‘live/work’-building

Towards an efficient use of the city

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Research rapport - P2
Dutch Housing graduation studio
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There is a shortage in dwellings as well as in office spaces in Amsterdam. Both should be combined in one building to fulfill both needs. Besides the shortages on the real estate market, there is also a shortage in employees. To solve this problem, labor workers (expats) should be attracted from abroad. For the graduation studio a building will be designed for expats who will work and live in the building.

Shortages, real estate market, segregation of functions, mixing functions, foreign companies, labor migration, expats, Zeeburgerpad
PREFACE

In my final year of master education at the TU Delft, I will graduate in the Dutch Housing studio. Prior to the P2-presentation, as a completion of the first semester, this research rapport is written. The rapport also includes the design concept. After the summer break, the graduation process will be continued.

Goal of the graduation studio is to keep the residential architecture connected with society. Therefore architecture should be reconsidered and, if necessary, should reincarnate to fulfill the needs of today and tomorrow. To do this in a proper way, individual as well as group research is done. Finally this resulted in this research rapport with the title

‘live/work’-building
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which is based on the book ‘Beyond live/work’ of Frances Holliss.

I would like to thank Theo Kupers and Pierijn van der Putt for the guidance they gave me.

Remco Schrijver
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## INDEX

1. **INTRODUCTION**

   - Assignment                        2
   - Topic Introduction               2
   - Shortages on real estate market   3
   - Gentrification                   4
   - Economical position              4
   - Reaction                         5
   - Research and design questions    5
   - Reading Guide                    6

2. **MANIFESTO**

3. **TOPIC ANALYSIS**

   - Period till the start of the Industrial Revolution in Europe/the Netherlands  14
   - Period after the Industrial Revolution till the end of the 20th century     16
   - Period from the end of the 20th century till now                          18
   - Guidelines for the design                                                  19

   - Shortages in employees for specific companies                            21
   - Foreign workers before the WO II                                           22
   - Foreign workers after the WO II                                            23
   - Foreign workers at this moment                                            24
   - Target group                                                                25
   - Guidelines for the design                                                  25

4. **PLAN ANALYSIS**

5. **SITE ANALYSIS**

6. **DESIGN BRIEF AND DESIGN CONCEPT**
1. INTRODUCTION
Assignment

Reconsidering ideals about Dutch residential architecture is a process which always has been present in society. The reconsideration and corresponding reaction in architecture was not only influenced by dwellings and building types, also the political and societal point of view played a role in it.\(^1\) As a result, the Dutch residential architecture was brought to reincarnations over time.

These reincarnations of Dutch residential architecture are not something only of the past. Nowadays this reincarnation is still important. Due to technical developments and issues like climate change, shifting demographics, and an increasing nationalistic feeling it is also in the current society important to keep the residential architecture connected. Therefore the residential architecture needs to be reinterpreted again. Goal of the Dutch Housing graduation studio is to figure out how to interpret the issues of the current time and how architecture can connect to this society again. Question is:

“How do we want to live and what kind of buildings do we need to allow for that?”

In other words, what do we have to change in residential architecture to fulfill the specific needs of today’s society? To give an answer on that, a manifesto will illustrate one of today’s problems in the city of Amsterdam, the location for the graduation project. Therewith the topic for the graduation studio will be introduced in a way it will represent ideals about residential architecture in the future. Related to this topic, a target group will be connected. Both, topic and target group, will be analyzed in the historical and present day context.

To learn form the past and make a reincarnation of present residential architecture possible, a plan analysis of precedent projects will be made. Goal is to find answers on specific design issues which are related to the topic of the graduation project.

Goal of the report is to merge all necessary information which is needed for a well-balanced design. Besides that, it should give an answer on three important questions. Namely: what should the design be, for who will it be designed and where would it be located? Therewith this report will be the guideline for the second semester of the graduation process.

**Topic introduction**

The Dutch economy is doing great, especially in comparison with other European countries, that is the message of the *Centraal Planbureau*.\(^2\) The consumptions increase because of higher incomes and therefore there are more and more investments. This phenomenon is strengthen by the fact that, since the economical crisis which came to an end in 2013, the European Bank is keeping the interest on...
rates low to support the consumption in the European countries.³

Although the method of the European Bank to support the economy is mostly positive, it also has some downsides. Especially when looking at the real estate market. Because saving money is not that interesting anymore (it does not give much profit), people will invest their money in something else. One of the options is investing in real estate. These investments are driving up the prices for real estate. Combined with the fact that a lot of projects are not realized during the financial crisis, a shortage in real estate arose.

**Shortages on real estate market**

Amsterdam is dealing with this problem of shortage on the real estate market as well.⁴ Both shortages in dwellings and office buildings will lead to specific problems. First the shortage in dwellings in Amsterdam city center (image 1.2). Due to the shortage, as an effect of the market forces, the prices are rising. Because of this, it is hard to find a dwelling for the lower and middle class of the society. More and more these people are abandoned to the areas further away from the city center. The fear is that in a couple of years living in the city center of Amsterdam is only affordable for the upper class, the phenomenon of the so-called gentrification.⁵ To avoid this gentrification, which could have a negative effect on the livability of the Amsterdam city center, the housing stock should increase. To avoid gentrification, mainly houses in the middle segment of the housing market are needed.

On the other hand there is a shortage in office buildings. Although the Amsterdam municipality is aware of this problem and therefore already decided to build at least two office buildings a year (image 1.3)⁶, this does not solve the problem completely. Especially not because lots of foreign companies are coming to Amsterdam the last couple of years, since the end of the financial crisis almost 700!⁷

The prognosis is that this number will increase in the coming years and that an extra 300,000 m² floor surface is needed to meet the demand.⁸ This number is partly expected because of the decision of the United Kingdom to leave the European Union, the so-called ‘Brexit’. Therefore lots of companies will move to other European countries, including the Netherlands and Amsterdam in particular. Besides the foreign companies, also companies who are already settled in Amsterdam are looking for bigger working places. Main reason for this is the fact that, due to the great doing economy, consumers spend more money. As a result, companies have more work and therefore need more space to meet the demand of the consumer. To fulfill the needs of the companies, two office buildings will not be enough.

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³ Executive Finance (2017)
⁴ Wanders, J. (2016)
⁵ Nieuwsuur (2016)
⁸ Rooijers, E. (2018, 15 January)
⁹ NOS (2018, 30 January)
Gentrification

As mentioned before, gentrification on the housing market is not preferable, mainly because due to this phenomenon people with lower incomes will leave the city or will move to the outskirts of the city. What makes it a problem is the fact that it is not a solid solution to solve poverty in the city, the problem only will be moved to other areas. Thereby the gap between people with lower and higher incomes will grow. Besides that, the gentrification does not only have an affect on people with lower incomes. Also young professionals will be disadvantaged by the gentrification. Because they do not earn that much money already, they do not have the ability to afford a house in the upper range of the market. Problematic is the fact that exactly the young professionals are the people that the municipality is trying to attract.

To do something against the gentrification problem, it is important that people move to a dwelling which corresponds with their income. When looking at the current situation on the Amsterdam housing market, the conclusion can be made that the main problem is that there are not enough dwellings in the middle segment. The biggest part of the group with a middle income (up to €52,500,-- gross/year; 1.5 modal) does not live in this segment. More than half of the group (52%) instead lives in a dwelling which pertain the lower segment, the problem of the so-called ‘scheefwonen’. As an side effect, the shortage of middle class dwellings has a negative effect on the lower part of the housing stock. Result is that it will be hard for people with lower incomes to find a dwelling in Amsterdam as well.

To solve the problem of ‘scheefwonen’ and therewith the problem of gentrification, it is important that the housing stock in the city center will increase. By building dwellings in the middle segment, people can move towards these new dwellings. As a results, dwellings in the lower range of the market becomes available for the lower class which in the end will bring back the balance on the Amsterdam housing market.

