PORTFOLIO

Digital Design

Semester 1, 2021

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Education:

2020 - current	Bachelor of Design, University of Melbourne
2019-2020	Trinity College
2008-2019	BPK Penabur Gading Serpong, Tangerang, Indonesia

Work Experience:

2021	Gogyo Fitzroy

Awards / Exhibition:

2020	FOD:R Exhibition, Msdx
2020	Studio Alpha Exhibition, Msdx
2021	Dean's List 1st Year Award

Skills:

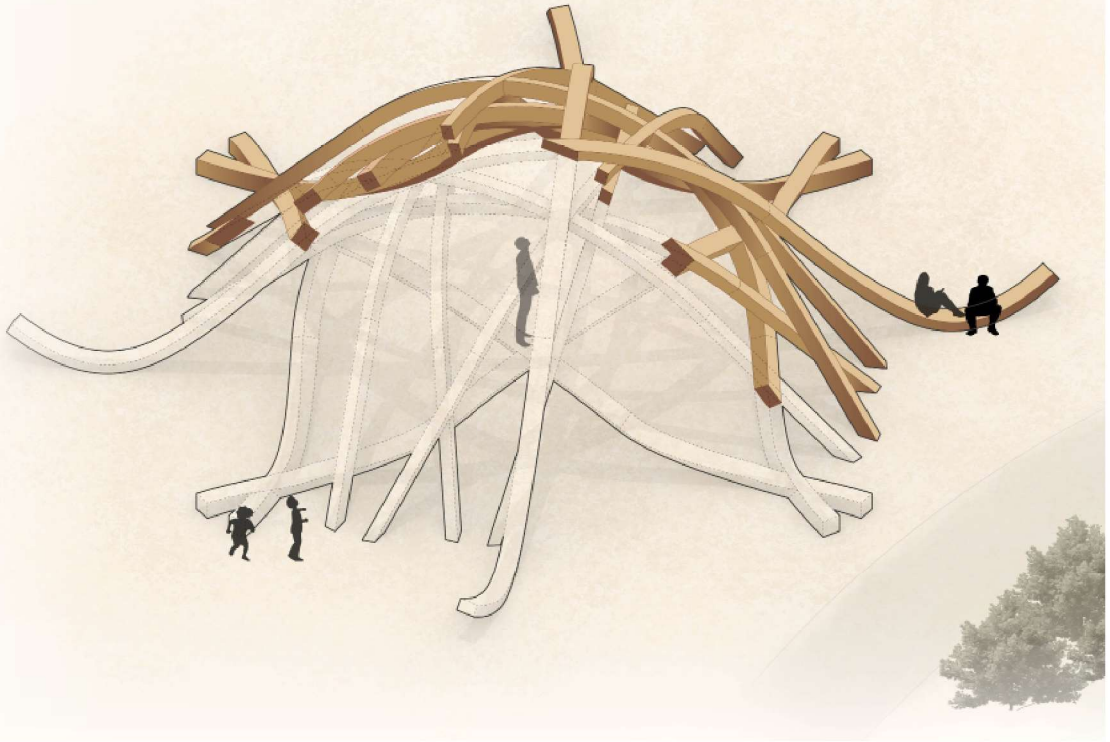
Rhino	●●●●○
Grasshopper	●●●○○
Twinmotion	●●○○○
Photoshop	●●●●●
Illustrator	●●●●●
Indesign	●●●●○
Fabrication	●○○○○

Reflection:

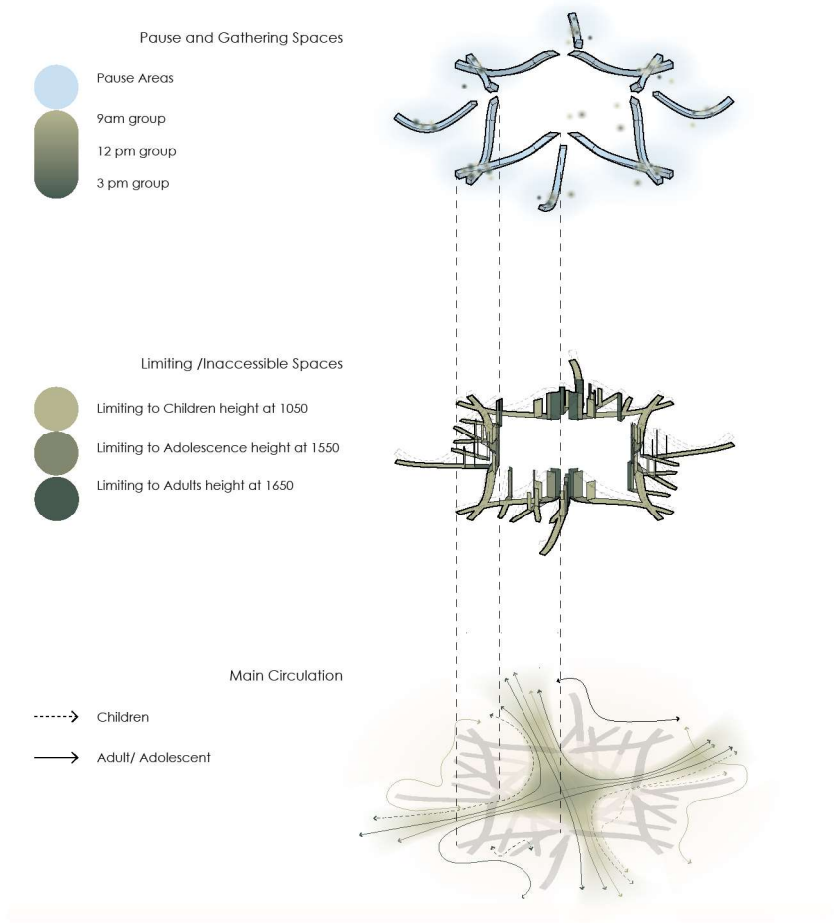
My interest in design started at a young age due to my passion for drawing and puzzle-solving, in which I learned to find creative solutions and create aesthetically pleasing outcomes that haven't been created before. This led me to design and motivates me to make the most suitable work in a particular brief. Through studying Digital design, I learned that designing is not always linear, and many iterations could be developed more easily with the help of digital processes. I learned new software skills, such as grasshopper plugin and twinmotion, to let the digital process become considerations to the design and soft skills such as analysing qualities and presenting that could help me in my further career. I aspire to become an architect to find connections with people through my design and create better solutions to help human interaction with spaces and form with aesthetically pleasing outcomes. There is much to improve with my skills as a designer, notably mastering new software skills, developing ideas with iterations, and time management to prioritise work in a project. I intended to learned them throughout my studies and learning from other people throughout my career.

