THE EQUITABLE CITY

REFLECTION PAPER

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MSc-3 Dwelling graduation studio

DUTCH HOUSING

BETWEEN STANDARD AND IDEALS

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The brief of the Dutch Housing Graduation Studio is to design a residential building which answers the question: *How do we want to live in cities in the future and what kind of buildings do we need to allow for that?* To answer this question an idea is elaborated in a design form. To come to this design form, my residential building, different types of research have been conducted, by ways of different tools and methods. This paper is a reflection on the different types of research and how it is implemented in my final design for the residential building.

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<table>
<thead>
<tr>
<th>CONTENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>9</td>
</tr>
<tr>
<td>Process</td>
<td>11</td>
</tr>
<tr>
<td>(Scientific) research and design</td>
<td>15</td>
</tr>
<tr>
<td>Research methods</td>
<td>17</td>
</tr>
<tr>
<td>Literature study</td>
<td>17</td>
</tr>
<tr>
<td>Monography</td>
<td>20</td>
</tr>
<tr>
<td>Precedent research</td>
<td>22</td>
</tr>
<tr>
<td>Visualisation boards</td>
<td>24</td>
</tr>
<tr>
<td>Digital model making</td>
<td>26</td>
</tr>
<tr>
<td>Site analysis</td>
<td>28</td>
</tr>
<tr>
<td>Field research</td>
<td>30</td>
</tr>
<tr>
<td>Hand sketching</td>
<td>33</td>
</tr>
<tr>
<td>Conclusions and considerations</td>
<td>34</td>
</tr>
<tr>
<td>Retrospect</td>
<td>35</td>
</tr>
<tr>
<td>Bibliography</td>
<td>38</td>
</tr>
</tbody>
</table>
INTRODUCTION

‘Doing research’ is a phrase which is often heard within the walls of the Faculty of Architecture and the Built Environment. In order to design a building, whether it is a residential building or some other type of building, research has to be done to validate the design and design choices made along the way. The answer to architectural research is not singular, but rather multi-faceted as the discipline of architecture itself. According to Ray Lucas architectural research is done to represent an original contribution to knowledge. To move on from the established or overarching debate within the discipline, rather than replicating, conventional knowledge and rehearing arguments that have established positions and no clear resolution¹.

The first part of this paper is a chronological recapitulation of different research methods used during the process towards the final design of my residential building in an equitable city.

The second part of this paper is a summary of the different research methods I used during my design. To reflect on my ways of working, I will explain why I used a certain research method and how I used this method and the tools accordingly. Subsequently, I will show how the results of my research is implemented in my residential tower named the Equilibrity. Lastly, I will reflect on how and why a certain approach did or did not work in my design, and what I would change for my future projects.

The last part of this reflection paper will incorporate 5 aspects as described in the graduation manual which include:

Aspect 1: The relationship between research and design
Aspect 2: The relationship between my graduation (project) topic, the studio topic, and my master programme.
Aspect 3: Elaboration on research method and approach chosen in relation to the methodical line of inquiry, reflecting thereby upon the scientific relevance of work.
Aspect 4: Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.
Aspect 5: Discuss the ethical issues and dilemmas I have encountered in doing research, elaborating the design and potential applications of the results in practice.
PROCESS

The process from start to final design can be divided into five terms. Each end of term signifies a formal (P2, P4 and P5) or an informal assessment (P1 and P3). The formal assessments result in a Go / No-Go assessment, whilst the informal assessments result in positive or negative feedback. This reflection paper will focus on the period from the start up until P4, as P5 is beyond the scope of reflection.

P0 - P1

The main focus leading up to the P1 assessment was to come up with a relevant theme for a residential building in Amsterdam. To help conceptualise this idea, a written piece in the form of a manifest with an accompanying image was produced to commence the project. To come up with a relevant topic, I looked to different sources of media such as the internet, tv and newspapers. After reading and watching different topics of contemporary housing problems, I tried to distill the essential problem that is prevailing in Amsterdam. The main problem seemed to be the lack of proper housing due to the shortage of affordable housing within the city centre.

