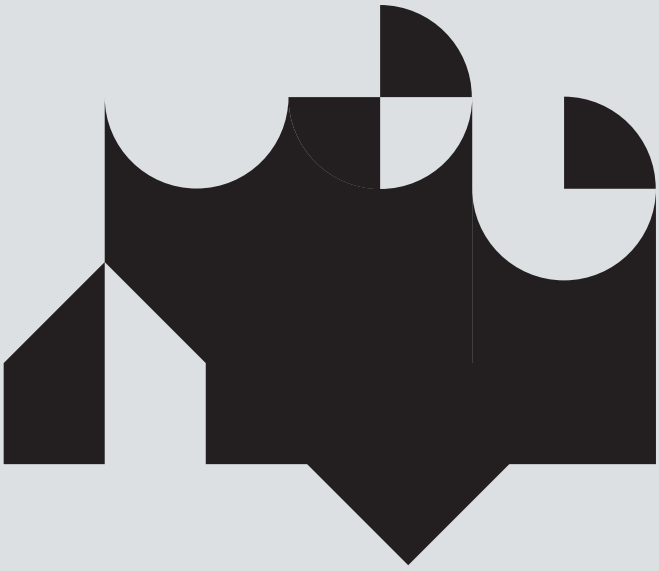
Journey
to
Cross-sections
of
Multigenerational life

Community center design in Frihamnen based on
intersections and hybridizations



Yuchen Yang
Examiner: Daniel Norell
Supervisor: Kengo Skorick, Jonas Lundberg

Master Thesis Program
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Acknowledgment

My deepest gratitude goes first and foremost to Kengo Skorick, my supervisor, for his patient and constant guidance. He worked me through all my design process. Without his consistent and illuminating instruction, this thesis could not have reached its present form.

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Last but not least, I would like to thank my beloved wife, Rongchao, for her help and encouragement.

I enjoyed the 2 years' life in Sweden. I am grateful for all my friends I met here, for all the memory, happy or sad. It will be an irreplaceable experience in my life.

Thank you Sweden.

Student background

Yuchen Yang

Education

Bachelor:

2010.09---2012.03:
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Contents

1 INTRODUCTION

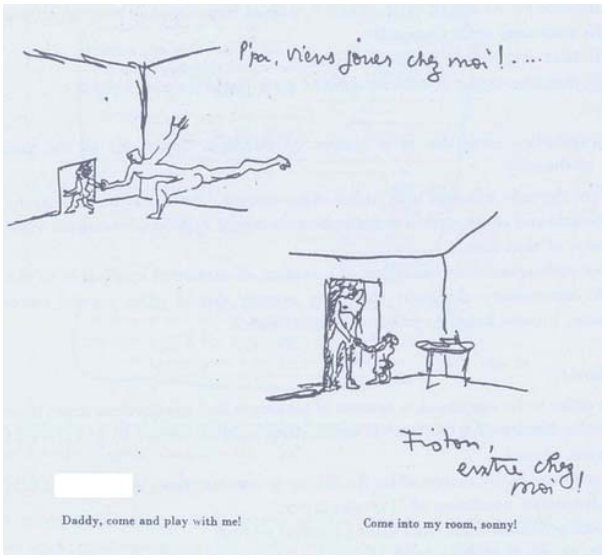
Abstract

In the recent century, great changes have taken place in both society and architecture area. Yet, they do not happen simultaneously. On the one hand, aging population is expanding fast, arousing worldwide attention, which makes governments encourage birth. Family structures are inevitably changed. Seniors and kids catch more attention now. On the other hand, it is said that modern architecture is dead and ideas are emancipate. However, we are now still trapped in the old-fashioned ideas from time to time, such as neglecting children's dimensions. The unmatching pushes me to think about how to design a building for both children and the elderly.

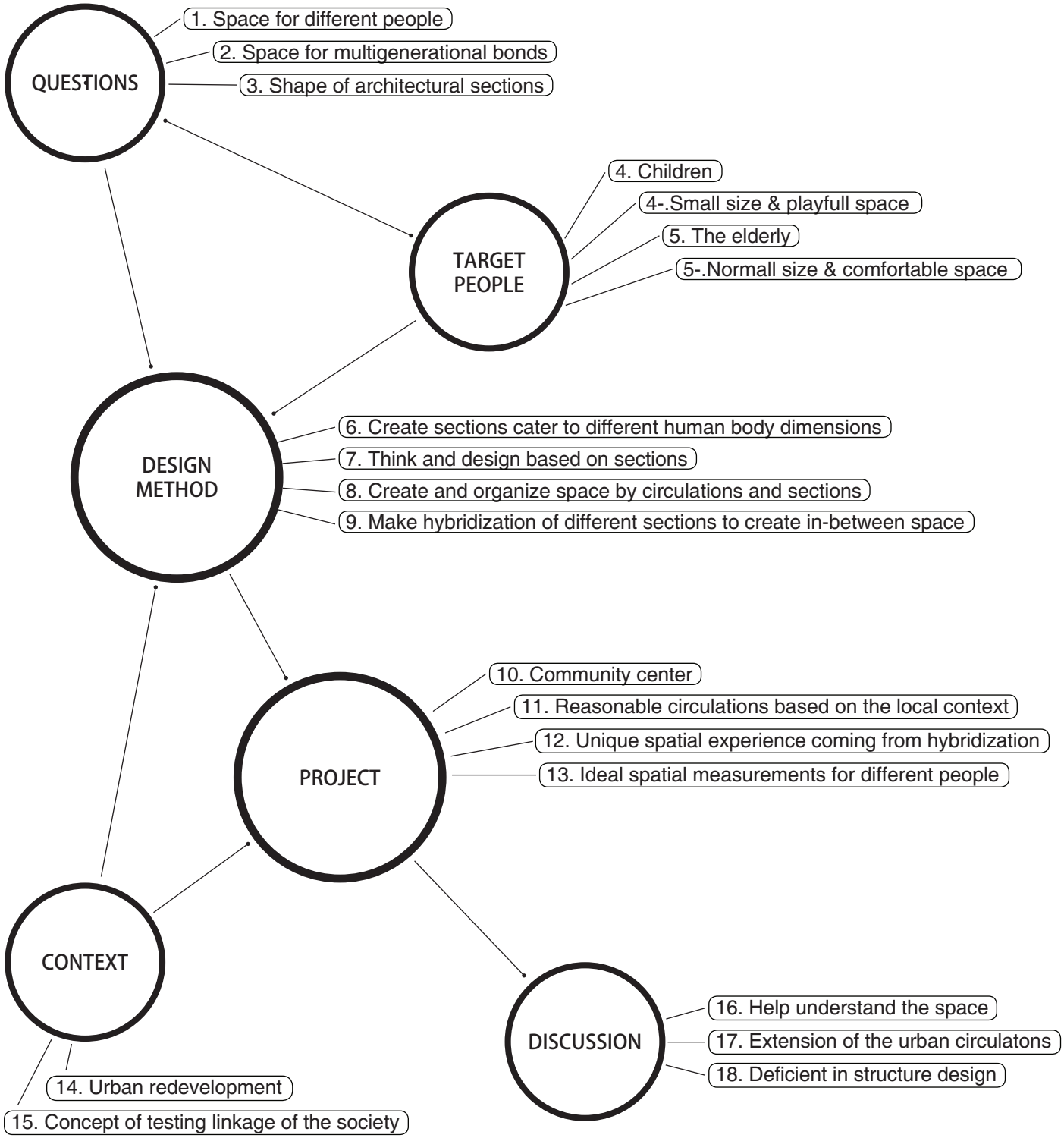
The purpose of the thesis is to explore the possibility of design based on sections and different human body dimensions . To be more specific, a series of sections designed for different activities, caring about human body dimensions, both the elderly and children,are arrayed with different circulations to form space. By using this design method, the result would be a totally different community center with playful, dynamic, as well as peaceful and static spatial experience for both children and the elderly people.

The project involves design and research during all the process. In the research part, a new workflow starting from profiles to space and finally to architecture is studied by making prototypes. Then in the design part, the urban plan on the site is studied carefully, which become the starting point of the project. The circulations inside the building, of both kids and the elderly, are treated as the extension of urban circulations. Children and senior people can enjoy their own activities following their own circulation. Whenever circulations cross with each other, an interactive space is created. Gradually cumulating all kinds of space, the project is finally merged.

Apart from providing unique spatial atmosphere for children and the old, the project is meant to challenge the Inertial design method. Furthermore, by designing sections according to different human body measurements, the thesis work try to awaken those who have always been neglecting children' dimensions and taking it for granted.



Discourse diagram



Background

Changes in the society

In the recent century, with the development of the economic and society, the model structure of families has changed dramatically. In the developed countries, due to the changes in peoples' minds about marriage, family structure changes from extended (children, parents and grandparents) to nuclear (only children and parents), and further to a more dynamic state. In the developing countries, like China, it also changes, but still in the first stage. Both two stages show the transformation of people's lifestyle.

At the same time, the demographic changes of population aging results in "longer years of shared lives" between generations. However, families are becoming smaller and more dynamic because of the changes mentioned above. The contradiction between them will inevitably lead to the gap between generations, making seniors living longer but lonely.

Furthermore, despite the fact that the size of family is becoming smaller, and the structure is becoming dynamic, the multigenerational bonds are gradually getting more importance. On the one hand, kids and grandparents share longer life now, so that the elderly are able to look after them, giving life advice. On the other hand, seniors are the key to stabilize the dynamic family.

The unchanging in the architecture area

Changes happened in the architecture area but not simultaneously.

In the beginning of 20th century, modern architecture come into vogue worldwide, as well as modulor, which raised by Le Corbusier. Modulor was a precise measuring tool based on the human body. It is easy for people to use these numbers to design because numbers in the modulor system correspond to human body dimensions and basic human activities. In some way, we can say dimensions and proportion show the idea of human activities or lifestyles. And modulor is just the tool help people master the skill quickly.

However, modulor only consists of a scale of dimensions derived from the six-foot man, which means people who are not at this height (especially children) may not be adapted for the system. Take children as an example, all the numbers seem lose their meaning.

Time flies, modern architecture has lost its charm and been challenged by more and more people. Other claims from Le Corbusier are no exception, including modulor. However, no matter they change, the elderly people and children are not paid much attention.

Urban plan in Frihamnen

Population of Sweden is increasing fast these days, which gives growing pressure on the exploitation of public resources. As a result, the government is pushed to make integrated plans. In Gothenburg, Frihamnen is going to be the test area to test the idea of interlinked society, specifically focusing on the interlinkage of preschool, elderly care, student housing and public use.

Aims

The thesis work seeks to :

1. Provide a unique spatial experience, which is suitable for the body measurements of both children and the old, playful and comfortable at the same time.

2. Design and think sectionally to address diversity of spatial character, functionality, and programmatic hybridization.

3. Investigate the potential of structures as the accent profile to make space easy to be understood.

4. Provide a different breakthrough point for nowadays popular design methods.

5. Learn more about architecture history and find my own standpoint of the thesis. Sharpen my own skills to be prepared for the future career.

Thesis questions

What kind of space is suitable for both children and the elderly, and may contribute to the multigenerational bonds?

How to design a unique space cater to different features of children and the elderly?

Method

From the beginning
The thesis work started occasionally. I had no determined topic when the semester began. At that time, I just had a vague idea that I would like to do something focusing on children and the elderly. When I worked deeper, I gradually figured out my breakthrough point. I found my interest in human body dimensions and sections.

The first step
I just read and copied sections. With more and more sections that I copied, I tried to use simple shapes to mimic the profiles of sections. In another word , I tried to divide a complex section into several simple shapes.

The second step
According to different human body dimensions , I started to use basic shapes (profiles) to design sections. Then space was made by sections and circulations. These space usually had single function.

The third step
SIngle-function spaces intersected with each other so that complex sections and multifunctional space generated.

The final step
After the whole space volume was generated, more detailed design was conducted to strengthen the spatial experience.

Delimitations

The project pays attention to both social and academic areas, and tries to give an answer to the social problem through the academic research.

Here the social problem mainly involves children and the elderly, about how to strengthen the multigenerational bonds in nowadays society, consisting of nuclear families(only parents and children). However, the social problem is quite complex, so, what I can do is to give a solution in architecture area, providing a future vision about how children and the elderly can have activities and communicate at the same building. Other aspects, such as management of the building or education etc, are not taken into consideration.

The academic research is about the design method based on the sections and human body dimensions. In this project, the building is a result of intersections and hybridizations of space created based on sections coming from different human body dimensions. However, due to the time given, the research works better in diagram level, not about materials or structure details. Therefore, in the future, there is still a lot of work to do to develop the thesis further and deeper.

Reading instructions

Structure

The booklet is structured with the proposal first and research part followed, talking about the design process of the community center for children and the elderly. Four main chapters will be found in the thesis. Introduction part comes firstly, telling the basic questions, that is what, why and how the thesis work came and developed. Then,answers of the thesis questions are all presented with the proposal. In this chapter, the project starts from the site, focusing on the relation of users, activities and space. Profiles are introduced to make connection between people and space, and also as strengthened hints, helping understand the space. Finally, bibliography provide more understandings for people.

Terms explanations

Community center : here community center does not follow its usual definition, but more like a activity center in the community. Since it is mainly for children and the elderly, functions inside are decided by the author with the observation of usual life.

Profile: profiles in the thesis work mainly means the outline of sections. It is the basic unit of the design.

2

PROPOSAL

Context

Frihamnen is located in the central part of Gothenburg, near the commercial center, on the opposite bank of the river. It had worked as the industrial harbor for a long time. However, around 2000, the harbor was closed and moved away, and only left desolation in this area.

Urban development plan

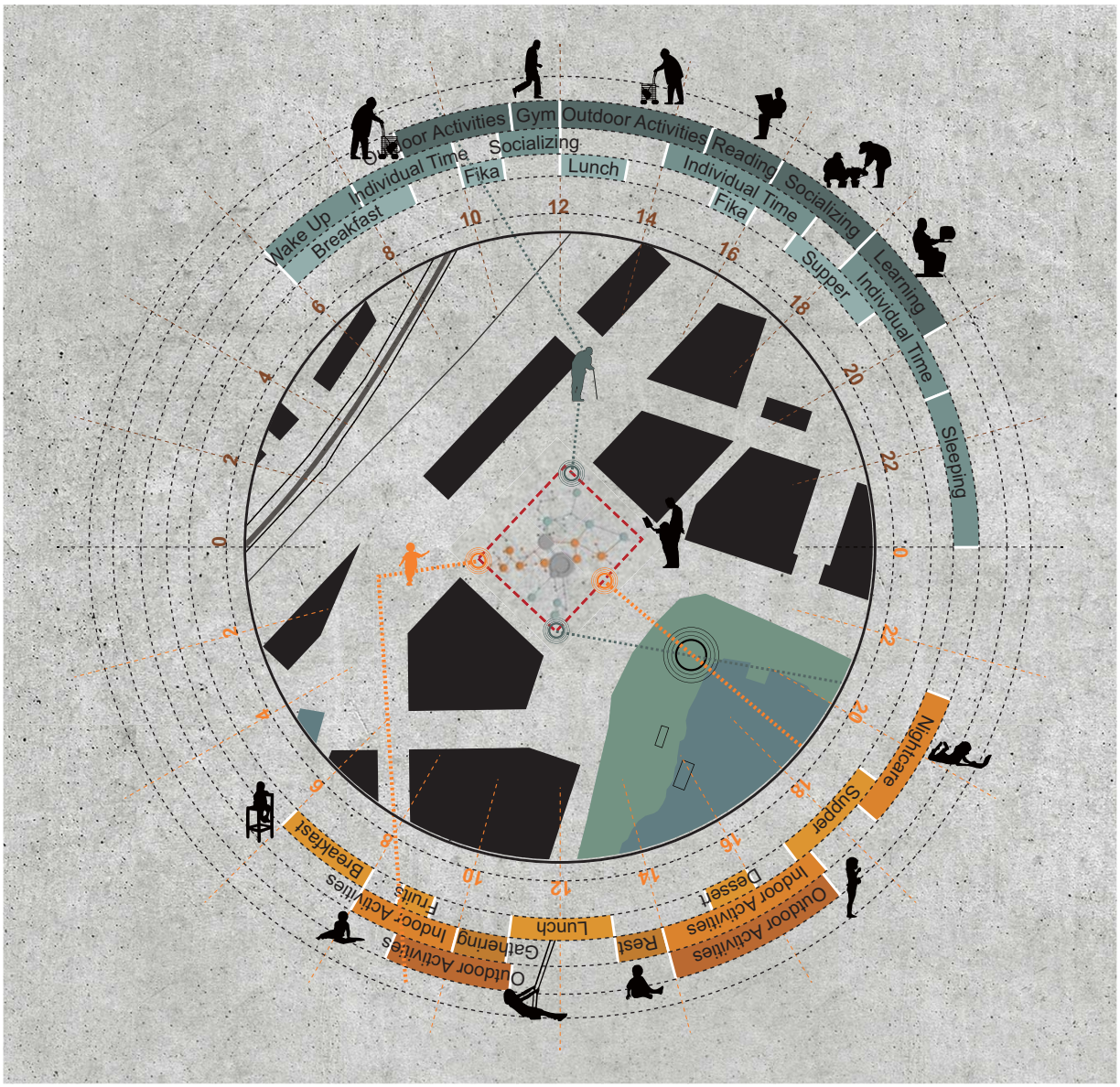
To activate this area, the government has made several versions of urban design in the recent years , and below is one of them. With an expectation of population growth, the main idea of the urban design are shared use and space for creating a dense city with mixed functions. So, for this project, this area is also a good place for testing the linkage of preschool children and the elderly.

Site accessibility

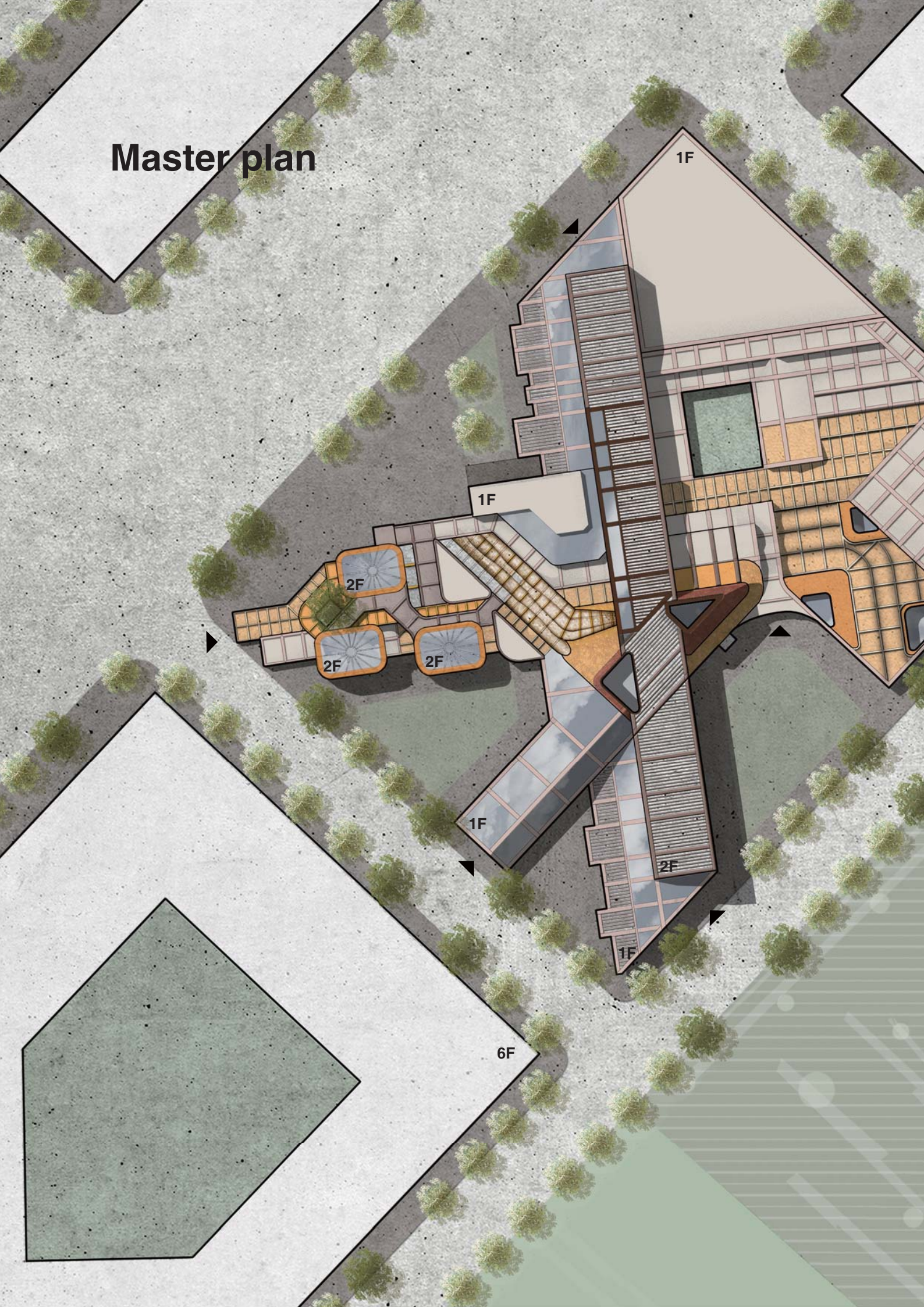
As is shown in the urban plan, it is quite convenient to get access to the site. On the one hand, the traffic condition is very good. New bridge and bus lines will make it even better. On the other hand, the site is close to the commercial center and traffic center.

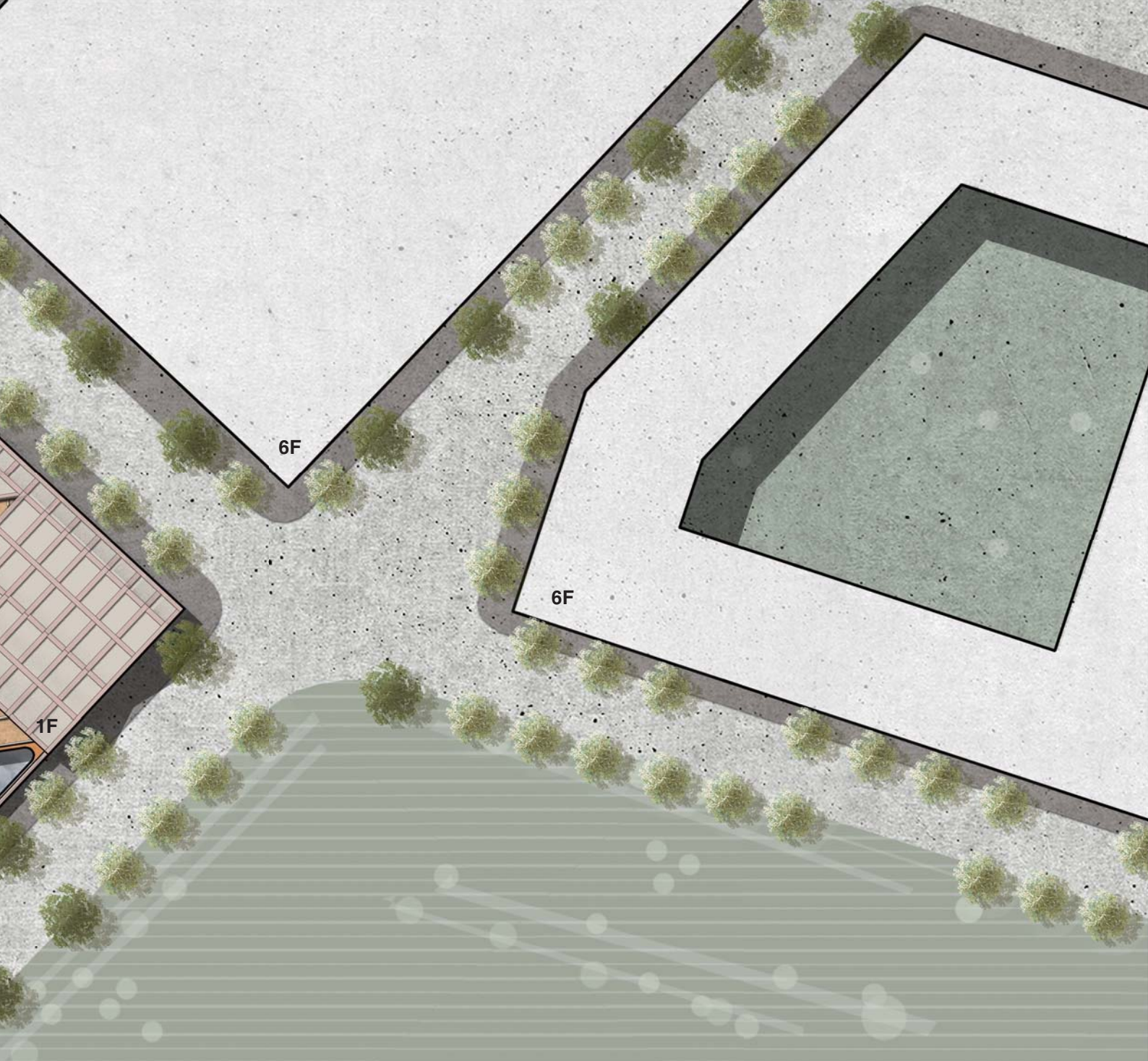
Target people

The project is mainly for preschool children and the elderly, so their life habits are carefully studied. It is obvious that they will have different timetables as well as interests. As a result, their circulations should be different. And here is one of the possibilities.