01. Diagramming Design Precedent

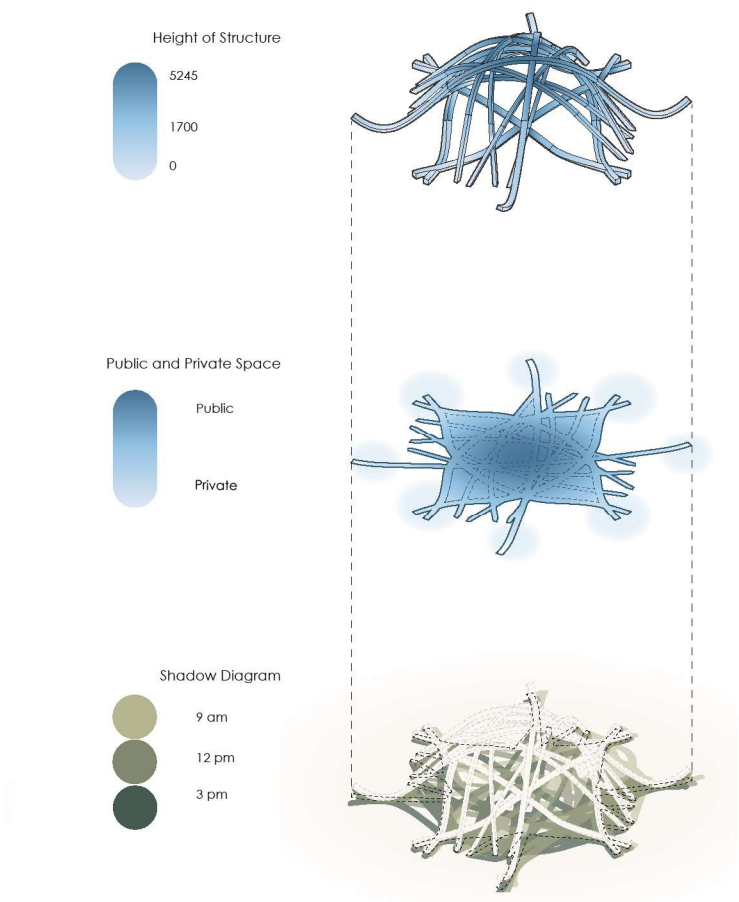
The Bad Hair Pavillion by AA School of Architecture was my precedent study, which is a summer pavilion located in London, 2007. It has key concepts such as creating different experiences for different users (children and adults) through the height of the structure, creating thresholds when entering the pavilion and how there is no defining entry point. The qualities that i learned was that it has different visual connections and conditions at the pavilion spaces where it touches the ground, providing seating area with different view framed on each end, contrasting the urban and natural setting around the pavillon.