In addition to the media sources, I have also drawn inspiration from popular culture such as books and films. There are two main sources I have drawn my inspiration from that have an identical theme. The first source is the book High-Rise by J.G. Ballard from 1975 and the second source is the film Snowpiercer from the director Joon-ho Bong from 2013, which is also a film adaptation of a book. Although the latter takes place in a train, both authors criticizes the way our society is constructed, where the wealthy people live lavishly whilst the less wealthy barely scrape by. The main plot for both sources is about the disgruntlement of the less wealthy who take matters in their own hands and riot against the wealthy. The end result is always the collapse of society. Although these stories are obviously science fiction, the similarities between those stories and real life can not be overlooked. The materialisation of our society as a whole can be found on a smaller scale in the residential tower. Like J.G. Ballard described and the way similar residential towers in my hometown of Rotterdam are designed, the wealthiest people are literally looking down on the less wealthy.
As a result of these sources I decided that I want to shake this up and look at the residential tower differently, by designing dwellings of equal value.

Parallel to the elaboration of the individual theme, a plan analysis of an existing urban plan was made. In my case, Müllerpier in Rotterdam was analysed based on different aspects of the urban plan. These aspects include circulation within the plan, building typologies, division of functions, and so on. The aim for the plan analysis was to draw inspiration from Müllerpier to create an own plan for Minervahaven, but also to gain knowledge about how to go about designing an urban plan.

**P1 - P2**

The period between P1 and the first formal assessment of P2 marked a change of pace. The P1 assessment was mostly based on inspiration and background information, whilst the run up to P2 was the starting point of the actual design of the residential building. After P1, the final location of the individual residential building was established. The main focus towards the P2 assessment was the research that was conducted to validate choices for the building design. My main research question was: How can the residential building contribute to an equitable city? To answer this question, I divided the research into two main themes. The first theme was to design an inclusive city which is accessible and affordable for most everyone. The second theme was to open up the city. This part of my research paper was based on the five open forms proposed by the urbanist Richard Sennett. Coming from an architect’s perspective I tried to interpret his theory into architectural elements.

In addition to the literature study, I also analysed four existing residential projects in order to gain knowledge and inspiration on how to design a residential tower. The selected projects were justified by the different characteristics such as high dwelling diversity or an innovative way of accessing dwellings.
P2 - P3

P2 marked the first formal assessment. During P2, the research in addition to the concept design of the building was presented. After P2 I had to reconsider the implementation of the five open forms of Richard Sennett into my residential building. As his work is mostly theory based, and no other architect has implemented the five open forms into his or her project (that I know of), I had to reassess my work method. Instead of directly interpreting Sennett’s forms into my residential building, I took a step back and looked at the works of architects before me who have a similar design approach such as Sennett. Architects like Aldo van Eyck and Herman Hertzberger caught my eye. These architects do not overdetermine their architecture, which is also a fundamental characteristic of an open city, as mentioned by Sennett in his book.

P3 - P4

After the informal P3 assessment, the intention was to make minor adjustments in the design whilst furthering the overall design. A few adjustments I had to make had to do with rules and regulations such as the minimum height of a railing and the maximum spacing between the bars of the aforementioned railing. To me, this period also signified the materialisation of my residential building and the design of my facade. Ironically this is one of the last things I designed, but one of the first things a person sees when approaching the actual building, if it were to be built. The inspiration for my facade design was not necessarily based on what is considered to be a scientific approach, but rather a play of rhythms of openings (windows) and closed parts (walls) within the facades. The inspiration was derived from different expressions of creative skill and imagination, not excluding built architecture precedents. An example of a different expression is the work of Dutch visual artist Jan Schoonhoven. His work has mostly to do with rhythm and shadow play on a small scale, similar to the facades of my residential building. Subsequently, I let my personal preferences play a role in searching for facade inspiration. Whilst browsing the internet for inspiration I
specifically searched for building facades of the British architect David Chipperfield, which I did for several reasons. One of those reasons being that his work, like Jan Schoonhoven’s has a mostly even rhythm. In addition to designing the facade, this period focused on what I consider to be the most practical part of the design process as it includes rationalising the actual building sequence of my design.