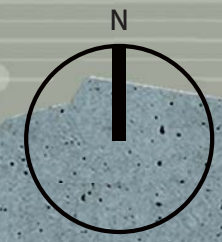


Master plan





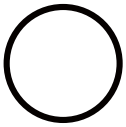
After think about the connections on the site, an idea that making the building as the extension of urban circulations come into my mind. Different profiles coming from human body dimensions flow with different circulations, creating various spaces, which intersect with each other. Then the architecture is finally generated.



master plan 1:400

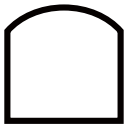
Primitive profiles

Starting from the primitive profiles I got from the section analysis (research part,P52), I made some transformations of them to compose the basis of the project.



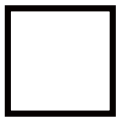
circle

Circle is soft and playful, so it can be used for safe and interesting space.



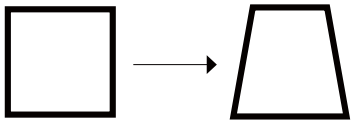
arch

Arch is soft too. Compared with circle, it has a flat bottom, which makes it suitable to compose all kinds of daily functional rooms. Also, as is mentioned, arch has hierarchy between middle and two sides, adding more fun.



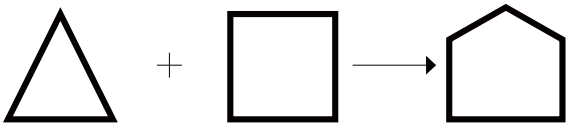
rectangle

Rectangle is the common profile that we used in design. The space it composes is homogeneous. But, at the same time, the efficiency in space use is the highest.



trapezoid

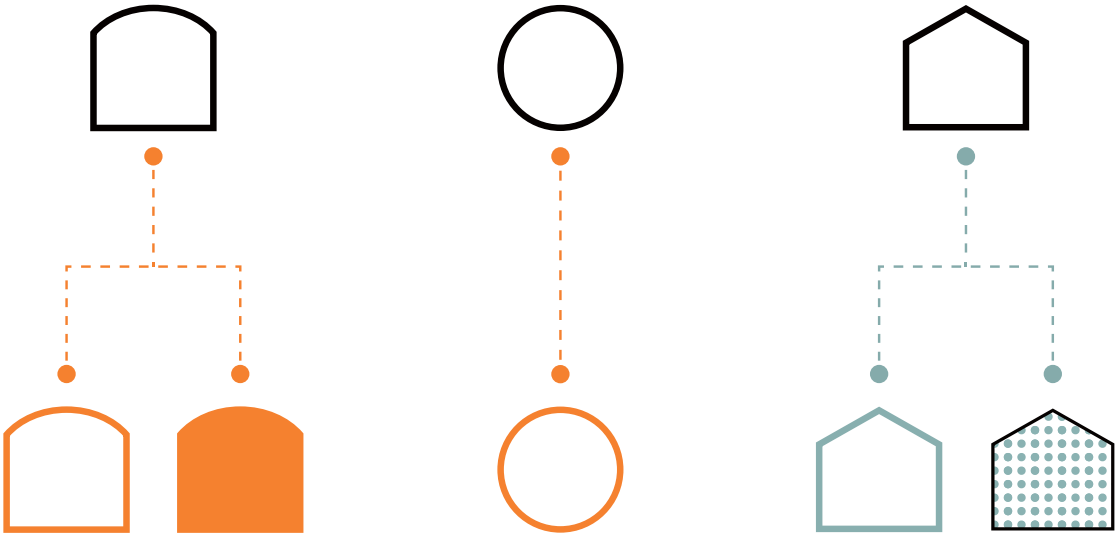
Trapezoid is a variant of the rectangle.

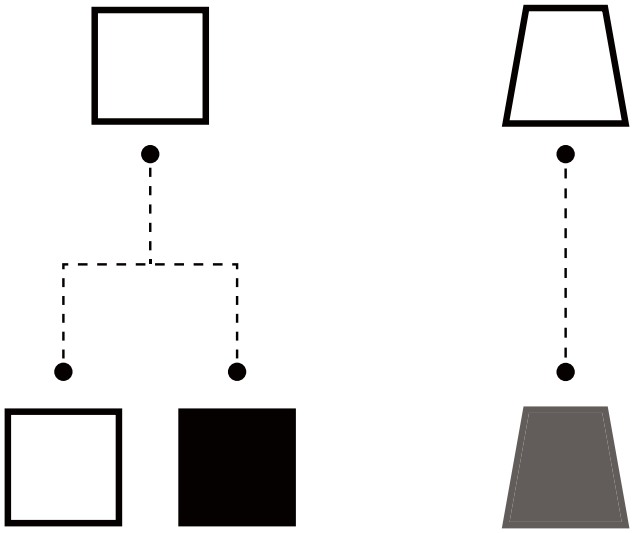


gable

Gable reminds people of the shape of house, giving a warm and familiar feeling.

In the project, arch and circle are used to create the space for children, while gable is mainly for the elderly. Neutral spaces are made up of rectangle. Finally, intersection points are represented by trapezoid. Then I use positive shape to represent space for staying. Negative shape mainly means corridors.

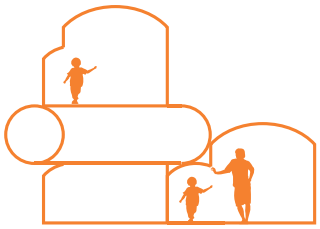




Combinations

Entrance for children
Different sizes of arches show the accessibility for children and the adult.

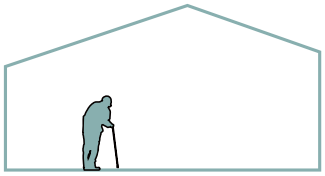
Corridor and resting room
Apparently, according to the size of arches, adults can only enter some certain area.



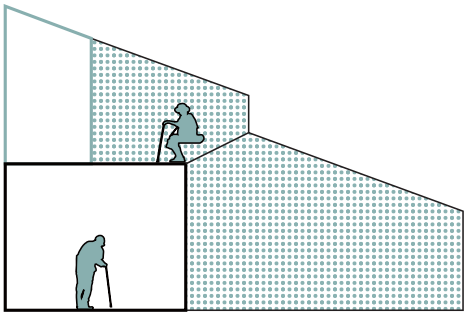
Corridors
Some of children's corridors are formed by circle as the playground.

Corridors and playground
The shape formed by circles and arches becomes the unique playground.

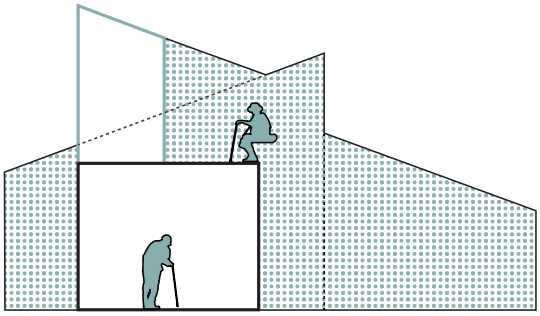
Cafe, corridors and playground



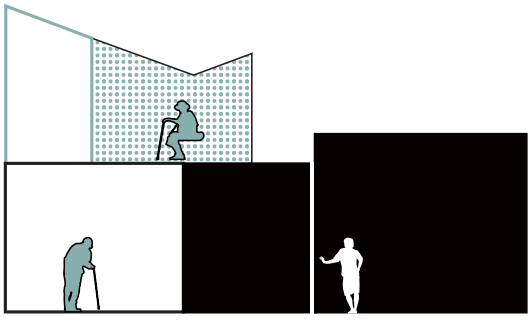
Entrance for the elderly
Gable shape gives home-like feeling to the elderly, pushing away the unease feeling.

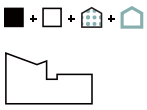


Corridor and therapy center
Rectangle forms the corridor, while gable shape is the main rest space.



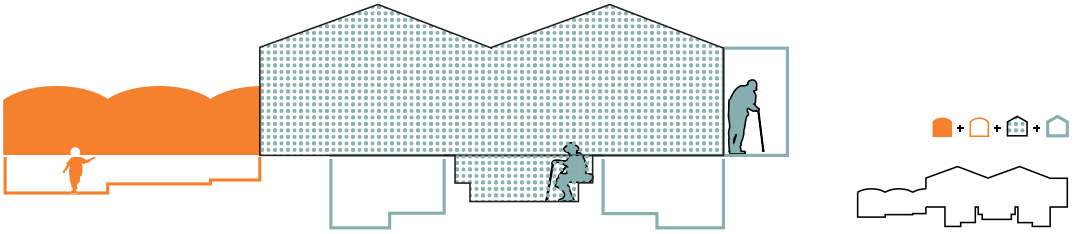
Corridor and therapy center



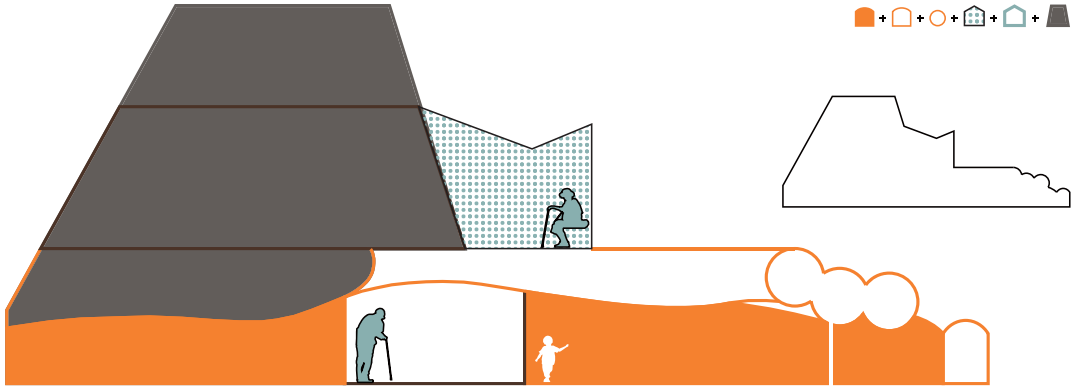


Corridor and cafe

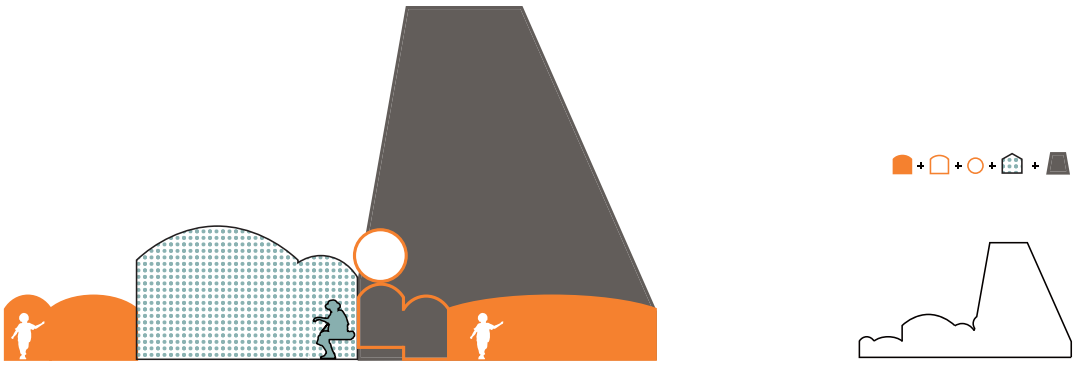
Hybridization



Swimming pool

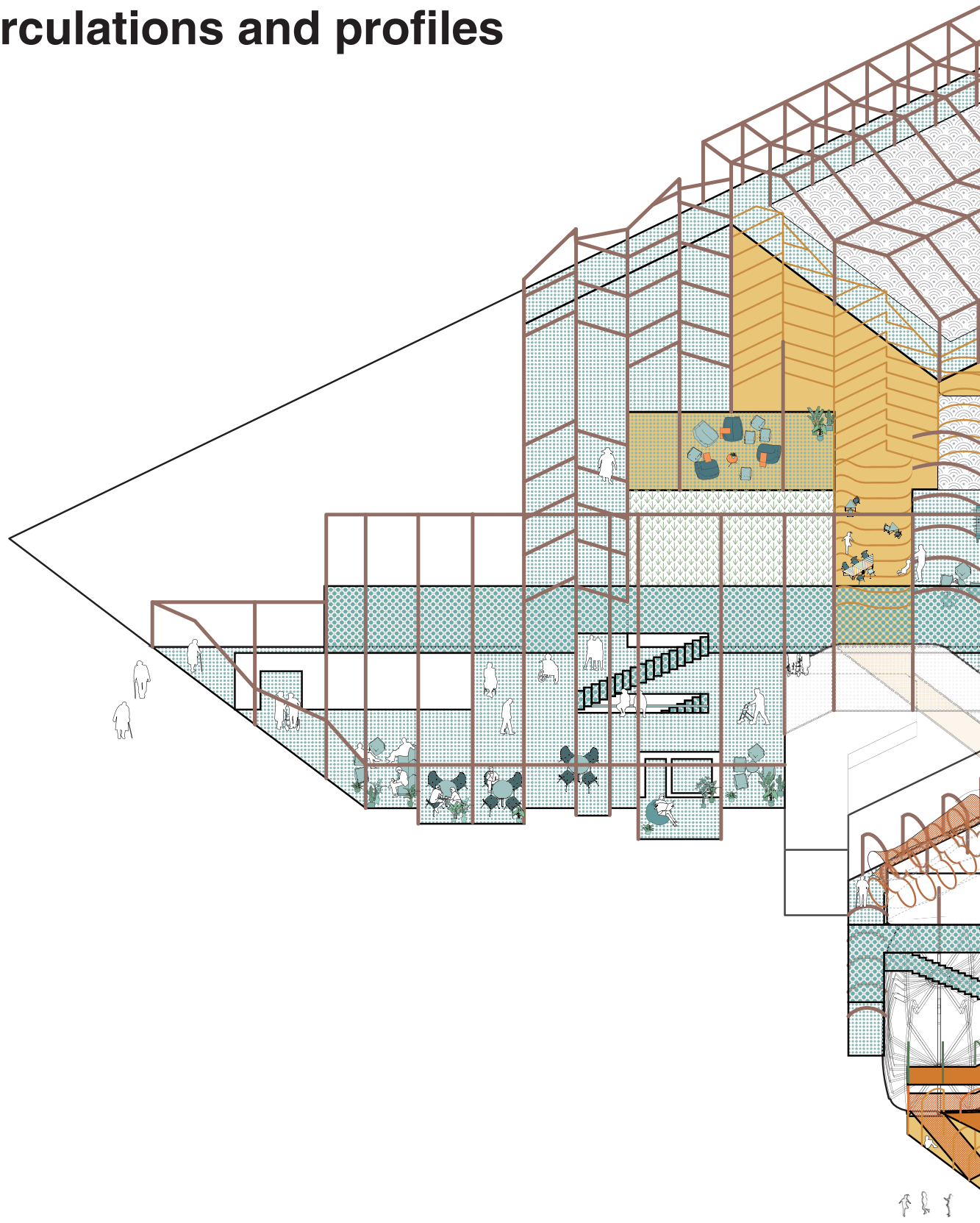


Intersection tower, corridor and playground

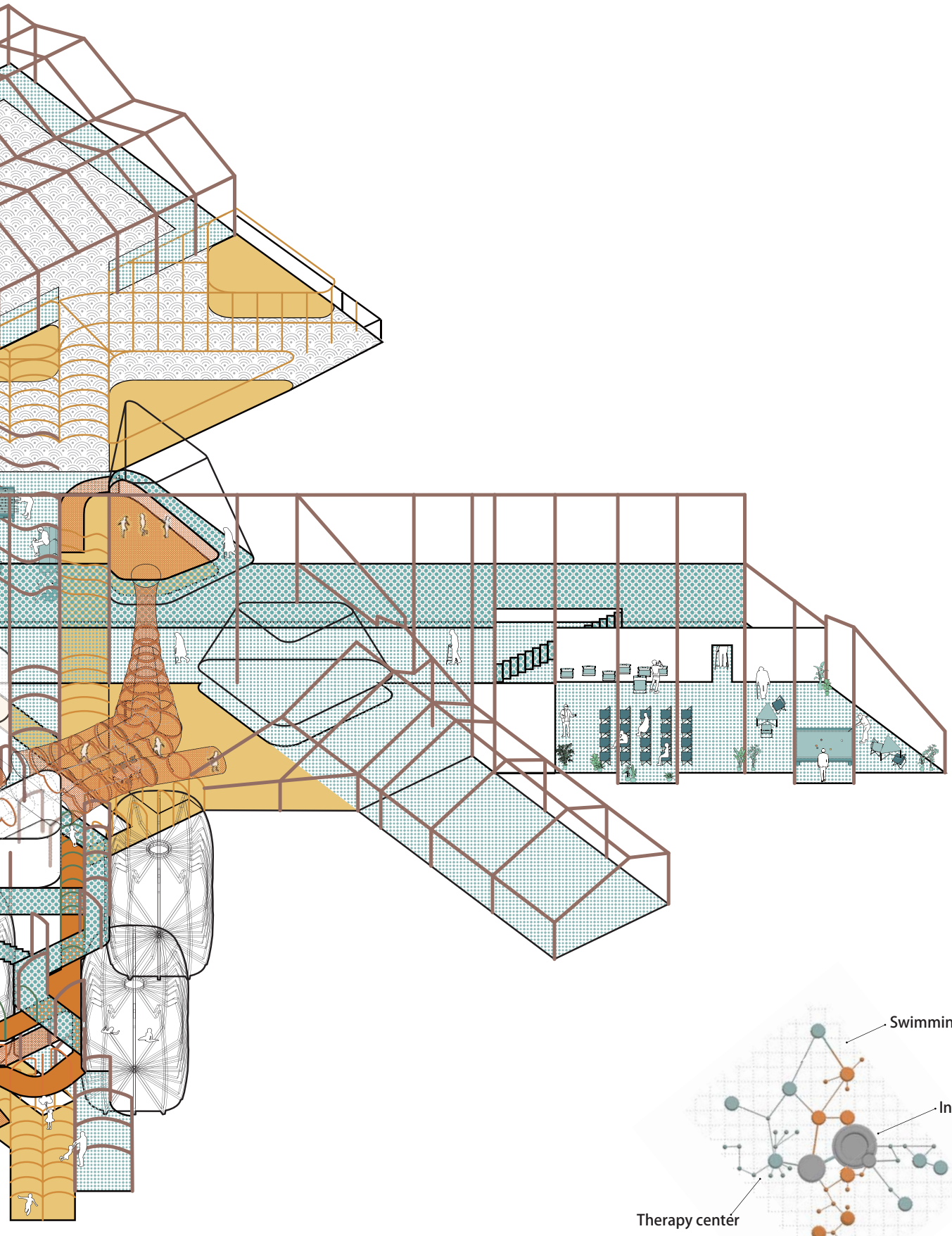


Lounge room and intersection tower

Circulations and profiles

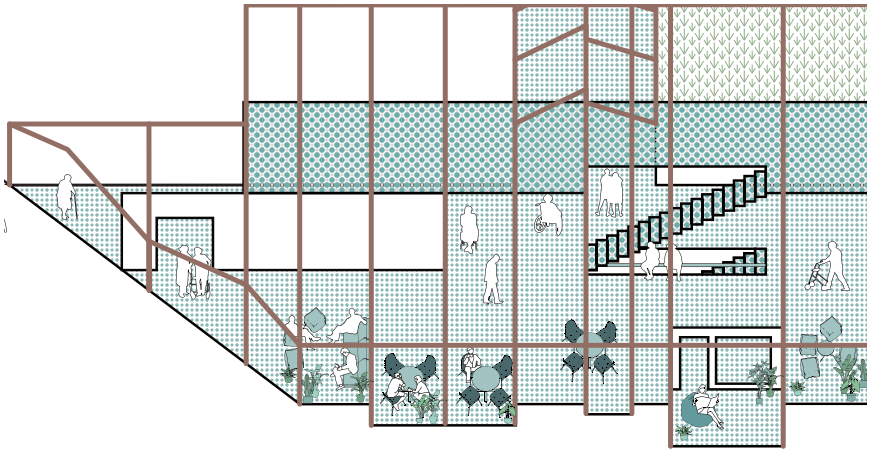


The axonometric drawing introduces the relationship of circulations and profiles. It shows how the primitive profiles are distributed in the building. Also, people's activities are added to give a vision how people will use the space composed by profiles.

