RURBANITY

Exploring the integration of rural qualities
with density and urban life

Janna Kampers
Master Thesis Spring 2019

Chalmers School of Architecture \ Spatial Morphology
Examiner: Meta Berghauser Pont \ Supervisor: Evgeniya Bobkova

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I am generally intrigued by how form and design influences behaviour and trained
in working on the interface between urban planning, landscaping and architectural
questions, as well as different scales. My main interests include public space design and
the interplay between nature and the built environment. After experimenting more
on smaller scale and working with social issues recently, I am eager to get back to my
urban planning "roots" and delve deeper into the decisive factors of urban form.

MASTER STUDIOS
Architecture and urban space design | Site: Hjällbo, Gothenburg, Sweden
Reality studio | Site: Kisumu, Kenya
Planning and design in a local context | Site: Orust, Sweden

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HafenCity University, Hamburg / Blekinge Institute of Technology, Karlskrona
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WORK EXPERIENCE
2018 City premises administration, Gothenburg, summer worker
2017 Landschaftsarchitektur+, Hamburg, intern
2015-16 Urban & Regional Economics Group, HafenCity University, research assistant
2013-14 Information centers, HafenCity Hamburg Gmbh, exhibition assistant

ABSTRACT

The world population is growing, and more and more people move to cities. Densification is discussed as one of the important strategies for sustainable urban development with the aim to reduce transport needs, prevent sprawl and other negative environmental impacts. It is moreover seen central for achieving proximity to facilities and other people as well as for creating vibrant and lively streets that are appreciated and sought after by many. On the other hand, the dream home for a large majority of people is still the one-family home on the countryside, in a calm environment and close to nature. This thesis takes these contradicting interests as a starting point and explores how experiences of nature, privacy and ownership can be combined with the 'urban buzz', high density and proximity to service. Applying a morphological approach, the aim is to develop design strategies and new typologies on the neighbourhood and block scale that integrate these sometimes contradicting qualities, referred to as qualities for rurbanity.

To do so, first, central parameters for creating lively spaces, nature experiences, places for private retreat and higher density are defined based on literature review and personal experience. Aspects such as network configuration and the location and design of open space take a central role. Second, two assessment diagrams are developed, structured into neighbourhood and block scale, which are then used as tools for evaluating reference projects in Amsterdam and an own design proposal in Backaplan, Gothenburg.

The reference projects in Amsterdam are analysed to get a better understanding of the parameters, but also to gather inspiration. From the reference projects, combined with other sources of inspiration, design strategies are extracted and typologies on neighbourhood and block scale are explored. Different combinations are created, pushing the parameters to their extremes and combining different strategies, resulting in a catalogue that shows design options on how the rurbanity qualities can, or cannot be combined.

The design proposal for a part of the Backaplan area in Gothenburg is used to show how the developed strategies and typologies can be used in a real case and how local challenges modify the types and how some strategies fit certain contexts better than others. The result is a 'superblock' of mixed typologies, with urban street fronts and a number of tranquil enclaves.

Keywords: Network configuration, typologies, density, nature, privacy, ownership, public life

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*If not marked differently, the illustrations are my own.

GLOSSARY
Reoccurring terms that might need clarification are defined here.

Island   Refers to the 'islands' of private space within the public street network. Usually, this is referred
                to as block. The term island is used here in order to not imply that there is a building block on
                the 'island'. Island is derived from the French 'île' and is used regularly within the field of spatial
                morphology, for example in 'Spacematrix' by M. Berghauser Pont and P. Haupt. (2010)

Integration   Integration is also called closeness centrality and expresses "how many neighbouring spaces [...]
                [a space] connects to" (Hillier, 2007, p. 94). The parameter is mostly relevant for social encounter
                and other activity as it indicates how much movement of people can be expected. (Hillier, 2007)

Betweeness   Betweeness, is also called choice centrality. It expresses how many routes a space
                is part of. A betweeness map points to the (topologically) shortest routes between
                central locations and indicates where most through movement is likely to occur.
                Betweeness has mostly larger scale relevance. (Cf. Spatial Morphology Group, 2018)

Strategies   Strategies in this context concern the logic of certain parts or aspects of a configuration.

Typologies   Typologies combine different spatial strategies in a comprehensive configuration. The term is used in
                this work to refer to configurations that can represent a group with similarities, in order to emphasize
                when a configuration is not about it's specific design, but a general idea.

01: INTRODUCTION

Can we have both, the vibrant high
street around the corner and the calm
nature paradise behind the house?

BACKGROUND
THE CONTRASTS WE LOVE

The world population is growing, and more and more people move to cities. (United Nations, 2015) In that context, high-density development and densification is seen as necessity within the discipline, in order to reduce transport needs, prevent sprawl and environmental impact. That stands in contract with the fact that the dream home for many is still a one-family home on the countryside. According to the study 'Att välja med hjärtat – Så vill svenskarna helst bo' for example, almost a third of the respondents would choose this form of living if they could decide independently from aspects such as job location and economic situation (Landshypotek Bank & Kantar Sifo, 2017). But what is it they mean by countryside? Defining this is difficult, since official definitions vary and these do not need to match the perception of people. What is most relevant in this context is the qualities people see in the rural life they are longing for. Reasons to move to the countryside are diverse and individual, but recurring arguments include living in a calm environment, in close proximity to nature and having large private spaces (Landshypotek Bank & Kantar Sifo, 2017; Fischer, 2019). However, there are as many aspects holding people in the city: The dependency on larger cities regarding jobs and commerce is growing with increased urbanization. Plus, the dense agglomeration of cities is central for the vibrancy and proximity to facilities and social contacts that is sought after by many. (Boverket, 2017) A common compromise is to settle in suburbia – with the comfort of the countryside and closeness to the city. But, if we continue building the city into the surrounding landscape, there is a risk we end up with large sprawl areas, that are eating up space, creating large travelling distances, and are highly dependent on both city and countryside and with no centralities of their own.

This thesis takes these contradicting interests of urban and rural living as a starting point and looks into how some typically "rural qualities" can be integrated with urbanity and density. Based on common arguments for rural or urban living and personal experience, I choose to focus on integrating four qualities specifically: The two typically urban assets of 'housing many' and 'public life' and the two typically rural characteristics of 'nature experience' and 'private retreat'.

Housing many
The quality of 'housing many' is most straightforward: As an effect of the urbanization trend, most European cities, including Gothenburg, are struggling with a massive housing shortage. In order to react to that, without creating sprawl, we simply need to 'move closer together' and house more people on less land.

Nature experience
What often differs between countryside and urban living and is especially at risk in high-density developments - is the connection to nature. In sparsely inhabited areas, natural environments are often accessible in close proximity. Buildings are usually lower and more dwellings have a private access to the outside, often to an own garden. This access to natural environments is crucial for human well-being - both physically and psychologically (C/o City, 2014; University of Illinois at Urbana-Champaign, 2009). Not only does the nature provide the physical base for human life through ecosystem services, such as clean air. - As Grahn & Stigsdotter found, people visiting green spaces regularly do for example also report less stress-related illnesses (2003). Other studies found that this positive effect is furthermore not limited to direct physical interaction with nature; even visual and acoustic impressions of natural environments seem to contribute to mental well-being, by reducing negative thinking, calming down and reducing stress (Harvard Health Publishing, 2018; University of Illinois at Urbana-Champaign, 2009). Integrating nature is of significant importance for healthy urban living. In this work, the quality of "nature experience" is analysed in order to focus on the character of spaces. Simply in numbers of land use, it is probably not possible to have equally much natural space in dense, urban environments (at least not in the age where paved streets are still needed) as in rural environments, but maybe one can have the experience of being in nature.

Public life
'Buzz', or public life is what defines urbanity and the urban character that is so intriguing about being in cities. As Jan Gehl and Jane Jacobs argue, this is simply because 'people attract people' and find pleasure in observing public life (Gehl, 2011; Jacobs, 1992). Hillier explains that public life occurs based on spatial configuration and multiplier effects connected to that. It will be assessed in this work how to create the preconditions for lively public spaces.

Private retreat
Many name the ownership aspect and spaciousness of a one-family home as a main argument for rural living. In the context of urbanization, large private plots in central locations do not seem feasible. – City space is becoming rare and valuable and we might need to change our mind-set and live small(er). Still, we should not ignore the desire for privacy and ownership. As much as people need other people, at the same time we also need the possibility to retreat. About the importance of public life, the discipline is quite agreeing, whilst ownership might seem less of a central theme. Eva Minoura shares the impression that in the architecture and planning discourse, use, and thus interaction of people, is regarded positively, whilst "ownership [is seen] as individualistic and negative." She remarks that ownership is crucial in order to achieve stewardship and people caring for spaces, plus that sense of ownership can be an important aspect in the context of densification, where small yards might become more usual. (Minoura, 2015) This work looks therefore into how the experience of 'private retreat' can be facilitated and integrated with urban living , mainly focussing on the outdoor space.

BACKGROUND
RESEARCH & PRACTICE

The duality of urban and rural is and has been discussed in planning since the birth of the discipline, it seems. Likewise, there have been numerous approaches to combine rural and urban qualities. Probably most famously, Ebenezer Howard proposed in 1902 the development of 'Garden cities', which can be seen as a direct reaction to the unhealthy urban living conditions that prevailed in European cities during the rapid industrialization and urbanization. Howard suggested to form new self-containing communities that would include housing, industry and agriculture and be surrounded by a green belt. In contrast to usual cities, these communities were not allowed to grow too large; instead a new unit would be formed. By keeping the scale small and providing large green spaces, he aimed to avoid the downsides of the city, but keep urban practicalities. History showed that the logics Howard assumed did not work as intended in reality: Garden cities became dependent satellite communities, often contributing to sprawl. The liveliness of cities could not emerge in these communities.

A more recent reaction to the urban-rural contrast is 'rurbanism' in the sense of taking the urban to the rural. This includes movements that focus on bringing urban amenities to the countryside, preserving villages and work against the rural decline. – Even if this attempt is highly relevant, especially for regional development, it has it's restrains: For urban vibrancy and a variety of facilities to develop, a critical mass of people is needed. And does not then the village become a town again? Other rurbanism trend focus on temporary living: An article by Fischer (2019) reports for example about 'co-villages' (german: Ko-Dörfer), where urban dwellers form small communities on the countryside. In this case, that implies however only temporary migration, staying on the countryside location for a while and still returning to the city, since these dwellers are dependent of the urban infrastructure and social structure.

Such ruralisation approaches have probably a high potential of becoming successful the more efficient our transport system gets and the more digitalized our lives become. In either way, they built on an ambitious regional planning.

Outgoing from the current situation and focussing on how we can improve the discussed qualities on a local level, my approach is to take the urban agglomeration as a starting point, and ask, how certain qualities that are often easier accessible in a rural context, can be integrated into an urban neighbourhood.

On the building level, this has already been done quite a bit – albeit in most cases focussing mainly on one of the dimensions, e.g. the relation between private and shared or between green and dense. Examples are urban row houses with patios and roof-terraces, or the project 'Urbana villor' in Malmö, where one-family home elements are organized vertically in an urban setting. A trend can also be seen of community housing with a focus on shared spaces and for example common gardening (Lundell, 2014).

For the performance of an urban area however, the space network, in which the buildings are one element, are crucial. The factors affect each other and should be discussed on a larger scale. This work is thus taking on a systematic approach and explores the urban and the rural and their spatial qualities on the scale of the neighbourhood and the block, or 'island'. I start by analysing how different spatial configurations influence the performance of an area, in order to then be able to make informed designs that contribute to the co-existence of density, nature, a rich urban life and possibilities for private retreat.

RESEARCH QUESTION, AIMS & DELIMITATIONS

It is explored how typically urban and rural qualities can be combined in an urban setting. More specifically, I ask, how the aspects of public life, nature experience, privacy and ownership (referred to as private retreat here) and the ability to house many people can be integrated with each other.
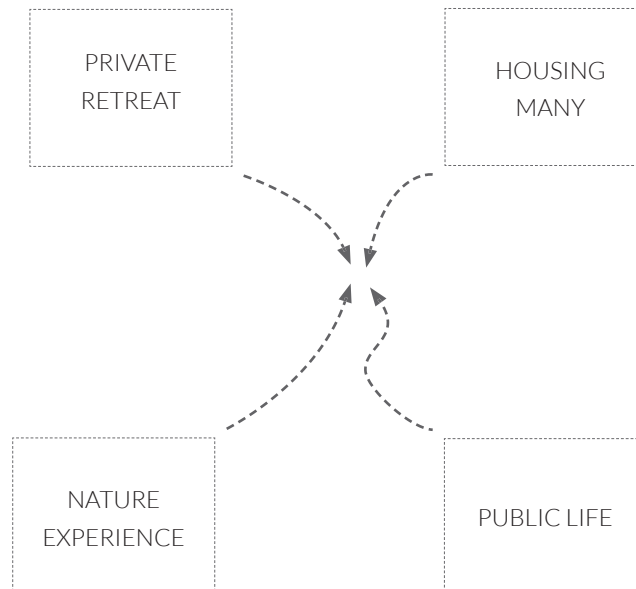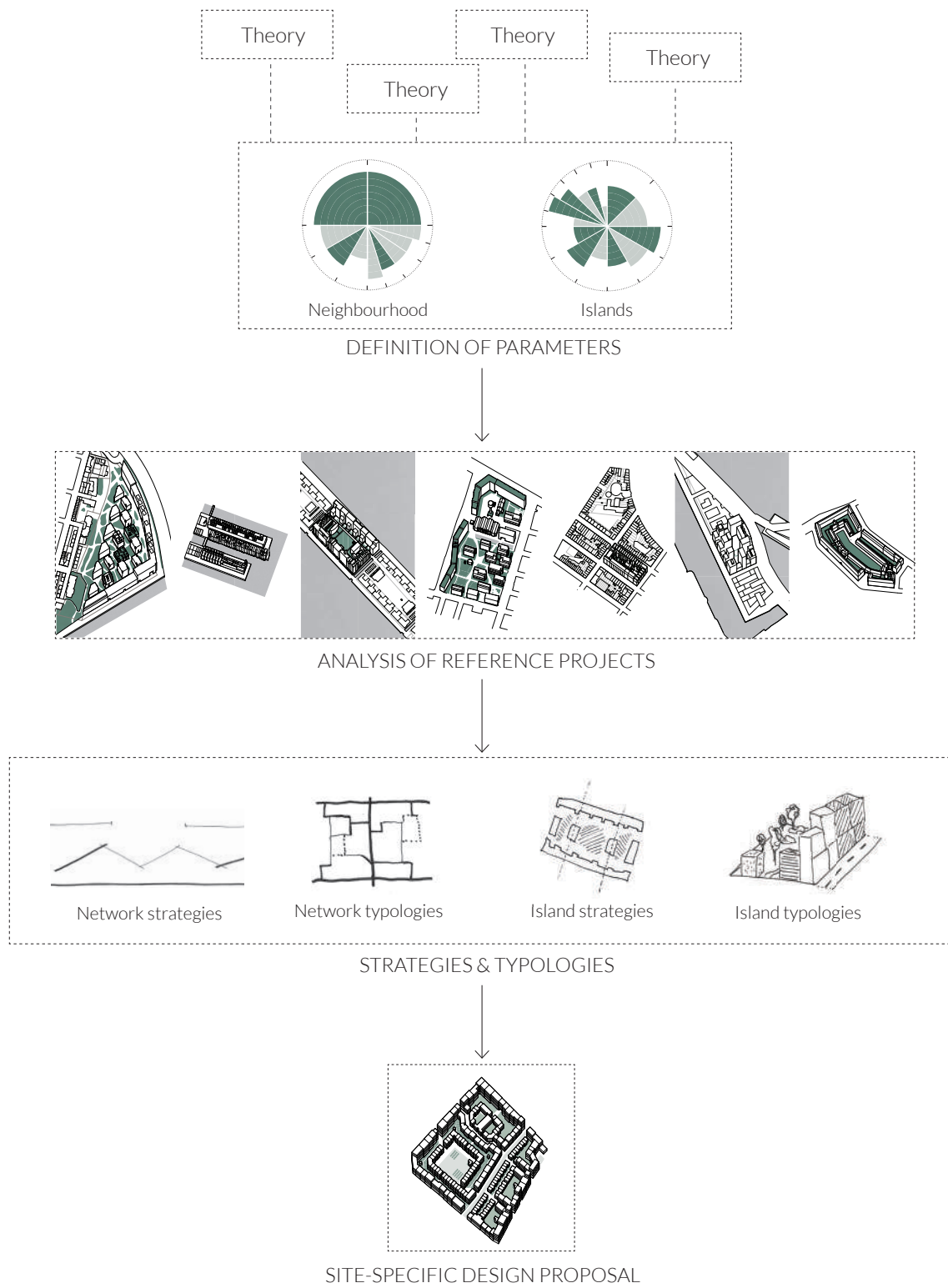
The main aims are to

1. Define strategies and typologies on the neighbourhood and on the island scale, that contribute to combining density, natural elements, experienced privacy and urban "buzz".

2. Develop a design proposal for a neighbourhood in Gothenburg, where the typologies are applied and adapted to a specific context.

Located within the direction of 'Spatial Morphology', the thesis is mainly concerned with the influence of the physical form. Socio-economic and political preconditions are largely excluded.

The project can be defined as an exploratory design project, rather than a theoretical research project. The main aim is to develop spatial configurations and typologies and test them in a specific context. Designs are based on a set of principles derived from literature and case studies and evaluated roughly in relation to them. However, the focus of the work is not on the development of a detailed evaluation method.

In designing, different scales and their interaction are considered, but the focus is on the neighbourhood and island scales, with relevant drawing scales between 1:15000 and 1:200. The outside space is in focus; single buildings are only discussed conceptually and with regard to their interaction with the surroundings.

Theory   Theory
        Theory
                        Theory

Neighbourhood   Islands

DEFINITION OF PARAMETERS

ANALYSIS OF REFERENCE PROJECTS

Network strategies   Network typologies   Island strategies   Island typologies

STRATEGIES & TYPOLOGIES

SITE-SPECIFIC DESIGN PROPOSAL

METHODOLOGY & PROCESS

"Physically, cities are stocks of buildings linked by space and infrastructure. Functionally, they support economic, social, cultural and environmental processes. In effect, they are means-ends systems in which the means are physical and the ends functional. Our most critical area of ignorance is about the relation of means to ends, that is, of the physical city to the functional city. [...] [There is a] split between understanding and design, between thought and action." (Hillier, 2007, p. 111)

Acknowledging the strong interrelation that Hiller describes between the physical form and the functional performance of cities, this work takes on a morphological approach, where analysis plays a central role for coming to design conclusions. One of the main tools is therefore space syntax, which is a set of theories and methods to analyse network configurations and their implications for human movement and usage. On a larger scale, this might be more self-evident, but also for smaller scale design, this is of high relevance, as the context sets the preconditions and potentials for the performance of a space. As Hillier puts it: "Places are not local things. They are moments in large-scale things, the large-scale things we call cities. Places do not make cities. It is cities that make places. [...] We cannot make places without understanding cities" (Hillier, 2007, p. 112).

The network configuration analysis is complemented by massing studies and drawings, to explore the spatial implications of certain designs. Using these methods, one should be aware that it is only covering the spatial configuration, showing spatial potentials for something to develop. The city is however more than that. It is a cultural artefact, shaped by a complex interplay of different cultural, social, economical and ecological processes. These influences are partly considered on a local scale, but not in focus in this work.

The process consists of four phases:

1. Parameters definition
By reviewing literature and reflecting on personal experience, I find which aspects are central to achieving the four qualities and define parameters to measure them with. Two assessment diagrams are developed, structured in neighbourhood and island scale.

2. Reference studies
To get an idea what kind of designs certain values of the parameters imply and to retrieve strategies on how to integrate the qualities, a number of reference projects are analysed.

3. Strategies & Typologies
After summarizing the findings into general strategies, typologies on network and island level are explored. Different combinations are invented, pushing the parameters to their extremes and combining different strategies, resulting in a catalogue that shows design options on how the aspects can, or cannot be combined.
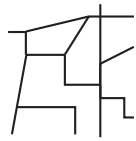
3. Site-specific design
In this part of the work, the findings, strategies and typologies are translated into a Gothenburg context and tested on a real site. Site-specific challenges come into play and alter the types. The contextualization gives the possibility to discuss so far abstract strategies more in detail and develop typologies that relate to certain spatial situations.
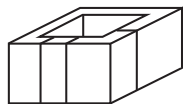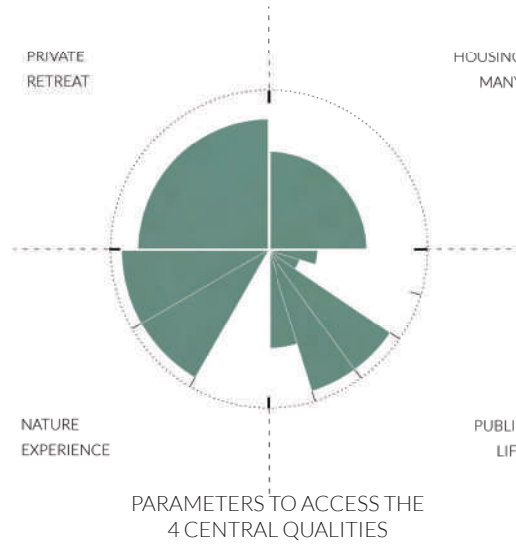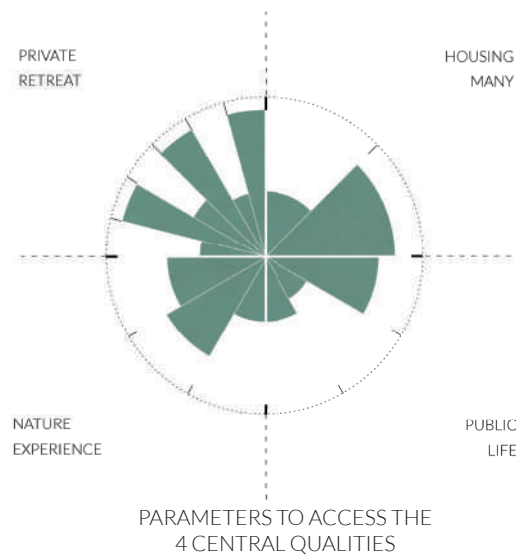
02: PARAMETERS DISCUSSION

PRIVATE
RETREAT

HOUSING
MANY

NATURE
EXPERIENCE

PUBLIC
LIFE

NEIGHBOURHOOD SCALE

PARAMETERS TO ACCESS THE
4 CENTRAL QUALITIES

PRIVATE
RETREAT

HOUSING
MANY

NATURE
EXPERIENCE

PUBLIC
LIFE

ISLAND SCALE

PARAMETERS TO ACCESS THE
4 CENTRAL QUALITIES

APPROACH

What do we design for, actually? In order to make informed design decisions, we need to know what spatial configurations certain qualities imply. In this chapter, I discuss research and reflect on own experiences to find out, which aspects are central to achieve the four central qualities of housing many, nature experience, public life and private retreat. As a result, I define parameters that these qualities can be assessed with. These parameters can be seen as a framework, showing spatial potentials. Fulfilling them does therefore only create the spatial pre-conditions for the four central qualities to develop. They serve in the following chapter as tool for assessing the performance of reference projects, and later on my own design proposal. At the same time, they also represent objectives for developing design strategies in part 4. Parameters and reference project analyses are conducted partly in parallel, which makes it possible to adapt the parameters to restrictions regarding data availability and proved relevance.

Parameters are defined on island and neighbourhood level, the two main scales of this thesis. A problem is that borders of neighbourhoods can be defined in different ways and their size influences the values of the parameters. In the analysis of references, a neighbourhood is defined as spatial unit with similar built structures and / or limited by larger borders, such as parks or infrastructures. When referring to data from other sources, neighbourhood units are often based on administrative districts. The two definitions usually go roughly in line with each other, but there can be some differences. The spatial unit of 'islands' refers to the 'islands' of private space within the public street network. More commonly, this is called a block. The term island is used here in order to not imply that there is a building block on the 'island' (Cf. Berghauser Pont & Haupt, 2010). Islands can be tricky to define when public and private are intertwined and public walking paths pass through an island or private spaces are used publicly. When such cases appear in the reference analysis, the units are estimated based on how they are experienced.

The chapter is structured by the four central qualities. For each of them, I define parameters first on neighbourhood and then on island scale. Subsequently, a table provides an overview of all parameters and thresholds that are recommended to achieve. Plus, the parameters are summarized in assessment diagrams.
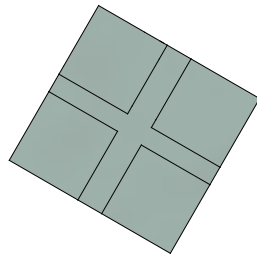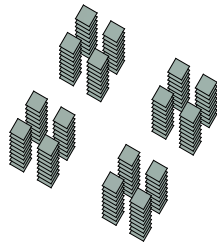
HIGH FLOOR SPACE INDEX (FSI)

To urbanize without creating sprawl, we
need to house many people on little land.
Since population density can change vastly
over time, land use intensity is assessed.
Floor space index states the "amount
of built floor area to the area of a plan".
(Berghauser Pont & Haupt, 2010, p. 87)

FSI = F/ A
= gross floor area (m^2) / area
of aggregation (m^2)

Unit: m^2 / m^2

HOUSING MANY
NEIGHBOURHOOD SCALE

To urbanize without creating sprawl, we need to house many people on little land. In order to be able to evaluate design solutions regarding their density, we need to define this aim firstly. There are several ways to measure density, all describing human space consumption, but having different implications. If the aim is to accommodate many people per square meter land, working with the population density, that means, the number of people per square meter land, seems most logically. However, a downside of this measure is, that the number of inhabitants per square meter living space can change drastically over time. Historically, people shared for example very little space in cities with a high number of people, especially in times of urbanisation during industrialization, whilst nowadays, a lot of people live alone or share a (large) flat with only one other person. - The average household size in Sweden in 2017 was 2,3 persons, with an average size of 41 square meters per person (Statistikdatabasen, 2017a, 2017b). Additionally, functions can change over time, which also affects population density. The same urban form can thus house very different numbers of people. According to Berghauser Pont and Haupt (2010), dwelling density is therefore a more commonly used measure. But even the same dwelling density can look very different, since the size of dwellings differ and the dwelling density does not take other functions than housing into account (Berghauser Pont & Haupt, 2010). Another alternative is to work with land use intensity, such as the 'floor space index', which shows the "amount of built floor area to the area of a plan", combining all space, independent it's use (Berghauser Pont & Haupt, 2010, p. 87). This measure says much more about the building mass than what population or dwelling density can and is used in this work as single parameter for 'housing many' on neighbourhood scale.

For a neighbourhood, floor space index is calculated by dividing the total floor space in an area by a base area, covering a whole neighbourhood, including street spaces within it and half of the street space surrounding it. The measure provides an answer to how much floor space we manage to realise within the borders of that area, and thus enables us to evaluate the achievement of the objective 'housing many'. It does however not say anything yet about how this is done. It can imply for example high-rise towers within large, green areas, as well as low-rise typologies with only street spaces surrounding them. As Berghauser Pont and Haupt note, to be able to "relate density to potential urban form" a "combination of indicators is needed", considering e.g. ground coverage and network density (2010, p. 95). These aspects, regulating e.g. the amount of open space, island sizes and building heights are covered within the parameters for the other three qualities.

Typical values
It is tricky to define how much density is acceptable, since the perception of the same physical density might differ from one person to the other. Whilst one might enjoy the liveliness of it, others might feel the very same space is crowded (Berghauser Pont & Haupt, 2010). To put things into perspective, I looked into the density values of some areas, representing typical (urban) patterns. Gothenburgs's inner city has mainly perimeter block structures with FSI values between 0,75-1,0. Vasastan achieves for example a value of 1,0. Haga, with it's slightly lower, dense block structure has a value of around 0,75. Only few areas exceed the threshold of 1,0, such as Linnéstaden with an FSI of 1,25 and Inom Vallgraven with an overall value of around 1,4. Other urban, but not most central areas of Gothenburg achieve FSIs between 0,4-0,6,;most suburban areas values between 0-0,3. (Spacescape & Göteborgs stad, 2018, p. 26)

Thresholds
Relating to the aim of 'housing many' in urban contexts, both Gothenburg municipality and the consulting firm Spacescape recommend, based on UN habitat, a population density of 150 000 inhabitants per square kilometre in urban contexts* (Spacescape & Göteborgs stad, 2018; Ståhle, Wezelius, Lundin Kleberg, Rydell, & Gjertsen, 2016). Expressed in land use intensity, Spacescape suggests a minimum FSI of 0,75 on district level for areas within 800m of frequent public transport (Ståhle et al., 2016). Gothenburg municipality sets a target value of 1,0 for areas within 500m of public transport. (Spacescape & Göteborgs stad, 2018)

*The recommendation by UN habitat refers to an overall density for the whole urbanised area of a city. On that scale, only metropolises such as Mexico City achieve the aim value of 15 000 people / square kilometre. Spacescape and Gothenburg municipality only apply the recommended value on neighbourhood scale and limit it to areas in close proximity to public transport. This is reasonable, since such a high average density does not seem realistic for whole cities in a European or Swedish context. (UN Habitat, 2014)
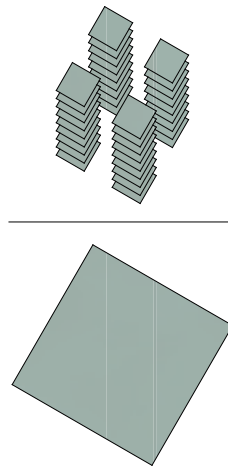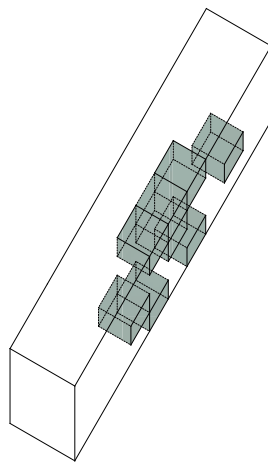
HIGH FLOOR SPACE INDEX (FSI)

Floor space index is a landuse intensity
measure and states the "amount of
built floor area to the area of a plan".
(Berghauser Pont & Haupt, 2010, p. 87)

$$= F/A$$
= gross floor area (m²) / area
of aggregation (m²)

Unit: m² / m²

SUITABILITY
FOR SMALL FLATS

Considering floor space index as the only
density measure implies the risk of planning
for huge flats for few people. Therefore, a
second parameter for 'housing many' on
island scale is added: Suitability for small
flats. This has implications for building
typologies, mostly regarding building depth
and form of access / circulation spaces.

HOUSING MANY
ISLAND SCALE

To get more information about how different typologies are performing, density is also analysed on island level. Since it is easier to predict and calculate and for reasons of continuity, land use intensity is used again here, expressed in floor space index - the "amount of built floor area to the area of a plan" (Berghauser Pont & Haupt, 2010, p. 87).

On island scale, the area of plan is the total size of the island (block). That means, no network space is included, only the area of the private "island" within the public network that surrounds it. Again, factors as island size and ground coverage are not taken into consideration here, so the FSI only tells about the ability of a structure to house many dwellings or workspaces, not how it is achieved.

The quality in question is actually to house many people and not to develop as much floor space as possible. Considering floor space index as the only density measure does however imply the risk of planning for huge flats for few people. As it is today, it is very usual to live alone or with only one other person (Statistikdatabasen, 2017a). In the face of an on-going individualisation of society, it is likely for this trend to continue. (A counter argument would be the massive increase of housing prices in cities, which forces people to share flats and live in small spaces. However, it can be assumed that even in that context, there are still a lot of people that can effort occupying large spaces.) It might be possible to limit the housing space per person by planning for small flats. Therefore, a second parameter for 'housing many' on island scale is added: Suitability for small flats. This has implications for building typologies, mostly regarding building depth and form of access / circulation spaces.