Economical position

Amsterdam has, on a national and international level, a good reputation when looking at economical opportunities. Due to the good location in the Netherlands and Europe, the diversity and open culture in the city, and the available knowledge infrastructure, Amsterdam could be seen as one of the European business hubs. Thanks to this position in Europe, which is indispensable for the Netherlands with its open economy, the Dutch economy could grow with 3.2% in the last year, one of the best results in the European Union (image 1.4). With this growth, the economy came back on the level before the beginning of the financial crisis in 2008.

![Image 1.4: growth of economy in percentage (Centraal Planbureau (2018))](image)

Although Amsterdam already could be seen as an European business hub, the municipality of Amsterdam has the ambition to extend this position to a global scale: Amsterdam as a global business hub so that it could act on the world stage. Goal of this ambition is to attract multinationals and smaller world-orientated companies to Amsterdam so that it will strengthen its position in the global economy, and therewith could guarantee the welfare of its citizens in the future. To achieve the ambition it is important that all facilities will be arranged so that the city of Amsterdam and the Netherlands as a...
whole could keep its good position in Europe and the world. Most important facility will be office spaces which should make Amsterdam an attractive city which is ready to welcome global players.

The reason why it is important for the city of Amsterdam to build more office space right now, is the fact that there are opportunities to strengthen its position. Due to the Brexit, lots of multinationals and global orientated companies will leave the United Kingdom and are looking for a new and interesting place to settle. By reacting on this, Amsterdam could improve its position on the global economy. If the city does not, it will fall behind in comparison with other European cities.

Reaction

It will not be the right thing to do to choose for one or another. Both dwellings and office spaces are needed to guarantee the livability and success of the city of Amsterdam. Instead, dwellings and offices should be built in an efficient way so that it will deal with the limited amount of available space. A solution for saving space is to combine functions with each other in one building. By doing this, both the shortages will be addressed and therewith will have a positive effect on the business climate of the city.

As a side-effect, the solution will also have other positive consequences. First the city of Amsterdam becomes more sustainable. Buildings will be used in a sufficient way and will not be abandoned that much during the day in comparison with the traditional separated dwelling and office buildings. Automatically this has a positive influence on the energy consumption of the building which will be less. On the other hand the combination of both dwellings and offices could result in an answer on the mobility question Amsterdam (and the Netherlands) is facing in the coming years. Because people could live near their work traveling will be reduced to the minimum.

Research and design questions

The research question, based on the topic, is related to the question what the design should be. The formulated question is:

1. How can dwellings and working places be combined in one building?

To give an answer on this question, the next sub-questions will be researched:

- Where will the separation between dwellings and offices? (public versus private)
- What does make the separation between dwellings and offices?
- What aspects are important to let it work?

Later on in this research rapport the problem statement about the target group and location will be introduced. Related to these questions, for whom the project will be designed, and how the building could blend into the surroundings, the following questions are formulated:

2. For whom will the project be designed?

The related sub-questions are:

- Where does the target group come from?
- Out of how many people does their household exists?

3. How can the building blend into the surroundings?

The related sub-questions are:

- Which location will meet the specific demands?
- What building type is characteristic for the neighborhood?
- What can the new building offer the surroundings (facilities) to avoid clashes with the neighborhood?

18 Amsterdam, H. van, e.a. (2009), p. 10
20 Termaat, G. (2018, 04 April)
Reading guide

The order of the research questions will be leading in this research rapport. The problem statement about what the building should be, the topic, is already mentioned in this introduction. Beside this problem statement also the solution is mentioned already, nevertheless there is not an answer yet on the questions related to what the building should be. Before diving into the topic and its historical as well as present time developments, a manifesto will give strength to the topic and its solution. In the end, after a disquisition of facts, the first guidelines for the design will be presented.

For the research questions related to the target group, the same approach is used. After the problem statement related to the current situation in Amsterdam, a solution is proposed. This again will be placed in a historical and present time context. To give an answer on the stated questions, this part again will end with some guidelines for the design.

To learn from the past and make reincarnations of residential architecture possible, a plan analysis will be presented. Here a topic will be researched which is related to the separation of public, collective, and private areas in a multi-functional building. Goal is to formulate an answer on the related question, something what did not succeed in history.

To answer the third question, the 'where'-question, a site analysis is made. Besides practical information about the plot, also some more specific information can be found here.

Conclusions from the plan analysis and site analysis will be combined in the design brief with the earlier presented guidelines. Here the guidelines and conclusions will be linked to each other to formulate a clear and complete guideline for the design. In the end, this will result in a design concept.
2. MANIFESTO
The 24H building

Towards an efficient use of the city

In 2050 two-thirds of the world population (more than six billion people!!) will live in cities. To make this possible, cities should increase dramatically in size. If we let the city grow the way we are used to it nowadays, the effects cannot be overseen. Instead, we should use the buildings in the city in an efficient way to avoid the dramatic expansion in size.

All western cities in the world which had to deal with the reconstruction period after the war do look the same, not only when looking at architecture but also on the urban scale. They could be seen as a result of the modernism movement where segregation of function was iconic. As an outcome of this movement a city existed out of several areas, all with their own function and their own period of use during the day.

Due to different functions, the areas in a city are never all used at the same time. This means that areas are not used during parts of the day. This leads to sleeping areas during the day and during the night. Imagine for example the suburbs of a city which are all empty during the day because everyone is working in the city. Or an office area where only security is present during the night to keep an eye on the deserted buildings. And then imagine how deserted the office areas are during the holidays. Big parts of the cities then will be completely unused for a couple of weeks!!

Together with the shift between the areas in the context of the sleeping city, there is therefore also an enormous shift of people which is not preferable. All public transport facilities are bursting at the seams. The subways are not able to ride on time anymore because of too much travelers and special agents are hired to push as much as possible people in the cabins. A comparable problem arises on the roads in and around the cities. Although infrastructure is dimensioned for rush hours and therefore takes lots of space, traffic jams are a daily returning phenomenon. In the coming years these traffic jams becomes even worse!

We should ask ourselves the question if we want to live in such insufficient cities where building aren’t used half of the time? Do we want to travel with public transport facilities which aren’t able to ride on time? And if so, do we want to use the public transport when people are like squashed sardines? And what about the roads. Do we like cities which are full of them and which are completely blocked during rush hours?

Although Jane Jacobs already tried to go against the idea of segregation of function almost 60 years ago, the shift between functions is still recognizable in cities. We are all leaving our house to travel to the other side of the city for work. We are all doing the groceries in the shop at the other side of the city because that shop has the best offers. Or by overcrowded public transport or by car where we will join the daily phenomenon of traffic jams. The necessary shift never took place, a dwelling is still just a dwelling and an office is still just an offices.

We should not think that the modern city with its segregation of functions is the future city. Instead, we should bring functions together to avoid insufficient use of buildings and the enormous shift of people. We should prevent ourselves from the
The segregation of functions is not necessary anymore, it should be the past. We should make a shift towards an efficient city without segregation. Today we should make that shift towards the city of tomorrow. A city where only multi-functional buildings are present.

Jane would be proud of us!!
3. TOPIC ANALYSIS
To fulfill both the needs for dwellings as well as office spaces in the city center of Amsterdam where the available space is limited, the two aspects will be combined in one building. Besides the positive side-effect related to sustainability (less energy consumption, less movement between work and home, and a more sufficient use of the building itself), it also will have a positive influence on the livability of the area. One of these aspects which will have a positive influence on the livability of the area, is the fact that the area (and building) will be used on different periods during the day by different users. This will increase the social control in and around the building. Besides this, the people also create a bigger support for facilities in the near area. Because people could share them, the chance is bigger that facilities will be realized and/or will establish at the location.

Although there are a lot of positive aspects related to the combination of working and living, is it still not a frequent phenomenon in society. Still, there is a segregation of functions noticeable in cities in the Netherlands. Nevertheless, this does not mean that bringing functions together is completely new in society. It was rather normal till the beginning of the Industrial Revolution in the end of the 19th century that functions were combined. Later on, this changed into the segregation of it.