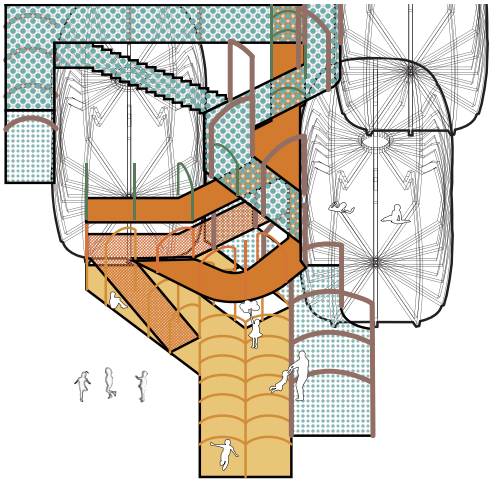


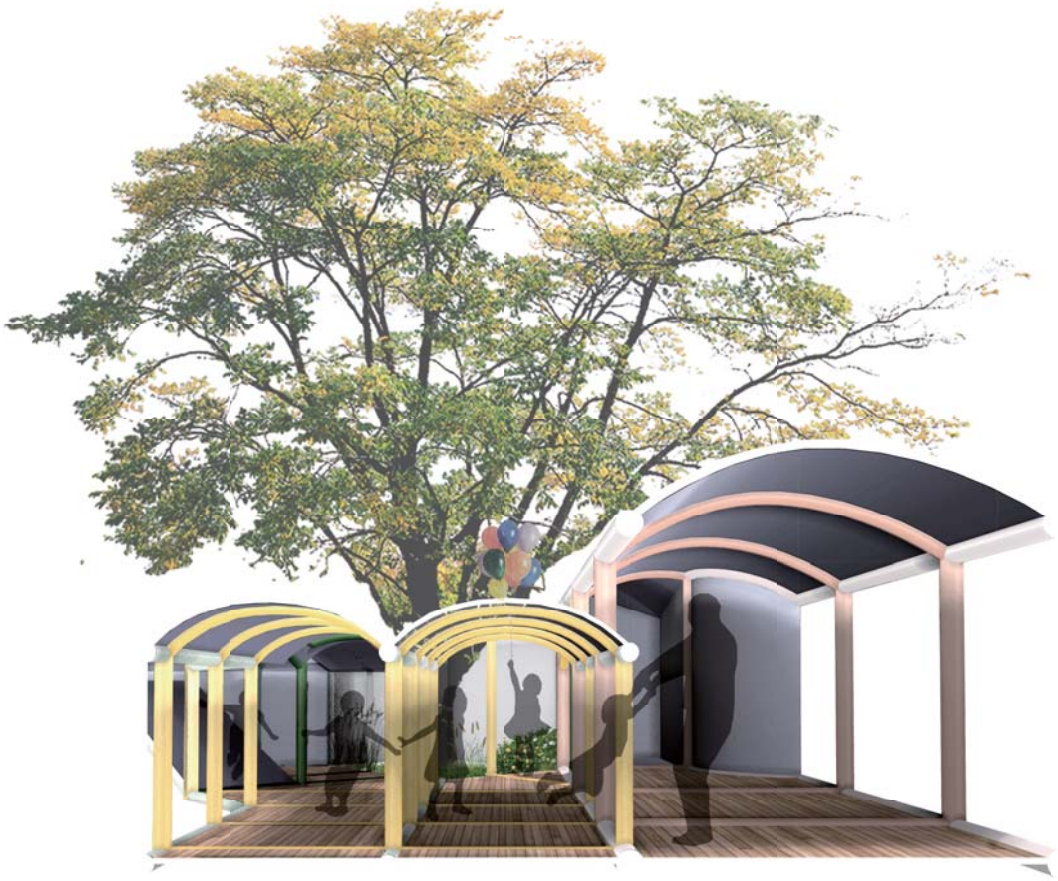
Swimming pool
Intersection tower
Therapy center
Kids world

Entrance for the elderly

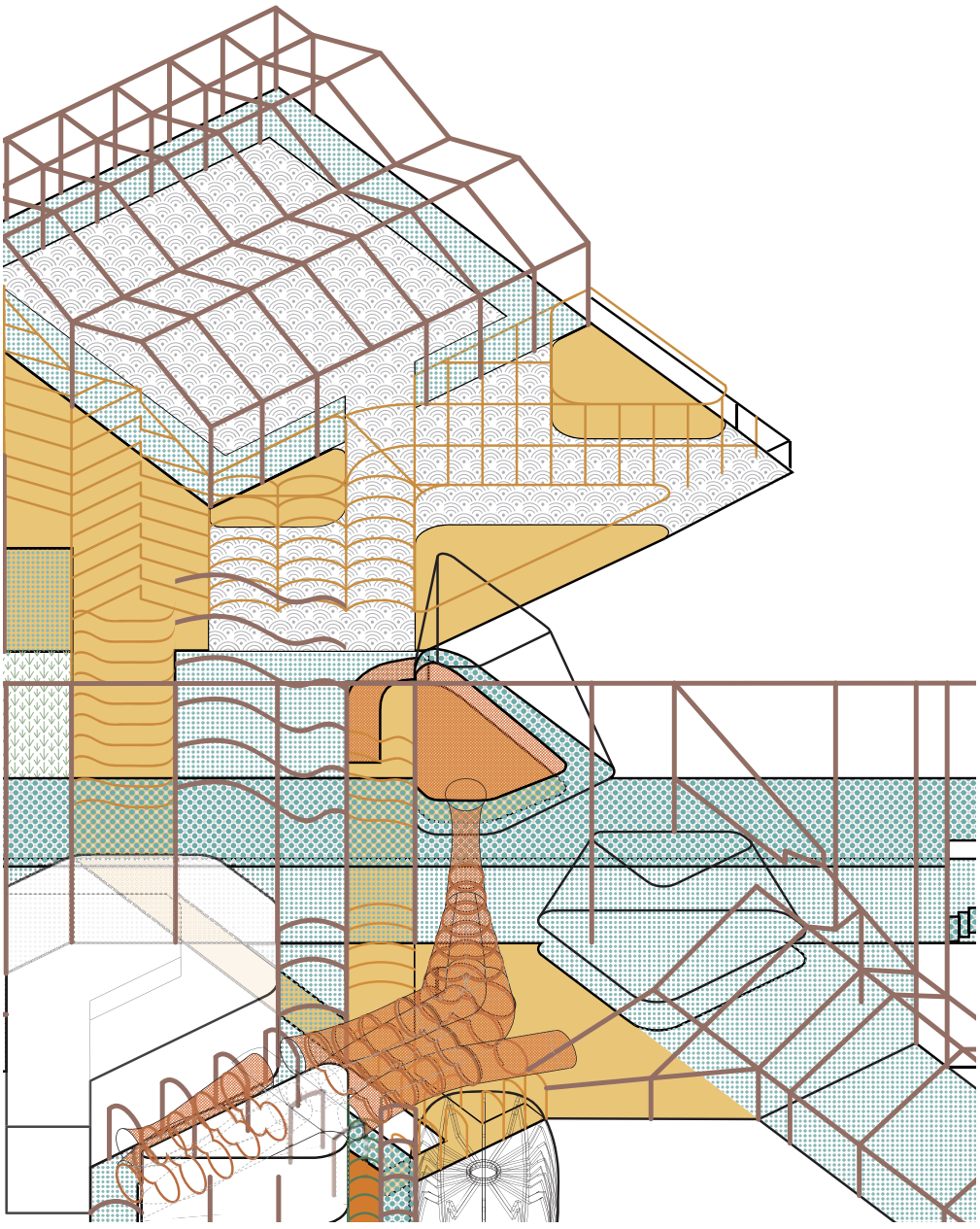


Entrance for children

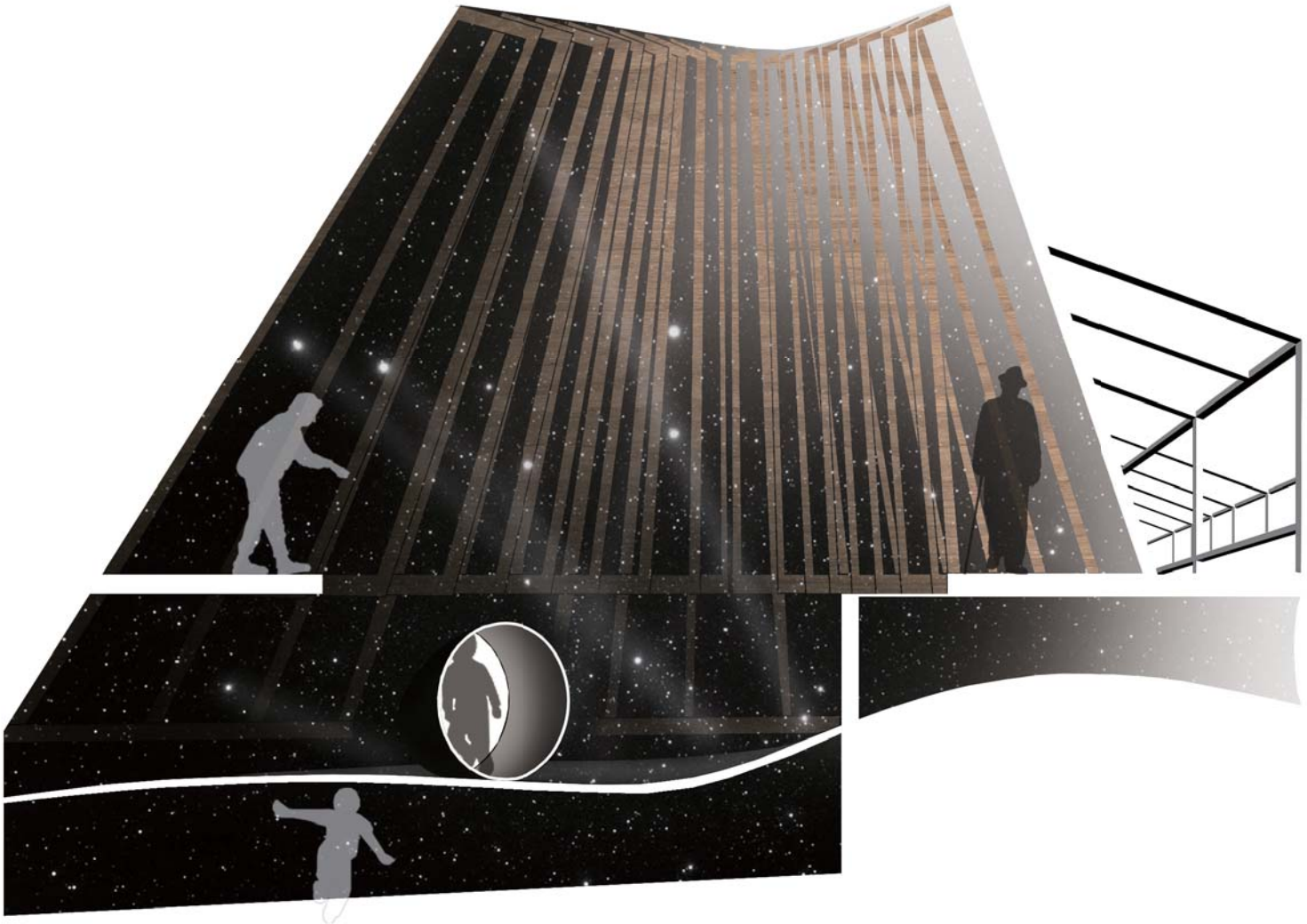




Entrance for the elderly



The intersection tower is a place where children's playground, therapy center and lounge room all gather together. In the tower, children and the elderly can communicate with each other but also have separate space.

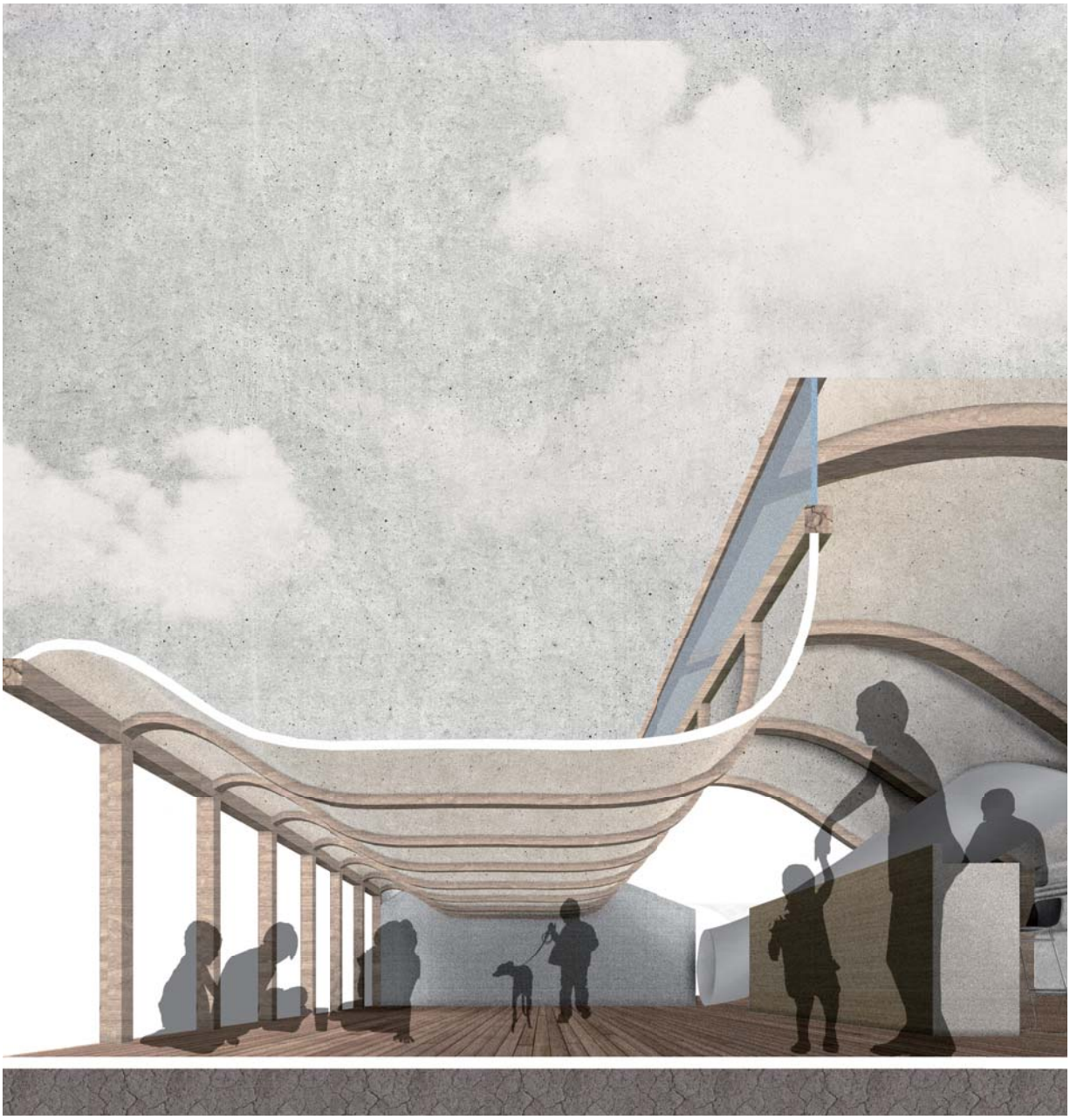


Perspective

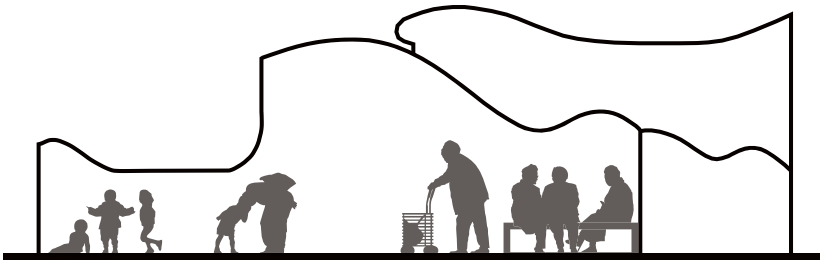
The architecture provides several different entrances for people to choose. From the appearance, it is clear some of them are for children while others are for adults. People can choose which one they would like to enter and have unique spatial experience.
Then, different from other buildings , the project tries to stress the profiles (structures), instead of hiding them. With the help of profiles, it is easier for people to understand the architecture.

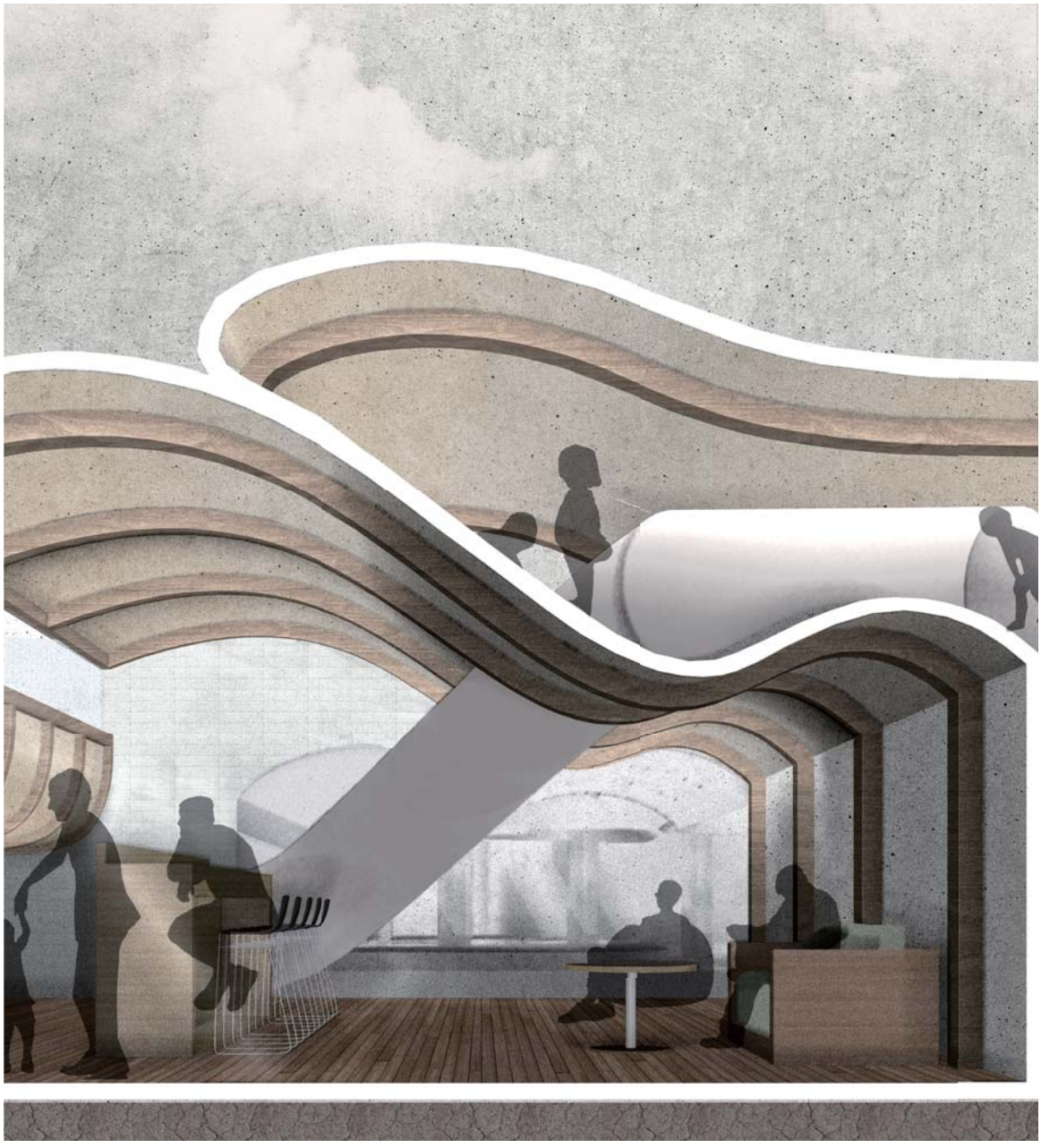
Lounge room (children)

The lounge room uses height to divide the area for children and the elderly. Both area can enjoy the sunshine and courtyard. Also, children and the elderly can communicate and have activities in this space. The stressed structures also help them understand the space.



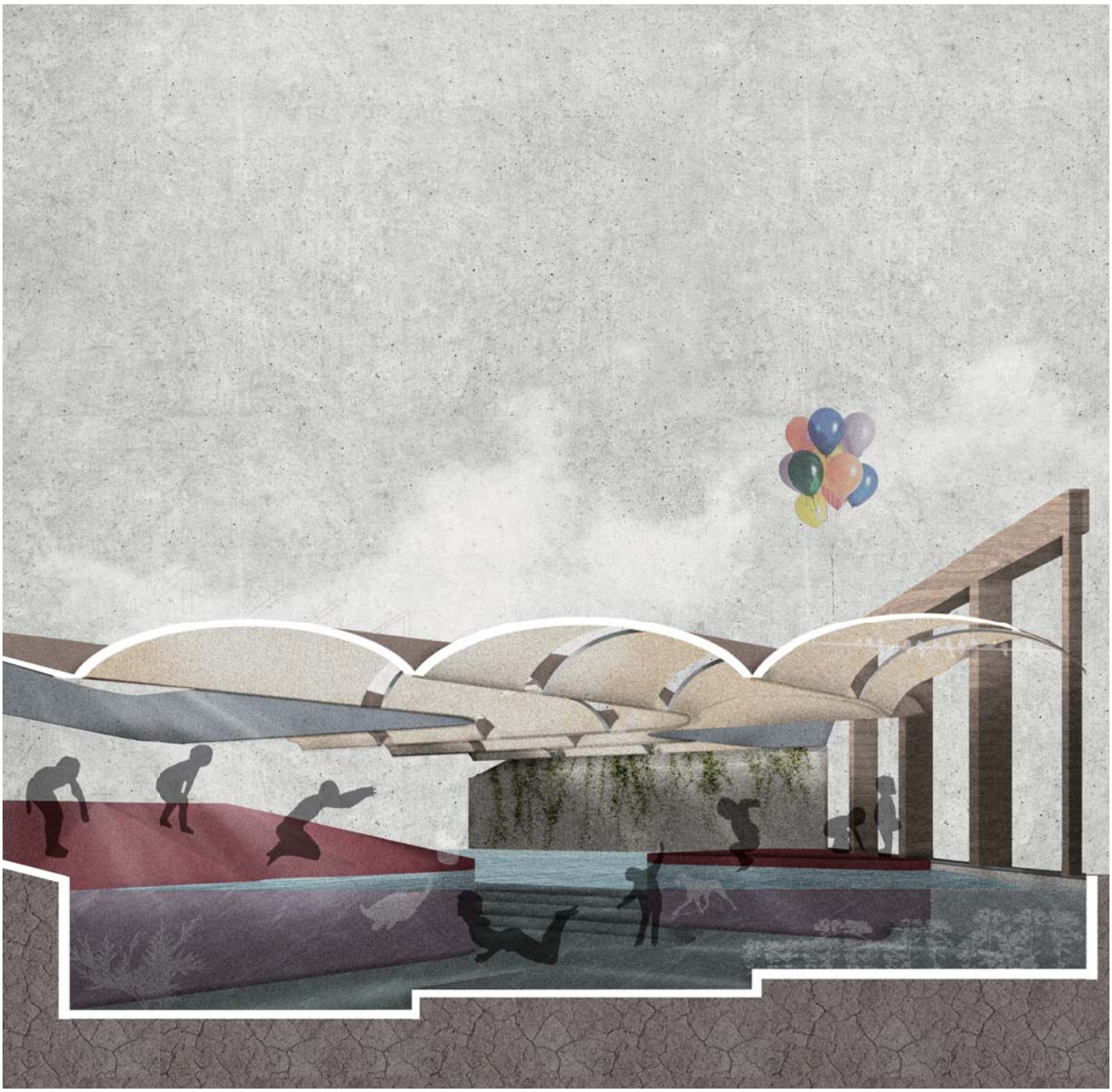
Lounge room (the elderly)



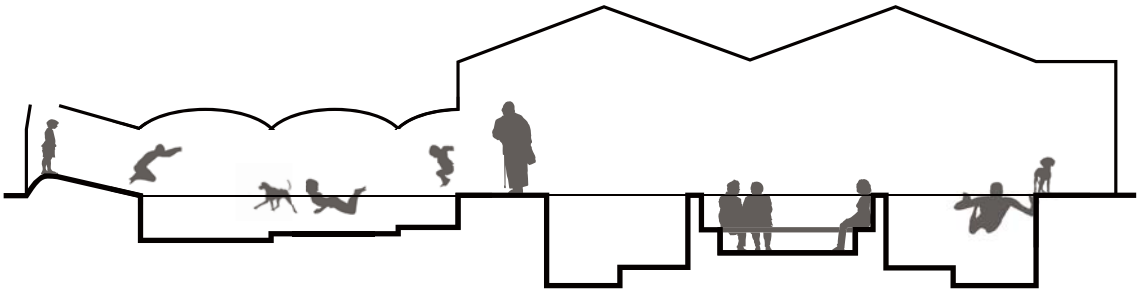


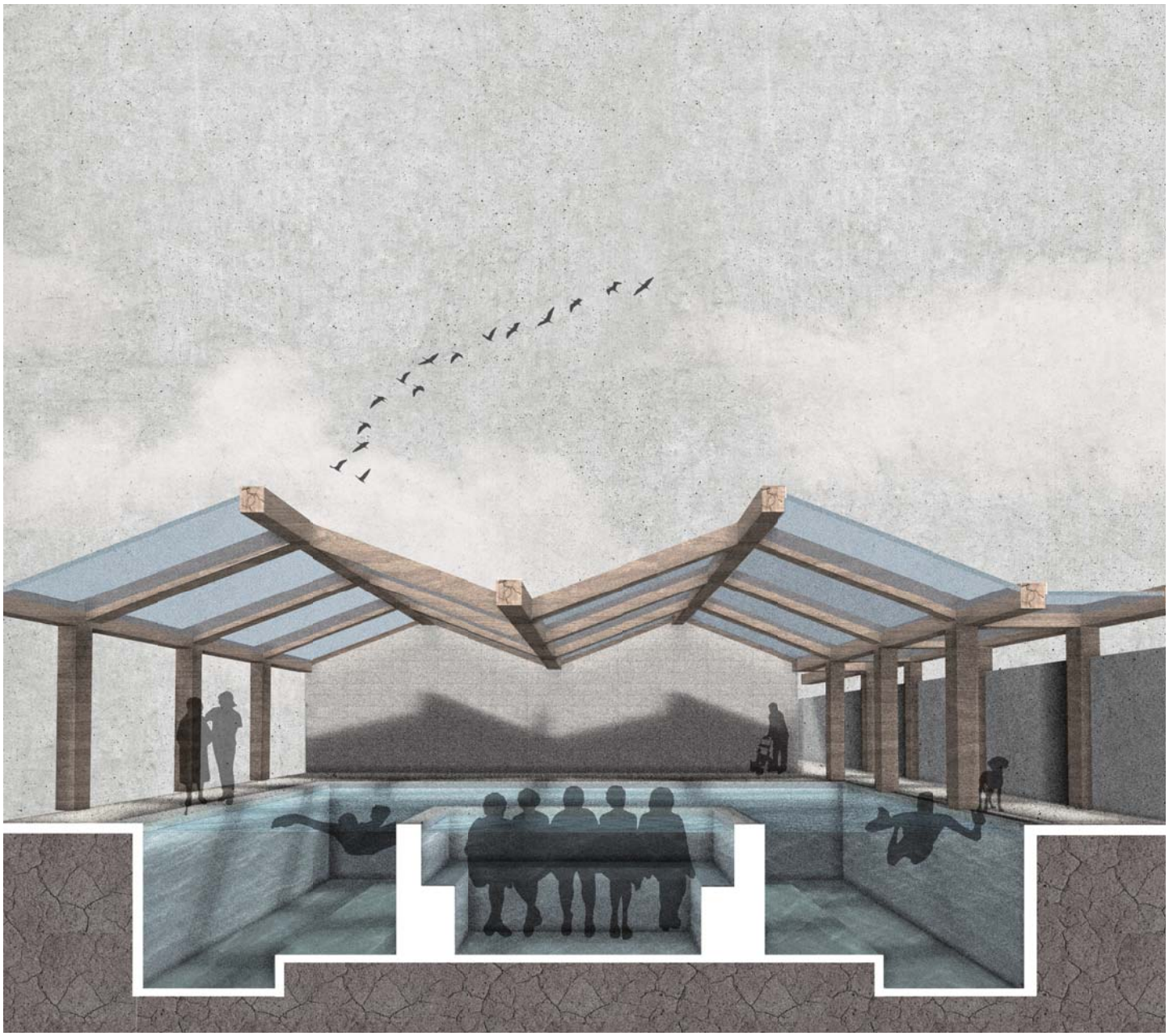
Swimming pool (children)

The swimming pool for children and the elderly are totally different. The one for children is quite dynamic and interesting. There, children can play the slide, jump, chase with each other. Also different depth of the water provides more choices for children. The other one is more static. In the middle of the pool, there is also warm water for the elderly to rest.