Typical values
Similar FSI values on island level can appear very differently, depending on building heights and distribution of open space. In the book Spacematrix, Berghauser Pont and Haupt provide the FSI values for a number of areas in the Netherlands, Germany and Spain that can give an idea of typical FSI values for certain building typologies. An example for urban perimeter blocks is Chamissoplatz in Berlin. In this case, buildings have rather many stories and several building parts extend into the yards. The area reaches an island FSI of 3,21. Perimeter block structures with larger public spaces in between them still reach rather high FSIs. – An example is Berlage Plan Zuid in Amsterdam, with an island FSI 2,41. Besos in Barcelona is an example for modernistic slab blocks and achieves an FSI of 1,48. Amsteltorp in Amsterdam can serve as example for low rise row houses with large garden spaces. They get to an FSI of 0,88. One-family housing with large adjacent gardens have even lower values - often between 0,1-03. (Berghauser Pont & Haupt, 2010)

Thresholds
As prerequisite for good access to services and reduced individual transport needs, a high density is required, also on island level. Spacescape transfers UN habitat's threshold of an FSI of 0,75 on neighbourhood scale to island scale. They state that islands in an urban context with a small grain street network and close proximity to frequent public transport (800m) should have an FSI of min. 2,0. (Ståhle et al., 2016)

For island scale, the aim is not to achieve high values on each separate island, but more that the neighbourhood as a whole manages to house many people. Islands can balance out each other with some having higher and some lower values. Therefore, the average value for several islands can be interesting.
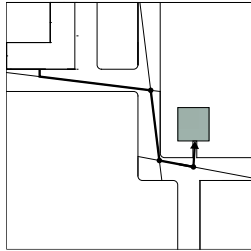
TOPOLOGICAL PROXIMITY

Number of direction changes
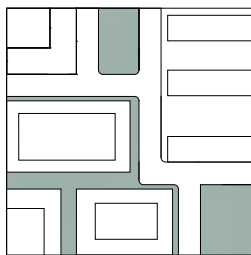from all spaces to the closest
green space (of min. 0,2ha)

Measured by attraction reach of
green spaces in topological steps
or: Integration analysis
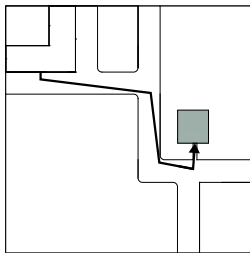
METRIC PROXIMITY

from all spaces to the closest
green space (of min. 0.2 ha)

Measured by attraction reach of
green spaces in metric distance
or manual estimation

LARGE AMOUNT OF
NATURAL SURFACE

Measured by percentage
of total public space

NATURE EXPERIENCE
NEIGHBORHOOD SCALE

Nature experience is a vague term and it's meaning highly personal. In this context, I assume that all natural elements, such as greenery, but also rock landscape and other naturally shaped surfaces can contribute to nature experiences. Most research this chapter builds on is using greenery and nature as synonyms. Since most natural environments in Sweden tend to be habitats for plants, this is acceptable. Nature experience includes both direct and indirect use values, meaning the values of actually experiencing a place physically, versus from a distance, e.g. visually. In his study "More green in a denser city", Alexander Ståhle concentrates on the direct use and analyses which parameters are important for the experienced access to green spaces. He states to include all natural spaces in the analysis, not only those covered by greenery. Water areas are considered "as attractors (that create use value), but not areas (that make open space)". (Ståhle, 2010, p. 5)

According to Ståhle, open space access can be evaluated regarding two main aspects: Attraction and accessibility. Traditionally, attraction would be measured by surface area and accessibility by metric distance. To grasp the experienced access to open, green space, he suggests also measuring the axial distance (number of direction changes needed to reach a space) and use values of spaces (number of usages that a space is suitable for). These measures tell how easy spaces can be found and what recreational quality they have. Ståhle suggests combining four parameters for evaluating the experienced green space access on neighbourhood scale: Cumulated green surface area, use values (possible uses), orientation (topological distance), and range (walking distance). (Andersson, Berg, Ståhle, & Oppenheim, 2015; Ståhle, 2010) The topological distance and the use values of green spaces showed to be most influential. In contrast, density and the absolute amount of green space did not correlate with the experienced access to green space. – In Ståhle's study areas, the opposite is the case: "[...] dense inner city areas with relatively low green and open surface area measure higher accessibility than the two post-war suburbs, which have many times higher green and open surface area" (Ståhle, 2010, p. 27). According to Ståhle, this is because those spaces are well -integrated in the network and thus more visible in people's walking paths and their uses are broader (2010). Ståhle developed a complex method that combines several factors in one measure (2005). For the scope of this thesis, such a detailed analysis is not feasible. The aspects he points out are therefore summarized and combined with the findings of other studies in order to define parameters that can be evaluated separately.

Usability & size: Usibility is decided mostly by the specific design on smaller scale and difficult to evaluate without extensive analysis or a "sociotope" map. It is thus considered in the design proposal, but not defined as parameter. A prerequisite for usability that is determined on the neighbourhood scale is however size: It can be assumed that size is crucial for the potential of certain usages to develop (Minoura, 2015). The guide 'Mäta stad' acknowledges that the continuous size plays a role and recommends spaces of min. 0,2 hectares in close proximity of all dwellings and a larger green area of min. 1ha in a bit longer distance. (Ståhle et al., 2016, p. 33) I integrate thus minimum sizes in the proximity parameters. Since this thesis focuses on smaller neighbourhood structures and larger parks can be seen as an issue of larger scale planning, where the specific context plays a central role, I consider all natural spaces larger than 0,2 hectares.

Orientation – topological distance: Space syntax research has found the number of direction changes needed is crucial for predicting how people walk in a network. Bill Hillier describes that human movement has a lot to do with vision; we move in lines of sight.– There is a "cognitive accessibility in movement space in terms of directionality" (Ståhle, 2010, p. 7). Humans tend to move in paths with as few direction changes as possible. How intelligible a network is can be expressed in maps of axial lines. Such lines express "a walkable line of sight". The cognitive accessibility of a space, or if a space is easy to find, can thus be measured by "axial steps" - the number of direction changes that have to be made on the way. (Ståhle, 2010, p. 7) To retrieve the topological distance from all dwellings to the closest green space, an attraction reach analysis in GIS Place syntax tool can be run. (Ståhle, 2010, p. 8) A fast option, that also provides a rough idea about the cognitive accessibility, is to overlay a map or image of natural spaces with an integration analysis. This shows whether the spaces in question are located at central streets of the network. Well-Integrated spaces will be easier to find and thus increase the experienced access to green spaces, but also "be more frequently visited and used", which could become a risk of overcrowding. (Ståhle, 2010, p. 26)

Range -Walking distance: The metric distance shows whether a destination is reachable within acceptable walking distance. Grahn and Stigsdotter found however that people would only walk around 200-300m to reach a green area The guide "Mäta stad" recommends a maximum of 200m walking distance from all dwellings to a public green space of min 0.2 hectare (Ståhle et al., 2016, p. 26). Metric proximity can be assessed by an attraction reach analysis (GIS) with a radius of around 300m. For the sake of convenience, it can also simply be estimated if green spaces are distributed equally.

Cumulated natural area: Ståhle found that the total amount of greenery is less relevant for the inhabitants' experience, but suggests including it in the analysis as a minor aspect (Ståhle, 2005). I consider the total natural area, since the proximity parameters are limited to (usable) parks of min. 0,2ha, although even smaller green elements contribute to whether a space is experienced as green. Secondly, a certain amount of natural elements is needed for a functioning ecosystem with different species, and that in turn is a prerequisite for creating rich nature experiences (C/o City, 2014). Evaluating all natural elements would require a detailed analysis, using measures such as the "green area factor". As this thesis focuses on creating spatial potentials, rather than specific solutions, and in order to have a measurable parameter, the natural surface is evaluated. On the scale of the neighbourhood, this is limited to the public space.
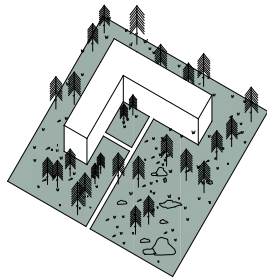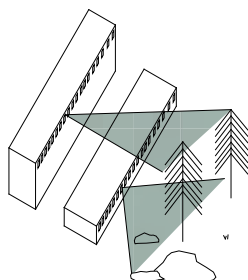
LARGE AMOUNT OF NATURAL SURFACE

Measured by percentage of all island surface
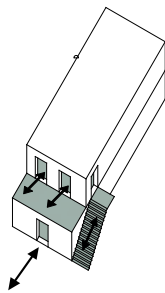
EASY PHYSICAL ACCESS TO THE OUTSIDE

Ideally a direct connection between dwelling and outside. Rooftop terraces, balconies etc. also contribute.

VISUAL CONNECTION TO NATURAL ELEMENTS

Undistrubed view line from dwelling to natural elements

NATURE EXPERIENCE
ISLAND SCALE

As Alexander Ståhle's analysis focuses on neighbourhood or district scale, the only parameter that can be translated to the island scale is 'percentage of natural surface'. In order to also cover the direct contact of the dwelling with nature, the parameters 'easy physical access out' and 'visual connection to natural elements' are added here. The parameters are supposed to set preconditions for a rich natural environment to develop. Whether this is the case depends also on the specific context and small scale design. In a specific design, it is important to take in more aspects, such as vegetation density and topography, to create a variety of spatial characters that serve different needs and usages. - A forest has different functions than a pocket park and e.g. height differences can be fun for children, but inaccessible for elderly and so on.

Percentage of natural surface
As on neighbourhood level, the percentage of natural surface is evaluated to capture the basic potential for a rich ecosystem to thrive. On the island level, this includes also roof and wall space. For the visual or physical experience, only those roofs and walls that are visible from dwellings and ground would be relevant. However, since all natural surfaces can potentially contribute to a thriving ecosystem, and that in turn adds to the overall experience, all spaces are considered. Plus, it is difficult to differentiate in detail in the analysis. Ståhle et al. recommend a minimum of 25 % of the island space to be green, although not including roofs and walls (2016).

Easy access out
Grahn & Stigsdotter found that for people to be in open green spaces, not only a close proximity to public greenery, but also "access to a garden, in the form of a private garden or a green yard immediately adjacent to, for instance, an apartment building" is crucial (Grahn & Stigsdotter, 2003, p. 1). This

observation fits the space syntax logic that Alexander Ståhle applies on neighbourhood level. He found that much more than the actual metric distance to green space, it is important for the experienced access to greenery, how easy spaces are to find and how likely people are to pass by them (Ståhle, 2010. Transferring that logic to the island scale, it can be assumed that people even here experience a better access to outdoor spaces, if it requires few direction changes and is easy to get outside. Additionally to that, - as it does on neighbourhood level - the metric distance probably also plays a role. Inside and outside spaces in close proximity make it possible to connect different activities and an adjacent outdoor space is more likely to be used spontaneously. Since balconies and terraces can also provide a certain nature experience (at least visually and through weather sensation), they can contribute to fulfilling this parameter. Access to wider natural environments with natural soil is however valued higher.

Visual connection to natural elements
The positive (psychological) effects of nature experience are not limited to physical contact and one important indirect form is visual impression (Harvard Health Publishing, 2018; University of Illinois at Urbana-Champaign, 2009). Therefore the visual connection between dwellings and natural elements is considered when evaluating whether a building block manages to provide valuable nature experiences. As the spatial potentials are in focus and not individual plants, that mostly implies checking that distances between buildings are sufficient and openings oriented towards natural areas.

A lot is written about how to achieve this "buzz" and one could get the impression that it is in a way "mystified" as we continue seeing projects, carefully planned by trained planners and architects, failing to achieve the urban life that they aimed for. The literature and research about urban life is extensive, and can thus not be covered here. Since this work takes on a spatial morphology perspective, looking mostly into the influence of material form on urban life, Hillier's "Space is the machine" is in focus here. His work provides fundamental findings, especially regarding the larger, neighbourhood and urban scales. Apart from space syntax theory, theorists and practitioners focussing on observation of people's behaviour are central in the discourse about public life. Two famous names of which are Jane Jacobs and Jan Gehl. Their findings are complementing the space syntax discussion in the way that they focus more on local design qualities, but also in the way that they contradict Hillier partly.

Grid configuration
 "Urbanity [...] is not so mysterious. Good space is used space. Most urban space use is movement. Most movement is through movement, that is, the by-product of how the grid offers routes from everywhere to everywhere else." (Hillier, 2007, p. 127) The main logic behind Bill Hillier's research and space syntax theory is that the configuration of space itself influences human movement. This basic movement, which is independent from other attractors, is so-called 'natural movement'. According to Hillier, it is the most powerful factor for urbanity to evolve and the necessary precondition for multiplier effects to develop: When people move in urban space, they have an origin and a destination, but they also pass through other spaces on the way. Which spaces it is they are passing through on the way, "is determined by the structure of the grid, even if the location of all the a's and b's is not." (Hillier, 2007, pp. 125–126) Therefore some locations have a higher potential for becoming lively spaces than others. To make use

of this, higher densities tend to develop at such spots, which in turn again increases the flow of people and that again attracts new development and usages. Through this "positive feedback loop", many different people are engaging in different activities in the same space and the so-called 'urban buzz' arises. From the start, the source for these multiplier effects is still the layout of the urban grid itself, Hillier argues (2007). In this context, I focus on the purely spatial aspects that provide prerequisites for certain usages and public life to emerge. Even though they have an effect, attractors and functions are not included in the analysis.

Grid configuration -> density -> more people -> diverse functions -> buzz

But how does spatial configuration influence movement? Hillier argues that people naturally have a linear perception and move in lines. For predicting movement, it is crucial how spaces are interconnected. Movement 'lines' meeting a building at an open angle are for example supporting the natural movement, as no strong shift of direction is needed and the field of vision changes slowly by moving along it, whilst lines meeting a building at a right angle are rather disrupting movement. (Hillier, 2007, p. 119) A high number of direction changes within a path means thus less potential for movement flows. (Hillier, 2007, p. 115) To measure these direction changes, one can use axial maps, consisting of axial lines, which are the longest possible straight lines through spaces. The number of links that are needed to reach all other spaces from an initial space expresses the 'depth' of that space, also called integration. "[...] the less depth from the complex as a whole, the more integrating the space, and vice versa", Hillier explains (2007, p. 25).

Density
& mixed use

Buzz

Network configuration

Flow
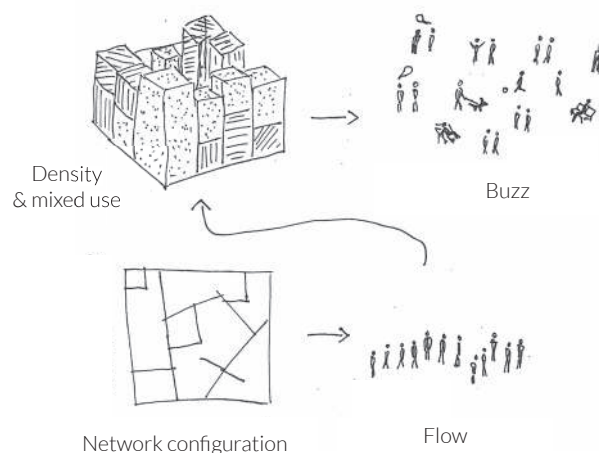
Urban buzz is experienced when many people engage in different activities in the same spaces. It emerges through mulitplier effects, which grid configuration is the base for. (Hillier 2007)

In space syntax, two main measures are used to express the topographic centrality of space in a network. Integration is also called closeness centrality and expresses "how many neighbouring spaces it connects to" (Hillier, 2007, p. 94). The parameter is mostly relevant for social encounter and other activity as it indicates how much movement of people can be expected. (Hillier, 2007) The second measure, betweeness, is also called choice centrality. It expresses how many routes a space is part of. A betweeness map points to the (topologically) shortest routes between central locations and indicates where most through movement is likely to occur. Betweeness has mostly larger scale relevance. (Cf. Spatial Morphology Group, 2018) To analyse networks regarding these parameters, the Place syntax tool in GIS can be used. Integration analysis is usually based on axial maps and betweeness on segment maps. Using 'angular integration', it is also possible to use segment maps of road-centre lines for both measures. This method is used here, since that material was available for both Amsterdam and Gothenburg from earlier research projects by the spatial morphology group (Berghauser Pont et al., 2017; E. Bobkova, Marcus, & Berghauser Pont, 2017).

Radii
 The "internal structures [of urban sub-areas] relate to the larger-scale system in which they are embedded" (Hillier, 2007, p.99). Therefore it is recommended to look at different scales. This is done by undertaking analyses with different radii (in steps or meters). A radius 3 analysis takes for example only into consideration "how deep or shallow each line is from all lines up to three steps away", a 1km radius analysis would show the integration of a line to all others within 1km distance. (Hillier, 2007, p. 99) Generally, integration measures pedestrian movement patterns on different scales, but Hillier states also certain relevance for vehicular movement. He explains that "local integration [..] is the best predictor of smaller-scale movement – that usually means pedestrian movement, because pedestrian trips tend to be shorter and read the grid in a relatively localised way – while global integration is the best predictor of lager-scale movement, including some vehicular movement, because people on longer trips will tend to read the grid in a more globalised way." Urbanity is a lot about different people engaging in different activities and this has to do a lot with different movements congregating. Where more local and global centrality

converges, there is an interface between "internal movement […] in-out movement and through movement and locals and passers-by meet. (Hillier, 2007, p. 101) Hillier says, central areas usually have both a strong local structure and interact with the global system.

In the context of this thesis, the parameters betweeness with a radius of 3,5km and Integration with a radius of 1km are considered, as research by the Spatial Morphology Group has shown that these together provide comparable results for the 'liveliness' of different European cities (Stavroulaki, Bolin, Berghauser Pont, Marcus, & Håkansson, 2019).

Thresholds / Ideal value
So how should a network ideally look like to support urbanity? Is maximum integration and betweeness the aim? Hillier states, that a network should most importantly be understandable and not too 'deep'. "Good urban space has segregated lines", but these should be in close proximity to integrated lines, in order to achieve a mixture on local level. (Hillier, 2007, p. 130) By the example of the city of London, he explains that a space structure can even be 'broken up' into small units and still be easy to orientate in. One strategy to achieve this combination is the 'two-line-logic', he describes. If the grid is not so "deep" and you can reach from every 'line' another line that takes you out if the back streets or toward a significant space, the space pattern is understandable. Also slight changes of direction, which, according to Hillier, are common in historic cities, are following the "two-line logic". "[..] The functional implication of this technique is to "access [..] the stranger to the heart of the city", he states (2007, p. 118). If grids are broken up in a way that one looses the visual connection between sub-spaces - that means the next sequence is not visible from where one stands - spaces are less intelligible and with that also less integrated.
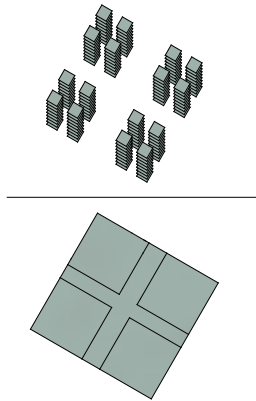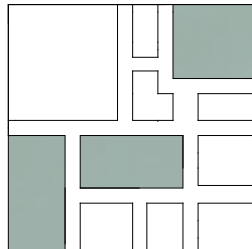
High floor space index (FSI)

$$= F/A$$
= gross floor area (m²) / area
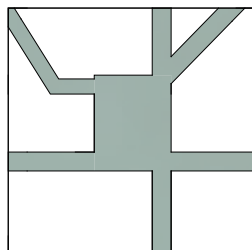of aggregation (m²)
Unit: m² / m²
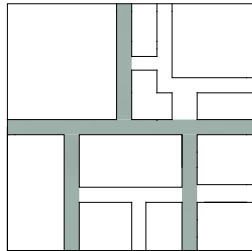
HIGH CENTRALITY

Meassured by
Integration (Radius 1km)
Betweeness (Radius 3,5km)

MEDIUM ISLAND SIZES

Large blocks support intensity.
Small blocks support interaction.

WELL-INTEGRATED
PUBLIC SPACES

Adjacent to highly integrated
streets, with good visibility.
(Cf. Hillier 2007, Gehl 2011)

Well-integrated public spaces
Squares and similar focus points in the spatial network play an important role for the experienced public life. Jan Gehl founds in his observatory studies that a human scale size and design is important for functioning public spaces, as is strong edges people can place themselves at to observe public life. (Gehl, 2011) As the primary activity of those who stop to sit in urban spaces seems to be to watch others pass by, Hillier stretches the importance of placing squares in a strategic location in the network, where many people move. He criticizes that spaces are often designed as local elements, with focus on nice edges and too little focus on the visibility field from the space. According to him, public spaces "close to, but not actually lying on, the main lines of movement are optimal". (Hillier, 2007, p. 123)

High floor space index
Urbanity needs density for two reasons. Firstly, a critical mass of inhabitants is needed to make public life possible. Secondly, in high-density areas, more floor space can be reached within shorter distances. The high accessibility for walking and biking increases the flow of external people as a by-product. (Hillier, 2007) User density consists of on the one hand, population density and on the other hand, external people being present in an area. Referring to Jane Jacobs and Eduardo Lozano, Berghauser Pont and Haupt name some thresholds for how density and urbanity are correlating: This categorization says that a minimum of 130 dwellings / 260 inhabitants per hectare or an FSI of 2.0 is needed to be able to supply a variety of functions for the dwellings. Between 350-700 inhabitants / 175-350 dwellings per hectar or a FSI between 2.2-4.4 would be needed for 'urbanity' to emerge. (Berghauser Pont & Haupt, 2010, p. 229) The presence of external people is dependent on how accessible an area is by different transportation means. Berghauser Pont and Haupt argue that in areas with higher densities, more floor space can be reached within shorter distances, even to such high degree, that bikes and pedestrians for example have a greater catchment in dense inner-city environments than car transport has in some sparse environments (2010).

Medium island size
Network ratio, or how dense the network is, is a crucial aspect of urbanity, as it influences both intensity and interaction. As Berghauser Pont and Haupt explain, large blocks lead to intensity, since a concentration of programme and a low percentage of public network space (network ratio) concentrate movement. Small blocks support interaction: Here, the network density is higher, creating more choice of routes (better pedestrian and bike connectivity) and a higher number of intersections, which means more flows crossing and potential for interaction. The total length of facades exposed to the public space is higher, meaning more possibilities for public or commercial functions to interact with people. To achieve urbanity, these contradicting aspects need to be balanced out carefully. (Berghauser Pont & Haupt, 2010)

Referring to the importance of the choice of path, Ståhle et al. recommend islands not to be larger than 7000sqm in average (Ståhle et al., 2016). That corresponds for example with the dimensions of an 84x84 meters square. Comparing this measure to Gothenburg's and other European inner city blocks, this size seems comparably rather low. In Haga, Gothenburg, islands sizes vary for example between 6000-14000 square meters, and in the lively commercial centre in Inom Vallgraven , blocks can be around 25 000 square meters. In Amsterdam's inner city, blocks are often narrow, but long – up to 250 meters.
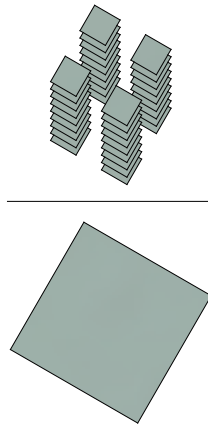
HIGH FLOOR SPACE INDEX (FSI)

= F/ A
= gross floor area (m²) / area
of aggregation (m²)
Unit: m² / m²
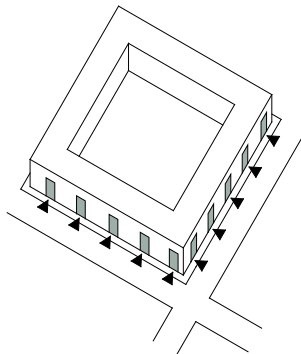
FREQUENT ENTRANCES
FACING THE STREET

To increase the variety of different
flows in the same space
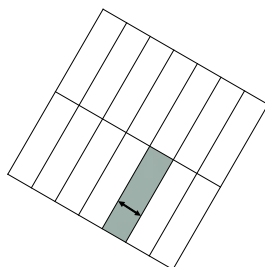
NARROW PLOTS

Supports mix of functions
Supports frequent entrances

On island level, a high floor space index, narrow plots and frequent entrances to the street could be identified as most relevant preconditions for public life to evolve. Mixed use itself s not included, since I focus on the spatial potential. In the site-specific design however, it is considered that active frontages require a certain ceiling height and possibly deeper buildings.

High floor space index
As described in the parameters for the neighbourhood scale, urbanity needs density for having a critical mass of people within an area and since in high-density areas, more floor space can be reached within shorter distances. Especially for the latter, also the island scale matters, in order to create a continuous density and much accessible floor space. (Cf. Berghauser Pont & Haupt, 2010)

Frequent entrances
A spatial technique Hillier describes to achieve a relaxed co-presence of people living in an area and people passing by is to create a "two way relation from the convex spatial element: one into the building, the other to the larger scale through the line structure." (Hillier, 2007, p. 118) This can be achieved by placing entrances to face the street space (and ideally a culture that opens up the inside space towards the public space). Interfaces between the people inside and outside, "between those who are using the space outside the buildings, and those who are passing through", emerge. (Hillier, 2007, p. 118) Gehl et al. agree to the positive effect of frequent entrances for the reason that they would contribute to a human scale design (as other vertical façade design would), which in turn makes space more attractive to pass through and more lively (Gehl, Kaefer, & Reigstad, 2006).

Narrow / small plots
As Bobkova et al. argue in the study 'Multivariable measures of plot systems', a large number of individual plot units provides the potential for different land owners and a diversity of functions to develop, which in turn contributes to lively public space (see previous chapter) (E. Bobkova, Berghauser Pont, & Marcus, 2017). To meet the needs of different usages, also different sizes would be needed. I aim specifically at narrow plots, as that is likely to contribute to an interesting, small-scale streetscape (Gehl et al., 2006). For the sake of convenience, size is used as measure in the analyses instead of width as those two usually correlate. Gothenburg municipality recommends a maximum plot size of 2000 square meters / Spacescape & Göteborgs stad, 2018).

Coverage
As the number of people in a space in general is having an influence on urbanity, coverage (GSI) is relevant. It indicates how many dwelling are 'sharing' how much private open space, and thus says something about potential crowdedness (regarding inhabitants) (Berghauser Pont & Haupt, 2010). The authors mention that Jane Jacob's recommendation for lively neighbourhoods would be a coverage of 60-80 percent (of a plot or island), in combination with a high floor space index (FSI) and small percentage of public network space (Berghauser Pont & Haupt, 2010, p. 231). Coverage is however not included as seperate parameter here, as it can be assumed that other parameters, namely narrow plots, high floor space index (island), frequent entrances to the street and high physical enclosure (>private retreat) make sure that coverage is held high.
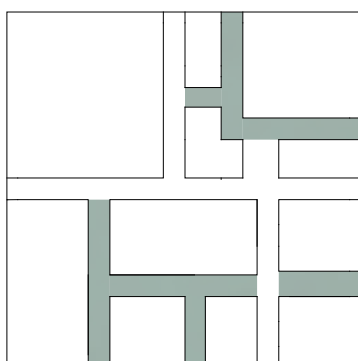
LOW INTEGRATION

Measured by
Integration (Radius 1km)

PRIVATE RETREAT
NEIGHBOURHOOD SCALE

Under the term 'private retreat', I summarize experiences that have to do with feeling ownership and the possibility to withdraw oneself. What is needed for that experience varies between different people, cultures and situations. Privacy can mean solitude, but can also be shared to a certain degree. To meet different needs, spaces with different degrees of privacy should be available. Similarly, whether ownership (for spaces) is experienced is personal and cultural.

Most of the information presented here is based on Eva Minoura's dissertation 'Uncommon ground' in which she analyses how spatial factors work together to shape territories, focussing on shared housing yards. Minoura examines how the spatial form influences how spaces are used and whether inhabitants feel attachment/ownership for them. Generally, she finds that the experience of privacy and ownership is closely connected to spatial configuration,

especially regarding physical and visual boundaries and the presence of other people in a space (Minoura, 2015). The degree of visual, and physical access should be limited, as the group of people having access should. (Minoura, 2015)

Low integration
The aspect that is influenced most on neighbourhood level is the crowdedness of space. – Network configuration influences the movement path of people (see chapter 'public life'). Low network integration and few points of entry are reducing the number of people and especially strangers in a space and are therefore perceived as positive for safety and sense of ownership (Minoura, 2015). The measure of Integration with a radius of 1km is most relevant, since it can be assumed that if integration on such local level is low, betweeness tends to be low as well. Since both analyses are conducted anyways, this can also easily be crosschecked.
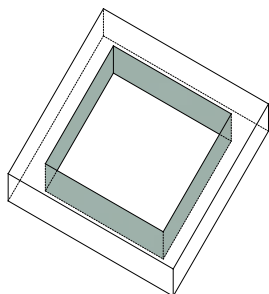
PHYSICAL ENCLOSURE
of outdoor spaces
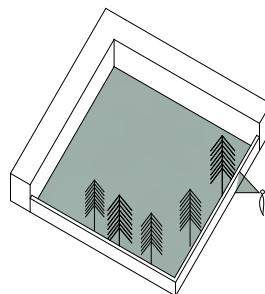
LOW VISUAL EXPOSURE
of outdoor spaces
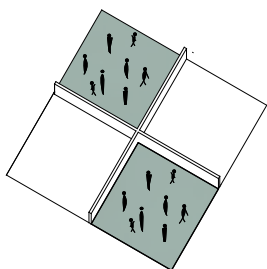
SMALL GROUP SHARING
a defined space
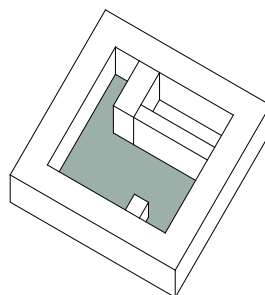
LARGE ABSOLUTE SIZE
of continuous shared space
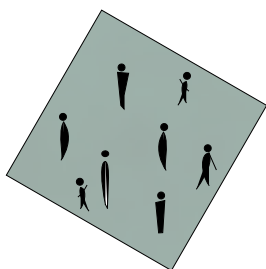
SPACIOUSNESS (OSR)
Relative amount of open space per gross floor area

OSR= 1- (GSI / FSI)

GSI = ground coverage
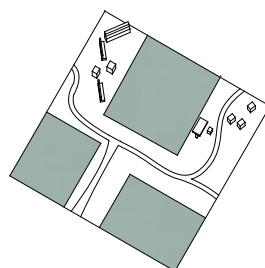
LOW DEGREE OF PROGRAMMING
facilitates appropriation

PRIVATE RETREAT
ISLAND SCALE

Minoura stretches the importance of the island scale for privacy and explains that it has become forgotten in modernist planning, which focused on the neighbourhood scale. As a result, "[..] the collective space of yards was scaled up in building-in-a-park schemes to be nearly indistinguishable from public land" (Minoura, 2015, p. 23). Buildings within a fluid landscape created a more loose relationship between building and open space around it and the unit of communities is scaled up. According to Minoura, this has negative consequences for the experience of community and privacy and ownership (Minoura, 2015). She sees common spaces as an important supplement to public and private spaces. Even if she remarks that different groups of people have different recreational needs and preferences, she states that a park and a yard or garden generally fulfil different social purposes and that both more private and more public outdoor spaces are needed, in order to provide sufficient green environments for residents.

Minoura's case studies (interviews and spatial analyses) showed that privacy and ownership – or appropriation - is generally about negotiating the interface between different 'territories'. Some spatial aspects were found to be essential for whether privacy and ownership are experienced: Physical accessibility and visual exposure are central issues, but also "size of the spaces framed (both in absolute terms and relative to population)" and the degree to which space is programmed. (Minoura, 2015, p. 20) Minoura remarks though that these findings are not determinative and that different contexts require different measures (2015).