Isometric View



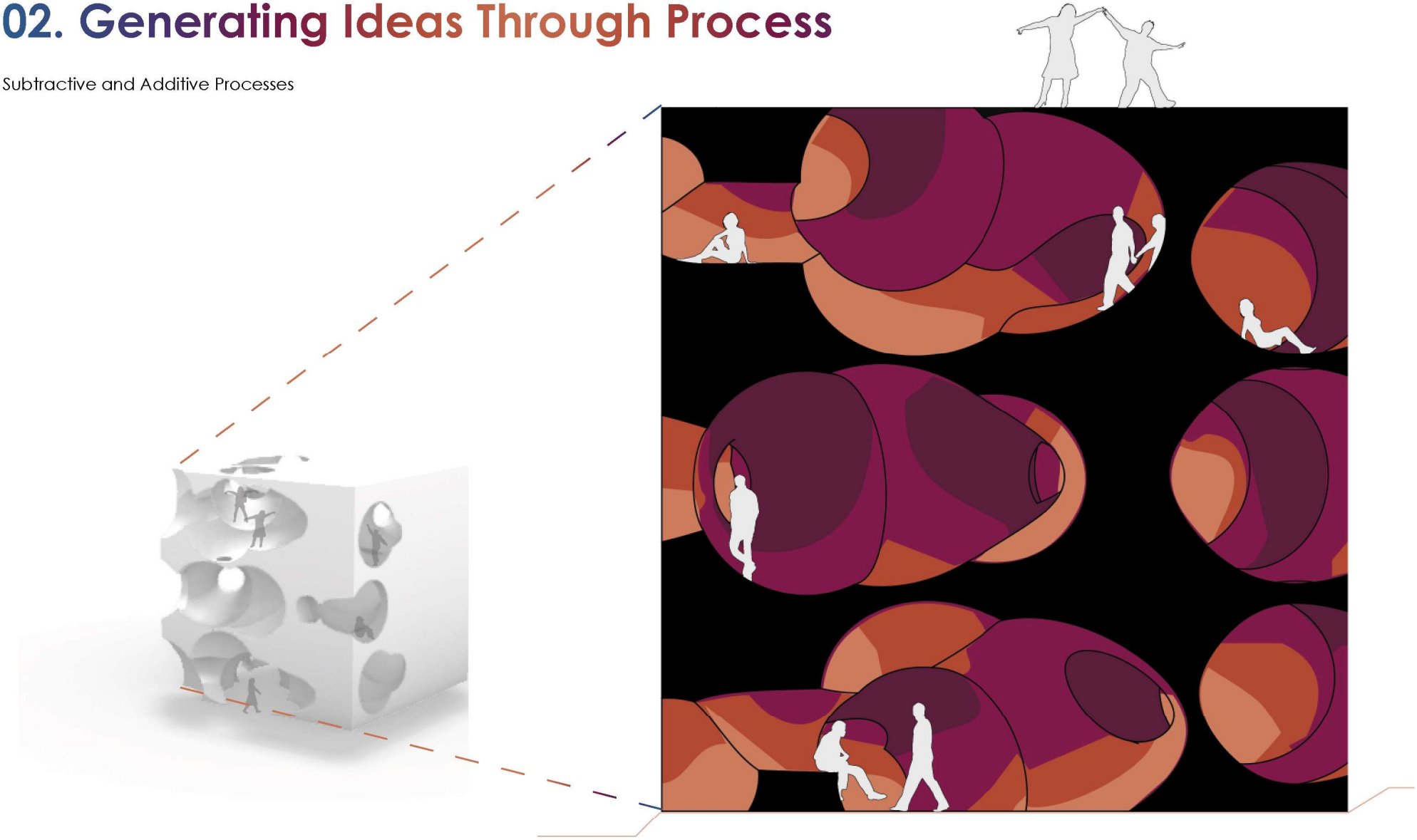
Circulation Diagram



Threshold Diagram

02. Generating Ideas Through Process

Subtractive and Additive Processes



Task A - Design Matrix

In M2 i was tasked to develop iterations of form finding using subtractive and additive processes. The key parameters of my matrix was the variety of profile curves fo form the custom geometry and how they loft, as well as rotating and scaling the geometries. My key idea was to create the sense of visual connection as well as continuation througout the space with porosity, successful iterations is where geometries interconnect with each other to form a void after the subtractve and additive process. By constantly extracting the geometry i could go further and iterate the matric using rotation parameters, scaling, and amnipulating the grid point using attractor points.

Iteration Matrix

01. Base Geometry
    01.1 Sphere
    01.2. polygon + extrude pt
    01.3. polygon + rotate+ loft

02. Curge generator
    02.1. s curve
    02.2. Thin curve
    02.3. C curve

03. Pipe Geometry test (extrude & loft sine graphmapper)

04. Rotate (degrees)+ clustering

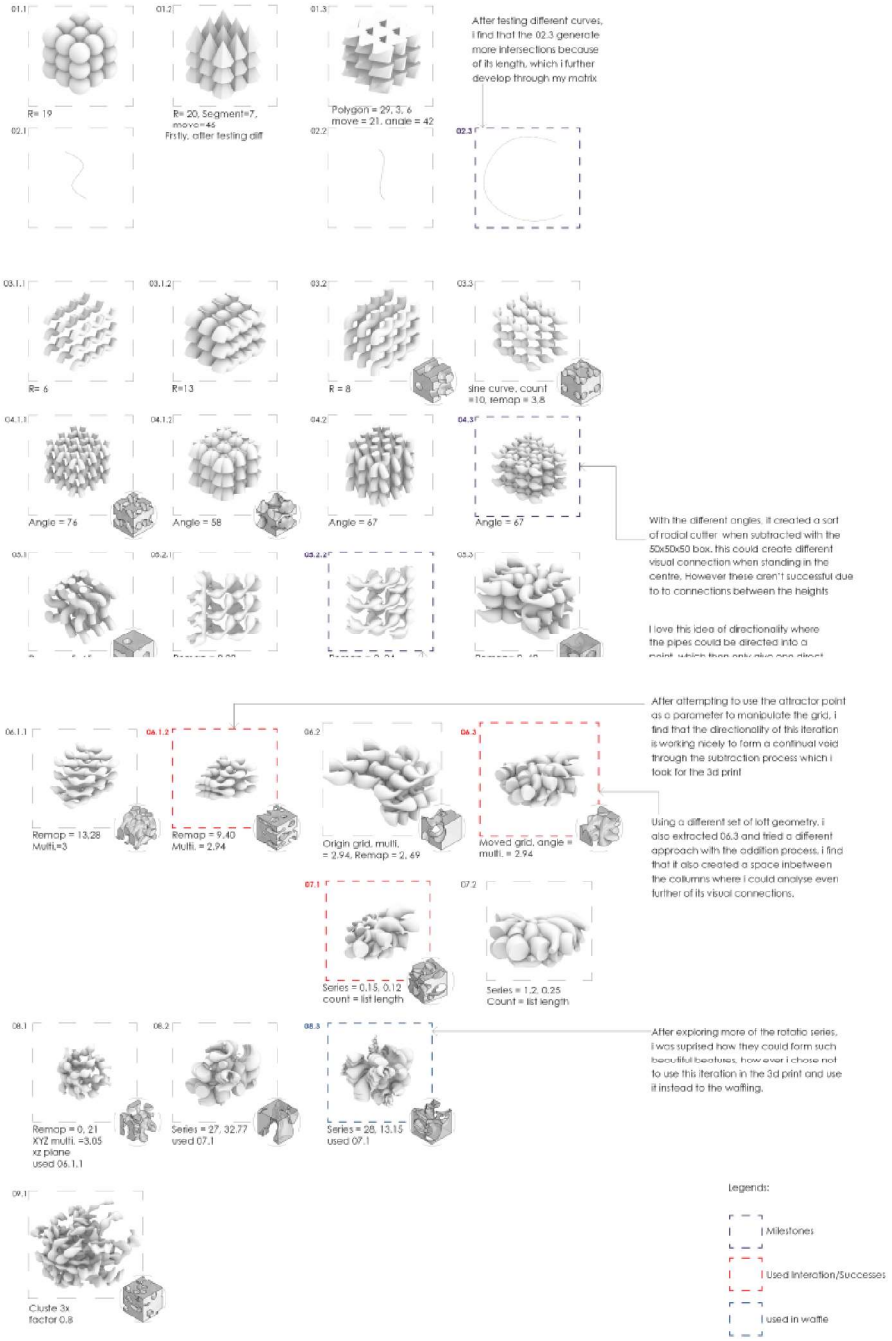
05. Rotate 3D + 1 att point (Z axis)