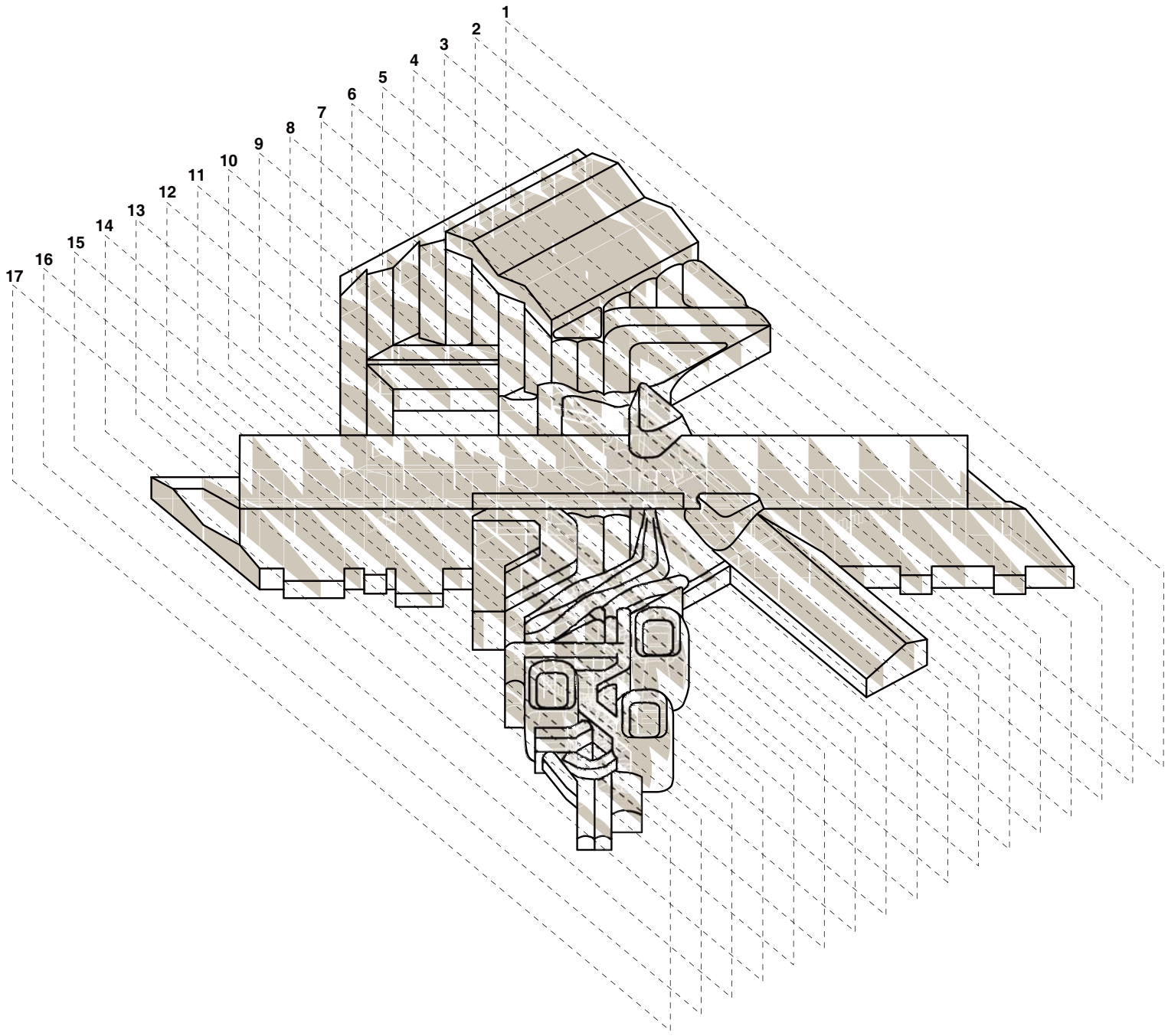


Swimming pool (the elderly)





Sections array



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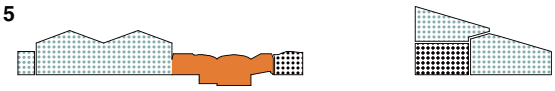

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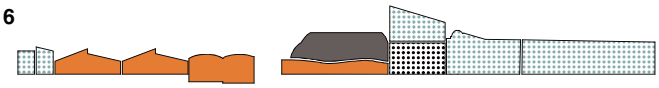

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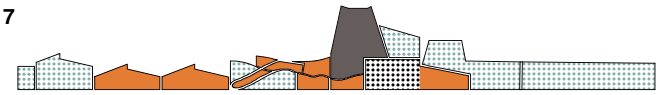

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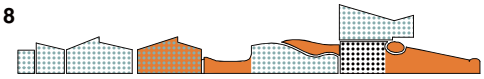

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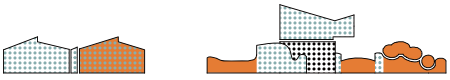

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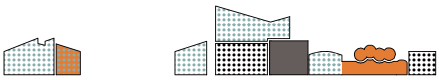

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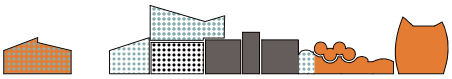

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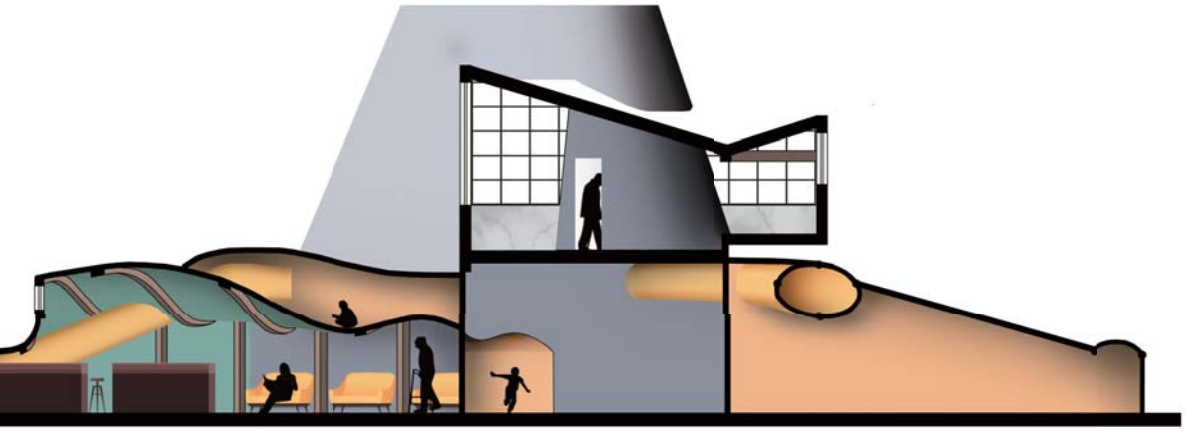
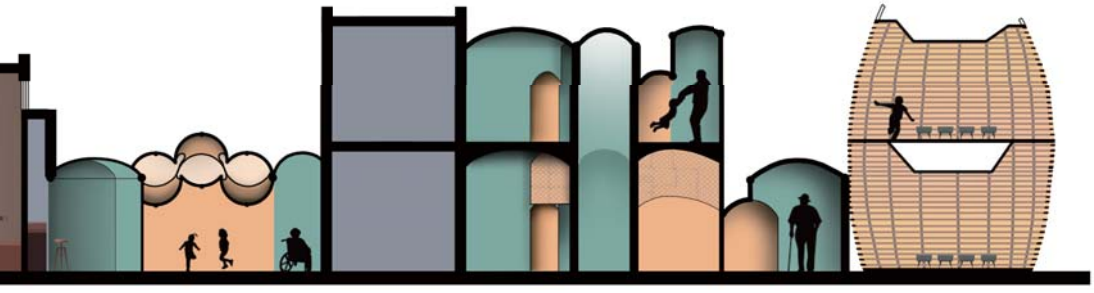
Detailed sections

