Benefit of the Common
housing for the urban families

Marta Kaniuk
Reflection Report

Benefit of the Common
housing for the urban families

Marta Kaniuk
4901746

Msc4 Dwelling
Dutch Housing Graduation Studio

05.2020
Preface

During the Dutch Housing Graduation Studio, I have been working on a cohousing project for the community, based on the theory of Robin Dunbar of relationships in group sizes. During the months of researching and designing, I have used various ways of doing research and each of them had influence on the design process and the design itself.

This report will reflect on research methods that I have used, the relation between research and design, and dilemmas that I encountered in my design process.
| CONTENTS |
|-----------------|------|
| **Introduction** | 5    |
| **Methods and approaches** | 7    |
| Research phase   | 8    |
| Field research   | 8    |
| Problem analysis | 9    |
| Literature study and case study | 10   |
| Concept design   | 12   |
| Development of the design | 14   |
| Conclusion       | 21   |
| **Research and design** | 22   |
| The relation between research and design | 22   |
| **Relation topics** | 23   |
| Social, professional and scientific framework | 26   |
| Ethical issues and dilemmas | 27   |
| **Bibliography** | 30   |
Introduction

The last project of my Master studies at TU Delft I decided to make in the Chair of Dwelling, Dutch Housing. The main question of the graduation studio is “how do we want to live in the future and what kind of buildings do we need to make that possible?” and the topic is “between standards and ideals”.

In order to identify the challenges that Amsterdam is facing I conducted research that became a basic for my graduation project. The final design is an attempt to find an answer for the lack of suitable family housing in the city and decreasing feeling of creating a community.

The first part of this report presents my reflections on the methodologies used in particular phases of the graduation: the research- and the design phase. This chapter elaborates on the variety and validity of approaches. It is a broad explanation of the following steps taken in the research process, from the problem analysis, through concept design and finally to development of the project.

Next chapter is the development and influence of the research on design. It is also a reflection of my graduation topic on the studio topic, master track and the master programme.

The following part reveals the transferability of the outcome in social, professional and scientific aspects. It reflects on the validity of cohousing in the current situation of Amsterdam and the possibility of the building’s existence in the proposed

---

1 Dwelling, MSc 3 Dutch Housing Graduation Studio - Course guide Course guide spring 2019-2020.
urban setting, based on Borneo-Sporeenburg - urban plan from another part of Amsterdam’s harbours.

In the last part of this report I reflect on some of the ethical issues and dilemmas that I have encountered during the design phase of the project. The dilemmas of esthetic, social, economical and sustainable nature.
**Methods and approaches**

The setup of the graduation studio is divided in several designing stages of which the two main phases were the research phase and the design phase. Each stage came with different methods and approaches in order to determine information that contributed to the research.

In figure 1 an overview is provided with the two main phases and underlying methods. Following this setup led to the final design: a solution not only to the main question of this studio: “how do we want to live in the future and what kind of buildings do we need to make that possible?”, but a solution that addresses a problem of the municipality of Amsterdam, the location of my project.

*Fig. 1 Overview of design phases*
Research phase

The start of the research phase was marked by a presentation given by Koos van Zanen, urban planner and a member of the municipality of Amsterdam, who addressed the vision of Amsterdam 2050. Our main focus was the development of the Minervahaven, an industrial site located in Haven-Stad, Amsterdam. This site, our location to develop our plans on, was visited to conduct field research.

Field research

The purpose of field research is to establish parameters of the site to introduce the best design, responding to the environmental features. By looking at the existing circumstances, such as size, topography, location, climate, plants, (also subjective: atmosphere of the place) architects are able to consider future changes of the site and how they influence the project; as every site is unique. In result, the project may consciously respond to the context and reflect it, or ignore unwanted conditions. Having those observations in our minds, it is possible to regulate buildings orientation, placement, form and materialisation; in later stages it determines the structure and sustainable solutions\(^2\). The recordings of this field research were helpful for the urban design strategies, though the atmosphere was captured in the collage of our own subjective first impression of the place.

\(^2\) Source: https://www.archisoup.com/architecture-site-analysis-introduction
Problem analysis

The goal of this phase was to find a topic of interest. The more I read about the situation in Amsterdam, and from what I know from my own experience of growing up and living in Warsaw, people want to be independent, but due to that they became more disconnected and isolated from each other. Many people search for the particular standard of housing for themselves and their families, but those expectations rarely meet with the possibilities offered by the housing market (limited land, high prices for square metres, demand for small housing for solo dwellers i.e. expats and students). It has been found that Amsterdam is also facing the problem of leaving families and weak social ties. Therefore my focus was pointed towards cohousing projects, in which people share spaces. The value of the cohousing idea is the bonding factor, creating relations with neighbours and limiting private space by sharing facilities.

