The role of socially sustainable, transitional spaces in dense housing projects

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ABSTRACT

As Flanders these years faces the challenge to decrease their sprawl, they will have to integrate density into their cities. Especially in a country where people are used to live on their own parcel with their car in front of the door and a large private garden in the back, the term density gives residents the feeling they have to give up everything they like. This is an image created mainly in modernist times, but recent projects show it can be different. After many research is done on ecological and economical sustainability, now social sustainability is introduced. Here the community and the individual needs are the points of attention. The best place in residential projects to influence social sustainability is the transitional space, the space between public and private. Previous researches have already pointed out some guidelines to design socially sustainable transitional spaces. This thesis will test the effectivity of the design on the perception of the residents on a specific case.

First literature research will be done to precisely define density, transitional spaces, social sustainability and collective housing, then a few cases are presented. Afterwards one of the cases, the Centrale Werkplaatsen in Kessel-Lo by Bogdan & Van Broeck is analysed, comparing the design intentions of the architects with the perception of the residents.

There can be concluded that most of the elements to design socially sustainable dense housing are present. The main point of improvement is the lack of community engagement, especially during the design-phrase. This is one of the most difficult elements to archive, since most often the inhabitants are not known on beforehand. Nevertheless the project is doing great, a lot can be learned from the architects approach.

FOREWORD

The Master thesis together with the Master project form the final piece of the five years study of Architecture at the University of Hasselt. Throughout the thesis I have been very well accompanied by my promotor and co-promotor Prof. Dr. Bart Janssens and Victoria Taranu. I have learned a lot from their method and would like to thank them for their time and effort.

Secondly I would like to acknowledge Bogdan&VanBroeck Architecten, in particular Maxime Czvek for their time, for the interview and for all the useful information I gained through them.

For years I have been interested in the social aspect of architecture, in how architects can make a difference in the lives of the inhabitants and the users of their design. I am therefore glad I could deeply investigate in this subject and have learned a lot through it. I hope this thesis can inspire its readers as much. Hopefully further investigation will be done on the subject in order to improve the way of living for millions of people around the world.

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GLOSSARY

In this list, all main terms, used in the further research will be briefly defined. For a more detailed description of the terms and references, it is recommended to read chapter 2 (literature review).

Dense housing:

> **Actual density; quantitative value:**

The amount people or units using a certain amount of build space. This is described in exact numbers, like UPH = unit per hectare. Some other possible measurements are: FAR = floor area ratio, m^2/ person, … .

> **Perceived density; qualitative value:**

Perceived high density or crowding is a feeling of stress caused by too many unwanted social interactions, this is not directly related to an exact qualitative value, but rather to certain design-outcomes. The feeling of crowding should be avoided.

> **Dense dwelling types:**

Dense housing buildings are usually categorised according to their volumetric appearance and manner of access towards the private units. In this thesis the following categories and sub-categories are defined: linked constellations (row houses and attached houses); combined constellations (urban villa, slab and cube) and vertical constellations (high rise slab, high rise cube, tower).
In thesis will be focussed on multifamily housing of a UPH higher than 30.

Transitional Spaces:

Transitional space in this thesis will mean the continuing in-between space between public space (often the street) and private areas (the private dwellings). But also space in-between several private areas.

Transitional spaces can be categorised according into six types: the corridor, the gallery, the central core, the private oriented hybrid zone, the public oriented hybrid zone, the inner-street or square.

Sustainability/ sustainable development

A multidisciplinary value, existing out of three simultaneous dimensions (environmental, economic and social). It ensures to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Social Sustainability:

The part of sustainability that focusses on the social dimensions of a project, on the community and its members. It exists of two dimensions that should be fulfilled both at the same time:

-social community: fulfilling the needs, wants and demands of present and future residents and users
-social equity: concentrating of participation and involvement of residents and users in management and decision-making

1
INTRODUCTION SITUATING THE THESIS

1.1
CONTEXT

This thesis explores the social sustainability of transitional spaces in dense housing projects. More precisely will be examined how designing transitional spaces with care for the social aspects, can effects the inhabitants and the overall sustainability of the project.

There are already several previous researches about this subject, on different scales and in different countries and situations. Out of these studies it can be concluded that social sustainability is (unlike environmental and economic sustainability) strongly depending on the cultural context (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012). Therefore, this thesis will analyse dense housing projects in the Flemish context.

Previous research, such as the Master thesis of Kristof Dedecker (Dedecker, 2014), have already focussed on transitional spaces in the Flemish context. Dedecker created design guidelines for the overall sustainability of transitional spaces. As mentioned in his outlooks, the research results should be further tested. The deeper examination, preferably on one type of transitional space, will lead to more complete results. The research of Dedecker is entirely based on literature and own insights. This thesis will be more practical, by analysing the effect of design decisions on the inhabitants and the social sustainability of a project.

1.2
PROBLEM STATEMENT

Flanders an area of sprawl

The problem in numbers

Leo Van Broeck, Flemish bouwmeester, points out the importance of densification in housing. Flanders (the Northern half of Belgium) grew through historical evolution into an area full of sprawl. The overall density is 355 inhabitants/km^2. This is slightly high, higher than for example England with 266 inhabitants/km^2. But especially the density measured if counted on each build square kilometre is disastrous, for Belgium this is 2700 inh./km^2 while for England 3900 inh./km^2 (Van Cauwelaert, 2017).

All inhabitants of Flanders easily fit into the City of Greater London, which is more than eight times smaller (Vlaamse Overheid, 2018) (Trust for London, 2018). As the population of Flanders grows further, we should aim to fit them in the space we already use (Van Cauwelaert, 2017).
Belgium has, with its 7.37% the second highest percentage of sealed land, land that is fully covered, in Europe. Considering the low density of the Walloon area, this value for Flanders alone is much higher (Bogdan & Van Broeck Architects, 2014).

"The nation that destroys its soils, destroys itself."
Franklin D. Roosevelt (Bogdan & Van Broeck Architects, 2014)

This remarkable urban structure results in many dramatic European records, like the highest time spend in traffic jams per employee, the European record in km road per housing unit, the European record in km facilities under roads and the highest cost per inhabitant for these facilities. (Bogdan & Van Broeck Architects, 2014) (Balthazar, 2018). These records show clearly that there is an urgent need for densification

of the Flemish cities and larger villages, leaving more space for nature and creating a more defuse, but efficient infrastructure network.

The historic growth of the Flemish sprawl

In order to better counteract on the Flemish sprawl we should understand how it originated. Unlike the common believe, the Belgian lack of urban structure is not a mere result of a national, nonchalant character, but rather a result of economic and social influences throughout the years, strengthened by the government and its laws or the lack thereof (De Meulder, Schreurs, Cock, & Notteboom, 1999).

Flemish people have a brick in their stomach.
(Balthazar, 2018)

This say is assigned to this Flemish mentality of building their own house on the countryside. Joachim Declerck explains that the mentality is the last 50 years encouraged, because it was financially interesting and because the infrastructure build encouraged this development. All costs of living further away were payed for them, which made living on the countryside cheaper than in the city (Balthazar, 2018). The sprawl grew slowly through several laws and subsidies as explained bellow.

In the middle ages Flanders, although dense for its time did show a logical urban structure. Cities were, just like in the rest of Europe ordered according to the central places theory of Walter Christaller developed in 1933. On a tapestry of agricultural fields, dense cities, towns and villages were located on logical spots, the in-between distances and sizes of the central spaces were influenced by economic factors (Briney, 2018).

With the independence of Belgium in 1830 the cities and villages gained a strong independence and constraints on urban growth were left aside.
The first industrial revolution added up to this, industries in plenty of different forms were found place next to one-another. Coalmines were found next to cotton mills and steel factories, in between these industries workers-settlements and mansions for the big leader in the industry were build. The chaos brought to life in this area only grew further throughout the

next century (De Meulder, Schreurs, Cock, & Notteboom, 1999).

But so far the chaotic mix of building types did not disturb the countryside. The colonisation of the countryside started in 1874, when the minister of railways introduced extraordinarily cheap season- tickets for the working class. Due to its overwhelming success, the system was adopted by the 'Nationale Maatschappij voor Buurtspoorwegen' the agency which stood for the more local tramline-connections, funded in 1874 (De Meulder, Schreurs, Cock, & Notteboom, 1999).

The low prices tickets became a political strategy which divided the low-income-class over the countryside. This way Belgium could avoid problematics of over-expanding cities like in the neighbouring countries. On top of that factory jobs became available for everyone, transport was so cheap that no families were stuck on the countryside and designated to gain their living through agriculture. This strategy had a great beneficial effect on the Belgian economy at the time (De Meulder, Schreurs, Cock, & Notteboom, 1999).

The first Belgian housing Act (1889) "Loi sur les habitations ouvert" made private house owning possible for the working-class, by allowing them to build on the countryside, the only place where land would be affordable for them. Dwellings were mainly build alongside existing roads and around train stations. The previous law was in 1947 even strengthened by the 'Le Taeye'-act (De Meulder, Schreurs, Cock, & Notteboom, 1999). After the second world war there was a drastically need for housing. While the opposition proposed rented apartments in high-rise buildings in and around the main cities, where there was more demand, the Christian party (cvp) proposed to build private housing on the countryside, which was much cheaper. The cvp actually aimed for this strategy to boost the building sector and so the economy. After forming a coalition, the 'Le Taeye act' was approved, the act would promote house-ownership through financial support of the government and the availability of cheap loans without an advance to pay.
These loans were divided into four categories depending on the density of the location, since land near large cities costed more, loans there were more

beneficial. This way an even spread of new-build housing all over the area was encouraged (Theunis, 2006).
Luckily the allowed typology for these working-class houses was the row house, this because of its economic benefits, both on land use as on construction. The originally typical urban typology ensured still a decent level of density, which limited the effects on the Flemish landscape (De Meulder, Schreurs, Cock, & Notteboom, 1999).

House-possession became the Flemish way of investing your savings and passing them on to the next generations. Totally out of its original context the row house grew and got adapted. On the backside, throughout generations, extra spaces were build up against the original façade. Due to the escape on urban over-congestion, the Flemish government never really set up urban planning strategies and any attempt to create it failed (De Meulder, Schreurs, Cock, & Notteboom, 1999).

Around the beginning of the 20th century, progressive thinkers and socialists promoted a 'retour à la terre' ideology and tried encourage citizen to leave the cities and go live in garden-suburbs. Romanticised typologies were introduced, referring to the historical, local beguinages and almshouses (De Meulder, Schreurs, Cock, & Notteboom, 1999). The government stopped organising competitions for garden-cities, which were mostly rented social housing. They returned to the Moyersoen law of 1922, that released subsidies to encourage private house owning. The lower social class would also get to buy their own house, the traditional, affordable row house (Van Herck & Vandeweghe, 2006).

Under the pressure of the economic crisis, Hendrik De Man founded in 1936 the Nationale Maatschappij voor Klein Landeigendom (National agency for small-scales and Ownership), in brief the NMKL. This agency build houses combined with small agricultural facilities, this way families could strengthen their income by having the left-behind family-members working in their farm. After the crisis this typology remained existent, but rather than to survive the crisis, the extra income increased the wealth of the families and was used for luxury-investments like a washing machine or a private car (De Meulder, Schreurs, Cock, & Notteboom, 1999).

After the second world war also the middleclass moved towards the countryside. This was influenced by major investments in improved comfort on trains and lowered travel time. On top of that the amount of spare time was increased, housing locations were no longer merely chosen for economic reasons, but personal preference gained its share. With the movement of the middle-class, the former citizen took their culture with them. The nowadays typical typology of the Farmette, a vague reference to the historical farm-typology, was introduced at the time. Row housing, which referred to the lower-income class, was often replaced by this, further lowering the density and increasing the sprawled character. At last the Flemish sprawl became uncontrollable through the democratization of car ownership. (De Meulder, Schreurs, Cock, & Notteboom, 1999)

Throughout this history of urbanising the Flemish landscape, the government showed no remarkable resistance and even supported the development. It could be considered that this was mainly in order to support the housing production, which until today has a major role in the Belgian economy. But the lack of leftover space could drastically influence this (De Meulder, Schreurs, Cock, & Notteboom, 1999).

Nowadays: Changing family structures

After a century of building large houses wider apart, during the last 25 years Flemish households started shrinking drastically. At the start of the '90 the average household contained 2.59 people, in 2016 this was only 2,36 (Vlaamse overheid, 2017). Nowadays statistics point out that 72% of the Flemish households has an under-utilisation of capacity, a value that marks an unnecessary big amount of rooms for the amount of inhabitants. The European average is less than half of it. (Vlaamse overheid, 2016) We therefore have to aim for more smaller units, more apartments rather than family houses.
Joachim Declerck explains that people when growing older want to live closer to their neighbours, this to tackle loneliness. As a result urban planners and architects will have to start thinking about new forms of living adapted to the new family structures. (Balthazar, 2018) As modernist projects shown, living next to one another does not necessarily increase positive contact with neighbours.

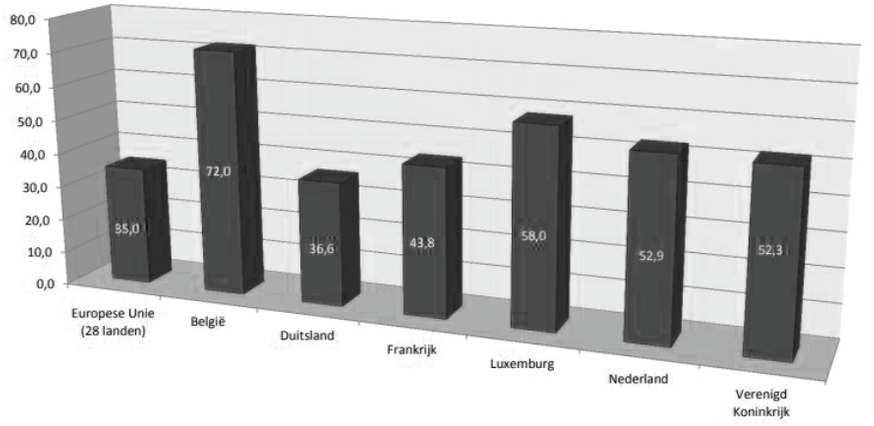


Figure 1: Households with an underutilisation of capacity/ total household _ Under-utilisation of capacity marks more rooms than the minimum: 1 per household, 1 per couple, 1 per person older than 17, 1 room per 2 singles of the same gender and age between 12-17, 1 per single not fitting in above mentioned categories of age between 12-17, 1 per 2 children younger than 12 Retrieved: https://www.wonenvlaanderen.be/woononderzoek-en-statistieken/cijfers-over-vlaanderen-europees-perspectief

Density _ A matter of balance

> Density in Modernism _ The lack of social sustainability

Dense housing got its negative image mainly during the 20th century. Modernist architects and urban planners started to design with great economic consciousness. Several architects, like Le Corbusier, tried to determine a minimal size for all types of living spaces, in order to make housing affordable for everyone. This led to an approximation in which transitional spaces, the spaces that provide access to private dwellings, were simplified to the sole purpose of circulation. As a result people were living closer than ever to each other but in the meantime socially more separate than ever.

Even when architects tried to escape this approximation it still led to severe buildings in Saint Louis by Leinweber, Yamasaki and Hellmuth's (Bristol, 1991, p. 163). Even though its design, which tried to encourage social interaction, was praised in the early stages, the social housing project later on became a main example of the failure of modern architecture.

This was caused by several problems existing on beforehand, the designers were put for an impossible task to begin with. Not only did the existing

community hold severe socio-economic problems (like unemployment, poverty and micro-criminality) and cultural difficulties, the architects were also forced to limit the prices to an unrealistic level. We learned that purely economic approach had a bad influence on interaction with neighbours. Especially with an existing community, the different aspects of the community and design solutions need to be examined carefully, otherwise these projects are doomed to reinforce problematic communities (Bristol, 1991).

Nowadays property developers still hope to get maximal economic benefit out of their project. This forces the designer to limit on the transitional spaces, since these will not be rented. (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012)

> Density and desire

As proven by Van Broeck, density is needed but our desires tell us differently. We have been analysing density over the years and examined ways of generating and calculating it, like floor area ratio, units per hectare, … Density is vital to the planet and we use it to evaluate plans. But we seem to avoid a critical point in the development of it: "Do we really want to live in the compact City?" (Per, Mozas, & Arpa, 2011) The typical Flemish housing dream is one where we live in a detached house with a private garden in a suburban area. (Camp, 2017)

As former Minister of spatial planning Philippe Muyters explains, this remote housing should cost much more than urban housing, unlike nowadays. Not only to discourage living in such an unsustainable manner, but also because the cost of facilities (like water, electricity and postal deliveries, …) is much higher. This cost should not, like now, be paid with taxes. (Van den Broek, 2012)

> The promise of density

People feel like they have to give away a lot of things they like, but they will also get a lot in return, says Leo Van Broeck (Balthazar, 2018).

"If it's not fun, it's not gonna work" Van Broeck
(Vermeersch , 2016)

Van Broeck brings a positive story. He does not want to take away the - by

Flemish beloved - detached house they are used to. Instead he shows them a different nice option. Public transport will be more efficient, people will live closer to actual nature and at the same time reach their jobs faster, so they will have more time left to spend with their family. (Vermeersch , 2016)
He states that when Flemish people would move to denser cities and villages this would result in: more use of bikes, more nature, more public transport, less smog, safer bicycle lanes and less fatal accidents. (Balthazar, 2018)
Van Broeck also points out that many people are against high-rise, but when trying this out, it turns out better than they thought. It is not ideal for everyone, for some row-housing, can be an option. Especially detached houses should be avoided. (Vermeersch , 2016)
Paula Viganó speaks about the advantages of a 'no-car' city. It would result in a reduction of carbon emission, accidents and lost spare time.

"What if we imagine that the defuse city of Flanders, that is the densest infrastructure place in the world, can be the starting point for this 'no-car scenario'." Paula Viganó (Balthazar, 2018)

But in order to create affordable, efficient public transport Flanders needs to densify. A family now living in a typical Flemish suburb, needs the car for almost all its activities (Bogdan & Van Broeck Architects, 2014). As said "you have got to connect your land use decisions with your transport decisions." Tim Kaine (Bogdan & Van Broeck Architects, 2014)

Ultimately Van Broeck states that dense housing can be pleasant but you need good architects to archive this. By good architects he does not mean those who design beautiful architecture but rather architecture that is relevant for society (Van Cauwelaert, 2017).

You need good architects to make density liveable. Architecture is not only about being beautiful, but being good and socially responsible. Van Broeck (Van Cauwelaert, 2017)

In comparison to the modernists, architects now have an additional quality to focus on namely social sustainability. They should try to make dense housing feel like home (Per, Mozas, & Arpa, 2011). City apartments should

be designed in a way they could compete with the detached villa, so you can have the best of both worlds (Balthazar, 2018). This form of attractive density can actually attract people to go live denser, solving many of the earlier named problems Flanders currently faces.

1.3
EXISTING RESEARCH

In recent years attention for environmental sustainability grew, but in order for projects to be successfully sustainable, thus have a long term use, social satisfaction of the residents need to be granted as well (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012). In the paper of Hall results of several own studies are documented, summing up the needed aspects to encourage communities to form in new towns and neighbourhoods. Even through these researches and their outcomes are to be applied on a larger scale than our research, being towns and neighbourhoods instead of single buildings, similar approaches might be considered.

According to Hall's study, what residents need to be satisfied for a longer period, is a sense of belonging, they need to feel part of the identity of the place. This lack of 'identity of a place' is described as 'non places' (Augé, 1995), places without identity, where none of the history or cultural background of the place is represented and people do not feel connected to one another. Examples of these places are airports, petrol stations, station halls, shopping malls, etc. Often these are also the places where a lot of people come together and have the most chances of meeting, but because people do not feel a sense of belonging, these spaces do not encourage social interactions.

According to P. Hall (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012), four elements are essential in order to build new, sustainable communities:

- amenities and infrastructure;
- support of social and cultural activities;
- influence of the inhabitants in their local governing;
- the possibility to grow.

In a paper by B. Janssens (Janssens, 2014), an attempt was made to raise

awareness on conflicts in dense housing Projects. This paper concluded that while implementing densification, quality should be kept in mind. Full utilisation of the transitional spaces could bring promising results to the social and environmental sustainability of the whole project. As an outlook the paper concludes that further research should be done, including more case studies.
With research about this subject, designers will have a valid argument to convince property developers and the government to invest in these spaces. Also can be examined different design strategies and guidelines that can help the designer in the process.

1.4
RESEARCH GOAL

The goal of this research is to increase the social sustainability in dense housing projects thought the design of transitional spaces. Based on exiting research designing strategies and guidelines for transitional spaces are defined, further on an existing project will be examined.

Previous research has been done on these strategies and guidelines, but this research stands out from the existing research because it tests the effectiveness of the design strategies and guidelines on a real-life case.
There will be analysed in how far the existing guidelines are being put into practice, by interviewing the designers and the effect of the conscious design of the transitional space on the social sustainability will be tested by holding questionnaires with the inhabitants and by observing the use of the transitional space.

With these results guidelines could be improved leading to better social sustainability in the future designs of the transitional spaces in dense housing.

1.5
MAIN RESEARCH QUESTION

The thesis will try to find an answer on the following question:

What influence does a conscious design of the transitional space in dense housing projects have on the inhabitants and the social sustainability?

More specified the thesis will focus on the following question:

How do residents experience the transitional spaces compared to the initial intentions of the designers, that considered the social sustainability in their dense housing project?

1.6
SECONDARY RESEARCH QUESTIONS (RQ)

In this research, though several steps, answers to the following questions will be searched:

1RQ) What are transitional spaces? What is dense housing? What does 'social sustainability' mean in the context of dense housing?

2RQ) Which are the typologies of dense housing? Which are the transitional spaces in the different typologies of dense housing projects? How can the transitional spaces be categorised? Is there a link between different types of dense housing and types of transitional spaces?

3RQ) Which design guidelines are already proposed by other researches?

4RQ) In how far and in which manner are these theoretically concluded design guidelines and strategies been put into practice in the analysed case of the Centrale Werkplaatsen Kessel-Lo?

5RQ) Does the design of the transitional space in the Centrale Werkplaatsen in practice result in an improved social sustainability? This is the main focus of the empirical research.

6RQ) How can the conclusions be taken into account in the future designs? This will be done through the design of the master project.

1.7
METHODOLOGY

After literature research is done to define the issue, existing knowledge, terminology and existing best practices. This research will analyse an existing case study where architects took into account the social sustainability in their design process. The effects of a conscious design, on the inhabitants and the community they form, will be investigated in the Central Werkplaatsen in Kessel-Lo. The conclusions will be used in the design of a master project.

Literature research

Firstly (step 1) literature research will be necessary to define what is already known about the subject. Out of this definitions of the used terminology can be defined (Research question 1). Also based on literature research, in combination with own reflections, the transitional spaces and dense housing projects will be categorised (Research question 2). Further literature research will be needed to define what research is already done. Some researches already propose guidelines on how to design for social sustainability, these guidelines will be collected and their relevance for this thesis will be evaluated (Research question 3).

Cases

Best-practice projects will be collected to set an example (step 2). These cases are types of community housing, but should only be communal up till a certain level. The thesis does not focus on a specific group of inhabitants who chose for active engagement, but rather on housing that can serve for the average inhabitant. In order to define the applicability of these cases on the thesis, collective housing and the scales on which they exist should be examined, through literature research (see chapter 2.4 Collective Housing).
The best practice cases will be studied based on analysis of available plans, literature. This analysis should make clear the design aim of the architects.

Empirical research

Through the empirical research (step 3, Research question 4, 5) a specific case out of the previous step will be investigated through field research. Two elements, will be examined: the design intentions and the effects of the design, which will afterwards be compared. For each of the examined elements two techniques will be used, for example both questionnaires and observations for triangulation of data.

The different elements and techniques used result in an empirical research in the following four parts:

- Analysis of the available plans
- Interview of the architects
  > Defining the design intentions
- Questionnaires with the inhabitants
- Observations of the use and behaviour in the transitional space
  > Analysing the effect of the design

The four steps are explained more in detail in chapter 4 Empirical research, in paragraph 4.1 Research setup. There are listed up the partial questions that should be answered through every step and the method of how each part of the empirical research will be done.

Conclusion on the empirical research

Out of the empirical research, conclusions will be made. As architecture is a matter of perception, a design can never be entirely good or bad. Therefore both shortcomings in the design and positive elements will probably be present at the same time.

– Shortcomings can lead to proposals to improve the design.
– Positive elements can be used as example to use in other projects and function a guidelines. These will be included in the very last part of the thesis, de master project.

In both cases the findings will be useful to keep in mind when designing other projects, either to use as an example for positive and negative tactics of designing transitional spaces.

Master Project

The final step (step 4, Research question 6) is the master project. The guidelines will be implemented on an existing project in the Flemish context – more exactly in the city of Genk. This last step of the research, done in the studio New Economies.

2
LITERATURE REVIEW

The main concepts used in this research will be defined, though literature review. From the available definitions of the concepts there will be concluded one definition for each term that will be applied in the whole thesis. Additional to definitions also classification of dense housing and of transitional spaces will be defined.
A short summary of the concluded definitions in this chapter is listed up in the beginning of the paper bellow the title ‘glossary’.