By summarising my design process chronologically, it enables me to reflect on the different research methods I used and how it is incorporated within my residential building. The next part of this reflection paper is the elaboration of these different research methods and how I implemented the result of my research in my residential building.
According to Van der Voordt², there are five criteria research has to encompass in order to qualify as scientific. The first criterion is that research has to be conducted methodically. In order to do that, a thorough analysis of the problem should be done. The second criterion is that there is a certain sense of objectivity, meaning the researcher will leave most of his or her personal values and opinions out of the research. Thirdly, the research should be controllable. All the intent, analysis of material and interpretation should be made clear for third parties. The fourth requirement for scientific research is validity and trustworthiness of measuring devices. Lastly, the research should be scientifically relevant. The research that is conducted should contribute to the development of the subject. This contribution can therefore lead to a rejuvenation of theory, new methods and research techniques.

To recapitulate, scientific research is the process of collecting, editing and analysing of data in a methodical, verifiable, objective, valid and trustworthy way in order to understand and interpret our reality and therefore make it more manageable.

What is most striking about Van der Voordt’s notion is that according to him, scientific research should be objective. However, architecture, in my opinion can never be truly objective. The reason being, when two architects get the same assignment, the outcome will always be different from another. There is no evident right or wrong in architecture.

Looking back at the overview of my design process from start to final design, a few ways of doing research methodologies can be distinguished within my design process. I will dwell further on these methodologies in the next chapter about my different research methods.
An important methodology that has taken precedence during my design process is the literature study. The challenge, as mentioned before, at the beginning of the design process was how to design a residential building for an equitable city. This topic came to mind after reading media coverage of the current housing crisis in large cities such as Amsterdam. The main problem was and still is that housing prices are skyrocketing, making living in the city unavailable for a lot of people. This trend in combination with popular media such as J.G. Ballard’s book High Rise\(^3\) inspired me to come up with the theme of an equitable city.

Image 1: Main sources of theme inspiration

I read Ballard’s book about a dystopian future before the start of this studio, out of my own interest. The story focuses on a high-rise building and its tenants who slowly descend into violence in order to literally and metaphorically reach the top of the building. So, the theme of criticising society built on a system of hierarchy is something that has been in the back of my mind at the start of this project.

To come up with a design, I tried to look at precedent architecture which had a similar theme. As it turned out, most residential buildings are designed according to practical design principles or other social intentions. The challenge for me was to look for precedents which incorporated all the aspects that I wanted for my residential building. During earlier stages, we were encouraged to read Sennett’s book Building and Dwelling - Ethics for the City⁴. A book which I unfortunately overlooked in my search for similar building concepts. I did not think of using this book for my research, until my tutor mentioned it. Although based on a larger (urban) scale, the same ideas could be integrated into my residential building after the scale reduction.

In retrospect, this translation of a theory with several urban scale examples to architectural scale and then implementing into my building has been the biggest challenge so far for this project. As I mentioned before, Ray Lucas commented that research methods should be relatively objective. This is not the case at all, which is one of the reasons why I had such a hard time interpreting the theory. Another person could have interpreted Sennett’s theory any other way, but this is my way and my interpretation. In addition there was no existing knowledge (that I know of) which I could extend on. So, it felt like I had to start from scratch.

Ultimately, this way of using literature has been a first for me. I think that one of the reasons why I overlooked Sennett’s book was that I was looking for actual built precedents instead of theoretical work. That way, I could prove that my theory of designing an equitable residential building could actually work in practice and that there is a certain sense of objectivity to it. Previously, I would only reach for literature when my conclusions would also be theoretical instead of a practical design. Hence this was an eye opening experience for me.
Another type of research method I would like to address is the connection between text based and graphic based research methodology, namely monography. I use this phrase very loosely as a way to indicate the works of a single architect. I used this type of research to make the transition of Sennett’s open forms theory to architectural elements in my residential building. Like Sennett, Hertzberger’s work despises overdetermination of our built environment. The research I conducted was mostly based on the relation between Herman Hertzberger’s theoretical framework and his actual built work. I chose to look into the work of Hertzberger and not many of his contemporaries, mainly because I was already familiar with Hertzberger’s work, as I did a transformation project of his offices for Centraal Beheer in Apeldoorn into dwellings. Another reason why I studied his theory and work was because of the scope of his work, which is not limited to merely dwellings or schools, but is rather expansive.

Image 3: Example of Hertzberger’s implementation of polyvalency⁵.

I read two works of Hertzberger, namely Lessons for Students in Architecture and Andere Ogen. Both books are based on Hertzberger architectural vision and his vision in practice.