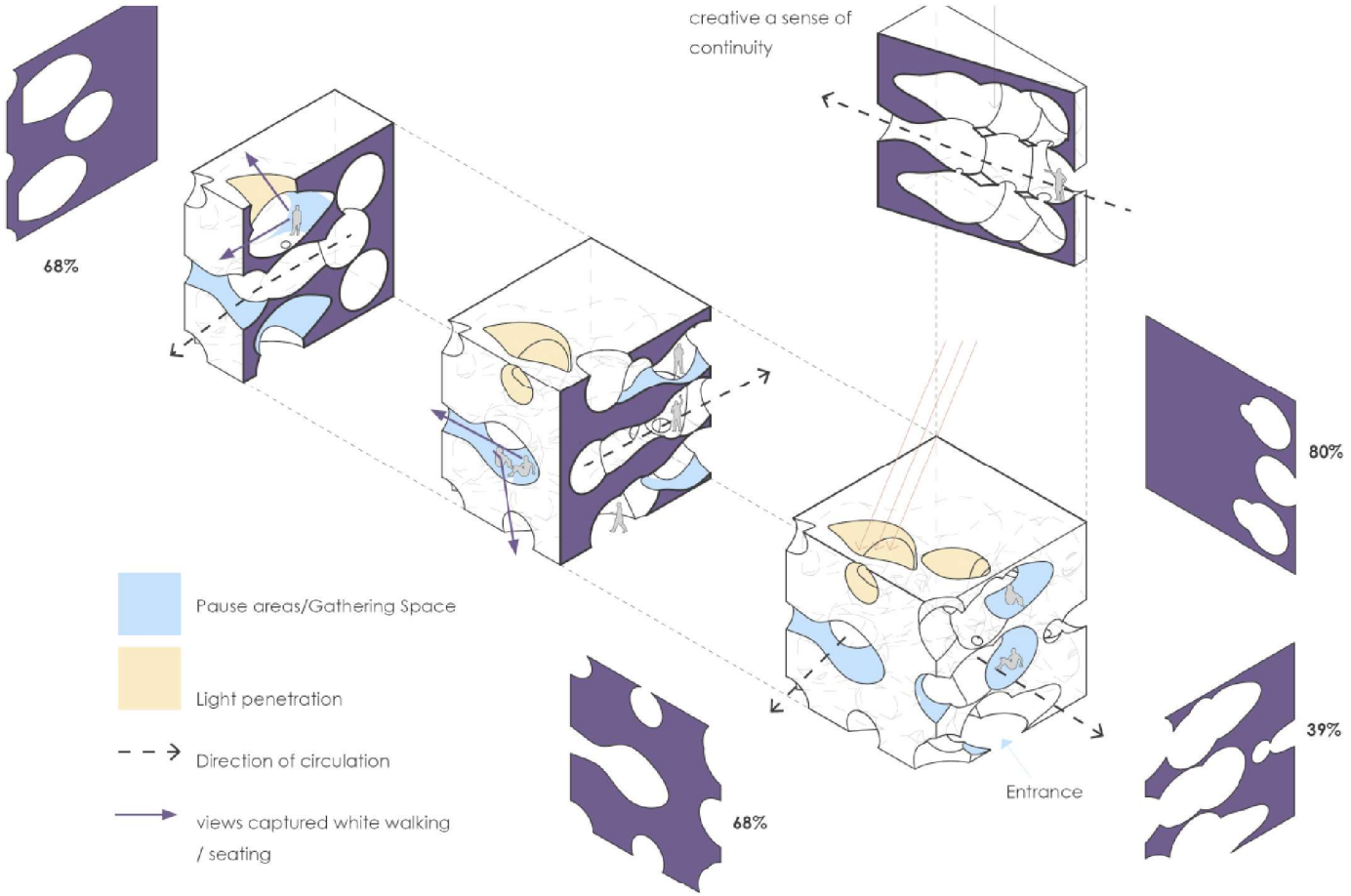
06. Rotate 3D +1 pt attr + move grid +zy plane