2.1
DENSE HOUSING

Density is a difficult subject in city planning, constantly there needs to be searched for the right balance in this measure. This is because changing the level of density will have beneficial effects on one urban aspect, but negative effects on another aspect. Even when considering social sustainability as the only concern, higher density is beneficial to access and availability of services, while at the same moment sustainable communities benefit from a lower density. (Bramley & Power, 2017)

Definition

> Quantitative Value – Actual density

Density is by planners often described in exact numbers, this is considered as the quantitative density. These indexes make it easier to compare the density of different projects and their proceeds. The higher the number the more units are located on the same parcel, which leads to more economical gain (Janssens, 2014). But throughout the years there are developed many different ways of describing density through numbers.

MVRDV defines density in the urban environment as the amount of space available per person. This definition follows the prescriptions by Chombart de Lauwes who describes 8 -10 m^2 as the absolute minimum needed space per person, from this number on, problems of crowding decrease rapidly (MVRDV, Maas, van Rijs, & Koek, 1999).

Another number taken into account is the site-coverage, when buildings get higher light infiltration at the lower levels decreases. Above 10 – 15% site-coverage, options in build typologies are limited. Based on the site coverage, FAR was introduced. (MVRDV, Maas, van Rijs, & Koek, 1999)

Floor Area Ratio (FAR) is the amount of usable floor space, compared to the land size used for it. Density is here measured in volumetric size only, which means even when space is inefficiently used, density can be high. The ideal FAR in city-planning is long considered to be between 1,5 and 1,8. (MVRDV, Maas, van Rijs, & Koek, 1999)

A common measurement in Belgium, the Netherlands and many other Western countries is units per ha (UPH). In the case of Flanders the average UPH-value of the build areas is considered too low (as explained in 1.2). The RSV, a juridical plan that describes the desired urban structure of Flanders, proposes 15 houses per ha on the countryside and 25 in urban areas (De Meulder, Schreurs, Cock, & Notteboom, 1999). As said before this results in very difficult and expensive access to services. (Bramley & Power, 2017)

In this thesis UPH will be used to measure the qualitative density. First of all because a high UPH is drastically lacking in the Flemish context. Secondly this measurement, rather than FAR, is linked to the positive effects of density. As mentioned before more housing-units on a smaller surface leads to a more affordable access to services and possibly a better social cohesion. While a higher FAR, equals a bigger volume, which increases the perceived density and might also include less daylight and outdoor-spaces.

The UPH-value makes density easy countable, nevertheless there are many factors influencing the liability of this measurement. First of all, units can contain a different number of inhabitants. Furthermore, unlike the FAR-value, with UPH the volume size can remain the same, while increasing the measured density. This by introducing smaller units, which as explained later on, can contribute to the feeling of overcrowding. It will therefore as mentioned before always be a matter of balance.

At last the ideal city contains a mix of housing with other functions, when counting in UPH these other functions are not included in the calculations. (MVRDV, Maas, van Rijs, & Koek, 1999)

> The desired UPH in Flanders

The RVS, the official plans with urban regulations for Flanders made in 1997, prescript a density of 15UPH in rural areas and a density of 25UPH in urban areas, two values that are very close to one another. (De Meulder, Schreurs, Cock, & Notteboom, 1999) Van Broeck pleads for an urban density of rather 50 – 100 UPH, this will in this thesis be seen as a high density value. (Bogdan & Van Broeck Architects, 2014)

> More than a number

Not only are there many different ways of measuring the quantitative density (like UPH, FAR, m^2/person,…), each concentrating on different aspects and leaving out possibly important values. Also can projects or areas with a same quantitative density be perceived way different, due to the qualitative value of the design, as shown in Figure 1 (Janssens, 2014).

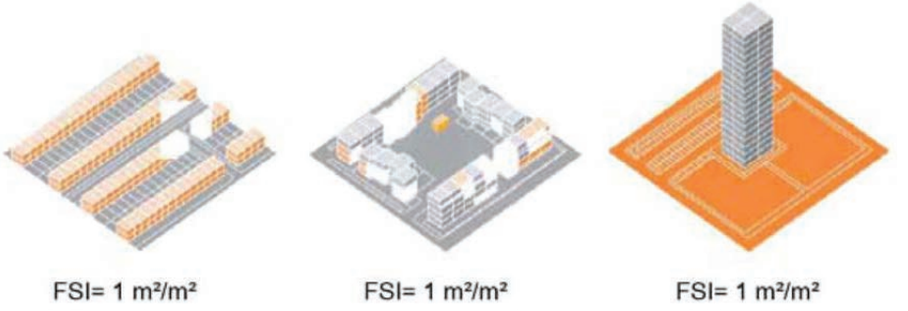


Figure 3: Types of residential buildings, based on the way of stacking, (Leupen & Mooij, 2011)

High density was long considered desired or even inevitable in city centres. But at a certain level the phenomenon of behavioural sink showed up. Behavioural sink is the phenomenon off gross distortions in behaviour when animals, and so humans, are being together in unusual great numbers. (MVRDV, Maas, van Rijs, & Koek, 1999)

The term density, while it can have beneficial impacts on both ecological, economic and social concerns, often caries negative prejudices with it. As designers we strive for density, while it clashes with our images of the ideal home (Per, Mozas, & Arpa, 2011). But areas are sometimes denser in numbers than one would think. By better understanding the term and the needs in a dense design the negative image of it can be avoided (Knack,

2002). Ideally a project should have a high qualitative value in comparison to its perceived value.

Qualitative Value – Perceived density

The qualitative value of dense housing projects is not as easily measureable nor can projects easily be compared using this value. It depends on the design, but also on the socio-cultural context. (Janssens, 2014)

In Modernism, density has been considered the medium to support urban life. Some architects, like Le Corbusier advocated for high density because of its functional and economic benefits. While others proposed high density as a method to encourage social interaction and social benefits. (Janssens, 2014)

On an urban level, on top of a high UPH, following design-features are needed in order to get these economic and social benefits:

- Efficient transport and efficient infrastructure by concentrating actors
- Reduced distances to frequent destinations (both jobs and frequently needed facilities)
- Preservation of existing green area and its habitats
- Affordability of the project building and its maintenance
- Encouraging of positive social interaction between residents

Important to note is that these apply mainly on the urban scale. Regarding the first two features, an architect designing a single project has little to no influence. The last feature, encouraging positive social interactions, is done through the design of the project (Janssens, 2014). Earlier research presumes that positive social interactions are only possible when dwellers perceive no overcrowding (Moch, Bordas, & Hermand, 1996).

Jonathan Freedman, on the other hand, states that crowding does not necessarily have a negative impact on social interactions, but rather intensifies the individual's typical reactions to the given situations. Crowding he defines as: the lack of control on unwanted interactions and the stress caused by this. (Technical university of Cluj- Napoco, 2013). With this definition in mind can be concluded that the individual might on the outside react positive, but since the interactions were unwanted and caused stress their impact cannot be merely positive. Freedman's interpretation also shows that the results depend on the individuals themselves. Since the research is aimed on a mixed group of inhabitants that are not choosing specifically for a form of cohousing, we consider as before the logic of Moch and will avoid perceived overcrowding.

Through their research (Moch, Bordas, & Hermand, 1996) defined some factors influencing perceived density of dwellers and the effects on their behaviour towards neighbours.
Dwellers get a feeling of overcrowding from factors they associate with other people's presence like noise, tidiness, odours and unwanted social meetings. Also feeling crammed in their private residences, because of too small or a too little number of rooms, had an influence on perceiving the entire neighbourhood as dense.
This perception of density has a direct influence on the relationships with neighbours and an inversely effect on the well-being of the residents. (Moch, Bordas, & Hermand, 1996)

On a smaller scale, the scale of the project, the following guidelines are given to perceive density as pleasant: (Technical university of Cluj-Napoca, 2014)

- Encouraging the right social interaction and sense of community by:
    - Balance between privacy and interaction and personal expression
    - Encouraging positive social interactions to strengthen the sense of community, while avoiding unwanted social interactions
    - Encouraging close social interactions, through maintaining the right group size
    - Architectural coherence in order to identify with the place
- Providing in an available and qualitative way the following amenities:
    - Outdoor areas and visual green spaces
    - Various functions and services (preferably in walking distance)
    - Diverse forms transport (both public transport and biking lanes).
    - Sustainable and ecological features
- On top of this decent maintenance, safety and the discouraging of vandalism are needed.

When taken into account these factors, density can be perceived positive. In existing design following deficiencies are often found (Janssens, 2014). The designers should pay extra attention on avoiding these:

– Limited privacy, views, solar access, natural light and air quality
– High uniformity, lack of identity
– Limited expandability or flexibility
– Limited social interactions
– Limited biodiversity
– Trapping heat inside buildings

> Dense housing in this thesis

This thesis will consider multifamily housing with an UPH higher than the existing, the UPH can start at 30 but ideally should be around 50 – 100, as considered by Van Broeck (Bogdan & Van Broeck Architects, 2014). Row housing although in many countries not considered as a dense housing type is in Flanders often already an improvement and therefor included in the considered typologies.

Typologies of dense housing - based on their constellation and access

It is important to remark the wide variety of typologies of dense housing. As mentioned before, dense housing projects can have the same quantitative value but be perceived totally different due to their qualitative characteristics. To get a better insight in the different types and to distinguish which are more valuable, categorising dense housing projects and their transitional spaces is helpful.

Most often housing buildings are categorised based on their volumetric appearing which influences the manner of accessing the private homes, but also the contact with the street or direct surroundings, privacy, views, light and air.

Leupen distinguishes nine types of residential buildings, based on the ways, or rather the physical directions (width, depth, height), in which the individual housing units are stacked or linked. As shown in Figure 1 the types he distinguishes are: the detached house, the mat, the row, the clustered low-rise, the urban villa, the infill, the slab, the block and the tower (Leupen & Mooij, 2011).

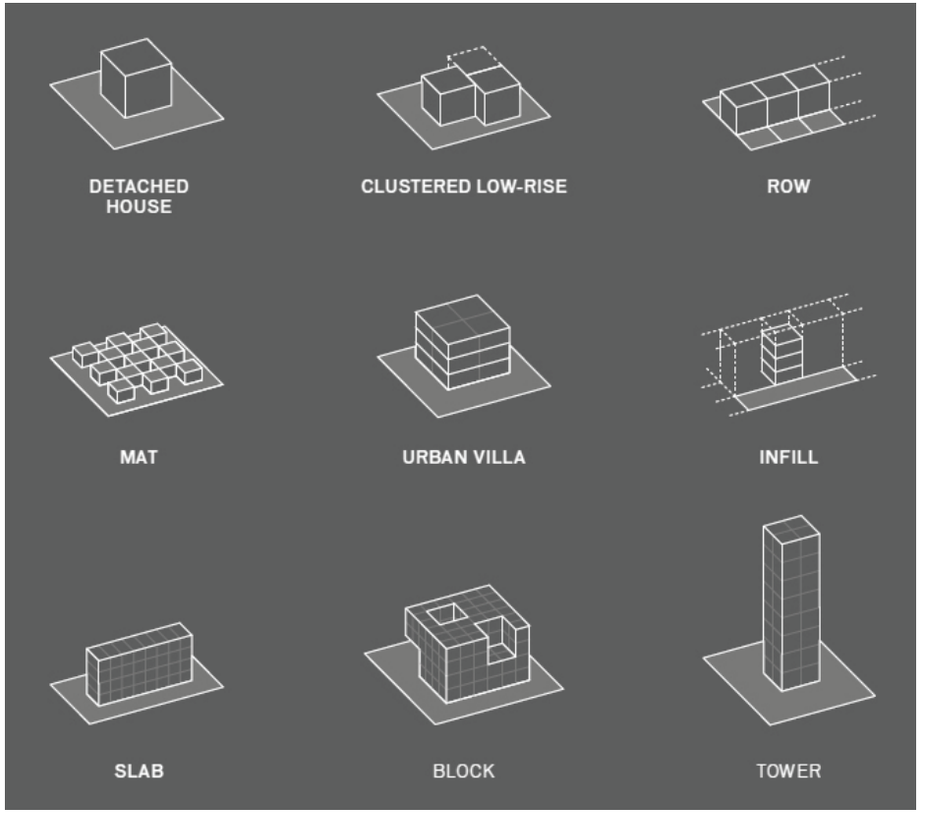


Figure 3: Types of residential buildings, based on the way of stacking, (Leupen & Mooij, 2011)

It is important to remark that not all these typologies can be considered dense housing typologies. The detached and its adaptation, the semi-detached house, typologies often seen in the Flemish urban sprawl, we want to avoid. A + t -researchers do not include this type in their categorisation of dense housing types. (Mozas & Per, 2006)

Furthermore the infill, as Leupen mentions, does not form a building on its own, but fits into an empty space in the existing urban structure. Although it is strongly characterised by the existing surroundings, which could be both beneficial as detrimental. There are no characteristic forms of access or issues, because the infill can take form of a row house, mat, block or even tower. It will thus not be considered a building type by itself. (Leupen & Mooij, 2011)

For each type there are advantages and disadvantages and each has his own

ways of providing access to the individual units. Five types of access are distinguished: street access, the staircase, the elevator, the corridor and the gallery. But necessary to add are the lobby, courtyard and atrium. this way of accessing the unit is often related to the type of transitional spaces exist in the building/ project. (Leupen & Mooij, 2011)

A+T research-group on the other side classifies dense housing into the following four main categories: Houses, blocks, city blocks and high-rise buildings. They also distinguish a fifth category, the mixed solutions, which are combinations of the previous categories (Mozas & Per, 2006). As Leupen also states, even complex looking buildings can often be read as combinations of simple solutions (Leupen & Mooij, 2011).

Based on the given examples by a+t -researchers the categories can be defined mostly based on their context and access and will be reconsidered as three categories. The nine categories of Leupen, or the seven we will derive from them, can fit into these three main categories.
As Flanders can learn a lot about densifying its housing from its Norther neighbour, the Netherlands (Camp, 2017), the given examples of dense housing typologies are all but one situated in the Netherlands.

> Horizontal/ linked constellations: Houses

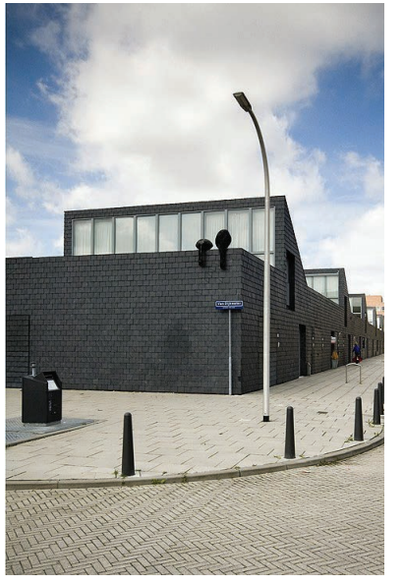
Houses as a constellation of different units exist in two forms: either as row houses or as attached houses, possibly around a courtyard. Characteristic for houses is that all units are accessed from the ground level, either through a courtyard, garden or by direct street-access (Mozas & Per, 2006).

o Row houses are more than two ground connected dwellings which are linked in a clear line (Leupen & Mooij, 2011). Like in the example bellow in Ypenburg, his line can be folded even in a U-form, or closed city-block, to fit around a courtyard, or the heights of the row houses can defer resulting in stepped row houses (Mozas & Per, 2006). As mentioned this typology was typical for the Flemish development of the countryside (De Meulder, Schreurs, Cock, & Notteboom, 1999). Although in other countries this typology might not be considered dense housing, in Flanders it is already and improverment. (Van Cauwelaert, 2017)

Figure 4: Rowhouse _ Bureau SLA _ Ypenburg (The Hague, 2000) _ 46 UPH _ via http://www.bureausla.nl/ypenburghousing-ypenburg/

o In attached houses, what looks like one house, often contains several units. (Mozas & Per, 2006) In contrary to row houses they are not constellated in one clear direction, they can from low-rise clusters or a mat.

– Low- rise clusters exist of more than two ground connected dwellings, which are linked but not in any clear direction.
– A mat is a constellation of more than two connected dwellings both width as depth wise. A risk here is the lack of daylight in the enclosed units, also the access towards these middle units is a challenge. (Leupen & Mooij, 2011)



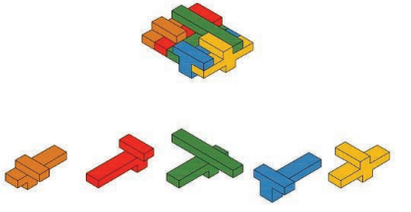


Figure 5: Low rise clusters _ Next-architects _ Villa voor vijven _ Almere (Amsterdam 2008) _ 10 UPH _ via: http://www.nextarchitects.com /nl/projects/villa_overgooi

Figure 6: Mat _ MVRDV_ Patio Islands _ Ypenburg (The Hague, 2005) _ 49 UPH _ via: https://www.mvrdv.nl/en/projects/patio

> Combined constellations (Horizontal/ linked and vertical/ stacked): Blocks and City-blocks

Both blocks and city-blocks as shown by a+t -researchers are constellations of houses not only in horizontal direction but also vertically. As a result not all houses are ground connected anymore, there will also be units in the form of apartments. The difference between blocks and city-blocks is merely found in the type of surroundings, while the first is found in a green or open area, the latter is strongly constrained by surrounding streets in a clearly urban area. (Mozas & Per, 2006)

o The urban villa is a typology based on the old roman villa, where from a centre atrium different abodes could be reached. Throughout the centuries this central courtyard got modified into a distribution core, still providing access from the inside. It is different from the cube and the slab as the central core has no corridors but only staircases, elevators and possibly an atrium. Often the lower floors of the urban villa are filled in by facilities like shops.

Figure 7 _ Futafrosch GMbH, Sabie Frei & Kornelia Gysel _ Hunziker House I _ (Zürich, 2015) _ 58 UPH _ Via http://www.citiesconnectionproject.com/project/hunziker-areal-house-i-zurich-oerlikon

o The Slab is a stacked form of the row house. The typology got introduced during the modernism, where it was often build in open space or nature. Through its stacked confirmation much of the ground space could be left open, promising a richness of light, air and views inside the dwellings. But due to issues of anonymity and difficulties with managing the ground level, the slab gained a bad reputation. It is now making a comeback no longer as a free-standing volume but in the right urban environments. Any type of access can be used in the slab. The lowest, ground-connected dwellings can

be provided from a street access, the rest through a stairs and elevator. In case of a long slab, higher levels can also be provided from a corridor or its outside version, the gallery, which is mainly useful in case of a wider slab. The slab does not have to be solely straight, it can have a kinked form.

Figure 8: Slab _ MVRDV _ Silodam _ (Amsterdam, 2002) _ 523 UPH _ Via: http://www.architecturerevived.com/silodam-housing-amsterdam-netherlands/

o The Cube: According to Leupen, the block as a building, should not be confused with the city-block which is an urban form of combining buildings. To avoid confusion in this thesis Leupen's constellation will be called the cube. The cube is a building constellation, where multiple dwellings are both linked width and lengthwise and stacked on top of each other. The difficulty in this typology, like with a mat-structure is the access of light and air into the building. To solve this often openings are cut out of the volume.

o Cube with courtyard: Some projects take a the form that seems to be something in between the urban Villa, the Slab and the Cube, It is a ring from around a central courtyard with it a stacked apartments along a corridor (like Cellulosa by MVRDV) or with a gallery along the courtyard. According

to a+t –researchers categorised as a closed city-block (Mozas & Per, 2006), according to Leupen as a block, with its cut in the middle (Leupen & Mooij, 2011). It could also be understood as a slab going around the courtyard, often entered from the courtyard and from there on having the same access to the private dwellings as the slab. Light is gained through on one side the façade facing the courtyard and on the other side the outer façade. In this thesis it will be seen as a type of cube, since it doesn't offer wide views for everyone.

Figure 9: Frits Van Drongen, De architecten Cie _ The Whale _ Borneo Sporenbrug (Amsterdam, 2000) _ UPH 428 _ via http://en.cie.nl/projects/39

> Mainly Vertical/ Stacked constellations: High rise buildings

High-rise in Belgium is defined as buildings where the upper floor is higher than 25 m, this is equivalent to a building of nine floors (Van Damme, 1997). Most common high-rise forms are towers but some other previously discussed constellations can also exist in a high-rise form.

- The high rise slab
- The high rise cube (block according to Leupen)
- The tower is a stacked configuration of dwellings in the height, creating a very high density and great views, but negligible connection to the street and direct environment. Usually the tower has a vertical access channel with staircase and elevator and on the ground level a communal entrance.

Figure 10: Tower _ Xavier De Geyter _ Chasé terrain, park apartments _ (Breda, 2001) _ 135, 6 UPH _ via: http://xdga.be/gallery/chasse-park-apartments/

As a result of this categorising we can now easily understand any high-density residential building find out their typical access-type and distinguish their characterising design issues as well as the benefits.

> Identification of the spatial context

According to a+t Research Group there can be distinguished five different types of areas where density can cause social problems: The dispersed city, the expansive city, the modern city, the core of the city and the recycled city. All these types grew in a different ways and need different ways of solving and avoiding problems. (Per, Mozas, & Arpa, 2011)

The Dispersed city is the most typical for Flanders, like plead against by Leo Van Broeck. It is mainly caused by the low cost of agricultural land and the comfort of an private garden one can get there. This environment is recognised by sprawl are problematic because they are unsustainable, in need of expensive infrastructure and lack of diversity.
a+t-Researchers propose a few solutions for improving the density and social sustainability in these existing neighbourhoods, the solutions include implementing high density, hybrid buildings that serve as landmarks and community spaces. This of course is a solution for existing sprawl, building new areas like should absolutely be avoided. (Per, Mozas, & Arpa, 2011)

The next one, the expansive city is built near existing fast expanding cities to catch up with the expected growth, examples are Ijburg and Almere near Amsterdam, Vallecas in Madrid and Orestad near Copenhagen. This type of cities often function as dormitory towns, the main problems in these town are the mono-functionality, lack of public spaces and lack of context. Yet the lack of context left space for experimenting, introducing several new typologies of collective housing and improved social sustainability. (Per, Mozas, & Arpa, 2011)

The modern city is caused by the economic expansion after World War II. There was an urgent need of low cost housing which resulted mainly in the building of tower-blocks, detached from the existing city fabric. Although often containing the necessary facilities and green close, monotonous, simplistic design causes: a lack sense of belonging resulting in safety issues and social segregation. This city nowadays mainly functions as an example what to avoid when increasing density. (Per, Mozas, & Arpa, 2011) A popular example of this type is Pruitt Igoe. (Bristol, 1991)

The core of the city handles about the historical cores, these also are very relevant for the Flemish context. They have been overpowered by the modern city, where functional zoning was preferred, but are gaining interest again thanks to some specific values. Typical is their valuable functional mix, with necessary facilities in a walking distance and safe, walkable routes. But there are some important treats this type of city is facing nowadays. The comfortable living in these cores, makes prices rise, pushing out low-income residents. There also exist the treat of monumentalising, turning parts of the cities into theme parks instead of vibrant living spaces. Renewal is necessary to improve, the mixing of ages, the integration of more contemporary facilities and the amelioration of accessibility are vital to these areas and can be archived through the implementation of dense multifamily housing. When renewing or densifying attention should be paid on maintaining the qualities the city-core already possesses. (Per, Mozas, & Arpa, 2011)

At last there is the recycled city, which exist of former industrial parcels that became depleted after industry moves out of the central city. The examined cases of the Heymans Soap-factory and the Centrale Werkplaatsen are both clear examples of this. The typology is very interesting because it forms a perfect opportunity for the city to grow from the inside. On top of this, the existing plots or even buildings offer a history which can lead to interesting designs. (Per, Mozas, & Arpa, 2011)

2.2
TRANSITIONAL SPACES

Definition

There is a wide collection of spaces that can be defined as transitional spaces. In most literature it is defined as an in-between space either between inside (indoor climate) and outside (outdoor climate) of between public (like the street) and private (the home).

> Indoor – outdoor

When focussing on the thermal comfort, transitional spaces usually make a transition from indoor to outdoor climate.

This type of transitional spaces are nothing new in architecture, they have been used for over 5000 years. Their aim has always been to retrieve natural light and air. (Taleghani, Tenpierik, & van den Dobbelsteen , 2013)

Dedecker for example defines a transitional space as the border between a building and its surrounding (Dedecker, 2014).

Chun points out the difference between transitional and transient space, terms that are very often confused. Transitional talks about the architectural space while transient talks about the physical conditions and the human behaviour (Chun, Kwok, & Tamura, 2004). In this thesis we focus on the architectural space and how it is used, this way we will also search for the links between both characteristics of this places.

Chun names spaces like transitional zones and buffer zones as types of transitional or transient spaces.

'Transitional zones', are defined as "in between" architectural spaces where

the indoor and outdoor climate is modified without the mechanical control systems and where the occupant may experience the dynamic effects of this change.

A buffer zone is a continuous space from inside to outside of a building, this could be an atrium, an entry, a lobby, … (Chun, Kwok, & Tamura, 2004)

> Private – public

In his manual Leupen, focusses more on the architectural qualities and use of spaces and buildings. Remarkable is the definition for access. Access is defined as the connection between the front door of the building and the front door of the individual dwelling (Leupen & Mooij, 2011).
A similar meaning can be found in the Japanese language, where transitional spaces (Tyukan Ryouiki), are places where inside (uchi) and outside (Soto) meet. The inside is here defined as the space related to belonging and possessing. The outside is seen as the opposite of this (Chun, Kwok, & Tamura, 2004).