High physical enclosure
Openly designed yards lead to a higher accessibility for strangers. Minoura describes that such spaces are "more difficult for residents to appropriate and feel responsible for" while closed blocks support sense of ownership. (2015, p. 18) Plus, enclosure is crucial for perceiving a space as own entity, separated from the public space and thus can allow for other kinds of activities. This finding goes in line with Jane Jacobs, who already advocated for a clear demarcation between public and private (1992). For the same reason, Minoura criticizes buffer zones: Where the interface becomes blurred, and there is confusion about what a space is intended to be used for and whose it is, it consequently remains unused and not appropriated. As a threshold, at least 85% enclosure is suggested, preferably provided by built structures. It can partly be achieved by secondary enclosure (e.g. hedges or fences), but that might influence visual exposure and thus be an issue for privacy and solitude. (Minoura, 2015) While enclosure is critical for ownership, it is not necessarily for privacy: Minoura found that a lack of enclosure did not disturb people from finding peace and quiet. In the cases she studied, people did not feel disturbed by other users and spontaneous meetings. She claims however that this might be the fact since "the type of relaxation sought in yards is not dependent on solitude" (Minoura, 2015, p. 256). Since my aim is to create possibilities to private retreat that can be found in own

gardens, not only that of shared yards, it can be assumed that more seclusion is needed - either within shared areas or in the form of separate individual spaces.

Low visual exposure
A related issue is visual exposure. If a space is clearly defined and enclosed, but very exposed visually, ownership might be high, but privacy low. Limiting visual access is necessary for the experience of privacy. The "need for controlling exposure" depends on the location in the network, which affects whether few or many people are likely to pass by (see neighbourhood scale). (Minoura, 2015, p. 116)

Small group sharing
Sense of ownership builds on the feeling of being part of a certain group. If a lot of people share a space, this group becomes too large to be understandable. Keeping the number of people sharing a certain space low is essential building attachment and ownership (Minoura, 2015).

Large continuous space
Small, enclosed yards risk to get appropriated by some few residents, reducing the sense of ownership for others. If spaces become for small, they can still have qualities as they for example offer a nice view, but seldomly serve as open space used collectively. What's more, Minoura finds that size also has a relevance for privacy: "[...] size correlates to finding peace & quiet" (2015, p. 256). If a space is too small, for a too large number of people, that becomes a problem. In Minoura's case studies, yards that both support use and ownership were often of 0,4-07 hectares in size. In smaller yards than this, enclosure impacts use negatively. Yards smaller than 0,05 hectares are in risk of just being occupied by some few residents and are perceived as private, individual spaces. The 'Mäta stad' guide recommends 0,15 hectares as minimum size for a connected area in order to be able to house a variety of functions (Ståhle et al., 2016).

Spaciousness
For frequent usage, not only absolute size, but also and most importantly, the relative size, or space per person, is influential. This aspect is included as I see use as the base for private retreat. Ownership and privacy partly becomes pointless, if the space is not used or usable in the first place. For the sake of convenience, I use the amount of open space per gross floor area as spaciousness measure. Ståhle et al. recommend 0,2sqm private open space per square meter gross floor area in their planning guidelines (2016).

Low programming
There is a risk in over-planning: As Minoura's case studies show, spaces where functions are 'over-determined', e.g. by a lot of fixed furnishing, are less used and the possibilities for inhabitants to appropriate them themselves are reduced. It is suggested to keep the degree of programming rather low, to increase both use and ownership (Minoura, 2015).

ASPECT	QUALITIES *What to gain*	PARAMETER *How to measure*	SCALE
Housing many	Providing living and working space	High floor space index (FSI)	Neighbourhood, Island
		Suitability for small flats	Island
Public life	Critical mass of people Accessibility of floor space	High floor space index (FSI)	Neighbourhood, Island
	Urbanity experience	Proximity to locations with high integration value	Neighbourhood
	Intensity and interaction	Medium island size	Neighbourhood
	Attractiveness to stay	Location of public squares: adjacent to well-integrated streets, good visibility.	Neighbourhood
	Different flows of people	Frequent entrances facing the street	Island
	Functional mix Frequent entrances Human scale facade design	Narrow plots / small plots	Island
Nature experience	Accessibility of green / nature area	Metric proximity from all areas to closest green area of min. 2000 sqm	Neighbourhood
	Usibility (Recreational value)	Topological proximity from all areas to closest green area of min. 2000 sqm	Neighbourhood
	Recreational value and ecosystem services	Large amount of natural surface	Neighbourhood, Island
	Close relation to the outside	Easy physical access to the outside environment	Island
		Visual connection from dwelling to natural elements	Island
Private retreat	Experienced privacy	Low integration values (incl. low global integration - noise)	Neighbourhood
		Low visual exposure	Island
		Spaciousness	Island
	Experienced ownership, possibilites for appropriation	High physical enclosure	Island
		Low degree of programming	Island
		Small number of inhabitants sharing a space	Island
		Large absolut size of continuous shared space	Island

Legend:
⌂ *Neighbourhood*   ▱ *Island (block)*

THRESHOLDS

PARAMETER	RECOMMENDATIONS	SOURCE	EXAMPLES, COMMENTS
Floor space index / Population density	15 000 people / sqkm	Göteborg Stad & Spacecape (2018) Ståhle et al. (2016) based on UN habitat	Vasastan, Gothenburg
	FSI min. 2,0 (island) FSI min. 0,75 (district)	Ståhle et al. 2016, based on UN habitat	*for areas within 800m of tram / public transport
	FSI min 1.0 (district)	Göteborg Stad & Spacecape (2018)	
Medium island size	min. 150 intersections per sqkm, implies an average max. size for islands of 7000sqm (e.g. 84x84m or 50x140m)	Ståhle et al. (2016)	Jordaan, Amsterdam: Long, narrow blocks of e.g. 80x200m Haga, Gothenburg: mixed sizes, e.g. 70x90m or 100x130m Inom Vallgraven, Gothenburg: large blocks of e.g. 250x100m
	max. 100m island length in the inner city, max. 200m island length in other urban areas	Göteborg Stad & Spacecape (2018)	
Narrow plots	max. plot size 2000sqm	Göteborg Stad & Spacecape (2018)	
Frequent entrances facing the street	min. 5 entrances per 100m (20m distance)	Ståhle et al. (2016)	
	max. 15m between entrances at main paths	Göteborg Stad & Spacecape (2018)	
Proximity from all areas to closest green area	max. 200m	Göteborg Stad & Spacecape (2018)	
Proximity from all areas to larger green area	max. 1km		
Few topological steps to closest green area	max. 2 steps for good illegibility	Hillier (2007)	Hiller's two-step logic is comparable
Spaciousness	20sqm per 100sqm GFA 22-25 sqm per flat	Ståhle et al. (2016)	
	min. 10sqm public open space + min 10sqm private open space per flat	Göteborg Stad (2018)	Göteborg Stad currently reviews their own thresholds.
Natural surface	min. 25% vegetation area per island	Ståhle et al. (2016)	Comparable with potential vegetation area
Physical enclosure	min. 85% enclosure of shared private space	Minoura (2015)	
Size of continuous shared space	well-performing yards are often between 4000-7000sqm negative effect if smaller than 500sqm	Minoura (2015)	
	min. 1500sqm shared, private yard	Ståhle et al. (2016) Göteborg Stad & Spacecape (2018	

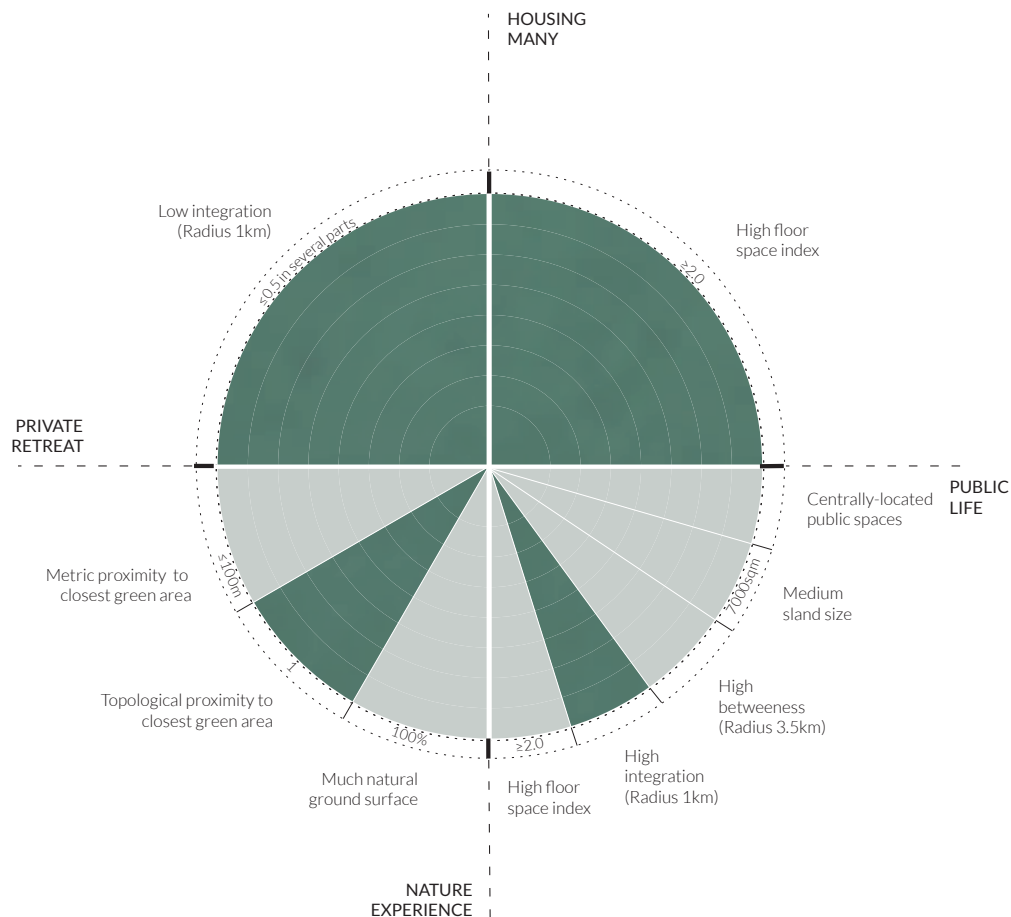# ASSESSMENT & HIERARCHY
NEIGHBOURHOOD SCALE

All parameters are summarized in assessment diagrams - one for the neighbourhood and one for the island scale. These are used firstly, to assess reference projects and later on to assess own design configurations. The slices of the circle can be filled according to the performance of a project regarding each parameter. Here, the circles are shown filled all the way to the outer ring, which would imply an extraordinarily good performance regarding all parameters (– which is supposedly not possible to achieve though).

To make assessments comparable, maximum values are shown, that express what a "full slice" means. These are set by comparing typical values appearing in reference projects and thresholds found in literature and practice. To be able to show extraordinarily good performances and not set the limit at the minimum threshold, the maximum was often set at about 200% of the threshold. This differs where such a high scale would make it impossible to visualize the real performance of projects. A 'equals or higher' / 'equals or lower' expression is used in some cases, where more extreme values can appear,

but these does not seem relevant to achieving the desired qualities.

The colours indicate hierarchy and relevance: Based on theory and the reference analysis (chapter 3), the dark green parameters can be defined as the ones that need to be considered first and most importantly in designing. They showed to set the frame for the central qualities to develop, whilst the ones coloured in light green are easy to realize (often on smaller scale) within that or do not show a significant effect on the performance.

Aspects that could be identified as central based on theory for the neighbourhood scale are floor space index and network configuration. The reference project analysis confirmed their importance for the character of an area. Island size does not show such a large impact in the reference projects, as permeability can be solved within an island. Creating natural surface and centrally located green areas and other public spaces can probably be solved as a second step, within an overall network layout.

ASSESSMENT & HIERARCHY
ISLAND SCALE

Regarding private retreat, several parameters have shown high importance in the theory review. Physical enclosure, spaciousness and the size of the group that is sharing seem to have the strongest influence on typology and need to be considered firstly. The continuous size of a space would also be such a large-scale aspect, but theory has shown that it is mostly relevant that a certain threshold is reached here. The performance regarding the remaining private retreat parameters can also be tweaked on smaller scale.

For housing many, it is obvious that floor space index captures the main aim.

Regarding urban life, the references show that narrow plots are not necessarily needed for achieving small units and frequent entrances, but plots division can be a tool for assuring these features in new projects.

For nature experience, how access between inside and outside is organized has a high impact on possible typologies. Natural surface can partly be organised later (if roofs are included), and with that also the visual connection to green. It has to be considered though that typologies that require a lot of paved circulation spaces around them reduce the amount of possible natural surface.
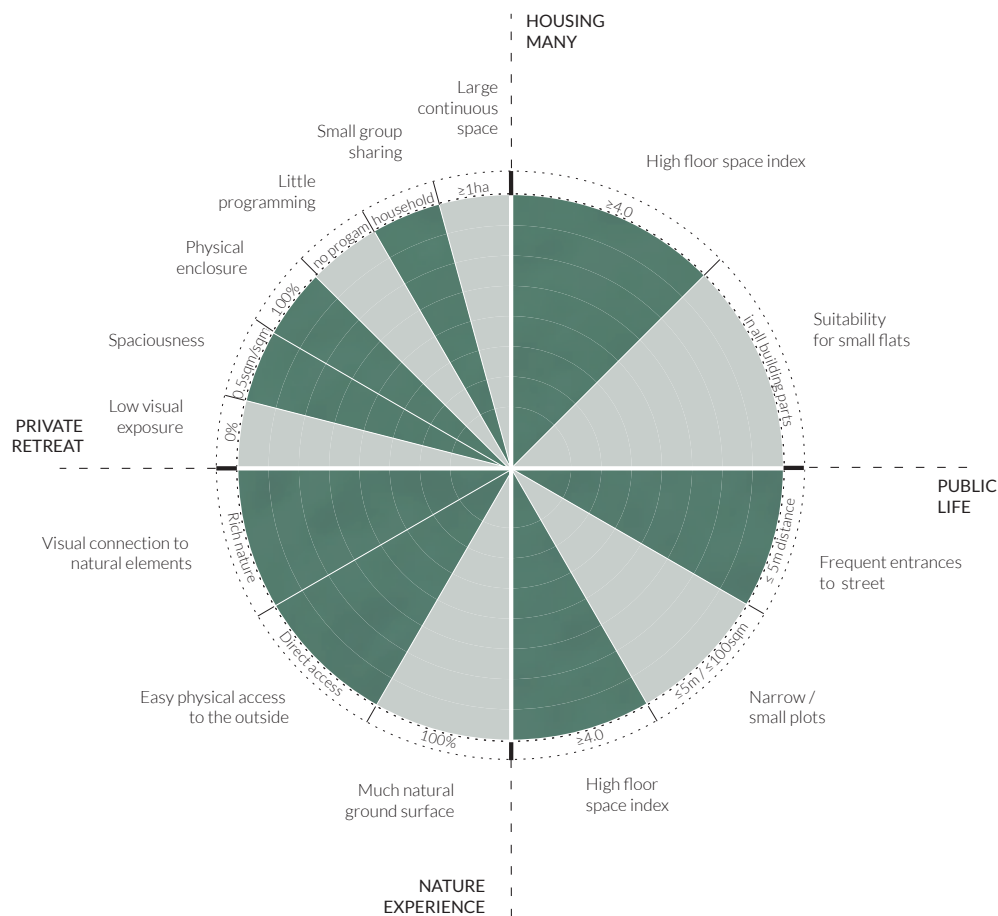
INTERRELATIONS
NEIGHBOURHOOD LEVEL

The diagrams visualize the interrelations I identified between the parameters. To come to conclusions, it was asked: If the value of this parameter changes, what more changes? These diagrams are used as support in the design process, in order to anticipate the effect of design decisions on the performance of the parameters.

HOUSING
MANY

Low integration
(Radius 1km)

High floor
space index

PRIVATE
RETREAT

Centrally-located
public spaces

PUBLIC
LIFE

Metric proximity to
closest green area

Medium
sland size

Topological proximity to
closest green area

High
betweeness
(Radius 3.5km)

Much natural
ground surface

High floor
space index

High
integration
(Radius 1km)

NATURE
EXPERIENCE
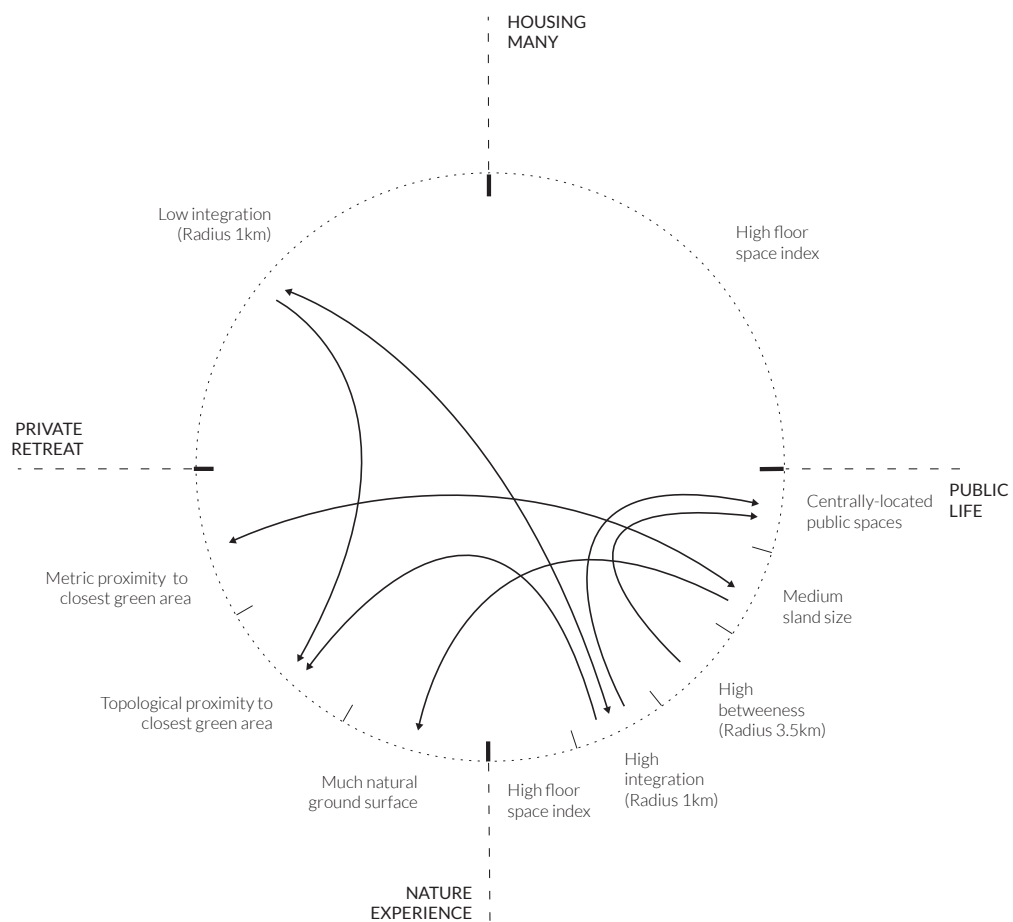
INTERRELATIONS
ISLAND LEVEL

HOUSING
MANY

Large
continuous
space

Small group
sharing

High floor space index

Little
programming

Physical
enclosure

Suitability
for small flats

Spaciousness

Low visual
exposure

PRIVATE
RETREAT

PUBLIC
LIFE

Visual connection to
natural elements

Frequent entrances
to street

Easy physical access
to the outside

Narrow /
small plots

Much natural
ground surface

High floor
space index

NATURE
EXPERIENCE

03: LEARNING FROM ...

Zaanhof

Westerdok

GWL Terrein

Java-eiland

Funenpark

Borneo-Sporenburg

De Pijp

Scale 1:35 000

APPROACH & CHOICE
OF REFERENCE PROJECTS

Reference projects serve as a central source of inspiration in this work. They give insight into how different designs actually work in reality and what spatial experience they create. To be able to really experience this, I visited most areas and buildings presented here in person (all in Amsterdam, Malmö and Milan). One has to keep in mind that these impressions are subjective and dependent on factors such as weather, time and season. Cause and effect of a performance cannot be clearly defined. It is difficult to draw general conclusions, but by comparing several cases and taking the context into consideration, I can at least get inspired and identify certain patterns.

The majority of reference projects are retrieved from Amsterdam, Netherlands. The Netherlands is a highly urbanized country with densely built cities, but at the same time known for their small scale built structure with great living qualities. In Amsterdam, several interesting building typologies can be found that combine density and a lively urban environment with calm, green and more private spaces. There are of course the traditional narrow urban row houses and modern interpretations of those, that combine strong private units and direct access to the outside density, but there can even be found numerous areas with other interesting approaches to balance privacy and public life and density and greenery, such as 'block in a block' typologies like Zaanhof, and combinations of long blocks with freestanding buildings in greenery, like in GWL Terrein or Funenpark.

The detailed analysis is limited to cases that are interesting on larger scale and to the city of Amsterdam, to be able to base it on the same dataset. In order to complement and compare the findings with Swedish, contemporary planning and not miss out on other relevant inspiration, some additional cases are reviewed shortly. These include Bo01 in Malmö, 79&Park in Stockholm, Bosco verticale in Milan and Funenhof in Amsterdam.

The analysis is built up as follows: Each case is presented shortly and it is described how it performs regarding the parameters. First, this is done for one representative island. Where the interplay between the islands seems important for the design and one island cannot represent all central design strategies, several islands are analysed and evaluated. Here, the parameters are assessed based on average values. The islands units are digitally defined by joining adjacent plots. The plot information is retrieved from the GIS material, created by the Spatial Morphologies group in previous projects (J. Bobkova, Marcus, & Berghauser Pont, 2017). Due to the automatic generation of the plots, where the street area is taken away, in some cases (where public and private blend into each other) the plots do not seem correct, so the plot borders had to be estimated due to the physical character (e.g. hedges).

Those parameters that are most valuable in the way as they can inform general design strategies are looked at more closely and visualized in maps and axonometric drawings. On the island scale, this includes public, private shared and private individual spaces, entrances, natural surfaces, floor space index (FSI) per island, spaciousness per island (OSR) and plot sizes. Additionally, some values (that do not require visualization) are simply retrieved from files by the Spatial morphologies group (Berghauser Pont et al., 2017; J. Bobkova, Marcus, et al., 2017) or the digital 3D-model I created myself. These include the average FSI per island (GIS), the average spaciousness per island (GIS), the absolute size of interconnected shared space (3D-model), the percentage of natural ground surface (3D-model) and usual plot widths. The remaining parameters are assessed based on estimation and personal impressions from the site visit.

For analyses on neighbourhood level, areas are defined based on similar building typologies and/or larger gaps or barriers in the built structure. In cases, where the structure of the reference project is very distinct, some adjacent islands are added to the neighbourhood scale, in order to account for the areas interplay with the direct surroundings either way. For aspects regarding the network as a whole, no specific area needed to be chosen. Those aspects are simply visualized in maps of comparable scale.

On the neighbourhood scale, the most central aspects that are visualized in maps include centrality (measured by integration of 1km Radius and network betweeness for a 3,5km radius), island sizes, and the integration of open space. Since I do not have detailed green space data, the latter substitutes for attraction reach analyses of green spaces. Floor space index for a neighbourhood as a whole (including network space) is simply retrieved as value from the GIS file. As base area for this calculation, polygons are drawn, defining a "neighbourhood". The amount of natural surface in the area could not be assessed in detail and is thus excluded from this analysis.

NEIGHBORHOOD SCALE

HOUSING MANY

Low integration (Radius 1km)

High floor space index

≥2.0

PRIVATE RETREAT

PUBLIC LIFE

Centrally-located public spaces

Metric proximity to closest green area

Medium island size

≤100m

700m²

Topological proximity to closest green area

High betweeness (Radius 3.5km)

100%

≥2.0

Much natural ground surface

High integration (Radius 1km)

High floor space index

NATURE EXPERIENCE

ISLAND SCALE

HOUSING MANY

Large continuous space

Small group sharing

High floor space index

Little programming

≥1ha

≥4.0

Physical enclosure

no program/ household

Spaciousness

ln ≥1 building/person

Suitability for small flats

Low visual exposure

6 seg/sqm

100%

PRIVATE RETREAT

0%

PUBLIC LIFE

Visual connection to natural elements

≤ 5m distance

Frequent entrances to street

Rich nature

Direct access

Easy physical access to the outside

≤5m / ≥100sqm

Narrow / small plots

100%

≥4.0

Much natural ground surface

High floor space index

NATURE EXPERIENCE

FUNENPARK, AMSTERDAM
ARCHITECTS: ARCHITEKTEN CIE, LANDLAB ET. AL | YEAR: 1999-2013

Funenpark is a housing area consisting of several low-rise point houses in open landscape and a long apartment block functioning as a shield between railway and housing. Fences and the long building define the park-like area, but with a size of 8,5ha, the area is rather large and most spaces little enclosed. The whole area constitutes one large island and fences support the private character, but due to publicly accessible paths, the permeability is high anyways. Additionally to the continuous shared area, some buildings have individual private spaces attached to them. Often, there are no clear borders between the shared, almost public and the individual space. In some places, it is unclear whether you are entering somebody's space. Private objects are just placed outside of doors and windows but they seem partly out of place and exposed. That is likely because the private zone is not limited in how far it can spread and the public zone is not held back. - The public character spreads thus all the way to the buildings. Some apartments have terraces, but most privately used spaces are simply occupied by the inhabitants and have no defined border to the shared area. On less central paths through the area, the shared space is narrow and overlooked by buildings. Here, a more intimate feeling evolves and appropriation of outdoor spaces can be seen. One could draw the conclusion, that if a space with strong public character is directly adjacent, a clear definition or border to the private space is needed to make appropriation and ownership possible and not intrude privacy.

Some buildings in the area have architectural qualities that are especially interesting for the research question: One building is divided in two by an open air corridor in the middle. The private outdoor space is oriented outwards. This gives a feeling of seperate dwellings with private exterior doors, without requiring extra space. It strengthens the

relation between inside and outside. This logic works even with several stories: Behind some doors, there is a staircase, leading directly up to the second floor. Even though the space in between the houses is narrow, privacy is supported. Being placed perpendicular to the street space, the corridor is is not within a movement flow of people and does not become a shortcut. A slight height difference and change of material between open corridor and surroundings underline the distinction. As windows are placed on ground floor level and facing each other, the privacy towards other neighbours is however low. If this is regarded a problem depends, amongst other things, on the cultural context.

Another building at the main path has a lower, one-story part along the street with roof terraces on top. I experienced these low terraces as a good compromise: They provide more privacy than the small, highly exposed zones along the facades, but do not hide away people, as higher roof terraces would do. It seems like they contribute at least to a certain extend to a lively street space and eyes on the street.

Neighbourhood measures
Spaciousness (with tare): 0,50
Floor space index (with tare): 1,36
Island sizes: 8,5ha (large one), 1500-300 (surroundings)

Island measures (1 analysed)
Floor space index : 1,43
Spaciousness (without roofs): 0,47
Plot sizes: Outer block 8945sqm, others 400-800sqm
Plot widths: Along the whole island
Size of continuous shared space: 3,8ha
Distance between entrances: about 10m
Percentage of natural surface (incl. roofs) : 33%

RURBANITY STRATEGIES
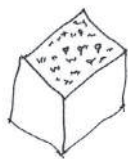
Green roofs improve
biodiversity & microclimate
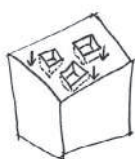
Lowered terrasses for
privacy & easy access out
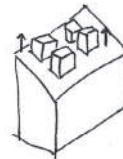
Continuous roofspace
with access from flats
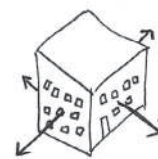
Free-standing
volumes for view
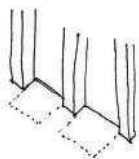
Recess in wall for enclosure
& visual protection
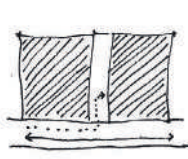
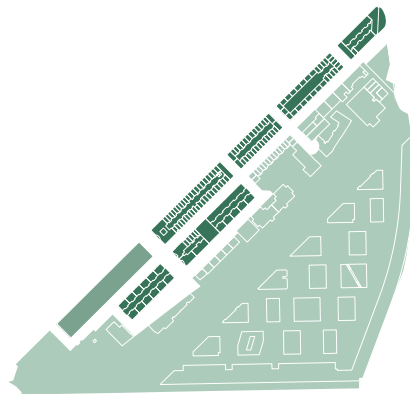Open corridors
for ownership & access out
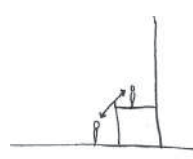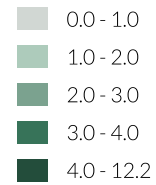
Raised terrasses for
privacy & lively streets

Usibility and permeability
by public character

PUBLIC AND PRIVATE
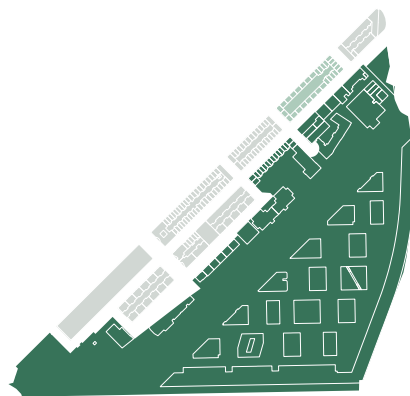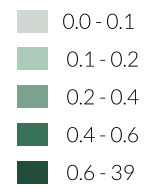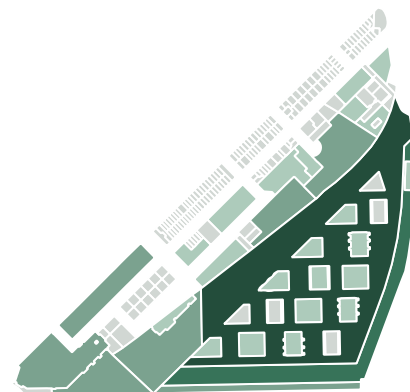
■ Individual, private use
■ Shared, private use
□ Public use
■ (Public) water
◀ Main entrances

NATURAL ELEMENTS

■ Natural surface
■ Water

FLOOR SPACE INDEX

0.0 - 1.0
1.0 - 2.0
2.0 - 3.0
3.0 - 4.0
4.0 - 12.2

Scale 1:9000

SPACIOUSNESS (sqm/sqm)

0.0 - 0.1
0.1 - 0.2
0.2 - 0.4
0.4 - 0.6
0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

0 - 500
500 - 2000
2000 - 6000
6000 - 15000
15000 - 31718

Scale 1:9000

INTEGRATION (Radius 1km)   Scale 1:12000

— 0.00 - 0.75   — 1.00 - 1.25
— 0.75 - 1.00   — 1.25 - 2.00

BETWEENESS (Radius 3,5km)   Scale 1:12000

— 0 - 200000   — 400000 - 600000
— 200000 - 400000   — 600000 - 4959436

Integration (R1) overlayed with open space   Scale 1:12000

— 0.00 - 0.75   — 0.75 - 1.00   — 1.00 - 1.25   — 1.25 - 2.00   ▨ Open space

ISLAND SIZES (sqm)

▨ 113 - 3500
▨ 3500 - 7000
▨ 7000 - 10000
▨ 10000 - 15000
▨ 15000 - 86000

Scale 1:9000

NEIGHBORHOOD SCALE

HOUSING
MANY

Low integration
(Radius 1km)

≤0.5 in several parts

High floor
space index

≥2.0

PRIVATE
RETREAT

Centrally-located
public spaces

PUBLIC
LIFE

Metric proximity to
closest green area

≤100m

700-3.4m

Medium
island size

Topological proximity to
closest green area

High
betweeness
(Radius 3.5km)

100%

≥2.0

High floor
space index

High
integration
(Radius 1km)

Much natural
ground surface

NATURE
EXPERIENCE

ISLAND SCALE

HOUSING
MANY

Large
continuous
space

High floor space index

Small group
sharing

≥1ha

≥4.0

Little
programming

no program / household

Physical
enclosure

100%

Suitability
for small flats

level building parts

Spaciousness

0.5sqm/sqm

Low visual
exposure

0%

PRIVATE
RETREAT

PUBLIC
LIFE

≤5m distance

Visual connection to
natural elements

Rich nature

Frequent entrances
to street

Direct access

≤5m / ≥100sqm

Easy physical access
to the outside

Narrow /
small plots

100%

≥4.0

Much natural
ground surface

High floor
space index

NATURE
EXPERIENCE

BORNEO SPORENBURG, AMSTERDAM
ARCHITECTS: WEST8 ET AL. | YEAR 1993-1996

Borneo-Sporenburg is a row house neighbourhood, located on two peninsulas. In the northern part, the main entrances are located towards a street in the middle. One building row has privately used backsides, facing another waterfront street, only consistent of a door out and a small, appropriated zone within the public street space. The other – the probably most famous and recognizable row - has private, individual zones reaching all the way to the water. Each unit here has an own little terrace or pier and thus an extraordinary close contact to nature in the form of water. At the street, adjacent to the main entrances, there can be seen further signs of private use of the public space. - Inhabitants have placed some flowerpots and furniture on the walkways, as it is common in Amsterdam.