07. Scale +Series

08. Rotate 3D +XYZ

09. Aggregation growth through mirror

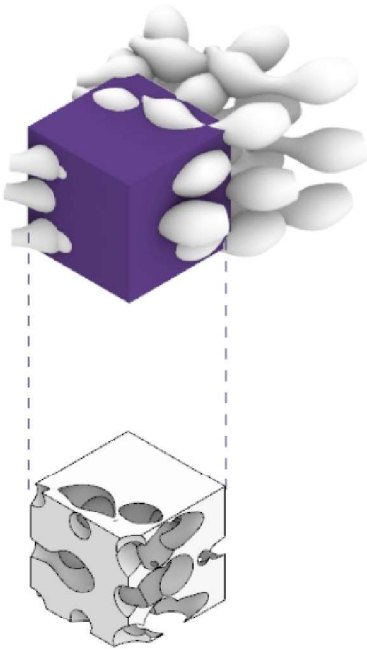




Subtractive & Additive Processes

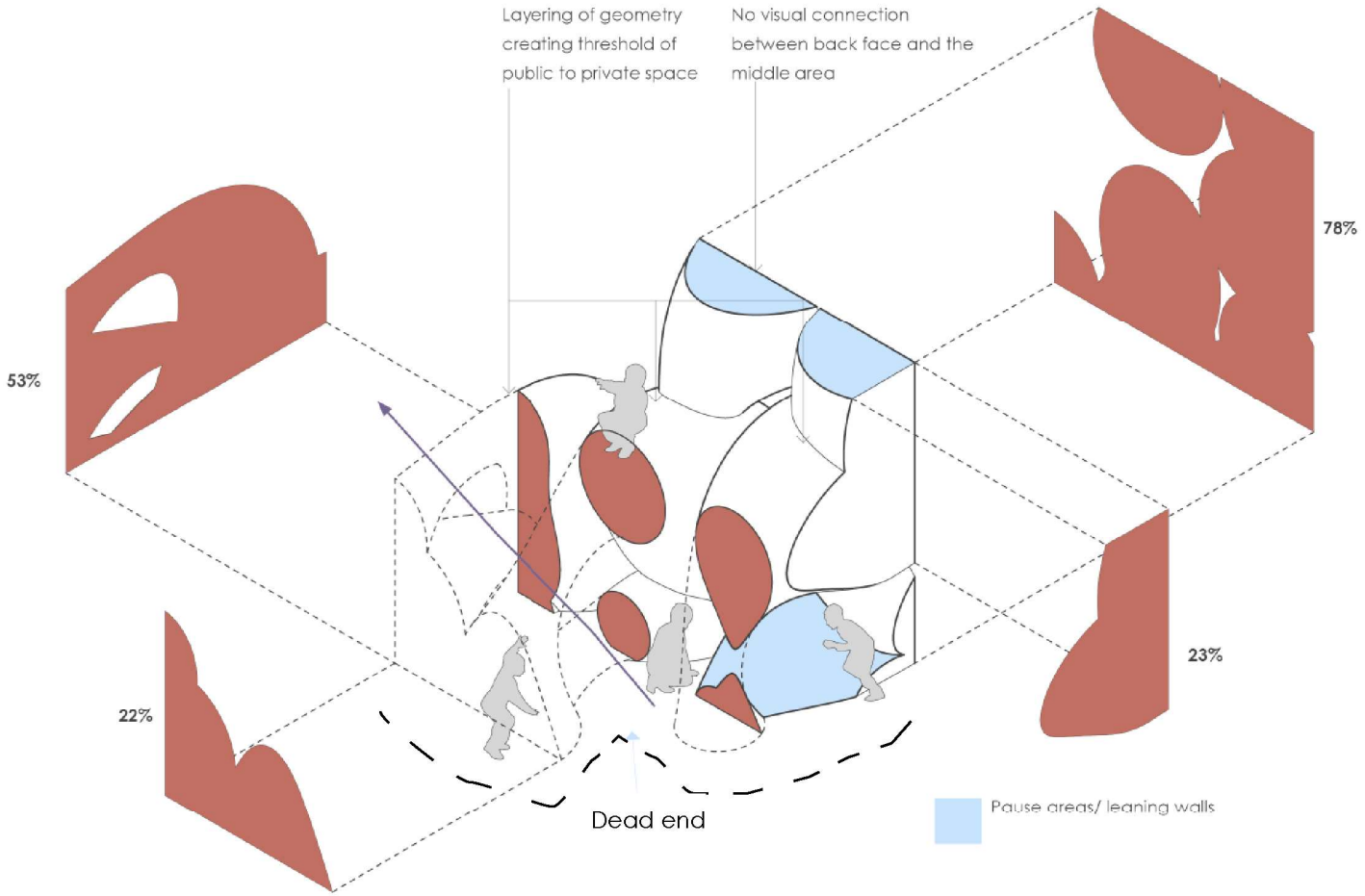
In Task A module 2, i need to generate geometries tha relates to the initial concept, which for me is porosity and visual connections. Through the matrix i subtracted the geometry with a 50x50x50 bounding box that led to this porous geometry, Here i analyse the abstract geometry to find its circulation and pause areas. I learned that there is a direct visual connection to more porous scpaces and create continuity in circulation.

06.1.2



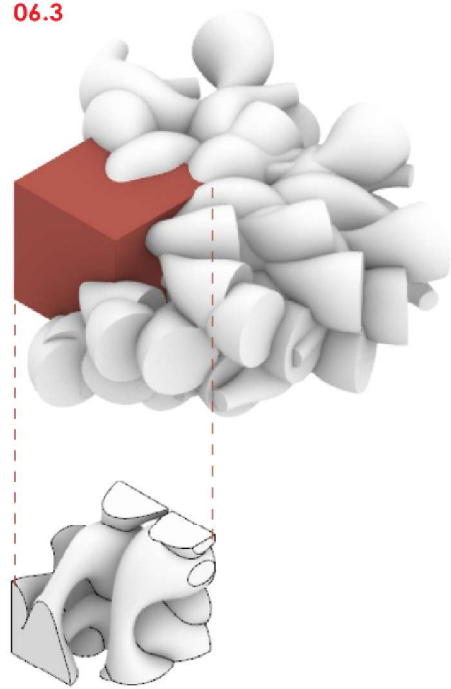
Subtracton

Subtractive & Additive Processes



Here in the additive process, i learned that the space has no entry point due to the block of the form, which create a dead end. By this, circulation is manipulated to move around the form rather than go in it. the porosity also articulate visual connection, where there is less openings at the back creating barrier to the person standing at the dead end space.