> The social focus

Often these definitions lead to the same collection of spaces, but there is a slight difference between them. Since this thesis focuses on the social aspect of the build environment, rather than on the physical measurements (like thermal comfort) the focus in this thesis would rather go to the transition between private and public.

Transitional space in this thesis will be defined as:
The continuing in between space between public space (often the street) and private areas (the private dwellings). But also the space in-between several private areas (like corridors inside the building).

In other means the space where people from different dwellings, families but from the same housing-project can cross and possibly meet one-another. This space can be either indoor climate, outdoor climate or something in-between.

Types of transitional spaces
As transitional spaces can be defined in different ways, categorising also defers according to its definition.

Chun (Chun, 2004) defines three groups of transitional spaces. Except from their relationship to the building this groups also explain the level of thermal comfort present in the transitional space, this in closely related to the type of activities in this space and the amount of time spend there. As Dedecker defines 'verblijfsplekken' places of stay (Dedecker, 2014), we expect that the social sustainability will be improved by encouraging longer term stay in the transitional spaces.

– Inside the building (this is thermally separated from the outdoor climate)
  Mainly used for: walking through, standing still and also sitting
  Examples are: entrances, lobbies, corridors, atriums, …
  But also: shared facilities, like a community room of a shared laundry room, …
– Attached to or in-between buildings (this is not thermally separated from the outdoor climate)
  Mainly used for: standing still, smoking and hanging out laundry
  Examples are: shared balconies, galleries, courtyards, bridges between buildings, …
– Non-attached to a building
  Mainly used for: sitting and chatting
  Examples are: a pavilion, a detached community room,…

This thesis tries to focus on passive interaction, it is not a thesis about cohousing where participants consciously choose for interaction. Therefore the third type of transitional spaces (the non-attached one) is in this paper not considered as a transitional space cause the use of it happens more consciously.

Closer related to one another are the categories stated by Leupen and Dedecker.

By Leupen (Leupen & Mooij, 2011) five different types of access are distinguished:

- the corridor,
- the gallery,
- the access staircase,
- the access lift,
- the street.

Dedecker combines the staircase and elevator into the central core and adds two types of hybrid zones resulting in the following six categories, fit best for this research:

- the corridor,
- the gallery,
- the central core (staircase or lift),
- the private oriented hybrid zone (front yard, terrace, …),
- the public oriented hybrid zone (courtyard, lifted platform, …),
- the street or square.

He also mentions loggia's and terraces as transitional spaces but, just like this thesis, focusses on the types where one crosses through (Dedecker, 2014). The places included here are places of movement. A clear difference is to be made with shared facilities, which are not considered transitional spaces in this thesis. This will be discussed further on with the types of community housing.

The combination of maximal privacy in the dwellings in combination with maximal interactions in the rest of the building is seen as the ideal in the design of multifamily housing (Leupen & Mooij, 2011, p. 171).

2.3
SOCIAL SUSTAINABILITY

Sustainable development

> History

In the sixties after the world war economies were more nationalistic than ever. Colonies with large amounts of resources became independent. The overall believe in technology which started in the beginning of the century made different nations and companies very optimistic about economic growth.
This optimism gradually weakened throughout the seventies. At the same time (in 1972) the UN held a conference to address the rights of all families for a healthy environment.
In the late eighties the united nations decided to address the world-scale environmental problems of their time, like global warming, dissolving of the ozone layer, growing amount of desert surface, … . A detailed research was done and a report was put together with proposals on how to create a sustainable society and world focusing on the main sectors in society. (Brundtland, 1987)

> Definition of sustainable development

The Brundtland report defines the following:

"Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p.16).

This definition is afterwards used in several other reports and papers and is overall expected as a definition of sustainability or sustainable development.
The definition includes on one side meeting the human needs, this shows that in sustainable development the human factor is a key element. These human needs are on one side essential or basic needs, like food clothing , shelter and jobs; but on the other hand people have – beyond their basic

needs - legitimate aspirations and dreams for better life quality. Throughout her report Brundtland proves that improving life quality leads to a lower population growth which is addressed as one of the main problems faced by sustainable development. And if managed correctly, improved life quality does not limit the level of sustainability in development. This aim on human needs can be seen as a base of social sustainability, especially when considering the improvement of life quality.
On the other side it addresses a long-term focus, a focus on the future generations. Like explained throughout the report (Brundtland, 1987) the at that time present economy was all focussed on growth. This way of acting can work on a short time span, but the resources of our planet are limited. Every gain that does not take into account these limitations, brings depths with it. These depths can be maintained for a while, but somewhere in the future will have their consequences.
These depths will not necessarily be counted directly in money, for example Brundtland discusses the use of land area for agriculture . A lot of land-surfaces are used for agriculture while they do not fit this use or are used too intensively. This way these zones lose all of their value and turn into desert. The land will generate agricultural value for a little while but for future generations lose all of its value. If it would not have been overly intensified the land could still have been used for some purposes.

While the report mainly focusses on the environmental crisis, it shows links with the economic crisis very clearly. Also the report repeatedly indicates the importance of the human factor. This is even directly said through the definition of sustainability itself. Brundtland also states that a sustainable development can never be reached when poverty is still a global issue.
The statement shown above also indicates Brundtland's positive outlook on the problem, stating that humanity has the ability to achieve sustainable development. But further on she explains how archiving sustainable development is limited to a certain extend by the current state of technology and social organisation.
She thereby explains that it will be required for the more wealthy to adopt their lifestyles to these limits. Both the proposals of Brundtland and Leo van Broeck, as described in the problem statement of this thesis, suggest a certain change of lifestyle in relatively wealthy Flanders.

Very adaptable to the presented problem in this thesis are Brundtland's conclusio ns stating that population growth will be especially very big urban areas, cities and this mainly in developing countries. She points out that therefore the growth should be managed very carefully to avoid deterioration of quality and social life. There is expected that the larger cities will develop smaller city centres around them to reduce the pressure on the original centre. Several services therefor will be needed like self-help housing. The social sustainability on smaller scale, the subject this thesis aims on, will be a contributing factor to address this urban growth. (Brundtland, 1987)

> Conclusion

The definition and its detailed explanations together with examples and proposals on improvement of sustainability in different sectors of society form a comprehensive report. Therefor the definition on the widely known but rather vague term is made very clear through this definition.
Throughout the report is suggested that in order to reach sustainability only human needs matter. The balance of ecosystems and the way the distortion of this can limit future resources are mentioned. But in her theory she implicates that if research shows the future human needs can be maintained, conservation of the ecosystem in not essential. This slight difference in the definition and its stakeholders might quite probable not affect the present research. But it might be necessary to revise the definition and add more to be ensured than only humans needs.

A combination of concepts?

Social sustainability is one of the three pillars of sustainability, the others are environmental and economic sustainability (Dempsey, 2009). In some cases there is also considered human sustainability, which focusses specifically on the individual compared to the community (Goodland, 2002), in this research like in the Brundtland-report human sustainability is a part of social sustainability. To create a sustainable environment all of the three pillars should be taken into account.

Figure 11: Pillars of sustainability
Own figure, based on Brundtland

The Social dimension

> Definitions on Social sustainability

Sustainability is applicable on al rages of interest, so is social sustainability, it applies to society on global scale but also scaled down to the individual.
"Social sustainability is about ensuing the sustenance of diverse social relations that exist in a healthy community." (Palich & Edmonds , 2013)

"The ability of a community to develop processes and structures which not only meet the needs of its current members but also support the ability of future generations to maintain a healthy community." (WebFinance, 2018)
The central role in the concept of sustainable development handles about the human needs, both for survival and well-being. (Brundtland, 1987)

Social sustainability is the dimension of sustainability that concentrates on the society and its members or on smaller scale on communities. It discusses subjects like: diversity, human rights, equal opportunity, standards of living, health, safety, identity, meaning.

> Social sustainability in architecture

Like mentioned in 'Density is Home' even though we know density is needed for environmental sustainability it conflicts with our desires. In other words environmental and social sustainability contradict one another when discussing density of living. But while environmental sustainability is related to the quantitative density, the density described in exact numbers (like described in chapter), social sustainability is related to the qualitative density, or the way density is perceived by inhabitants and users. On top of that Fernández Per suggest that when designed the right way, by "true architects , who think like users", density can even contribute to social sustainability (Per, Mozas, & Arpa, 2011). Per is convinced, just like Palich (Palich & Edmonds , 2013) and Woodcraft, this coinciding should be the main purpose of the architect.

> Social capital and social equity

When social sustainability is discussed in the build environment, at any scale, it becomes closely related to concepts like 'social capital' and 'social equity'.
In the previous definitions on social sustainability, only social capital was taken in to account. This term, sometimes replaces by social community, is defined

according to the 'British accord' as:
"Places where people want to live and work, now and in the future they meet the diverse needs of existing and future residents, are sensitive to their environment and contribute to a high quality of life. They are safe and inclusive, well planned, built and run and offer equality of opportunity and good services for all." (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012)

This means the main focus here lies in creating what the residents need and want. While 'social equity' puts that concept into practice by letting locals make actual decisions.

Dempsey (2009) concludes that social sustainability in the build urban context exists out of two dimensions (out of the ones named before) being 'social equity' and 'social community'. These two dimensions can exist next to each other but in order conduct social sustainability, both should be accomplished.

> The challenge of the 21th century

'Design for social sustainability' (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012), starts with a summary of examples in which a lot of attention is drawn to environmental and economical sustainability and shows in which ways these projects failed.

Woodcraft describes the realisation of social sustainability as the great challenge of the 21st century's urban design. In sustainability debates so far environmental and economic sustainability are being given priority, while social sustainability is often forgotten.

In order to achieve social sustainability, the community involved in the project will have to be carefully examined. Each community is different and social reactions are less predictable then scientific estimations of the environment or economic logic. Therefore the solutions to archive social sustainability are way more complex than the ones to acquire environmental and economic sustainability.

Several definitions of social sustainability are summed up in this text. OIST

(Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012) defines it as taking into account how individuals, communities and societies live and interact, while keeping an eye on the existing boundaries of the place and community.
'Social life' describes social sustainability more as a process that combines physical realm with the social world. The main focus is on understanding the needs of the users in a design. But also engagement is named as an important part.
The key element that determines high quality developments in Europe is involvement of local authorities. It was crucial for the local authorities to have basic management skills and a certain financial capacity. (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012)

> Social sustainability on the scale of the project

Important to note is that Woodcraft is concentrating on social sustainability on a much larger scale (neighbourhoods, cities and even countries), while this particular thesis is looking towards the subject at the scale of a single project and it's transitional space.
In (Palich & Edmonds , 2013) is further described how the principles learned from woodcraft can implemented into the creation of new communities and the strengthening of existing communities. Two key points are to be taken into account:

– the integrative process (social equity) is just as important as the goal (social capital),
– apart from cultural and social spaces also the physical form is very important.

Integrative process

In the process of designing social sustainable architecture, both with existing as with new communities, the community should be involved. This inclusive approach has three beneficial effects on the community.
It brings the community and its diverse members of different ages and with different interests together. This way it creates social links between the (future) residents. It empowers the community by giving them a voice in the decision making and therefor makes them feel more related with the design. The participation during the design also makes them more confident in the future about the future management, they have seen what good teamwork generated.
The task of the architect is to listen to the needs and insights of all stakeholders and design a balanced project where all are equally represented, this through process in steps where different design proposals are generated and evaluated. Like mentioned before the effects of social sustainability are much more difficult to measure than environmental and economical sustainability which are measured in exact numbers. But it can be measured through this design-process of trial and error and needs to be followed by post-occupancy evaluations. This is explained both for masterplans, where the architects and locals work together with governments as for projects where architects work together with inhabitants and possibly other stakeholders like property developers or social housing agencies (Palich & Edmonds , 2013)

> *Physical Space*

The physical form is an important issue, although social and cultural connection are the goal, the physical design can make or break a community. According to Woodcraft four key-elements are needed to create a sustainable community: amenities and social structure, social and cultural life, voice and influence and space to grow. (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012) Except from voice and influence, all key-elements, take physical form.

Amenities are needed to create a sense of identity in the community. As mentioned by Per a functional mix is beneficial for a neighbourhood (Per, Mozas, & Arpa, 2011). These include schools, shops, health provision, green-space and meanwhile (or temporary) spaces. Since the thesis handles about one project, those amenities do not need to be all part of the project, but they need to be in the near surroundings. The desired integrated Amenities depend on the size of the project. But even inside a smaller project functional mix and green space is desired.

Physical infrastructure is needed. This should include low-carbon infrastructure, like bicycle lanes and footpaths, as it is beneficial for health. But also fast connections, preferably of public transport, to connect the community with her surroundings.

To encourage social and cultural life the design should include people-friendly design (like car free places and well-lit areas); distinctive architecture, giving the project an own identity; connections to neighbouring communities, to avoid isolation; third places (like cafés, parks, …), informal spaces where people can unwind from the daily rush and at flexible working spaces, to encourage home working and local economics.

Space to grow is needed because communities change over time, this should be taken into account at any scale, it should result in both flexible housing, flexible common spaces and flexible master planning (Palich & Edmonds , 2013) (Thirdspace, 2013) (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012).

> Conclusion: How to measure the social sustainability of a project?

As explained social sustainability aims on fulfilling the social and cultural needs and wishes of the inhabitants and creating through this a community (social capital). The best way to archive this is through engaging the inhabitants in the design process (social equity). (Woodcraft, Bacon, Caistor-Arendar, Hackett, & Hall, 2012) (Palich & Edmonds , 2013)

Each community is different, so there is no ideal design guide. But the implementation of following physical elements should be taken into consideration during the design phrase of a housing project:

– green space,
– functional mix,
– amenities within close distance,
– low carbon infrastructure,
– people friendly design,
– distinctive architecture,
– open/ connected to the surrounding communities,
– third places,
– good connectivity
– flexibility of homes
– flexibility of common spaces

> through community engagement in the design process.

The success of the projects social sustainability can only be measured after finishing of the design, this happens in a post-occupancy evaluation. Through feedback from the residents (in the form of questionnaires, interviews,…) and observing their behaviour key-elements can be defined. Both strategies have their benefits. Direct feedback from the residents gives a faster insight and an overall overview over all topics of interest, but observations are used because people do not always act as they say. The following elements should be examined during a post-occupancy research (see diagram):

– precipitations of involvement in decision-making,
– willingness to act in maintenance and decision-making,
– positive local identity,
– How do residents feel about the community?
– How do outsiders see the community?
– relationships with neighbours,
– well-being of the residents (although this is a difficult subject to examine),
– feelings of safety,
– community facilities. (Quality, frequent use, satisfaction, …).

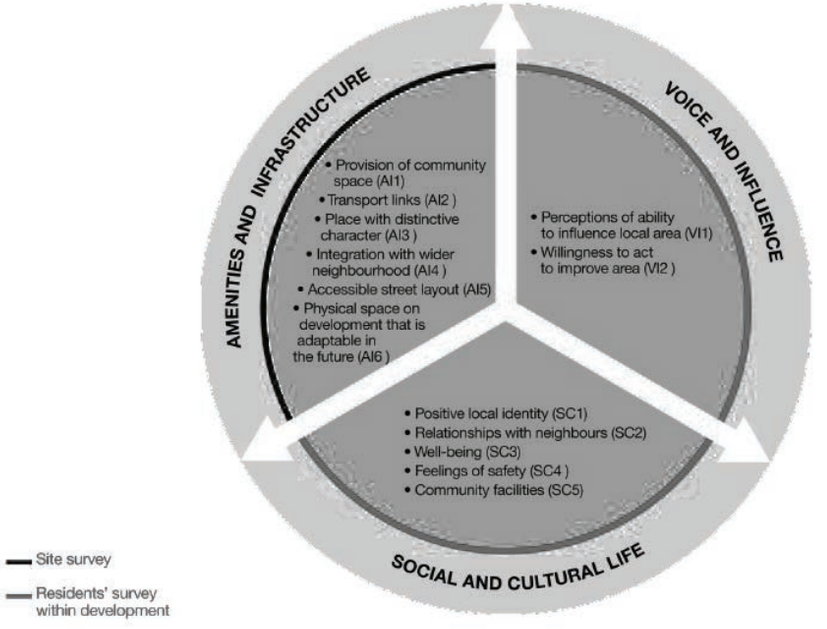


Figure 12 The 13 indicators for measuring social sustainability organised within three dimensions. (Source: Social Life/Berkeley Group 2013)

2.4
COLLECTIVE HOUSING

The housing focussed on in this research is a type of collective housing. Collective housing, often confused with cohousing, is becoming very popular recent years and so several types are distinguished. Co-housing is one type of collective housing, but there exist many others. In order to understand better the focus of this thesis, the main types of collective housing are here explained and categorised. (Camp, 2017)

Categories of collective housing

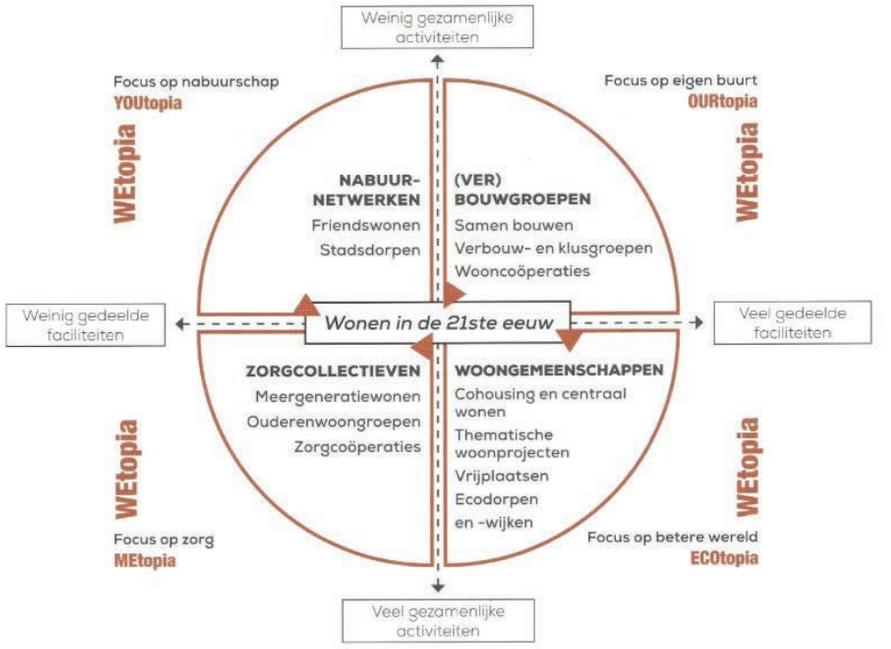


Figure 13: Types of collectiveness, Camp, Wonen in de 21ste Eeuw 2017, p 22.

Like shown below in Figure 13 collective housing can be categorised according to different scales of collectiveness of facilities (horizontal axis) and activities (vertical axis). Different types of collectiveness attract people with different values and are often typical for certain age-categories (Camp, 2017).

Neighbour-networks or Nabuurnetwerken

This is the softest form of collective housing, there is only a limited amount of shared facilities or shared facilities. Friends housing is one of the main types forming part of this category, together with Framily-housing and Stadsdorpen (literally translated city-villages.

Living – Communities or Woongemeenschappen

This is the most collective category, there are both shared facilities and activities. The main types are Cohousing, Central Living (Centraal wonen) but also alternatives like Eco-neighbourhoods, garden-sharing, retrofitting-cohousing form part of this category. Even inside of this category different types can be ordered according to their level of collectiveness.

Special combinations

The in-between categories are more specific and therefore less relevant in order to define the type of collective housing in this research.

> Building (and renovating)- groups or (Ver)bouwgroepen

In a building-group the main focus is on the shared building of the project. In living-cooperation's (wooncoöperaties) future inhabitants organise the building of their future homes together, often with help of an architect. In chore-groups (klusgroepen) individuals can rent or buy a home cheaper in exchange for doing some jobs/ chores around the project or neighbourhood.

> Care-collectives or Zorgcollectieven

This category focusses on a different type of care, through care from neighbours and combining multiple generations rather than through the classical elderly-homes.
(Camp, 2017)

Levels of collectiveness

In the previous categories of collective housing, there could be distinguished, side categories: care-collectives and building groups. These side categories have apart from there collectiveness very specific focusses, like care for elderly, of designing your own home. These categories are not part of the focus in this thesis.
The other categories: neighbour-networks and living-communities, are both focussing on an everyday kind of living and are only different from one another in their level of collectiveness. But inside of these categories different types also defer from one another based on the level of collectiveness. This causes that there is no clear border defining when a project is a neighbouring network or a living-community.

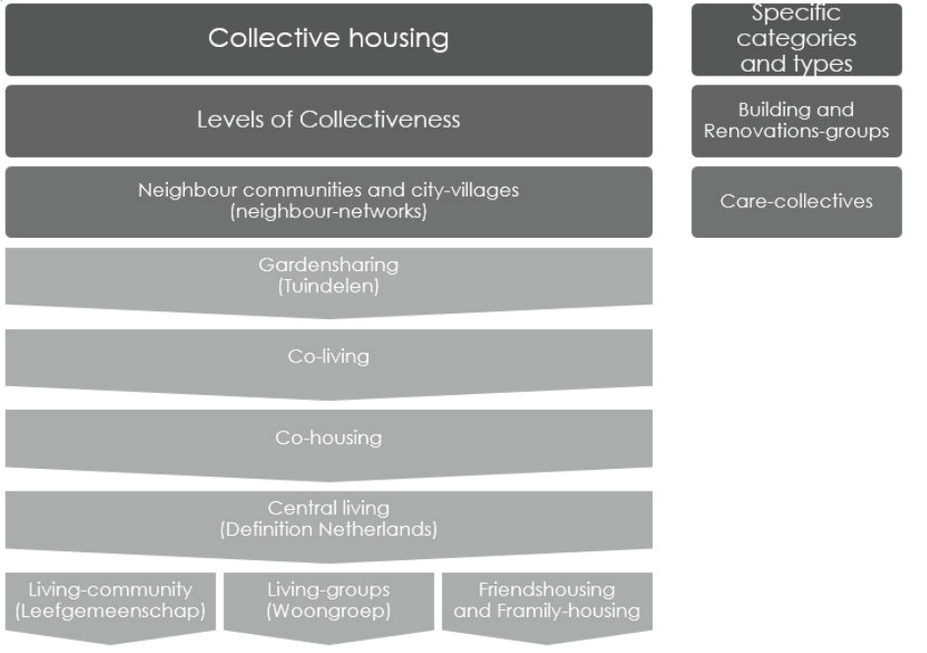


Figure 14: Community housing according to their level of collectiveness _ Own scheme based on Camp, P. (2017), Wonen in de 21ste Eeuw.

Rather than dividing the existing typologies into two categories, an ladder-framework can be made ordering the existing typologies according to their level of collectiveness, or in other words the types of spaces that are shared. The projects studied in this thesis will be situated somewhere in these

categories, it is also important to note that the borders between typologies aren not always very strict, one project can sometimes fit into several of these typologies.

> Neighbour-networks

In neighbour-networks you are strengthened by the presence of others without necessarily sharing physical spaces.

- Stadsdorpen, literally translated, city-villages, are organised based on the idea of reciprocity, everyone is in need of something and everyone has something to offer, this could be knowledge, care or even warmth and presence. The inhabitants of rather dense neighbourhoods live here like in former villages. Initiative is expected from the inhabitants, but there also exists a light form where joining in activities is less compulsory.
- In neighbourhood-communities (or buurtgemeenschappen) a stronger community is formed in an existing neighbourhood, there is no need for moving to a specific designed project. Households forming part of this community can be spread out through the neighbourhood. These communities own a community space where activities can be organised.
- The living-street (leefstraat) is still an experimental typology, it started in the city of Gent with closing the street of from traffic and creating on the end of the street a neighbourhood parking. The street can be set up for any kind of neighbourhood activities, but normally this intervention is temporary.

> Garden-sharing

Garden-sharing is a first step towards Co-housing, here everyone has his own private home but the dwellers share an exterior space. The typology can be set up in an existing city-block by taking away division walls and hedges between the individual gardens are taken away or making the streets car-free. This typology can also have shared park, garden or pedestrian road on top of some private gardens.

The Savonnerie Heymans (which is later discussed) is an example of this typology, where only the inhabitants have access to a series of shared exterior spaces. In the Centrale Werkplaatsen dwellers also have access to a private garden and to a central square or pedestrian roads, but here the shared space is open to public and so also used by non-inhabitants.

> Co-living

In this typology everyone still has his fully-equipped private dwelling, but extra facilities are shared. These shared facilities can be a café, a workspace, guestrooms or like in the Savonnerie Heymans, a washing-corner and a crèche. The shared facilities do not include a dining room or kitchen.