On the southern peninsula, two building rows are directly adjacent to each other and both main entrances and private outdoor spaces are facing the public street space along the waterfront. Some dwellings make use of the public street space in front of the house for placing furniture and for example playing. Others have slightly raised terraces. Due to the height difference, the border to the public becomes clearly defined, whilst the people using the terraces still contribute to the street life and "eyes on the street". Parents can for example sit and contemplate their children playing and neighbours see each other, but have some physical enclosure and distance between them. In some areas, two dwelling units are placed on top of each other. Here, both (slightly raised) ground floor and second floor are accessible by narrow outdoor staircases between dwellings, which implies fewer entrances directly facing the street.

In general, the connection to the outside can be considered strong in the whole area, as the buildings are low and have outdoors spaces on different levels. It is easy to get outside and to experience the surrounding water. However, there is a significant lack of larger open spaces that can be used for recreational purposes and only few terrace spaces include greenery.

Due to extremely high ground coverage, a high FSI of 3,26 is reached, albeit low building heights. Plots are narrow and distances between entrances to the street very short.

The possibilities for private retreat are probably experienced as good, in the way that all dwellings have own entrances and individual outdoor spaces, but on the other hand, a large share of the outdoor spaces are highly visually exposed for passers by and physical enclosure is low.

The flow of people passing through the area seems to be rather low, but this is assumable due to the grid configuration on neighbourhood and city scale and especially the 'dead end' location on a peninsula.

Neighbourhood measures
Spaciousness (with tare): 0,30
Floor space index (with tare): 1,71
Island sizes: mostly 2000-4000sqm, range from 621-9032sqm

Island measures (3 analysed)
Floor space index : 2,99 | 3,4 | 3,4 = Ø 3,26
Spaciousness (without roofs): 0,015 / 0,001 / 0,000 = Ø 0,005
Plot sizes: partly 3500-4000sqm, partly 70-85sqm
Plot widths: partly 100-150m, partly 5m
Size of continuous shared space: none
Distance between entrances: about 5m
Percentage of natural surface (incl. roofs): 0,7%

RURBANITY STRATEGIES
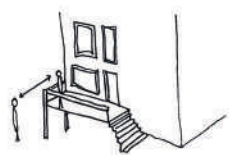
Raised terraces for privacy & lively streets
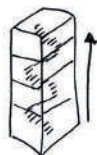
Vertical units for access out & frequent entrances
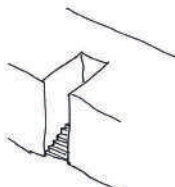
Cut-outs for private entrances
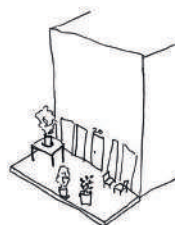
Appropriation of public space
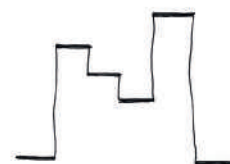
Outdoor spaces on different levels for privacy

PUBLIC AND PRIVATE

- ■ Individual, private use
- ■ Shared, private use
- ■ Public use
- ■ (Public) water
- ◄ Main entrances

NATURAL ELEMENTS

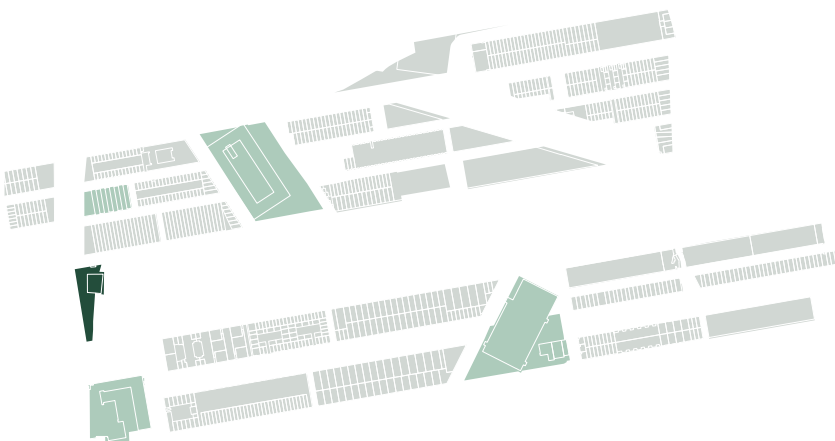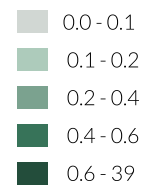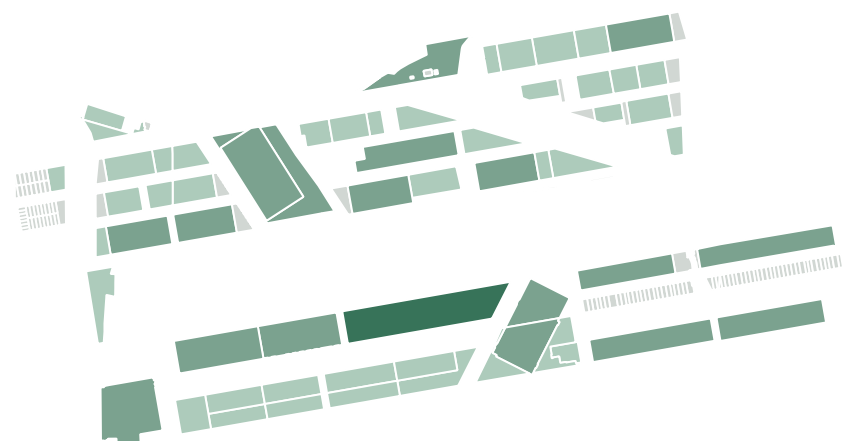🟩 Natural surface
⬜ Water

FLOOR SPACE INDEX

⬜	0.0 - 1.0
🟩	1.0 - 2.0
🟩	2.0 - 3.0
🟩	3.0 - 4.0
🟩	4.0 - 12.2

Scale 1:9000

SPACIOUSNESS (sqm/sqm)

⬜	0.0 - 0.1
🟩	0.1 - 0.2
🟩	0.2 - 0.4
🟩	0.4 - 0.6
🟩	0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

⬜	0 - 500
🟩	500 - 2000
🟩	2000 - 6000
🟩	6000 - 15000
🟩	15000 - 31718

Scale 1:9000

INTEGRATION (Radius 1km)   Scale 1:12000

— 0.00 - 0.75   — 1.00 - 1.25
— 0.75 - 1.00   — 1.25 - 2.00

BETWEENESS (Radius 3.5km)   Scale 1:12000

— 0 - 200000   — 400000 - 600000
— 200000 - 400000   — 600000 - 4959436

INTEGRATION (R1) OVERLAYED WITH OPEN SPACE   Scale 1:12000

— 0.00 - 0.75   — 0.75 - 1.00   — 1.00 - 1.25   — 1.25 - 2.00   ▇ Open space

ISLAND SIZES (sqm)

▢ 113 - 3500
▢ 3500 - 7000
▢ 7000 - 10000
▢ 10000 - 15000
▢ 15000 - 86000

Scale 1:9000

NEIGHBORHOOD SCALE

HOUSING MANY

Low integration (Radius 1km)

≤0.5 in several parts

High floor space index

≥2.0

PRIVATE RETREAT

Centrally-located public spaces

PUBLIC LIFE

Metric proximity to closest green area

≤100m

Medium sland size

700sqm

Topological proximity to closest green area

100%

≥2.0

High betweeness (Radius 3.5km)

Much natural ground surface

High floor space index

High integration (Radius 1km)

NATURE EXPERIENCE

ISLAND SCALE

HOUSING MANY

Large continuous space

Small group sharing

Little programming

no program/household

≥1ha

High floor space index

≥4.0

Physical enclosure

Spaciousness

0.5sqm/sqm

100%

Suitability for small flats

In all building parts

PRIVATE RETREAT

Low visual exposure

0%

PUBLIC LIFE

Visual connection to natural elements

Rich nature

≤ 5 m distance

Frequent entrances to street

direct access

Easy physical access to the outside

100%

5 m²/100sqm

≥4.0

Narrow / small plots

Much natural ground surface

High floor space index

NATURE EXPERIENCE

JAVA-EILAND, AMSTERDAM
ARCHITECTS: SJOERD SOETERS ET AL. | YEAR: 1992

Java-eiland is characterized by a duality of different design scales. The main structure is made up by large building blocks with yards in the middle. However, the yards are subdivided into smaller units by landscaping and lower buildings within it. The inner buildings are placed parallel to the outer, shorter sides and oriented towards them so that they together create smaller units. These are either used as shared subspace or as private gardens, which enjoy a high degree of privacy.

Private individual areas are clearly defined and differentiated from the shared area. In some places, small height differences and a densely vegetated buffer area emphasize the borders additionally and increase privacy.

In general, Java-eiland is defined by a contrast between inside and outside. The public space and access is oriented to the outside, which supports a public access to the waterfront. The inside of the blocks are mostly characterized by greenery and residents space. Anyhow, many houses also have entrances to the inside, which together with the smaller paths running through the blocks brings a certain publicness into the yards. - Walking around in them as a stranger did for example not raise any attention.

Two islands were analysed in detail. Here, many of the surrounding buildings are high and continuous, which makes the yard so closed-off; you almost feel locked-in within it. At the same time, this is balanced out by the large size and the public path that connects several islands into a larger unit. This gives the yards a more open, public character and a feeling of spaciousness.

To the outside, a block also has very different faces – Whilst the long sides have high facades and are bordered by rather wide streets, the short sides consist of small-scale row houses at narrow channels. Different characters and scales of urbanity and seclusion are combined in close proximity of each other.

Neighbourhood measures
Spaciousness (with tare): 0,595
Floor space index (with tare): 1,317
Island sizes: 3000-13000sqm (housing),
2-4ha (parks)

Island measures (2 analysed)
Floor space index: 2,16 / 4,85 = Ø 3,50
Spaciousness (without roofs): 0,274 / 0,066= Ø 0,17
Plot sizes: large variety between 112-4241sqm
Plot widths: large variety between 5-167m
Size of continuous shared space: 0,68ha (blends in with public)
Distance between entrances: 5-20m
Percentage of natural surface (incl. roofs): 32%

RURBANITY STRATEGIES
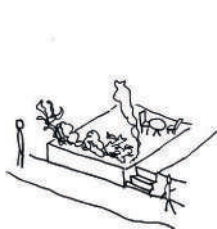
| Raised, dense vegetation defines private space | Buildings subdivide large yard in smaller spaces | Coexistence of different characters & scales | Small path for permeability whilst keeping enclosure |
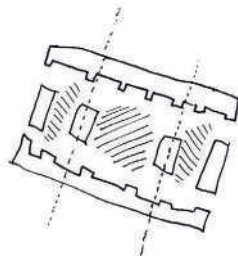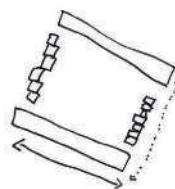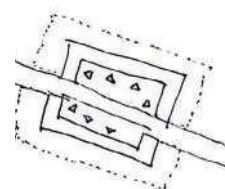
PUBLIC AND PRIVATE

- Individual, private use
- Shared, private use
- Public use
- (Public) water
- ◀ Main entrances

NATURAL ELEMENTS

■ Natural surface
■ Water

FLOOR SPACE INDEX

- ■ 0.0 - 1.0
- ■ 1.0 - 2.0
- ■ 2.0 - 3.0
- ■ 3.0 - 4.0
- ■ 4.0 - 12.2

Scale 1:9000

SPACIOUSNESS (sqm/sqm)

- ■ 0.0 - 0.1
- ■ 0.1 - 0.2
- ■ 0.2 - 0.4
- ■ 0.4 - 0.6
- ■ 0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

- ■ 0 - 500
- ■ 500 - 2000
- ■ 2000 - 6000
- ■ 6000 - 15000
- ■ 15000 - 31718

Scale 1:9000

INTEGRATION (Radius 1km)   Scale 1:12000

— 0.00 - 0.75   — 1.00 - 1.25
— 0.75 - 1.00   — 1.25 - 2.00

BETWEENESS (Radius 3,5km)   Scale 1:12000

— 0 - 200000   — 400000 - 600000
— 200000 - 400000   — 600000 - 4959436

INTEGRATION (R1) OVERLAYED WITH OPEN SPACE   Scale 1:12000

— 0.00 - 0.75   — 0.75 - 1.00   — 1.00 - 1.25   — 1.25 - 2.00   ▨ Open space

ISLAND SIZES (sqm)

▨ 113 - 3500
▨ 3500 - 7000
▨ 7000 - 10000
▨ 10000 - 15000
▨ 15000 - 86000

Scale 1:9000

NEIGHBORHOOD SCALE

HOUSING MANY

Low integration (Radius 1km)

≤0.5 in several parts

High floor space index

≥2.0

PRIVATE RETREAT

PUBLIC LIFE

Centrally-located public spaces

Metric proximity to closest green area

≤100m

70ha/sqm

Medium sland size

Topological proximity to closest green area

100%

≥2.0

High betweeness (Radius 3.5km)

Much natural ground surface

High floor space index

High integration (Radius 1km)

NATURE EXPERIENCE

ISLAND SCALE

HOUSING MANY

Large continuous space

Small group sharing

Little programming

no program/household

≥1ha

≥4.0

High floor space index

Physical enclosure

100%

Spaciousness

0.5sqm/sqm

Suitability for small flats

in all building parts

Low visual exposure

0%

PRIVATE RETREAT

PUBLIC LIFE

Rich nature

≤5m distance

Visual connection to natural elements

direct access

Frequent entrances to street

Easy physical access to the outside

≤5m / ≥100sqm

Narrow / small plots

100%

≥4.0

Much natural ground surface

High floor space index

NATURE EXPERIENCE

ZAANHOF, AMSTERDAM
ARCHITECT: HERMANUS J. M. WALENKAMP |YEAR: 1916-1919

Zaanhof is a housing complex in the district of Spaarndammer en Zeeheldenbuurt, originally developed for affordable social housing. It consists of closed blocks that are shaped and placed so that they form an outer and inner ring and enclose a park with a ring street in between them. The buildings of the blocks facing inwards are lower, the outer ones higher. Only some small gates connect the outer and the inner space. Cars are allowed within, but there is no through-traffic. The special typology, together with the street configuration, creates a gradual filter from urban to rural character, from lively to calm. The area in the middle is a public park, with a small street surrounding it. A fence supports the definition as park. Otherwise the area could have been in risk of becoming an abandoned street side green.

Entrances both to the lively street on the outside and to the inner street ring are frequent. All ground floor flats have separate entrances, most both to the street and towards a private outdoor space on the back. It can be assumed that some flats stretch over two floors and thus that both floors have access to the outside. Higher floors mostly have balconies.

The typology implies smaller or no shared yards, but offers both private, individual spaces for a number of residents and a good accessibility to a park which still has an intimate character. Even if the park is officially public, the scale and high enclosure makes it feel a bit like a shared private space – The dwellings surrounding it are not so many, so the space is actually not shared by a very large group of people. The typology seems like a smart design alternative to reach high density, where space is limited and it is hard to realize both a public park, private, shared yards and individual gardens. A downside is that only some flats have a private garden, whilst others only have small balconies and thus lack any kind of private ground space.

When visiting Zaanhof, I took a quick look at the neighbouring area around Zaandammer plein as well, as it has a quite similar typology, with an inner and outer "ring". The main differences are that in this set of buildings, even the inner ones are high and that the public space in the middle is much bigger and less green. These small differences lead to a big difference in character. – Even if the inside is calmer, the space appears much more public and the intimate character is lost. This can however be a fitting design choice in certain locations, where a calmer public space is required, since it has other qualities: The adjacent houses create a strong feelings of eyes on the street and there are people passing through, without creating disturbing traffic. During the site visit, the space was lively with children playing and running in the wide space.

Neighbourhood measures
Spaciousness (with tare): 0,30
Floor space index (with tare): 1,43
Island sizes: 2500-10000sqm

Island measures (3 analysed)
Floor space index: 2,55 / 2,87 / 2,72 = Ø 2,71
Spaciousness (without roofs): 0,15 / 0,16 / 0,12 = Ø 0,1433
Plot sizes: around 130sqm (outer ring) or 50sqm (inner ring)
Plot widths: around 10m (outer ring) or 5m (inner ring)
Size of continuous shared space: none / 0,33ha (public)
Distance between entrances: 0-10m
Percentage of natural surface (incl. roofs): 43%

RURBANITY STRATEGIES
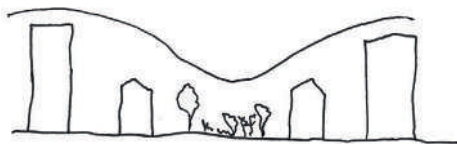
Character changes from outside to inside of an ensemble. Heights & density decreasing.

Narrow blocks enclose private, individual spaces, common usage happens between them.

PUBLIC AND PRIVATE

■ Individual, private use
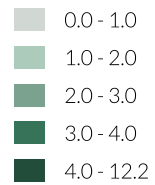■ Shared, private use
□ Public use
■ (Public) water
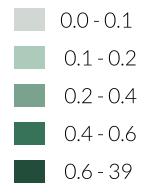◀ Main entrances

NATURAL ELEMENTS
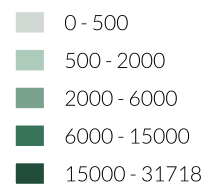
■ Natural surface
■ Water

FLOOR SPACE INDEX

- ☐ 0.0 - 1.0
- ☐ 1.0 - 2.0
- ☐ 2.0 - 3.0
- ☐ 3.0 - 4.0
- ☐ 4.0 - 12.2

Scale 1:9000

SPACIOUSNESS (sqm/sqm)

- ☐ 0.0 - 0.1
- ☐ 0.1 - 0.2
- ☐ 0.2 - 0.4
- ☐ 0.4 - 0.6
- ☐ 0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

- ☐ 0 - 500
- ☐ 500 - 2000
- ☐ 2000 - 6000
- ☐ 6000 - 15000
- ☐ 15000 - 31718

Scale 1:9000

INTEGRATION (Radius 1km)   Scale 1:12000

— 0.00 - 0.75   — 1.00 - 1.25
— 0.75 - 1.00   — 1.25 - 2.00

BETWEENESS (Radius 3,5km)   Scale 1:12000

— 0 - 200000   — 400000 - 600000
— 200000 - 400000   — 600000 - 4959436

INTEGRATION (R1) OVERLAYED WITH OPEN SPACE   Scale 1:12000

— 0.00 - 0.75   — 0.75 - 1.00   — 1.00 - 1.25   — 1.25 - 2.00   ▮ Open space

ISLAND SIZES (sqm)

▮ 113 - 3500
▮ 3500 - 7000
▮ 7000 - 10000
▮ 10000 - 15000
▮ 15000 - 86000

Scale 1:9000

NEIGHBORHOOD SCALE

HOUSING
MANY

Low integration
(Radius 1km)

≤0.5 in several parts

High floor
space index

≥2.0

PRIVATE
RETREAT

Metric proximity to
closest green area

≥100m

PUBLIC
LIFE

Centrally-located
public spaces

70063m

Medium
island size

Topological proximity to
closest green area

100%

≥2.0

High
betweeness
(Radius 3.5km)

Much natural
ground surface

High floor
space index

High
integration
(Radius 1km)

NATURE
EXPERIENCE

ISLAND SCALE

HOUSING
MANY

Large
continuous
space

Small group
sharing

Little
programming

Physical
enclosure

no program

household

≥1ha

High floor space index

≥4.0

Spaciousness

100%

Low visual
exposure

0%

to all building parts

Suitability
for small flats

PRIVATE
RETREAT

Rich nature

PUBLIC
LIFE

Visual connection to
natural elements

≤5m distance

Frequent entrances
to street

Direct access

≤5m / ≥100sqm

Narrow /
small plots

Easy physical access
to the outside

100%

≥4.0

Much natural
ground surface

High floor
space index

NATURE

WESTERDOK AMSTERDAM

ARCHITECTS: MVSA ARCHITECTS, MVRDV ET AL.| YEAR: AROUND 2004-2008

Westerdok is special for reaching extraordinarily high density-values without going higher than 10 storeys. The area consists of perimeter blocks, made up by buildings of varying heights. Most of the floor space includes housing, but ground floors, especially towards the main street in the East, are used for businesses. Business and housing usages are thus separated clearly. The courtyards can only be entered through doors and seem highly private. When visiting the site, I could only enter into one courtyard, which is why this island was chosen for detailed analysis. That yard was rather large, but nevertheless I experienced a feeling of being locked-in, due to the high buildings enclosing it. The fact that you had to enter through doors made it almost feel like an inside space in parts. Main entrances to common staircases are placed both towards the inside and outside of the block. On the inside, some apartments and businesses have secondary doors to the outside. There are no clear borders between shared and private spaces. The space seems to be planned as one shared unit, but in some places, inhabitants or businesses have claimed small zones in front of their dwellings. Being almost completely paved and furnished only with benches, the design reminds of a public square, which appears a bit out of place, since the space is completely cut-off from the public network and supposedly rather empty at most times. With the tall buildings all around, the yard is visually exposed for the neighbours' views. A large pergola with climbing plants defines a smaller, less exposed unit and adds a natural element. In the middle of it, some playground equipment is placed. Apart from this, there is a lack of greenery and different spatialities. Several roofs are used as private terraces that can probably be assessed directly from flats, as one-story-high volumes stick up from the roof.

Neighbourhood measures
Spaciousness (with tare): 0,23
Floor space index (with tare): 2,64
Island sizes: 3000-10000, some smaller

Island measures (1 analysed)
Floor space index: 5,118
Spaciousness (without roofs): 0,066
Plot sizes: 8065sqm (representative) + two smaller
Plot widths: Along the whole island
Size of continuous shared space: 0,33ha
Distance between entrances: about 20m
Percentage of natural surface (incl. roofs): 1%

RURBANITY STRATEGIES
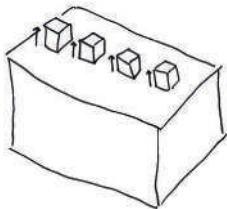
Flats rising into roofscape
for easy acces out
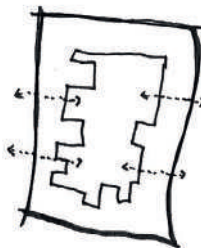
Full enclosure and
doors to yard for strong
private character
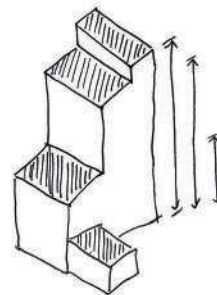
Variation in height creates
individual volumes, view
& rooftop access

PUBLIC AND PRIVATE

■ Individual, private use
■ Shared, private use
□ Public use
■ (Public) water
◄ Main entrances

NATURAL ELEMENTS

■ Natural surface
■ Water

FLOOR SPACE INDEX

- ☐ 0.0 - 1.0
- ☐ 1.0 - 2.0
- ☐ 2.0 - 3.0
- ☐ 3.0 - 4.0
- ☐ 4.0 - 12.2

Scale 1:9000

SPACIOUSNESS(sqm/sqm)

- ☐ 0.0 - 0.1
- ☐ 0.1 - 0.2
- ☐ 0.2 - 0.4
- ☐ 0.4 - 0.6
- ☐ 0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

- ☐ 0 - 500
- ☐ 500 - 2000
- ☐ 2000 - 6000
- ☐ 6000 - 15000
- ☐ 15000 - 31718

Scale 1:9000

INTEGRATION (Radius 1km)   Scale 1:12000

— 0.00 - 0.75   — 1.00 - 1.25
— 0.75 - 1.00   — 1.25 - 2.00

BETWEENESS (Radius 3,5km)   Scale 1:12000

— 0 - 200000   — 400000 - 600000
— 200000 - 400000   — 600000 - 4959436

INTEGRATION (R1) OVERLAYED WITH OPEN SPACE   Scale 1:12000

— 0.00 - 0.75   — 0.75 - 1.00   — 1.00 - 1.25   — 1.25 - 2.00   ▨ Open space

ISLAND SIZES (sqm)

▨ 113 - 3500
▨ 3500 - 7000
▨ 7000 - 10000
▨ 10000 - 15000
▨ 15000 - 86000

Scale 1:9000

NEIGHBORHOOD SCALE

HOUSING
MANY

Low integration
(Radius 1km)

High floor
space index

≤0.5 in several parts

≥2.0

PRIVATE
RETREAT

PUBLIC
LIFE

Centrally-located
public spaces

Metric proximity to
closest green area

≤100m

700m²qm

Medium
sland size

Topological proximity to
closest green area

100%

≥2.0

High
betweeness
(Radius 3.5km)

Much natural
ground surface

High floor
space index

High
integration
(Radius 1km)

NATURE
EXPERIENCE

ISLAND SCALE

HOUSING
MANY

Large
continuous
space

Small group
sharing

High floor space index

Little
programming

no program/household

≥1ha

≥4.0

Physical
enclosure

100%

low building parts

Spaciousness

0.5sqm/sqm

Suitability
for small flats

Low visual
exposure

0%

Rich nature

PRIVATE
RETREAT

PUBLIC
LIFE

Visual connection to
natural elements

direct access

≤ 5m distance

Frequent entrances
to street

Easy physical access
to the outside

100%

≤5m / ≥100sqm

≥4.0

Narrow /
small plots

Much natural
ground surface

High floor
space index

NATURE
EXPERIENCE

GWL TERREIN, AMSTERDAM

ARCHITECTS: KEES CHRISTIAANSE (URBAN DESIGN), ET AL. | YEAR: 1994-1998

GWL terrein consists of rather small slab blocks in open landscape and one large block along the Northern and Western borders, shielding the area towards a large road and an industrial area. A large continuous space is surrounding the buildings. However, due to rich vegetation and several small paths, spaces are clearly defined and there are numerous different spatial characters. Spaces vary both in size and in how public or private they are experienced. Especially the bike path that leads rather straight from North to South through the development seems to be used publicly, whilst the smaller paths have a more private character. Being narrow and defined by gardens lining up on both sides, they give the feeling of walking through allotment gardens. At the small channel, a large historic building constitutes an area of public character within the island: There is a restaurant and at the Eastern border some shops (partly vacant) in the ground floor. In the South, a nursery school is integrated in the ground floor of a building. Both in that building and at the little square on it's other side, there are some more business spaces, which seem to be vacant though.

Ground floor flats have individual entrances, sometimes also second floor flats. In higher buildings, the upper apartments are reached by common entrances and staircases.

In the outdoor space, there is a strong focus on individual gardens, often combined with individual entrances. A little gate leads through the garden to the front door. This design allows for a high degree of appropriation, which most residents seem to make use of. Especially interesting in GWL terrein, I find the gradual, but clear transition between public and private:

The private gardens, that most ground floor spaces have, are enclosed by thick hedges and separated from the shared areas. Parts of the shared space consist of cultivation plots. It is not clear whether these are individual or shared and how they are allocated, but in general, they can provide those interested with opportunities to grow vegetables, like in an own, private garden. However, they seem to be focused on production and do not provide places for retreat. Several roofs are used as terraces, parts are also not accessible green roofs.

