13312!8i6656>
71. *The Golden Age by Ian Kirkpatrick*. (2018). In P. Top (Author). Retrieved June 8, 2019, from <https://artenders.com/projects/golden-age-amstel-tower-ian-kirkpatrick/> (Originally photographed 2018)
- 72-80. Own image
81. *Amstel Tower*. (2016). In Powerhouse Company (Author). Retrieved 2019, from <https://www.powerhouse-company.com/projects/amstel-tower> (Originally photographed 2016)

82. Musch, J. (2018). *Wonen voor stedelingen – Amstel Tower Amsterdam door Powerhouse Company*. Retrieved 2019, from <https://www.dearchitect.nl/architectuur/artikel/2018/09/wonen-voor-starters-amstel-tower-amsterdam-door-powerhouse-company-101201131> (Originally photographed 2018)
83. Own image
84. FaceMePLS. (2007). *Strijkijzer Look a Like: De Vesteda Toren Eindhoven*. Retrieved 2019, from <https://www.flickr.com/photos/faceme/2250919612> (Originally photographed 2007)
85. Own image
- 86-87. Funda. (2018). *Smalle Haven 13* [Photograph found in Eindhoven]. Retrieved June 8, 2019, from <https://www.funda.nl/koop/verkocht/eindhoven/appartement-40669154-smalle-haven-13/> (Originally photographed 2018)
- 88-95. Own image
96. Funda. (2018). *Smalle Haven 13* [Photograph found in Eindhoven]. Retrieved June 8, 2019, from <https://www.funda.nl/koop/verkocht/eindhoven/appartement-40669154-smalle-haven-13/> (Originally photographed 2018)
- 97-98. Own image
99. Brison, S. (n.d.). *Vesteda*. Retrieved June 8, 2019, from <https://www.kreon.com/nl/international/showcase/vesteda>
100. *Vestedatoren*. (n.d.). In N. V. Onna (Author). Retrieved June 8, 2019, from <https://www.onna.nl/fotografie/vestedatoren/>
101. Own image
102. Krishnan, G. (n.d.). *Lake Point Tower* [Photograph found in Chicago, Illinois]. Retrieved 2019, from <https://unsplash.com/photos/W9HkB0HE5BI>
103. Own image
- 104-106. Chicago Top Condos. (2018). *Lake Point Tower*. Retrieved 2019, from <http://www.chicagotopcondos.com/?q=09844127> (Originally photographed 2016)
- 107-118. Own image
119. Lake Point Tower Condo Association. (n.d.). *Lake Point Tower*. Retrieved June 7, 2019, from [http://www.lakepointtower.org/property4sale\\_list.asp](http://www.lakepointtower.org/property4sale_list.asp)
- 120-121. Own image