> Co-housing

In a co-housing everyone still has his private dwelling but eating facilities are shared. This way the design actively stimulates interaction. Eating together once a week is also expected.
Because co-housing is not possible for everyone and there still exists a big threshold to move in this type of project, there exists 'retrofit co-housing'. Instead of moving into a project shared facilities are created in existing neighbourhoods, these start in the form of concepts like neighbour-networks or co-living.
Eco-housing is another adaptation on Co-housing, where inhabitants share an interest for the totality of sustainable living, so including ecological living. This is an interesting typology considering that social sustainability, the focus in this thesis, does not stand alone. In order to archive truth sustainability all three pillars should be kept in mind (chapter 2.3).

> Central living

Central living, or in Dutch 'centraal wonen' has a different meaning in the Netherlands compared to Belgium, here will be considered the meaning of the term in the Netherlands. In this typology inhabitants live even more actively together than in cohousing. They share dining room, kitchen but also several other facilities. They are different from co-living because active participation is expected. Central living projects often contain a rich mix of ages.

> Friends Housing

Friends-housing and its adaptations are a solution to the growing number of singles in the present society. These singles are from all generations and

their growing number is caused by several changes in our society: our mentality becomes more individualistic, young people are more often 'single by choice', there are more divorces and elderly live independent for a longer time.
Since most dwellings are designed for families, they are often too big and expensive for singles. But apart from the economic aspect also the social aspect is important, living together lowers the chance for loneliness. Many singles start renting a home together with friends. The latest years, even specific friends-flats are designed, they contain two same-size bedrooms and a shared kitchen, living room and bathroom. For bigger groups there exist the Melrose-concept and Framily houses, where friends rent a house together. Community houses are similar to this, they are also very typical for students and young people, but unlike a framily-home inhabitants don not know each-other on beforehand.
Pause-housing is also meant for singles, but in particular for fresh divorced people, here they do get a minimal sized unit where all necessary facilities are private.

> Living community and Living groups

In living-groups like in friends-housing everyone has his own room, but facilities like the kitchen, dining room, living and bathroom are shared. This typology is mainly meant for elderly. They are very closely related to care-collectives but defer from them since the inhabitants are equal, no care-giver is involved.
Living communities are typical for people sharing a specific ideology like religious groups, but also interest in ecology and solidarity can be the shared factor. In living communities major parts of the household are shared.

Conclusion

All the previously named dwelling-types have shared spaces where neighbours can interact with one another but some have way more shared spaces than only the ones used for passing through. Concepts with many shared spaces and therefore less privacy (like co-housing, central living, living communities,…), do not fit for everyone, especially when considering the Flemish rather individualistic mentality.
Since this thesis tries to give shape to the ideas of Leo Van Broeck (as mentioned in chapter 1.2), which are meant to encourage all inhabitants in Flanders to go live more dense, the type of housing we want to focus on should not be too far from the existing Flemish housing typologies. This thesis tries to encourage a certain level of interaction, maintaining respect for the individual needs, like privacy . Typologies taken into consideration are neighbourhood-networks (existing ones or still to be created from existing neighbourhoods), garden sharing and co-living (all are marked in red in Figure 4). Also conventional apartment blocks can be considered, having the intention to improve social sustainability here and make a neighbourhood-community out of it.

3
CASES

CASE 1
SAVONNERIE HEYMANS

Project name:	Savonnerie Heymans
Architects:	MDW – architects
Address:	Rue d'Anderlecht 139 – 147, 1000 Brussels (Belgium)
Year of completion:	2011
Client:	CPAS Bruxelles (Centre publique d'associons social) = social housing agency in Brussels
Surface terrain:	6.500 m^2
UPH:	85,7
Build surface	4.900 m^2
Units	42 (apartments, lofts, duplexes and maisonettes)

Type of transitional space:
courtyard, galleries, entrances, loggias, outdoor staircases garden (mini forest)

Figure 15: Savonnerie Heymans _ Main courtyard _ Retrieved: www.archdaily.com/220116/savonnerie-heymans-mdw-architecture

History

The project is a renovation of a former industrial site in the centre of Brussels a few hundreds of meters from the central square of Brussels. The plot forms a typical example of the Brussels degradation problem: since 1960 industry is moving out, prosperous inhabitants followed short after, moving to the suburbs and countryside, leaving behind only the poorest inhabitants. After the closure of the soap factory and a few small initiatives the site became abandoned in 1994., until in 2005 a competition was organised for the development of 42 Social housing units at this location. (Dejardin, 2012)

Concept

Gilles Debrun, one of the architects, describes the project as a small village in the centre of Brussels.

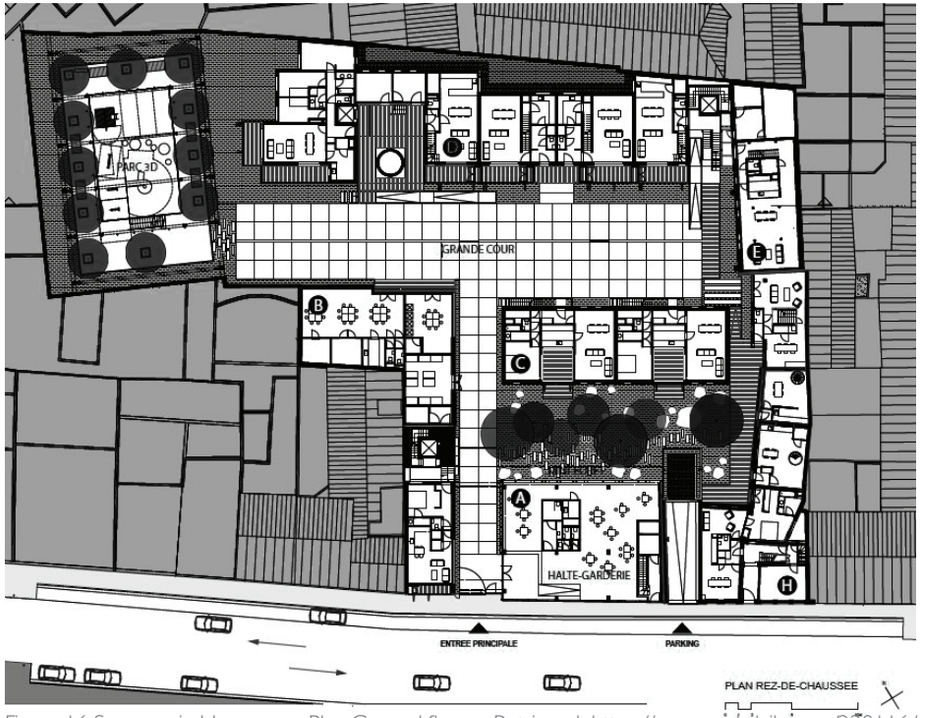


Figure 16 Savonnerie Heymans _ Plan Ground floor _ Retrieved: https://www.archdaily.com/220116/savonnerie-heymans-mdw-architecture

The main focus in the project went to the qualitative value of the unbuilt/exterior spaces. In the very dense region free space was necessary to avoid a suffocating feeling. Therefor the project is organised around three exterior spaces with each their own character (see Figure 3). Right form the entrance a mini-forest with a Japanese path is created for contemplation. Further the central courtyard is created, which reminds of the central square in a village. There is also a playground, made out of the existing frames on the site. (Lefèvre, 2012)

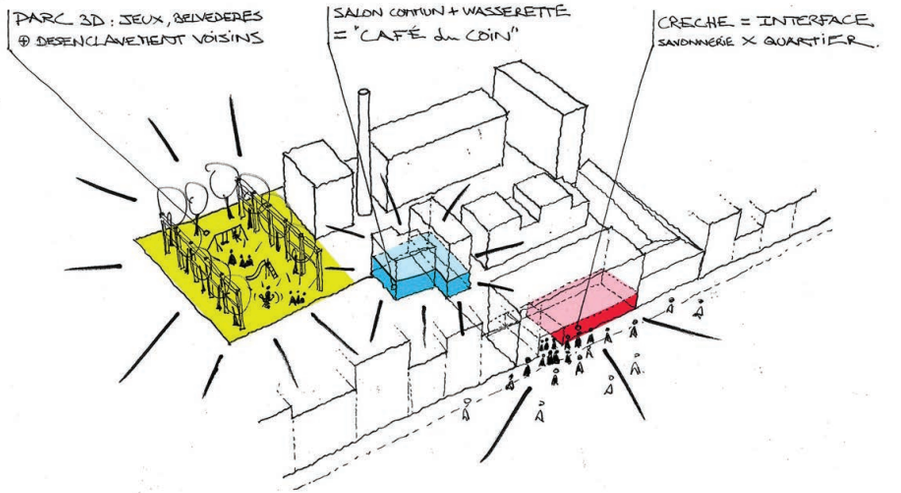


Figure 17: Savonnerie Heymans _ Concept: Exterior shared spaces _ Retrieved: https://www.archdaily.com/220116/savonnerie-heymans-mdw-architecture

Mix of use and inhabitants

A mix of inhabitants is ensured by introducing a very large range of housing typologies: apartments with 1 – 6 bedrooms, duplexes, triplexes, lofts and maisonettes.

Apart from the common exterior spaces and private units, some shared facilities are provided like a crèche, community room and laundry room. Only the crèche functions as a connection with the rest of the neighbourhood. (Lefèvre, 2012)

The layers of sustainability

The design also focusses strongly on environmental sustainability by renovating an existing building instead of demolishing and building a new one and by adding of a 14 cm layer of insulation, a rainwater-reservoir, bioclimatic loggia's, solar panels, green roofs, heat recovery ventilation, … . Through these environment-friendly applications bills for heating are lowered which is

very beneficial for the low-income inhabitants.

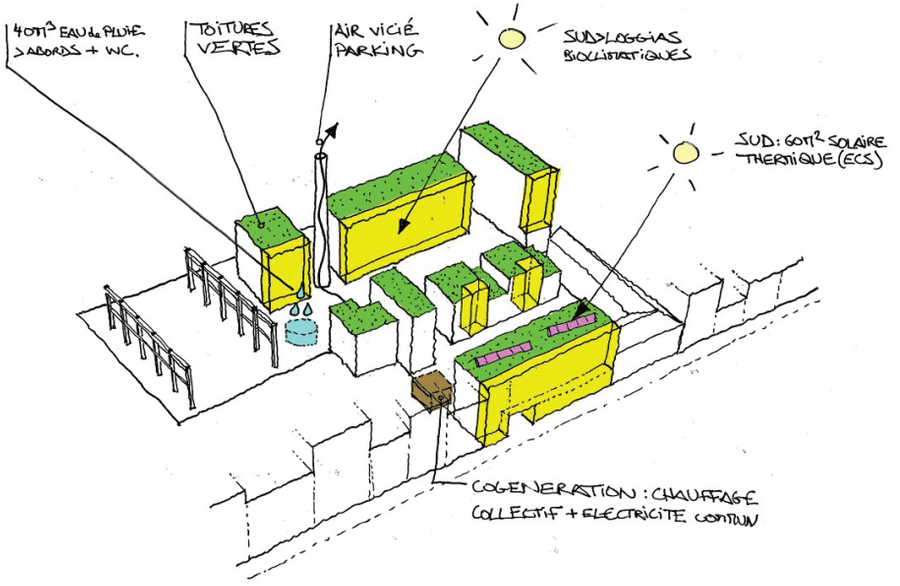


Figure 18: Savonnerie Heymans _ Ecological Features _ Retrieved: https://www.archdaily.com/220116/savonnerie-heymans-mdw-architecture

Debrun points out that apart from the economic desires, typical for social housing project, these inhabitants maybe more than any others are in need of this qualitative way of living and pride due to the social cohesion. He even refers to it as a layer of sustainability.

"Les habitants de logements sociaux ont besoin , peut-être plus que d'autre, d'un lieu de vie de qualité, appropriable, capable de leur donner un sentiment de fierté… ce qui est aussi un gage de durabilité." G. Debrun (Lefèvre, 2012)

The project is not only an example of high density where the social sustainability of the transitional space is taken into account, it also shows how all layers of sustainability interact with one another. This while having a maximum respect for the industrial heritage of the site. (Lefèvre, 2012)

CASE 2
CENTRALE WERKPLAATSEN KESSEL-LO

Project name:	CWK Centrale Werkplaatsen Kessel-lo
Architects:	BOGDAN & VAN BROECK and VBMarchitecten
Address:	Diestsesteenweg - Locomotievenstraat, Kessel-lo (BE)
Year of completion:	2013
Client:	AG Leuven Stadsontwikkeling (AGLS) and Matexi
Other common spaces:	library, underground parking, shops, offices, park
Surface terrain:	29.494 m^2
UPH:	67
Build surface	19 964 m^2
Units	134 (apartments, row houses with gardens, duplexes)
Transitional space:	Inner streets, public passage, staircases
Common Facilities:	library, underground parking, shops, offices, park

(Bogdan & Van Broeck, 2017)

Figure 19: Intimate streets in project Bogdan & Van Broeck (http://www.dagvandearchitectuur.be)

History

The site, situated along the central train station of Leuven (Belgium) was from 1860 on used for workspaces related to the train station. The facility, called the 'Centrale Werkplaatsen' created many jobs which leaded to a remarkable development of the rather rural municipality of Kessel-lo.
But after the industry finally left the site in 1993 the site had become an empty spot, closed off by a surrounding wall. The site has been used for a certain period by the regional thrift shop 'het Spit' and as a parking space, but totally lost its function as the beating heart of the neighbourhood. (Struyven, 2011)

Figure 20.1,2: Abandoned site of the Centrale Werkplaatsen (inventaris.onroerenderfgoed.be)¬_ Retrieved http://www.agsl.be/

Masterplan

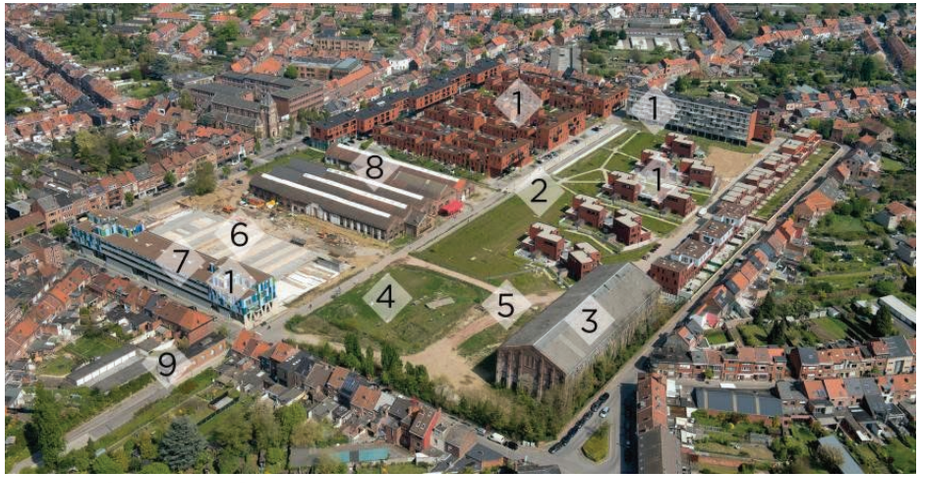


Figure 21: Overview site Centrale Werkplaatsen retrieved from http://www.agsl.be/

The masterplan aims to open the area and make it the centre of the municipality again, without losing the spirit of the space. The spirit of this space is described a vibrant space which owes its richness not from any expensive materials but from its users. The integration of public life is therefore an important criteria for the evaluation of the designed project, this is very closely related to the social sustainability the thesis focusses on.

In order to ensure a diverse character over the large site, multiple competitions are organised each for different parts of the site. The public space, which takes more than half of the space, exists in four different characters:

- Het Blauwputplein: a multipurpose square (Figure 21 - number 6)
- Spoorpark: a park alike passageway leading to the station and including a water buffering swamp (Figure 21 - number 2)
- A playground was planned to be built in het Spoorpark, but is not there yet. The neighbourhood started creating its own temporary playground, (Figure 21 – number 4) this will later be replaced by more housing
- More intimate pedestrian streets in between the houses (Figure 21 – number 1)

This last one forms part of the project by Bogdan & Van Broeck and will be the transitional space to be examined. (Struyven, 2011) (AGSL, 2018)
In the final stadium the masterplan will contain 325 housing units, 7 commercial spaces, a library, a community centre, a tavern. (Coenen, 2012)

Housing

The project of Bogdan & Van Broeck which is situated along the Diestsesteenweg, a provincial road, contains commercial spaces on the side of the 'steenweg', cheap vending housing a few apartments and an underground carpark. The houses are organised along three parallel roads, and have their own private gardens on the backside. The two outer roads the Paswerkerij and the Koperslagerij are car free roads.
The middle road, the Ketelmakerij, is wider and looks more like a paved square, benches and trees are integrated in order to invite inhabitants onto the square and lower the threshold between the houses and the street. (Struyven, 2011)

4
EMPIRICAL RESEARCH

4.1
RESEARCH SETUP

Main research question of the empirical research

Like mentioned in section 1.5 the thesis will compare design tactics used by the architect and his goals to design social sustainable projects with how the inhabitants and the community use and experience the transitional spaces. This research will regard the project Centrale Werkplaatsen Kessel-Lo and the focus will be on the transitional spaces.

Stages of the empirical Research

The research will happen in four parts, not necessary in a strict order.

– Defining of the architects' design intentions through:
  1 Documents: analysis of the available plans and literature
  2 Interview with the architects
– Examining the effects of the design on the inhabitants and the community through:
  3 Questionnaires for the inhabitants
  4 On-site observations of the inhabitants use of and behaviour in the transitional space

As an extra during a first site visit, I found out there was an official meeting in the community-bar one of the following weeks, I joined the meeting to get some extra insight in the community.

Partial research questions and methodology of the empirical

> Documents - analysis of the available plans and articles

First the case will be studied based on analysis of available plans and literature. This analysis should make clear what the design goal of the architects was, the attempts of the architect and how they tried to archive social sustainability. The presence and quality will be checked of the facilities and elements as listed in chapter 2.3 (Social Sustainability: Conclusion: How to measure the

social sustainability of a project?). This will be combined with a site visit.

Interview of the architects

A semi-structured interview will be held with the architects of the project. The aim is to answer the following research questions:

- What were the intentions and expectations of the architects at the start of the design?
- How did they implement social sustainability in the project and specifically in the transitional spaces?
- Was there any community engaged in the design phrase? If yes, to what extend?
- Did they do a post occupancy evaluation? In case they did, what are their findings?
- Do they feel like the desired result is archived?
  In case they do not feel like that, what do they think is the reason it is not archived?

> Questionnaires for the inhabitants

Research Question for the questionnaires

The inhabitants will be interrogated through questionnaires. Through the literature research a list of parameters can be generated, to test the level of social sustainability (chapter 2.3 Social Sustainability: Conclusion: How to measure the social sustainability of a project?). These are normally used in a post-occupancy evaluation, but this part of the research is similar to such an evaluation. The following questions should be answered through the questionnaires.

- What are socio-demographics of the respondent? (age, family status, profession, interests/hobbies) As Palich implies behaviour and feelings about the place, could be linked to individual matters instead of to the design.
- How frequently do they use the transitional space? For what purposes?
- What do they like about their home? And what not?
- Do they have the feeling they have any effect on the decision-making in their building?
- Are they willing to act in maintenance or decision making?
- How well do they feel like they know their neighbours?

- Would they like to know their neighbours better, or know more of them?
- Do they ever do activities together with their neighbours? Which? How often?
- Are they proud about the community they are part of?
- Do they feel safe, mainly in the transitional space?
- How satisfied are they about the facilities? Do they use them?

The questionnaire will be put into Qualtrics (an online survey platform) in Dutch as this is the local language. The results will be translated into the thesis in English. Door-to-door recruitment method was used and the respondents filled in the questionnaire on an IPad. The visits were done on four different evenings, and on a Sunday afternoon, since at that time probably more respondents would be at home.

Frame of the questionnaire

In the questionnaire (found in attachments) *the translations* are added and marked.

The questionnaire called 'housing satisfaction' will exist out of the following 5 blocks:

- Algemene informatie – *Overall information* (10 Questions)
- Gebruik van de ruimte – *Use of the space* (7 Questions)
- Kwaliteit van de gemeenschap – *Quality of the community* (8 Questions)
- Kwaliteit van de woning – *Quality of the residence* (4 Questions)
- Ervaringen - *Experience* (11 Questions)

> On-site observations

As people do not always act as they say, the questionnaires will be enriched with observations in the transitional space. The following aspects will be analysed:

- Who uses the space?
- When and for how long do they use the space?
- How do they use it? What activities do they do in it?
- Do they take care of the space?
- Do inhabitants interact with one another? Or can a sense of community be felt in any other way?

– Are there any traces of incidents implying the place is safe or unsafe, such as marks of vandalism?

After a first visit of the site and a test observation the place and technique of observing are further defined.

The observations will be done in the inner streets. The wider middle street, the Ketelmakerij, seems the most adequate for this. They will happen at three different times of the week.

- An afternoon (14h – 16h) on a regular working day (not on Wednesday, since children are out of school this day),
- In the evening (18h – 20h) during a working day ,
- On an afternoon (14h – 16h) during the weekend.

The following elements will be marked in a table that is put together on beforehand. This will be done for all individuals passing by during the observation.

- Groups or individuals: In case of groups amount of people
- Age category: this will be guessed, the options will be kid (0 – 11 years), Teenager (12 – 18), Young adult (19 – 34), Middle-aged (35 - 65), Elderly (> 65)
- Action:
  - Walking, running, biking, skating as a transportation
  - Active playing (includes running ,example: football, skating around one area,…),
  - Passive playing (playing while remaining seated, example: drawing with chalk, playing cards,…)
  - Standing Still
  - Sitting
  - Interaction for example talking, waving, … with someone of their group or with externals?
  - Other activities (define these)

Possible extraordinary happenings or incidents, such as a festivity or vandalism. Will be noted down.

The following table will be used:

		Age category					Actions									
	Individual/ Group	Kid (0-4)	Teenager	Young adult	Middle age	Elderly	Walking	Biking	Running	skating	Play active	Play passive	Standing	Sitting	Come home	Interacting	Other (define)
1																	
2																	
3																	

Figure 24: Table for observations of the use of the transitional space - self constructed

– Each row belongs to one individual of group that clearly came there together.
– In the column individuals/groups the amount of people belonging together should be written.
– In the columns of estimated age category and actions at the right a sigh will make clear if it is a man or woman.
– Other activities should be defined by writing a short description in the cell.

4.2
FINDINGS

Documents

The case of the Centrale Werkplaatsen is explained in chapter 3. According to the published articles the main aim of the masterplan was to open the site and give it a great value thanks to the inhabitants. This is encouraged by a lot of public space, in different forms and some more intimate than others, in combination with a variety of public facilities.
In the housing project of Bogdan & Van Broeck the main focus is on the public space (the inner streets) that are directly touching the house to minimalize the threshold.

Interview with the architects

The interview was held with Maxim Czvek, an architect who works at Bogdan & Van Broeck and who did the follow up of the last stages of the project. Therefor he has a clear overview on the project.

The interview is analysed according to the methodology of Braun and Clarke (Fylan, et al., 2015). Answers are thematically divided. For the themes there is chosen for measures of social sustainability, as discussed in the literature research (chapter 2.3 Social Sustainability: Conclusion: How to measure the social sustainability of a project?). These measures used are:

- the identity of the community,
- the social mix of inhabitants,
- the accessibility of the site with a specific attention paid to low-carbon transport,
- the multi-functionality
- the willingness of the inhabitants to take initiative

On the other side it is important for this research to compare the initial design and the aims of the designer to the outcomes. Therefor three other themes are added:

- the masterplan concept
- the designed use of the transitional space
- the critical reflection of the designers on the project

The themes are discussed below, including the exact citations out of the interview.

> The masterplan concept

As Czvek explains, in the passage of the interview shown below, the central idea of the masterplan is to use the logic of the industry, the former function of the site, to guide the design. They created linear streets with the important characteristic that they are car free.

"But if fact where it comes down to … They made a plateau for the trains to be able to roll and go into different locations. And that, the logic of that plateau, made that there is a central axis, that in fact, continues all the way to the station. And in our part one of those ateliers, we kind of kept the same logic of the structure, so we didn't start, changing in a new direction. And we made a clear façade towards, the Diestsesteenweg, which was next to it, with an apartment block. And then in there are entrances towards different streets with their own public character, and again a clear line towards what the park is. So you get this kind of old, industrial logic of repetition, that we repeated, again in the repetition of the site. That leads in fact to, to one building, that is the facade towards the main street that goes to Kessel-Lo. But with that there are three gates, that lead towards those new streets, and two of those streets are more on a smaller scale and more intimate and have more differentiation and the other one are more open and is a bit more of a bigger playing street. But what is important, in all of them, is in fact that, they are completely car free, except for the back passage with a bit of the parking, but those streets with the houses, with the row houses are completely car free." _ Maxim Czvek [1]

Of course the car free use can never be entirely ensured as explained in the interview [1.2]

> The Identity of the community

Identity of the house

As a main idea in the design of the streets themselves, they designed a reverse typology of the Flemish backhouse. A typical Flemish house often has an informal entrance on the back side and throughout the years extra spaces are build up against the existing, creating a stepped volume. The reversed typology is entered from the street side and has a very differentiated form on the street side. Instead of recognising a house by its number at the door, they can be recognised by the form.