During this phase we were also assigned in the groups of four students in order to propose the masterplan for Minervahaven
(base urban framework for our designs), as the area was only provided with the general development vision for 2050. Every group came up with a masterplan, based on the principles of one of the following existing plans: Manhattan, Barcelona, Campus model and Borneo-Sporenburg. Those plans were first superimposed in the area, to understand the scale of the location, and adjusted to the harbour situation. The low-rise high density plan, based on Borneo-Sporenburg in Amsterdam, that I developed with my group, was expanded by us with typological research of new dwelling forms, suitable for this plan. Along this research, there was also conducted a research about the history of the harbor area and its connection with the city.

Literature study and case study

After the first stage of the research and identifying the problem (the P1 presentation) the phase was followed by a literature study. This concerned the topic of interest as well as context research about housing situation in the Netherlands, with emphasis on Amsterdam.

In my research I focused around the topic of community: What is the optimum group size of the community? And supported with sub research questions: What is the foundation of the community? How the spaces transition from public to private? In literature research I discovered, among others, a research led by Robin Dunbar, treating the diversified relations between people in groups of particular numbers. Knowledge about particular group sizes, combined with the research about the nature of cohousing and the conclusion of my studies, became the basis for the idea of clustering people and led to the shape of my building.
Next part of the research was about case studies, which is a commonly used methodology research to investigate dwelling typologies. The choice of the right projects for the case study is crucial. The aim was to find data of comparable aspects, but also to be able to take something from each one separately. The projects that I chose to analyse were based on the concept of cohousing, sharing facilities and highly urban environment, that supports increased density. To make the results of the analysis comparable, I focused on particular aspects of each project, i.a. accessibility and routing to the flat, proportions between private and common, public and local amenities, and flat typologies.

![Fig. 3: Projects chosen for case studies](image)

The variety of the methods, approaches and topics considered in the research phase, found a common language in the design process. The ambition of Amsterdam in the vision for 2050 served as a starting point for urban design proposal. Field research helped to establish the plot size. Due to problem analysis I learned about the housing situation and families moving outside Amsterdam, but also about connections between people in the city - weakening social ties. Thus urban
families became my target group, and the aim of the project to strengthen ties. Literature and case study taught me about the desirable group sizes and cohousing. Elements that I chose to analyse in case studies gave measurable and comparable outcomes about various aspects, such as flat typologies or proportions between common and private. Thus I established the principles in design solutions, that I decided to apply to my design: group sizes and clustering people in smaller communities, green patio as a contrast to highly urban environment, ratio of private to shared spaces, views and visual connection, high density - the plot imposed the demand of minimum 300 units/ha) that wouldn’t be perceived by tenants.

Concept design

The second phase - design phase - consisted of the concept design (after P1) and development (P2-P4) (Fig. 1). The last element of finalizing the project will take place between P4 and P5. The concept design started from attempts to form the building, basing on the outcomes of the research. The quick-start helped to understand the size of the chosen plot, build mass and first floor plans, as a basis for the further design process. First shape was based on the previously analysed case study projects superimposed in Minervahaven’s location.

I wanted the shape of the building to be coherent with the idea of supporting the community life, together with the requirement of high density. The plot that I chose to work on was the size of 120 x 60m with the minimum density of 300 units/ha and maximum height of 13 floors.
The early result was the shape of a perimeter block, consisting of eight towers with valleys in between, that have terraces on sides. The shape supported the idea of belonging to smaller clusters and keeping the community of the whole block connected within the inner courtyard. Moreover, the valleys allowed for the views and created terraces, allowing for the visual connection between inhabitants and the higher quality of dwelling in urban environment.

Because it was based on one of the shapes of analysed projects, the shape was not yet regulated. In a further stage of design, and in order to simplify the concept, I decided on using a grid of 6x6m. The reasons to simplify the grid laid in technological benefits, prefabrication, lower costs and sustainability (repetitions). The organisation of the building on the grid helped to set up the depths of the flats and locate circulation and common spaces.