For a long time during my design process I was at a loss, because I was not sure which research method to use to interpret Sennett’s forms. Ultimately, studying the work of Hertzberger inspired me to come up with my own interpretation of Sennett’s open forms. The downside of this type of research method, when studying the work of one architect, is that the translation into the own building can be very similar.
PRECEDENT RESEARCH

A well-known research method within the field of architecture is precedent research. We live in the built environment, so there is no need to reinvent everything from zero. There are several moments within the design process that I can point out where precedent research takes place. The first time was before the P1 assessment, at which we analysed an existing urban plan. These urban plans were chosen according to the similar conditions like the project location, namely a harbour environment within a high density urban environment. In my case, Müllerpier in Rotterdam was analysed based on several characteristics.

The second time precedent research was used during my design process was between P1 and P2. During this time, 4 architectural projects were selected to analyse and draw conclusions from. These projects were chosen based on the fact that they were all residential towers, some based in the Netherlands whilst others were not.
I purposely selected these towers to get an idea about universal common aspects and differences. These four towers were then analysed according to three main aspects, which were the design of the core with lifts, shafts and staircases. The second aspect was the loadbearing structure and thirdly, the total amount of dwelling types were analysed as this was important to include in my own project (image 4). The main goals for precedent research was to gain knowledge about practical workings of a building, whilst also drawing inspiration for my own project.

Whilst analysing precedent projects, I came to realise that - like most every aspect of architecture - there is no one way of designing a residential tower. As I have not built a residential tower before, I was looking for answers in the precedent projects to give me basic guidance. If I compare my final design with the precedent projects, I can certainly point out some similarities which were derived from these projects. However, I do feel like my final design is different in the way that I can say that my building is an extension of knowledge, rather than a one to one, copy and paste.

When using precedent projects as a research method, I compose a question to answer by analysing precedent projects. This was not the case for literature study, where the main goal was to extend my own knowledge and in Sennett’s case, interpret into architectural elements. Precedent research is useful in a way to go more in-depth into a plan than just a pretty image.
**VISUALISATION BOARDS**

A visualisation board is usually just a pretty image. Other than precedent research, the visualisation boards as a research method is more superficial than analysing precedent projects. The visualisation boards were primarily used to have an idea about the design or atmosphere I wanted to achieve of certain parts of my residential building. So, whilst precedent research had more to do with analysis of spatial organisation, circulation and so on, visualisation boards allowed me to consider the appearance of my building.

Image 5: Fragment of my personal visualisation board
In addition to architectural precedents on the visualisation boards, I also looked at somewhat less obvious inspiration. To gain inspiration from the rhythm of my facade, I looked at work of Delft artist Jan Schoonhoven. One would say his work is rather flat for a visual artist. But upon looking closely, a certain plasticity in his work can be found which creates an interesting shadow play. As my building is similar in terms of large scale repetition with a set back on the lower storeys due to a gallery, I found it very helpful whilst designing a facade without it being boring or too obvious.

Although this type of research is enjoyable as a change of pace during the design process, the vulnerability lies within the way the programme works. After clicking on an image, a selection of related suggestions pop up, after which you can click endlessly further, whilst losing focus on the initial idea.
DIGITAL MODEL MAKING

Digital model making has been a preferred research method during my process, as it is relatively easy to make several variations of a design whilst analysing it in both 2D and 3D, when working in programs such as Sketch-Up or Revit. Other than actual model making with foam, cardboard or other material, the input is immediately translated into the output which is less time consuming than cutting everything one line at a time.

Due to the scale of my building, I found it to be less time consuming to insert all my ideas into the digital model. As the mass of my building was already set from P2 onwards, I felt no need to try and cut masses out of foam for example.
The downside of digital model making I experienced, is that it is relatively hard to compare several variations of a design because you have to go back and forth, whilst actual (foam/cardboard) models can be easily placed next to each other and therefore be compared at a glance.