"What for us was important, … is this kind of reversing of the typology of the backhouse... In Flanders you see it a lot, when you take the train, that you have this kind of backhouses and kitchens, and everyone enters there. So we put that entrance towards the street, and in fact, that makes the differentiation in the street as well." _ Maxim Czvek [2.1]

"There are a couple of typologies developed so that you can actually still recognise 'this is my house'. You have the numbers, but it is just not like "I live on number fifteen." It's also the one that jumps, the one that jumps in, that kind of makes this kind of differentiations. One that goes a bit higher, a bit lower, and so on and so forth." _ Maxim Czvek [2.4]

In the first build street the stepped form is mainly seen here the back side was also stepped, due to the financial crisis the rest of the houses where designed more flat on their back sides.

"And then those gardens are in fact with a very flush façade and in the very first design they were jumping in levels so in section. … In the second phase we had to make them flat because of financial crisis that hit them, so we had to optimise the project a bit." _ Maxim Czvek [2.2]

Identity of the neighbourhood

The project carries a clear identity compared to the surrounding communities. The houses have a clear material code, windows are slightly differentiating to create a large number of different unit, but still following the same style. Inhabitants carry a certain proudness with them for living in the Centrale Werkplaatsen.

"There is a deliberate choice of having only two clear materials, or colours, so red brick and everything which is steel, for details of railings and sealing and so on, is in black." _ Maxim Czvek [2.3]

"We created individual housing, but in a very, a rather dense situation. In collective buildings, with a very clear identity. And in our minds, also with a certain collectiveness, cause people, when you say, I live there on the Central Werkplaatsen, it's a very clear mind. There's a certain proudness and it is also a certain place where kids share things and you know your neighbour." _ Maxim Czvek [2.4]

"And then we had a library, of windows which we can repeat depending on unit to unit. We have then a series of types, slightly different in the execution then on the competition. And then we could play with them, mirror them, and just, in the end we didn't have fifty types, ten types, which we could just watch, shuffling them have a full differentiation in the project." _ Maxim Czvek [2.5]

> A social mix of inhabitants

Originally the project attempted to attract young families. In order to create equal chances for those with a lower income there was specifically aimed to sell a certain part at a more affordable price. With the other part the developer was free to define the prices. As the neighbourhood became popular, the housing prices rose fast, making it less affordable now.

"The city wanted to have a percentage of the global amount of units being affordable housing, for young families, to attract young families in that neighbourhood. … they could make really an exemplary project. And then, a part of it was to developed to put freely on the market to sell." _ Maxim Czvek [3.1]

"The project got very popular as well and the prices went up straight away, very fast. So people bought a house and in fact the value of their house over the five years now went really almost to a double, if I am not mistaking." _ Maxim Czvek [3.2]

> Accessibility of the site and low carbon transport

The project is located at a walking distance from the station of Leuven, as the cars are parked mainly underground low carbon transport is encouraged. The location of the project makes it extra attractive.

"The city wanted … Close to the station, using the bike, not using the car and so on and so forth, so they could make really an exemplary project." _ Maxim Czvek [4.1]

"It is a deliberate choice in this project to have, to go to a minimal amount of parking spots. … And to promote the cyclists … and not the car use." _ Maxim Czvek [4.2]

> The designed use of the transitional space

During the design phrase the architects hoped to make the street an important part of the design. One of their central decisions was to make the streets car-free, they found that if the street are car free they also are very lively. But as they remarked some tactic worked to keep cars out while other didn't. Cars where kept out by:

- making the street very narrow
- providing a green underground for the streets
- providing an access from the underground parking directly into the house.

Additionally the interiors of the houses are organised with the kitchens in front to keep an eye on the children. The plateau creates an extra threshold towards the street, this keeps the children from going to the street. The intimate character of the streets in combination with being near the house makes it a nice place. The central street is a bit larger to organise group activities.

"How did you expect the streets to be used?
I think the way they were designed... The streets between, where the parking spots are, … We want this mineral of street, this kind of hard street. To play and to run around and I think it also works like that. But the central zone, we had in mind that it would be much more green, much more trees, much more liveliness." _ Maxim Czvek [5.2]

"At the same time, we also notice that if the car is not there, that it does make a central space, where, we have one of the colleagues living nearby, that kids play, that there is a bit more activity around." _ Maxim Czvek [5.3]

"So the typology of the kitchen is towards the street and kids are playing, and the parents see the kids playing and the living rooms are more towards the garden." _ Maxim Czvek [5.1]

"When the distance of the houses is closer, you can have the kids playing, but it's more of a passage zone. And also, those kind of small streets, connecting, it is very deliberate that they are not in one line, they are jumping. So they are really small connectors but it's nice places for kids, to hang around and to have a bit more than instead of being on a Boulevard let's say. And then that central space becomes a bit more of a boulevard, but then allows us to again, to do something a bit more in group, in something organised. They had for a very long time, in fact a trampoline on the site." _ Maxim Czvek [5.4]

"The plateau is also rather nice … a bit higher up, with the houses towards the street side… The kids are not just running into the streets you know, there is always this kind of threshold, between the playstreet and then the big street in the back." _ Maxim Czvek [5.5]

> Multi-functionality

To be socially sustainable a neighbourhood needs multiple functions to enrich the housing. Czvek also describes this as an important aim of the office as it ensures activity throughout all time of the day and week. In the neighbourhood the Centrale Werkplaatsen currently the additional functions are a playground, a small grocery store and Hal 5, which was originally supposed to become a library.

"No, there is no library over there, it's something else, something much more interesting, for what you are studying in fact. That is quite interesting." _ Maxim Czvek [6.1]

"On the lower floors, we have commercial activity, that in fact. Also we find it rather important not to have these kind of hundred percent mono-functional design, but to have this kind of local shops or administration, or whatever is there, that can help to get a social interaction. During the day there is

activity and during the evening or in the weekends, there is activity of the people living there, so there is social control on the site is quite interesting, as well." _ Maxim Czvek [6.2]

> Initiative of the inhabitants

As discussed in the literature review in a great community initiative of the inhabitants encourages initiative of the inhabitants. Not only does the office aim to give inhabitants a certain freedom and their own infill on the design. During the interview Maxim mentions the initiative of inhabitants to create an own play-garden on a spot that will later on be developed .

"We designed in this office very much to try to make a placeholder in which people can start living. And then they have their own infill. … we also want to restrict certain things. So that there are certain qualities that are always continuing through the lifespan of a building." _ Maxim Czvek [7.1]

There is a play-garden and that is also by the same people that initiated from the neighbourhood to say to the city: "Look, we see that that property is there, it's yours, it's empty, we have here, a lot of people that like to be in their garden but to do something together for the kids, why don't we do something there, and the same here because most of the hall is being used for lessons for this kind of parkour-running, and as a gym almost, for kids from the neighbourhood. Rather than just turning it in to something very commercial. But it's a social engaged activity, without becoming naïve." _ Maxim Czvek [7.2]

> Critical reflection of the designers on the project

Czvek and the office are both conscious about how the project works today and about certain elements that didn't work well. As het says not every effect of the design could be predicted.

Post-occupancy evaluation?

Although they plan to do more follow up on their projects, a post-occupancy evaluation did not happen for the Centrale Werkplaatsen.

"Another thing that I find we learned is that: the strength of this project lies in combining the individual wishes of housing together with the collective potentiality of a place And that I think, is the strength, that we tried to bring in fact into a lot of our projects." _ Maxim Czvek [8.1]

Questionnaires for the inhabitants

When holding the questionnaires there is attempted to get a random mix of the inhabitants living in the project. There were 29 people interviewed, all were recruited as planned in the methodology by ringing the all doorbells and letting those who respond fill in the questionnaire on an IPad.

> Group mix

The gender of in habitants ended up in an almost equal amount being 48,2% men and 51,8 % women. The ages of the interviewed (considering children are not interviewed) shows that the main part of inhabitants are around 30-40 (Figure 25), often having children. The most common household-type of the respondents is the couple with children (Figure 26), out of the 29 respondents 19 live with their kids, in the apartments all respondents where couples or singles without children.

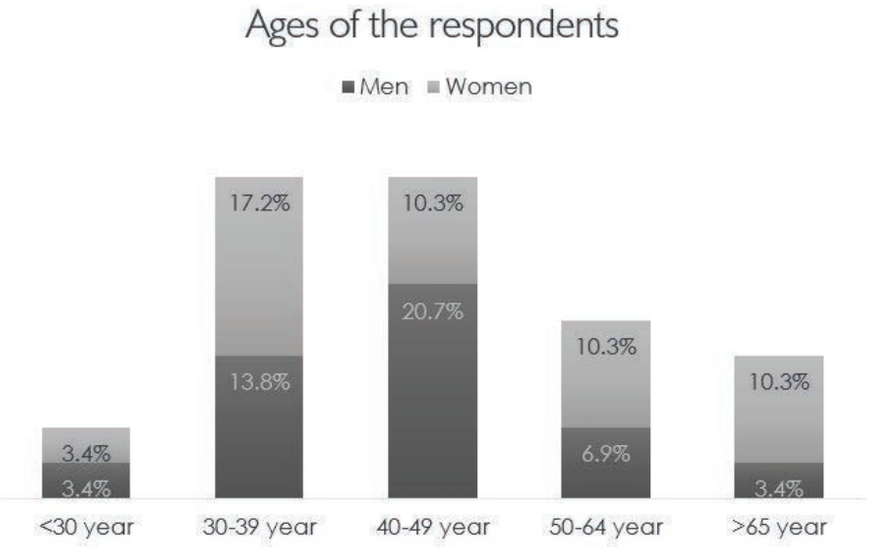


Figure 25: Ages and genders of the respondents _ (percentage of all respondents per age) _ Result Questionnaire Housing satisfaction (Q1 – Q2)

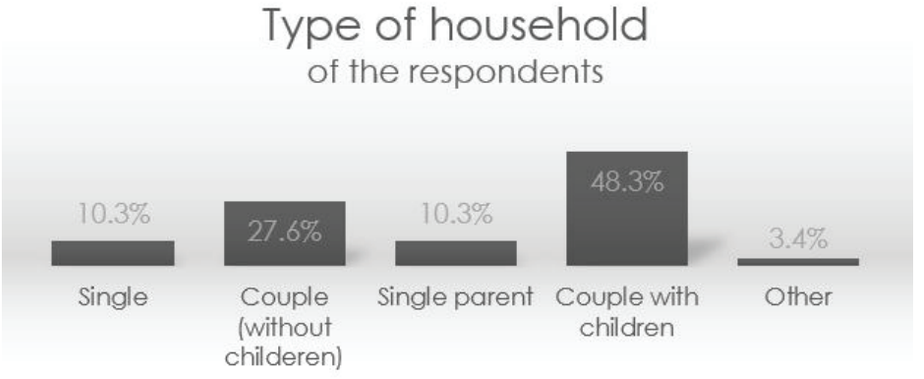


Figure 26: Types of households of the respondents _ (percentage of respondents per household-type) _ Result Questionnaire Housing satisfaction (Q5)

Remarkable is the job type and the languages used at home. The houses were meant to attract a mixed group of inhabitants and also attract people with a lower income by reserving a part of the houses with a prescription of a certain maximal income. As mentioned during the interview with the architects, the prices of the houses were too high, for those belonging to this income class. These houses were often sold to people who were temporarily working part-time or who had saving for example from selling a previous house. The chart below (Figure 27) proves this statement, it shows that 72,4% of the respondents are clerks/employees, a job type typical for the middleclass, only one respondent is a labourer.

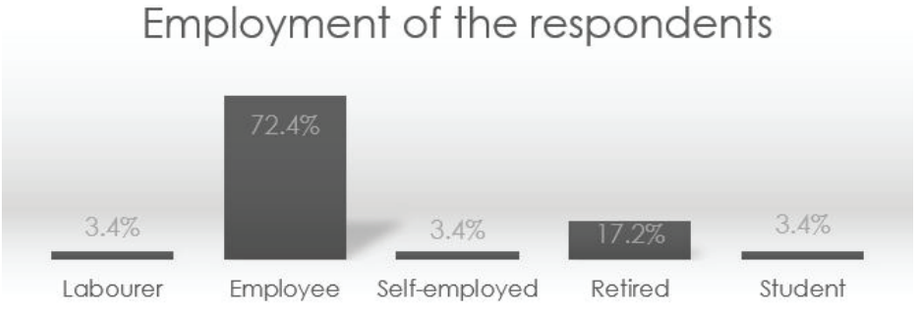


Figure 27: Employment of the respondents _ (percentage of respondents per job type) _ Result Questionnaire Housing satisfaction (Q3)

Figure 28 displays the reasons for their last moving out, it shows that the group had no particular aim to move into a multifamily housing or for the specific atmosphere this project holds. Only one inhabitant remarked he sold his previous house to move into a group housing project but this plan failed so he bought this home instead, another one mentions the piece full atmosphere as his reason. The main reason for moving was the need of a bigger house, this could be because respondents have several children and therefor a need of a decent sized home. Although the location of the project is exceptional, only 3 respondents mentioned this as their reason.
The table shows 30 results, this is because one of the inhabitants gave two reasons, being both buying a house and moving out of a too small residence.

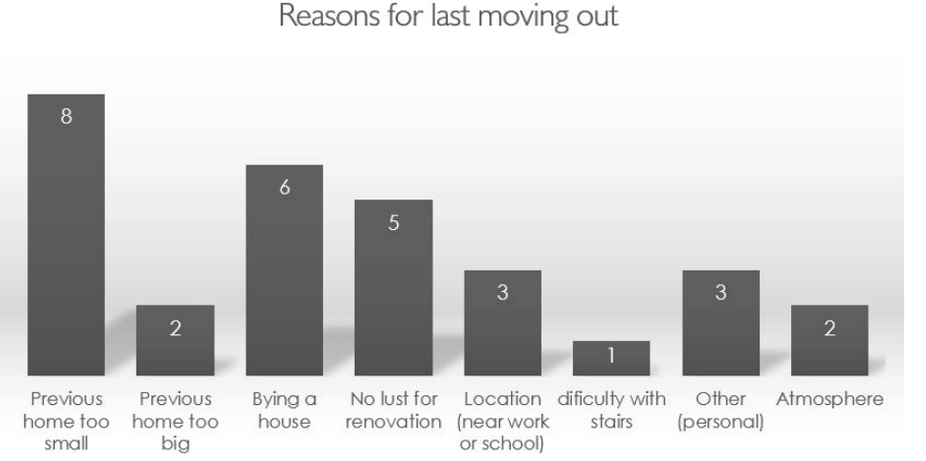


Figure 28: Reasons for last moving out _ (amount of respondents per answer) _ Result Questionnaire Housing satisfaction (Q11)

Considering the first houses where finished around 2010, 8 years before the questionnaire was held, most inhabitants seem live in the project for a long time, as shown in Figure 30. There could be assumed that they are satisfied about their home, which is also proven by the results in Figure 35 later on. In the open question what they like about the project, 51,7% of the respondents mention, the atmosphere and contact with neighbours is one of the things they really like about the project (Figure 29) . There can be assumed that this is a reason people stay in the project for a relatively long time.

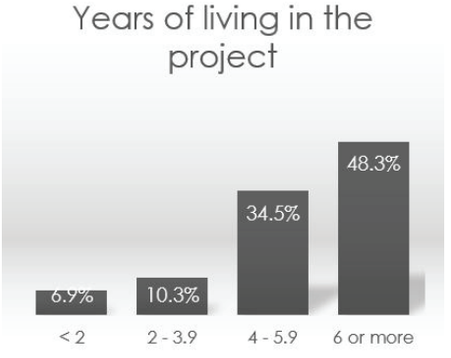


Figure 30: Years of living on this location _ (amount of respondents per answer) _ Result Questionnaire Housing satisfaction (Q10)

Figure 29: What do they like about the project? _ (amount of respondents per mentioning certain aspects) _ Result Questionnaire Housing satisfaction (Q30)

> Integration in the neighbourhood

Overall the questionnaires show that most respondents feel like they know their neighbours well. On the question "Do you feel like you know the neighbours well?" the answers are the following:

- o 34,5% answers absolutely yes
- o 51,7% answers rather yes
- o 13,8% answers rather no
- o Nobody answers absolutely no

> Influences on knowing their neighbours

Only a very small percentage of inhabitants speak another language than Dutch at home, which could show that the project somehow failed to attract a mixed group of inhabitants in terms of ethnical background.

Unlike one might expect, there is no notable difference in satisfaction or knowing the neighbours for this group of respondents (Figure 31). Somehow the language-barrier, did not affect this group. This result could also be very deceiving because the group of non-Dutch speakers is very small.

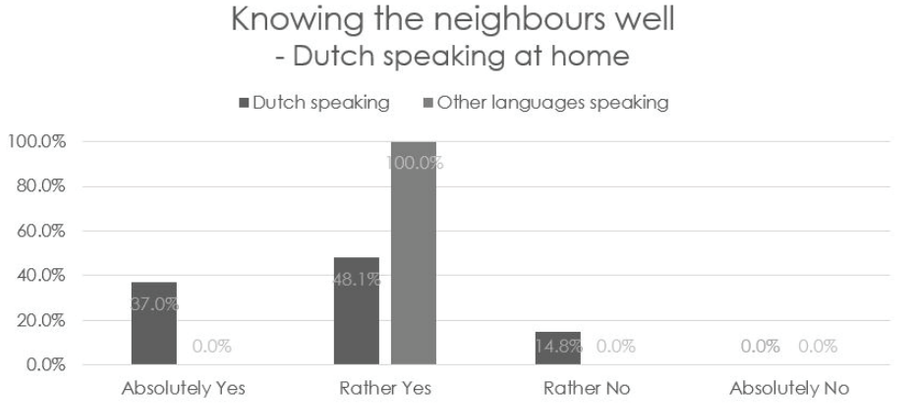


Figure 31: Knowing the neighbours well? _ (Percentage of respondents speaking Dutch or not at home per answer) _ Result Questionnaire Housing satisfaction (Q7, Q16)

People living in the apartments on the other hand, tended to feel like they know their neighbours less. This is shown in Figure 31.

People living in the apartments on the other hand, tended to feel like they know their neighbours less. This is shown in Figure 32.

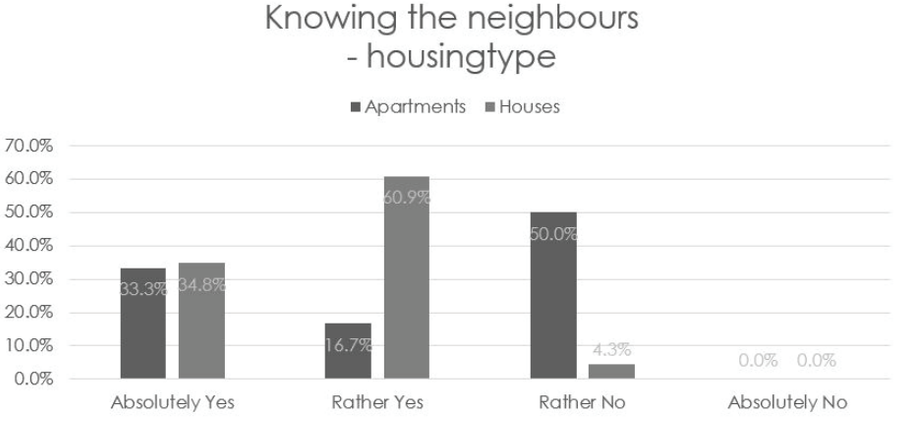


Figure 32: Knowing the neighbours well? _ (Percentage of respondents per housing type per answer) _ Result Questionnaire Housing satisfaction (Q6, Q16)

> Use of the space

As Figure 32 shows, the transitional space is mainly used as a passage and for talking to the neighbours (82,8% of the respondents). But also for other purposes like playing for kids, sitting to relax (51,7%), to place bikes (13%), holding barbeques and new-year-receptions with the neighbourhood. Multiple answers per respondent where possible. Although all respondents approve there is a bike park available 44,8% admits to leave the bikes at the front door from time to time, especially to save time.

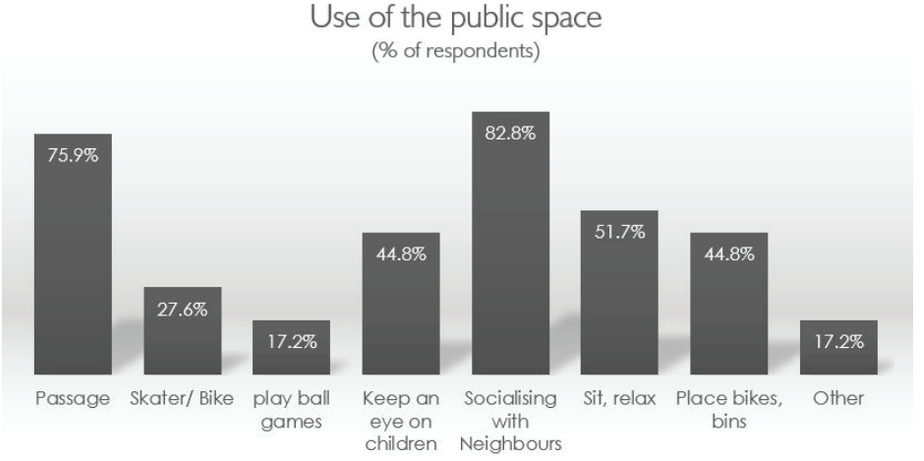


Figure 33: Use of the transitional space _ (percentage of respondents naming the answer) _ Result Questionnaire Housing satisfaction (Q13)

On the question how often they use the transitional space (for other purposes than walking through) the answers where very spread, as shown in Figure 33. We could state that the mayor part either uses the transitional space very frequently or uses it rarely.

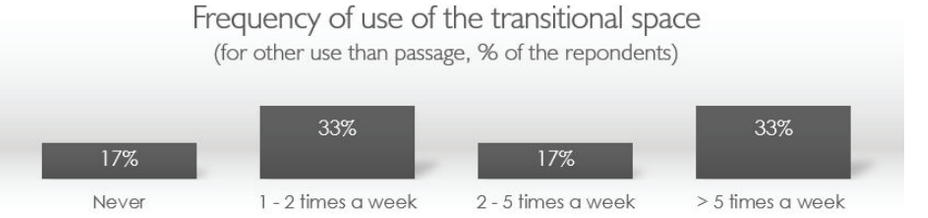


Figure 34: Frequency of use of the transitional space for other purpose than passage _ (percentage of respondents naming the answer) _ Result Questionnaire Housing satisfaction (Q14)

> Conflicts and Vandalism

Both on the question if they ever experienced conflicts or vandalism around 40% of the respondents answer no. Nevertheless they do occur, as one of the inhabitants stated “yes we do have conflicts but that occurs in every neighbourhood”. Many inhabitants talk about the same problems, the most common mentioned cases are shown in Figure 34.

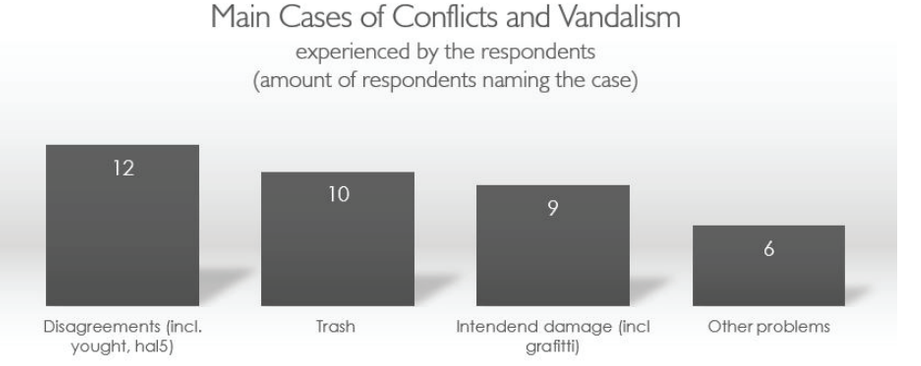


Figure 35: Main Cases of Conflicts and Vandalism experienced by the respondents _ (amount of respondents per answer) _ Result Questionnaire Housing satisfaction (Q28.1, Q29.1)

> Satisfaction

Although conflicts occur, the overall satisfaction of the inhabitants about the project is remarkably good (Figure 37). On Q33, a question about their general satisfaction of the project, 62,1% of the respondents answer they are absolutely satisfied, the remaining 37,9% answers they are rather satisfied, not a single respondent answered negatively on the question. The question on their satisfaction about the facilities shows similar results (Figure 36).

As shown in Figure 36, some more attention should be given on the inclusion of inhabitants in decision-making, this is the only factor where some inhabitants are absolutely unsatisfied, only half the inhabitants (51,3%) are somehow satisfied with their share in the decision-making. 37,9 % of the respondents is willing to join in the governance, the most common excuse for the others is their lack of time. As mentioned in the literature review the willingness to join in the governance is a sign of good social sustainability.
The perceived safety in the transitional spaces (shown in Figure 38) is quite good, even by night, although there is space for improvement.