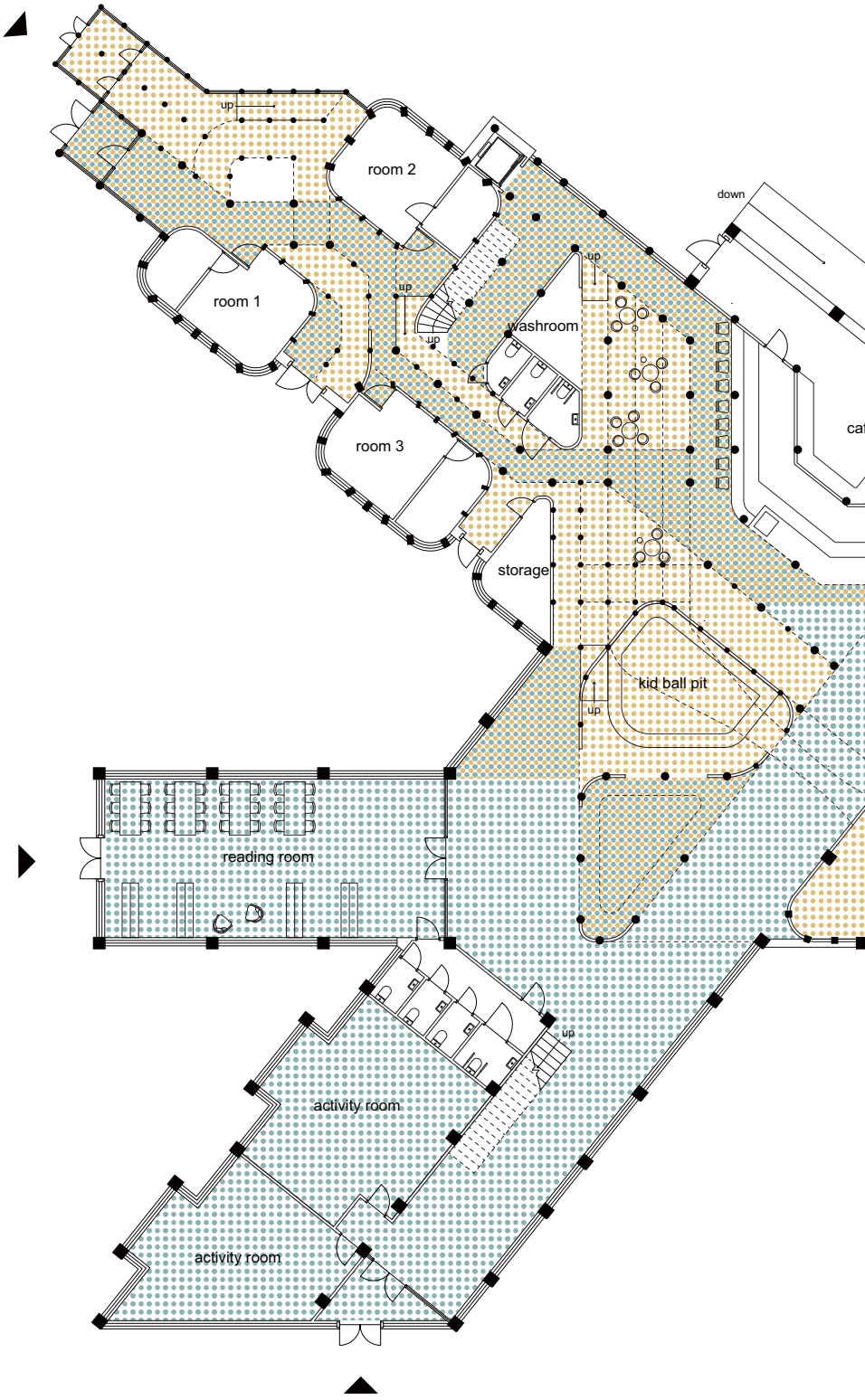


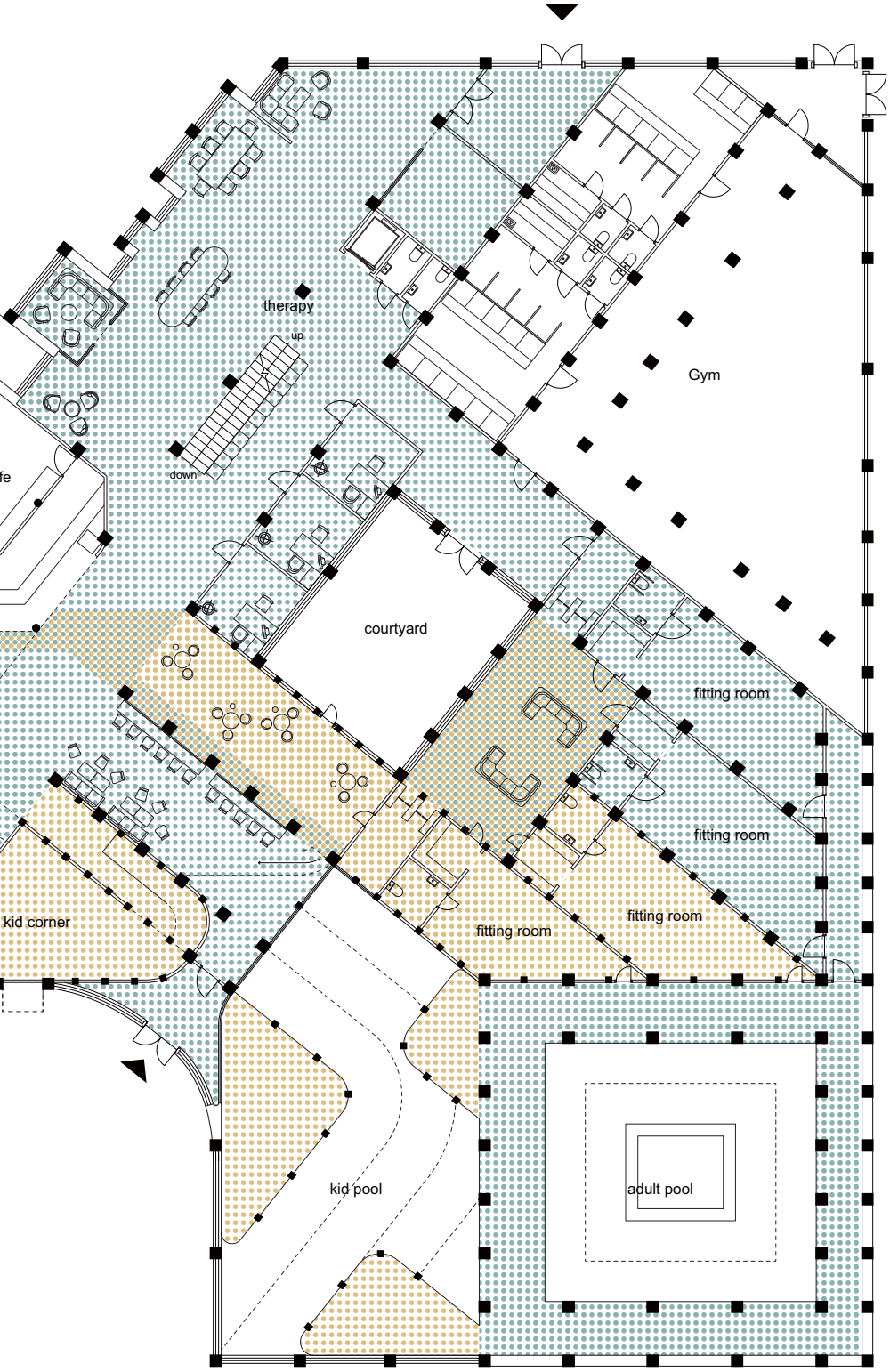
Section--8 1:150



Section--13 1:150

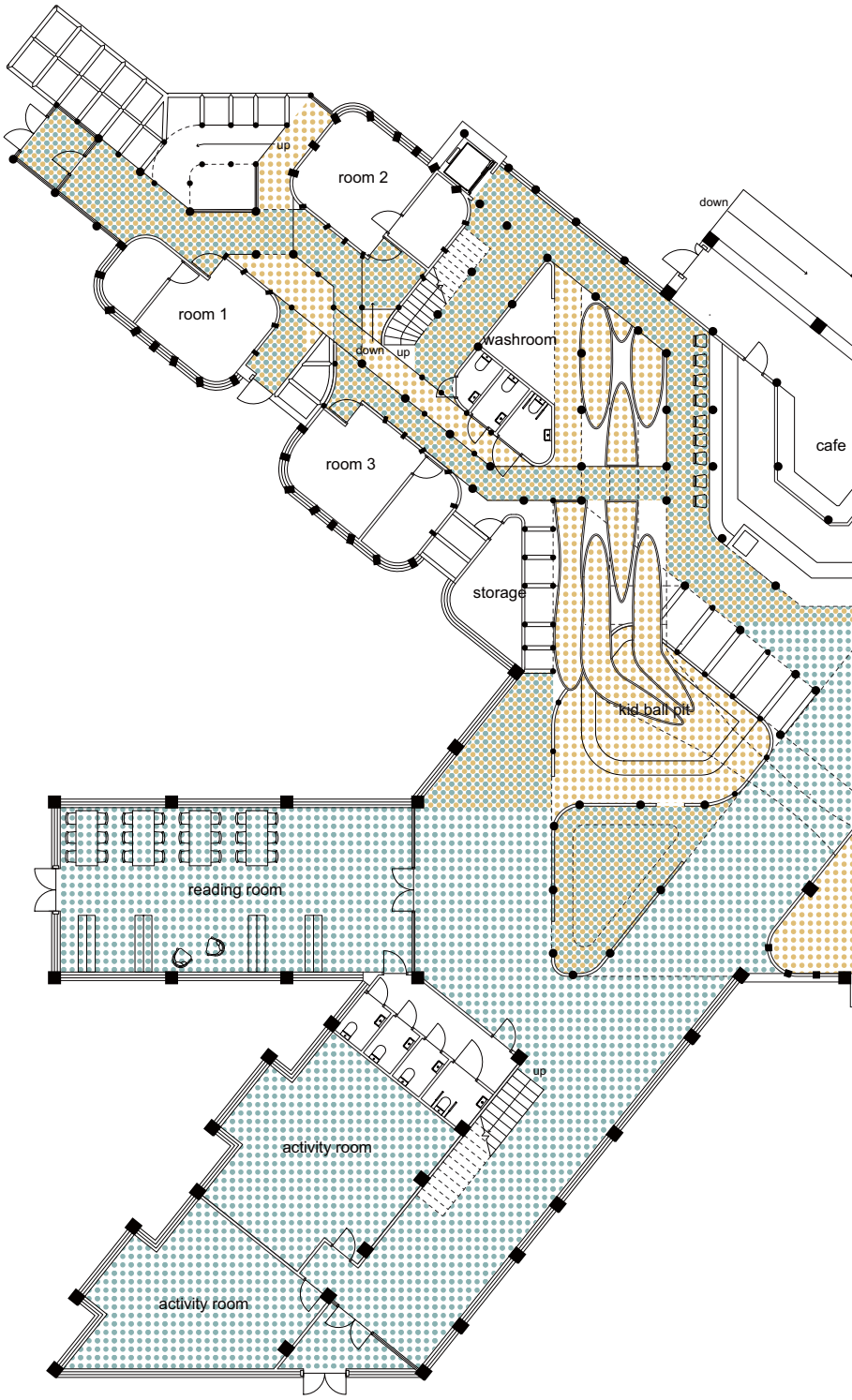
Floor plan at the height of 0.8m

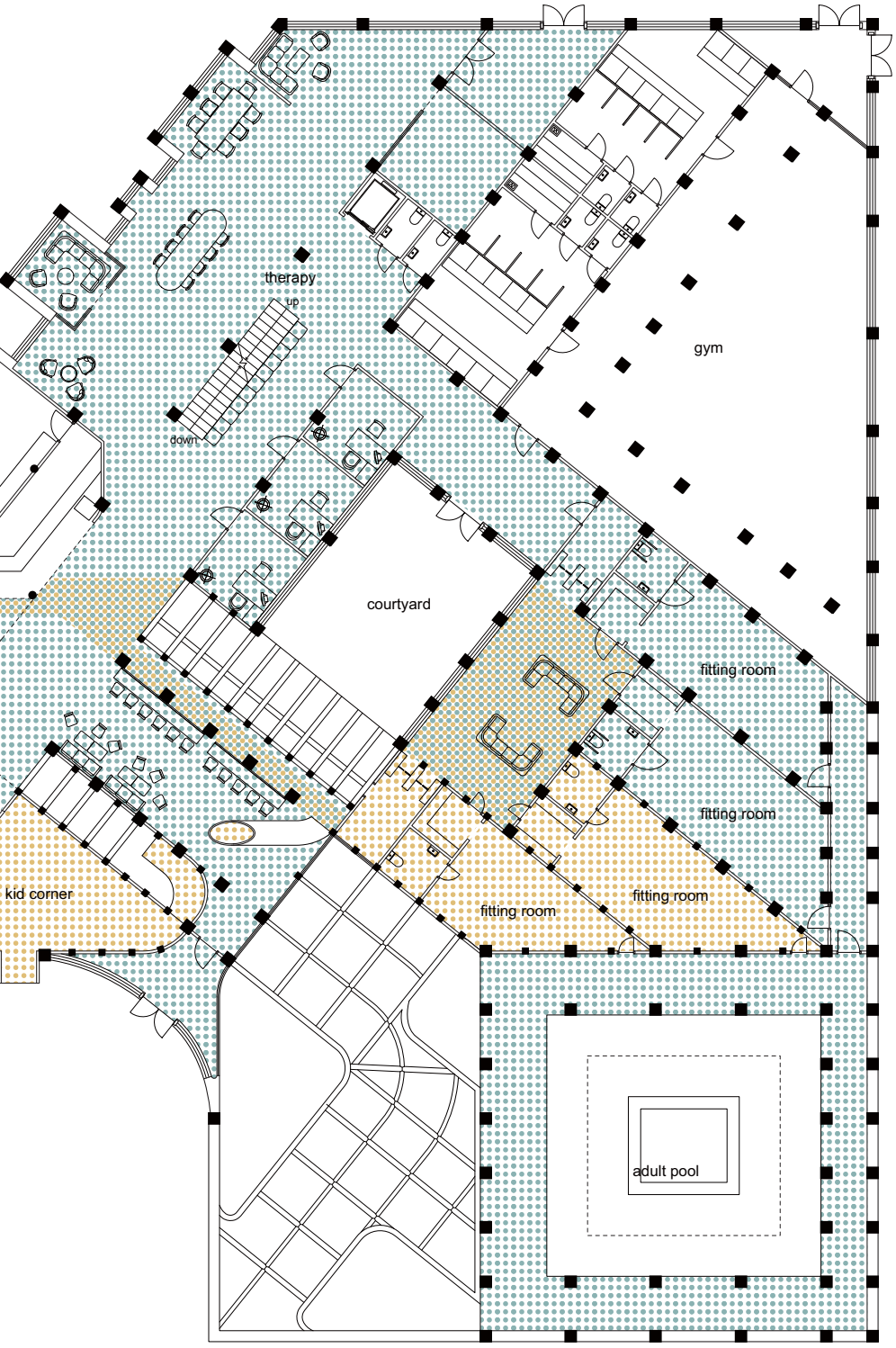




First Floor at 0.8m 1:250

Floor plan at the height of 1.5m





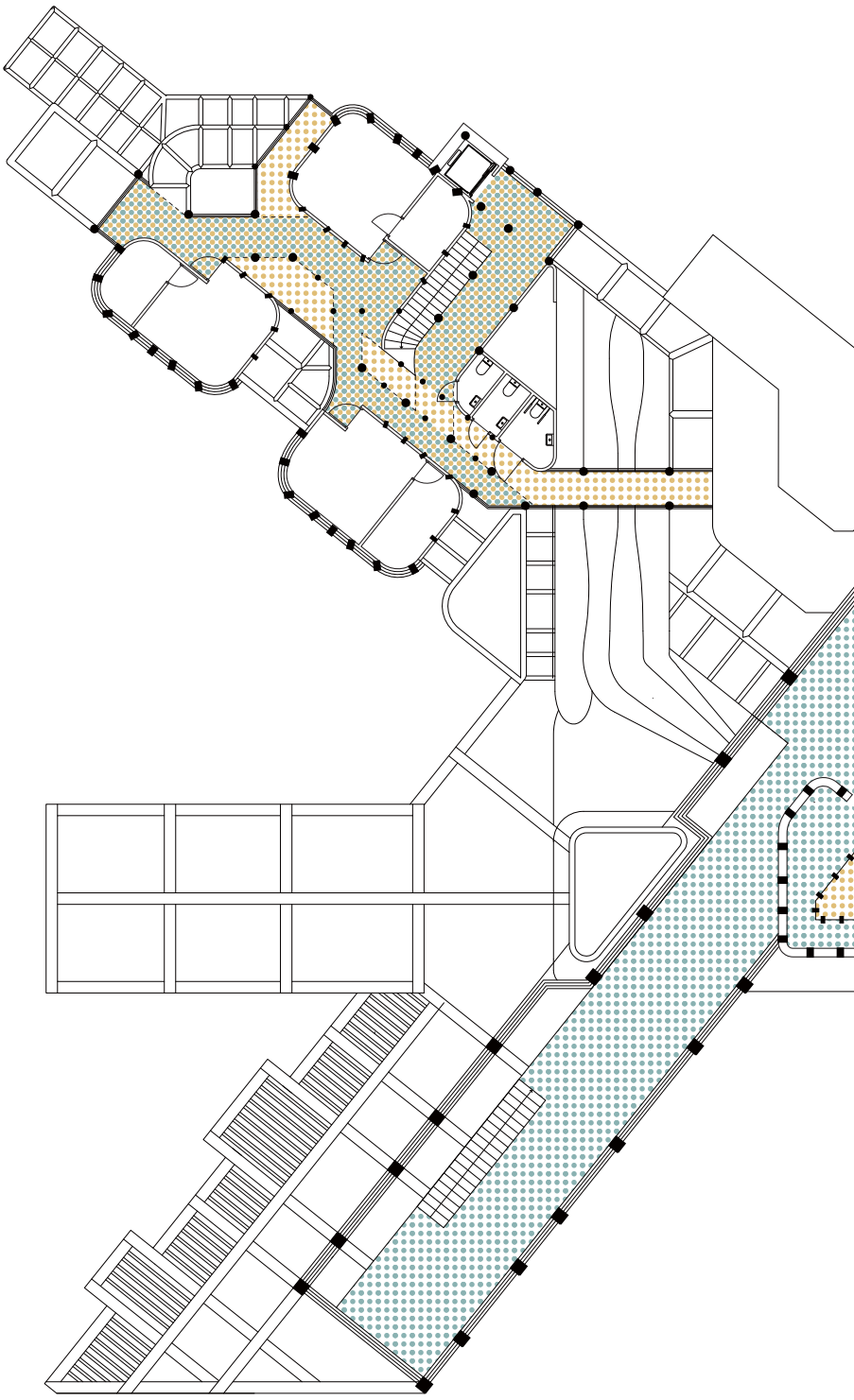
For the elderly

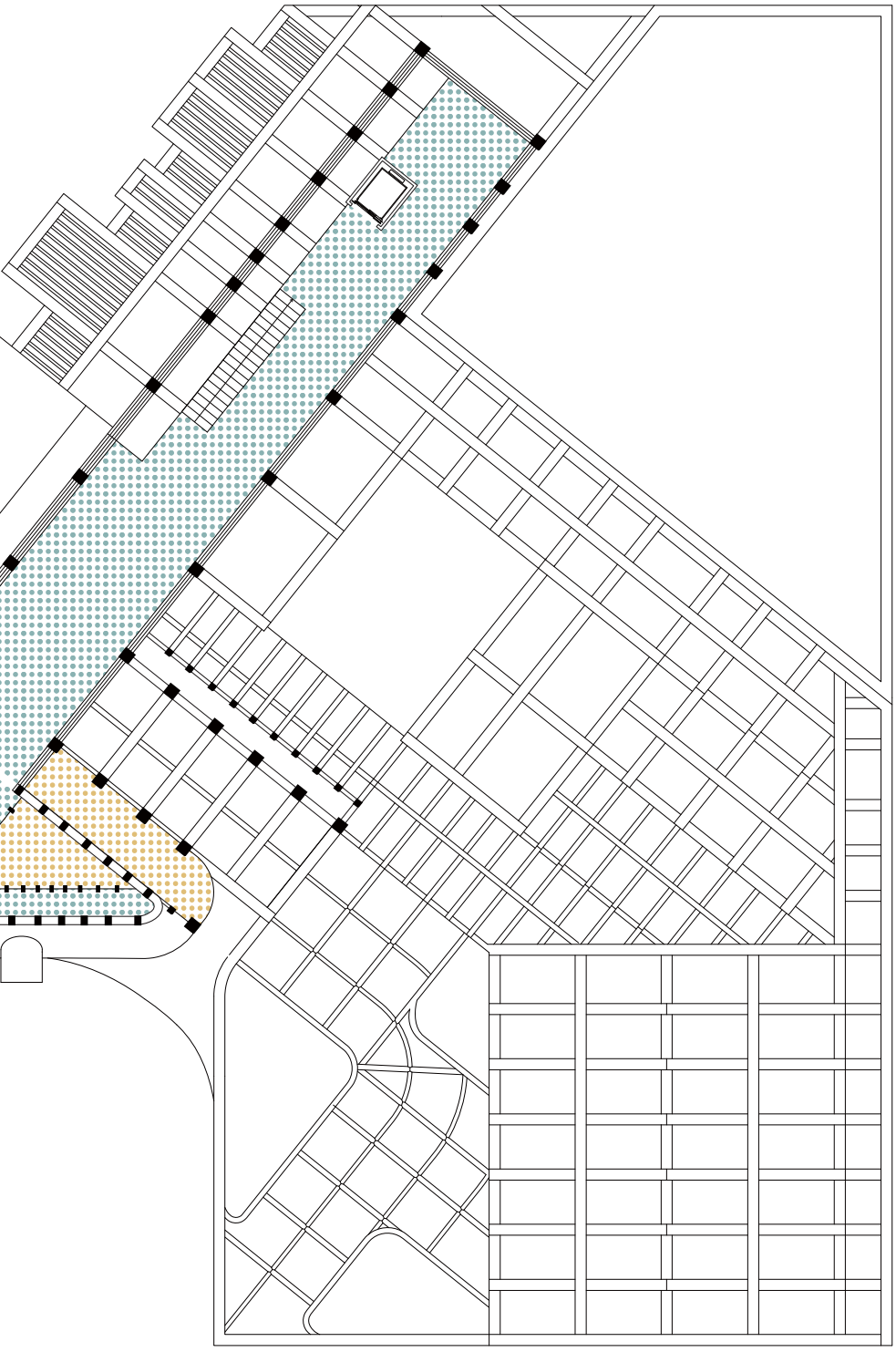
For children

For the both

First Floor at 1.5m **1:250**

Floor plan at the height of 4.5m





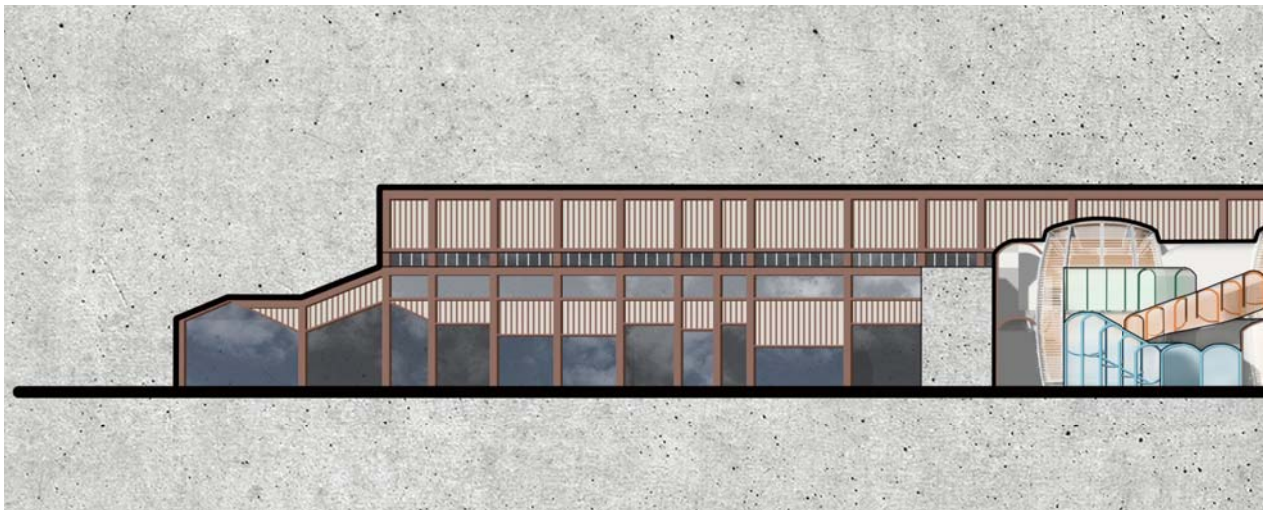
For the elderly

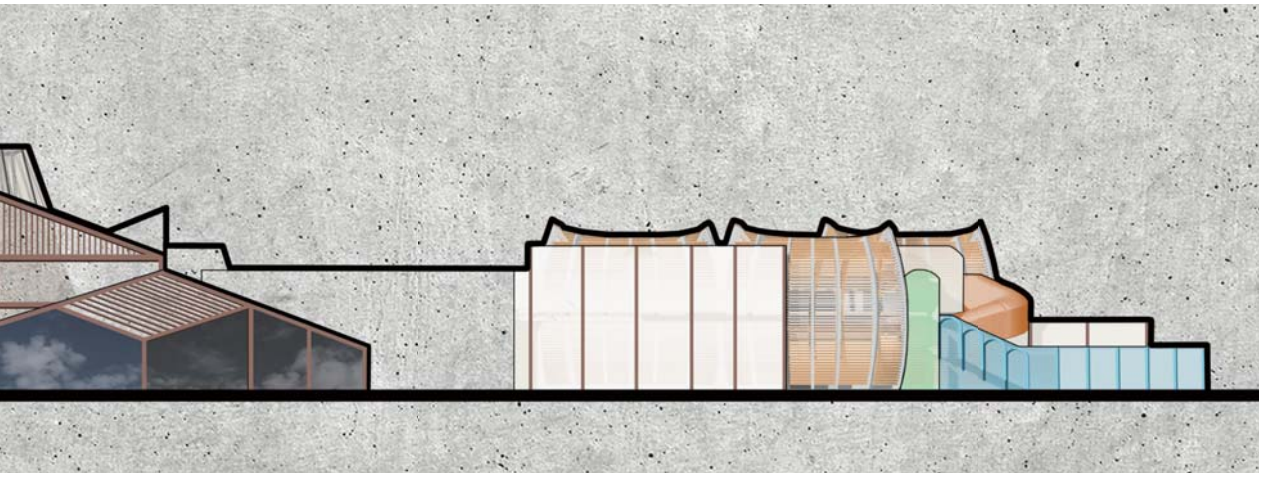
For children

For the both

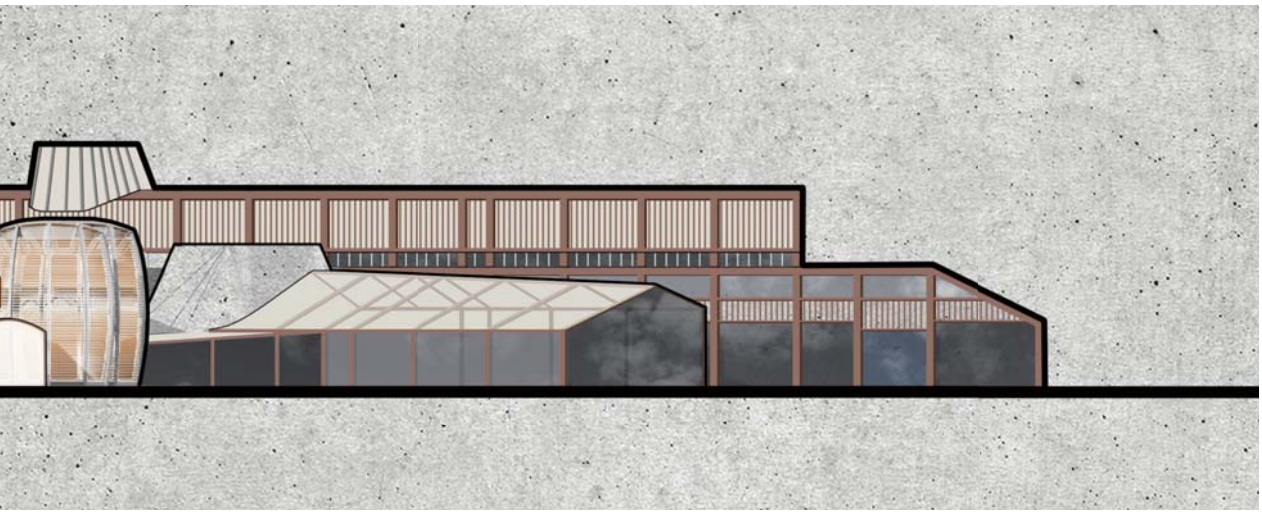
Second Floor at 4.5m 1:250

Facades





Northern Facade 1:250



Western Facade 1:250

Conclusion

The project tries to answer the thesis questions.

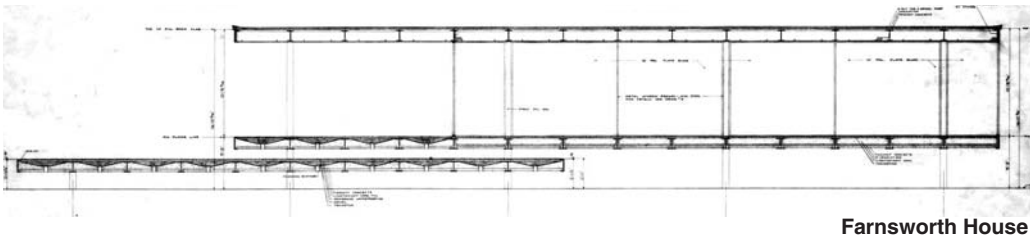
The whole design process is a challenge from just a profile to section and finally an architecture. During this process, more information are added, such as the human body dimensions and activities , to control the profile and section. Therefore, in the end, the whole building is generated based on these information.

For the first question, in my mind , I can just do something from the architecture direction. So, an architecture designed totally based on their human body dimensions is a good answer. Only in such kind of space, children and the elderly can both find their comfortable territory. I wish that the space can make them respect each other and have equal communication, which I think is quite important, and will be the key to multigenerational bonds.

Then for the second question, I believe my whole design process is the answer that design and think sectionally to address diversity of spatial character, functionality, and programmatic hybridization. In my view, designing sectionally is the best way to show and grasp the different traits of human body dimensions. Also by adding circulations, I am able to combine all the sections to finally form the architecture.

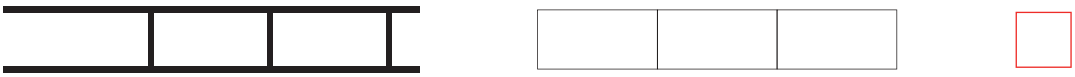
3 RESEARCH

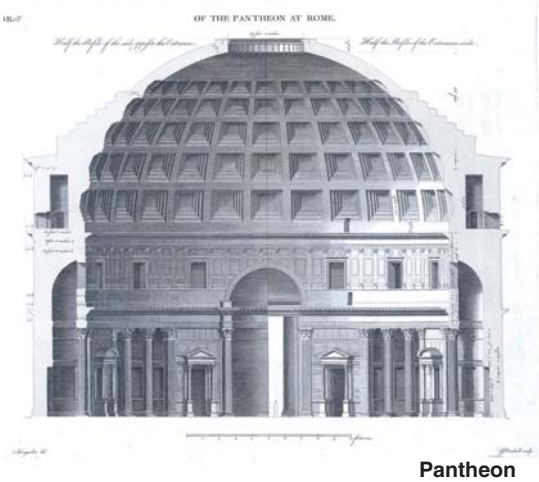
Sections analysis



Farnsworth House

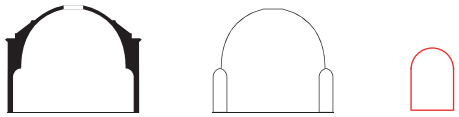
(www.google.com/search?biw=1280&bih=610&tbm=isch&sa=1&ei=y_dOXIqMJsXh8APo7oz4Dw&q=Farnsworth+House+section&oq=Farnsworth+House+section&gs_l=img.3...1343926.1345522..1346118...0.0..0.0.0.....1....1..gws-wiz-img.Zv_uoDU01Js#imgrc=TrHOeEpCBvzNdM:)





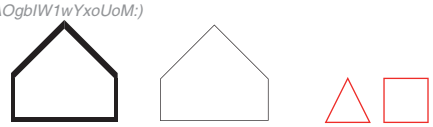
Pantheon

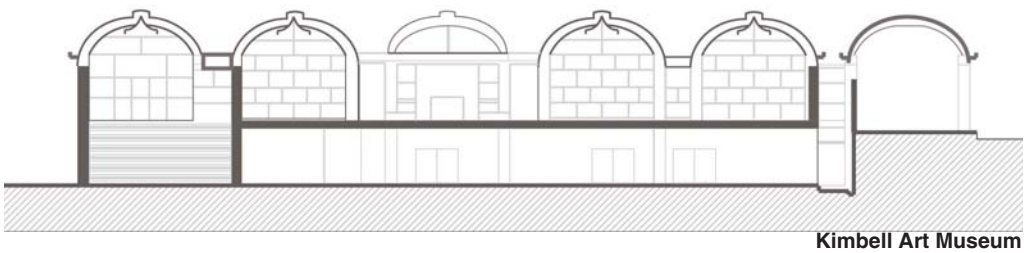
(www.google.com/search?q=&hl=en&tbm=isch&tbs=rimg:CZ-WaqMmJYdGIgiflmqjJiWHRioSCZ-WaqMmJYdGEdo-zVjY6WSt&tbo=u&ved=2ahUKEwjvvfiO05DgAhX4ITQIHWOvBMYQiRx6BAgBEAw&ictx=1&uact=3#imgrc=BkA5KLZe9wp_PM:)



Viggsö

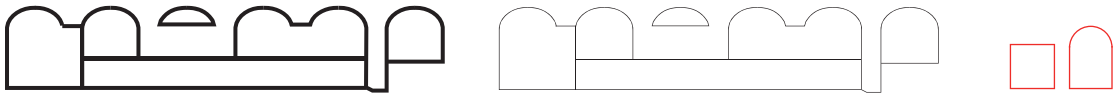
(www.google.com/search?sa=G&hl=en&q=Viggs%C3%B6&tbm=isch&tbs=simg:CAQSlwEJboeCbW2tA9EaiwELEKjU2AQaBAgUCAoMCxCwjKcIGmIKYAgDEijXE-kFtAHYE9kTgAOEE9oTgRPzEv41hz6IPv0-43DXqNegn8SrIlf44GjDNjMh-7j6rHXHgUyB4gFgo4v8oDahS7tW52blIZv_1EF-Nh-8-Fc9zcExRCj8r2gtggBAwLEI6u_1ggaCgoICAESBNFG3boM&ved=0ahUKEwj9-qWOxZDgAhWJA3wKHSioDCQQwg4IKygA&biw=1280&bih=610#imgrc=AOgbIW1wYxoUoM:)

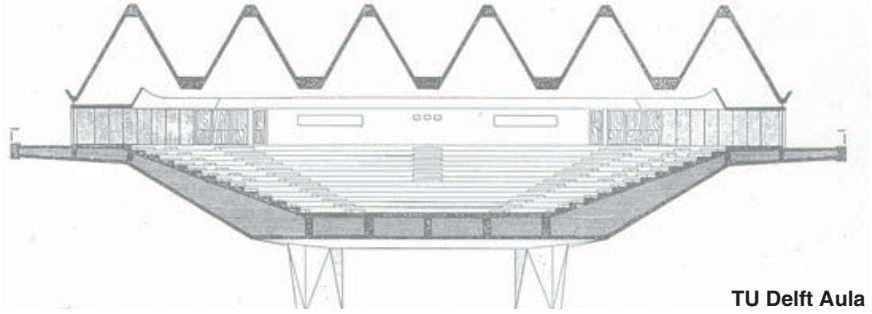




Kimbell Art Museum

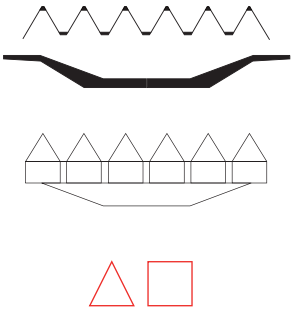
(www.google.com/search?sa=G&hl=en&q=kimbell+art+museum+louis+kahn+plan&tbm=isch&tbs=simg:CAQSlwEJvp6yukO5DZEaiwELEKjU2AQaBAgUCAoMCxCwjKcIGmIKYAgDEiiFE4QT2RPfE4AD2BPGE-wH3RODE8E2lj6uPr82rCjCNtM20j_1xP6w-GjCOTSzWEafSe5qVQmNiEj0SBWagxmm8_1q33wLdYiBAFuwAYnI3emFZwhBTMKMVZPjYgBAwLEI6u_1ggaCgoICAESBJPKumMM&ved=0ahUKEwj-84Dnx5DgAhWdFjQIHaT9BoYQwg4IKygA&biw=1280&bih=610#imgrc=YG3lXzKfzql4BM:)

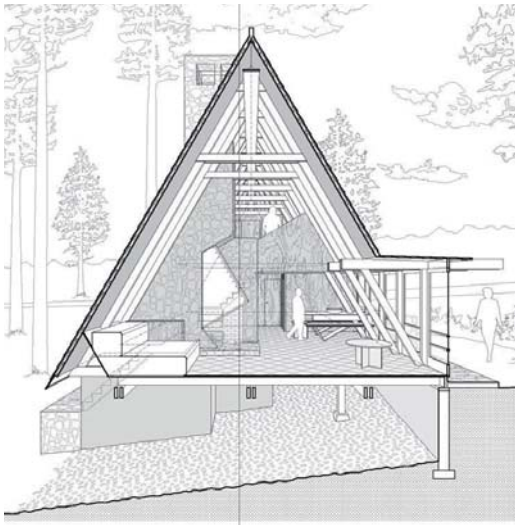




TU Delft Aula

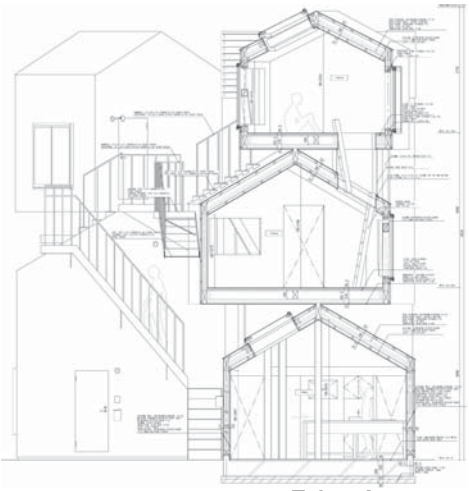
(www.google.com/search?sa=G&hl=en&q=tu+delft+auditorium+section&tbm=isch&tbs=simg:CAQSlwEJaXpDJioDSeEaiwELEKjU2AQaBAgUCAoMCxCwjKcIGmIKYAgDEijZE9sT6QXXE4ADgQOlCNwTpgjaE78ioCDvKtI5viLPOcs5nziPOcM2GjCSTVB2PIN-warFU556M5P6HEbQmUKMoq5BATK2wQJgMJt0QrhBm_1R3kL3lUw-9NSUgBAwLEI6u_1ggaCgoICAESBNztLtoM&ved=0ahUKEwiJsbeLypDgAhXDN30KHe9lCEkQwg4IKygA&biw=1280&bih=610#imgrc=06CYFyi9HYp_gM:)