Before continuing on development of my project, I had to reflect on the concept phase. The proposed shape was sculpted freely basing on the modules that are flexible - then the question was when the building was determined by anything and when I know that the process is finalised.
Therefore the first thing in the development of the design was the reconsideration of the adopted principles: construction grid 600x600cm, views, heights, and regulating them so that the fundamentals remained the same, but more crystalised in the shaping process.

Development of the design

The next step in the design process was to verify previously made assumptions about the concept of the building. Although I had established the locations and typologies of flats and thought about simplifying structure on the grid, further development was still a challenging phase with a lot of new ideas on how to improve and enrich the project, remaining in line with previous principles.

![Diagram: process of shaping the volume](image)

First step was the verification of the shape that I built during the previous phase. Despite the fact that I built it based on the
module of 6 x 6 x 6 m box, the outcome could have been developed further. Therefore I remodeled the structure, using styrofoam blocks on the physical model 1:200. Final improved shape was still built on the principles of separate towers with valleys in between, two entrances in the perimeter block to the courtyard and height differences in towers - from lowest on the southern to the highest in opposite corner, but now the improvement was that sloped facades with terraces were only facing two directions, which simplified the geometry of the building.

Fig 6: The comparison of two shapes: for P2 (left) and improved before P3 (right).

Fig. 7: Physical model 1:200; southern facade.
In order to make sure that the solution is coherent, I checked the shape of facades: the pattern of the edge became finally clear with one edge going down every 3m (left to right) and then going up every 6m. This rhythm is repeated on all inner and outer facades of the building.

Together with the shape and facades, I was developing the spaces inside. Ground floor of my building I decided to use for public functions and local amenities, that on the higher floors would be connected through vertical communication with the common spaces for tenants on each floor. Therefore the entrances to each tower became an important design task to solve as a representative space. I tested spatial solutions with facade detailing on physical model 1:50. On this model I continued what I started in the computer model - testing proportions on the facades and the contrast between the high plinth of the groundfloor and the rest of the facade on higher floors, with flats.

Fig.8: Physical model 1:50; entrance to the building.
Along with the physical modeling, I was testing the organisation and perception of the spaces using VR tools. By placing myself in the perspective of particular places I wanted to verify the perception of space - light, claustrophobic, spatious, and the clarity of organisation, where to go next (staircase, doors, other corridors, second entrance etc). VR as a research tool can be used in various ways; two of them that I used were: a head mounted display (that we used during Msc3 seminar) allowing for exploration of the model by walking, and low-tech Google CardBoard, which makes possible to render one particular scene in home conditions. During this phase I only used the latter myself, to verify if the spaces that I designed on paper have desirable qualities and navigate my own experiences on my design. I did not consider letting others experience the building with their feedback about my design decisions for two reasons. One of them was the sudden closing of the faculty for students and employees at the time due to COVID-19 outbreak and a command to keep the distance and limit meetings. The other was in order to receive measurable and comparable feedback from others, I would
have to ask more than a couple of people. The more answers about various experiences, the more reliable would be the research; yet also finding a representable group for a proper scientific investigation could have been time consuming, and the results not fully satisfying compared to the effort put into. It is also hard for me to judge whether this kind of research should be carried out rather in the early stage of the design or later, when presented spaces would be more defined and answers more concrete.

Nonetheless this research appeared after all not to be fully subjective. It helped me to decide about aspects such as the amount of windows (light and views) and consideration of whether to place additional niches or cubics in the common zomes dividing long space. Placing myself in the perspective of the terraces on higher floors gave me an insight of human scale in the whole complexity of the building. I could verify the visibility, views and possibility of visual interactions with (potential) co-inhabitants, that once worked on paper and on diagrams, but by “standing” on the terrace I could identify myself with future tenants.

Fig 10: 180 degrees panorama from one of the terraces.
While deciding on the materials and atmospheres in particular parts of the building, I did a lot of sketching on paper and photoshop collages. It helped me to simplify the esthetic aspects. The concept for the cold blue facade came from the urban setting - the contrast with low-rise tenement houses, typically finished with a warm-colored brick. The inspiration for abstract representation came from the surrounding of the harbour water - so typical and substantial for this particular site.

Although I proposed the shape of the tiles used on the facade, further research towards the color and level of reflectiveness would have to be continued on samples and mockups.
The color of the facade may vary per diagram, drawing or render. For the stage of this design I decided on green-blue. In the next (possible) phase of the design, the hue of the colours could be changed, depending on the samples tested in natural light and various conditions.