Period till the start of the Industrial Revolution in Europe/the Netherlands

The segregation of functions is, when looking at the whole history of living and working, a new phenomenon in urbanism and architecture. Till the end of the 19th century is was a regular principle that these aspects were combined in the neighborhood. Due to the small scale of the economic activities and therewith a low impact on society, it was possible to combine these functions in an area. At the same time this variation of living and working (and therewith also consuming) was desirable, people did not had that much options to travel long distances. It was therefore appreciated to have everything which was needed in daily life close-by.

Before the moment that the Industrial Revolution had its influence on the daily life of society, it was rather normal that people worked at home as much as possible. Therefore the architecture of the dwelling was simple and efficient. The houses consisted out of several rooms. Mostly these rooms were multi-purposed and therewith the dwelling had a flexible floor plan. Within this floor plan, people had the ability to make free the amount of space which was needed to practice their craftsmanships.

Another phenomenon was that of working and living next to each other to support the continuity of the function/building without being connected to each other all day. In this specific situation, the balance between working and living was in such a way so that the dweller also could do other things besides the employment related to the building.

At the end of the 19th century, the scale of the economic activities grew. Therewith the craftsmen made more and more the decision to work together. For that reason it became necessary to separate working and living, the craftsmen worked together in one big workshop close to their dwellings where they could share facilities. Despite this economic growth, the change could not count on that much popularity immediately. Working at home namely provided in the possibility that the whole family could help in the business. Besides that, the individual family lost its autonomy over their business and lost the possibility to combine work with other duties like carrying for the children. As a result the use of the dwelling changed as well, the workshop in the dwelling was not necessary anymore and therefore got another function.
Because of technical developments the economic activities grew further, therewith it heralded the Industrial Revolution. The developments had a big influence on the way of working, the scale of the industry increased drastically. Therewith the industry shifted from the small workshops to big factories. Despite this expansion, which resulted in pollution and noise, it did not change the way working and living were combined in the neighborhood immediately. The first couple of years after the beginning of the Industrial Revolution the problems were just neglected. Later on, when the problems became worse, the factories moved out of the cities. There the companies had the ability to grow without causing problems in the city itself. This moment could be seen as the real start of the segregation of functions.

A consequence of the growth of the factories was that more manpower was needed. Because the factories were not in the city anymore and the transport facilities were not well enough to transport a big amount of people every day, the owners were forced to build dwellings in the near area to be sure that there were enough people to work in the factory. This could be seen as the birth of the workers’ district. Good example of such a district is ‘Phillipsdorp’ in Eindhoven (image 3.2). By making these districts attractive, for example by offering facilities like schools, shops, and parks, the companies tried to attract employees. Therewith, the workers’ districts could be seen as individual and independent villages close to the factory (image 3.1d).

Later on, due to better transport facilities, and expansion of existing cities, the districts became part of the city and therewith it lost its individual character. In conjunction with this phenomenon the segregation of functions in the city became more visible (image 3.1e).

Because the craftsmen did not work at home anymore, the production of goods took place in the factories, the use of the dwelling changed. From now on
the dwelling only should facilitate living, workshops were not needed anymore. Finally, this resulted in dwelling complexes in which small dwellings were located. Facilities like toilets and bathrooms were often shared with other inhabitants of the complex.

Despite the segregation of working and living as a result of the Industrial Revolution, this did not mean that people did not work at home anymore. There were some exceptions noticeable in society. An example of such an exception was the cigar industry in Kampen, a city in the east of the Netherlands. Because the capacity of the factories was not big enough and there were no possibilities to expand, the owners made the decision that people should work at home as well. In fact this meant that people worked according the principle which was regular in the period before the Industrial Revolution. Difference was that people were employees instead of self-employed.

### Period after the Industrial Revolution till the end of 20th century

The start of the Industrial Revolution could be seen as the start of the segregation of functions in cities in the Netherlands. Therewith the segregation mostly had an influence on the position of factories in relation with the rest of the city. Functions like schools, shops, and parks were still mixed within the living area’s.

This changed in the 1930’s after Cornelis van Eesteren introduced the functional city in the Netherlands. The idea behind the principle, which was part of the CIAM-movement, was that each function had its own position in the city. Therewith the distinction was made between living, working, recreation, and traffic to improve the livability of the city. With this distinction van Eesteren made the comparison with factories: a separation of proceedings with the goal to improve the production process.

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30 RTV Oost (2013, 22 August)
31 Amsterdam, H. van e.a. (2009), p. 19

![Image 3.2: ‘Philips dorp’ Eindhoven (RHCe (z.d.))](Image 3.2: ‘Philips dorp’ Eindhoven (RHCe (z.d.)))
Although old parts of cities kept the mixed functions, new parts of cities were built according this new idea. The functional city became propaganda and the CIAM characteristics became standard design principles.\textsuperscript{32} Especially after the WO II this principle was reflected on society and therewith became visible in urbanism and architecture in the Netherlands, mainly because lots of new dwellings were needed since big parts of Dutch cities were destroyed. Nevertheless, also before the WO II the influence of van Eesteren was noticeable. A competition for the expansion of Amsterdam, commissioned by the municipality of Amsterdam in 1936, already had the demand to use the principles of the functional city and the CIAM-movement.\textsuperscript{33} A short summary of this commission is presented in box 3.1.

Due to the WO II it took a while before the ideas of Cornelis van Eesteren became visible in Amsterdam society. Finally, at the west part of the city his ideas became real (de Westelijke Tuinsteden). Though van Eesteren was convinced about the success of his ideas, there was a lot of critique almost immediately after the completion of the new neighborhoods. Main problem was that, due to the monotonous design, there was a lack of social cohesion which resulted in an neighborhood with big problems.\textsuperscript{34}

Although there was a lot of critique on the segregation of functions in the West part of the city, this did not stop van Eesteren to develop his ideas about the functional city. Instead he got the chance to design another area, this time at the south east side of the city (de Bijlmermeer), according the modern ideas (image 3.3). Again, a neighborhood emerged where problems and criminality were every-day’s business.\textsuperscript{35}

At the same time van Eesteren designed the Bijlmermeer, there was a counter-movement which was against the segregation of functions. They stated that the functional city was an unurban urbanization, a place where nobody took care for someone else because people did not know each other.\textsuperscript{36} Instead, they propagated the multi-functional city, a city where functions would be combined in the neighborhood.\textsuperscript{37} Therewith the livability and sustainability of the city should increase.

One of the most important fighters for the multi-function city was Jane Jacobs. She wrote the book...
‘The Death and Live of Great American Cities’ in which she stated that the city is a complex ecosystem, a sensitive balance between elements which will have an influence on each other. This was in contradiction with the idea of van Eesteren and the CIAM-movement who pulled out the specific elements. Therewith the balance in the neighborhood was gone which in the end resulted in a failure of the design.  

The idea of Jane Jacobs was that a city and/or neighborhood should contain four primary conditions to obtain an useful and great city diversity which in the end will be a healthy ecosystem. These four conditions were:

1. The district and as many of its internal parts should contain at least two primary function: preferably more. This should insure the presence of people for different purposes;
2. The blocks must be short; people should have the ability to turn around corners;
3. The district should contain buildings that vary in age and condition;
4. The district should be dense in such a way so that there will be people all the time.

Despite the fact that Jane Jacobs was very popular and had several important followers, her idea did not stop the segregation of functions on an urban level. Although there was a lot of praise for her ideas, the modern idea remained standard.

Nevertheless, combining functions was never completely disappeared. In some residential buildings, the traditional principle of multi-functional dwellings was still noticeable, even before Jane Jacobs expressed her critique about the segregation of functions in the 1960’s. Mostly the combination of living and working was made to support the continuity of the function/building like illustrated in image 3.1b. Due to the mono-functional point of view the buildings were approached, some questions raised about the balance between public and private. Main issue was what the impact was on the dwellers as well as on the institution which was related to the dwelling. Despite the raised questions, it did not stop many architects to combine functions in such a way.