Another drawback of digital model making is that whilst designing in a computer program, you get lost in detail very quickly. Sometimes I was so focused on meticulously placing walls and furniture down to the millimeter whilst losing focus on the overall design. In turn, working in a digital program has an advantage that once the design is finalised, almost every set of drawings can be exported, because every line is so meticulously drawn.
SITE ANALYSIS

In the beginning of September last year, we went on a site visit to Minervahaven, Amsterdam. The main goal of my visit was to see the built environment of our project location and to get a feel of the surroundings. The new urban plan my group and I made was based on government documents and their plans for the future of the location. In short, the municipality of Amsterdam wants to develop Minervahaven from a business to a primarily residential location. That is the main reason how we ended up with an almost completely new plan, whilst demolishing virtually all existing buildings. So, there was really no need to visit the site location for a second time, as there were no buildings to take into account into the new design.

What I did consider for my own design was the use of materials. I found that the materiality of the existing buildings were in tune with the harbour surroundings, meaning that overall there was a use of coarse and industrial materials such as steel, exposed concrete and corrugated facades, emphasising the rough environment.
Opposed to other projects I worked on, this was the only site location that I only visited once. During previous projects I visited the site location at least two times, one time at the start of the project and another time halfway through the project. The second visit was usually to see if the concept design of my project would fit into the urban context and to reconsider the sense of the environment.
FIELD RESEARCH

During the course of this project I went on several field trips. Some were intentional, meaning I went there for a purpose such as gaining inspiration or in search of answers to my questions. Others occurred more fortuitous, which I stumbled upon during random outings in my built environment.

There are two residential harbour environments that I visited, which are Müllerpier in Rotterdam and Hamburg in Germany. The aforementioned project was analysed and visited in order to gain knowledge for my own urban plan. Whilst visiting the site, I consciously looked around for the circulation of pedestrians. I wanted to see how people moved from the public
street towards their private homes, how the front doors were organised in relation to the street and so on. By visiting, I could also experience the space myself. In contrary to this visit, the Hamburg visit happened more organically in my experience. I was not part of the organisation of this field trip, nor did I plan to look around for certain aspects of this built environment. Rather, I let myself experience the space unimpeded by prejudices. The main difference between these two field trips was that I analysed the Müllerpier beforehand, so I partly knew what to expect. Also, growing up in Rotterdam, I was familiar with the surroundings as I have been there before. Hamburg on the other hand, I knew of by name, but I did not analyse any of the existing plans for example, I went there completely open minded and took photos of things that stood out.

Whilst looking through my photos I took during the trip, I realised that some elements seem to have slipped subconsciously into my own design. For instance, the type of railing in the first photo, the design of the transition between public and private and the large scale residential building with a very straightforward facade (image 10).

In addition to these field trips, I also researched through more or less spontaneous field trips. After considering Sennett’s theory and the works of Hertzberger who both despise overdetermination of our built environment, I looked in my immediate surroundings how polyvalency is incorporated into the public space. For instance, Schouwburgplein in Rotterdam is an example of an undetermined space. There are a few elements on this large square
I did not only consider the public space during my so called spontaneous field trips, I also looked specifically at the transition space between private homes and the public street and how to design this space particularly. For my design I looked at the way people appropriate space around their front door and the way the demarcation between public and private is established.

What is very valuable of field research is that you get to experience a sense of scale and atmosphere of a place, which you do not get otherwise. Subsequently, inspiration can be derived from the built environment, and whilst walking through places, I keep discovering more layers by looking at it with a different mindset.
HAND SKETCHING

Like digital model making, sketching by hand is a relatively quick way to test out different theories. During my design process, I only sketched to communicate my intentions to my tutor(s). The few sketches I made, include the usage of items such as a concrete block (image 13). I was more comfortable drawing people by hand than using computer program such as Photoshop, because I would feel the need to get into detail when it is not necessary.

The main reason why I only sparingly sketched during the course of this project had to do with accuracy. Sketching by hand is usually not very accurate size and dimension-wise.

Image 13: Sketch during my design process.
CONCLUSIONS AND CONSIDERATIONS

As I reflect on the research methods I used for my residential building, a few conclusions can be drawn.

Although I discussed the aforementioned research methods separately, I like to emphasise that each research method is closely linked to the other. The result of a research method can lead to more questions which can be answered by ways of another method. Some research methods were more prominent during my design process, whilst others were totally absent.

As mentioned before, literature studies has taken a large priority in this project more so than in other of my projects I have made. Primarily due to the reason of me trying to translate Sennett’s theory into architectural elements.