Neighbourhood measures
Spaciousness (with tare): 0,45
Floor space index (with tare): 1,48
Island sizes: 1000-10000sqm (project area), 4000-5000sqm (surroundings)

Island measures (11 analysed)
Floor space index : Ø 2,4
Spaciousness (without roofs): Ø 0,361
Plot sizes: mostly 500-200sqm, typically 1500sqm
Plot widths: about 30-50m
Size of continuous shared space: (blends with public): 3,47ha
Distance between entrances: 5-10m
Percentage of natural surface (incl. roofs): 66%

RURBANITY STRATEGIES
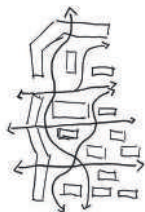
| Large island but high permeability | Hedges & fences between public, shared & individual spaces | Individual entrances for ownership | Allotment gardens for ownership and outdoor access | Shared roof terraces for access out and housing many |
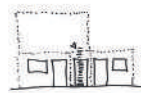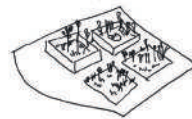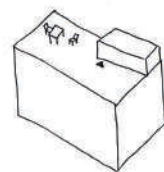
PUBLIC AND PRIVATE

- Individual, private use
- Shared, private use
- Public use
- (Public) water
- ◀ Main entrances

NATURAL ELEMENTS
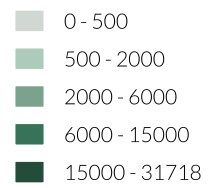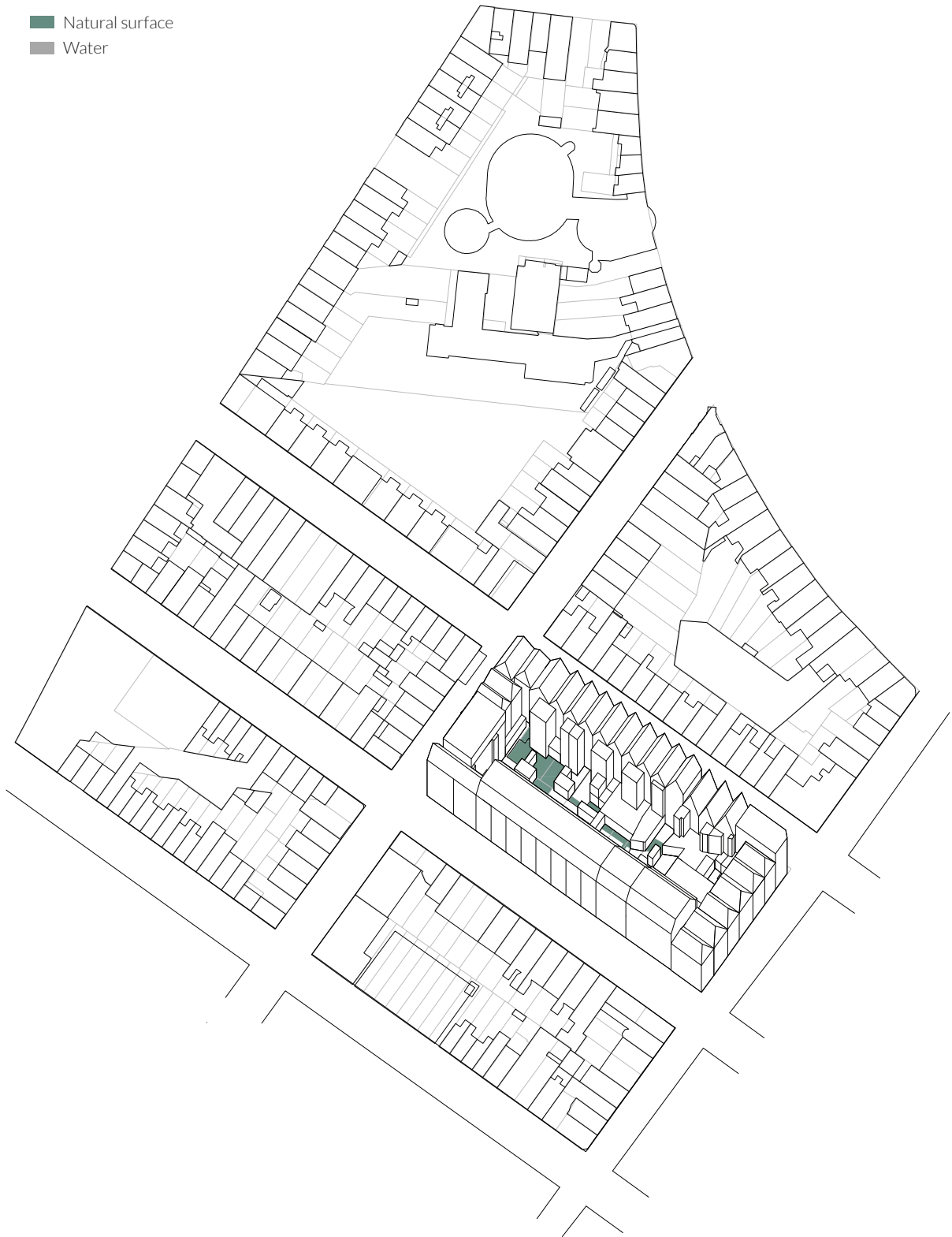
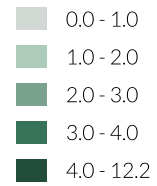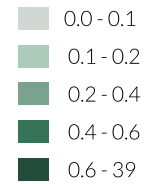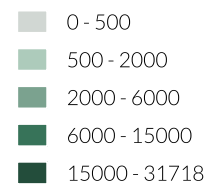■ Natural surface
■ Water

FLOOR SPACE INDEX

- 0.0 - 1.0
- 1.0 - 2.0
- 2.0 - 3.0
- 3.0 - 4.0
- 4.0 - 12.2

Scale 1:9000

SPACIOUSNESS (sqm/sqm)

- 0.0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

- 0 - 500
- 500 - 2000
- 2000 - 6000
- 6000 - 15000
- 15000 - 31718

Scale 1:9000
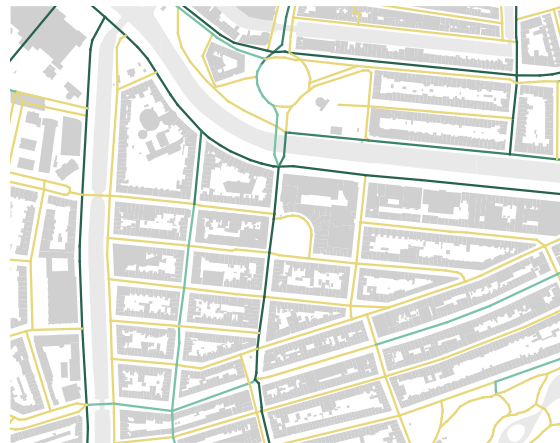
INTEGRATION (Radius 1km)   Scale 1:12000

— 0.00 - 0.75   — 1.00 - 1.25
— 0.75 - 1.00   — 1.25 - 2.00

BETWEENESS (Radius 3,5km)   Scale 1:12000

— 0 - 200000   — 400000 - 600000
— 200000 - 400000   — 600000 - 4959436

INTEGRATION (R1) OVERLAYED WITH OPEN SPACE   Scale 1:12000

— 0.00 - 0.75   — 0.75 - 1.00   — 1.00 - 1.25   — 1.25 - 2.00   ▢ Open space

ISLAND SIZES (sqm)

▢ 113 - 3500
▢ 3500 - 7000
▢ 7000 - 10000
▢ 10000 - 15000
▢ 15000 - 86000

Scale 1:9000

NEIGHBORHOOD SCALE

HOUSING
MANY

Low integration
(Radius 1km)

≤0.5 in several parts

High floor
space index

≥2.0

PRIVATE
RETREAT

Centrally-located
public spaces

PUBLIC
LIFE

Metric proximity to
closest green area

≤100m

≥700sqm

Medium
sland size

Topological proximity to
closest green area

100%

≥2.0

High
betweeness
(Radius 3.5km)

Much natural
ground surface

High floor
space index

High
integration
(Radius 1km)

NATURE
EXPERIENCE

ISLAND SCALE

HOUSING
MANY

Large
continuous
space

Small group
sharing

High floor space index

Little
programming

no program

household

≥1ha

≥4.0

Physical
enclosure

100%

Spaciousness

0.5sqm/cap

Suitability
for small flats

In all building parts

Low visual
exposure

%0

PRIVATE
RETREAT

PUBLIC
LIFE

Rich nature

≤5m distance

Visual connection to
natural elements

Frequent entrances
to street

Easy physical access
to the outside

Direct access

≤5m / ≤100sqm

Narrow /
small plots

Much natural
ground surface

100%

≤4.0

High floor
space index

NATURE
EXPERIENCE

DE PIJP, AMSTERDAM

ARCHITECT: JAN KALFF (URBAN PLAN) | YEAR: 19TH CENTURY

De Pijp was developed as an urban extension in the 19th century. Nowadays the area has become a central, vibrant district with a large number of cafés, restaurants and shops, but still a large share of housing. The district consists mostly of perimeter blocks of around 4000-6000sqm, made up by narrow buildings of 3-5 storeys.

The island chosen for detailed analysis is located across a central square and borders a busy street on one short side. Businesses are located on the ground floors here. On the remaining sides, housing is the predominant usage. Like many Amsterdam neighbourhoods, the block has a large number of entrances: Ground floor flats have a direct access out, second floor flats often an own staircase, and others share entrances. The inner yard could not be visited, since it is completely enclosed and dedicated to private, individual use: Most ground floor flats have an adjacent, small outdoor space, separated from the others by hedges, fences, walls and bump-outs. Some lower parts reach larger into the yard and have

terraces on top of them. There are barely any natural surfaces, but the Western part of the yard is vegetated with large trees. A shared area is lacking.

Neighbourhood measures
Spaciousness (with tare): 0,30
Floor space index (with tare): 1,81
Island sizes: typically 4000-6000sqm, some larger

Island measures (1 analysed)
Floor space index: 3,06
Spaciousness (without roofs): 0,064
Plot sizes: between 69-376, typically about 150sqm
Plot widths: typically 6m
Size of continuous shared space: none
Distance between entrances: 0-10m
Percentage of natural surface (incl. roofs): 7%

RURBANITY STRATEGIES
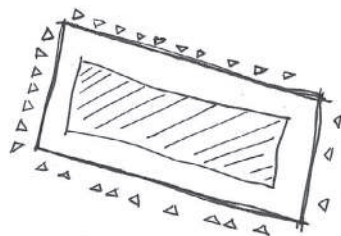
Access concentrated on public side for
lively streets and private retreat
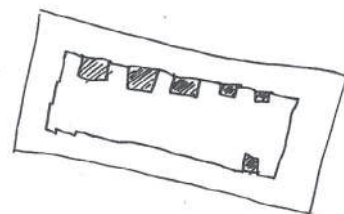
Smaller building parts define
smaller private spaces

PUBLIC AND PRIVATE

■ Individual, private use
■ Shared, private use
■ Public use
■ (Public) water
◄ Main entrances

NATURAL ELEMENTS

■ Natural surface
■ Water

FLOOR SPACE INDEX

- ☐ 0.0 - 1.0
- ☐ 1.0 - 2.0
- ☐ 2.0 - 3.0
- ☐ 3.0 - 4.0
- ☐ 4.0 - 12.2

Scale 1:9000

SPACIOUSNESS (sqm/sqm)

- ☐ 0.0 - 0.1
- ☐ 0.1 - 0.2
- ☐ 0.2 - 0.4
- ☐ 0.4 - 0.6
- ☐ 0.6 - 39

Scale 1:9000

PLOT SIZES (sqm)

- ☐ 0 - 500
- ☐ 500 - 2000
- ☐ 2000 - 6000
- ☐ 6000 - 15000
- ☐ 15000 - 31718

Scale 1:9000

INTEGRATION (Radius 1km)   Scale 1:12000

—	0.00 - 0.75	—	1.00 - 1.25
—	0.75 - 1.00	—	1.25 - 2.00

BETWENESS (Radius 3,5km)   Scale 1:12000

—	0 - 200000	—	400000 - 600000
—	200000 - 400000	—	600000 - 4959436

INTEGRATION (R1) OVERLAYED WITH OPEN SPACE

Scale 1:12000

—	0.00 - 0.75	—	0.75 - 1.00	—	1.00 - 1.25	—	1.25 - 2.00		Open space

ISLAND SIZES (sqm)

- 113 - 3500
- 3500 - 7000
- 7000 - 10000
- 10000 - 15000
- 15000 - 86000

Scale 1:9000

FURTHER INSPIRATION
FUNENHOF | URBANA VILLOR | 79&PARK

FUNENHOF, AMSTERDAM
Arons en Gelauff Architects

A small group of people shares a small intimate yard. The inhabitants seem to know each other and have a personal relation with each other, like in a one-family housing area. A semi-permeable private zone is formed through good interplay between architecture and landscaping. Multifunctional wooden elements serve as balconies, benches, sight protection and enclosure all in one.
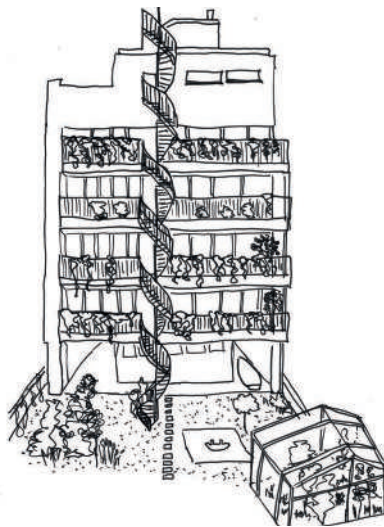
URBANA VILLOR, MALMÖ
Hauschild-Siegel Architecture

One-family units are stacked on top of each other. Large, green balconies with exterior doors provide high privacy and ownership. The individual units are complemented by a shared rooftop and a garden.

79&PARK, STOCKHOLM
BIG architects

A large housing complex, consisting of numerous small volumes. The block opens up towards a park and provides sunlight and views. Due to the height differences and shifts in the facade, the individual units have easy access to rooftop terraces and large windows and balconies.

FURTHER INSPIRATION
BOSCO VERTICALE | 8-HOUSE | BO01
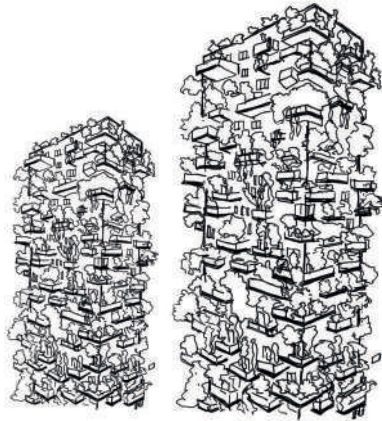
BOSCO VERTICALE, MILAN
Stefano Boeri Architetti

The famous green high rise project manages to integrate rich vegetation into the building design. All units have large balconies, which are equiped with planting areas, where even trees grow. A connection to the surrounding outdoor space is lacking though. Negative for ownership is also that a large number of people share the building and that there is no shared area. The public space around the solitary buildings is not enclosed.
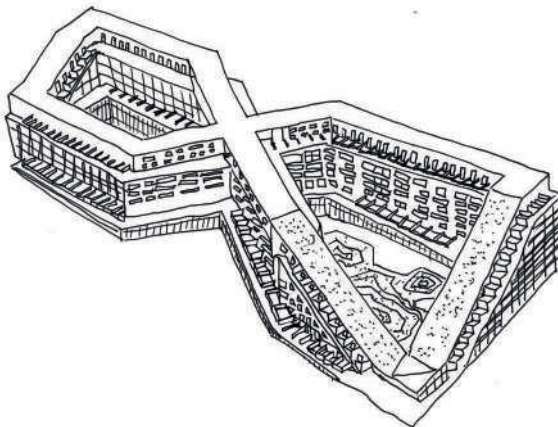
8-HOUSE, COPENHAGEN
BIG architects

The interesting typology where roof and ground meet, makes it possible to use the roofspace as part of the circulation network. Appartments partly have individual entrances to the outside path. The yards are shared by many people, narrow and lacking natural elements.
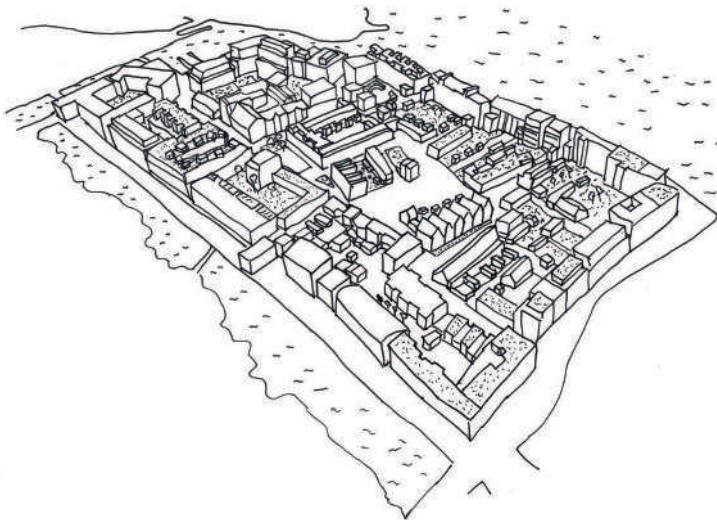
BO01, MALMÖ
Klas Tham / Malmö municipality

The shifted grid of the area provides interesting spatialities and calm areas. Buildings of different scales and typologies are mixed. Many offer zones for appropriation in front of dwellings. Several strategies seen in Amsterdam are applied here and adapted to a Swedish context.
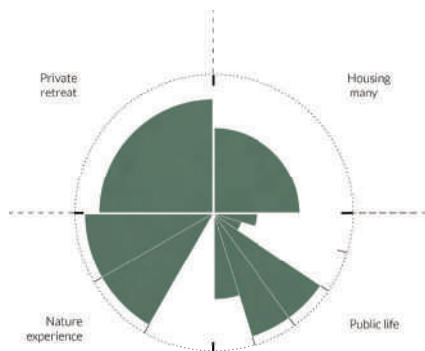
FUNENPARK
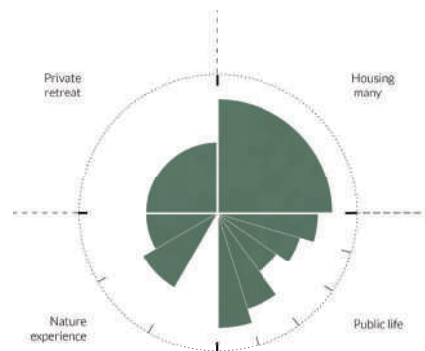
BORNEO-SPORENBURG
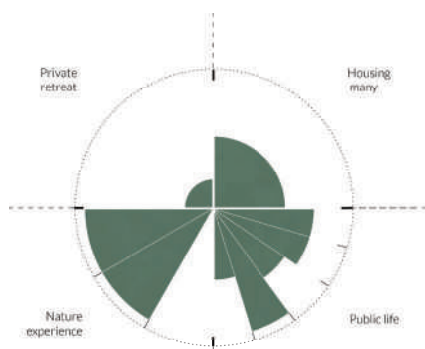
JAVA-EILAND
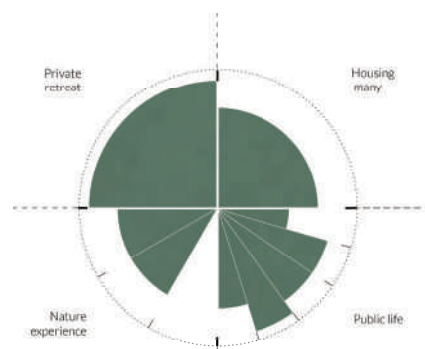
ZAANHOF
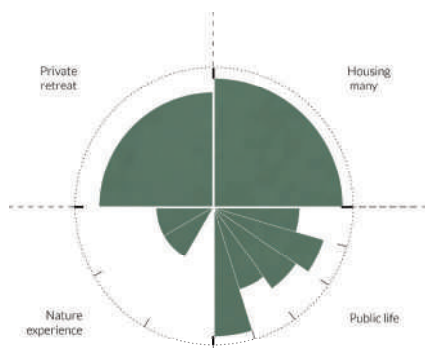
WESTERDOK
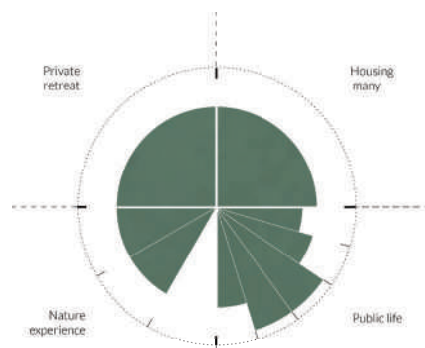
GWL TERREIN
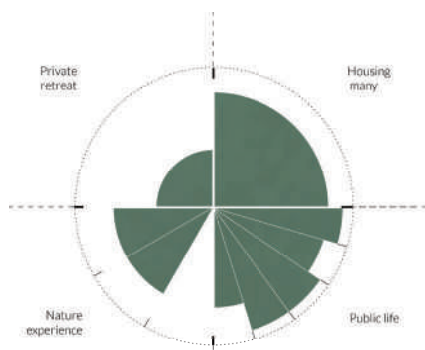
DE PIJP

SUMMARY
NEIGHBOURHOOD SCALE

Betweeness
Most of the chosen cases are adjacent to a central road with rather high betweeness values, whilst all other sides have low betweeness. That fits to the experience on site: Those roads were often larger and/or busy. Exceptions are Java-eiland and Borneo-Sporenburg. Located on an island / peninsulas, they are more remote. The other cases represent locations, which are or have potential for becoming lively. In GWL terrein, Zaanhof and Funenpark, long and high buildings are placed towards these spaces with high betweeness, which is why the roads are not experienced within the rest of the areas. De Pijp and Westerdok have smaller and more uniform structure, which is why the character of spaces is not so contrasting, even if the ones with high betweeness are busier.

Integration
The R-1 integration maps show more clearly the smaller scale spatial structure. Here, clear differences show between the areas. Some types could be identified: Some areas, like De Pijp and to a certain extend Java-eiland and Borneo-Sporenburg, have grid structures with low hierarchies and quite even integration values. (Borneo-Sporenburg is a bit special, due to its peninsula location. Areas close to the bridge are more integrated than others.) Where a grid structure is tweaked a bit (Funenpark) or shorter paths are added (Java-eiland), less integrated and more secluded spaces occur. In Zaanhof, but also in a part of Borneo-Sporenburg, there is an inside-outside contrast. The core of the spatial structure has lower integration values than the outer spaces, with only few connections in-between. GWL terrein has similar characteristics, but here, the structure is more permeable, with more connections between inside and outside, which leads to an overall higher integration and a less clear differences. Both the tweaked grid and the inside-outside structures lead to a co-existence of well-integrated and secluded space in close proximity of each other.

Integration of green areas and other public spaces
Since I did not have enough information and since it is difficult to define what kind of spaces should be integrated into the category "green space" I could not run an analysis of for example attraction reach. I instead overlaid integration maps with open, public space (not including the network space) , which says something about the integration of both public, green spaces and public squares. In some cases, the public and private space merging leads to accessible green space, even for the larger neighbourhood. (GWL terrein, Funenpark) The area of Funenpark is for example directly adjacent to a highly integrated street; GWL terrein is in close proximity of such. Both areas have large green, private areas that can (more or less) be enjoyed by the public. In the cases of Java-eiland and Zaanhof, green areas are placed in the middle of block ensembles, but with different integrations. While the park in Zaanhof is public, but more hidden, the green areas in Java are well integrated, but probably officially private. The official ownership is of little importance here. In "classic" perimeter block structures, green spaces occur mostly by "leaving out" a block, they are thus as well integrated as the other blocks. (De Pijp)

Island sizes
Most areas have island sizes of max. 10 000sqm; if they are larger, they are semi-permeable, e.g. by paths leading through. (Funenpark) GWL terrein has a similar system, but consists of several islands with public space in-between them. The recommended max. average size of 7000sqm is mostly fulfilled by De Pijp and most parts of Zaanhof, GWL terrein and Borneo-Sporenburg. These areas are indeed those experienced most as human scale, urban areas. At the same time, those of the small islands that were developed as perimeter blocks do not provide shared spaces within them. Structures that manage to combine shared spaces and small islands are several perimeter blocks with an open space in-between them (Zaanhof) or slightly larger islands (Java-eiland).
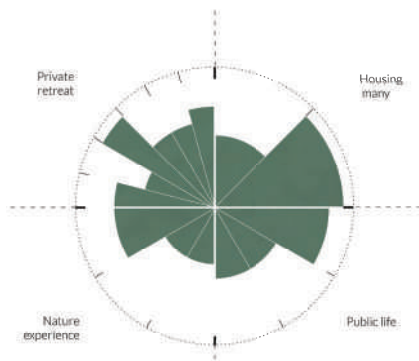
Floor space index
In the reference projects, FSI on neighbourhood level is much higher than the minimum recommendations. This is probably the case, because small neighbourhoods were chosen and no larger squares or parks are included in the analysis areas.
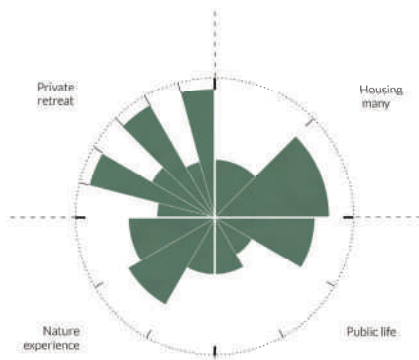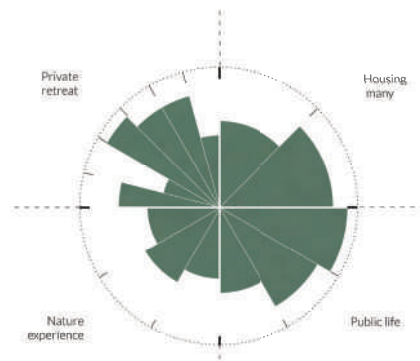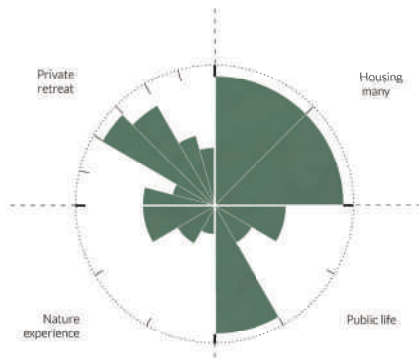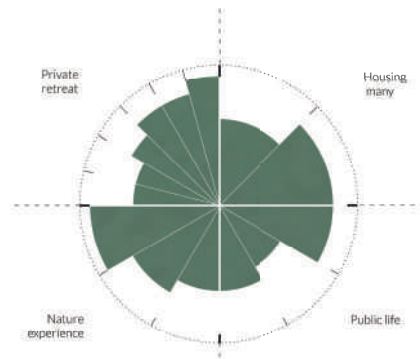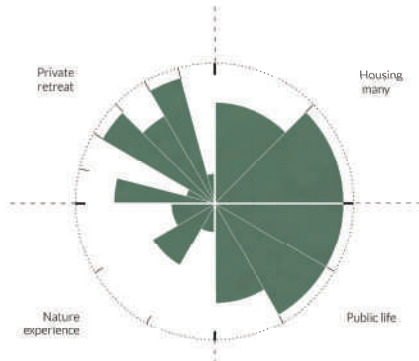
FUNENPARK
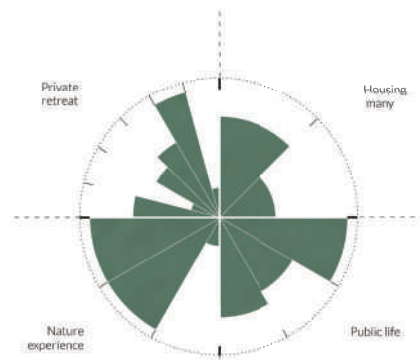
BORNEO-SPORENBURG

JAVA-EILAND

ZAANHOF

WESTERDOK

GWL TERREIN

DE PIJP

SUMMARY

ISLAND SCALE

Generally, all cases combine or try to combine some of the four central qualities and inspire the forthcoming design process. Numerous interesting strategies have been found.

Especially interesting regarding the parameters were the following findings:

The row-houses of Borneo-Sporenburg manage to establish a strong connection to the outside and large private, individual spaces, but there is a clear lack of shared spaces and natural surfaces within the island. Private zones directly adjacent to the public space are working well, but this is probably supported strongly by the Dutch culture where such zones are usual.

Java-eiland is interesting because different degrees of privacy and characters co-exist close to each other here. The inside of the islands feel like large apartment blocks, whilst the short outsides are small-scale, almost village-like.

Funenpark and GWL terrein have quite similar typologies, but differ a lot in how the different degrees of privacy and publicness are experienced. In Funenpark, an open, park-like space reaches all the way to the buildings, and creates and odd meeting between the private individual and the almost public. In GWL terrein, the different types of areas are clearly separated, and highly appropriated and enclosed individual gardens are co-existing with public paths. Looking at the overall performance, GWL terrein scores best regarding the parameters on island scale. This illustrates clearly, that typology alone does not decide about the performance on island level. The organisation of the outside space and the access between inside and outside are crucial as well. Plus, it shows that perimeter blocks aren't the one and only solution. Another conclusion from Funenpark and GWL terrein is that pedestrianization can be both problematic and a chance: If an area appears as a private enclave with clear borders, public paths that lead through may not invite everybody to pass through (e.g. just opening in wall / underpass and fence). This can hinder permeability, but also be a strategy to calm down an area without closing it.

Zaanhof has an interesting typology, as the closed blocks are assembled so that they form an outer and inner ring and enclose a park. This creates a gradual filter from urban to village character, from lively to calm.

Westerdok is reaching an extraordinarily high density-value of 5.1, but due to the full enclosure and high buildings around, there is a feeling of being locked in in the yards and they are highly visually exposed for neighbours windows and balconies. Plus, with a spaciousness of 0,07sqm/sqm, the outdoor space per person is insufficient.

In the area of De Pijp, there is a very clear public interface with a lot of entrances and the private inside, which consists of individual spaces with little natural surface. A larger open space is lacking.

Funenpark and Urbana villor show that even small yards can have great qualities if they are shared by only few units and achieve a character similar to a one-family house street. Inhabitants seem to know each other here (at least briefly). Clear physical borders, such as fences, strengthen the character.

In several cases, it could be seen that if a space with strong public character is directly adjacent, a clear definition to the private space is especially needed to make ownership possible and not intrude privacy. Another general conclusion is that it is highly difficult to reach a high FSI without reducing spaciousness or impeding the access out.

Cultural context
Privacy experience is a cultural issue. In the Netherlands, and Amsterdam especially, people are used to live densely together and it seems not to disturb most to sit right next to each other outside, exposed physically and visually to the public life and adjacent private spaces. In Sweden, it can be assumed that the personal space is larger and clearer borders and larger distances might be needed. The dense area of Bo01 shows however, that similar principles can be used: Many units here have own private gardens and front-gardens. Dense vegetation, fences and water define these spaces.
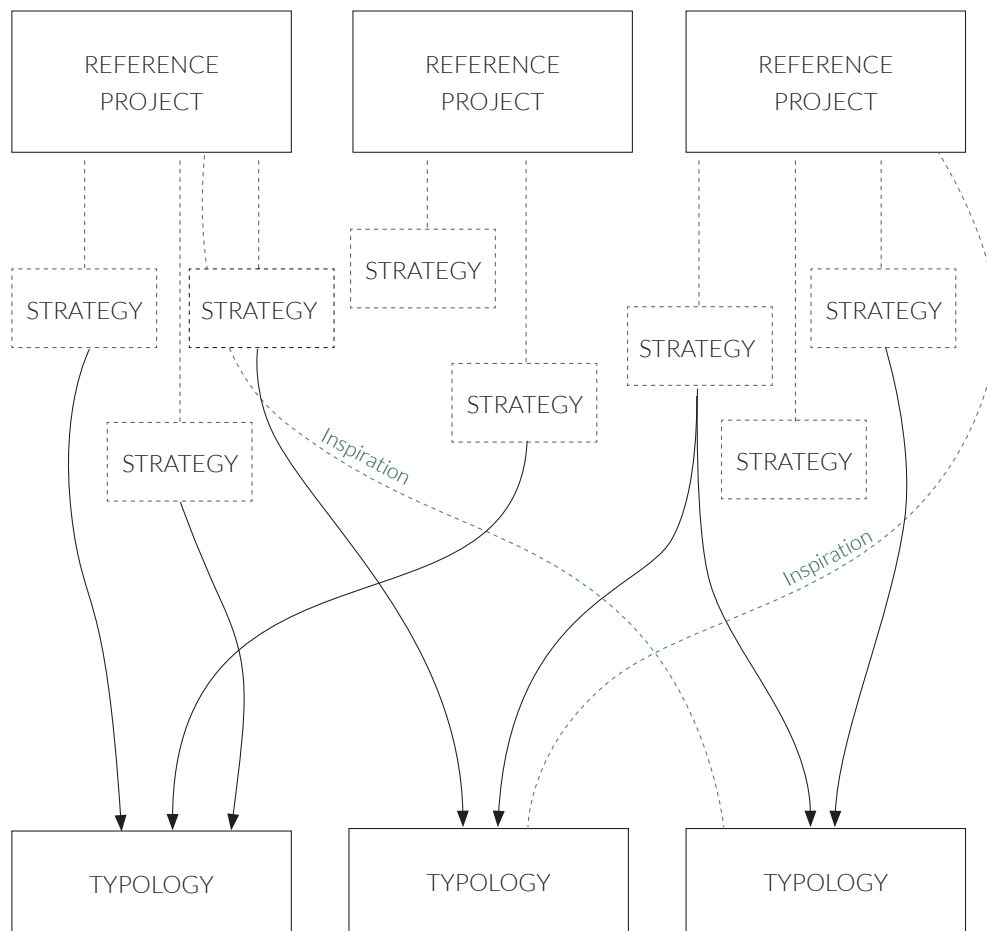
A related issue is appropriation. There is a strong culture in the Netherlands of appropriating the space right outside the front door and place plants, furniture and other private objects in the officially public sidewalk. In the Swedish culture, people are usually very careful about not disturbing each other. It seems likely that some people might complain if others just claimed spaces that are not theirs. Bo01 shows that clear, official zone differentiation makes appropriation easier in this context.

A specific feature, that was found in several Amsterdam cases, is the narrow staircases, that make it possible to provide individual entrances and direct access to the outside from flats on upper floors in a space-efficient way. Regarding accessibility, these do not seem ideal to establish today, and they are not compatible with accessibility regulations in Sweden. But the concept has important qualities for the ownership feeling and access to the outside, and should be revisited and adapted to 2019 Sweden.

04: STRATEGIES & TYPOLOGIES

REFERENCE PROJECT

REFERENCE PROJECT

REFERENCE PROJECT

STRATEGY

STRATEGY

STRATEGY

STRATEGY

STRATEGY

STRATEGY

STRATEGY

STRATEGY

Inspiration

Inspiration

TYPOLOGY

TYPOLOGY

TYPOLOGY

APPROACH

From the reference projects, literature and previous experience, I gathered a lot of inspiration and insights regarding how the four qualities of private retreat, nature experience, housing many and public life can or cannot be achieved. In the previous chapter, I looked at each project by itself and described how they handle the different aspects. Within this fourth part, I am summarizing the different strategies I extracted and take with me for my own design and test ways to use and combine them in typologies. Strategies & typologies can be seen as an abstraction and restructuring of the lessons learned in part 3 before going into the site-specific application in part 5.