The modern architecture where working and living was combined in a building could not count on that much attention in society. This changed in the 1960’s. In the second half of this period, Jane Jacobs led the ‘live/work’ movement which propagate the idea of combining working and living in the dwelling in New York. Because famous artists liked the ideas and therefore provided a lot of attention for it, the principle got followers in society, even in Europe. Despite this the type of dwelling never became a regular principle.

### Period from the end of 20th century till now

The type of dwelling where living and working will be combined, never became a regular principle in Dutch architecture. Nevertheless, more and more people decided to work at home (image 3.4). Reason for this was the fact that it became possible to do. Multiple developments were liable on this.

First it became possible to work at home because there was a shift in type of work. Till the end of the 20th century the Dutch economy was running on

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31 Amsterdam, H. van e.a. (2009), p. 9
33 Groen, J. e.a. (2004), p. 48
34 Groen, J. e.a. (2004), p. 71
35 Groen, J. e.a. (2004), p. 71
36 Amsterdam, H. van, e.a. (2009), p. 10
37 Schrijver, L. (2006)
40 Holliss, F. (2015), p. 47
41 Holliss, F. (2015), p. 47
42 Holliss, F. (2015), p. 57
43 Image 3.4: Working in living areas because Dutch dwellings are not design with a separate working room (Mamalobke (2018))
the industry. The scale of the production did not make it possible to work at home, the dwellings in the Netherlands were not appropriate for it anymore. Due to the shift towards an economy based on knowledge, not that much space was needed anymore which gave the employees the possibility to work at home.43

Secondly technical developments made it possible for employees to work at home, this in combination with the shift towards a knowledge-based economy. Due to the introduction of the Internet and the availability of computers and mobile phones, distances became relative. Therewith employees always could have a connection with their colleagues.

Due to the developments in society the amount of employees who will work at home increased. In the period between 2008 and 2012, the period before the financial crisis, the number increased with 5% to an total of 32%.44 The collaboration of government and employers also had their role in this increase.

That the government saw the benefits of working at home, becomes clear of the fact that the government introduced a new law called ‘Wet Flexibel Werken’ (2016). This law gives the employees more rights to work at home on a time which it preferable for them. Besides that, the law introduced some regulations about the facilities the employer should facilitate to meet the demands of the employee in relation with the ‘ARBO’-regulations.45 By introducing these demands, the regulations (which resulted in high costs) no longer will be a limiting factor for people to work at home.46

In collaboration with the new law and the technical developments the principle ‘Het Nieuwe Werken’ is introduced. This principle is introduced after the financial crisis, a period where companies were obligated to reduce costs to survive. Idea was that employees should be flexible in location and time so that the offices should become smaller and therewith the efficiency of the company as well as of the employee should increase. Because employees did not have an own desk, companies give them the possibility to work at home as well.

Although the amount of people who will work at home is increasing and therewith shows the increased popularity of it, it should be noticed that the combination of working and living has some limitations. Main one is that it is important for employees to have contact with colleagues to insure the visibility. This will amplify faith in each other. For that reason, working at home is limited to an average of two days a week to preserve the relationship between colleagues and employers.47

Guidelines for the design

The history already proved that segregation of functions will decrease the livability of an area. Instead, according to Jane Jacobs, functions should be combined. Preferable is to combine more than two functions to insure the presence of people during the day. Related to the current situation in Amsterdam, the functions working and living should be combined at least. In this situation it is, according the Frances Holliss, important that there will be a good balance between the public and the private area. A clear separation is appreciated.

By combining multiple functions with each other, it is important that a balance should be found between working and living. Besides that, it will be important to design the dwellings in such a way it will provide in the ‘ARBO’-regulations. Therefore the dwelling configuration of before the Industrial Revolution, especially in relation with the multi-functionality of rooms, should be leading for the future design. Although a lot of regulations of the ‘ARBO’ will increase the working conditions, still some other aspects needs attention for a functional working space. In her book ‘Beyond live/work’ Francis Holliss makes notion of these aspects.
One of these aspects is to think about sound insulation, not only in the dwelling itself, also between dwellings and in the outer facade. By doing this, the workability of the dwelling will improve. Secondly it will be important to think about the climatic circumstances of the working spaces. Because the working spaces will not be used all day people will regulate the climate on another, mostly not ergonomic, way. For that reason it is important to have a climate system which is sufficient and easy to use, also if the working spaces will not be used that often. A third, often underestimated, aspect is the presence of enough storage space.\footnote{Hollis, F. (2015), p. 100-120}
As mentioned before, the Netherlands has an open economy. Therefore it is important to attract multinationals and smaller world-orientated companies. These companies will strengthen the position of the Netherlands on the global trade market.

Attracting world-orientated companies is also important for the city of Amsterdam. Although the city is an European business hub already, the municipality is trying to become a global one. Therewith it will strengthen its position on the global economy, something which will guarantee the welfare of its citizens in the future.

Right now the city has an unique opportunity to strengthen this important position. Due to the ‘Brexit’ lots of companies will leave the United Kingdom. The municipality of Amsterdam is aware of this, it has the prognosis that an extra 300,000 m$^2$ floor surface is needed to meet the demand of office spaces. Therefore they already decided to built at least two new offices a year to try to improve the business climate.

With the knowledge that the last couple of years almost 700 foreign companies settled in Amsterdam and that due to the Brexit there will be an extra shift of Britain companies towards the European mainland, it is plausible that the amount of companies which will settle in Amsterdam will increase. Because the intention of the municipality of Amsterdam to build two new offices a year in this situation will not be enough the meet the demands, the decision is made that the design for a new residential building will contain working places as well with the idea that offices are less needed or can become smaller. Goal is to improve the business climate in Amsterdam and therewith attract more foreign companies. Important is to know which companies will come to Amsterdam. What type of work do they do and what are their needs?

**Shortages in employees for specific companies**

When looking at the almost 700 foreign companies who settled in Amsterdam the last couple of years, a big amount of companies are working in the TMT-sector (technology, media, and telecom). Besides that, lots of companies are related to the financial and business services. What the type of companies have in common, is that they all need a good working place (office) and good employees. As mentioned before the importance of good working places is known. For that reason the decision is already made to build and design new offices to solve the current problem of shortages on the real estate market.

Despite that, good employees are also necessary for a good operating result. Problem is that, especially in the TMT-sector, people who are well-educated to fulfill the needs of companies are scarce. Main reason for this is the fact that at this moment not enough people follow education in the Netherlands for these kind of jobs. To meet the demand and therewith solve the problem of shortages, companies could employ knowledge workers, the so-called expats, from abroad. Although this will solve the problem of shortages in staff, it creates problems at other aspects. The employees will exert pressure on the already problematic Amsterdam housing market. Nevertheless this does not weigh up against gaining a good economical position on the global market.

1 Rooijers, E. (2018, 25 January)
2 Gemeente Amsterdam (2018)
3 Stijl, H. (2018, 6 January)
4 AT5 (2017, 28 September)
However, it is important that the extra pressure on the housing market in combination with the opinion of the citizens of Amsterdam about this problem should not be underestimated. Because the expats have more money to buy or rent a dwelling, mostly due to support of the employer and a tax benefit, citizens of Amsterdam have the feeling that the expats capture the city. This should be avoided so that the people could live together in the city on an pleasant way.

**Foreign workers before the WO II**

To attract workers from other countries to fulfill the needs on the labor market is not new in society. Already in the Medieval there were labor migrants. The migration of people in this period was not without a reason, mostly the migration was because of oppression of and/or war against specific communities. Around 1500 this led to a migratory flow of Jewish people who came form Portugal and Spain. A couple of decades later, in the period between 1570 and 1585, another flow arose of people who came from Belgium. Due to the fact that these groups of people contained high-educated and well-known people (Joost van den Vondel settled in Amsterdam, others like Frans Hals and Lodewijk Elsevier settled in cities around Amsterdam), the city of Amsterdam became one of the most important economic and financial centers in the world. Later on, in the end of the 16th century, this phenomenon was strengthen by the arrival of good qualified craftsman form France. This could be seen as the start of the Golden Age (17th century) in the Netherlands.