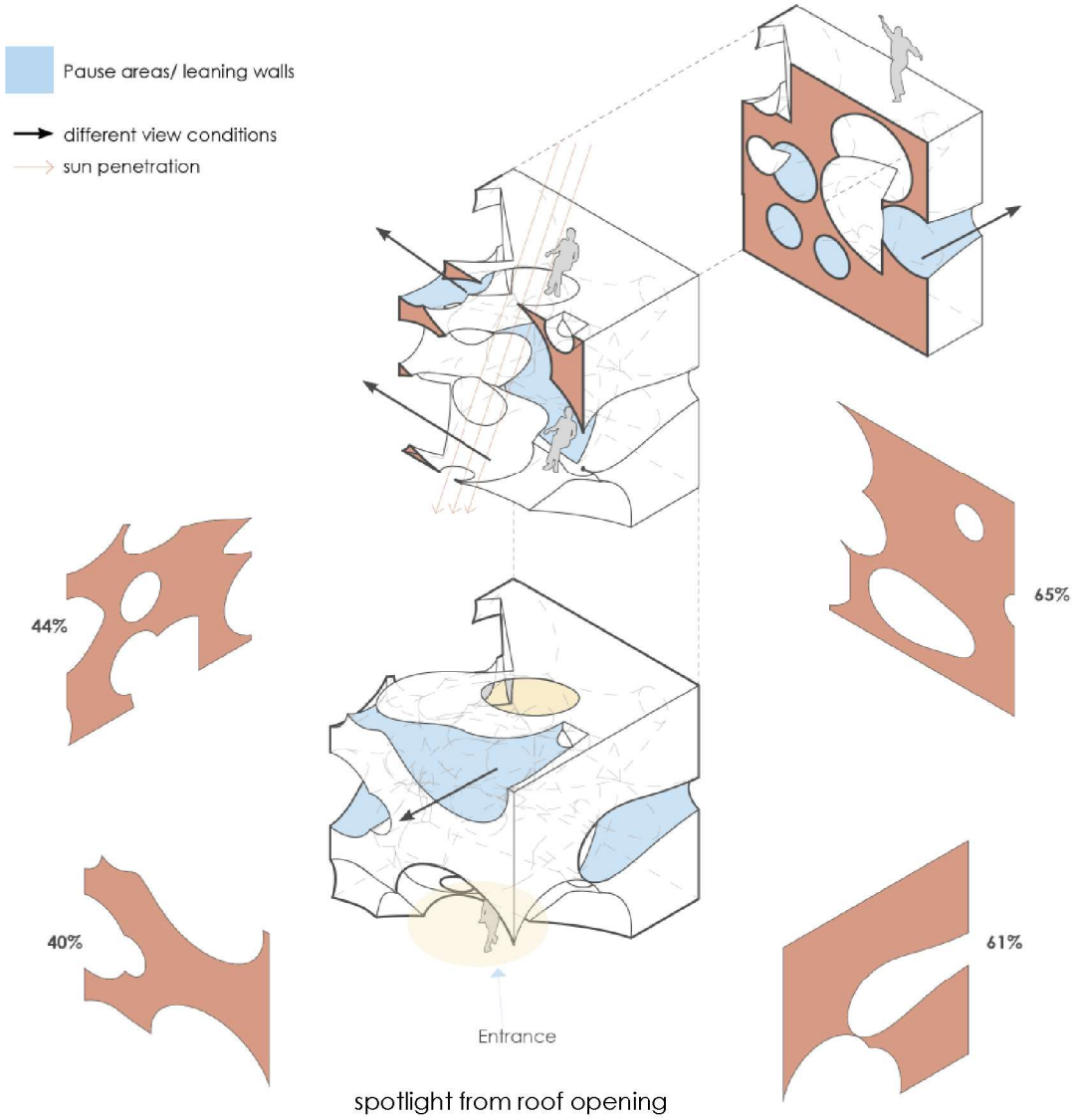
06.3



Addition

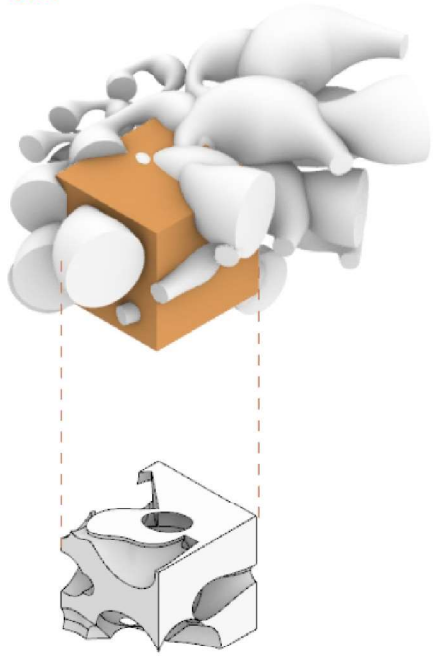
Subtractive & Additive Processes

In this iteration fo subtractive process, i learned how light could be used to define public and private space, have a spotlight could mean that people standing at the area has more attention towards them. secondly of certain angles where they could provide seating areas, less slanted forms.