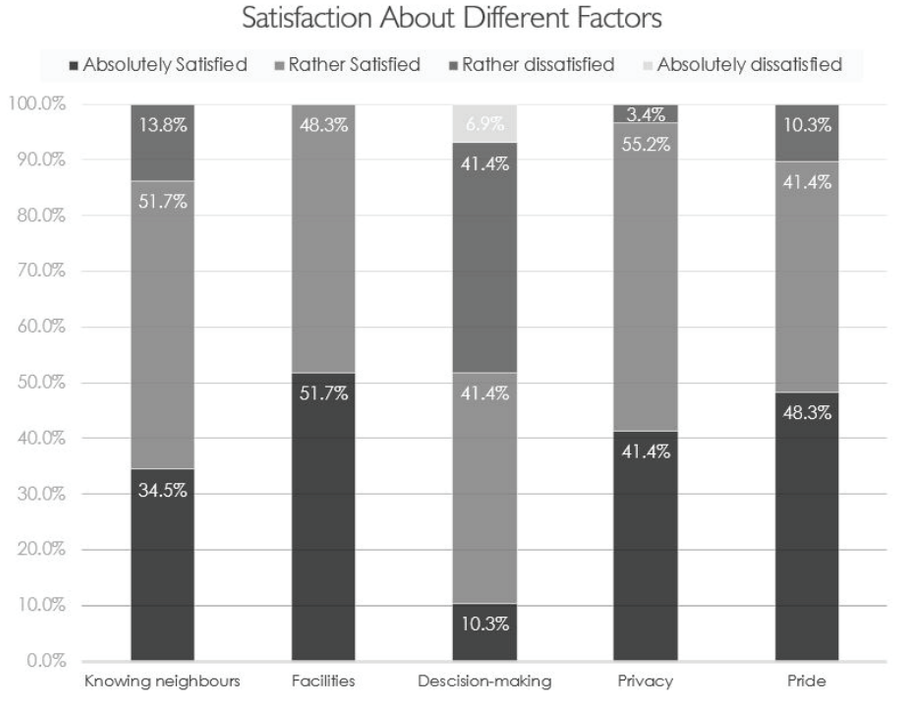


Figure 36: Satisfaction of the respondents in different factors _ (percentage of respondents naming the answer) _ Result Questionnaire Housing satisfaction (Q16, Q18, Q20, Q22, Q24)

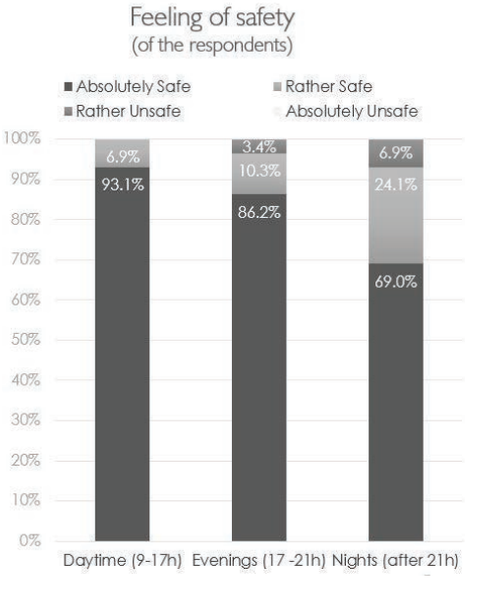


Figure 38: Perception of safety by the respondents per time of the day _ (percentage of respondents naming the answer) _ Result Questionnaire Housing satisfaction (Q25)

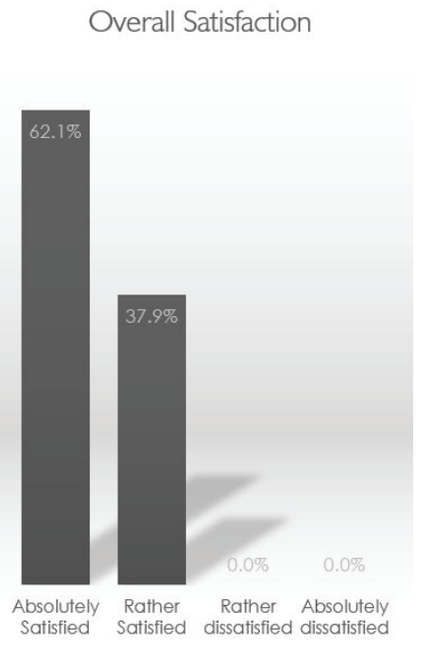


Figure 37: Overall Satisfaction of the respondents _ (percentage of respondents naming the answer) _ Result Questionnaire Housing satisfaction (Q33)

On-site observations

The observations where done on the following days, hours:

- Tuesday 30 January 15 - 17 h (weather: sunny but cold)
- Sunday 4 February 15 - 17 h (weather: little snow)
- Thursday 8 February 18 - 20 h (weather: cold, no rain, dark)

Since it was a very cold period in winter, little people were outside most just passed through the street to go to their houses, it was too cold to play outside comfortably. Most people were alone especially in the evening, sometimes teenagers stayed in the street to chat with their friends before entering home. Ideally the use should be compared to the use in summer.

Extra: Community meeting

When visiting the site for the first time there turned out to be an organised community meeting, on a Tuesday evening, the 6th February. The meeting took place in 'Hal 5', a warehouse that was left from the site's industrial history and was rearranged as a community centre with a bar, a greengrocer and a sports hall. Not only was this an ideal moment to get to see the facility from the inside, this also showed the engagement of the community. After some time of chatting and having a drink, while people were arriving, a small interactive play was presented. Afterwards in a rather playful way inhabitants were put in groups and given the chance to give their opinion about the project and talk about the possibilities.

Figure 39: Community meeting at Hal 5 _ Picture by Naomi Neelen (6 February 2018)

Around 30 - 40 people of different ages were present, some left earlier or showed up later. The group existed of combination of both an engaged community management, many attendees who seemed to know the group well and some individuals who seemed rather shy and new to the happening. As there was asked during the interactive play in which street they lived, around 1/3 of attendees lived in the surroundings of the Centrale Werkplaatsen.

From this happening could be concluded that there does exist a community with a strong bond, but considering there are around 133 dwellings in the project, only a minority showed up. Of course there could be several reasons for not showing up like, like having other plans for the evening, the fact that it is was very cold in Hal 5 on a winter evening like this or not being connected to the community. Since a part of the attendees came from outside the project, there could be concluded that Hal 5 and community in this project have a positive influence on the surrounding neighbourhoods.

4.3
CONCLUSIONS OF THE EMPIRICAL RESEARCH

The architects designed the project with the desire to create strong social interaction between the residents. The project stands out from other housing in the area due to its car free streets, while still providing parking near the house. This is one of the mayor benefits the inhabitants name when asked what they like about their home.

Contact with neighbours is quite good, especially for those living in the houses, which directly touch with the streets. The streets are used frequently by around half of the inhabitants. And mainly for socialising with the neighbours and by children to play in. This combined with great level satisfaction about the facilities resulted in remarkable level of overall satisfaction and pride.

As the satisfaction on most levels is great, there can be concluded that almost all demands for a social sustainable project are fulfilled. The main point of improvement would be the community engagement especially during the design phrase. This is also one of the most difficult elements to provide, since in most case, in the Centrale Werkplaatsen as well, the inhabitants were unknown during the design phrase. Still the inhabitants where not all that satisfied about their share in the decision-making.

During the design the architects aimed to keep a clear character in the project, by having clear regulations what not to do. For example the fences in the gardens where to be kept the same way. This limits the inhabitants of making the space their own. As Czvek explains this was their first project of this type and they might do it differently next time.

Another element that could be improved was to provide more green in the inner streets, as Czvek explained this was not their decision. Nevertheless

there was no complaint about any lack of green by the inhabitants, probably because there was a large green space provided nearby.

Lastly the social mix desired at the start of the project was not achieved, this was actually due to the project and region doing too the rise of housing prices could not be foreseen by the architects.

4.4
CRITICAL REFLECTION, LIMITATIONS

In general
As mentioned before, unlike ecological and economical sustainability, social sustainability is strongly influenced by human experience and behaviour, this causes that results are less sure. Social sustainability is a value that could be placed on a spectrum, even when it is clearly present it can always be improved.

The human factor in this research plays an important role. In the literature research there is trusted on the reliability of existing research and so the reliability of other researchers and their method. In the empirical research misinterpretations can be caused both by the choice of the method, the preforming of the research and in the analysis of the result.

Due to the limited timespan of the thesis, the empirical research focusses on only one case. Additionally the results of the done research are very case-specific. More research is needed in order to state conclusions for dense housing projects in general.

Analysis of the documents
When visiting the project and through talking to in habitants there could be found out that not all promised facilities as described in the literature were actually build. This is logical because the literature on the project is often written in a certain design phrase were situations and so plans can still change. This show that if there cannot be entirely predicted what will be built in the end, it must be even more difficult to predict the effects of the build environment.

Many of the articles were written by others than the architects themselves, they can be already influenced by the writer. On the other hand in literature written by the architects themselves the focus will be mainly on the positive aspects of the project. This limitation was overcome by triangulation of data sources and an orientation visit to the project which brought some extra insights.

Interview with the architects

Through interviewing the architects there can be gained more specific answers. By adding or adapting questions, based on the already given answers, less depends on the on beforehand chosen questions and more understanding can be gained of the architects aim.

On the other hand, defining conclusions out of this interview is more complex and can be influenced by human interpretations. To reduce the influence of personal interpretations, the interview is recorded and transcribed ad verbatim. The interviews is analysed with the thematic coding method.

Since the interviewed architect had already visited the project after its occupation and the interview was held after the responses on questionnaires were collected, the conversation could be influenced.

Questionnaires for the inhabitants

As the questions and in most cases the answers are strictly set on beforehand, the questionnaires might leave out relevant information. In attempt to avoid this, open-ended questions are preferred above multiple choice questions (like in Q4, Q10, Q11, Q14, Q17, Q28.1 and Q29.1) and extra open questions are asked, where overall remarks can be given (for example Q8, Q15, Q23, Q30, Q31 and Q32).

As said before the questionnaires were held in Dutch, this means the results were afterwards translated to English, this could lead to slight differences in interpretation.
Also people can interpret questions and therefore answer differently. Since the questionnaires are handed to the inhabitants in person, they can still ask if certain questions are unclear, this lowers the risk of misinterpretations.

People might not always answer truly on a question, this can sometimes be unintended. For example when asking how often they use the common space (Q14) they might think they use it more than they actually do. For these reasons there are observations done, to improve the reliability of the questionnaire.

As going up to the inhabitants houses with questionnaires many tended to answer in person instead of writing out their remarks on the questionnaire. Many questions also turned out to be not ideally set-up, as some inhabitants said it depended on a situation or their option was not available. Some questions turned out to be less useful and other should have been added. An interview for the inhabitants could have been a good alternative, although in this way less results could be collected and answers could not be generalised for the whole project.. Ideally a few on advance interviews should be done do further define the questionnaire. Luckily because of handing over the questionnaires in person and being present while they were filling in, extra information could be gained through their remarks. I learned a lot through this phrase of the research.

On how often the they use the transitional space (for other purposes than walking through) and how often they join in neighbourhood activities, not all answers are clear, these questions should be stated different if redoing the questionnaire. This could be because the questions were not entirely adapted to the situation. Most responds remarked that their use of the space depended strongly on the season, in the summer some use it daily and go sit outside while preparing the meal, while in winter they said it is simply too cold to stay outside. This last could be clearly seen through the observations, additional observations during the summer could help clarify if the first is true. At last the mix of respondents could be influenced by the distribution method. All the doorbells were rang but some inhabitants were not at home or did not want to fill in the questionnaire. Especially in the apartments many inhabitants refused join in answering the questionnaire.

Observations on the use and behaviour

The observations of the actions and behaviour in the transitional space can be influenced by the moments of observing. There was a predetermined time slot of the observations, but the use and behaviour at the time of observation could be unusual for the time of the week.

Because it is not possible to write down everything that happens in the transitional space, during the given time, a selection was made. This selection of elements to write down and the way of categorising, limits the amount of information available for the later analysis. Therefore it is important to define with care which information should be collected on beforehand, because it will have an influence.

Since the ages of the users of the transitional space is estimated, the observer here has a certain influence.

The observer will be present in the space and people might feel observed. This can cause the users to act differently from how they usually act or from how they would act when they are alone in the space. Therefore the presence of the observant should attract minimal attention.

As most inhabitant remarked while filling in the questionnaires, they did use the transitional space (the inners streets in particular) a lot in the summer. But since the research and so the observations were done in the winter they were not using it at that time. This caused that the observations brought little new information.

4.5
LINK WITH MASTERPROJECT

The knowledge gained through this thesis is put into practice through the master project. The project was part of the studio 'New economies', a design class that investigated on the area Hasselt Genk all designs attempt to engage a new type of economy that could revive the area and create a connection between the two cities.

There is chosen to implement housing and a culinary school with public restaurant near the station of Genk. This city is very sprawled and therefor a perfect example the Flemish low density problem. The project is therefore located on an empty plot at the border of the city-centre forming a connection towards the woods in the north of the city.

Figure 40: Master project Beyond the household _ View on transitional space _ Naomi Neelen

Like in the Centrale Werkplaatsen the transitional space is a car-free street, this time with some more green. The passage also connects with the neighbourhood in the north causing an easy access to public transport for a greater number of homes.

The design gets his identity not only by its exceptional form, its green corridor, but also through the facilities. The multicultural city of Genk, here offers cooking classes where one can express his own culture and where all ages unite in affordable but decent restaurants to try out the student's masterpieces.

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ATTACHMENTS

INTERVIEW FOR THE ARCHITECTS

Introduction (given to the respondent)

For my thesis around social sustainability in high density dwellings at the University of Hasselt. I am testing on the effects certain design intentions have on the inhabitants of dense housing. In particular I am analysing your project in the Centrale Werkplaatsen in Kessel-Lo. Apart from the users experience I also need to know your initial intentions.

Questions

1. What were the main goals when starting the design?
2. Was there a certain social type of person or family structure attempted to attract?
   (for example: young families with a lot of kids or singles, …)
3. During the design phrase, how did the designers expect the transitional spaces (the inner streets and park) would be used in the future? (for example: only by walking through, organising of events,…)
4. Are there any administrative agreements made on who pays for what maintenance?
5. Was the community engaged in the design phrase? If yes, up till what extend?
6. At first there was said the library would move into one of the remaining industrial shelters, this is not the case at the moment, is there still a plan to do it? If not, why?
7. What typologies of housing are there (apartments or houses, how many rooms) how many units are there of each typology?
8. Is there post occupancy evaluation (POE) done. If yes, how, what was the timespan/ scale of this research, what were the findings?
9. What did you learn from this project that you used for the next projects?

INTERVIEW ANSWERS TYPED OUT

Maxime: Is it a graduation project you're doing?
Interviewer: euhm … It's for my thesis but my graduation project is connected to it. So …
M: And what school is it you're exactly from?
I: The University of Hasselt
M: The University of Hasselt and the department of architecture, or.. yes?
I: Yeah
M: And it is considering housing typology? O, I'm seeing here, sustainability, social sustainability in high density dwellings..
I: and then especially focussed on the transitional space, so in this case in the 'Centrale Werkplaatsen Kessel-lo' in the middle streets and the park.
M: uhu
I: So my first question is, you can see this as well, what where the main goals …
M yeah, I'll Profile myself a bit, because the reason I am being able to talk to you is because I am being.. I've joined the office in 2009, In fact the project has been running from around 2006, I've been doing the follow up of the final stages but of course we have a logic in this office, to understand the previous steps two, be really understanding what you're creating. So I did a part of the permit of one of the streets and then the follow up of two other ones.
I can show you the competition booklet and I might be able to give you some scans, send you some scans afterwards, if …, cause the digital version, I don't know if we still have it. To explain you a bit what the original goals where for this project. So this was from the previous office of Bogdan & Van Broeck, VBM, the previous office in fact of Leo. And together with WIT, and in fact when it comes down to, you can also see. Is that there is a masterplan on the

old Werkplaatsen created together with WIT And here is we he will doing a part and also executed today a bit further. And also there is the building of MAP, of Maanhout Architecten and planners. And the library is currently in use, but I'll tell you a bit more and give you some contacts of people who are involved in that, so you may be able to talk to them as well …
Yeah, cause the inhabitants said, there was no library over there.
[6.1] No, there is no library over there, it's something else, something much more interesting, for what you are studying in fact. That is quite interesting. So the booklet, I can give it to you, if you want to read it. [1] But if fact where it comes down to, is there was, this plateau is in fact a bit of a …, they made a plateau for the trains to, be able to roll and go into different locations. And that, the logic of that plateau, made that there is a central axis, that in fact, continues all the way to the station. And in our part one of those ateliers, we kind of kept the same logic of the structure, so we didn't start, changing in a new direction. And we made a clear façade towards, the Diestsesteenweg, which was next to it, with an apartment block. And then in there are entrances towards different streets with their own public character, and again a clear line towards what the park is. So you get this kind of old, industrial logic of repetition, that we repeated, again in the repetition of the site. That leads in fact to, to one building, that is the facade towards the main street that goes to Kessel-Lo. But, with that there are three gates, that lead towards those new streets, and two of those streets are more on a smaller scale and more intimate and have more differentiation and the other one are more open and is a bit more of a bigger playing street. But what is important, in all of them, is in fact that, they are completely car free, except for the back passage with a bit of the parking, but those streets with the houses, with the row houses are completely car free.
I: In the middle as well? Because I've seen people..
M: [1.2] yeah they should be car free, but people are using it different, but I'll come back. I'll start with the initiative and then a bit of the evolution.
I: Okay
M: [2.1] .. of how the thing evolved. Because what for us was important, and then you might have seen the scheme on our website, is this kind of reversing of the typology of the backhouse in, what you typically see when you take the train in fact. In Flanders you see it a lot, when you take the train, that you have this kind of backhouses and kitchens, and everyone enters

there. So we put that entrance towards the street, and in fact, that makes the differentiation in the street as well. (5.00min) And there your kitchen is also, [5.1] so the typology of the kitchen is towards the street and kids are playing, and the parents see the kids playing and the living rooms are more towards the garden. So you always get this typology of the ground floor of living rooms towards the garden, kitchens towards the street. And then those gardens are in fact with a very [2.2] flush façade and in the very first design they were jumping in levels so in section. And also in the second face, (so this is the first face here) in the second phase we had to make them flat because of financial crisis that hit them, so we had to optimise the project a bit. But related to that in fact the parking-scheme is very much the size. Also towards the street, inversing the typology inside out, but also the car is not going to the front door on the ground floor, but is in fact going underground. And is going into an underground parking. And I have my computer with me, so I can see on the pictures.
I: yeah, I've seen one of the Parking's, it is directly connected to the.
M: … to the house. So you can go up, you can go, not in the street but on one of the side streets. Under the apartment block, into the parking, you park your car, you go into your house. You have your kitchen towards the playing-zone, where the kids can play in the neighbourhood. You have your private garden to the other side and before they were, as you can see on this plan jumping. And now after, this became more, flat to say it like that.
I: And that jumping façade that is also to, like make the identity more…?
M: [2.3] … yeah, in fact, we deliberately chose is .., there is a deliberate chose of having only two clear materials, or colours, so red brick and everything which is steel, for details of railings and sealing and so on, is in black. But the typologies …, there is a couple of typologies generated for the size of the housing. So you see that there is a couple of houses, of the row houses have in fact the same width. [2.4] And there are a couple of typologies developed so that you can actually still recognise 'this is my house'. You have the numbers, but it is just not like "I live on number fifteen." It's also the one that jumps, the one that jumps in, that kind of makes this kind of differentiations. One that goes a bit higher, a bit lower, and so on and so forth. And for that we had, we developed in fact, housing for different compositions. We were asked, this comes by the way out of a competition, maybe I should have started with that. So this is a competitions together with a developer. So it doesn't

start from a city that says: “okay we want housing” and now we design it and afterwards we search for a contractor and a developer. We were one building team from the start. Which also made it possible to rationalise the way we were thinking about building and developing the project. And so we won this competition. And there were demanded from the city, an amount of units. I could look up the exact amount, if you want. But with two bedrooms, three bedrooms, apartments , and so on and so forth. And this programme was then in dialogue between the developer and the city, optimised, because [3.1] the city wanted to have a percentage of the global amount of units. Being affordable housing, for young families, to attract young families in that neighbourhood. [4.1]Close to the station, using the bike, not using the car and so on and so forth, so they could make really an exemplary project. And the logic of how a city would work. And then, a part of it was to developed to put freely on the market to sell. So that’s the differentiation.
I’ll check if I can find you those numbers.
I: Yeah, cause I’ve spoken to some people indeed living there and said: “it was meant for people.. a few of the houses where meant for people indeed with a lower income.” But apparently the prices were too high for people with that income, to buy it and most of the time those where people who for temporary reasons had like a lower income or who had another house that they sold and got money enough for that.
M: it’s, … I must say that it also moved along with …, the way I see it at least, a time in Leuven where the prices …
I: cause the crisis…
M: Yeah, yeah, And together with that, the prices have been skyrocketing in Leuven, so people able to afford a house, I mean [3.2] the project got very popular as well and the prices went up straight away, very fast. So people bought a house and in fact the value of their house over the five years now went really almost to a double, if I am not mistaking. I mean it really went up. So it was also rather wanted, and I know it is a very popular neighbourhood, because yeah it is still the logic of having a garden, being close to the station, all these things coming together in Leuven. And Leuven is one of the more expensive markets in Flanders, so I think it plays a role in the development of the connection.
I: yeah of course I think so.
M: Okay well, the prices I cannot ..., I don’t have those numbers, I mean

we developed, we developed within a certain financial scheme, but the sales prices I don’t have. If you want to have them, I think it is best to contact with Matexi, if you need any contacts, if you really are interested in that…
I: Yeah, I don’t think so, it ‘s not really that relevant.
M: No it is not really that relevant, so okay. So this plan, well it developed together with WIT, but we focussed on…, so I cannot tell you too much about this building.
I: It was mainly on your part there was focussed.
M: Voila! And …, first it were the apartment buildings, these are the ones towards the street, they, evolved a bit in time, because, we handed in a new project for those to streets. Because of the terraces, because of the windows and so on and so forth, I mean there is also a competition sketch I am showing you, here. That what mainly was important is that there were really this kind of gates and then in between you have those cars and every time gate-buildings, towards the after… , the street laying behind and making a façade towards that park. And then this is the plan, of the .. which is rather a nice plan in my mind, so also in the social logic, is the plan of the streets. Of the apartments towards the Diestsesteenweg and that’s in fact a plan where we put all of the units, this is a North-south orientation, the other, the units, the houses are an East-West orientation. But the apartments on the Diestsesteenweg, are North-south. So all the apartments have in fact as much as possible their terraces towards the south as you can see. And the corridors towards the North. And so in fact, you enter into a closed corridor but you have a Passarella that leads you to your unit. And then there is potentially one bedroom on that Passarella, but that is in fact, most of the living spaces they are always orientated towards the euhm south side.
I: Also with a view on the inner streets of the row houses..
M: Well, with a view on the inner streets indeed and there is a bit of space kept in between the both. [6.2] So on the lower floors, we have commercial activity, that in fact. Also we find it rather important not to have these kind of hundred percent mono-functional design, but to have this kind of local shops or administration, or whatever is there, that can help to get a social interaction. During the day there is activity and during the evening or in the weekends, there is activity of the people living there, so there is social control on the site is quite interesting, as well. So as well here this is more than the parking for those apartments.