In the 17th century more and more people came to the Netherlands and Amsterdam in particular. In contradiction with the migration in the centuries before, migration now was because people searched for a better economical future. Therewith the essence of the migration was not related to safeness anymore. Due to the fact that the economy was doing great, lots of migrants had the goal to take advantage of this. Therefore they could do work where the Dutch citizens were not interested in. On the other hand Dutch citizens left Amsterdam and the Netherlands to work in one of the Dutch colonies or at one of the tradings posts of the ‘Vereenigde Oostindische Compagnie’ (VOC). Finally this resulted in the fact that almost half of the Amsterdam population was born in another country.

The term ‘expat’ could be interpreted differently. When looking at the etymological interpretation it means outside (‘ex’) native country (‘patria’), translated out of the Latin vocabulary. Literally seen, this translation is about all foreign workers. Nevertheless, in this research rapport I will limit the group. Therefore I will use the characteristics of an expat used by the ‘Centraal Bureau voor de States-tiek’ (CBS).

Their interpretation of an expat is:4

- An expat is born and raised in another country;
- An expat earns more money than a regular employee;
- An expat works for an international orientated company;
- An expat is high-qualified;
- An expat does not have the intention to settle permanent in the Netherlands;
- An expat does not (or barely) identify with the Dutch values.

If an foreign worker does not match with one of the characteristics, the research rapport will not be applicable. Though in the historical context of the foreign worker, the characteristics are not relevant.

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1 Ooijevaar, J. e.a. (2015), p. 6-7
2 Amsterdam, H. van, e.a. (2009), p. 20
3 Commissie arbeidsmigratie (2014), p. 84-85
4 Commissie arbeidsmigratie (2014), p. 84-85
5 Ooijevaar, J. e.a. (2015), p. 6-7
6 Amsterdam, H. van, e.a. (2009), p. 20
did not stop completely. Still people from surrounding countries came to do seasonal work, mostly related to agriculture.\textsuperscript{9} Besides that, lots of natives were hired by the Dutch army. This stopped after the introduction of the conscription in 1810.\textsuperscript{10}

In the 20\textsuperscript{th} century there was an increase noticeable in the amount of migrants. Reason for this was, again, the oppression of and/or war against specific communities. Now migrants not only came from countries in Europe, also lots of people came from former Dutch colonies. This shift was not only noticeable in the period before the WO II, it hold on also in the period after the war.\textsuperscript{11}

\textbf{Foreign workers after the WO II}

The period after the WO II was an interesting one. The economy was booming and because of the reconstruction of Dutch cities, there was a lot of work available. Lots of migrants came to the Netherlands to work, especially from the regions around the Mediterranean Sea. Though there came many labor workers from other countries, this was not enough to meet the demands of the companies. For that reason Dutch employers went in the 1950’s and 1960’s to countries like Turkey and Morocco to employ people for work wherefore no education was needed.\textsuperscript{12}

When looking at the living conditions of the labor migrants, the conclusion can be made that the conditions related to the dwelling were not good. Mainly the workers shared a room with multiple people. Although this was their own choice most of the time, they could save more money for their family because of lower costs, it had a negative effect on the neighborhood they lived in.\textsuperscript{13} Main issue was that the inhabitants did not feel comfortable anymore because of the big amount of foreign workers. Besides that, the Dutch residents had the feeling that the foreign workers capture their houses on the problematic housing market.\textsuperscript{14} This led to the danger of segregation between people in the neighborhood.

\begin{figure}[h]
\centering
\includegraphics[width=0.8\textwidth]{image3_6.png}
\caption{Migrants in the Netherlands (Hartogh, R. de (2012))}
\end{figure}

\textsuperscript{9} Commissie arbeidsmigratie (2014), p. 84-85
\textsuperscript{10} Amsterdam, H. van, e.a. (2009), p. 20
\textsuperscript{11} Commissie arbeidsmigratie (2014), p. 84-85
\textsuperscript{12} Commissie arbeidsmigratie (2014), p. 84
\textsuperscript{13} Heijke, J.A.M. (1979), p. 148
\textsuperscript{14} Heijke, J.A.M. (1979), p. 149
commitment for employers to arrange housing for their employees. The employers bought complexes to accommodate lots of workers. As a side-effect, the employers had the ability to offer the workers lots of facilities. Everything was done to make it as attractive as possible for the employees to work in the Netherlands.\footnote{Hout, R. van den (2010)}

This situation continued till the 1970’s. Because of a decreasing growth, the urgency of guest workers disappeared. Therefore the Dutch government made the decision to stop the labor migration.\footnote{Heijke, J.A.M. (1979), p. 1} By making that decision the amount of labor migrants reached its culmination of 1.4% of the total population of the Netherlands (which was low in comparison with the surrounding countries).\footnote{Ooijevaar, J., e.a. (2015), p. 5} Although the labor migration stopped in the 1970’s and the idea was that the employees went back to their native country when work was finished, the amount of 1.4% of migrants did not decrease. Main reason for this was the fact that most of the Turkish and Moroccan workers stayed in the Netherlands, especially those whose families already came over to the Netherlands.

After the 1970’s the labor migration reached a minimum. Nevertheless, due to the expansion of the European Union in the last decades, the amount of foreign workers increased. Main reason is due to the fact that it is easier for European citizens to work and stay in another European country.\footnote{Commissie arbeidsmigratie (2014), p. 90} Because the height of the income was one of the main reasons for people to work in another country, lots of European citizens came to the Netherlands.\footnote{Ooijevaar, J., e.a. (2015), p. 83} Here the incomes were one of the highest in Europe.

Foreign workers at this moment

Nowadays the labor migration is still noticeable in Dutch society. Though in history the migrants did low educational work, in the present commonalty there are also more and more labor workers with a high level of education and therewith have a high income.\footnote{Spaans, V. (2018, 14 January)} These people meet the presented characteristics of the so-called expat. This increase of knowledge workers could be explained by the fact that, as mentioned earlier, the Dutch economy is moving towards an open knowledge economy. Industry becomes less important, therefore labor migrants are less needed.

In contradicting with the past, the Dutch government nowadays is aware of the importance of expats in the Netherlands. For that reason, the expats do not pay that much taxes as the regular Dutch citizen does.\footnote{Spaans, V. (2018, 14 January)} Therewith the government tries to make it as attractive as possible for the expats.

The awareness that the expats are needed for an attractive economic climate is also noticed by the municipality of Amsterdam. In the ‘Europastrategie Amsterdam smart global hub’ they make notion of the necessity of this group for the city of Amsterdam. What illustrates the necessity as well is the fact that the municipality of Amsterdam started a campaign in London to attract expats, this related to the ‘Brexit’ (image 3.7). Nevertheless they also state that it is important that the expats do not displace the Amsterdam citizens.\footnote{Gemeente Amsterdam (2012), p. 3}
Target group

As stated before, this research rapport is about the expat, a knowledge worker who is well-educated, has a high income, and does not have the intention to stay in the Netherlands forever. When looking at the amount of expats who belongs to the demarcated group, the conclusion is that this group contains still more than 75.000 expats.\textsuperscript{23} Around the half of this group is coming from a country which belongs to the European Union, the other half is coming from outside the EU.

When looking more specific at the origin of the 75.000 expats in the Netherlands, the expats with a similar origin are mostly coming from European countries. Within this group most expats do have the German and British nationality.\textsuperscript{24} Due to the ‘Brexit’, the group of expats with a British nationality probably will increase the coming years. When looking at the origin of non-European expats, most of them have the American and Japanese nationality.\textsuperscript{25} What the expats have in common is the fact that they all have a western background.