This chapter consist of two parts - neighbourhood and island scale. On neighbourhood scale, network configuration is discussed, as it showed in the reference analysis that it is the backbone of the neighbourhood scale design and as it is the main decisive element for integration and island size. Aspects such as the character and location of open space and island size also influence the performance of a neighbourhood, but will due to time limitations only be considered in the site-specific design.

For both scales, I discuss first strategies and then typologies. The difference between these is that strategies only concern certain parts or aspects. They take up elements of the reference projects, but also include own ideas and ideas retrieved from theory. In typologies in contrast, different spatial strategies are combined into a comprehensive island / network configuration.

Networks
For networks, strategies are discussed very briefly, because as the word says, it is about how the parts interact and difficult to talk about single parts. There are some general logics that all configurations built on, that are presented as strategies here.

Since networks are also highly dependent on their context and the configuration possibilities are endless without that, the network typologies can be seen mostly as abstraction: Logics seen in the reference projects are translated into a uniform (square) shape, which makes them comparable. Additionally, some own configurations are added. The typologies are visualized as an abstract version of integration. They can be read as thick lines being spaces with high local integration, thinner ones spaces with lower integration and dotted lines as the lowest integration.

Islands
The strategies I found on island scale relate to certain parameters and sub-scales, which is indicated by symbols and color-coding. The largest scale, "urban design", implies relevance for the form of the whole island or how islands work together; the smallest scale, "small elements", can include for example fences and plants. Additionally, it is marked with "> reference" which project the strategy is retrieved from.

With island typologies, I then explore different configurations. For this, a flexible physical model is used. Different configurations are created, pushing the parameters to their extremes and using different strategies. This series mostly shows ideas on how strategies can be applied and combined and how characteristics of reference projects can be altered. It should not be seen as complete catalogue, but rather as selection from a range of options. As the context and location in the network is crucial for the island configuration, certain different conditions are imagined, but on an abstract level. Functions are considered in the iterations only in the way that the potential for more public or private functions is considered. The contextualisation takes place in the site-specific proposal.
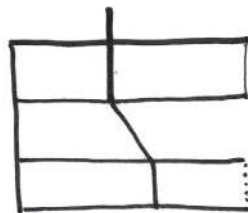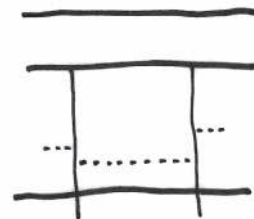
STRATEGIES

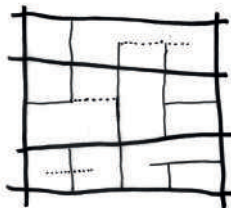Long, continuous spaces

Shifts, creating
(topological) distance

Interruptions, short spaces
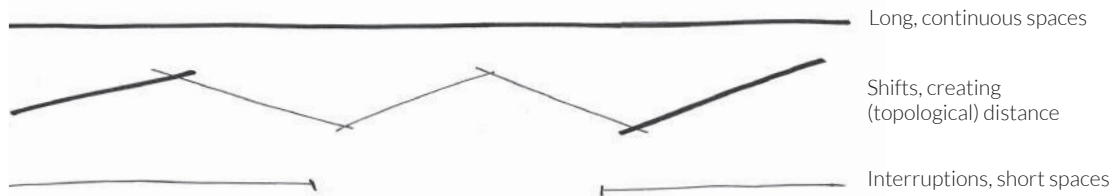
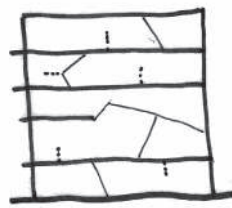TYPOLOGIES
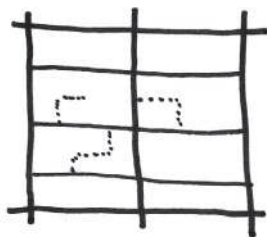
Grid
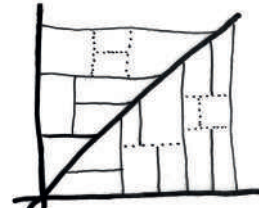> *De Pijp*

Grid with diagonal
> *Borneo-Sporenburg*

Grid with interuptions
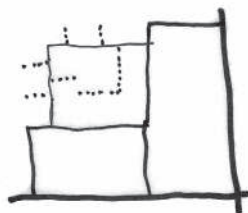>*Java-eiland*

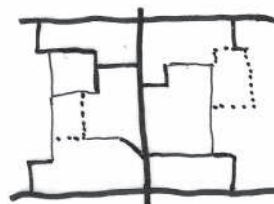Broken grid
> *Own configuration*
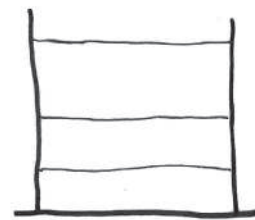

One-direction grid
> *Funenpark*

Shifted web between axes
>*Own configuration*

Gradual transition
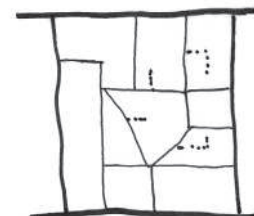>*Own configuration*

Labyrinth of shifts
>*Own configuration*

Limited grid
> *Westerdok*
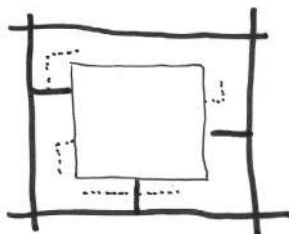
Secluded core
> *Zaanhof*
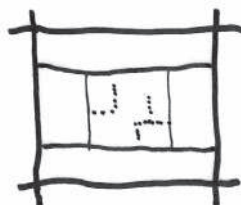
Space in a space in a space
> *Own configuration*

Variation bordered by grid
> *GWL terrein*

Strategies

The main strategies that I could identify to alter the configuration of spaces are long, straight spaces, short spaces with a lot of angular shifts in between them and cutting off spaces. According to the logic of space syntax, long, straight spaces are easier to orientate in and they are more likely to connect to many other spaces in the network, which makes them central and more likely to be used. Changes in direction make a network less illegible and increases not only the metric, but also topological distance between locations. – More secluded areas emerge, that are less likely to be passed. Interrupting connections decreases in a similar way the centrality of a space. The flow of people is simply likely to be lower in spaces that do not lead far. Such a space is "deeper" in the network, it takes more topological steps to reach all other parts of the network from here.

Typologies

The different typologies differ in 1. the degree of differentiation they achieve, 2. the spatial distribution of these differences and 3. the strategies they use to achieve these. Some main types could be identified: Homogenous grids have least differentiation and are easiest to orientate in. In inside-outside structures, as seen in Zaanhof, secluded spaces emerge at the core. Grids that are interrupted or tweaked (angle) create secluded spots in several, different parts of the network. Peripheral structures have strong axes and there is a gradual transition from high to low integration away from these strong main connectors. Those configurations that are least permeable (as for example Zaanhof, with reduced points of access and clearly separated spaces) achieve the clearest differentiation between centralities.

QUALITIES

Housing many   Public life   Private retreat   Nature experience
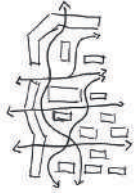
Large island with
public character
> *GWL terrein*
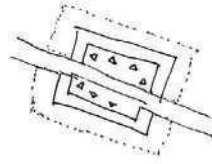
Public path
between private
> *Java-eiland*

THE PUBLIC MEANDERING THROUGH THE PRIVATE

When done right, mixing public and private can increase the permeability of an urban structure, whilst keeping the usibility of large spaces. This can be done either by making some private areas welcoming for the public, or by leading a clearly public path in between private spaces that form a unit. In either case, one has to be careful to keep a clear differentiation of spaces and high enclosure, so that territory does not become undefined.

Qualities
■ Large continuous space
■ Medium island size (network)

Scale

All entrances
on public side
> *De Pijp*
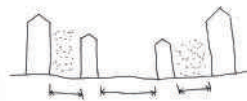
Narrow blocks enclosing
individual spaces,
together enclosing
common space
> *Zaanhof*
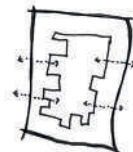
Controlled (lockable)
access points
> *Westerdok*

PURELY PRIVATE AND PUBLIC SIDES

Concentrating the interface to the public on one side and private shared areas to the other side of a block strengthens the experience of privacy and ownership of the enclosed area and contributes to flows and interactions in the public space. Plus, the need for paved areas in the yard can be reduced. The consistent division can be taken even further by enclosing in several layers: Individual spaces can e.g. be enclosed by blocks, which in turn together enclose a common area.

Qualities
■ Physical enclosure
■ Small group sharing
■ Low visual exposure
■ Frequent entrances to street
■ Much natural surface

Scale

Free-standing volumes
> *Funenpark*
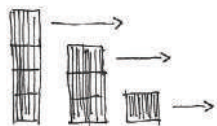
Stepping down building heights
> *79&Park*
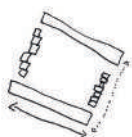
Combination of scales
> *Java-eiland*
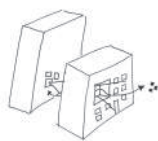
Holes in Facade
> *Own idea*
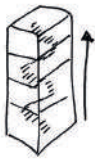
OPENING UP TO NATURE & CALMNESS

Opening up volumes and placing small-scale, permeable structures towards natural or calm areas strengthens the visual and physical contact to nature, supports eco-system services and makes adjacent areas accessible.
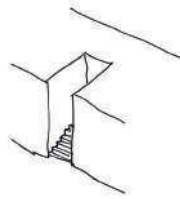
Qualities
■ Large continuous space
■ Visual connection to natural elements
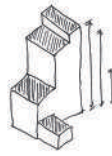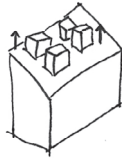■ Easy physical access out

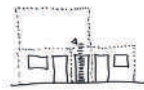Scale

Vertical units
>*Borneo-Sporenburg*

Cut-outs with entrance
> *Borneo-Sporenburg*

Variation in height
> *Westerdok*

Individual roof access
> *Funenpark*

Individual outer doors
> *Amsterdam*

HIGHLIGHTING INDIVIDUAL UNITS

By dividing up larger volumes, individual ownership or the limits of the group sharing a space can be communicated by design. Depending on the kind of strategy, the access to the outside is strengthened, individual outdoor zones are defined and zones for appropriation are created, even within larger structures.

Qualities
- High floor space index
- Suitability for small flats
- Easy physical access out
- Small group sharing

Scale

Roof and ground blending
into a continuous surface
> *Own project*

Different levels, connected
by stairs and bridges
> *Own thesis*

## INTEGRATING ROOFS INTO
THE OPEN SPACE

Roofs are one of the biggest (unused) potentials in the urban landscape. Designs that integrate rooftops into the network of open spaces can achieve a high density along with great recreational spaces. To gain quality spaces that can be used as ground level areas, it is however essential to create numerous strong connections between levels and keep height barriers minimal.

Qualities
- Spaciousness
- Much natural surface
- High floor space index

Scale
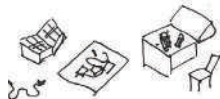
Assigned spaces for
appropriation
> *Own idea*
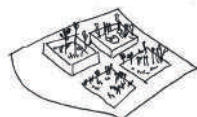
Allotment gardens
> *GWL terrein*

DETACHED INDIVIDUAL UNITS

Defining individual outdoor units detached from dwellings opens up for high density developments without loosing the quality of individual units (in close proximity) that invite for appropriation. A downside is that the threshold between indoor and outdoor space becomes higher, which could reduce usage.

Qualities
- Small group sharing
- Low degree of programming
- High floor space index
- Suitability for small flats

Scale

QUALITIES

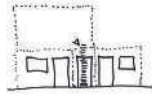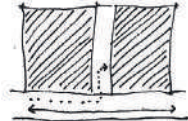■ Housing many   ■ Public life   ■ Private retreat   ■ Nature experience

Outdoors stairs and
balcony access
> *Urbana villor*

Individual exterior doors
(possibly with staircase)
> *Amsterdam*

Open corridors
> *Funenpark*

OPEN-AIR CIRCULATION SPACES

Opening up circulation spaces creates a direct connection between flat and outside environment, even in multi-storey buildings and emphasizes the individual units. Personal appropriation might be easier and more accepted in open air spaces. Own exterior doors or staircases are however limited to low buildings (or large flats), if not combined with secondary circulation levels.
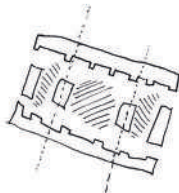
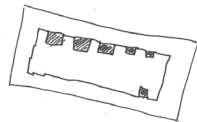Qualities
■ Easy physical access out
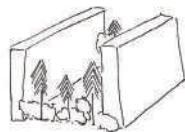■ (Frequent entrances to street)

Scale ☐ ■ ■ ▫

Buildings within yard
> *Java-island*

Smaller building parts attached
> *De Pijp*

Grouping vegetation
> *own projects*

Vegetation as enclosure
> *GWL terrein*

PERMEABLE/ HALF-OPEN BORDERS

Permeable borders make it possible to combine the usibility of large spaces with the intimacy of small spaces. When done with vegetation, the enclosure is weakened, but the amount of natural elements increased.

Qualities
■ Large continuous space
■ Physical enclosure
■ Small group sharing
■ High floor space index

Scale ☐ ■ ■ ▫

Green roofs with
thick soil layer
> *Own projects*

Green walls on inside
> *Own idea*

Climbing structures
as space division
> *Own projects*

BUILDING SURFACE AS
NATURAL SURFACE

Surfaces that are needed anyways for other purposes can double as an important part of the ecosystem and enhance nature experience.
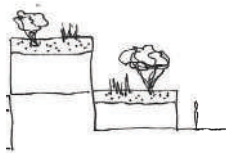
Qualities
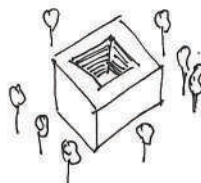■ High floor space index
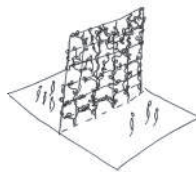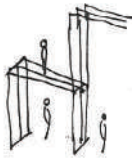■ Much natural surface
■ Visual connection to nature
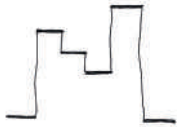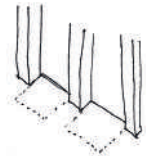
Scale ☐ ■ ■ ▫

Multifunctional division
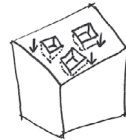and sight protection
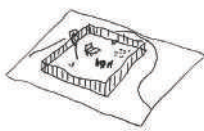*>Funenhof*
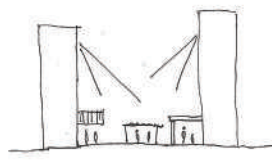
Roofs & pergolas
> Westerdok
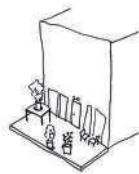
Outdoor spaces on
different levels
> Borneo-Sporenburg

Recess in wall
> Funenpark

Lowered terraces
> Funenpark

DIVISION OF INDIVIDUAL UNITS BY OBJECTS OR NEGATIVE VOLUMES

These strategies increase the mental distance between dwellings. Strong individual units can coexist close to each other with strong enclosure and visual seclusion.

Qualities

- Low visual exposure
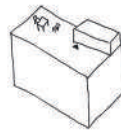- Physical enclosure
- High floor space index

Scale

Rentable areas in yard
> Own idea

Occupation of
public space
> Amsterdam generally

Shared roof terraces
> GWL terrein

SHARING SPACE

A central strategy for living closer together but with quality spaces has to be to share space. This does not necessarily mean less individual leeway. Rather, it is about using space efficiently and multifunctionally. A garden area that can be rented day-wise can be one's own for e.g. an event. Public space infront of one's door might substitute for a legally private outdoor space and contribute to a lively public space at the same time.

Qualities

- Spaciousness
- Large continuous space
- Low degree of programming
- High floor space index
- Suitability for small flats.

Scale

Open spaces on low
building parts
> Funenpark

Raised verandas
> Borneo-Sporenborg
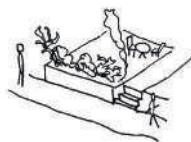
Dense vegetation
> Java-eiland, GWL terrein
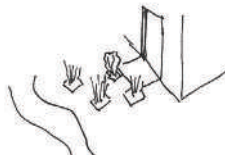
'Buffer' objects / plants
> Funenhof

DETACHING INDIVIDUAL SPACE SLIGHTLY FROM COMMON/PUBLIC

Individual spaces can be mentally detached from shared spaces by height differences, differences in materiality or other markers that indicate private territory that should not be entered. With these strategies, individual spaces can still contribute to a lively and inviting public environmen, without 'strong' borders.

Qualities

- Spaciousness
- Natural ground surface
- High floor space index

Scale

I start by visualizing what a floor space index of 2.0 would imply if laid out as a typical perimeter block. With 5 stories, the block could have a large opening.

1

Spaciousness is taken in as additional parameter. It has a strong correlation to FSI and represents a main 'nature experience' parameter. In order to maximize spaciousness, tall point buildings are most effective.

2

To add a main, influential parameter of 'private retreat', the high-rise configuration is altered in order to maximize physical enclosure of the open space.

3

To achieve easy access to the outside, the solution at hand is to reduce the building height massively. Even though some buildings are added in the middle of the perimeter block, an FSI of 2.0 is impossible to reach with this typology. The coverage is high and a small continuous shared space is left.

4

ISLANDS
TYPOLOGIES

The spatial implications of different building mass configurations are explored with the help of a physical model, consisting of baseboards, representing the two different island sizes and small wooden blocks that can be rearranged freely. One unit is representing a floor area of 36 squaremeters (6x6 meters and 3 meters in height). This size seemed practical for several reasons. 36 meters is a reasonable width for a narrow freestanding house, or row house unit, 36 squaremeters can be representing a studio-apartment, by adding two together, a typical building depth of 12 meters can be shown and by arranging 6 of them to a rectangle, a rather typical staircase unit with adjacent flats can be represented. The small grain was chosen in order to be able to arrange floor area freely and not being stuck to standard solution. Size and shape of islands and units limit the possibilities however and already have a great effect on the other aspects. Therefore the island models are only used for rough mass studies.

Two series of explorations are done, based on two different island sizes, which showed to be especially relevant. The first is 7000sqm, corresponding to the recommendation in 'Mäta stad' for the maximum average block size. (Ståhle et al., 2016) A second one is 15000sqm (150x100m) as a more typical block size in lively urban areas of Gothenburg, such as Haga and Vasastaden.

In the iterations, I test different strategies, alterations of the reference projects and take in new parameters one at a time and try to maximize their performance. First, those parameters are taken into account that showed to be most influential (see diagrams, p. 45,47). As FSI both is central for achieving urban life and being able to house many people, it is considered first: I set a fixed FSI of 2.0, as it is the minimum average recommended by Ståhle et al. (2016). Due to time limitations, but also since I felt I had gotten a feeling for the main logics, I did not experiment with higher FSI values.

In the small island series I arrive at several typologies that integrate roof spaces into the open space or have openings in their facades and a lot of height differences. Generally, it seems difficult to achieve high performances regarding several parameters within the small island. Configurations on the larger island focus mainly on creating smaller sub-spaces and permeable blocks, while keeping high enclosure and concentrating access to one side. Different scales and typologies are combined to create a change in experience from the outskirts in, or one central side to a more peripheral one.

Exploration series 1
Island size: 84x84 (7056 sqm).
Floor space index: 2.0
Gross floor area: 14112 sqm
Wooden blocks: 392

Exploration series 2
Island size: 100x150m (15 000 sqm)
Floor space index: 2.0
Gross floor area: 30 0000 sqm
Wooden blocks: 833
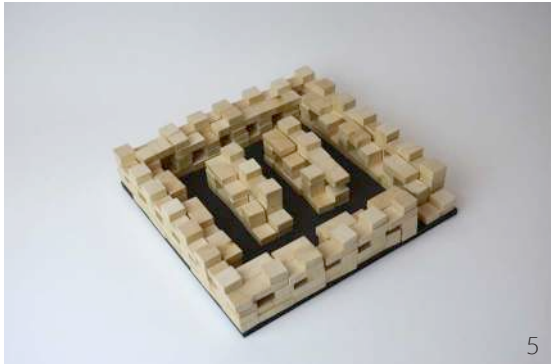
5

In an attempt to reach the FSI of 2.0 by increasing building heights, the quality of "easy access out" is weakened. Because what is outside? To which degree can balconies or smaller rooftop terraces substitute for a direct access out? When trying to get larger outside spaces, by creating 1-storey high holes within the structure, the size of private outdoor spaces is increased, but light and view will be issues hard to solve. Increasing building heights also leads to more visual exposure of the inner yard and less sunlight. Developing small flats in an efficient way seems highly problematic. Furthermore, spaciousness is low.

6

Taking the high-density row houses of Borneo-Sporenburg as a starting point, I try to combine this typology with the united shape of a perimeter block. In order to be able to realise both small flats and an easy access out, building heights are kept low. The ground floor can have own entrances, whilst the second and third floors share stairs. In this configuration, the access to private, individual roof- and garden spaces is good, whilst a larger common space is missing. A FSI of 2.0 cannot be reached.
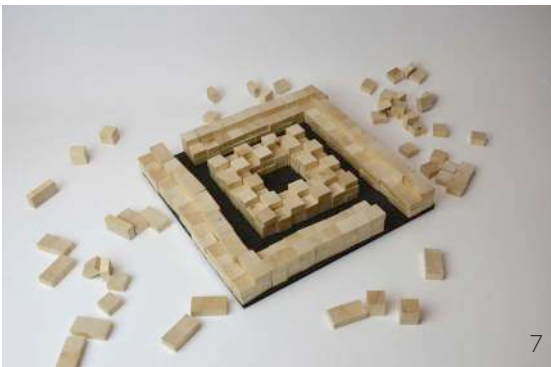
7

In an attempt to create something like Zaanhof, it is quickly found that a larger base area is needed, in order to achieve quality spaces both in the middle and in between building blocks. As Zaanhof as well is consisting of several larger islands, this is not surprising. The interplay between different islands is an important scale that needs to be considered in the design. When two perimeter blocks within each other are developed on the island of 84x84m, the remaining open space is narrow, leaving barely any space for gardens. For the apartments in the outer, higher ring, this means a difficult access to the outdoors. Having half a floor on top, the top floor can have rooftop terraces.

7B

To improve the connection between inside and outside, the outer block is broken up into smaller units. In between them, outside staircases could be placed. Additionally, the direction of rooftop terraces is varied, decreasing visual exposure and physical enclosure.

8
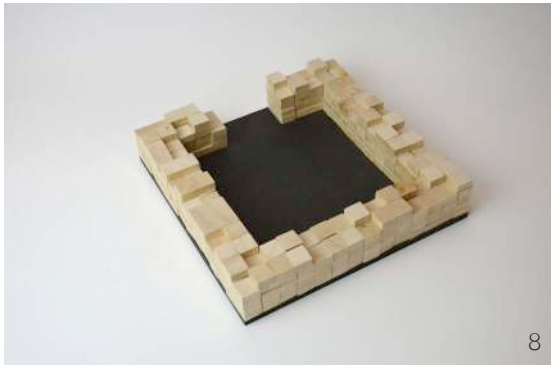
Having seen that row houses and block-in-a-block configurations lead to tiny open spaces on this small island, I take away the inner' structures and end up with a rather usual perimeter block again. A huge potential of this typology is the large open space. Here, the apartments that do not have an adjacent garden could be allocated small allotment gardens within the yard. Opening up the block at one side increases the connection to the (possibly natural) surroundings. In combination with another half-open island, the size of the continuous shared space can be increased without creating a high public flow through.

9

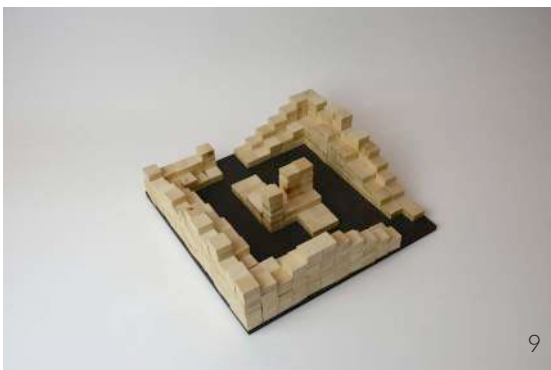A configuration inspired by BIG's 8-House. Easy access out, a good visual connection to greenery, high enclosure and spaciousness are combined in this configuration that lets buildings and landscape blend into each other. The terraced blocks can be constructed with an inclined roof, making it accessible for recreation and access to flats. In combination with a thick soil layer, this type can achieve not only high spaciousness, but also a high percentage of natural surfaces. To reduce the number of people sharing a space, a smaller building is placed within the yard, dividing it up without cutting off the connection, which would decrease usability.

10

To take the duality of urban buzz and seclusion into consideration, it is assumed that a busy urban street passes by two sides of the island, whilst the other sides border to calm areas and nature. By raising and closing one side of the block, more FSI and thus both critical mass and accessible (business) spaces are created in a central location. At the same time, the yard is protected from noise. Lowering and opening up the other side increases sun radiation and view to nature.

11
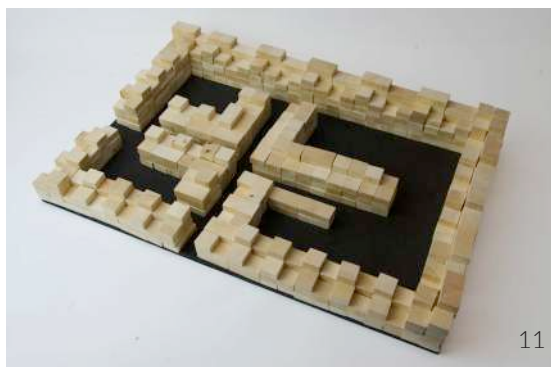
The larger island makes it possible to combine high enclosure with a large permeable space and smaller sub-spaces. Access is concentrated towards one side of the sub-blocks and through-passage is prevented. Intimate, small spaces evolve that are only shared by few. At the same time, one is not locked in in a small space but can move freely between the 4 areas. A downside is that the usibility is impeded by the division.

12
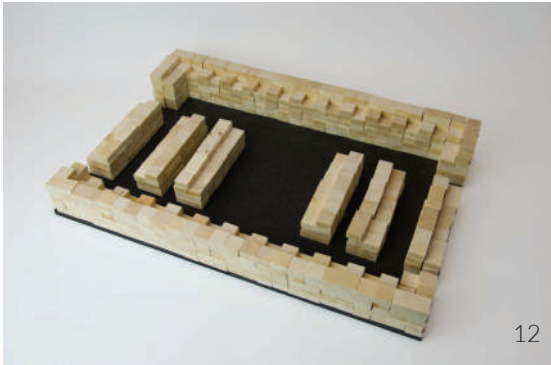
An alteration of Java-eiland. The area manages to combine public and private character and a large shared space with small-scale individual spaces, by adding small buildings within a larger yard. I suggest additionally an increased use of roofs by adding half-stories.

13
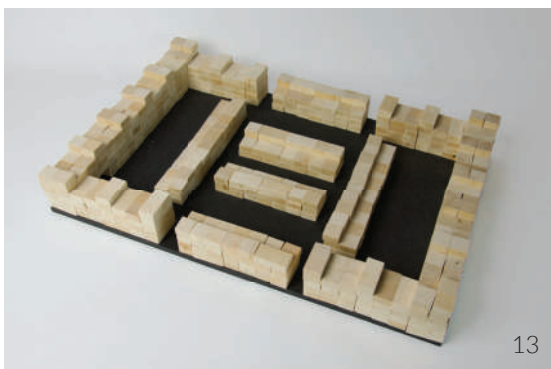
As in the previous configuration, publicly accessible paths run through the island and contribute to walkability. Here however, the division between public and private is expressed stronger: Shared areas are not exposed to through-movement, only row houses with clearly defined individual spaces. Again, the public access is concentrated at paths and seperated from the receational, private sides.

14

Another way to create sub-spaces is tested. This perimeter block that is retreating inwards at two points offers different spatialities at the inside and provides high enclosure, without interrupting the continuous space, which is positive for usibility. The areas that as a result open up to the street space are enclosed and defined by small rowhouses following the outskirts. Individual units are highlighted by shifting the seperate buildings slightly back and forth and combining different building heights. Building parts of different height adjacent to each other also make it possible to offer comfortable roof access.

15
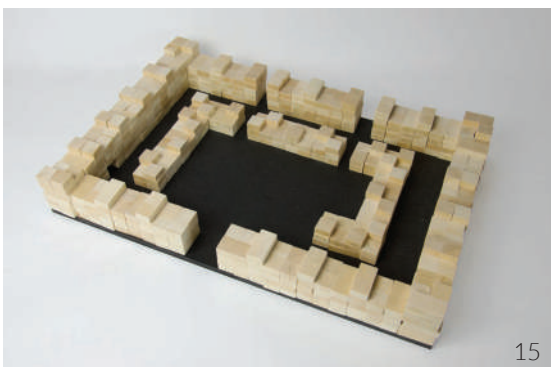
Following the logic of Zaanhof, this structure seperates clearly a shared area in the middle from private, individual units that are placed in-between building rows. It is possible to pass through the structure, but only in one direction and the shared space is rather hidden from the surroundings. I assume that busy streets would pass on the short sides of the island, which are fully closed and include higher buildings.

16

Another configuration that combines high enclosure with permeability and sub-spaces. Similarily to the previous one, the structure is opening up in the middle, where access is concentrated. The connection is not straight, in order to slow down and create a comfortable space to stay and not just a passageway. Roof usage is maximized. Different shared spaces on the roofs are subdivided by higher building parts that serve also as access points.

17

Inspired by GWL terrein, I test a combination of a perimeter block structure with an open, spacious layout within. It is assumed that one adjacent street is very busy; here high exploitation and enclosure is proposed. Away from that side, scale becomes gradually smaller and enclosure less. Free-standing buildings are placed to each other so that they form different sub-spaces, used by a smaller group of people and inviting for appropriation. A downside is that access and recreational spaces are not seperated strictly.

18

A combination of the two previous configurations. The block is closed towards the two short sides again and clearly divided into two parts. Smaller inner structures are lined up to concnetrate access. Nevertheless, one continuous, large space is kept.

19

A double-layer logic is applied, where two blocks are located behind each other, to then open up to one side with a permeable row house structure. Three different structures with different logics coexist within one island: An enclosing perimeter block (with a shared community house), a complex structure with open spaces on numerous levels and usual row houses. This broad mix makes it difficult to understand the logic of the structure and makes it less realistic.

05: BACKAPLAN DESIGN

BACKAPLAN SITE

Scale 1:20 000

APPROACH & CHOICE OF SITE

In this part of the work, the findings, strategies and typologies are translated into a Gothenburg context and tested on a real site. Site-specific challenges come into play and challenge and alter the prototypes. The contextualization gives the possibility to discuss so far abstract strategies and typologies more in detail. Since the strategies are specifically aimed at certain elements and contexts already, they can be applied right away to specific parts of the design. Typologies already are a coherent island, using certain strategies. Their form is highly dependent on the context. They can be used as inspirational base for design solutions, but have to be adapted highly.

Backaplan is chosen as site for this application, based on certain criteria: For the subject to be relevant, the site needed to be located in an urban, rather central context and have the potential to become a dense and lively district. Since a central part is to alter the network configuration and test design strategies on neighbourhood scale, the area for (re-) development had to be quite large. Plus, for Backaplan, there is already a detailed design proposal, which is convenient, as my work addresses only certain issues. The overall suggested structure and solutions regarding other aspects are kept and do not have to be dealt with.