Gisela Bennati Cabin

(www.google.com/imgres?imgurl=https://i.pinimg.com/originals/aa/34/77/aa347711b67dc8aa842b77839be38527.jpg&imgrefurl=https://www.thebestphotos.eu/im%C3%A1genes-de-small-house-floor-plans-under-1000-sq-ft.html&h=880&w=1200&tbnid=DRgjLpbjc7rKbM&tbnh=192&tbnw=262&usg=K_0DF0OGktIPwddY5gK6eH5VllJFs=&hl=en&docid=suywIPdCt51DEM&itg=1)



Tokyo Apartment

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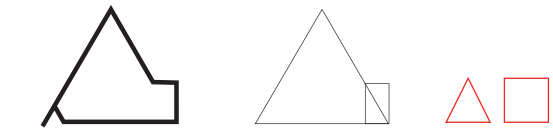
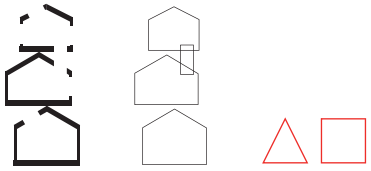
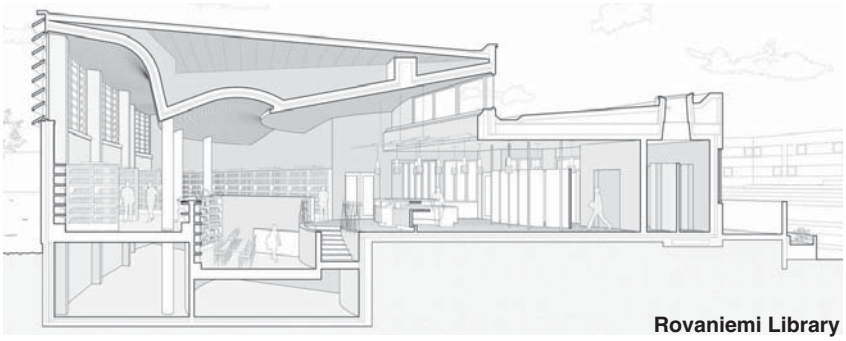
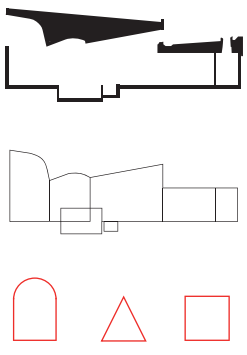






Rovaniemi Library

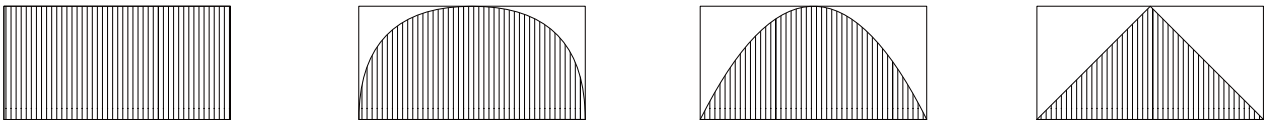
(www.google.com/search?sa=G&hl=en&q=Design&tbm=isch&tbs=simg:CAQSlwEJxxDe6uPrD70aiwELEKjU2AQaBAgUCAoMCxCwjKcIGmIKYAgDEiiAA_18SxhOEE_18ChRPXE-4H_1hLdE4g-_1jWHPt0qhCiGKOo16CeFKIMoGjAL-GDCtsk-S-VQG18CgKQ3HYDXXlUPcdXZxLmztvy8L5Celc92utXck03k2_11QTi8gBAwLEI6u_1ggaCgoICAESBMHh4boM&ved=0ahUKEwjwsdKG2JDgAhVvCTQIHSyzCqMQwg4IKygA&biw=1280&bih=610#imgrc=pMpIO-hDn4iaOM:)



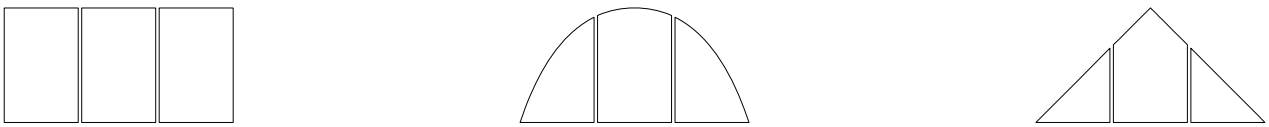
Single profile

From the section study, I start to think if it is possible to use simple shapes to mimic the complex profile. If it succeeds, then I can also say complex section (profile) can be decomposed into simple profiles. Here I try to use shapes with less than 4 edges as the primitive profiles.

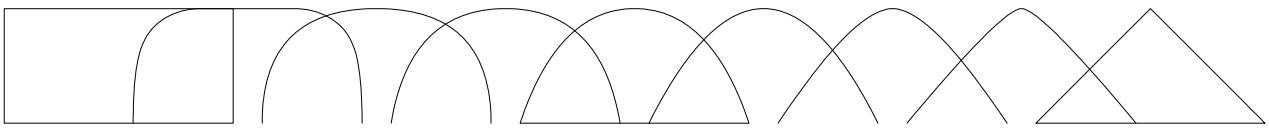
It is obvious that with bigger radian, more space under the profile will be.



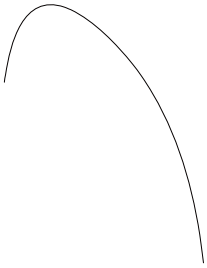
Space created by rectangle is homogeneous, which means there is no obvious difference. However, if the profile is arch or triangle, then space under profile will have hierarchy, middle and sides.

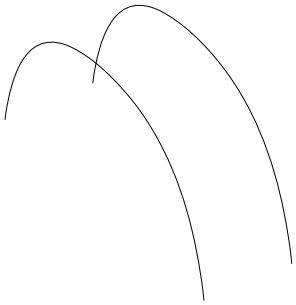


While these shapes seem quite different, they have some similarity, and can be transformed each other. Therefore, in the later research about the combination of profiles, it is possible to just choose one profile as a representative.

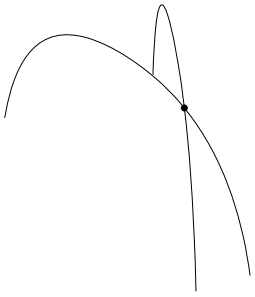


Combination of profile



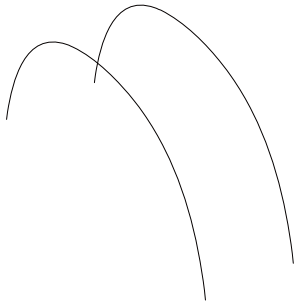


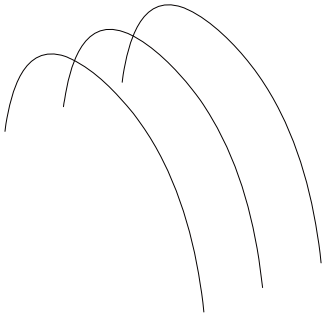
Situation 1. Profiles don't intersect with each other



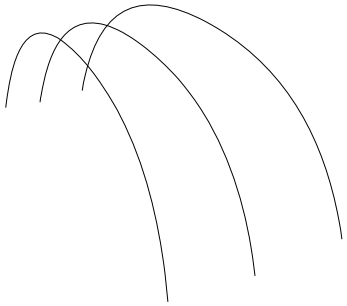
Situation 2. Profiles intersect (at least have one interaction point)

Combinations without intersection



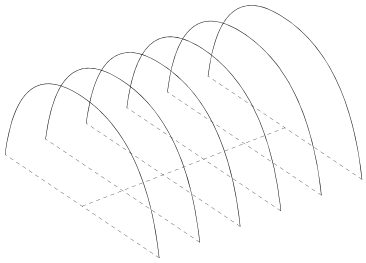


Situation A. Profiles are paralleled.
Parameters: distance(D) between profiles, size(S) and radian(R) of profiles

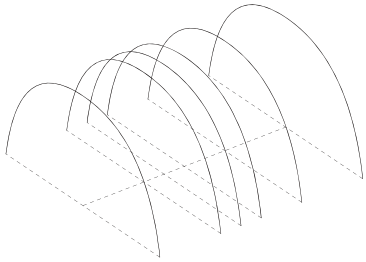


Situation B. Profiles are not paralleled.
Parameters: angle(A) between profiles, size(S) and radian(R) of profiles

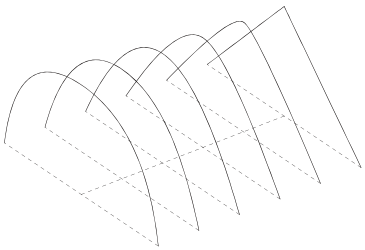
Different examples



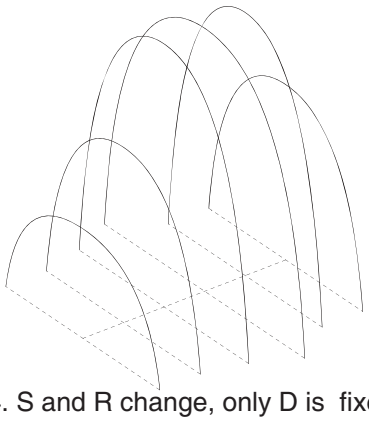
A1. S, R and D are all fixed.



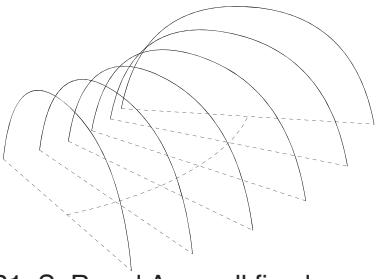
A2. S and R are fixed, only D changes.



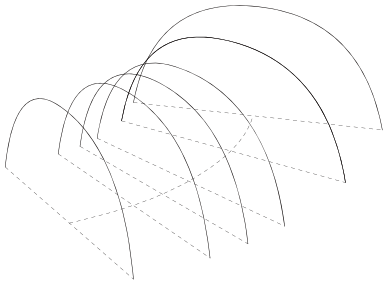
A3. S and D are fixed, only R changes.



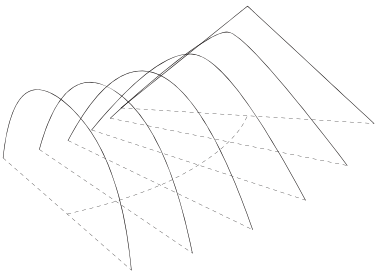
A4. S and R change, only D is fixed.



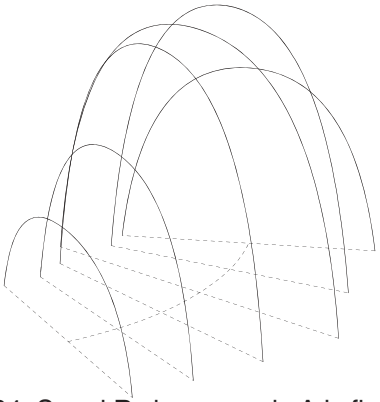
B1. S, R and A are all fixed.



B2. S and R are fixed, only A changes.

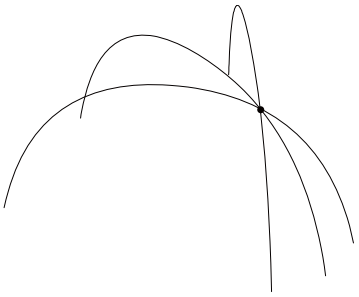


B3. S and A are fixed, only R changes.

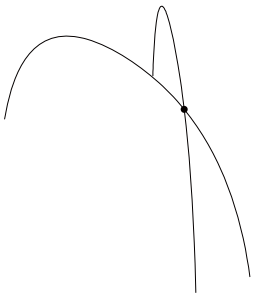


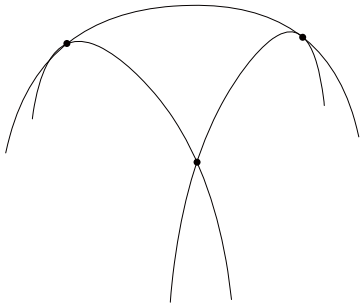
B4. S and R change, only A is fixed.

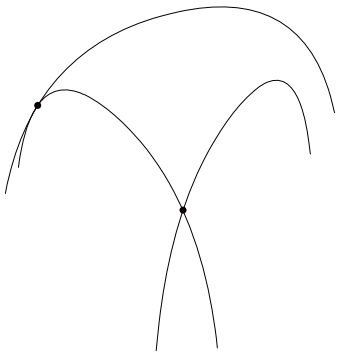
Combinations with intersection



Situation C. Profiles intersect at one point.
Parameters: angle(A) between profiles, size(S) and radian(R) of profiles, position (P) of intersection point.

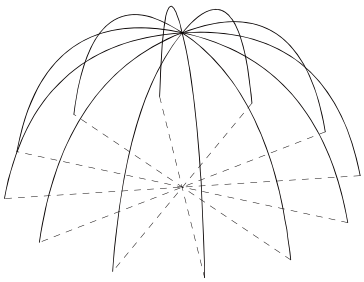




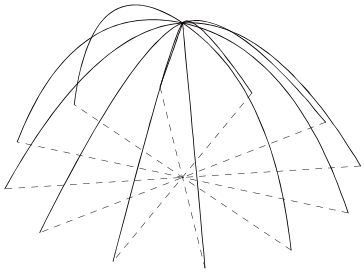


Situation Di&Dii. Profiles intersect at several points.
Parameters: angle(A) between profiles, size(S) and radian(R) of profiles, position (P) of intersection point. (P) of intersection point.

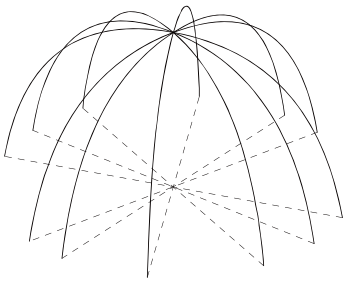
Different examples



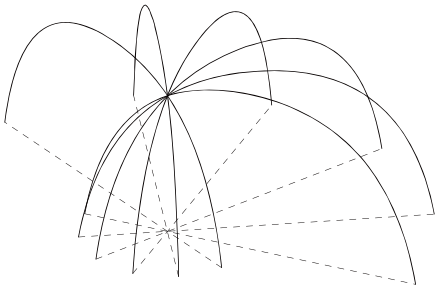
C1. A, S, R and P (in the middle) are all fixed.



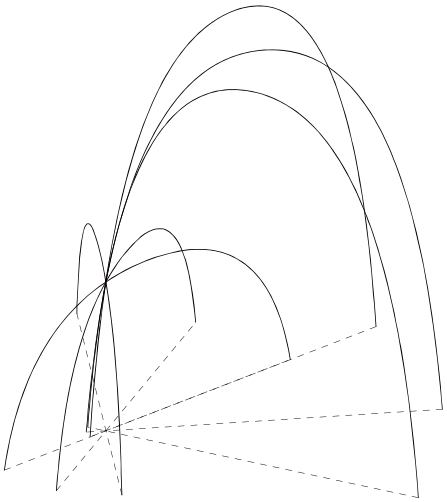
C2. A, S, and P (in the middle) are fixed, R changes.



C3. S, R and P (in the middle) are fixed, A changes.

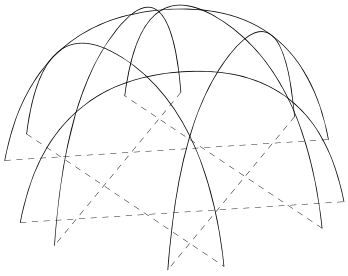


C4. A, S, R and P (not in the middle) are all fixed.

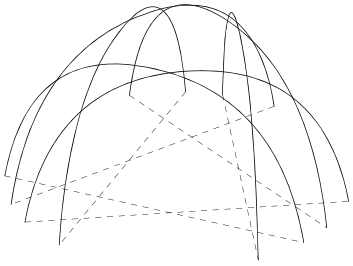


C5. A and P (not in the middle) are fixed, S and R change.

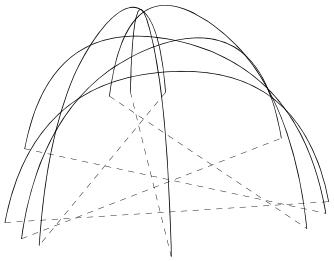
Different examples



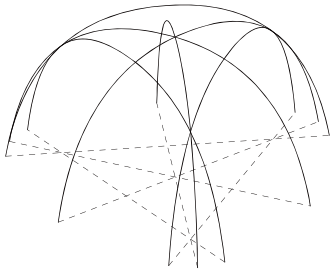
D1. Rotate Di 60°



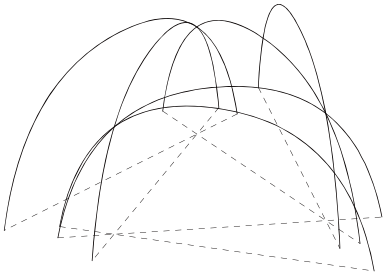
D2. Rotate Di certain degrees



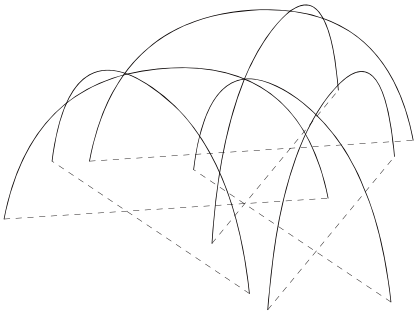
D3. Combine two different examples of Di



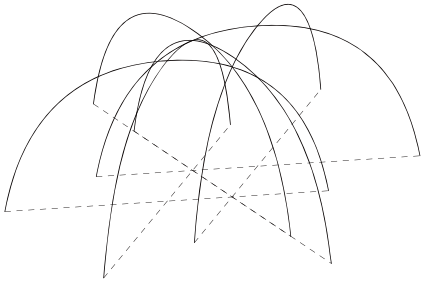
D4. Combine C with Di, and each two lines intersect.



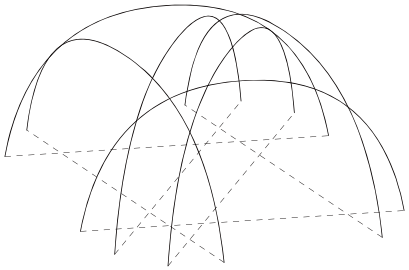
D5. Combine two different examples of C



D6. Rotate Dii

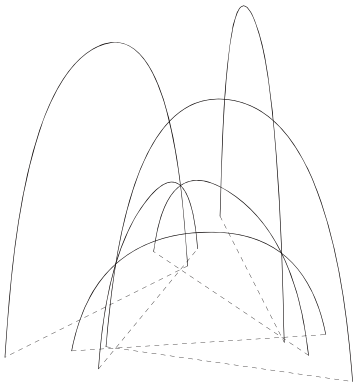


D7. Array Di

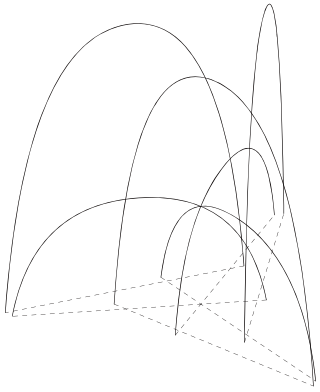


D8. Array Dii

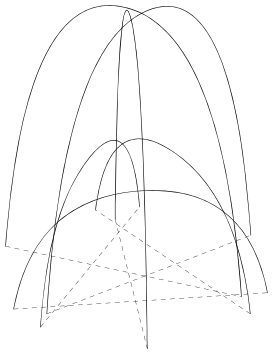
Different examples



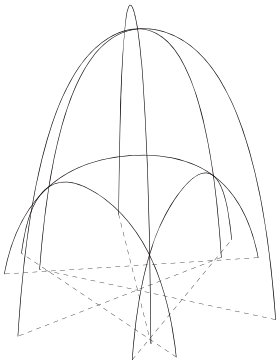
D9. Reconstruct “D6” with different size of profiles.



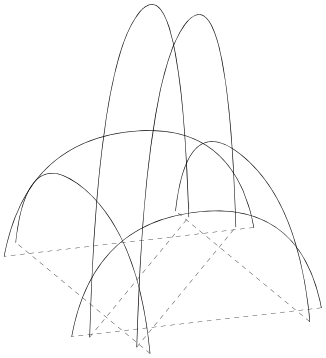
D10. Reconstruct “D4” with different size of profiles.



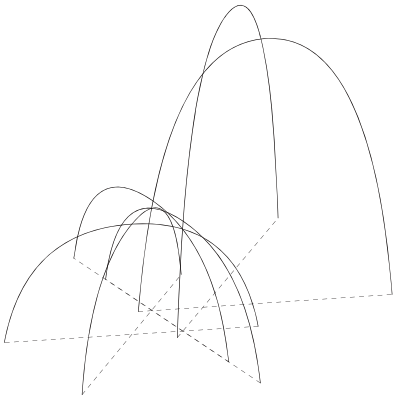
D11. Reconstruct “D3” with different size of profiles.



D12. Reconstruct “D4” with different size of profiles.



D13. Reconstruct “D8” with different size of profiles.

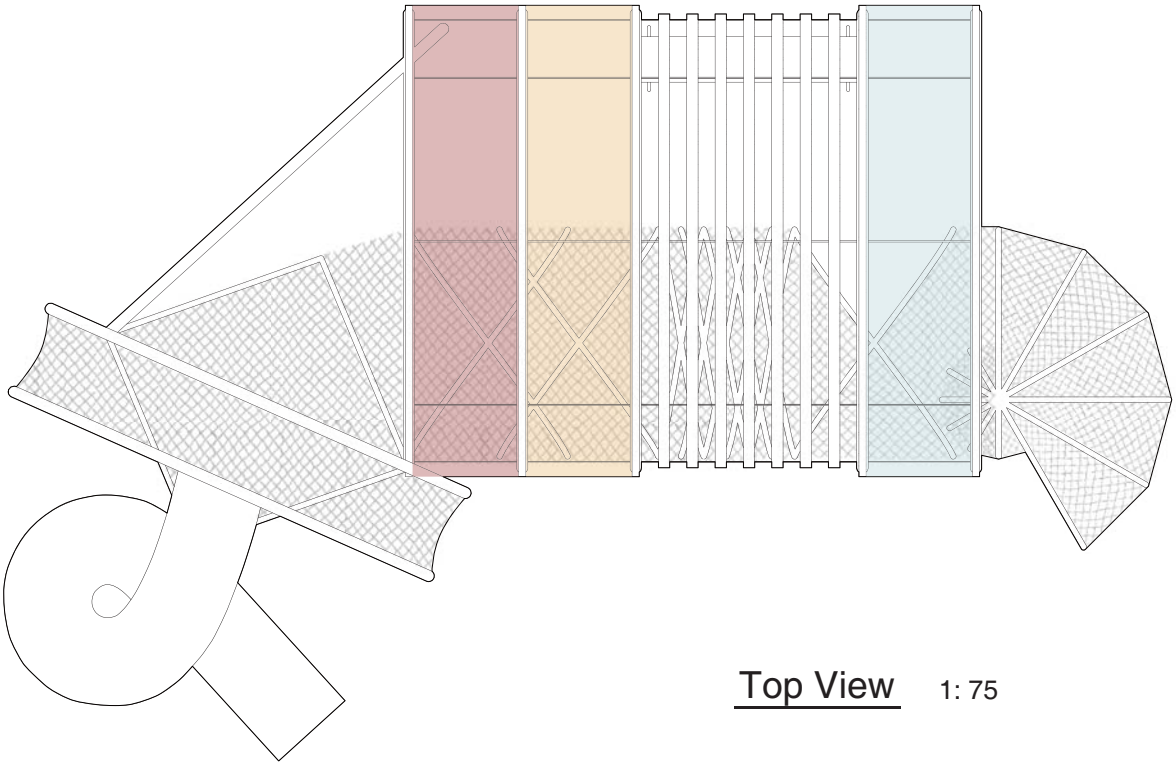


D14. Reconstruct “D7” with different size of profiles.