What the expats also have in common is the fact that most of them have the age somewhere between 18 and 40. Almost 75\% of the expats do have an age in this range (image 3.8).\textsuperscript{26} Reflected on the 75.000 expats, this corresponds with more than 56.000 people.

Due to the fact that most of the expats have an age somewhere between 18 and 40, the family composition is quiet mixed. Around a third of the expats is single and lives alone, another third lives together with a partner only. The last third of the group does live with a partner as well as with children (image 3.9).\textsuperscript{27}

One of the characteristics of the expats is that they do not settle in the Netherlands permanently. The length of their stay is strongly variable. As an average the duration of their stay is approximately two to five years.\textsuperscript{28} Plausible is that families with children will settle for a longer period because of a steady life for the children. Singles are more flexible and therewith could move faster to another place.

Guidelines for the design

Due to the fact that expats have more money to spent on the already problematic Amsterdam housing market, the citizens of Amsterdam have the feeling their future houses will be captured. This could result in a segregation between the two groups, something which almost happened in history as well.

\textsuperscript{23} Ooijevaar, J., e.a. (2015), p. 11
\textsuperscript{24} Ooijevaar, J., e.a. (2015), p. 14
\textsuperscript{25} Nicolaas, H., e.a. (2003), p. 21
\textsuperscript{26} Ooijevaar, J., e.a. (2015), p. 13
\textsuperscript{27} Ooijevaar, J., e.a. (2015), p. 15
\textsuperscript{28} Ooijevaar, J., e.a. (2015), p. 16

Image 3.8: division of expats in the Netherlands related to age (CBS (2015))
To prevent a separation, the employer should facilitate new dwellings for their employees with the idea it is not necessary anymore for the expat to search for a house on the Amsterdam housing market. Nevertheless the problematic Amsterdam housing market is not the only reason for irritations. The fact that expats mostly do not identify with Dutch values, they do not know the unwritten rules, they could cause nuisance in the neighborhood. To separate expats and Amsterdam citizens in a proper way, this problem could be avoided.

To make it possible to adapt the needs of the company in the building, it is important to know which company will be the future user. When looking at the current situation in Amsterdam, most foreign companies are related to the TMT-sector. Due to this, the building for working and living will be designed for these companies to make the target group as big as possible.

When looking at the characteristics of the expats who will work in the building, the biggest group (around 75%) has an age in the range 18 - 40. This is the group the dwellings will be designed for. Related to this, the households of each expat will be different. Based on image 3.9 the dwellings will be designed for three different family compositions, all in an equal quantity.

To prevent a separation, the employer should facilitate new dwellings for their employees with the idea it is not necessary anymore for the expat to search for a house on the Amsterdam housing market.

Though this will be attractive for the expat in the first place, the employer could also have some benefits. Nowadays lots of employers namely pay a compensation for the high costs for a dwelling in Amsterdam. If the employer can offer dwellings to the expats which are in ownership of the company, costs for living of employees could be limited for the company.

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29 AT5 (2017, 28 September)
30 AT5 (2017, 28 September)
4. PLAN ANALYSIS
<table>
<thead>
<tr>
<th>Topic</th>
<th>Separation between public, collective, and private areas in a multi-functional building.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>For a long time in history the segregation of functions was the standard way of thinking in urbanism and architecture, multi-functional buildings were not designed that often. Due to the mono-functional point of view the question raised what a good balance should be between public and private in a multi-functional building.¹</td>
</tr>
</tbody>
</table>
| Research question | 1. What is the position of the functions in a multi-functional building?  
2. Where are the functions segregated from each other?  
3. Which elements make the segregation of functions possible? |
| Hypothesis | Each function in a building has its own usage pattern during the day, therefore I think that each function has its own position in the building. Related to this position, I expect that each functions has its own entrance and therewith could be closed of from the other functions. I foresee that this segregation is already noticeable on the ground floor so that each function can be reached from outside. |
| Method | Because I expect that the functions are divided in the building, I decide to make an axonometric drawing which will show the mass of the building. Due to the fact that the segregation of functions probably will be noticeable on the ground floor, I will draw the floor plan of the ground floor. This will be an axonometric drawing as well so that the relation between floor plan and mass could be seen. |

¹ Holliss, F. (2015), p. 47
De Rotterdam

Location: Rotterdam, The Netherlands
Architect: Rem Koolhaas (OMA)
Completed in: 2013
Floor surface: 160,000 m² (netto)
Functions: Office, dwelling, hotel, parking, commercial space

Het Haagse Hoge Huis

Location: The Hague, The Netherlands
Architect: Dick van Gameren and Bjarne Mastenbroek
Completed in: 2004
Floor surface: 30,800 m² (netto)
Functions: Office, dwelling, commercial space

Klarheit

Location: Tokyo, Japan
Architect: Koh Kitayama + architecture workshop
Completed in: 2008
Floor surface: 800 m² (netto)
Functions: Office, dwelling, commercial space

References:

1. Lootsma, B. (2014)
2. Putt, P. van der (2005), p. 60-65
The functions in ‘De Rotterdam’ are divided over the different segments (towers and plinth) of the building. Therewith a clear separation is made between the functions. On the ground floor of ‘De Rotterdam’ all functions come together. Nevertheless, all functions have their own entrances, mostly situated in the facade. An internal corridor on the ground floor connects the functions inside the building. Combined with the entrances, each function has its own routing in the building.
There is a clear separation between the plinth of the building and the towers on top of it. All functions in the towers are private. People should work or live there or people should make a reservation (and pay) for the hotel to get access to the upper part of the building. Related to these functions, the entrance areas on the ground floor are private as well. Exception is the lobby of the hotel, this could be seen as a collective area.

Though the central lobby and the internal corridor are connecting private as well as public functions, the lobby and corridors become collective. (Due to the fact that the lobby and internal corridor could be closed off, the decision is made to name it collective instead of public)

1. Door
   The door could be opened with a key or card. Therewith it will give the ability to enter the building.
   After entering no further regulation possible.

2. Gates
   The gates could be opened with a key or card. Therewith it will give the ability to enter the building.
   After entering no further regulation possible.

3. Elevator
   The elevator could be used with a key or card. Therewith it will give the ability to enter the building.
   After entering regulation is possible (a key could bring people to one specific floor)
Though each segment has its own function, this does not mean that each segment has its own entrance. Sometimes segments with an equal function share the entrance in the form of a central lobby. Nevertheless, all functions are separated from each other.

In the end each function is accessible from outside. Besides that, each function has its own routing through the building.
There is a clear separation between the ground floor of the building and the towers on top of it. All towers are private, you should live or work in it to get accessibility. Most of the office segments share a central lobby from which the office towers could be reached, this lobby could be closed off. The space underneath the towers which do not have a footprint on the ground floor, belongs to the collective lobby.

An internal street is going through the building. This street connects the areas at the two sides of the building with each other. This street is accessible for everyone.

1. Door

The door could be opened with a key or card. Therewith it will give the ability to enter the building.

After entering no further regulation possible.

2. Elevator

The elevator could be used with a key or card. Therewith it will give the ability to enter the building.

After entering regulation is possible (a key could bring people to one specific floor)
Due to the scale of the building, several functions will share an entrance. Nevertheless, there is also an exception noticeable. The office on the second floor namely has its entrance next to the street, the height difference is captured by a stairs.

The third, fourth, and fifth floor, the levels were the ‘work/live’-dwellings are located, do have a shared corridor with which the routing is partly separated.
The offices as well as the dwellings are for private use. Because of the public function on the highest floor of the building, the whole routing becomes a public area which could be entered by everyone.

The fourth floor, the level where the ‘work/live’-dwelling could be entered becomes collective because several households share the internal corridor.

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**Diagram 4.8: Private-Public (own drawing)**

1. Door
   - The door could be opened with a key or card. Therewith it will give the ability to enter the building.
   - After entering no further regulation possible.