After describing the site and the current state of planning, my own design is presented. The proposal has mostly conceptual character and should not be seen as complete, coherent design. Rather, the site functions as a test bed or laboratory where different solutions are showcased. Plus, the configuration mostly considers the four central qualities; whether it works regarding other aspects is largely excluded here. The design is thus not a full alternative proposal, but it can hopefully inspire this and similar developments by emphasizing specific issues.
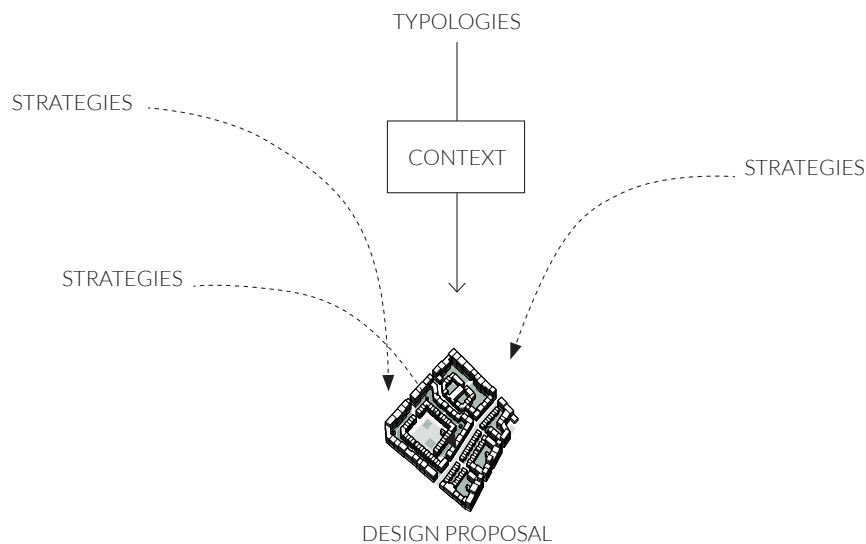
TYPOLOGIES

STRATEGIES

CONTEXT

STRATEGIES

STRATEGIES

DESIGN PROPOSAL

BETWEENESS (Radius 3,5km)   Scale 1:20 000

— 0 - 300000   — 300000 - 600000   — 600000 - 900000   — 900000 - 4959436

INTEGRATION (Radius 1km)   Scale 1:20 000

— 0.00 - 0.80   — 0.80 - 1.00   — 0.80 - 1.00   — 1.20 - 1.60

BACKAPLAN TODAY

The development area of Backaplan is located on Hisingen, Gothenburg, north of the river Göta älv, but only around 2 kilometres from the central station. It is today dominated by a traffic hub, large-scale retail and industry. As a part of the 'Älvstaden' development, the municipality aims to develop the 90 hectares large site into a central, mixed-use urban district. The vision for Älvstaden implies that Gothenburg is expanding it's centre onto the Northern side of the river and along the riverbanks on both sides. (Göteborgs stad, 2018)

The current situation as it is described in the following is mainly based on the document 'Program för Backaplan', where the municipality presents their analysis. (Göteborgs stad, 2018)

Built structure and usages
The current structure consists mainly of large retail buildings. Additionally, there are some offices and cultural activities and six one-family houses. Buildings are of 1-4 floors in height. Several housing areas of different character are adjacent in the surroundings, namely Brämaregården, Kvillebäcken and Brunnsbo. Brämaregården consists of large perimeter blocks; Brunnsbo does have large block structures as well, but these are designed more openly. The newer area of Kvillebäcken includes apartment buildings of varying heights ad shapes, assembled into rather small blocks. (Göteborgs stad, 2018)

Network
Important existing connections include Lundbyleden for motorized traffic, Backavägen for motorized, as well as non-motorized and public transport and Hjalmar Brantningsplatsen, which is a known (public) transport hub, connecting the Western part of Backaplan to the city centre. As the situation is today, the Northern parts of the development area lack good access to public transport. There is only one bus stop at Backavägen. Due to the dominance of large-scale retail buildings with extensive adjacent parking zones, the local spatial structure of Backaplan is today dominated by large, undefined spaces. The largest pedestrian flows concentrate between tram- and bus stops, shops and the adjacent housing areas. In the South of the area, along Hjalmar Brantningsgatan, passes a cycling connection. A number of barriers run along the edges of the development area, making integration with the adjacent districts difficult. In the East, the high-speed road Lundbyleden together with the train tracks parallel to it, interrupt the connection towards Ringön and Brunnsbo. The Göta älv river constitutes both a physical and mental barrier for pedestrians and bikers towards central Gothenburg. (Göteborgs stad, 2018)

A space syntax analysis of betweeness with a radius of 3,5km shows that Hjalmar Brantningsgatan in the South and a large road in the East of the side are central connections. Other rather important links include Swedenborgsgatan towards the South-West and streets around Kvillebäcken. In the integration analysis with a smaller radius of 1km, it becomes clear that almost all spaces in the area are today rather little integrated for local pedestrian flows. This goes in line with the finding that the area is mostly car-adapted.*

Noise
Due to the large roads and train connections the area is exposed to a high noise pollution. Analyses by the municipality came to the conclusion that housing can be developed in most parts anyways. Especially in the East, future buildings should however be designed so that they block the sound and provide a calmer yard. (Göteborgs stad, 2018)

Nature
The development area itself is flat, but adjacent areas are higher. As it is today, there is a clear lack of greenery. An important natural element in the area is the stream Kvillebäcken, which runs through the area in North-South direction. Larger green areas in the surroundings include Arödsberget, Ramberget and Keillers park in walking distance and Flunsåsparken and Hisingsparken a bit further away. (Göteborgs stad, 2018)

The legend categorization and range had to be changed slightly compared to the analysis in Amsterdam, since the Gothenburg's network is smaller and the same ranges would represent different spatial characters. With the updated legend divisions, the colours are able to represent roughly similar spatial characters as they show in Amsterdam. This is generally tricky though, since the spatial characters of the two cities differ so much. Whilst there is a diversity of typologies in the central parts of Amsterdam, Gothenburg is dominated by grid structures, co-existing with modernistic areas.
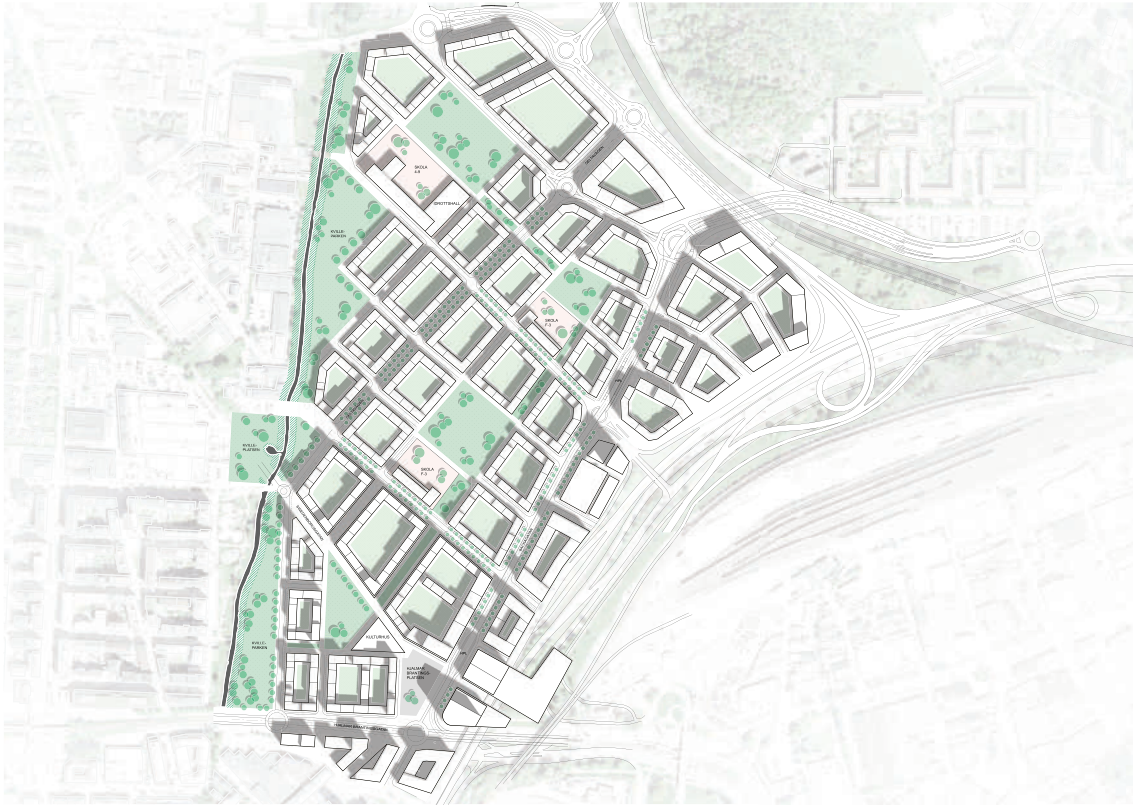
ill. 1 Design proposal by White Arkitekter

Important connections and focus points, based on 'Program för Backaplan' (Göteborg Stad 2018)

EXISITING PROPOSAL
DESCRIPTION

The municipality aims to develop Backaplan into a dense, green and urban district. Large parts of the land are publicly owned, but there are even several other owners. White arkitekter develop the proposal as consultants in cooperation with the municipality and the landowners. In the following, the current state of planning is summarized, based on the document 'Program för Backaplan' (Göteborgs stad, 2018).

Aims
The main communicated aim for Backaplan is to create a lively new district that is experienced as a part of the inner city, with an attractive mix of usages, good accessibility by public transport, bike and on foot and access to social services. Backaplan's identity as Hisingen's centre and as retail area is to be strengthened, while additional usages and qualities are to be added. Through a mix of usages and a strategic distribution and design of public spaces, it is intended to mix the flows of visitors, dwellers and people working in the area and to create attractive meeting places.

Programme
The programme proposal that the municipality published in 2018 discusses the whole development area, but only specifies the distribution of usages in detail for the area East of Kvillebäcken, which is to be developed first. It suggests a mixed use with 7000 housing units in different forms (5000 of which in the East), complemented by public service, including schools and nursery schools (5 pre-schools and 3 schools in the Eastern part), retail (140 000sqm), a cultural centre, sport and parks. Existing businesses and cultural activities are supposed to be integrated into the new planning if they want to stay.

Structure & usages
A grid structure with perimeter blocks is suggested. Main streets define superblocks, which contain several building blocks and usually a neighbourhood park in the middle. Building heights vary greatly, between 2-16 stories, with the highest buildings cumulated at main streets and nodes, whilst the inner sides of superblocks are planned to be lower. An aim is to direct entrances towards the street space and provide private inner yards.

Three main connections are proposed that bind Backaplan to the existing surroundings: Backavägen, Hjalmar Brantingsgatan and Swedenborgsgatan. They meet in nodes in Brunnsbo, at Swedenborgsplatsen and Hjalmar

Brantningsplatsen. Through traffic should be lead through Kvilleleden and be reduced on Hjalmar Brantningsgatan, so that Hjalmar Brantningsplatsen can become a central, urban meeting space. The node in Brunnsbo gains importance by a new train station that is planned here. Where the new area meets the neighbourhood of Östra Kvillebäcken, another square is suggested: Kvilleplatsen. Being located at the meeting between park and street, it is supposed to be a green space.

In the 'Program för Backaplan', it is stressed that measures are needed to bridge surrounding infrastructural barriers, especially in order to be able to establish the important connections to Frihamnen and Brunnsbo. The current plans for the area include suggestions for where to implement crossings over and under the barriers, but it is also stated that these are not developed in detail and have to be explored more in coming detail plans.

The block adjacent to Hjalmar Brantningsplatsen constitutes the retail centre of the area. Additionally to that, retail is proposed to be located in the ground floors along main streets. Along the traffic infrastructures in the East, offices are cumulated. Although these focus areas include a higher share of certain usages, the whole area is planned as mixed-use. The housing percentage varies in different parts between 30-70% but is overall the dominant usage.

For establishing a new network of natural spaces, Kvillebäcken is thought to be the backbone. Along the riverbanks, a large park is suggested. Green paths connect it to smaller neighbourhood parks within the 'superblocks'.

Zoning & development stages
The area will be developed successively. There are several zoning processes for Backaplan on-going at the moment. A traffic-planning proposal for the Northern part has already been accepted and construction is scheduled to start here this year, 2019. Planning for the future retail areas in the Eastern part of the area has come far and is expected to be adopted shortly. Next up is the zoning plan for the Southern area, close to Hjalmar Brantningsplatsen. After that, a plan for the central parts will be developed. The most western area is to be developed lastly. For this area, plus some smaller blocks in the South and North, there is no detailed program yet. For the completion of the whole area, 15-20 years are estimated. (Göteborgs stad, 2018)

BETWEENESS (Radius 3,5km)   Scale 1:20 000

— 0 - 300000   — 300000 - 600000   — 600000 - 900000   — 900000 - 4959436

INTEGRATION (Radius 1km)   Scale 1:20 000

— 0.00 - 0.80   — 0.80 - 1.00   — 0.80 - 1.00   — 1.20 - 1.60

[ ] Chosen site

EXISITING PROPOSAL
NETWORK ANALYSIS

An integration analysis (Radius 1km) and betweeness analysis (Radius 3,5km) show potential centralities of the suggested network. In order to get a more realistic outcome, not only the new structure of Backaplan is added to the existing network, but also the new bridge (under construction) and planned infrastructural changes that connect Backaplan to central Gothenburg.

In terms of integration, the overall structure is quite homogeneous: Due to the grid, most areas have high integration values; the Southern parts around Hjalmar Brantingsplatsen achieve the highest, the northern parts slightly lower values. Also the neighbourhood parks are well integrated. Secluded spaces are missing.
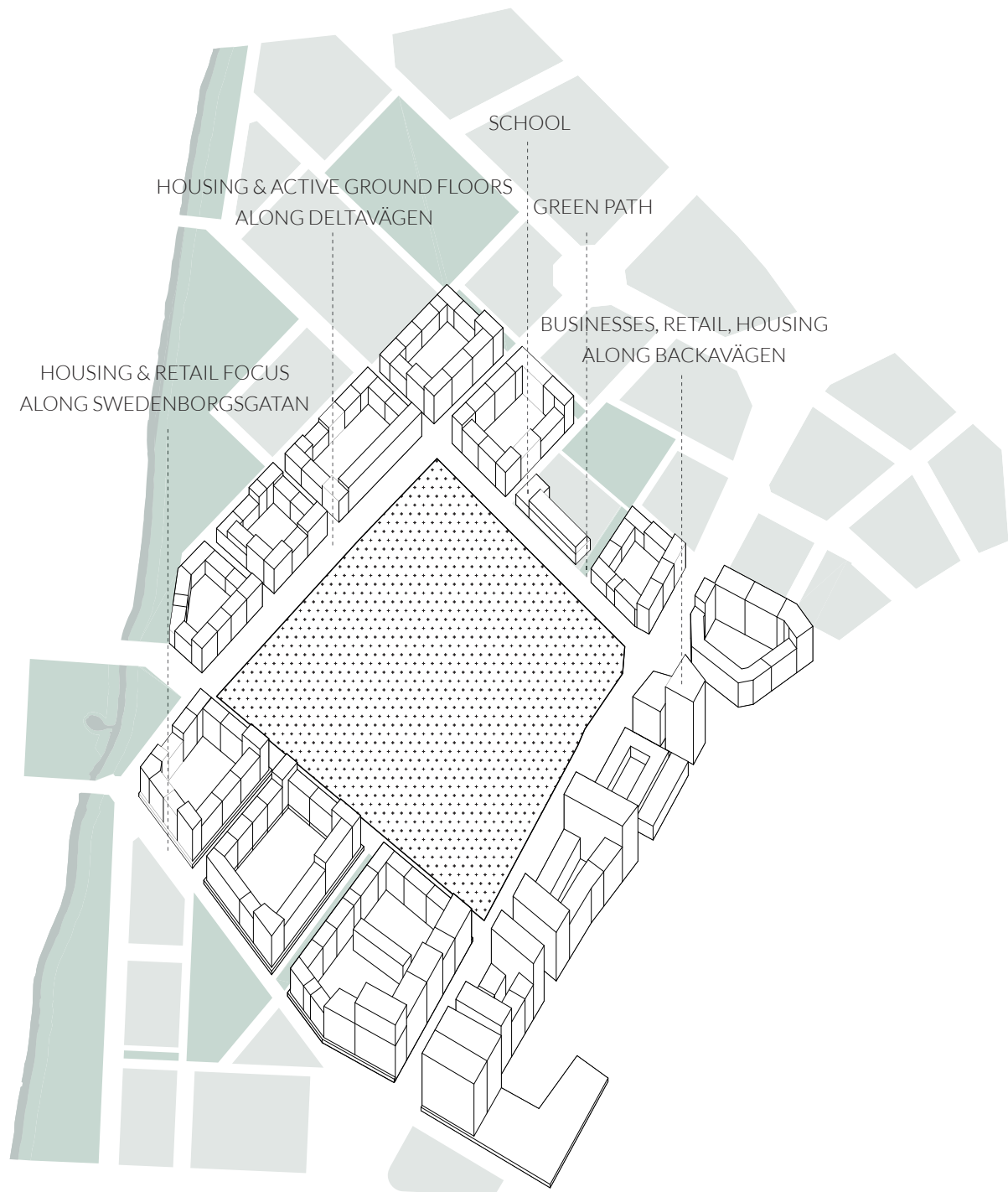
Noteworthy about the proposed structure is that it breaks with the strict South-North grid structure in the West of it and instead suggests shifting the grid by around 45 degrees. Most likely, this is because of the diagonal directions that are proposed to run towards Hjalmar Brantingsplatsen and for infrastructural reasons (railway crossing, stations etc.). However, the proposal seems to concentrate centralities in the East / outskirts of the area: The betweeness analysis shows high centralities along Backavägen, Hjalmar Brantningsgatan and at least most parts of Swedenborgsgatan. Compared to other inner city areas, the distance between streets with high betweeness is large in Backaplan. Deltavägen does not appear as such a strong link in the analysis as intended in the proposal. A solution could be to move the central connection in the East inwards, but that is difficult, since the existing crossing of the railway is in the East. Moving Backavägen inwards would also move it away from the office-focussed strip along the noisy traffic infrastructures in the East. Developing Deltavägen as another central street with active frontages and public transport could be another solution. In the proposal, no tram stop is proposed in the central parts of the development area. Deltavägen has a potential for becoming another central

street in the area. It shows in large parts both high integration and high integration and leads towards Kvilleplatsen. Deltavägen's centrality would be strengthened additionally by connecting it directly also for pedestrians to the in the North across Bohusbanan. The problem with this is the train tracks that cross here.

Another issue I see with the proposed structure is, that there is no continuous East-West connection that shows high betweeness as well as high integration. The space with highest betweeness in East–West direction crosses several superblocks and leads diagonally up towards Brunnsbo. All of these challenges are most likely to be caused by the strong barriers in the East and North that make it impossible to establish frequent connections in those directions.

For the context of this work, I keep the overall structure of the superblocks and main connections as it is proposed, as it is based on an in-depth analysis of several issues that I can not cover in the context of this work and takes care of a number of challenges, especially regarding the complex issue of bridging surrounding barriers. This scale master planning is not the focus of this thesis and it is not possible in the short time available to cover both this scale and individual island structures. Plus, the network analysis shows that the overall structure goes roughly in line with the aims of the municipality.

Based on the network analysis, I choose to work with a superblock between Backavägen and Deltavägen in my design (marked in maps). – This area fits the purpose well, as it is centrally located, adjacent to streets with high integration and betweeness values and in close proximity to the retail centre. I see a potential for urbanity, active ground floors and urban character to develop here, but with housing and the local neighbourhood scale in focus.

SCHOOL

HOUSING & ACTIVE GROUND FLOORS
ALONG DELTAVÄGEN

GREEN PATH

BUSINESSES, RETAIL, HOUSING
ALONG BACKAVÄGEN

HOUSING & RETAIL FOCUS
ALONG SWEDENBORGSGATAN

I choose to work with a sub-area of Backaplan, which has a size comparable to the neighbourhoods that have been analysed as references (7,22ha). As the most homogeneous "superblock" of the proposal, the chosen area is a good ground to test alternative solutions that aim to creating differentiation: Islands are of approximately the same size and organised within a strict grid. The local scale integration is overall high; which indicates low hierarchy in local movement. Betweeness values differ on the different sites of the area: Backavägen has the highest values, rather high ones are achieve by Deltavägen; the other sides are low in betweeness. This creates an interesting, slight variation in the preconditions. The area is located close to a (planned) large park, which allows me to focus on neighbourhood scale open space.

As part of the area 'central Backaplan', the site is supposed to include most housing according to the 'Progam för Backaplan' (Göteborgs stad, 2018). Additionally, one school and two pre-schools are suggested within this area. Integrating a schoolyard into the open space network or even facilitating a shared use for the school and the public requires careful planning and different strategies that have not been discussed in this work. I exclude the school usages in order to be able to focus on housing, combined with active frontages.

On site, a perimeter block structure of 5-8 storeys is suggested, with a neighbourhood park in the middle. A green walking path is planned to run through the area and connect it to other green areas. The inner sides of the superblocks are suggested to be lower than the outer sides. A lower school building in the South increases sun exposure of the park in the middle. Singular high-rise buildings could be integrated, according to the 'Progam för Backaplan'. South of the site, an area with higher exploitation and higher share of retail and businesses is suggested. East of it, higher structures are adjacent, with a high percentage of businesses. West and North of the area, heights of 4-8 stories are proposed. In general, the surrounding structures are not decided on and under constant change. A plan I received from White arkitekter in March 2019 (see page 122) already differs slightly from what is presented in the municipalities programme from 2018. Modelling the proposal, the shape, height and position of structures was assumed, based on the information available.
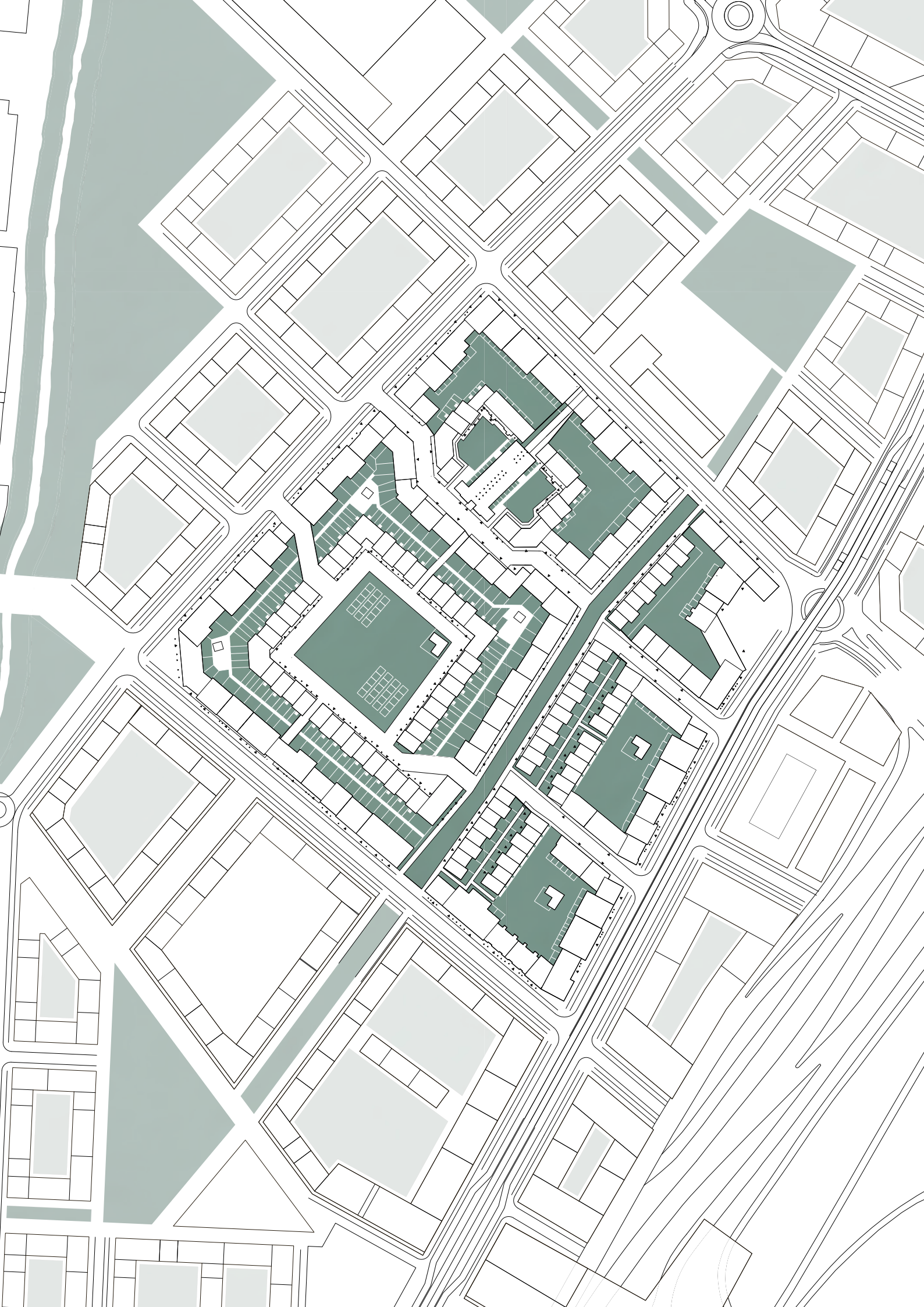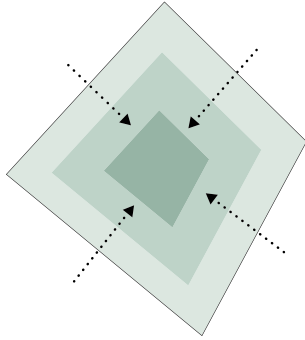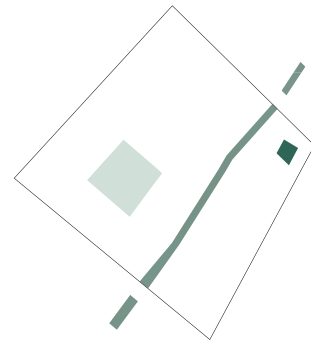
Transition in scale and character
from outskirts to core(s)
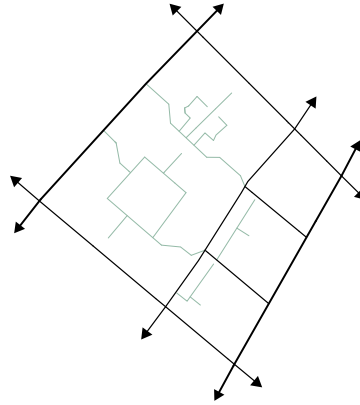
Well-integrated spaces for
lively streets, secluded areas
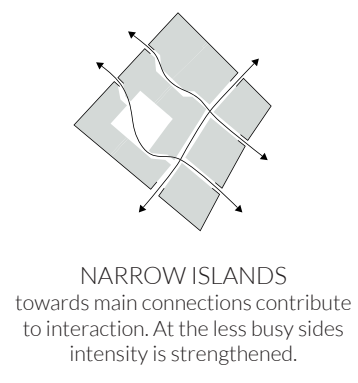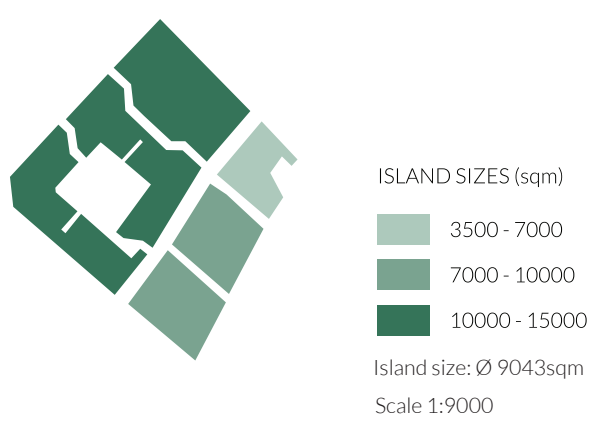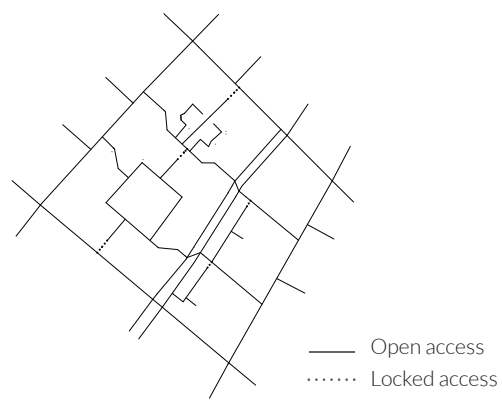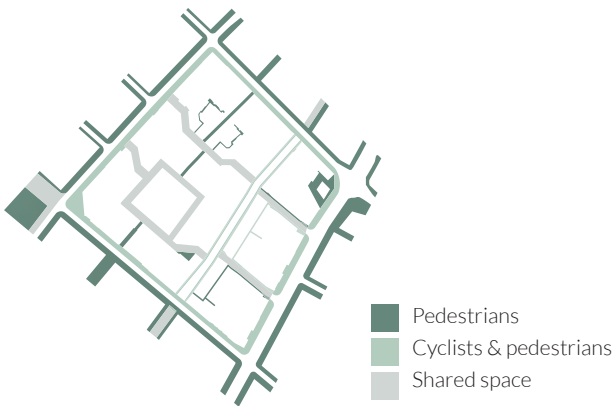for recreation and calmness.

Green spaces of different character:
A lively pocket park, an active green
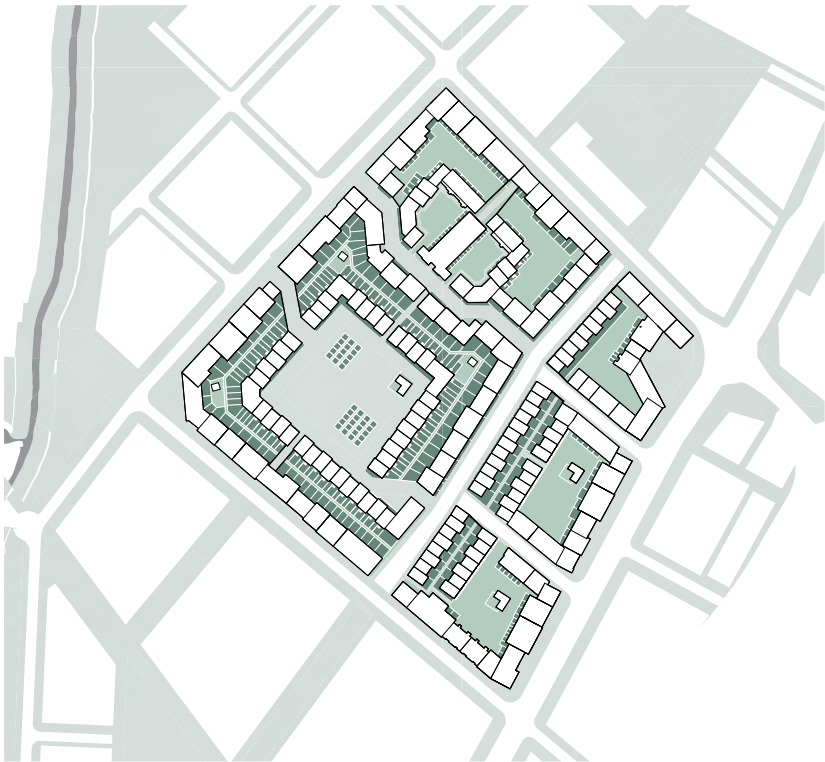path and a cozy neighbourhood park.

The design builds on the idea of a "superblock" with a gradual transition of centrality, character and scale inwards. As the area is framed by two important connections with high betweeness and integration values and the surrounding areas are very permeable, I see the possibility to develop more intimate places at the core of the site.