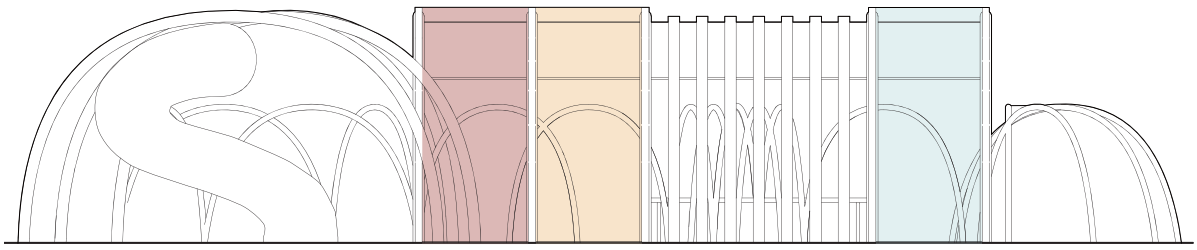
First design trial

The first design trial shows my idea that I will use profiles to compose space. However it seems that in this design, the most interesting part is not the profile itself, but the slide and glass.

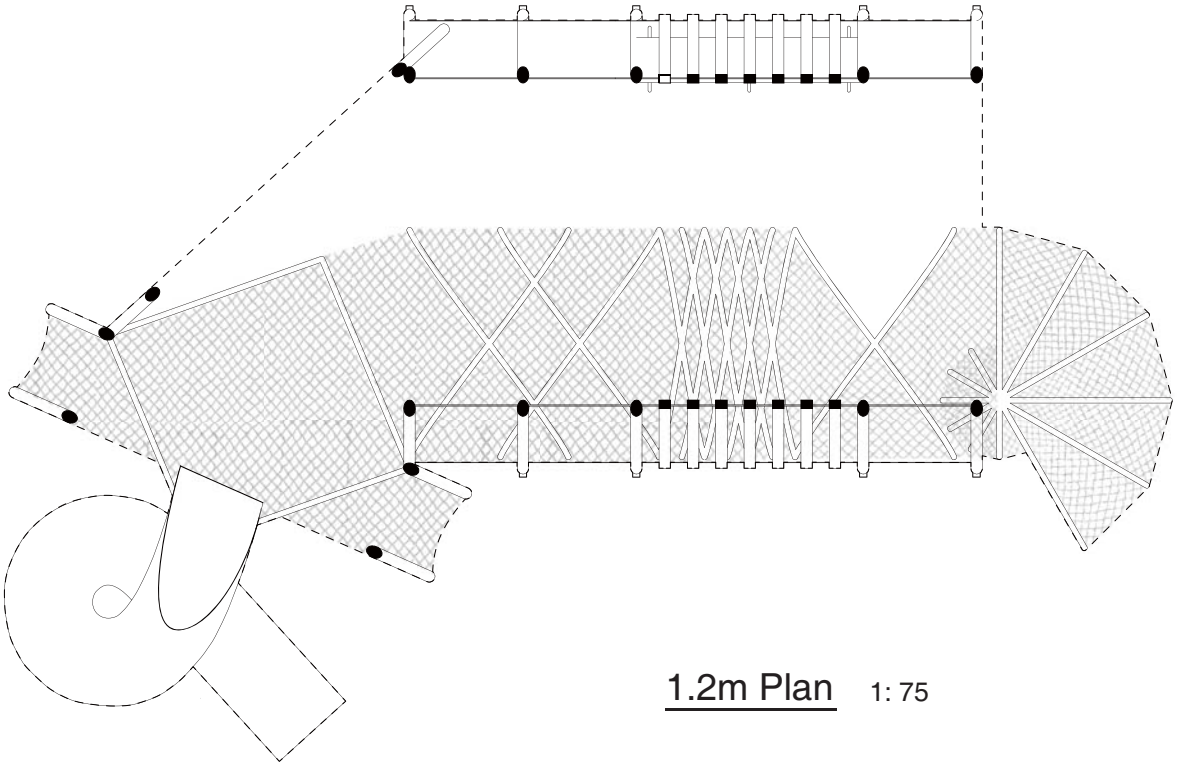
Plans and facade



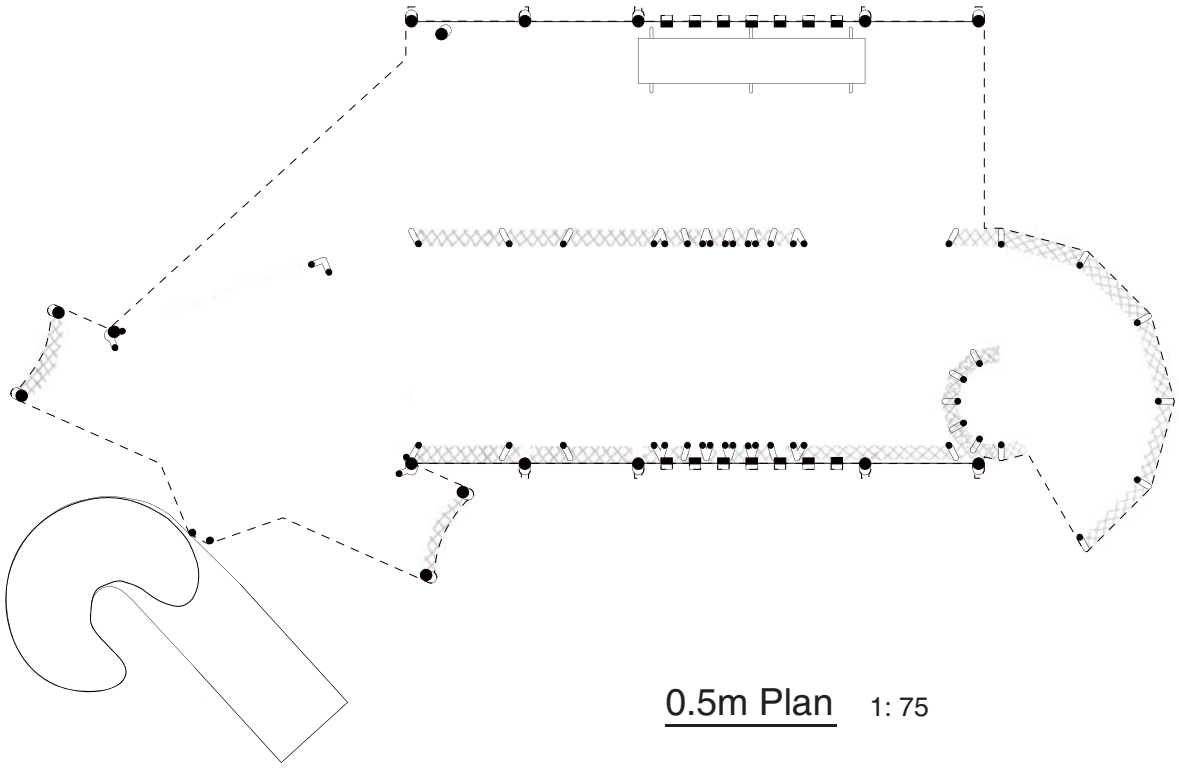
Top View 1: 75



Facade 1: 75

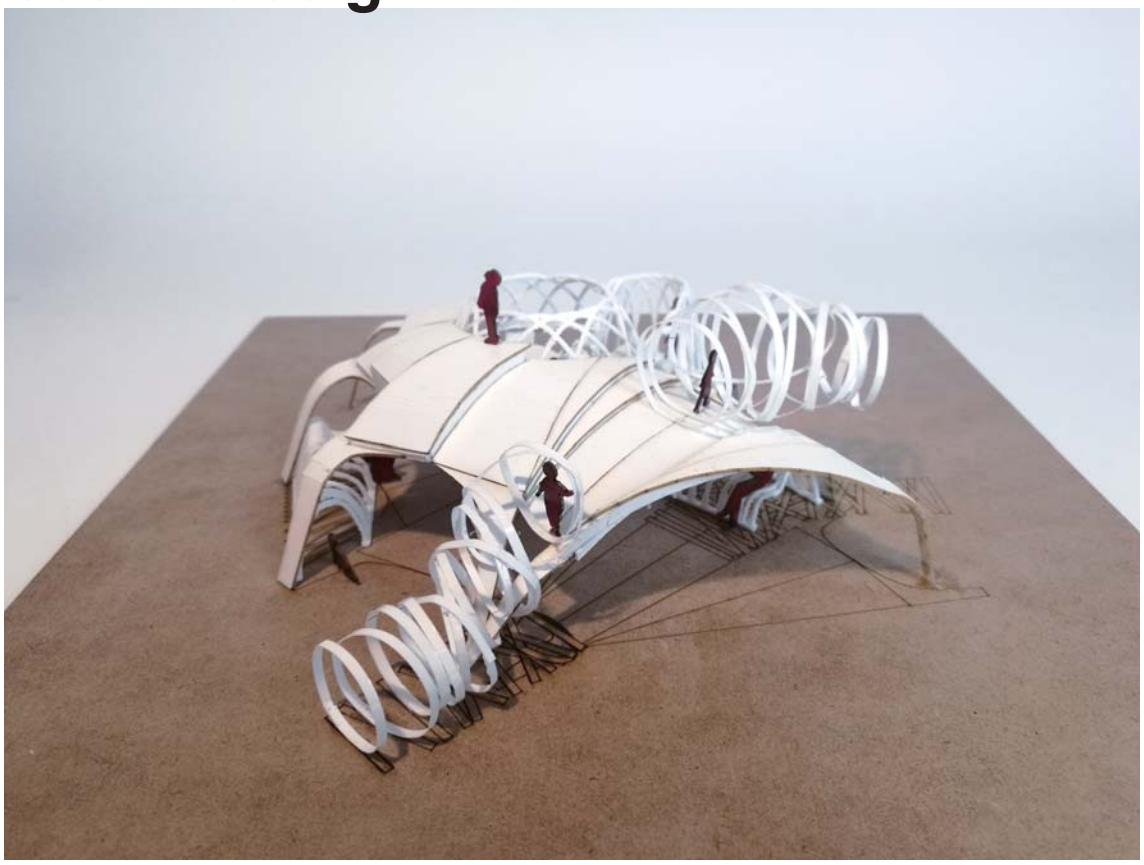


1.2m Plan 1: 75



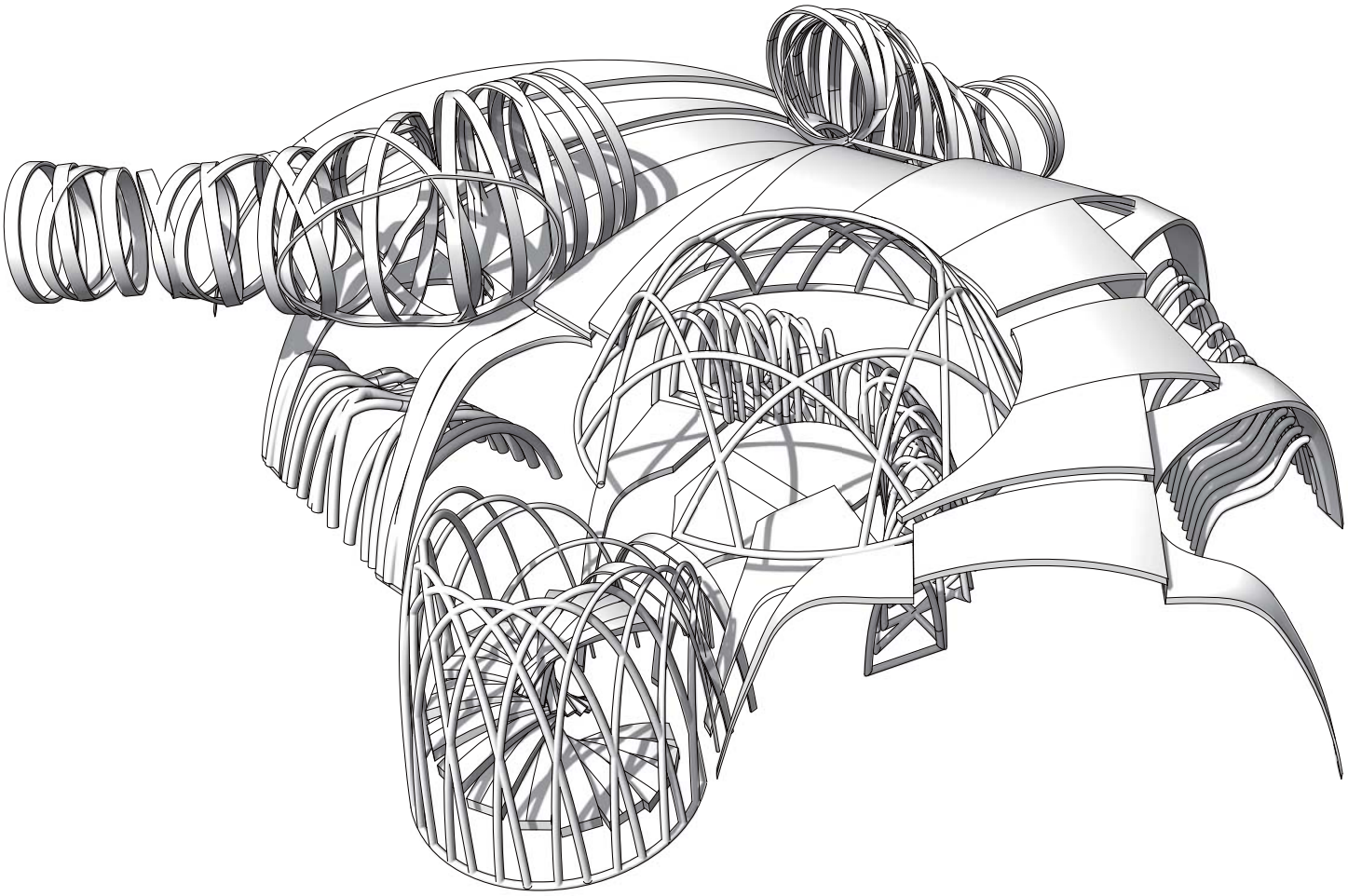
0.5m Plan 1: 75

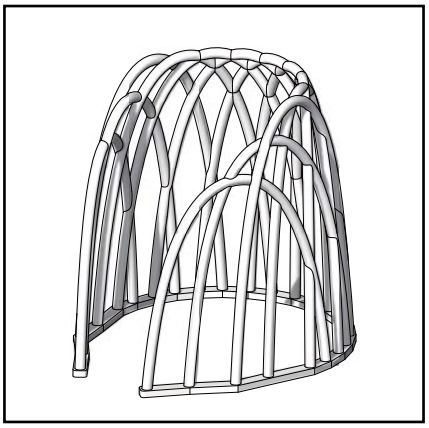
Second design trial

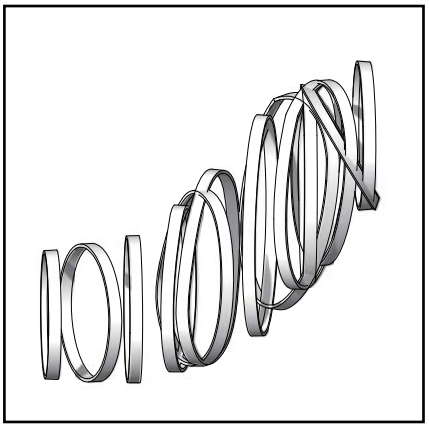


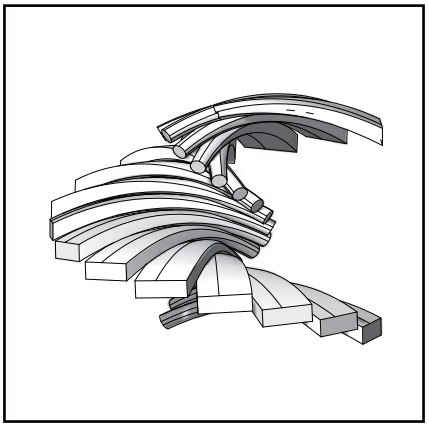
Components

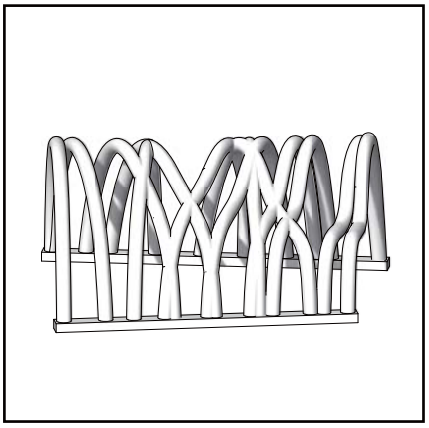
The second design trial tends to use profiles to make everything. Different from the first one, here all the components are firstly created by profiles. Then the components are combined together to form the whole thing. However, in this one, I still need to find more regulations to control the design.