2. Stairs
   - Although the stairs do not close off an area, it could work as a barrier for entering.
   - No regulation possible.
Conclusion

After analyzing precedents, a conclusion can be formulated on the stated questions.

1. What is the position of the functions in a multi-functional building?

Functions have their own position in the building. Mostly the functions are clustered to each other to avoid fragmentation of functions. The building parts in which functions are located, can be recognized as building segments. Therewith the functions can be recognized from outside.

There is a clear division in the location of public and private areas. The upper part of the building is mainly for private use, the plinth of the building is mostly public.

2. Where are the functions segregated from each other?

The segregation of functions most of the time takes place in the plinth of the building. There is no difference between public and private functions when looking at the entrance, each function has its own entrance in the plinth. A related, separated routing will lead the user to the building segment in which the function is located.

3. Which elements make the segregation of functions possible?

Several elements can make the segregation between different functions. Most of these element will be physical barriers, the users needs permission to enter (a key or card can regulate this). Others act like a physical barrier but are not one. The user in this situation will interpret the element as a barrier but in fact it is not one.

Elements which can create a physical barrier are:

- Door
- Gates
- Elevator
Elements which can act like physical barriers are:

Discussion

The research results could be improved by doing:

- research on more precedents: In this research rapport three precedents are studied, for a proper and scientific conclusion more than three precedents should be studied.
- research on precedents with the same size: In this research rapport one of the precedents is much smaller than the other two projects. This could have an influence on the conclusion.
- research based on visitation of the building: In this research rapport the research is based on documents. In daily life the way the buildings function can be different. The research can be improved by visiting the buildings. Related to this, results can be improved when all precedents are located in the Netherlands.
5. SITE ANALYSIS
As mentioned in the introduction of this rapport, the location for the graduation studio is the belt of former defense works around the UNESCO protected city center of Amsterdam. On this belt a location should be found which suits both the topic and target group. To find this spot, some guidelines are necessary. Related to the topic, a building which combines working and living for expats, these guidelines are:

- The location has to be visible. People in the city should notice the building which will be a trademark for the company;
- The reachability of the location has to be good, as well for the dwellers as for visitors of the building;
- To avoid irritations between Amsterdam citizens and the expats, the location should be separated from other living areas without causing segregation between expats and Amsterdam citizens;
- Inhabitants of Amsterdam may not get the feeling that the expats are capturing their future dwellings, demolishing of the existing housing stock is not allowed.

When looking at the belt one location stands out. Namely the Zeeburgerpad, a street at the East side of the city center. As illustrated in image 5.2 and image 5.3, the location is visible from many directions and therewith meets the first characteristic.

At this moment the area is mainly used for small industry, a function which is present at the location for a long time. Because the area nowadays can be seen as an exception related to the rest of the center of Amsterdam, the municipality decided that the area should be redeveloped into an area for mixed used.¹

At this moment several buildings are present at the location. Due to the bad condition of these buildings, it will be justified to demolish them. A restaurant, an office, and a workshop should move to another location. Nevertheless, the restaurant and the office could also be reintegrated in the new building.

¹ Gemeente Amsterdam (2016)
Image 5.2: View lines towards the location (own drawing)

Image 5.3ABCDEF: Views towards the location (own pictures)
As mentioned the plot is located at the Zeeburgerpad, a street were the traffic intensity is low. For the future design the lay-out of this street can change in a street with low intensity. Nevertheless there is always a street needed which means that it will not be possible to use the full depth (35 M) of the plot. Still the area could be used as an outside space (shared space).

There are some important aspects related to the location which will have an influence on the design. These aspects are:

- A height difference of approximately 1.5 M, running from the West side to the East side of the location;
- A height difference of approximately 1.0 M between the plot and the water (Nieuwevaart and Lozingskanaal);
- The monumental mill of ‘Brouwerij ‘t IJ’ is situated close to the location (image 5.5C):

Although the plot is closely located to the railway, this will not lead to nuisance on the plot.¹

¹ Gemeente Amsterdam (2017)
In image 5.6 the difference between the old part of the city, the area where the building blocks are located, and the ‘newer’ part can be mentioned. The Zeeburgerstraat and the Czaar Peterstraat will form the border between the areas.

The plot is situated in the ‘newer’ area with lots of stripped buildings. Because the plot is long and narrow, a building block will not be possible to use for the design. Instead, the narrow form makes the plot appropriate for a strip building. Therewith it will blend in the neighborhood (image 5.8)
Next to the Singelgracht and the Alexanderkade multiple higher buildings are situated. With a minimum of eight levels, these buildings are higher than the buildings in the surrounding (image 5.10 and image 5.11).

The strip with higher building could be continued on the plot. Besides the fact that it will react with building at the other side of the Zeeburgerstraat and therewith will make a visual connection, it will also have a positive influence on the visibility of the building itself.

Another high building is the mill of ’Brouwerij ’t IJ’. This monumental building is even higher than the other high buildings in the neighborhood and is prominent in the area. Important is to not block the view towards the mill completely.
Most of the buildings in the neighborhood of the plot have a flat roof. Some of them, mostly historic buildings, have another type of roof.

On the Zeeburgerpad, there are some buildings left which have a shed roof. This type of roof is typical for the location when looking at the history of it (small industry).
When looking at the different functions in the neighborhood, the conclusion can be made that there are lots of functions. These functions are divided in the area. Nevertheless some patterns are recognizable:

- The catering is mostly located on the corners of a building/building block. This has a good influence on the visibility of the catering;
- The retail is mostly located next to important roads. This has a good influence on the visibility of the retail;
- Next to the plot a workshop/atelier is located. This function could lead to noise disturbance. For the workability in the building it is important to be aware of this.

In the current situation a restaurant is located at the West corner of the plot. This should disappear for the new building. Because the type of restaurant is not appropriate for the new building, the restaurant can not be reintegrated in its current form.

In the middle of the plot an office building is located.

This office works in the TMT-sector, the target group for the project. Because this match with each other, the company could be reintegrated in the new building.
Because the location is surrounded by water, there is a lot of open space around the plot. Due to this space the plot is not subjected to shadows created by surrounded buildings, only in the winter some shadows can have an effect on the building.

Important to notice is that the new building could have a negative effect on the surroundings, especially on the houseboats which are floating North of the plot (Nieuwevaart). At this moment the existing buildings are not that high. Nevertheless in the new situation this probably will change. This will have a negative effect on the area North of the plot.
Despite the fact that there are lots of trees near the plot, the area is not that green at all. Most of the trees stand in the pavement. A green park or forest is not close (the only green area is the Funenpark, located North-East of the plot. This green area is collective for the Funenpark).

There are some trees right on the plot. These are sallow trees (‘schietwilgen’) and are located on the South side of it.
Image 5.20: Views from the location (own drawing)

Image 5.21: Views from the location (own pictures)
6. DESIGN BRIEF AND DESIGN CONCEPT
Amsterdam is dealing with a shortage in dwellings as well in offices spaces. Because the available space in the city center of Amsterdam is limited and both elements are needed, the decision is made to design a building in which living and working will be combined. Therewith the ideas about living from the period before the Industrial Revolution will be reinterpreted.

A balance between working and living is important. Related to this, there should be a proper segregation between the public and the private areas. This can be reached by giving each functions its own position in the building. At the same time each function should have its own entrance and routing. Therewith a clear division will be created. To avoid that people will come in an area in which they are not appreciated, a barrier should be designed at the entrance of the function. By doing this, the access can be regulated.

By building dwellings and office spaces in Amsterdam, the business climate of the city will increase. Due to this, more foreign companies will settle in Amsterdam. This increase will be strengthen by the fact that the United Kingdom decided to leave the European Union. Britain companies will leave the UK because of this decision. They will look on the European mainland for a new location to settle, also in Amsterdam.

When foreign companies will settle in Amsterdam, there will be more jobs available. This leads to new problems in the city. For lots of companies, especially in the TMT-sector, not enough well-qualified staff is available. To solve this problem, expats should be attracted to Amsterdam to meet the demands of the companies.

