

*Relationship between the theme of the graduation lab and the subject/case study chosen by the student within this framework*

Amsterdam is facing multiple problems in the near future. Firstly its population is growing which results in the need for new dwellings. The Dutch Housing studio's main object is densifying the inner city of Amsterdam. As for this semester the Appeltjesmarkt is the design site. The Appeltjesmarkt is a former fortification, located in the Jordaan along the Singelgracht. Nowadays the location houses a public square, a parking garage, a petrol station, a piano shop, a night shelter for homeless people and a café. The object to densify this former bastion with work/live related dwellings was further extended by my own chosen research, questioning '*What architectural features can be found in aging-resistant dwellings?*' and '*In what ways can gardening be integrated into high-rise buildings.*' These questions arose during the urban analysis.

Amsterdam attracts new citizens, but also ageing is a problem. The number of elderly in Amsterdam will increase from 95,000 to 143,000 in 2030. Most of these people live in dwellings which are not suitable to change into an elderly friendly house. The Jordaan is such a neighbourhood, where relatively many elderly live and the current housing stock hardly suitable for getting old. Additionally, due to reforms in the care, many care homes will get empty and even disappear from the inner city. Together with the fact that most elders would like to relocate within the neighbourhood where they live, asks for elderly friendly houses.

Secondly these elders are retired or will retire soon, which will drastically change their daily routine. They will have more time to spend and are still vital enough to work. The elderly of today are willing to still give input into society, by for example doing charity work or taking care of their grandchildren. By introducing gardening into their build environment, we can stimulate them to keep an active role in society. Vegetables gardens contribute to the health of residents and the quality of the living environment. By working in these vegetable gardens, people move more and eat more self-grown vegetables and fruits. There are also indications that stress decreases and (more) social contacts occur in the neighbourhood. The dwelling studio is about densifying Amsterdam through new dwellings. This process leaves less space for urban agriculture and other forms of gardening. By designing a residential building that intersects both elements, Amsterdam can be densified with high quality vegetation.

### *The relationship between the project and the wider social context*

Not only in Amsterdam, but throughout the Netherlands there will be a shortage of affordable and accessible homes for elderly people. Due to the fact that people live longer, the number of elderly will increase significantly, which causes a shift in the Dutch society. In addition to changes in care, elderly have also changed over past decade. The modern elder has been emancipated, He or she does not want to be experienced as a burden, but as a part of society. This requires a new look at elderly housing.

Integrating gardening and greenery into buildings not only helps its dwellers, but also has positive effects on the surroundings and the city. Firstly due to climate changes we increasingly have to deal with extreme rainstorms, which makes cities vulnerable. Cities consist more and more of hard surfaces which cannot absorb any water, resulting in overload of the sewage system and increased flooding. By adding roof gardens and green façades to buildings, we can use the retention properties of plants and soil to reduce the water peak during heavy rainstorms.

Secondly vegetation helps against urban heat island effects. Due to the low amount of vegetation and evaporation cities tend to stay warmer than surrounding country sides. This can lead to chronic complaints or even deaths among the elderly on hot summer days. Plants and trees have a positive effect on the build environment because of their cooling capacity. Not only the caused shadows prevent the ground from warming up, also the evaporation of water in the leaves cools the surrounding air.

### *Relation between research and design*

Research and design are interdependent, and starts directly from the beginning of the design assignment. First of all the urban and social analysis from Amsterdam where used to form my personal vision over the design site. What are the opportunities and where do we have to deal with at this specific place.

After a while more specific research took place, the research shifted from context towards ageing-resistant housing and the integration of gardening into high-rise. I first examined what ageing-resistant housing exactly means. There are multiple terms for housing of all ages, each with their own set of requirements. The starting point of the research and also the design was based on wheelchair accessible dwellings. This means that it should be possible to live in an apartment even if you are handicapped and driving a wheelchair, should this ever occur due to reduced mobility. By describing this scenario, I could ultimately make design decisions regarding the space to be reserved for

wheelchairs. For example, the wheelchair's turning circle has affected the dimensions of the circulation space and the bathrooms. Which then affected the bay width of the apartments.

Not only in the apartments, but also in the entire building, the turning circle of wheelchair users is taken into account. The circulation space is at least 1,5 meters wide and in some spots even wider, to make manoeuvring a wheelchair or walker easy. The design also takes into account places where residents can meet each other in order to strengthen social cohesion. The galleries are therefore wider set up so that 'casual meetings' can take place more easily. In addition, there are also collective (indoor) spaces, such as a greenhouse and a workshop which the residents can use.

Another important part is the lack of doorsteps and other vertical obstacles like stairs within the dwellings. These small height differences are not only a big obstacle for anyone in a wheelchair, but for older people in general. All of these features can be found in the design itself, and had an influence on the architecture of the building.

During the research on integrating gardening into high-rise new ways of using greenery and their benefits struck my attention. I first only knew about the simple roof gardens and green façades, but there are more ways of implementing greenery on façades and roofs and even as interior. In high-rise buildings winter gardens are a good option since it can be windy on higher levels.

#### *The relationship between the methodical line of approach of the graduation lab and the method chosen by the student in this framework*

The methodical line of approach of the Dwelling Studio can be divided into three parts. Firstly the urbanism part, where I mostly sketched and made models in scales 1:500 to 1:2000. The second part, the architectural is already getting more detailed in the scale of 1:100 to 1:200. And finally the scale of building technology where you switch between scale 1:5 to 1:50. The latter two parts ask for more accurate drawings and therefore the computer is a handy tool, but making sketches and models is essential in making design decisions throughout the whole process.

During my design process I tested most design options first by sketching and after that I did draw it in computer. The problem which occurred then was that when I started to draw in computer I stopped making the sketches, even when I was getting stuck. I tried to solve the problem on the screen and this caused some delay in the process. In some cases I used both techniques together and those design decisions went much faster. Making sketches helped me during my process, because of the fact that while sketching I had to think about it how to draw it. In computer I did miss this link between thinking and drawing.

Another important aspect during designing is the capability to switch between different domains. During tutoring the mentors also addressed this by telling us to check it either with the building technology tutor or the architectural tutor. There were some moments during the process that I was focussed on a specific topic, losing the overview and not considering the consequences for the rest of the design.

During the graduation project, I learned that I should make more sketches and models because it is a fast way of designing and they help to further develop the design. The times that I did not do one of these and only drew in computer, my workflow slowed down and my motivation dropped. On those moments I switched to another design part which helped me getting my motivation back. Something which also helped me a lot was talking with other students about the design itself. I think the students in a design studio will benefit from each other if there is more communication and sparring between each other. That is something I missed in this graduation group even though the tutors tried to arrange it during tutoring. Most of the students where only focussed on their own project during group tutoring.