Model making is one research method which my process completely lacks. Closely linked to architectural studies, models were only present during my formal presentations. There are several reasons why there were not any study models. The first reason being that I relied a lot on 3D programs for the visualisation of my residential building, such as SketchUp and Revit. This had to do with the scale of my building. Due to the large size of my building, I prioritised this type of 3D visualisation as it simply takes a lot less time. Although I personally like the change of working methods, it took a long time for me to get to a smaller scale of the design, which is why I did not care for models as they would not show clear differences due to the scale. Having said that, model making is something that I can definitely incorporate in my next projects. Even on a larger scale, I can always try to break up the building into smaller parts in order to test ideas through model making.

Referring back to Van der Voordt’s notion of scientific research and my personal design process I can conclude that there is certainly a sense of objectivity in architecture. Research in architecture can be done in several ways, but I consider this subjectivity the thing that makes architecture stand out from other disciplines as it is a way to be creative and bring a personal frame of reference into a design.
RETROSPECT

The last part of this reflection paper is a retrospect of five different aspects of research and design, based on the graduation manual.

**ASPECT 1: Relationship between research and design**

Looking back to my design process, it can be said that research and design are inseparable. There are different research methods that an architect can use, and the methods are as multifaceted as the work itself. During each step of the design process questions about certain elements arose, which could only be answered through research. All these answers combined have led me to my final design which is an extension of existing knowledge. To conclude, research is a crucial tool that architects must master in order to effectively address the technical, aesthetic and behavioral issues that arise in our work.

**ASPECT 2: The relationship between your graduation (project) topic, the studio topic, and your master programme**

My graduation project is named the equitable city. This means, in essence that I want to design dwellings of equal quality for every type of person, regardless of their financial wealth and make this available for as many people as possible. This is a topic I chose because it is something that intrigues me. Although this is an idealistic and maybe somewhat naive viewpoint of what future housing in the Netherlands should entail, I do stand by it.

The idea to rethink the way we are going to live in the future was a topic that intrigues me, because it allowed me to think creatively and innovatively about our future accommodations.
ASPECT 3: Elaboration on research method and approach chosen by the student in relation to the methodical line of inquiry, reflecting thereby upon the scientific relevance of work

The design studio has a very strict schedule, which I personally like. It helps me by knowing what the tutors expect from me, but it is also an indication of how far along you should be with your project. Meaning, you can estimate if you are still on schedule or not. In addition, precedent research was mandatory for this studio. This research was necessary to come up with my own design. I appreciate that time was scheduled to do this type of research.

The period after P2 was in my opinion less strict, which was helpful in a way that I could continue to work on my design without any tutoring if I felt the need for it. Although I tried to validate every part of my design by research, the final design is also very much my personal interpretation. So, unlike other studies where there is not specifically a gray area, architecture is always a personal interpretation of the architect.

ASPECT 4: Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results

As mentioned before, one of the main goals of research is to gain knowledge and draw inspiration of existing projects which can be implemented into the residential building. My residential building is the result of my personal interpretation of the open forms of Sennett, which can be interpreted by someone else in a different way. In addition, I do think that the practical combination of a tower with corridors and a gallery type of residential building can be transferred to other projects.
As the concept of my residential tower is based on the moral conviction that the architect can contribute to an equitable city, I encountered several issues in my quest to justify my design in a scientific way. Most of these issues had to do with the fact that a personal conviction cannot be scientific because it is a subjective point of view. However, I do think that taking a moral stand can help to tip the balance to a more inclusive society, rather than increasing social polarisation. As architects, we are not only responsible for our built environment but also for those who live in it. Therefore, I hope that my design inspires others to see inclusiveness not as a burden in their design, but as a way to reconsider our built environment.

Having said that, the MARK project in Utrecht, including three towers of respectively 80, 100 and 140 meters high is an example of a residential tower that mixes different types of dwellings. There will be social housing, care units, mid-range rental properties, and so on available. In addition, the architects designed communal spaces in order to stimulate social contact between residents. The goal of these residential towers are somewhat similar to mine, as they are also trying to design for a social, affordable, and inclusive society.

Subsequently, I do think the open forms I implemented into my building can be applicable in practice. Although, the interpretation of the open forms could have a different outcome, as the result in my building is my personal interpretation. In the end, I hope that my graduation project inspires others to perhaps think outside of the box.