An increase of expats will lead to extra pressure on the already problematic housing market. To avoid clashes with the inhabitants of Amsterdam who have the feeling that their city is captured by others, a solution should be found. When looking at the history, the same problem occurred. At that time expats only were welcome in the Netherlands if the employer could facilitate in dwellings for the migrants. For this moment this means that the employer should facilitate dwellings for the expats. By doing this, the company has more assurance that it has enough staff to do the work. Besides that the company could combine their needs in the building in which living and working will be combined. Therewith the quest to an office building is not necessary anymore. Besides the fact that the captured feeling of Amsterdam citizens could lead to clashes, the way of living could also cause problems. Therefore it is important that there will be a separation between the expats and the neighbors. Besides that, the company should offer the neighborhood facilities with the goal that the neighborhood also could take advantage of the new building.

When looking at the characteristics of the expat, the conclusion can be made that the most of them have an age in the range between 18 and 40. Most of the expats have a European/western background. The balance between the type of households is equal. Singles, couples, and families will be present in the same amount.

To design a dwelling in which working will be possible, it is important to think about some aspects. At first it is important to meet the demand of the ARBO-regulations. Besides that, it is appreciated that the dwelling has proper sound insulation, a good climatic system, and enough storage space.
Based on the information in this research rapport, the following criteria for the design will be used:

### Building

- The building should facilitate living and working
- The building should contain multiple functions (preferable more than two) to increase the livability of the area
- The building should offer facilities to the neighborhood
- The building should facilitate parking
- Functions should be separated from each other to gain a proper balance between public and private. Related to this, functions should have a separate entrance and routing
- The building should stand out in the surroundings

### Dwelling

- The residential area should contain a collective outside space
- The residential area should contain collective facilities
- The residential area should have a connection with the public area
- Each dwelling should have the right size for the specific user:
  - **A dwelling for a single:**
    - has a minimum size of 40-50 M²
    - has at least three rooms (living room/kitchen, bedroom, office)
    - has an outside space (preferable) or has French balconies
  - **A dwelling for a couple:**
    - has a minimum size of 50-60 M²
    - has at least three rooms (living room/kitchen, bedroom, office)
    - has an outside space
  - **A dwelling for a family:**
    - has a minimum size of 90-100 M²
    - has at least five rooms (living room/kitchen, 3 bedroom, office)
    - has an outside space
- Each dwelling should have enough privacy
- Each dwelling should have fixed interior elements (storage)
- Each dwelling should be well-insulated to avoid noise disturbance
The mass of the building is based on the site analysis. First the building will follow the stripped buildings at the East side of the Zeeburgerstraat. On eye-level the connection will be visible with the rest of the area (image 6.1).

Though there will be a connection with the area East of the Zeeburgerstraat, it will be essential to make a connection with the area West of the Zeeburgerstraat as well. Due to the view lines over the Singelgracht, the connection can not be denied. Therefore the decision is made to build towers on the stripped segment. These towers are visible from further away and therewith the connection will be noticeable (image 6.2).

The composition of the towers is based on a mass-study in the location model. When coming from the direction of the railway station, the first tower will block the view towards the towers behind. This will decrease the visibility of the other two towers (image 6.3). Therefore the decision is made that the first tower should be lower. The towers behind will be better visible in that composition (image 6.4).

As a side-effect, the composition illustrated in image 6.4 is better related to the monumental mill of ‘Brouwerij ‘t IJ’. In the specific situation the mill still stands out in the surroundings.
Based on the conclusions of the plan analysis the decision is made that the plinth of the building will have a public character. Office spaces and catering on the ground floor will increase the livability in the surroundings. The dwelling towers will all have a private entrance which is separated from the public functions. Related to the dwellings, on top of the parking garage will be a collective area which is meant for the residents.
SUMMARY

The Dutch Housing graduation studio focus on the changing ideals of society, particularly in Amsterdam. Goal is to figure out how to interpret the issues of the current time and how residential architecture can connect to the society again. Research, which is merged in this rapport, is done to give a proper reaction on the problem statement. Three main questions will be answered:

- What should the building be?
- For whom will the building be designed?
- Where will the building be located?

What should the building be?

Due to the financial crisis, which came to an end in 2013, a shortage arose in real estate. As a result, the prices for dwellings are rising which will make it hard for people to find a dwelling in Amsterdam. By enlarging the housing stock the problem, which could lead to gentrification in the city, could be managed. On the other hand there is also a shortage in the amount of office spaces. Due to the attractive business climate which is necessary to become a global business hub, more and more foreign companies have the ambition to settle in Amsterdam. Enough offices are needed to meet this demand.

The amount of available space in the city center is limited. To solve both the shortages an efficient use of the space is necessary, the functions living and working (dwellings and offices) should be integrated in one building. As a side-effect this solutions also have other positive consequences. The city becomes more sustainable thanks to a sufficient use of the building and the livability of the neighborhood will increase.

Though combining functions in one building is not a frequent phenomenon in society, the principle is not new in architecture. Till the start of the Industrial Revolution it was a common thing to combine working and living in the dwelling. Due to the expansion of the industry since the end of the 19th century, this was no longer possible. The additional disadvantages of the expansion of the industry heralded the segregation of functions. A couple of decades later, in the 1930’s, Cornelis van Eesteren (member of the CIAM-movement) introduced the functional city in the Netherlands. Idea was that each function should have its own position in the city. It resulted in unattractive neighborhoods with lots of problems. Jane Jacobs was against the segregation of functions. Instead she stated that a neighborhood should contain multiple functions to increase the livability.

Nowadays a shift is noticeable in the amount of people who will work at home. The changed type of work, technical developments, and new regulations form the government can be seen as main reason for this shift. The residential architecture should reincarnate to fulfill the needs for an attractive building for living and working. Regulations and preferences like sound insulation, climatic circumstances, and storage should be part of this reincarnation.

For whom will the building be designed?

The settlement of foreign companies in Amsterdam will cause a new problem: a shortage in employees. A lot of the foreign companies are working in the TMT-sector, a category in which too little people follow education. A solution for the problem is to attract expats form abroad. These expats will exert pressure on the already problematic Amsterdam
The last couple of years there is a shift in the type of work and therewith in the type of labor migrants. More and more they meet the characteristics of the expat. Although the expats are not appreciated by all Amsterdam citizens, they are needed for an attractive business climate in Amsterdam. To avoid segregation between the expats and Amsterdam citizens the companies should provide in housing again. A well-balanced separation is needed to avoid nuisance in the neighborhood without creating segregation.

Important to know is what the background of the expat is. In the current situation, most expats are from Germany and the United Kingdom (this number will increase due to the 'Brexit'). The non-European expats mostly have a western background. Most of the expats do have an age between 18 and 40. A third of them lives alone, another third lives together with a partner. The last third of the group does live with a partner and children.

Plan analysis

Combining functions in one building is not a frequent phenomenon in society. It is important to look at precedents to learn from existing architecture and make a reincarnation of it possible. Related to the topic, combining working and living in one building, the question raised how the functions in a multi-functional building are separated. What is the position of the functions and where are these separated? What elements does make the separation?

By looking at precedents, the conclusion is made that functions have their own position in the building. The private function are located in the upper part of the building, the public functions most of the time can be found in the plinth. Due to the positioning of functions, each function has its own entrance and routing system. Elements which makes the separation between functions (doors, gates, and elevators) can be found around the entrance and/or routing system.

Where will the building be located?

Related to the topic and target group, some guidelines are formulated to find a plot on the former defense works of Amsterdam which suits both. The Zeeburgerpad, a location which is visible from many directions, in the end is the best spot. Analysis of the location and its surroundings, combined with earlier formulated guidelines, led to the presented design concept: a building where working and living will be combined in such a way it could be an addition for the neighborhood.
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Introduction


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Plan analysis

5. Site analysis