I: Yeah, also, underneath the middle street, you didn't have parking, is there a reason for it?
M: Yes, it had to do with, in fact if I am not mistaking, it had to do with the width of that street and with the amount of spots we already could make possible in those two.., the front building and the street. So we were asked to have an amount of parking spots. With the idea that those parking's were actually very closely related to the houses. [4.2] And that we didn't have to add any additional parking spots. So we, cause it is a deliberate choice in this project to have, to go to a minimal amount of parking spots.
I: of course yeah.
M: … And to promote the cyclists and the … euhm … and not the car use. That's one reason. A second reason it that, there was the idea to have a central zone, much more green. Now, I see that was one of your questions: what was the other streets … I have to look here.
I: [5.2] How did you expect the streets to be used?
M: Yeah, well, and I think the way they were designed, so we didn't do the … we guided the design, but we didn't do it ourselves, it was Vectri, so a landscape office, but a bit more technical than creative sometimes, who was involved for that. And they, the streets between, where the parking spots are, because we did want this mineral of street, this kind of hard street. To play and to run around and I think it also works like that. But the central zone, we had in mind that it would be much more green, much more trees, much more liveliness. And now it's a bit hard, with full stone an only two/three trees. Which also allows than again, to have those cars coming on there, because, the other streets, they don't have cars, because it also doesn't invite, to have a car driving in. I mean, you're in fact stuck, when you're in the other ones. The width of course allows it but also the fact that the underground is like that. And that's a bit related to that parking story as well. Is that there we needed full ground to do that. And that comes also a bit out of that. So that was the idea of that street. Unfortunately, you don't always have it in hand to …
I: It's the property developers, who decided that, or..?
M: No it is in fact the city. So… cause for Matexi, it would have also been easier to sell the apartments, if you have, like a bit of a green zone and a nicely .. but we already had to fight to get a bit of green in this kind of passages and to have... . So because it is maintenance, it's the city that needs to take

care of it. And so on and so forth. No, we did't get there to the best result. [5.3] At the same time, we also notice that if the car is not there, that it does make a central space, where, we have one of the colleagues living nearby, that kids play, that there is a bit more activity around.
I: I am feeling it works very well when I went there.
M: yeah, we also feel that. But there, the distance between the houses is bigger, so you can have … You know [5.4] when the distance of the houses is closer, you can have the kids playing, but, it's more of a passage zone. And also, those kind of small streets, connecting, it is very deliberate that they are not in one line, they are jumping. So they are really small connectors but it's nice places for kids, to hang around and to have a bit more than instead of being on a Boulevard let's say. And then that central space becomes a bit more of a boulevard, but then allows us to again, to do something a bit more in group, in something organised. They had for a very long time, in fact a trampoline on the site.
I: yes, they told me.
M: But after a while, you think that everyone gets a bit more understanding. But to manage that with the full thing, full streets, it became a bit too difficult so... It's management of those things, it comes a lot of times down to those kind of things.
But in fact, what we are happy to as a result as I might be, let's say optimistic on that, or let's say proud of ourselves, is that: [2.4] we created individual housing, but in a very, a rather dense situation. In collective buildings, with a very clear identity. And in our minds, also with a certain collectiveness, cause people, when you say, I live there on the Central Werkplaatsen, it's a very clear mind. There's a certain proudness and it is also a certain place where kids share things and you know your neighbour. And in fact, nowadays it is not always that evident, if you buy something, you don't know everyone in the street. And I think, here, it kind of lives a bit better, because of this kind of car free street and activities that happen. And the kind of people that are living there are young families, most of them.
I: Yeah then I have like the last question: like you say for example they have a trampoline and everything, how well do you know how it is functioning now, did you do like some research afterwards, or someone from the office.
M: No, unfortunately we didn't. We keep in touch because of the people we know, we know some… like two three people through university, school

and college and so on that live there. But we didn't do additional research. It is something, it's funny you bring this up, because it is something we talk a lot about, quite often, that we want to do a bit more of this kind of, follow up after the project. Because we, now I maybe sound very theoretical, but [7.1] we designed in this office very much to try to make a placeholder in which people can start living. And then they have their own infill. And it becomes very interesting the moment they have their own infill. They start adapting, start using the thing, but we also want to, you can have a framework in which people can live and be completely free, but we believe that as architects we also want to restrict certain things. So that there are certain qualities that are always continuing through the lifespan of a building. And once in a while we have the opportunity, so just to give you an example last year we had a teambuilding in Leuven. And we went to visit again the project. Saw the good things and the bad things, went inside of one of the houses. Visited the hall next door. And talked to one of the inhabitants which is in fact managing the … one of the buildings at the 'Vaartkom'. He is in fact, this is very interesting, maybe for you as a name, it is called Miss Miaggi, it's a social developer. And what they do, they do in fact, the hall next door is a perfect example. They, see for sites in the city, that , especially around Leuven now, that are empty, that are not being used and that they temporarily use, for like two/ three years, give it an infill and see if it can be, and show that it can be without of.. out of a social engagement of neighbours and different groups of people can be something more than just an empty building. And then they step to the next and they show that in fact development should not always be only the refurbishment and then selling again. But can also be something that grows much more out of a local public. And out of people that are interested. Because…, I can give you his contacts, I'll send you a little email. The guy in fact, is together with some of the inhabitants of the Centrale Werkplaatsen. They are running, the hall next door, which you were wondering if it will be …

I: Hal 5?

Yeah: Hal 5, they invested in that site. The nice thing about it is that the city wanted a temporarily use. And they found a way that they can stay there for quite a period and do something and have a proper budget. And initiate activity for the neighbours, and not only the Carrefour, which was in the beginning. But also something that has a certain ideology behind it. And

for that it's a very nice thing, and maybe later it will become a library, or something else. But in the meantime, it's been something that people from the neighbourhood believed in, that they felt like that space could be used and that they are building up. Also there is a garden across that they also, did, I'll show you …

I: Next to the Hal 5? This one?

M: No this, this is an open zone, but in fact, around here [7.2] there is a play-garden and that is also by the same people that initiated from the neighbourhood to say to the city: "Look, we see that that property is there, it's yours, it's empty, we have here, a lot of people that like to be in their garden but to do something together for the kids, why don't we do something there, and the same here because most of the hall is being used for lessons for this kind of parkour-running, and as a gym almost, for kids from the neighbourhood. Rather than just turning it in to something very commercial. But it's a social engaged activity, without becoming naïve. You know it's still with the idea of: "okay, if we wanna run something there, we'll have to have some income, so we …, for instance we have a little shop, we have a little bar, we have pizzeria, …" Yeah, this kind of things that work and that people are willing to, … It makes sense as somebody else from the neighbourhood can say: "oh, I want to invest. Why? Because I see that there is …" it's not just a guy that comes once a week and that…, in fact, "is it open is it not open", no it runs. It's organised, that makes sense. And that's the very beauty of it.

I: Yeah I had the feeling, like, I've been there once like two weeks ago. There were some kind of community meetings. I've seen it working fantastic.

M: Yeah, it's rather beautiful. (phone rings)

And then we had a lot of this kind of housing types, out of the competition, where you in fact can see, some of them where still with the option to have the kitchen towards the garden, but most of them had or the kitchen central, or the kitchen, see like this typology here, there is really the kitchen towards the street, dining, then the Livingroom, the stairs, and the stairs, play in fact a rather important role, in these housing typologies, where there is always the central staircase , which is perpendicular and which has a skylight. So the depth is not really an issue because you always have a room in the front, a room in the back, a circulation in the middle. And the circulation, in fact structurally, it's a very ridged project. And that why it's also…, maybe the developer made a lot of money on it, but there was, it was very rationally

build up, you know, you have every time the same width. You could make a prefab construction, between those two walls, make an opening for the staircase, put the staircase in as one piece, and clearly divide the rooms. [2.5] And then we had a library, of windows which we can repeat depending on unit to unit. We have then a series of types, slightly different in the execution then on the competition. And then we could play with them, mirror them, and just, in the end we didn't have fifty types, ten types, which we could just watch, shuffling them have a full differentiation in the project. So that's a bit how the housing types developed and how they were a bit more ridged and strict the moment we went to this kind of central street where it's a bit more a bit more two clear walls a bigger difference in size.
And then you get these kind of composition schemes with similar numbers but then played around and the amount of rooms is always next to it. Three to four bedrooms, depending from unit to unit. So in fact they are not small houses, but they are in our mind aiming for the right goal. It's a nice living space. And rooms on both sides which are big enough to grow up and to have good qualities. And this is the plans of the building of WIT… These are some impressions out of the booklet. I think I told you the most important thing a bit of the, about the explanation… [5.5] The plateau is also a nice given, in fact, a bit higher up, with the houses towards the street side, so you kind of get into this… The kids are not just running into the streets you know, there is always this kind of threshold, between the playstreet and then the big street in the back. And everything here is ... But this is rather busy, you have to go out and then everything is rather busy. And then you go up to reach the secondary stage. I don't know if you have any specific questions you would like to hear…
I: I think you answered automatically most of them, so… .
M: let's see a bit, the goals of the design I already told you, the social community…
I: Yeah, maybe the last one, like: If you really have the feeling that you learned things out of this one that you could use next projects?
M: I think what we really learned is, making really rational housing plans. You know, things that m^2 and surfaces and organisation on the housing level, we really learned there also to have, to show that the project can work without having too many details. I mean we work with a limited amount of details which we have repeated. And then it can be very beneficial to know the

contractor and the developer already from the beginning. But for that we had very good partners, because as we have seen that, depending from partner to partner, it goes different, let's say. So 'Van Roey' and 'Matexi' where open-minded partners, and that was very handy? Another thing that I find we learned is that: the strength of this project lies in combining the individual wishes of housing together with the collective potentiality of a place. And that I think, is the strength, that we tried to bring in fact into a lot of our projects. It's not always that it is just the individual, just the unit, just… . That you always give something extra on top of that, so that maybe people live a bit smaller but that we will be giving them collectiveness, that they get a bit more of this common space. I think that's something we tried to bring, into our other projects … Yeah, projects we've done after this one.
I: So in the beginning you didn't expect it to be like that, much community activities and so?
M: well we expected it and we hoped it, but you know you always, you need to see it worked.
I: So it was like a first try?
M: yeah, the office before did housing projects and did qualitative housing projects, but I think it's one of the first ones with a bit of a larger scale, that actually worked on a, almost, it created a neighbourhood on its own. And I think, that is, you don't always, in Belgium there are not so many projects that, really allow a designer to make a real neighbourhood. And for that, there, I think we learned quite a lot in relation to, yeah if you do a couple of units on one location, or maybe even bigger plans, cause this is kind of a scale of a plan, where you still have enough connection with the detail and at its same time, you can grasp a bigger picture. So yeah that's, I think there was (already) a lot of mind-set, a lot of knowledge from before. But It's, the uniqueness is that you also, see that it works and that it's somehow, or even works a bit too well. Yeah, that it's, people that it's clear that Leuven people from university, that go into a PHD, that have the money to be able to buy a house close to the station but with a cars…, with a underground parking and everything, that… You know you'd like to, you have that for everyone living there, but in fact, not everyone nowadays in Leuven, could afford a house over there. And I think when we were conceiving it, and drawing it, we did have a bit, it was still at a different mind-set. So that's a bit the success of its thing. But yeah, at the same time it can only be a good reference, we have a

lot of visitors and groups that like to come and see the project and the way it works and it's amazing when you can guide them around on a bit of a sunny Saturday or something. Because then you see the people getting out, the activity, the liveliness, so … . I think that's it.
I: Okay, that's everything.

QUESTIONNAIRE FOR THE INHABITANTS

Block 1: Algemene informatie – *Overall information*

Q1 Leeftijd – *Age*

_____

Q2 Geslacht – *Gender*

- o Man (1) - *Man*
- o Vrouw (2) - *Women*
- o Ander (3) – *Other*

Q3 Job - *Job*

- o Arbeider (1) - *Employee*
- o Bediende (2) - *Clerk*
- o Zelfstandige (3) - *Self employed*
- o Werkzoekende (4) - *Jobseeker*
- o Student/ scholier (5) - *Student*
- o Huisvrouw / Huisman (6) - *Housewife / Houseman*
- o Gepensioneerd (7) - *Retired*
- o Arbeidsongeschikt (8) - *Incapacitate of work*
- o Andere (9) – *Other* _____

Q3.1 Job locatie – *Job location*

Display this question if the answer on Q3 is 1/2/3

- o Ik ben (voornamelijk) een thuiswerker (1) – *I work (mainly) at home*
- o Ik werk (voornamelijk) buitenshuis (2) – *I work (mainly) elsewhere*
- o Ik werk halftijds thuis (3) – *I work part-time at home*
- o Ander (4) – *Other* _____

Q4 Aantal personen in je huishouden?
Jezelf inbegrepen
Amount of people in your household?
Yourself included

_____

Q5 Ik leef samen met: (meerdere opties zijn mogelijk)
I live together with: (more options are possible)

o Niemand (1) - *Nobody*
o Mijn partner (2) - *My partner*
o Mijn kinderen (3) - *My kids*
o Mijn ouders (4) - *My parents*
o Mijn broer/ zussen(5) - *My siblings*
o Vrienden (6) - *Friends*
o Andere namelijk: *Other namely:* (7) _____

Q6 Heb je delen van de woning op de gelijkvloers?
Do you have parts of the house at the ground floor?

o Ja (1) *Yes*
o Nee (2) *No*

Q6.1 Heb je de ramen die op de straat uitkomen afgeschermd?
Bijvoorbeeld met een folie of gordijn
Do you have the windows showing on to the street covered?
For example with a foil or a curtain?
Display this question if the answer on Q6 is 1

o Ja (1) *Yes*
o Nee (2) *No*
o Ik heb geen ramen die op de straat uitkomen (3)
I do not have windows looking on to the street.

Q7 Welke talen worden er in huis gesproken?
Which languages are there spoken at home?

o Nederlands (1) - *Dutch*
o Frans (2) - *French*
o Duits (3) - *German*
o Engels (4) - *English*

o Andere namelijk: *Other namely:* (5) _____

Q8 Opmerkingen – *Remarks*

_____

Block 2: Gebruik van de ruimte – *Use of the space*
Q9 Heb je deze woning gekocht of huur je hem?
Have you bought the residence of do you rent it?

o Ik huur. (1) - I rent.
o Ik heb deze woning gekocht. (2) - I have bought the residence.
o Andere - Other (3) _____

Q10 Hoe lang woon je al op deze locatie?
Aantal maanden/ jaar
How long do you already live on this location?

_____

Q11 Wat is de reden van je laatste verhuis?
What is the reason for your last moving out?

_____

Q12 Waar ben je normaal de gegeven tijd van de week?
* Geef de plaats waar je je het grootste deel van de gegeven periode bevind. Als je bijvoorbeeld van maandag tot donderdag op het werk bent van 9 tot 17 u en op vrijdag thuis gedurende deze uren dan duidt je het 'op het werk' aan.
Where are you usually at the given time of the week?
Give the place where you spend most of the shown period. If you are for example from Monday until Thursday at your job from 9 – 17 and on Friday at home at these hours then you mark 'at the job'.

Thuis (1)	In de binnenstraten/ het Spoorpark (2)	Op het werk (3)	Andere (4)
At home	*In the inner streets or the park*	*At the job*	*Other*

Maandag tot vrijdag 9-17u (1)
Monday until Friday (9 – 17h)
o o o o
Zaterdag 9 - 17 u (2) *Saturday 9 – 17h*
o o o o

Zondag 9 - 17 u (3) *Sunday 9 – 17h*
o o o o

's Avonds 17-21u (4) *In the evening (17-21h)*
o o o o

's Nachts 21 - 7u (5) *At night (21- 7h)*
o o o o

Q13 Waarvoor gebruik je de publieke ruimte* binnen het project?
What purposes do you use the public space for?
*Onder publieke ruimte begrijpen we de plaatsen waar zowel jij als je buren kunnen komen zoals de binnenpleinen, straat, trappenhallen,...
Meerdere antwoorden zijn mogelijk
** By public space is meant the places where both you and your neighbours can come, like the squares, streets, staircases, …*
More answers are possible

- o Als passage (1) - *As a passageway*
- o Om te skaten, rondfietsen (2) - *To skate and bike around*
- o Om balsporten te spelen (3) - *To play ball sports*
- o Om mijn kinderen op straat te laten spelen (4) – *To keep an eye on my children when playing on the street*
- o Om met buren te praten (5) - *To talk to the neighbours*
- o Om te zitten en tot rust te komen (6) – *To sit and get some rest*
- o Voor het plaatsen van onze fietsen/ vuilbakken (7) – *To place bikes/ bins*
- o Andere (8) *Other* _____

Q14 Hoe vaak gebruik je de gemeenschappelijke ruimte?
Voor andere doeleinden dan als passage.
Aantal keer per week/ maand/ jaar?
How often do you use the public space? For other purposes than passage.
Times a week/ month/ year

_____

Q15 Opmerkingen - *Remarks*

_____

Block 3: Kwaliteit van de gemeenschap – Quality of the community
Q16 Heb je het gevoel dat je je buren goed kent?
Do you have the feeling you know the neighbours?

- o Absoluut ja (1) - *Absolutely yes*
- o Eerder ja (2) - *Rather yes*
- o Eerder nee (3) - *Rather no*
- o Absoluut nee (4) - *Absolutely no*

Q17 Hoe vaak neem je deel aan buurtactiviteiten?
Aantal keer per week/ maand/ jaar?
How often do you participate in group activities?
Times a week/ month/year

_____

Q18 Hoe tevreden ben je over de faciliteiten?
Faciliteiten: de bibliotheek, hal 5, de speeltuin, de winkels die deel uit maken van het project...
How satisfied are you about the facilities?
Facilities: the library, Hal 5, the playground, the shops that are part of the project?

- o Absoluut tevreden (1) - *Absolutely satisfied*
- o Eerder tevreden (2) - *Rather satisfied*
- o Eerder ontevreden (3) - *Rather dissatisfied*
- o Absoluut ontevreden (4) - *Absolutely dissatisfied*

Q19 Hoe vaak gebruik je de faciliteiten in het project?
Faciliteiten: de bibliotheek, hal 5, de speeltuin, de winkels die deel uit maken van het project...
Aantal keer per week/ maand/ jaar?
How often do you use the facilities?
Facilities: the library, Hal 5, the playground, the shops that are part of the project?
Times a week/ month/ year

_____

Q20 Heb je het gevoel dat je inspraak hebt in het maken van beslissingen in het project?
Do you feel like you have a say in the decision-making in the project?

- o Absoluut ja (1) - *Absolutely yes*
- o Eerder ja (2) - *Rather yes*
- o Eerder nee (3) - *Rather no*
- o Absoluut nee (4) - *Absolutely no*

Q21 Stel je krijgt de kans om deel uit te maken van een bestuur dat beslissingen neemt over het onderhoud en de voorzieningen in het project,
zou je dit voorstel aannemen?
Geef eventueel je reden waarom.
Imaging you are asked to join in a governance that takes decisions about the maintenance and facilities in the project, would you accept that proposal?
You can give a reason.

- o Ja (1) *Yes* _____
- o Nee (2) *No* _____

Q22 Ben je fier om hier te wonen?
Are you proud to live here?

- o Absoluut ja (1) - *Absolutely yes*
- o Eerder ja (2) - *Rather yes*
- o Eerder nee (3) - *Rather no*
- o Absoluut nee (4) - *Absolutely no*

Q23 Opmerkingen - *Remarks*

- o _____

Block 4: Kwaliteit van de woning – Quality of the residence
Q24 Heb je het gevoel dat je genoeg privacy hebt?

- o Absoluut ja (1) - Absolutely yes
- o Eerder ja (2) - Rather yes
- o Eerder nee (3) - Rather no
- o Absoluut nee (4) - Absolutely no

Q25 Hoe veilig voel je je in de binnenstraten, op de gegeven momenten van de dag?

How safe do you feel in the inner streets at the given times of the day?

Absoluut veilig (1)	Eerder veilig (2)	Eerder onveilig (3)	Absoluut onveilig (4)
Absolutely safe	Rather safe	Rather unsafe	Absolutely unsafe
Overdag (9 - 17 u) (1) At daytime (9 – 17h)			
o	o	o	o
's Avonds (17- 21 u) (2) *In the evening (17-21h)*			
o	o	o	o
's Nachts (na 21 u) (3) *At night (after 21h)*			
o	o	o	o

Q26 Laat jij soms fietsen voor de deur staan?

Do you sometimes leave bikes in front of the door?

Is hier een reden voor?

o Ja (1) *Yes* _____

o Nee (2) *No*_____

Q27 Zij er fietsenstallingen voorzien?

Is there a space provided to stall your bikes?

o Ja (1) *Yes*

o Nee (2) *No*

Block 5: Ervaringen - Experiences

Q28 Heb je ooit conflicten* ervaren in het project?

Bijvoorbeeld een burenruzie of problemen met hangjongeren,…

Have you ever experienced conflicts in the project?

For example troubles with teenagers hanging around or with neighbours,…

o Ja, meermaals (1) *- Yes plural times*

o Ja, éénmalig (2) *- Yes once*

o Neen (3) *- No*

Q28.1 Welke oorzaken hebben al geleid tot conflicten?

Which causes have already leaded to conflicts?

Display this question if the answer on Q28 is 1/2

_____

Q28.2 Zijn er maatregelen getroffen om deze conflicten in de toekomst te voorkomen?

Have there been taken measures to avoid conflicts in the future?

Display this question if the answer on Q28 is 1/2

o Ja (1) Yes _____

o Nee (2) No_____

Q29 Heb je ooit vandalisme ervaren in het project?

Have you ever experienced vandalism in the project?

o Ja, meermaals (1) *- Yes plural times*

o Ja, éénmalig (2) *- Yes once*

o Neen (3) *- No*

Q29.1 Welke schade was er veroorzaakt door het vandalisme?

Which damage was caused by the vandalism?

Display this question if the answer on Q29 is 1/2

_____

Q29.2 Was de schade veroorzaakt door een bewoner van het project?

Was the damage caused by an inhabitant of the project?

Display this question if the answer on Q29 is 1/2

o Ja (1) *Yes* _____

o Nee (2) *No*_____

Q29.3 Zijn er maatregelen getroffen om vandalisme in de toekomst te voorkomen?

Were there measures taken to avoid vandalism in the future?

Display this question if the answer on Q29 is 1/2

o Ja (1) *Yes* _____

o Nee (2) *No*_____

Q30 Dit heb ik graag in het project:
I like this in the project:

_____

Q31 Dit heb ik niet graag in het project:
I do not like this in the project:

_____

Q32 Deze faciliteiten ontbreken:
These facilities are missing:

_____

Q33 Ben je over het algemeen tevreden over het project waarin je woont?
Are you in general satisfied the project in which you are living?

o Absoluut tevreden (1) *- Absolutely satisfied*
o Eerder tevreden (2) *- Rather satisfied*
o Eerder ontevreden (3) *- Rather dissatisfied*
o Absoluut ontevreden (4) *- Absolutely dissatisfied*

The following questions open-ended questions : Q8, Q15, Q23, Q30, Q31, Q32 are optional, while the other questions cannot be skipped.

		Q1	Q2	Q3_2	Q3_3	Q3.1	Q4
		Leef-tijd	Geslacht	Job		Job locatie	Aa pe hu
Start time	End time			2	3	voornamelijk	
03/02/2018 18:40	18:56:29	40	Vrouw	Bediende		buitenshuis	
03/02/2018 18:08	18:37:54	41	Vrouw	Bediende		buitenshuis	
03/02/2018 17:57	18:05:14	41	Man	Bediende		buitenshuis	
03/02/2018 17:45	17:57:01	38	Man	Bediende		buitenshuis	
03/02/2018 17:34	17:44:11	30	Man	Bediende		buitenshuis	
03/02/2018 17:24	17:33:47	16	Vrouw		Student/ scholier		
04/02/2018 14:48	15:01:06	36	Vrouw	Bediende		buitenshuis	
04/02/2018 14:35	14:48:19	34	Vrouw	Bediende		buitenshuis	
04/02/2018 14:29	14:34:10	39	Man	Bediende		Ander	
04/02/2018 14:15	14:26:29	43	Man	Arbeider		halftijds thuis	
04/02/2018 13:50	14:13:49	63	Man		Gepensioneerd		
04/02/2018 13:39	13:47:19	56	Vrouw	Bediende		buitenshuis	
05/02/2018 20:30	21:07:04	72	Vrouw		Gepensioneerd		
05/02/2018 20:21	20:29:56	33	Man	Bediende		buitenshuis	
05/02/2018 20:07	20:21:08	37	Vrouw	Bediende		buitenshuis	
05/02/2018 19:47	20:05:29	57	Vrouw	Bediende		buitenshuis	
06/02/2018 20:39	20:56:33	75	Vrouw		Gepensioneerd		
06/02/2018 18:44	19:28:04	59	Man		Zelfstandige	buitenshuis	
06/02/2018 18:09	18:39:44	70	Man		Gepensioneerd		
07/02/2018 19:50	20:00:08	37	Vrouw	Bediende		buitenshuis	
07/02/2018 19:32	19:47:58	43	Vrouw	Bediende		buitenshuis	
07/02/2018 19:12	19:30:31	41	Man	Bediende	Ambtenaar	buitenshuis	
07/02/2018 18:52	19:08:57	60	Vrouw	Bediende			
07/02/2018 18:17	18:45:59	71	Vrouw		Gepensioneerd		
07/02/2018 18:06	18:16:40	42	Man	Bediende		thuis	
07/02/2018 17:54	18:04:48	35	Vrouw	Bediende		buitenshuis	
07/02/2018 17:46	17:53:49	28	Man	Bediende		buitenshuis	
07/02/2018 17:36	17:43:22	43	Man	Bediende		buitenshuis	
07/02/2018 16:58	17:36:09	45	Man	Bediende		buitenshuis	

Q4	Q5		Q6	Q6.1	Q7_1	Q7_2
Aantal personen in je huishouden?	Welke personen in het Huishouden		delen woning gelijkvloers?	ramen afgescherm d?	Talen worden e gesproke	
	2	3			1	
4	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	
6	Mijn partner	Mijn kinderen	Ja	Ja	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Ja		Frans
2	Mijn partner		Ja	Ja	Nederlands	Engels
4	Mijn ouders	Mijn ouders	Ja	Ja	Nederlands	Frans
2	Mijn partner		Ja	Ja	Nederlands	
2		Mijn kinderen	Ja	Nee	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Ja		Engels
2	Mijn partner		Ja	Ja	Nederlands	
2		Mijn kinderen	Ja	Ja	Nederlands	
1	Mijn vriend		Ja	Nee	Nederlands	
5	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Ja	Nederlands	
2		Mijn kinderen	Ja	Ja	Nederlands	
2	Mijn partner		Nee		Nederlands	
2	Mijn partner		Nee		Nederlands	
2	Mijn partner		Nee		Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Ja	Nederlands	Duits
4	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	
1	Niemand		Nee		Nederlands	
1	Niemand		Nee		Nederlands	
2	Mijn partner		Nee		Nederlands	
1	Niemand		Ja	Ja	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	
2	Mijn partner		Ja	Ja	Nederlands	
4	Mijn partner	Mijn kinderen	Ja	Ja	Nederlands	Engels
5	Mijn partner	Mijn kinderen	Ja	Nee	Nederlands	