In order to create differentiation in the network, I apply different strategies and typologies in different sub-areas: In the South, a strict grid is continued, in order to support the interaction potential and centrality around Backavägen. One strong South-North connection is established, to continue the green path and provide an alternative connection here with different character. In the North-East, the typology of a secluded inner ring is tested. The character is strengthened further by interruptions and angular shifts. In the most Northern part, angular shifts are applied to create a medium centrality.

In relation to the centralities, green spaces of different characters are proposed; because for nature experience, green spaces should be well integrated, for privacy and ownership, the opposite is the case. A pocket park at a central connection works similar as a square, where people can sit and observe the life around them. The green path is continued: It can be developed as an active green space with pedestrian and bike movement and activity possibilities, such as play and training facilities. A secluded neighbourhood park provides a more intimate recreation space for the adjacent dwellings.

BETWEENESS (Radius 3,5km)   Scale 1:9000

— 0 - 300000   — 600000 - 900000
— 300000 - 600000   — 900000 - 4959436

INTEGRATION (Radius 1km)   Scale 1:9000

— 0.00 - 0.80   — 0.80 - 1.00
— 0.80 - 1.00   — 1.20 - 1.60

Pedestrians
Cyclists & pedestrians
Shared space

Focus on shared space and pedestrian / bike movement
No through-connection for motorized traffic

—— Open access
······ Locked access

To create secluded, private areas, without hindering
permeability, long blocks and dead ends are
combined with lockable entrances for dwellers.

ISLAND SIZES (sqm)

3500 - 7000
7000 - 10000
10000 - 15000

Island size: Ø 9043sqm

Scale 1:9000

NARROW ISLANDS
towards main connections contribute
to interaction. At the less busy sides
intensity is strengthened.

WALKABLE OPEN SPACE
AND IT'S ACCESSIBILITY

- Individual, private use
- Shared, private use
- Public use
- (Public) water
- ◄ Main entrances

NATURAL GROUND
SURFACE AND IT'S
ACCESSIBILITY

- Public natural area
- Private natural area
- Water

Measures:
Natural (public) surface: 27 %
Metric distance to
natural space: mostly
10-80m, max.160m
Topological distance to natural
space: mostly 1-2 steps

Three subareas of island typologies were tested. Each has a unique approach to interact with the network.

TYPE 1
STRONG BLOCK

The area at Backavägen is a central location, which is likely to have quite some flow of people. Therefore the islands themselves function as strong units and differentiation in character is created by the island and building typologies. The focus is on high seclusion and a very private yard.

Strategies
Purely private and public sides: all entrances on public side, controlled, lockable access points

Opening up to nature & calmness: combination of scales, stepping down building heights

References
De Pijp, Westerdok, Java-eiland

TYPE 2
NEIGHBOURHOOD UNIT

Here the network itself already creates strong differentiation. The public space doubles as shared area and I assume that the islands and buildings themselves can have less emphasis on creating secluded shared spaces. But since public and private blends, the focus is on complementing this with clearly seperated individual spaces in between long perimeter blocks.

Strategies
Purely private & public sides: Narrow blocks enclosing individual spaces, together enclosing common space; controlled, lockable access points

References
Zaanhof

TYPE 3
INVITING COMMUNITY

The Northern part combines these two approaches: The network lowers the degree of centrality a bit, but additionally, the built structures form intimate spaces. I suggest small, partly half-open yards that define small communities. The focus is on creating personal, appropriated shared space.
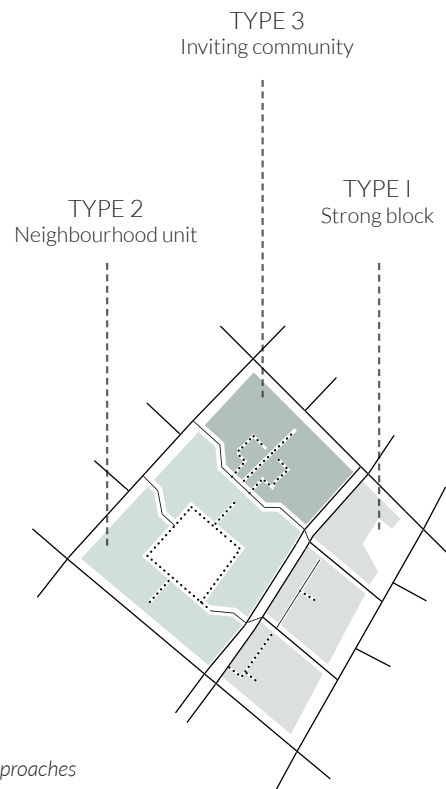
Strategies
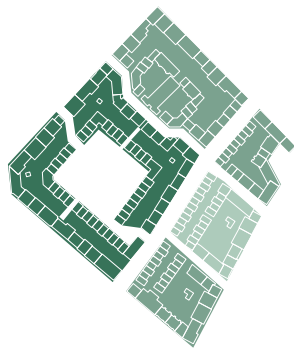Opening up to nature & calmness: Stepping down building heights, combination of scales

Permeable / half-open borders: Smaller building parts attached, buildings reaching into a yard.
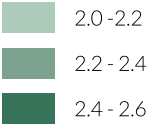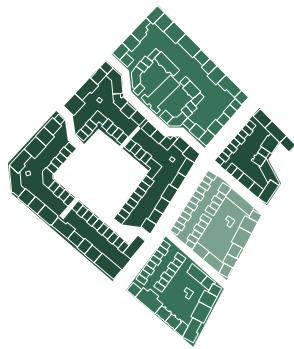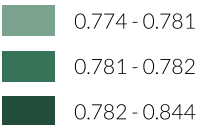
References
 GWL terrein, Urbana villor, Funenhof

TYPE 3
Inviting community

TYPE 2
Neighbourhood unit

TYPE I
Strong block

Three areas, three approaches

FLOOR SPACE INDEX (sqm)

- 2.0 - 2.2
- 2.2 - 2.4
- 2.4 - 2.6

Average floor space index: 2,4
Scale 1:9000

SPACIOUSNESS (sqm)

- 0.774 - 0.781
- 0.781 - 0.782
- 0.782 - 0.844

Average spaciousness: 0,76 (without roofs)
Scale 1:9000

PLOT SIZES (sqm)

- 0 - 500
- 500 - 2000
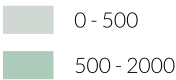
Plots widths: 7-30m, most ca. 10m
Scale 1:9000

A | Apartment blocks
B | Row houses
C | Community houses

4-10 floors
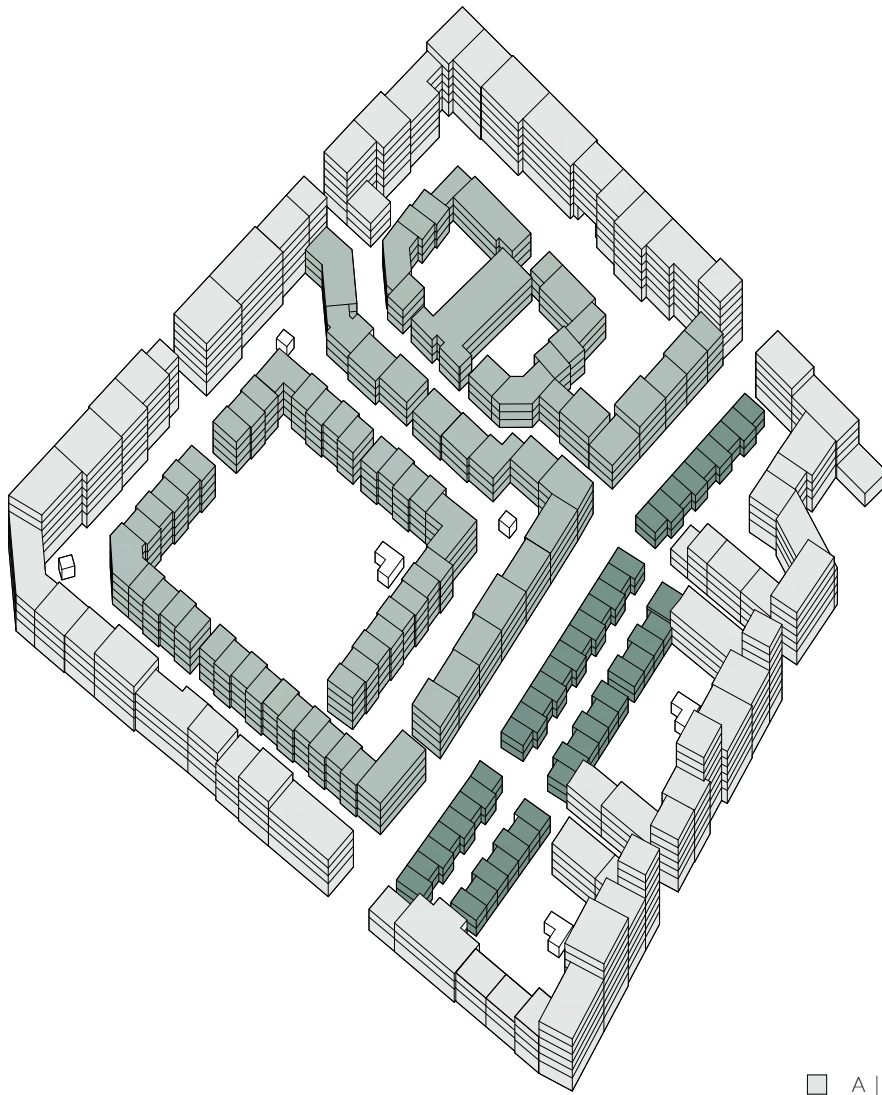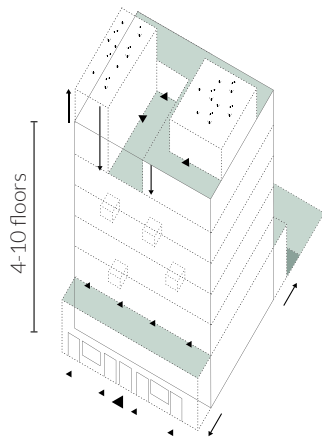
2,5 floors

3-4 floors

TYPE A
TALL APARTMENT BLOCKS

A typology for busy, urban contexts with active frontages. The focus here is on creating contact to the outside even on upper floors. By a large variation in height, several rooftops are accessible easily from different levels and the building is divided into smaller units.

Ground floors are 5m in height and deeper in order to be adapted for business and retail usage. On top of the protuding building part, circulation platforms or terraces can be placed.

Some units can have individual, private spaces attached, but the focus is on a shared yard with intimate character for a large range of - also private - activities and a bookable garden house.

Strategies
Highlighting individual units
Integrating roofs in the open space
Open-air circulation spaces
Building surface as natural surface
Division of individual units
Sharing space
Detaching individual units
from common

References
79&Park
Funenpark
Funenhof
GWL terrein
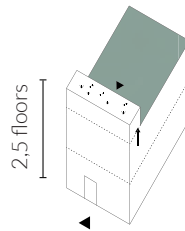
TYPE B
URBAN ROW HOUSES

Urban row houses are placed at the green path, where the overall scale is smaller and there is only housing. The typology can be used in areas with some public flow, where a clear differentiation of private space might be needed for appropriation to happen.

On top of two housing floors, small volumes stick up in order to provide an easy, direct access to the outside.
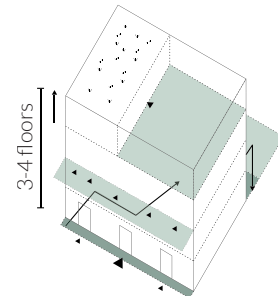
Depending on the location regarding people's flow and sun, the units have a larger front garden or only a narrow front zone combined with a garden in the back.

Strategies
Highlighting individual units
Building surface as natural surface
Detaching individual space
from common

References
Borneo-Sporenburg
Funenpark
GWL terrein

TYPE C
COMMUNITY HOUSES

A typology that aims to create small, personal communities within a building. Volumes are of medium height and provide a good access out. Central feature of this typology are shared open-air spaces, in the form of access balconies and/or rooftops. These are shared, but by few people.

Ground floor flats and most second floor flats have access to individual gardens and in sun-exposed locations also to small individual zones in front of their dwellings.

Strategies
Highlighting individual units
Detached individual units
Open-air circulation spaces
Division of individual units
Sharing space
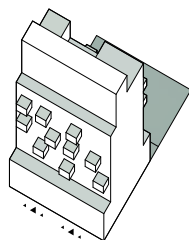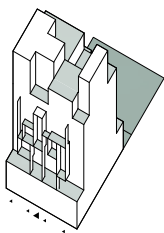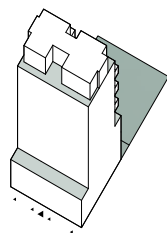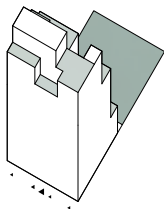Detaching individual space
from common

References
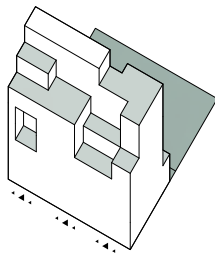Funenhof
Urbana villor
GWL terrein
Funenpark

BUILDINGS \ EXAMPLES

These drawings illustrate what kind of buildings I have in mind, but should mostly be seen as examples. They could look in very different ways, while using the same spatial logics.

A | APARTMENT BLOCKS

B | ROW HOUSES
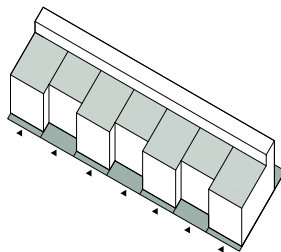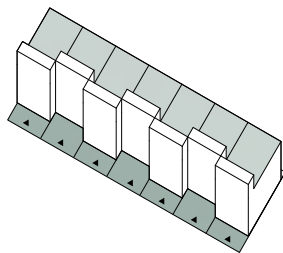
C | COMMUNITY HOUSES

NATURAL GROUND SURFACE   ASSESSIBLE GREEN ROOFS   OTHER ACCESSIBLE ROOFS

Built structure
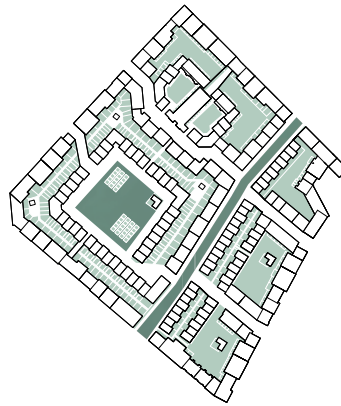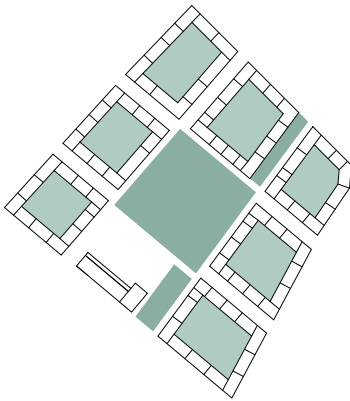
Green spaces
Dark = public Light = private
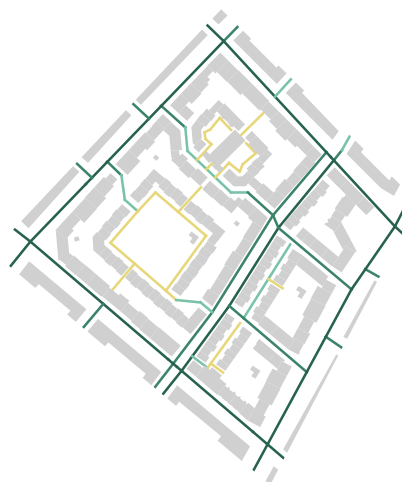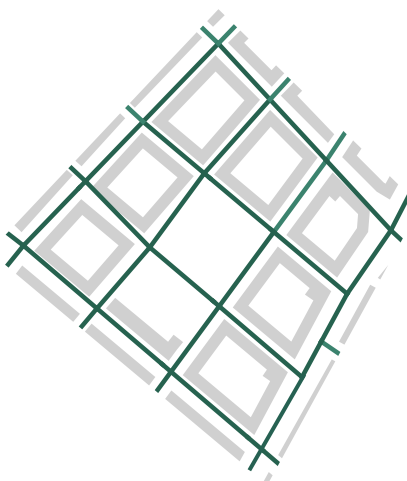
Integration (Radius 1km)

OFFICIAL PROPOSAL   RURBANITY PROPOSAL

COMPARISON
WITH THE ORIGINAL PROPOSAL

The official proposal for the site has a homogenous structure, which is problematic regarding the four qualities.

A secluded park that is proposed in the middle might have quite some flow of people passing through.

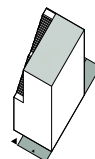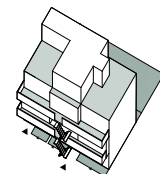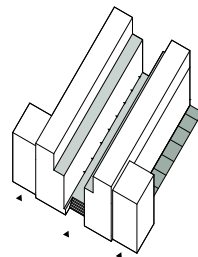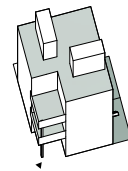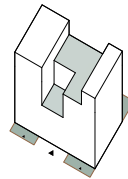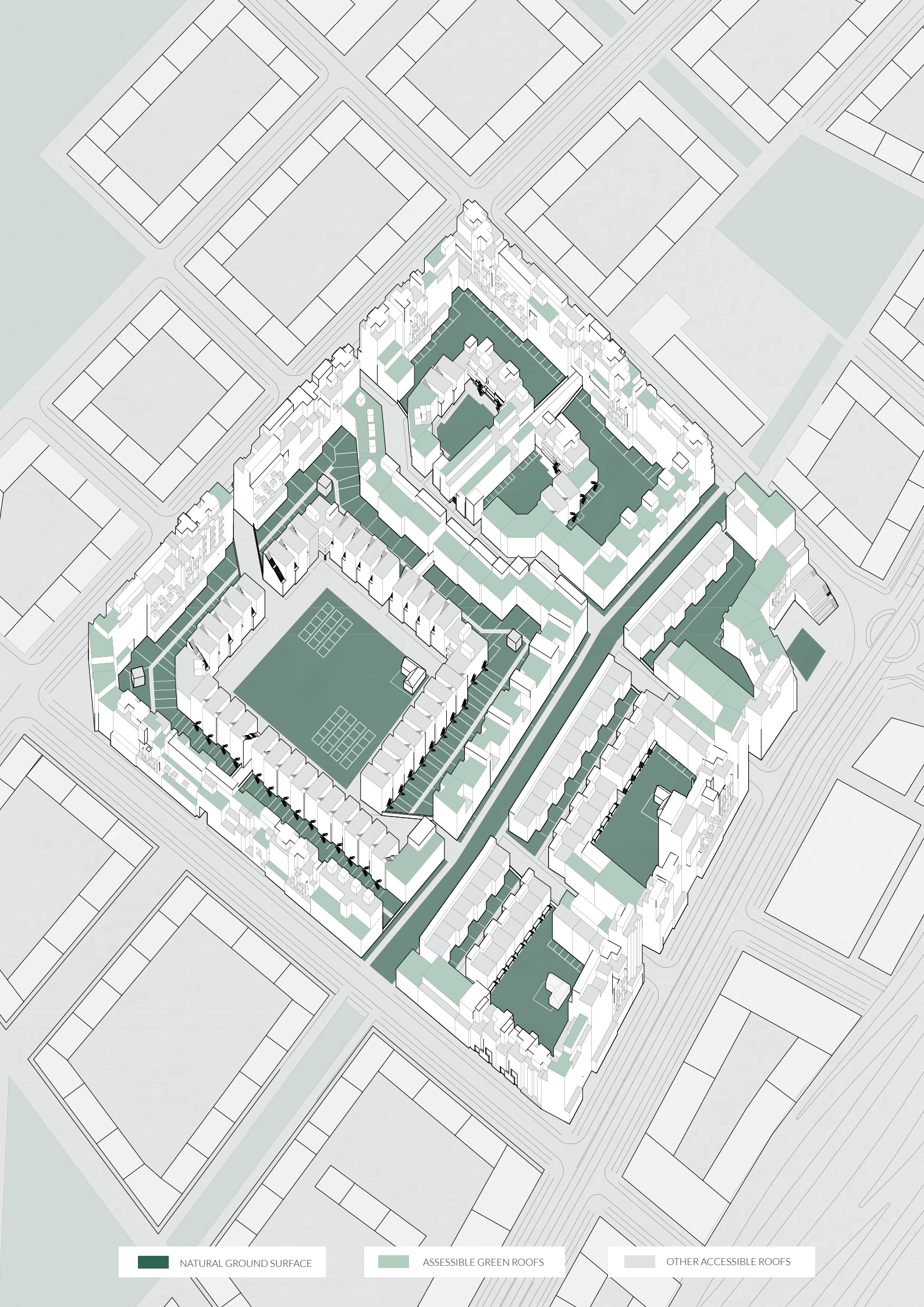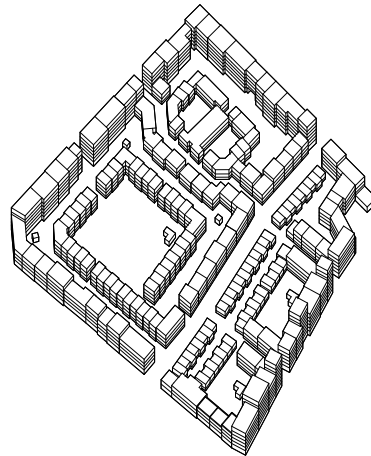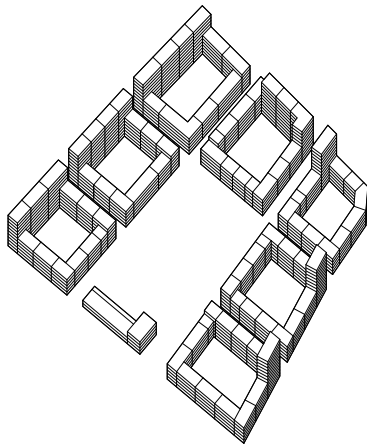All islands are developed as perimeter blocks; a variety of housing forms to choose from is missing.

From what can be seen from the plans, there is not a strong focus on private, individual outdoor spaces.

Overall, it seems as if there is not so much differentiation of spatial character thorughout the area - The public is always highly public, the private clearly enclosed and private. This is at the same time the strength of the existing plan: Borders are clear and yards clearly dedicated to the people living within a block.

The rurbanity proposal creates a differentiation in character and scale. I create small units on building scale in order to support individual ownership and on urban design scale in order to support a community feeling.

Buzzing areas are located close to calm areas. Most dwellings have easy access to both calm an lively open (green) spaces and shared and individual ones.

There is a large focus on access out and individual outdoor units. Outdoor and indoor environments are integrated with each other, both in the way that pedestrians are prioritized as main users of the streets and street space can be used for recreation and also by placing as much circulation space of singular buildings outdoors as possible.

Regarding the parameters, the altered proposal improves the performance of the area. It has to be remarked though, that the original proposal takes care of numerous additional aspects, which the rurbanity proposal neglects.

NEIGHBORHOOD SCALE

HOUSING MANY

Low integration (Radius 1km)

≤0.5 in several parts

High floor space index

≥2.0

PRIVATE RETREAT

PUBLIC LIFE

Centrally-located public spaces

Metric proximity to closest green area

≥100m

Medium sland size

≥7000sqm

Topological proximity to closest green area

High betweeness (Radius 3.5km)

100%

≥2.0

Much natural ground surface

High floor space index

High integration (Radius 1km)

NATURE EXPERIENCE

ISLAND SCALE

HOUSING MANY

Large continuous space

Small group sharing

Little programming

High floor space index

≥1ha

≥4.0

no progam/household

Physical enclosure

Spaciousness

100%

0.5sqm/sqm

in all building parts

Suitability for small flats

Low visual exposure

0%

PRIVATE RETREAT

PUBLIC LIFE

Visual connection to natural elements

Rich nature

≤5m distance

Frequent entrances to street

Easy physical access to the outside

Direct access

≤5m / ≤100sqm

Narrow / small plots

100%

≥4.0

Much natural ground surface

High floor space index

NATURE EXPERIENCE

ASSESSMENT

The design manages to achieve a high performance regarding many aspects. What became the strongest focus of the design is the relation between private and public and different spatial characters connected to that and the relation between inside and outside. This also shows clearly in the assessment. - The values regarding these aspects are high. What has been neglected in this focus on privacy and ownership was the positive effect of openness and large continuous spaces. Here, a rather low score has been reached.

With an average of 2,4 on island scale and 1,8 on neighbourhood scale, floor space index values are quite good, but not exceptional. The density of the development was limited and balanced out by the other aspects. Also, trying to raise the FSI resulted in large, rather usual apartment blocks. Here, more architectural work would be needed.

Continuous shared space: 0,2ha
Entrance frequency: max. 10m
Natural surface (without roofs): 37 %

The secluded neighbourhood park

06: CONCLUSIONS

CENTRAL FINDINGS

This work started with the discussion of the urban and the rural and the qualities people connect with urban and rural living. Right from the beginning, it was clear that the urban and rural duality can serve as a relevance and starting point, but the preferences for a certain form of living are too multi-layered and complex to cover in this context. Therefore, four qualities were chosen for further examination: Housing many, nature experience, private retreat and public life. Research on these – still broad – fields is extensive. Taking on a morphological approach, a number of parameters could be defined, specifically focussing on network configuration and spatial perception. Parameters that showed the clearest correlation with different characters and thus can be seen as most influential are integration values, natural surface and parameters regarding the distribution, size and location of shared and individual spaces – mostly physical and visual enclosure and the size of continuous, shared space. The accessibility to the outside showed to be strongly related to the building typology and that again to the relation of open space to density.

The in-depth analysis of reference projects became a central part of the work and the main source of information and inspiration. In Amsterdam, a number of interesting practices and logics could be seen, especially regarding the interaction of private and public life and dense, urban living with a close connection to the outside environment. The approach to concentrate on certain aspects and compare areas rather independently from their historic context and aesthetic appearance turned out to be fruitful, as it revealed the underlying spatial logics.

In the next step, the lessons learned from Amsterdam were translated into strategies and typologies for both network and island configuration. While typologies served mostly as support and background experience for the site-specific proposal, the strategies that could be identified were directly applicable as they only concerned certain aspects or spatial elements and could be combined according to a specific situation. For networks, the three identified strategies represent the main logics of spatial configuration, that also space syntax is based on: Long, straight spaces are well-connected and thus likely to be used by many people, while changes in direction and interruptions make spaces less legible and decrease their centrality in the network. On island scale, numerous strategies could be identified, referring to certain sub-scales from urban design to architectural details and addressing certain qualities. Most strategies concern the interrelation between public and private spaces. Those regarding combining urban, dense structures with nature mostly aim at using all potential surface for natural elements.

As the result of the analysis and explorations, the site-specific design proposal can in a way be seen as a conclusion manifested in form and space. The proposal for Backaplan manages to offer a number of interesting spatial characters, especially regarding the relation between public and private and inside and outside. However, if qualities are achieved also depends largely on small-scale design. Density was difficult to solve and resulted in large, rather usual apartment blocks. Here, more architectural work would be needed.

The initial question was, how urban and rural qualities, and especially the four aspects of nature experience, private retreat, housing many and public life can be combined in an urban context. For doing so, some main aspects could be identified, that also show as central features in the design:

- Generally, it is about providing access to a diversity of spatial qualities: In the proposal, buzzing areas are located close to calm areas and most dwellings have easy access to both calm and lively open (green) spaces and shared and individual ones.

- The proposal creates a differentiation in character and scale: I create small units on building scale, in order to support individual ownership and on urban design scale, in order to support the impression of small, personal communities.

- The connection between spaces is essential, which is why I integrated outdoor and indoor environments strongly: This can for example be seen in the way that street space is calm and of small scale and can be used for recreational uses. In buildings, many circulation spaces are placed outdoors and short topological and mental distances are created from the dwellings out.

- Clarity for what and for whom spaces are meant and how they can be used is essential. In the design, this is expressed e.g. by enclosing shared spaces and providing bookable garden houses. This clarity also makes it easier to share spaces and thus use them time and space-efficiently.

- Variety is key: In Backaplan, I developed three different subareas with different focuses (different levels of access out, density and seclusion). None manages to fulfil all parameters - as the reference cases do not either - and it might not be possible to do this. But people are different and have different needs and preferences. Even within the assumption that most people appreciate and need the four central qualities, it can be assumed that priorities differ largely with differences in lifestyle. Therefore, the design offers a variety of characters and housing typologies.

- An ecosystem focus: To provide rich nature experiences in an urban environment, the built structures need to be treated as inherent parts of the ecosystem and for example roofs and other vacant spaces should be considered as green surfaces.

- Certain typologies and heights raise associations and the character of the built environment thus plays a role. We can integrate the rational qualities of rural living, but only partly the emotional. Different, individual volumes support at least the impression of unique, small-scale units, but to address emotions, more work on the architectural scale is needed.

OUTLOOK

This thesis contributes with a systematic exploration of different concepts, typologies and strategies. It provides an overview that can serve as inspiration and reminder of certain issues in architectural design processes, especially regarding the interplay between network and buildings. On island and building scale, the design stays a test, which lead to a certain degree of ambiguity and vagueness. The different island types would need some further development to make sure they achieve the intended qualities. This is even more the case for the architectural scale of detailing. Due to the limited time, a broad focus, and me mainly being an urban designer, I do not suggest specific, detailed solutions, but rather set the frame for architects and landscape architects to act artistically within.

To be able to use this framework in municipal planning, one would need to develop tools to regulate how public, shared and individually used spaces work together and to ensure that private landowners work together, to create spaces of specific characters. In this context, I looked at the questions under the premise that I could design freely. In reality, it is harder to regulate the design of the private spaces.

Another field that needs further exploration is the influence of culture and climate on the use of outdoor spaces, the integration of inside and outside and the relation between public and private. This work could only touch on some of the most obvious cultural issues, but did not analyse them scientifically. Plus, culture is not static and attitudes might change with the conditions. It needs to be considered that attitudes and behaviour might adapt when higher density and crowdedness became more usual in Sweden.

PERSONAL REFLECTION

I took on a large task with several sub-moments and had the ambition of exploring parameters, typologies and a specific design in depth. For the time frame of a master thesis this was not feasible. Therefore the quality of the work became more to provide an overview of different aspects, strategies and typologies, rather than reaching deep into one specific issue. In retrospect, I understand, that this is what I needed for my own learning process. I had experience within the main subjects previously, but had to get acquainted with new methods and perspectives. It was very satisfying to have the possibility to explore commonly used, but maybe not so questioned concepts systematically. While it is a pity that the time allocated to the site-specific design became short, I also know that this work became what it is because I was lead by my curiosity. After doing several projects with "quick" design decisions, I needed this slow approach. Plus, I wanted to go back to my roots of urban planning. - In my bachelor education, analysis was more central than it has been in recent projects. In my future profession, I hope to be able to combine my curiosity to analyse in detail with the joy I experience in designing.

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ILLUSTRATIONS

ill. 1 Illustration plan of Backaplan proposal
White arkitekter, internal material. Received by mail on April 17, 2019.

GIS MAPS

Non-motorized network (Integration and betweeness maps):
Berghauser Pont, M., G. Stavroulaki, K. Sun, E. Abshirini, J. Olsson, L. Marcus (2017). Quantitative comparison of the distribution of densities in three Swedish cities, ISUF 2017 XXIV international conference, October 2017 in Valencia.

Density model (FSI and OSR maps):
Berghauser Pont, M., G. Stavroulaki, K. Sun, E. Abshirini, J. Olsson, L. Marcus (2017). Quantitative comparison of the distribution of densities in three Swedish cities, ISUF 2017 XXIV international conference, October 2017 in Valencia.

Property model (Plot density maps):
Bobkova, J., L. Marcus, M. Berghauser Pont, (2017). Spatial Capacity: Introducing multivariable measures of urban form that influences urban diversity, The 11th Space Syntax Symposium (SSS11), July 2017 in Lisbon.