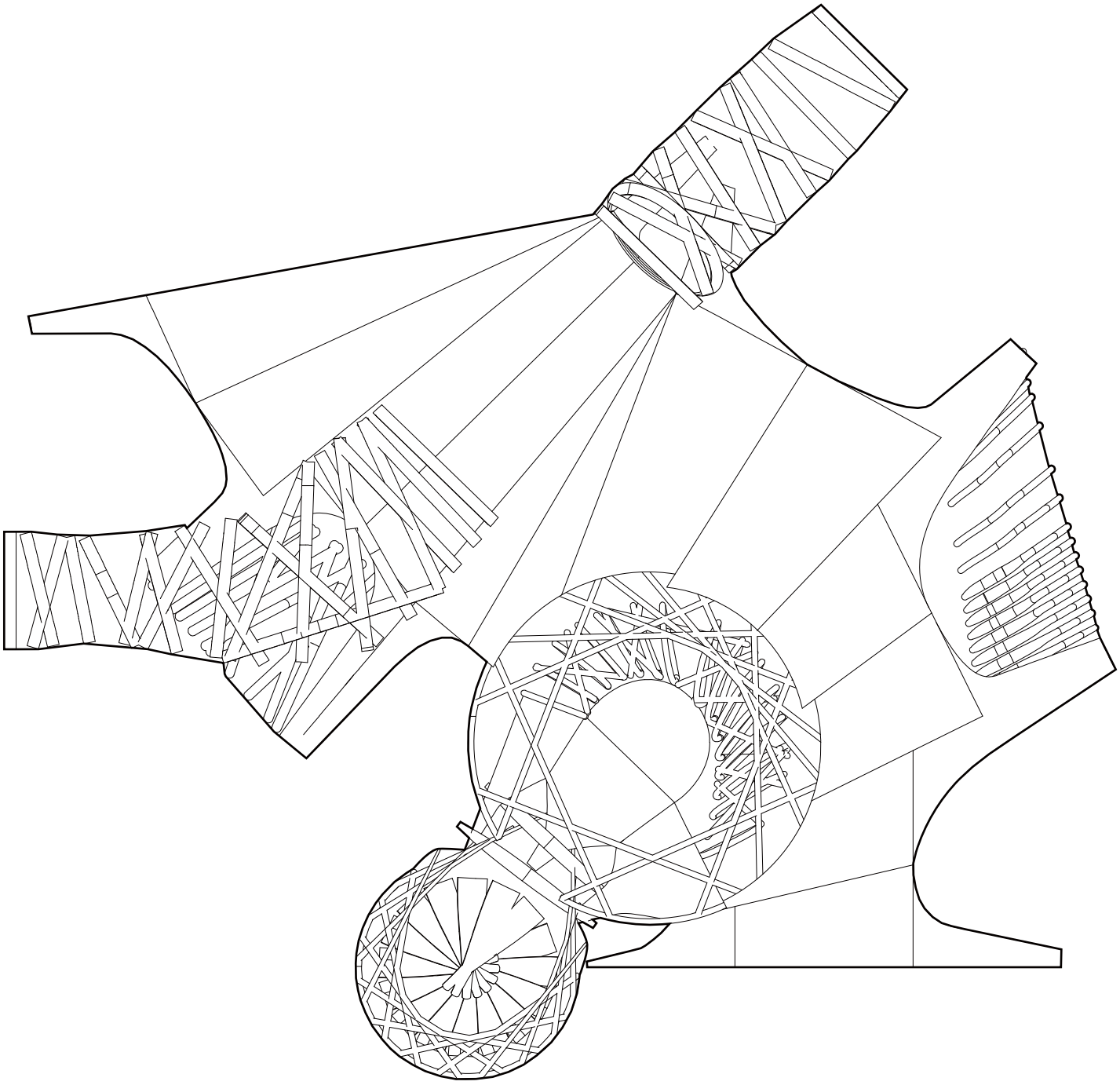






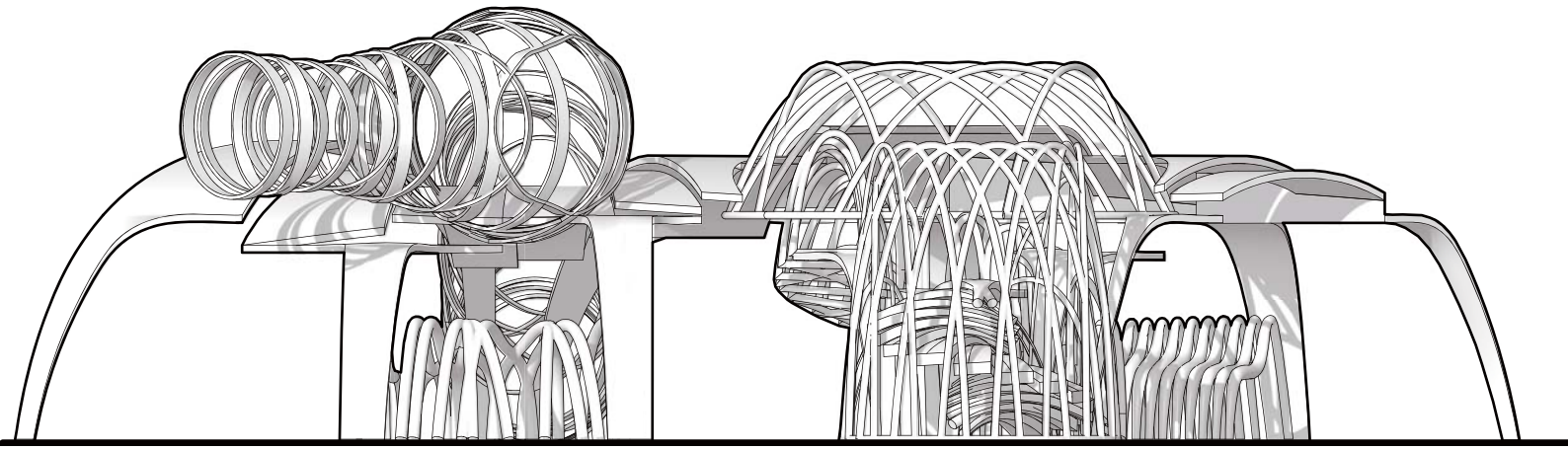


Master plan

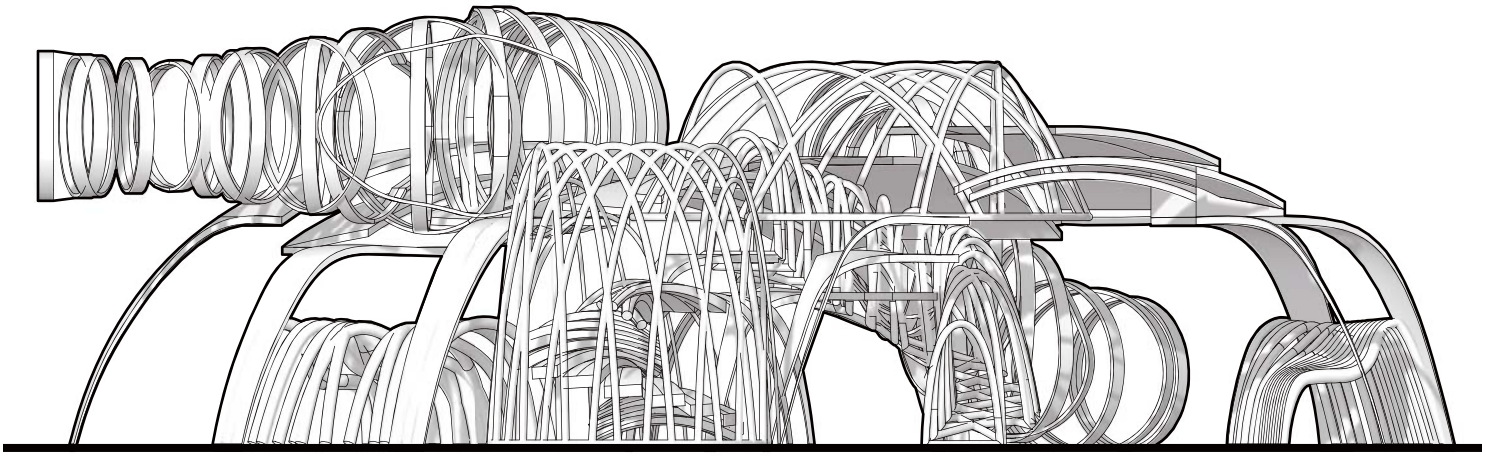


Master plan 1: 50

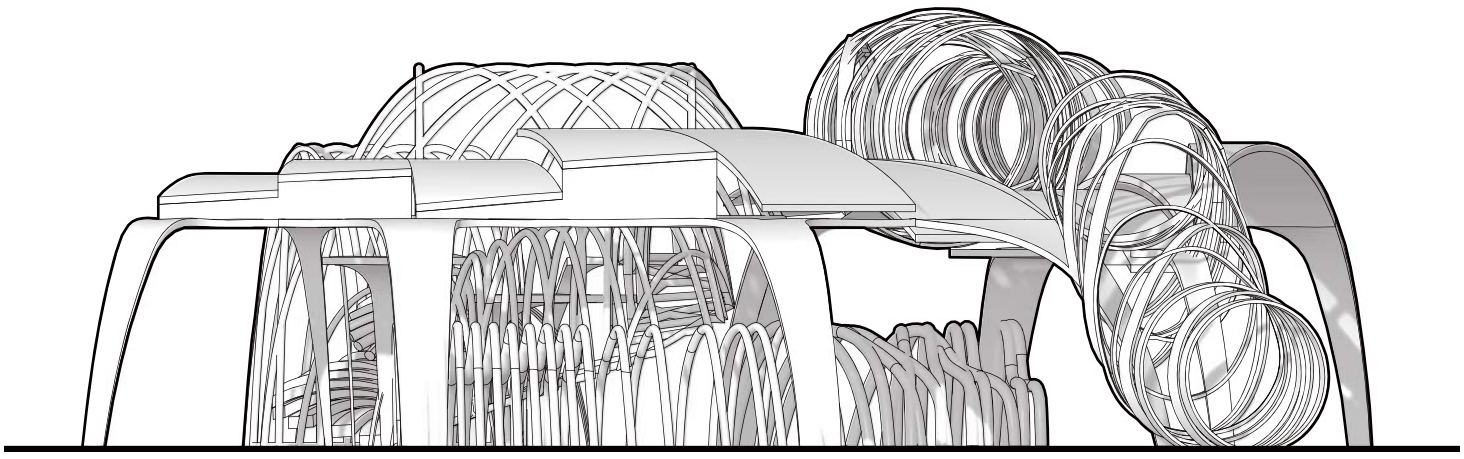
Facades



Facades 1 1: 50

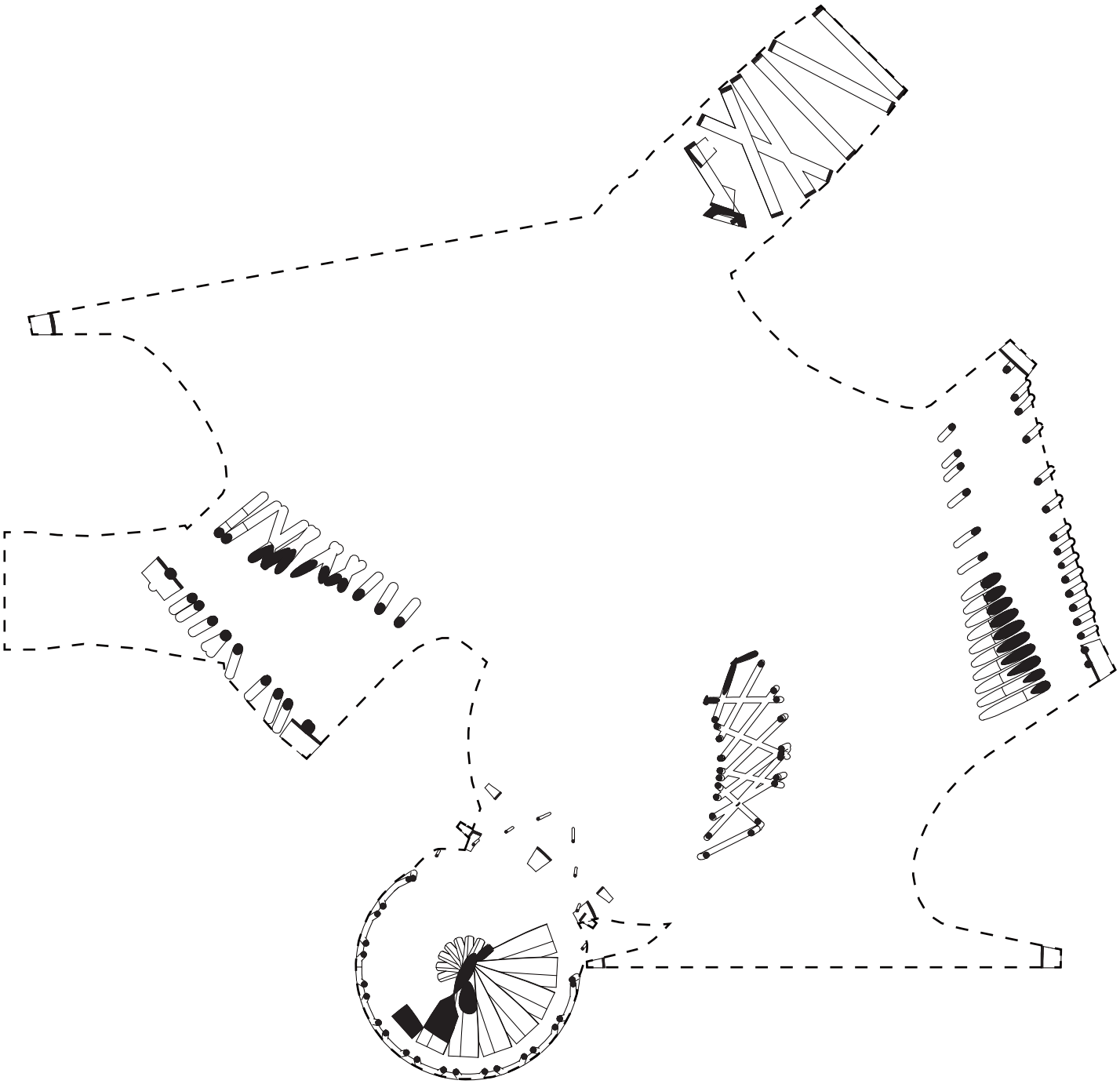


Facades 2 1: 50



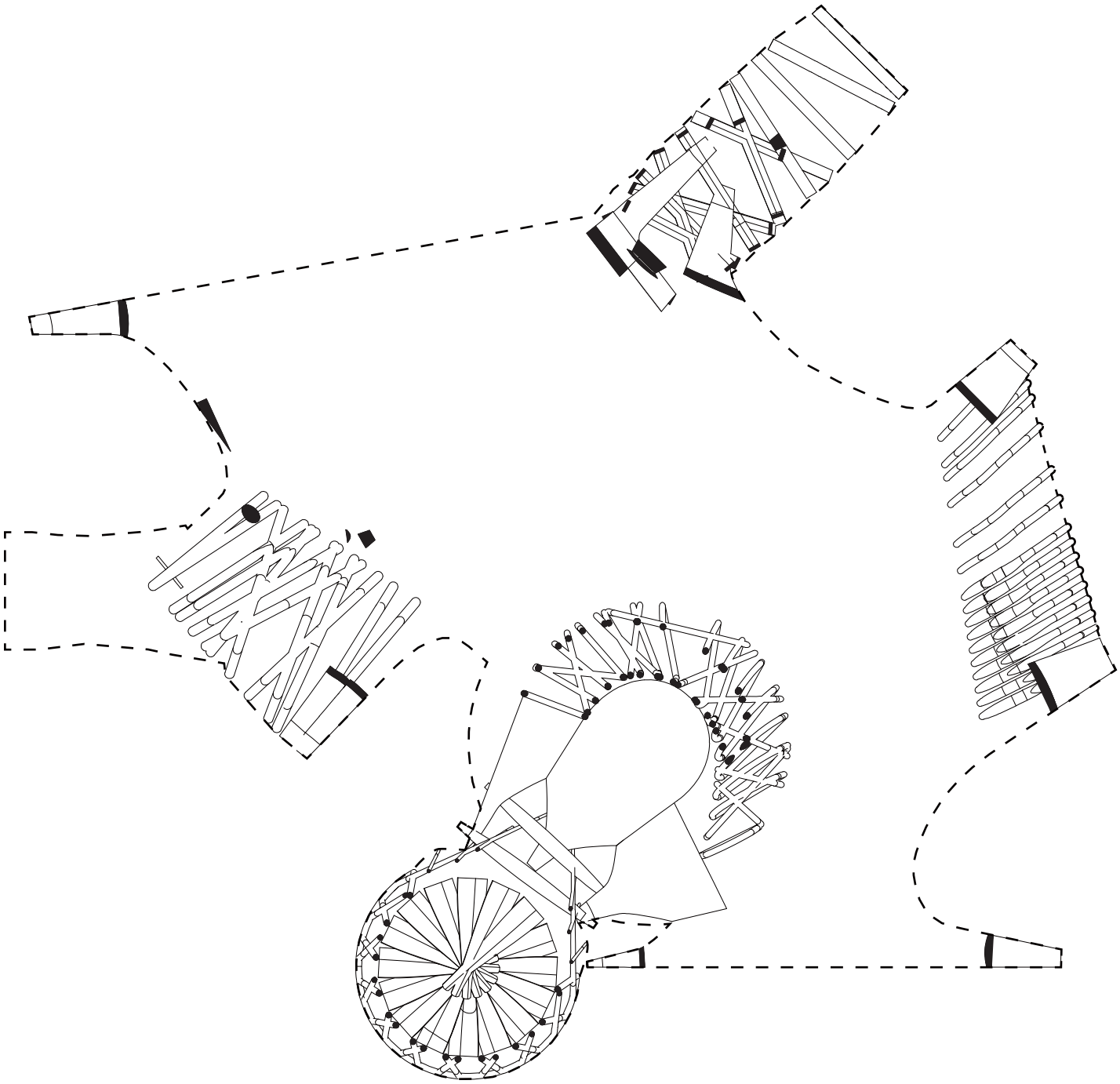
Facades 3 1: 50

Plan at the height of 0.8m



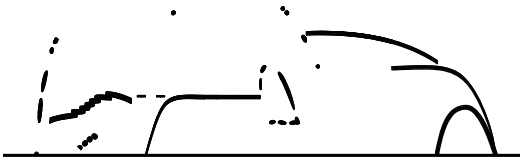
0.5m plan 1: 50

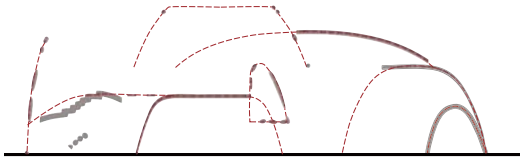
Plan at the height of 1.2m

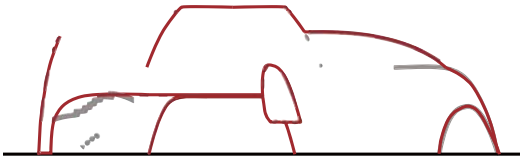


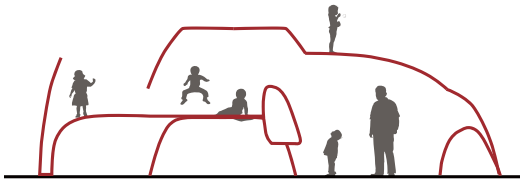
1.2m plan 1: 50

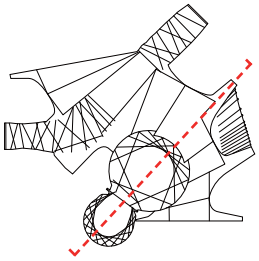
Section analysis 1



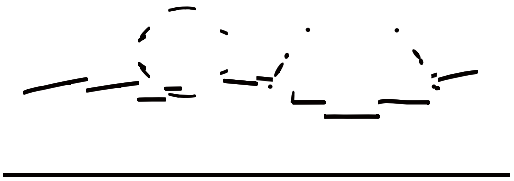


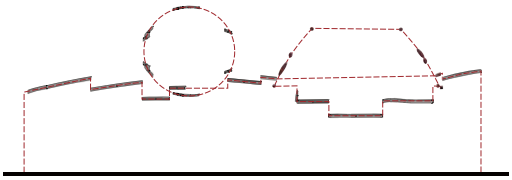


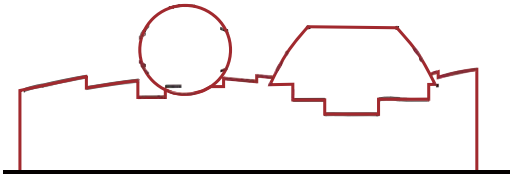


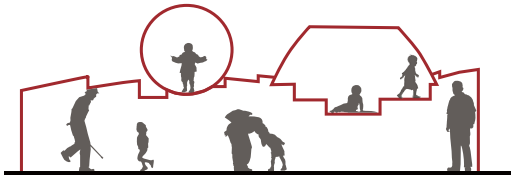


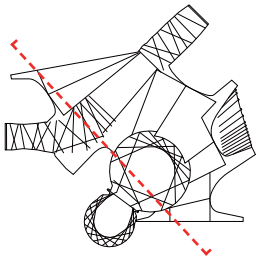
Section analysis 2

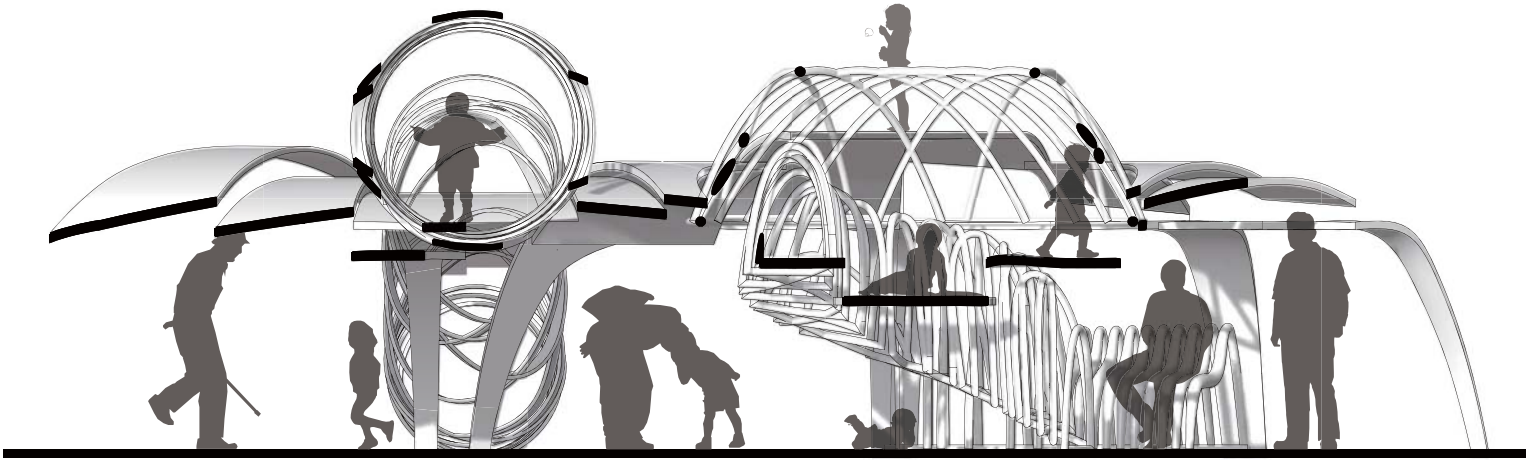




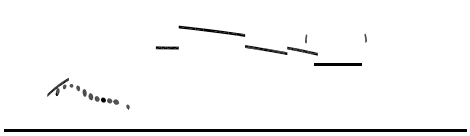


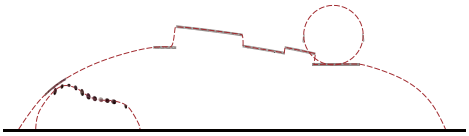


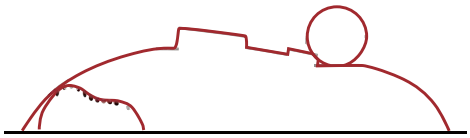


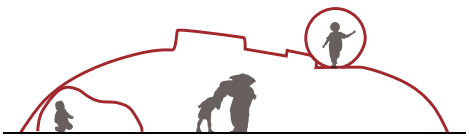


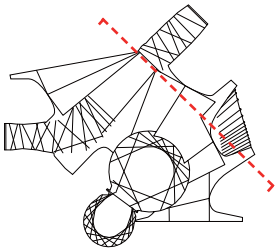
Section analysis 3

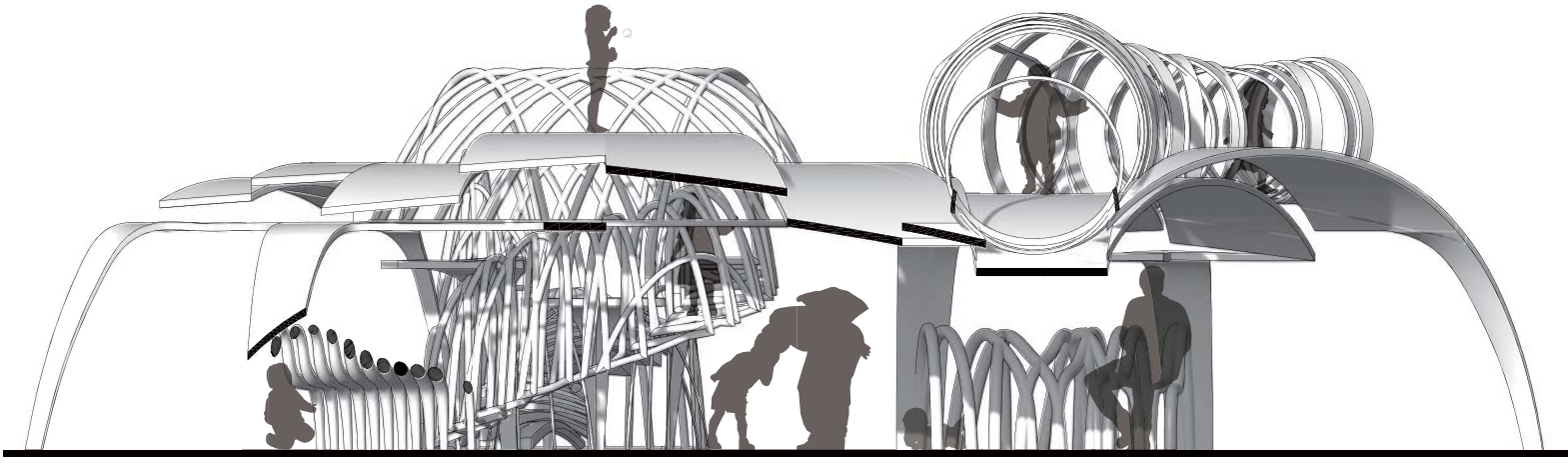




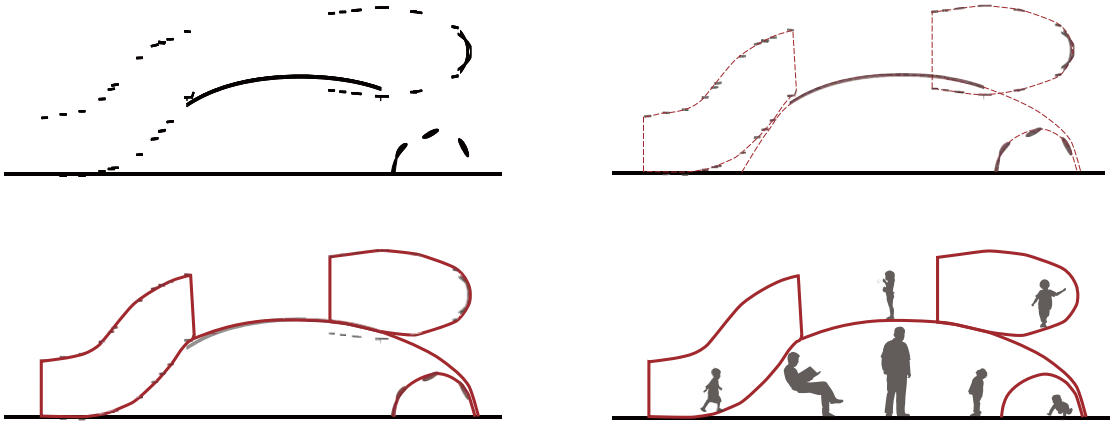




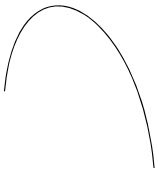




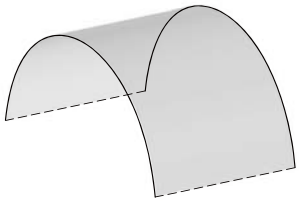
Section analysis 4



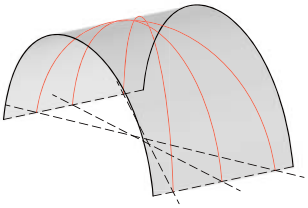
Workflow



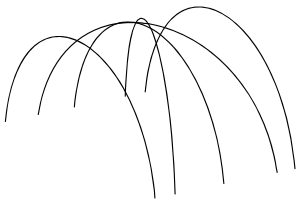
single profile



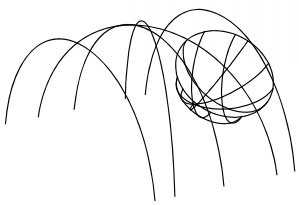
imaginary boundary



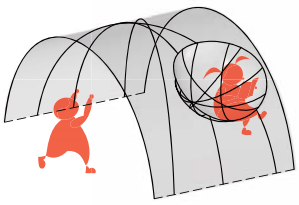
division



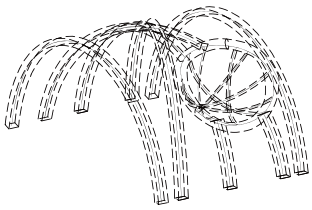
combination



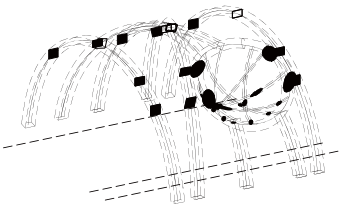
more combinations together



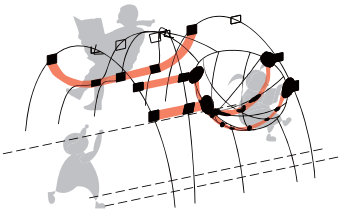
activities



structure according to activities



make vertical divisions



more detailed design

Conclusion

Through the whole thesis work, I kept thinking what kind of architecture could contribute to the multigenerational bonds. Later, I realized it was a too complex problem for me to solve. The relationship of children and the elderly can be affected by lots of facts, such as families, personalities, management of the building and so on. What I could do was just providing a space which would attract children and the elderly and also be suitable for them to stay together. So after the first thesis question, I asked myself how to design it .

The starting point of the design research is my thinking and answer to the first thesis question. A building which is customized according to the human body dimensions of children and the elderly could possibly be an answer. In this kind of building, people can easily understand the use of space under the suggest of the height of ceilings. Therefore, while people are all under the same ceiling, they will be aware of where is their own area. Connected and keep a certain distance, which I think would be helpful for the multigenerational bonds.

With the requirements of different ceiling height, it is natural to start the work from sections. In the beginning, it was hard to design a section based on different human body dimensions. It was not until Kengo suggested me to try firstly with simple profiles that I got some progress.

Reflections

There are still a lot of work that needs to continue in my thesis project. First of all, the design of structure still has a long way to go. Which kind of structure system should I use ? Material ? How should I deal with the intersection points of different structures ? Then, more perspectives should be drawn to make the project more practical instead of diagrammatic. Furthermore, during the design process, I found more interesting points. For example, when I use primitive profiles compose complex profiles, I usually focus on the positive shape. But sometimes, the negative shape can be more interesting. Finally, I still need to do more work to study the bonds between children and the elderly.

Looking back this year's thesis work, I have learnt more about design and research. On the one hand, I know that before starting a research, the choice of the topic is very important. Usually, we need to zoom in several times so that we can have a precise topic. On the other, it is important to insist on the original design concept and keep working on it. It is also necessary to be clear of the design logic and follow it.

4

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