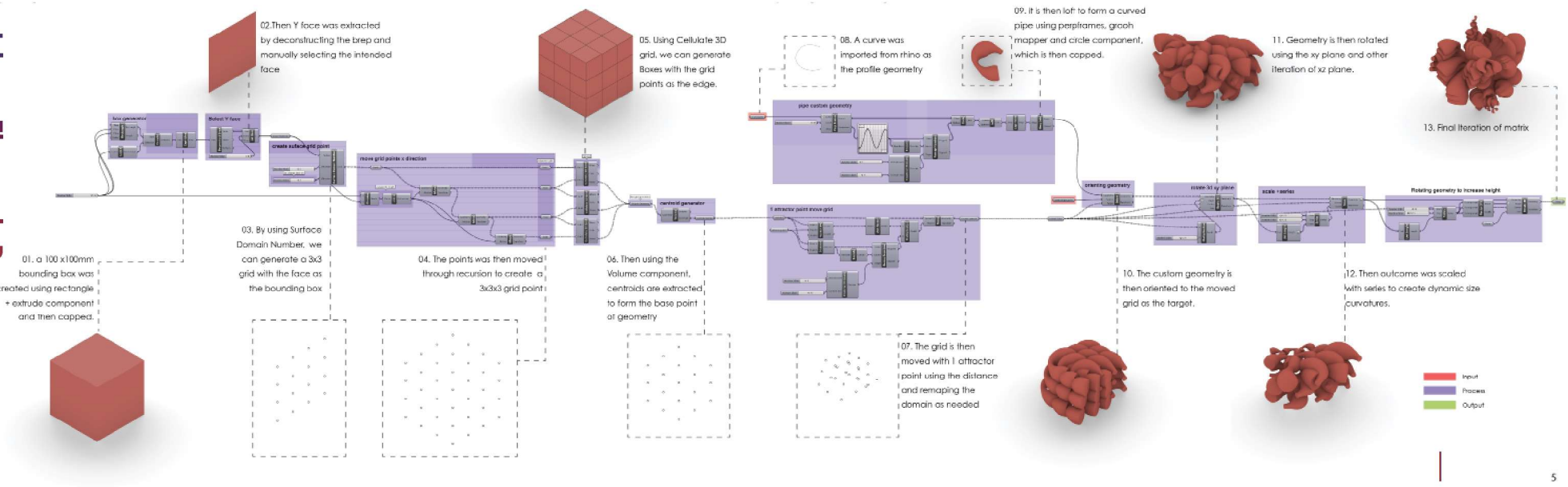
spotlight from roof opening

07.1



Subtraction

Generating Ideas Through Process



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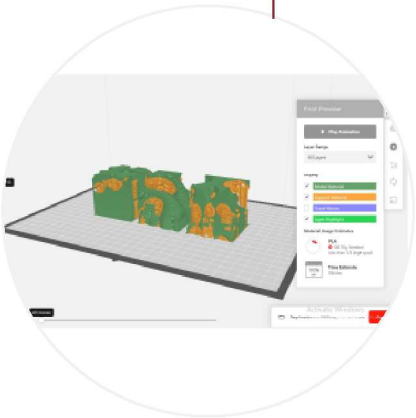
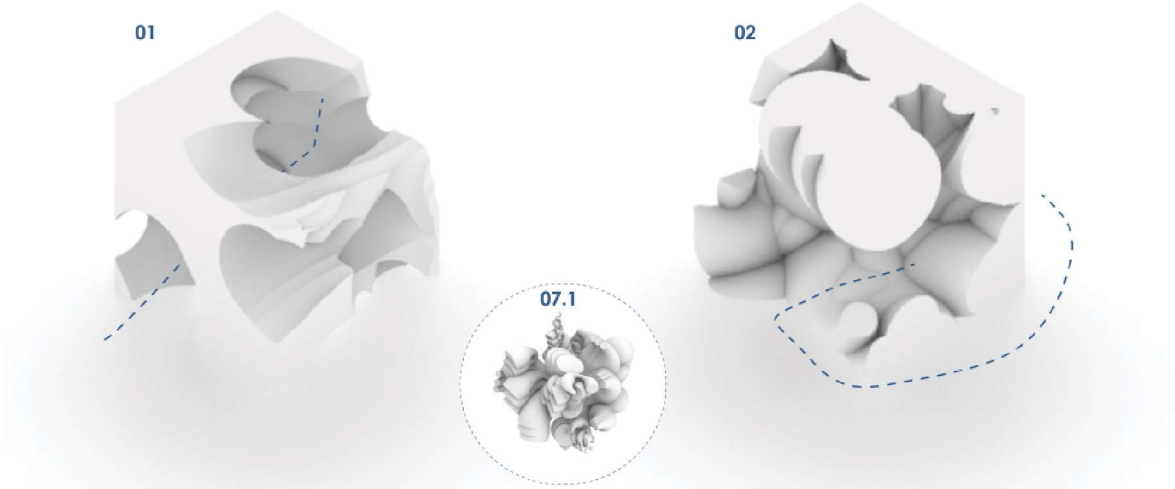
After generating forms through subtractive and additive processes we then continue the process of creating 3d files for 3d print. i encounteres a few learning points that i need to adjust in order for my geometries to be accepted. I realized that the holes/ void inside my geometry would increase the time it maybe produced and that it would use more support material than other rigid additive geometries.

i learned to consider the orientation and adjusted the distance between each geometry to be closer together so that the makerbot wouldn't waste time traveling.



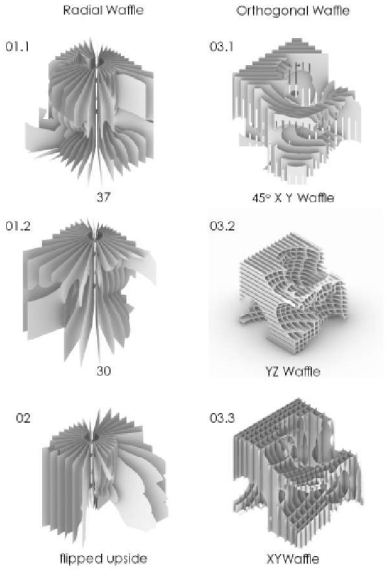
Study Area Development

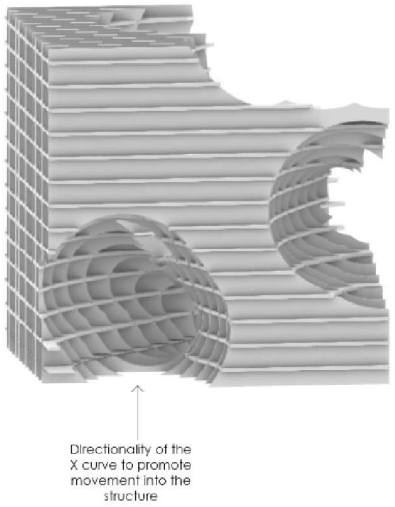


Two of the iterations for my waffle structure was taken from my last iteration matrix 07.1, these are used due to the more rigid qualitiy it has to create the waffle structure. The previous iterations that i use for 3d print woudn't be as successful due to the many holes it has at the centre, creating problematic fragments when notching.