Q7_1	Q7_2	Q7_5_TEX	Q9	Q10	
Talen worden er in huis gesproken			Woning gekocht/ huur	Hoe lang woon je al op deze locatie?	
1	2	6		Antwoord	Aantal Jaar
Nederlands			Gekocht	8	8
Nederlands			Gekocht	8,5jaar	8.5
Nederlands			Gekocht	8	8
	Frans		Gekocht	7 jaar	7
Nederlands	Engels		Gekocht	3,5	3.5
Nederlands	Frans		Gekocht	5 jaar	5
Nederlands			Gekocht	5 jaar	5
Nederlands			Gekocht	2jaar	2
Nederlands			Gekocht	6	6
	Engels	Nepalees	Gekocht	4 jaar	4
Nederlands			Gekocht	4	4
Nederlands			Gekocht	2 jaar en zes maand	2.5
Nederlands			Gekocht	Bijna 6 jaar	6
Nederlands			Gekocht	5 jaar	5
Nederlands			Gekocht	5 jaar	5
Nederlands			Gekocht	6	6
Nederlands			Gekocht	6jaar	6
Nederlands			Gekocht	8jaar	8
Nederlands			Gekocht	4	4
Nederlands	Duits		Gekocht	9 jaar	9
Nederlands			Gekocht	9 jaar	9
Nederlands			Gekocht	8	8
Nederlands			Gekocht	5 jaar	5
Nederlands			Gekocht	5jaar	5
Nederlands			Gekocht	6 jaar	6
Nederlands			Gekocht	6	6
Nederlands			Gekocht	15 maand	1.25
Nederlands	Engels	Azeri	Ik huur.	Anderhalf jaar	1.5
Nederlands			Gekocht	4,5 jaren	4.5

Q11		
Wat is de reden van je laatste verhuis?		W
Gegeven antwoord	Clasificatie	Week 9
Garage bij de woning ipv onvindbare parkeerplaat	Parkeerplaats	Andere
Vorige te klein	Te klein	Op het
Groter huis gekocht na geboorte kinderen	Te klein	Op het
Terugkomst naar Belgie na buitelandse functies	Andere	Op het
Te klein	Te klein	Op het
Verandert van school	Bereikbaarheid	Op het
Aankoop woning	Koopwoning	Op het
Dichterbij stad komen wonen	Bereikbaarheid	Op het
Ruimere woning nodig	Te klein	Op het
Het was te klein	Te klein	Op het
Oud huis te verbouwen en geen optie	Renovatie	Andere
Studies dochter	Bereikbaarheid	Op het
Rustigere buurt	Sfeer	Andere
Huis gekocht	Koopwoning	Op het
Aankoop woning	Koopwoning	Op het
Vorge huis verkocht om in een samenwoonproject	Sfeer	Op het
Tkon de trap niet meer op	Trap	Thuis
Huis was aan verbouwing toe	Renovatie	Op het
Te groot	Te groot	Thuis
Aankoop woning	Koopwoning	Op het
Vorige oudere woning verkocht	Renovatie	Op het
Weg bij mn vriendin	Andere	Op het
Moeilijk renovatieproject vermijden	Renovatie	Op het
Woning te groot	Te Groot	Thuis
Naar koopwoning + appartement te klein	Te klein; koopw	Thuis
Groter Huis gekocht	Te klein	Op het
Groter wonen	Te klein	Op het
Vorig huis werd verkocht	Koopwoning	Op het
Een te lang verbouwverhaal en we waren het verb	Renovatie	Op het

Q12						
Waar ben je normaal de gegeven tijd van de week?						
Week 9-17u	Zaterdag 9 - 17	Zondag 9 - 17	's Avonds	's Nacht	1	
Andere	Andere	Andere	Andere	Andere	Passage	
Op het werk	binnenstraten/	binnenstraten	binnenstr	Thuis	Passage	
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Op het werk	Thuis	binnenstraten	Thuis	Thuis	Passage	
Op het werk	Andere	Thuis	Thuis	Thuis	Passage	
Op het werk	Andere	binnenstraten	Thuis	Thuis		Skate/
Op het werk	Thuis	Thuis	Thuis	Thuis	Passa	Skate/
Op het werk	Op het werk	Andere	Andere	Thuis		
Andere	Thuis	Thuis	Andere	Thuis		
Op het werk	Thuis	Thuis	Thuis	Thuis		
Andere	Andere	Andere	Thuis	Thuis	Passage	
Op het werk	binnenstraten/	binnenstraten	Thuis	Thuis	Passa	Skate/
Op het werk	binnenstraten/	Thuis	Thuis	Thuis		Skate/
Op het werk	Andere	Andere	Thuis	Thuis	Passage	
Thuis	Thuis	Andere	Thuis	Thuis	Passage	
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Thuis	Thuis	Thuis	Thuis	Thuis		
Op het werk	Thuis	Thuis	Thuis	Thuis	Passa	Skate/
Op het werk	Thuis	Thuis	Thuis	Thuis		Skate/
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Thuis	Thuis	Thuis	Thuis	Thuis	Passage	
Thuis	Thuis	Thuis	Thuis	Thuis	Passage	
Op het werk	Andere	Andere	Thuis	Thuis	Passa	Skate/
Op het werk	Thuis	Thuis	Thuis	Thuis	Passage	
Op het werk	Thuis	Thuis	Thuis	Thuis	Passa	Skate/
Op het werk	Thuis	Andere	Thuis	Thuis	Passage	

Q13							
Waarvoor gebruik je de publieke ruimte binnen het project?							
3	4	5	6	7	8		
	kinderen l	buren pr	Zitten, rust	fietsen/ vuilbakken			
	kinderen l	buren pr	Zitten, rust	fietsen/ vuilbakken	Ander	Bbq, sc	
Balsport	kinderen l	buren pr	Zitten, rust				
	kinderen l	buren praten		fietsen/ vuilbakken			
		buren praten		fietsen/ vuilbakken			
		buren praten					
	kinderen l	buren praten					
Balsport	kinderen l	buren pr	Zitten, rust	fietsen/ vuilbakken			
	kinderen l	buren pr	Zitten, rust	fietsen/ vuilbakken			
	kinderen l	buren praten		fietsen/ vuilbakken			
		buren pr	Zitten, rust				
		buren pr	Zitten, rust	fietsen/ vuilbakken			
Balsport	kinderen l	buren pr	Zitten, rust				
Balsport	kinderen l	buren praten					
		buren praten					
		buren praten					
		buren pr	Zitten, rust				
			Zitten, rust		Ander	Hal 5	
	kinderen l	buren pr	Zitten, rust		Ander	Bbq , fa	
		buren pr	Zitten, rust	fietsen/ vuilbakken			
		buren pr	Zitten, rust	fietsen/ vuilbakken	Ander	Feestm	
		buren praten		fietsen/ vuilbakken	Ander	Barbec	
		buren pr	Zitten, rust				
Balsport	kinderen l	buren pr	Zitten, rust	fietsen/ vuilbakken			
	kinderen l	buren praten		fietsen/ vuilbakken			

Q14 gebruik gemeen-schappelijke ruimte?		Q16 Heb je het gevoel dat je je buren goed	Q17 Hoe vaak neem je deel a buurtactiviteiten?	
Tekst	X / week (zomer)		Andwoord	X
5/week	5	Eerder ja	1/maand	
Quasi Dagelijks in de	6	Absoluut ja	Aantal per jaar officeel, veel	
Dagelijks	7	Eerder ja	Maandelijks	
Dagelijks	7	Eerder ja	2-3 keer per jaar	
1 keer per maand	0.25	Eerder ja	3 keer per jaar	
Niet	0	Absoluut ja	Nooit	
3 keer per week	3	Eerder ja	5 keer per jaar	
Id winter weinig, id zo	?5	Eerder ja	4/jaar	
Dagelijks	7	Absoluut ja	Proberen elke keer	
Per week	? 1	Eerder ja	Per maand	
1 per week	1	Eerder ja	1 maal week	
Drie keer per week	3	Eerder ja	Een keer per maand	
In de zomer vaak als b	? 5	Eerder ja	Zo vaak er eentje is	
Elke dag in de zomer	7	Eerder ja	3 keer per jaar	
Wekelijks,woensdag	3	Absoluut ja	3 keer per jaar	
In de zomer elke dag	7	Eerder ja	Bijna altijd	
Niet	0	Eerder nee	1keer per jaar bbq	
Paar keer per maand	0.5	Eerder ja	Activiteiten zijn stilgevallen	
Goed weer regelmatig	2	Eerder nee	Altijd	
Zomer dagelijks, wint	7	Absoluut ja	Helft van de activiteiten, spo	
20/jaar	1	Absoluut ja	4/jaar	
2x per jaar	0	Eerder nee	2 garage opkuis	
Minstens 1maal per w	1	Absoluut ja	Altijd	
1 maal per week	1	Absoluut ja	Een maal per week	
1-2 keer per week	1.5	Eerder ja	1x per maand	
Elke dag	7	Absoluut ja	2 keer per jaar buurtfeest + v	
Niet	0	Eerder ja	0	
Zelden	? 0.5	Eerder nee	Bijna nooit	
Erg regelmatig, zeker	? 3	Absoluut ja	Regelmatig, als ze georagnis	

an	Q18 Hoe tevreden ben je over de faciliteiten?	Q19 Hoe vaak gebruik je de faciliteiten in het project?		Q20 Gevoel inspraak	Deelnem	
/ maand		Antwoord	x/week			catego
1	Absoluut tevreden	7/week	7	Eerder ja	Nee	Vanwe
*	Eerder tevreden	Carrefour d	7	Eerder ja	Nee	Geen,
1	Eerder tevreden	Wekelijks	1	Eerder nee	Ja	
*	Absoluut tevreden	2-3 keer pe	2,5	Eerder nee	Nee	Niet g
*	Eerder tevreden	1 keer per	1	Eerder nee	Ja	Mee b
0	Absoluut tevreden	Nooit	0	Absoluut nee	Nee	
*	Absoluut tevreden	2 keer per	2	Eerder ja	Ja	
*	Eerder tevreden	Paar keer p	? 2	Eerder nee	Ja	
? 1	Eerder tevreden	Maandelijk	0.25	Eerder nee	Nee	
1	Absoluut tevreden	Per maand	? 1	Eerder ja	Nee	Geen t
4	Absoluut tevreden	Hall 5 1 ma	0.1	Eerder ja	Nee	
1	Absoluut tevreden	1 keer oer	1	Eerder ja	Ja	
*	Eerder tevreden	Soms. Carre	? 1	Eerder nee	Ja	Missch
*	Eerder tevreden	Dagelijks	7	Eerder nee	Nee	Te dru
*	Absoluut tevreden	4 keer per	4	Absoluut ja	Nee	
*	Absoluut tevreden	1X om de tv	0.5	Eerder ja	Nee	
0.1	Eerder tevreden	Een keer ge	0.1	Eerder nee	Nee	Geen
*	Eerder tevreden	Nooit	0	Eerder ja	Nee	Bestu
*	Absoluut tevreden	1 / week	1	Eerder ja	Nee	Te wei
*	Eerder tevreden	Wekelijks	7	Absoluut nee	Ja	
*	Eerder tevreden	4/maand	1	Eerder nee	Ja	
	Absoluut tevreden	1x per maa	0.25	Eerder nee	Nee	
*	Absoluut tevreden	Regelmatig	? 5	Absoluut ja	Ja	
4	Eerder tevreden	Hal 5regeln	? 2	Eerder ja	Nee	
1	Absoluut tevreden	Bijna dage	5	Eerder nee	Ja	
*4	Absoluut tevreden	Wekelijks	1	Absoluut ja	Nee	
0	Eerder tevreden	0	0	Eerder ja	Nee	
0.1	Eerder tevreden	Zelden	0.1	Eerder ja	Nee	
*	Absoluut tevreden	Wekelijks t	3	Eerder nee	Ja	We do

Q21			Q22	Q24	Q25	
Deelnemen bestuur?			fier?	Genoeg privacy?	Hoe veilig voel je je in de gegeven momente	
	categories (reasons, wh				Overdag (9 - 17 u)	'S avonds (
Nee	Vanwe	Time	Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Nee	Geen,	Time	Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Ja			Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Nee	Niet g	Time	Eerder ja	Eerder ja	Eerder veilig	Eerder veil
Ja	Mee b		Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Nee			Absoluut ja	Eerder ja	Absoluut veilig	Absoluut v
Ja			Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Ja			Absoluut ja	Eerder ja	Absoluut veilig	Absoluut v
Nee			Absoluut ja	Eerder ja	Absoluut veilig	Absoluut v
Nee	Geen t	Time	Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Nee			Eerder ja	Eerder ja	Eerder veilig	Eerder veil
Ja			Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Ja	Missch		Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Nee	Te dru	Time	Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Nee			Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Nee			Absoluut ja	Eerder ja	Absoluut veilig	Absoluut v
Nee	Geen (	No own compute	Eerder nee	Absoluut ja	Absoluut veilig	Eerder veil
Nee	Bestu	Tired of it	Eerder ja	Eerder ja	Absoluut veilig	Eerder onv
Nee	Te wei	Time	Eerder nee	Absoluut ja	Absoluut veilig	Absoluut v
Ja			Eerder ja	Absoluut ja	Absoluut veilig	Absoluut v
Ja			Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Nee			Eerder ja	Absoluut ja	Absoluut veilig	Absoluut v
Ja			Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Nee			Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Ja			Absoluut ja	Eerder ja	Absoluut veilig	Absoluut v
Nee			Absoluut ja	Absoluut ja	Absoluut veilig	Absoluut v
Nee			Eerder ja	Eerder ja	Absoluut veilig	Absoluut v
Nee			Eerder nee	Eerder nee	Absoluut veilig	Absoluut v
Ja	We do		Absoluut ja	Eerder ja	Absoluut veilig	Absoluut v

Q25		Q26			Q27	Q28
l je je in de binnenstraten, op de en momenten van de dag?		Fietsen voor de deur?			fiet sen stal	Ooit conflict ervaren
'S avonds (17- 21 u)	s Nachts (21u)		Waarom, J	waarom nee		
Absoluut veilig	Absoluut veilig	Ja	Handig Snel in gebruik		Ja	Ja, meermaa
Absoluut veilig	Absoluut veilig	Ja	Niet genoeg plaats		Ja	Ja, meermaa
Absoluut veilig	Absoluut veilig	Ja			Ja	Neen
Eerder veilig	Eerder veilig	Ja			Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Ja	Praktisch		Nee	Ja, éénmalig
Absoluut veilig	Eerder veilig	Ja			Ja	Neen
Absoluut veilig	Eerder veilig	Nee		Binnenstallin	Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Nee		Gezamenlijk f	Ja	Neen
Absoluut veilig	Absoluut veilig	Nee			Ja	Neen
Absoluut veilig	Absoluut veilig	Nee			Ja	Neen
Eerder veilig	Eerder veilig	Nee			Ja	Ja, meermaa
Absoluut veilig	Absoluut veilig	Ja			Ja	Neen
Absoluut veilig	Absoluut veilig	Ja	H		Ja	Ja, meermaa
Absoluut veilig	Absoluut veilig	Ja	Snel zijn of later nog noo		Ja	Ja, meermaa
Absoluut veilig	Absoluut veilig	Ja			Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Nee			Ja	Ja, éénmalig
Eerder veilig	Eerder veilig	Nee			Ja	Ja, éénmalig
Eerder onveilig	Eerder onveilig	Nee			Ja	Ja, meermaa
Absoluut veilig	Eerder veilig	Nee			Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Ja	Gemak		Ja	Ja, éénmalig
Absoluut veilig	Eerder veilig	Nee		Diefstal	Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Nee			Ja	Neen
Absoluut veilig	Eerder onveilig	Nee			Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Nee			Ja	Ja, meermaa
Absoluut veilig	Absoluut veilig	Nee			Ja	Ja, éénmalig
Absoluut veilig	Absoluut veilig	Ja			Ja	Neen
Absoluut veilig	Absoluut veilig	Nee		Garage	Ja	Neen
Absoluut veilig	Absoluut veilig	Nee		Al een keer ge	Ja	Neen
Absoluut veilig	Absoluut veilig	Ja	Als We ze meerdere kere		Ja	Neen

Q28.1 Oorzaken conflicten?		Q28.2 maatregelen conflicte		Q29 Ooit vandalisme?	Q29.1 schade
Given Answer	Classification		Tekst		Given Answer
Sommigen will	Meningsverschillen	Nee		Ja, meermaals	Grafiti; fietsdie
Buren die zich	Meningsverschillen	Ja	Verg	Ja, meermaals	Sluikstorten, pc
				Ja, éénmalig	Graffiti
Verschillend m	Meningsverschillen	Nee		Neen	
Afval in strater	Afval	Ja		Ja, éénmalig	Afval
				Neen	
Drugshandel i	Drugs, Hal 5 (lawaaihir	Ja	Tran	Neen	
				Neen	
				Neen	
				Neen	
Gebruik van ge	Meningsverschillen	Ja		Ja, meermaals	Geen ernstige
				Neen	
Lawaai,gebrek	Meningsverschillen, Af	Ja	Een	Neen	
Hangjongeren,	Hangjongeren, Afval	Ja		Ja, éénmalig	Zwerfvuil in de
Trampoline	Meningsverschill	Ja		Ja, éénmalig	Graffiti
Rommel op str	Afval	Nee		Ja, éénmalig	Fiets van dochte
Hangjongeren,	Hangjongeren, Drugs	Ja	Polit	Ja, éénmalig	Bommetje in br
Hangjongeren,	Afval, Hangjongeren, La	Ja	Scho	Ja, éénmalig	Wild plassen e
Fout verkeer cc	Verkeer, Afval, Hygiene	Nee		Ja, meermaals	Aan infrastructu
Invulling geme	Meningsverschillen	Nee		Ja, éénmalig	Alleen opkuisw
Persoonlijk cor	Andere (persoonlijk)	Ja	Over	Ja, éénmalig	Grafiti
				Ja, éénmalig	Graffiti
Gewone misve	Andere (misverstander	Ja		Ja, meermaals	Dealen van dru
Hangjongeren:	Hangjongeren, Afval	Nee		Ja, éénmalig	Zadel van brom
Invulling hal 5	Hal 5: geluid en geur	Ja		Neen	
				Ja, éénmalig	Grafiti
				Neen	
				Neen	
				Neen	

Q29.2 Vanda-lisme door een	Q29.3 Maatregelen vandalisme	Q2 ma a	Q30 Graag	ment ioning	Q31 Niet
Nee	Ja		Sociale interactie en verkeersvrije straat	x	Wei
Nee	Ja	Ze	Autovrij, dichtbij tekenschool, gemeenschap	x	Te k
Nee	Nee		Gedeelde ruimte, veilige ruimte voor buiter	x	
			Voetganger straat, buren met kinderen	x	
Nee	Ja		Speelstraat, gedeelde ruimte, park	x	Stra
				0	
			Uitstekende ligging, aangename en warme	x	/
			Grote buitenruimtes waar kinderen vrij kunr	x	
				0	
			Meer plaats	.	
Nee	Nee		Verkeersveiligheid - parkeerfaciliteiten en s	.	Te v
				0	
			Nabijheid van mensen en kinderen	x	Het
Nee	Nee		Burencontact	x	Klei
Nee	Nee			0	klei
Nee	Nee		Contacten met buren . Feestjes . Elkaar help	x	Som
Nee	Nee			0	
Nee	Ja	Li	Geluidsisolatie naar buren toe	.	Ond
Nee	Nee			0	Te w
Nee	Nee		Autovrij wonen	.	
Nee	Nee		Alternatieve gemixte karakter	x	Nog
Nee	Nee		Goede ligging	.	
Nee	Ja	Pl	Dat de bestaande buurtwerking nog mag ve	x	Zwe
Nee	Nee			.	Uitb
			Ligging, winkels, buren	x	
Nee	Ja		Veel contact met buren kinderen kunnen ve	x	Klei
				0	
			Locatie en rust, voorzieningen in de buurt	.	Huiz
			Het is een soort dorp in de stad	x	Slui

Q31	Q32	Q33	Q15
Niet graag	Deze faciliteiten	over het algemeen tevreden over het project?	
Weinig groen	Gemeen	Absoluut tevreden	
Te klein huis, te weinig bezoeke		Absoluut tevreden	Enkel in de zomer leven we zo
	Goede b	Eerder tevreden	
		Eerder tevreden	
Straat wat minder onderhouden		Eerder tevreden	
		Absoluut tevreden	
/	/	Absoluut tevreden	
	Speeltui	Eerder tevreden	
	Speeltui	Eerder tevreden	
		Absoluut tevreden	
Te veel commerciele activiteiter		Eerder tevreden	
		Absoluut tevreden	
Het aanslepen van de	De bib,	Eerder tevreden	
Kleine woningen		Absoluut tevreden	
kleine meningsverschillen maa		Absoluut tevreden	
Soms wat teveel lawaai . Romm		Absoluut tevreden	
	Aan hal !	Absoluut tevreden	
Onderhoud van algemene deler		Eerder tevreden	Eigen voorstel zetel in inkomha
Te weinig betrokkenheid vd bew		Eerder tevreden	
	Speeltui	Absoluut tevreden	
Nog niet afgewerkt na	De beloc	Absoluut tevreden	
		Absoluut tevreden	
Zwerfvuil en honden		Absoluut tevreden	
Uitbreiding van cambio		Absoluut tevreden	
		Absoluut tevreden	
Kleine.tuin	Stockage	Absoluut tevreden	
		Eerder tevreden	
Huizen zijn niet van een geweld		Eerder tevreden	
Sluikstorten	Er Mag n	Absoluut tevreden	

Q23
Opmerkingen
veel buiten, in de winter te koud
tel in inkomhal
Inspraak ja, uitvoering ???

OBSERVATIONS OF THE USE

Date, Time: Tuesday 30-01 15h – 17h	Weather: Sunny, bit winter-cold	Page: 1

		Age category					Actions										
	Individual/ Group	Kid (0-10)	Teenager	Young adult	Middle age	Elderly	Walking	Biking	Running	skating	Play active	Play passive	Standing	Sitting	Come home	Interacting	Other (define)
1	1		M				X										Backpack
2	2				F	F	X										
3	1					M	X										Walk very slow
4	2				MF		X										
5	3		3F				X									X	Talking, backpack
6	1		M					X							X		backpack
7	1		F				X										
8	3	MF			F		X									x	Backpack
9	2		2M					X								x	Backpack
10	5	m³f			F		X										
11	1		M				X										
12	1			M			X										
13	1				F		X										
14	1		M				X								X		
15	3		3M					X									
16	1		F				X										
17	3	M			MF		X										
18	1			F			X										
19	1		M							X							
20	1				F		X							x			Rest
21	2		FF					X					X			x	Slow, stay to chat
22	2	M				F	X										
23	1		M					X									
24	1		F					X									
25	2		M M				X										
26	1				M		X										
27	1		M				X										
28	1		M					X									
29	3	M	f²m					X								X	

Date, Time: Tuesday 04-02 15h – 17h	Weather: Sunny, bit winter-cold	Page: 2

		Age category					Actions										
	Individual/ Group	Kid (0-10)	Teenager	Young adult	Middle age	Elderly	Walking	Biking	Running	skating	Play active	Play passive	Standing	Sitting	Come home	Interacting	Other (define)
1	1				M		X										
2	1		F					X									
3	1			M				X							X		
4	2			F			X										buggy
5	1						X										
6	1			M			X										
7	2			FM			X										
8	1					F	X										
9	2	FF						X									
10	1		M							X							
11	1			M			X								X		
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	
26																	

Date, Time: Sunday 04-02 15h – 17h	Weather: little bit snow, cold	Page: 1

		Age category					Actions										
	Individual/ Group	Kid (0-10)	Teenager	Young adult	Middle age	Elderly	Walking	Biking	Running	skating	Play active	Play passive	Standing	Sitting	Come home	Interacting	Other (define)
1	2	X			F		X								L		Leaves home with buggy
2	1				M		X										
3	1				M		X										Gets in car
4	2		F		M		X										Leaves to car with big suitcase
5	2				2M		X										Parks car
6	1				F		X										Walks quickly
7	1	F						X									Leaves with instrument on back, waits for n°10
8	2				F	F	X										
9	1	M					X										
10	4		F 2M		M			X							L	x	Leave home with n°7 after waiting for each other
11	2				M	F	X										
12	4				F		X										
13	2				F		X								L		
14	1				M		X										
15	2			F			X								L		Leave home, gets in car
16	1					F	X								X		
17	1		M				X										
18	4	M M					X								X		
19	3	M					X								L		Leave home
20	2						X										With dog
21	1						X								X		With shopping-bag
22	3	F					X										
23																	
24																	
25																	
26																	

Date, Time: Thursday 08-02 18h – 20h	Weather: Dark, cold, no rain	Page: 1

		Age category					Actions										
	Individual/ Group	Kid (0-10)	Teenager	Young adult	Middle age	Elderly	Walking	Biking	Running	skating	Play active	Play passive	Standing	Sitting	Come home	Interacting	Other (define)
1	1				M		X								X		
2	3		3F					xx	x				x				Talk, stay longer
3	1			F			X										Shopping bag
4	1				M		X										Out of parking
5	1				F		X										
6	1		M							X							
7	2				MF		X										
8	1				M		X								X		
9	1				M		X								X		Leave home to parked car
10	1				M		X										
11	1			F				X									
12	1			M			X										
13	1				M		X										
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	
26																	
27																	

The role of socially sustainable, transitional spaces in dense housing projects

Naomi Neelen