![Fig. 12: Possible RAL colors used on the facade of the building, source: https://www.ralcolor.com/](image)

The combination of various methods can be the most fruitful, as each of them separately can’t give answers for all aspects of the design. 3d modeling allows us to build components very quickly and compare various versions. Physical models seem to represent the spaces more accurately and show how natural
light performs in spaces; it also makes a “builder” more aware of the used materials, proportions, reflections, because it’s more tangible than digital representation.

Conclusion

The design process consisted of two main phases: research and design. In each of them I used a variety of research methods and approaches. The research phase consisted of explorative research (field research, literature research, typological research); further investigation into the project was conducted as research through design (experimental research, literature research, typological research). Approaches in those two phases were interdependent and complementary.
Research and design

The relation between research and design

The previous chapter presented the methods and approaches in the process of research and design. This part focuses on the direct influence of the research on my design.

Theory that has significant importance in my project is theory of relationships in groups of various numbers. What Robin Dunbar described are relations with people that we know, not necessarily the closest physically, but from personal relations in an individual’s life: family, school and work acquaintances. Christopher Allen, based on Dunbar’s numbers, created thresholds of Personal Circles, of which each has defined range and intimacy degree. Though I believe in transferability of those numbers to the living environment, so our physically closest surrounding. I decided to assign the numbers of particular groups to housing situations:

- 3-5 people: support circle → single flat / household
- 10-15 people: sympathy circle → common floor / couple of flats
- 100-300 people: emotional circle → one tower
- Up to 1000 people: the familiar stranger → building / neighbourhood

This division of thresholds enables tenants to identify with a particular group of people, that is defined spatially. How is this project different from regular housing in the shape of perimeter block, that doesn’t divide people into smaller groups? I believe that conscious clustering into groups of particular sizes helps people to create certain relationships and influences their behaviours. The fact of dividing the
building visually and spatially, improves the well-being and encourages a strong sense of community\textsuperscript{3}.

Although the research towards the target group that I conducted was focused mostly on young families, who I found to be an important part of the city, the outcome of the design process changed my view towards the target group. The small flats and broad common facilities, that primarily were planned for urban families, appear to be much more versatile and flexible. The building could house a broader representation of social groups: also including singles or elderly, who lack the feeling of the community and social ties.

Relation topics

“The central question of the Dutch Housing Graduation Studio is: how do we want to live in the future and what kind of buildings do we need to make that possible? You will identify the challenges which the city of Amsterdam faces in the immediate and distant future and you will design a residential project which meets these challenges. By moving from ideal to concrete building design, you marry the world of ideas with that of material form. The result is an inspired, idealistic but also realistic design proposal.” \textsuperscript{4} (course guide)

The aim of the dwelling studio was to find a balance between the standards and ideals, with attention paid to the concerns

\textsuperscript{3} Chapin, Ross (2015), \textit{Rural by Design: Planning for Town and Country}.

\textsuperscript{4} Dwelling. MSc 3 Dutch Housing Graduation Studio - Course guide Course guide spring 2019-2020
like sustainability, climate, overpopulation, shifting demographics. The challenge of this task is the expectation of a new standard that is suitable and rationally affordable for the chosen target group. The awareness of the certain problems that our projects are causing is essential to make particular design decisions.

While choosing the graduation topic, I was searching for a problem, that is present in Amsterdam, yet also specific to many big cities. The dynamic changes that Amsterdam is facing are an increasing number of expats and students (solo dwellers) arriving to the city, and constantly rising housing prices followed by the families leaving to the suburban areas. Therefore my answer for the question “how do we want to live in the and what kind of buildings do we need to make that possible?”, is the building clustering young families in groups of different sizes, on various privacy levels (from the most private to the most common: flat, floor, building, neighbourhood). The idea of clustering was supported by various shared facilities, encouraging building the community and neighborly bonds.

The track architecture is focused on “developing creative and innovative building projects that use design as a means to deal with the technical, social and spatial challenges encountered
in the built environment”. In my graduation project I confronted technical, social and spatial challenges and implemented solutions. The innovation of it depends on the clustering based on the research of Robin Dunbar’s theory of maintaining relationships according to numbers (group sizes). Technical aspect that is the most challenging is the CLT construction on the grid, that is non repeatable on following floors, and the consequences of this shape: relocation of shafts, drainage of extensive roof area, distribution of media through the building, vertical communication leading to top floors. Social aspect is connected to the idea of clustering people, how they use and encounter wide-ranging common spaces (those for inhabitants in circulation spaces were proposed, but would be most likely adjusted and designed according to particular tenants.

The master programme concentrates on “innovative ways to create more sustainable developments” can be perceived in the final result. The building uses already known technologies to support sustainable solutions, often in a passive way. Reduced size of the windows on the facade with external blinds (limiting heat loss and overheating), modular CLT construction on the grid (use of the material with lowered embodied CO2; elements easy to mount, demount and reuse), planting trees in greenery on the patio (absorption of the city noise, clearing air, breaking the wind flow, heat stress in the city).

**Social, professional and scientific framework**

The topic of my graduation is based on the various social issues that society is facing. The problem of families searching for particular standard outside cities was motivated by
different grounds, but can be already recognised in urban sprawl in the 2nd half of XIX century. The aim is to attract families back to the urban areas, but more importantly to give them opportunity for that. Demand for smaller housing and ascending values of land, that are present in Amsterdam nowadays, require architects to find forms of housing suitable for all members of the society. This problem is not limited to Amsterdam only, but it is visible in other big cities as well. The cohousing originated in the 1960s for low-income groups; though nowadays it shouldn’t be limited to one social group, but can be an answer for affordability and creating communities for (and between) all social groups.

The scientific knowledge of the theory of numbers in cohousing and other housing require broad and detailed studies on existing buildings, to measure the familiarity and community ties according to Dunbar numbers, in order to recognise the transferability of research’s outcome and relationships satisfaction in those groups.

The building is not only designed as “an icon” in the urban context of a low-rise environment; the urban plan inspired by existing plan Borneo-Sporenburg in Amsterdam, but also the courtyard block typology could be transferred to various urban configurations. General principles and research outcomes could be used in various buildings.

**Ethical issues and dilemmas**

During the design process there were a number of ethical issues and dilemmas that forced me to consider consequences of my decisions.
Few of the dilemmas concerned building techniques and what should be the most important aspect: sustainability, affordability, quality of living? After my P3, where I proposed to use CLT not only for the construction, but also secondary/division walls, one of the remarks from tutors was that the consequence of using one material is pleasing, but also expensive. Therefore for the clarity I optimised the choice of materials: CLT for load bearing construction of the walls and slabs, secondary walls to be made of modular concrete blocks and divisional walls in flats with lightweight frame and gypsum cardboard finishing, due to inexpensive and easy installation.

![Fig. 15 Section through the building: above flats with circulation space in the middle; groundfloor: common spaces.](image)

Though the tougher decision concerned use of additional acoustic insulation in flats. Due to the direct connection between flats and common spaces, located in the circulation space, I decided to use an additional layer of acoustic insulation on walls, which would increase the standard of living. As feedback involved costs (very expensive to provide it in all flats) and appeared to be not necessary (the thickness of the construction already decreases noises), finally I
compromised with coated interiors of common rooms for improved noise cancelation, as flats are located directly above those activity spaces. For the flats the decision about using additional insulation or not, is in inhabitants hands, with the suggestion that acoustic performance can be improved.

What also concerned me was the consequence of development of the project. In the early conceptual phase of the design I already decided to use approximately 30% of the space in the building for common spaces. It was one of the principles that helped me to build the idea. Meanwhile my research led me to the conclusion that land- and housing prices are expensive in Amsterdam, therefore its favourable to design rather smaller flats. In my setup the private zones (flat interiors) remained indeed relatively small (from flats of 50 sqm to few of 120 sqm), with an extensive circulation zone and ground floor of the building designated for common facilities. In the process of finalising the building, every square meter has its price; both private flats, but also corridors and staircases have to be paid for. Also the shape has extensive external surface, which makes the building more expensive (much more finishing facade materials, thermal insulation etc). Therefore the dilemma: is the idea and “iconic” look justified by the idea of clustering people for improved quality of life? Is it rational to propose this wide-ranging common space? There is a price for everything. I find that cohousing and building a community undeniably is the irreplaceable advantage and the quality of this set up.

Conclusion

During the research- as well as the design phase I encountered multiple problems and dilemmas. The choice is hardly ever objective, and it strongly refers to architect’s morality. I
believe that the choices that I made in this project would be justified and commonly sanctioned in real life. The process of designing revealed that the dilemmas architects are facing are rarely only of an aesthetic nature.
Bibliography


Dwelling. MSc 3 Dutch Housing Graduation Studio - Course guide Course guide spring 2019-2020.