With visual connection and porosity still in mind, i intended to enhance the 01 iteration using the orthogonal waffle and the 02 iteration with radial structure. The qualities i wanted to include in my waffle structure are the directionality where people could more in or sit, and how view could gradually open when entering the structure.

Model Making





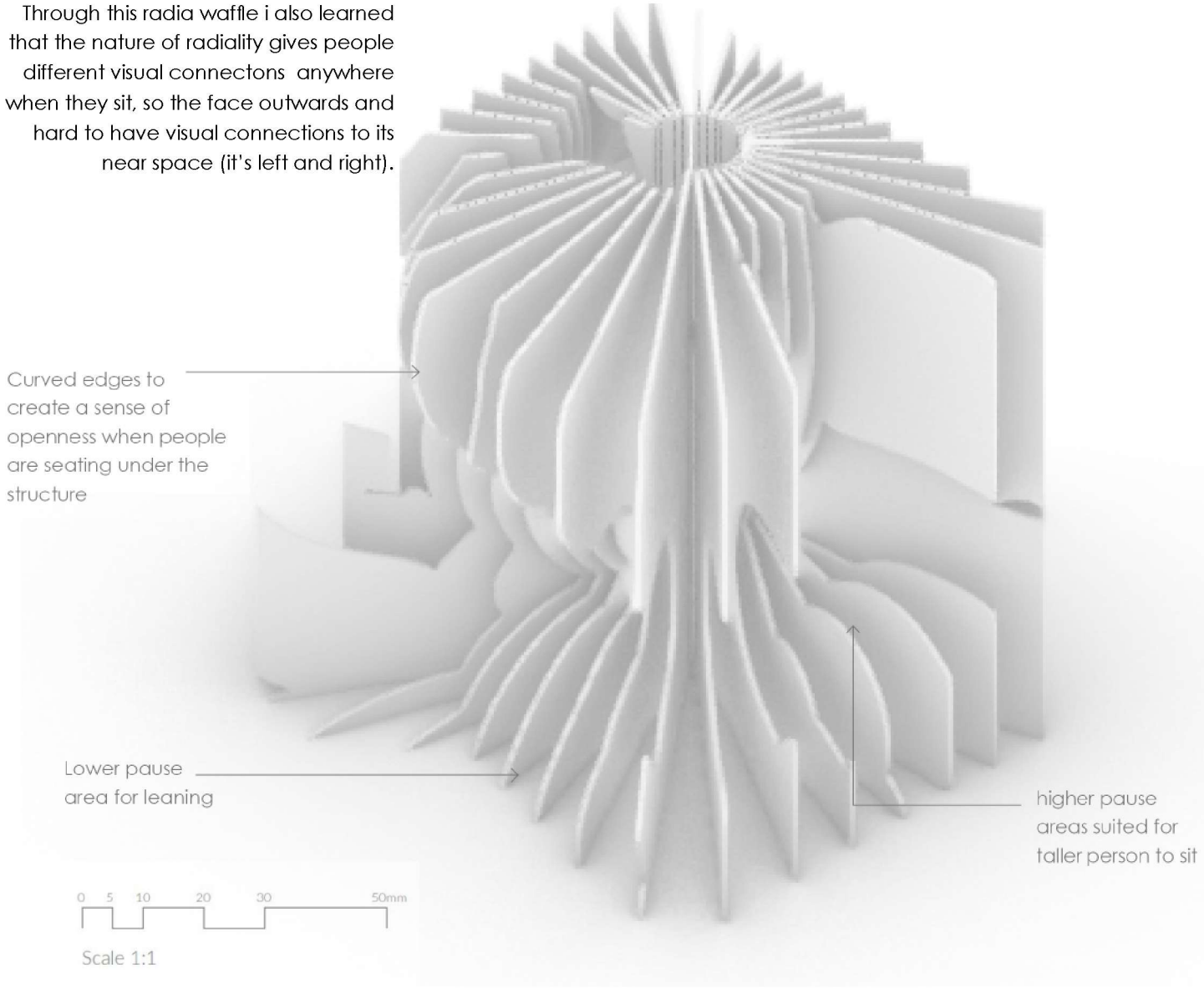
Task B - Design Matrix

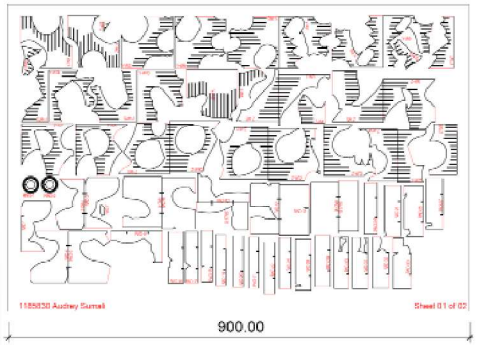
When waffling, i consider the orientation of the section cuts. initially i intended touse XY waffles , however through iterations i found that XZ waffles could create visual connection between the open area and no connection to the right angle of the section. so visual connection and movement is based around the openings of the structure.

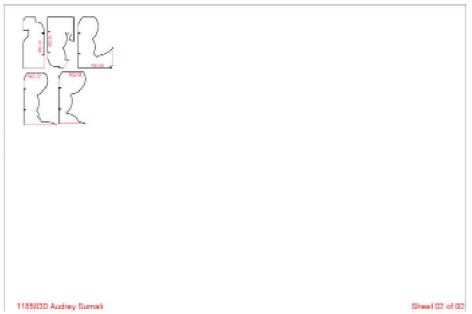
Surface and Waffle

Through this radia waffle i also learned that the nature of radiality gives people different visual connectons anywhere when they sit, so the face outwards and hard to have visual connections to its near space (it's left and right).

This process of waffling also taught us to make physical form through laser cutting and nesting. Even though we aren't able to perform the physical module, we learn the process of how to nest, use etch to skip taping, and effectively arrange them to minimise the use of material

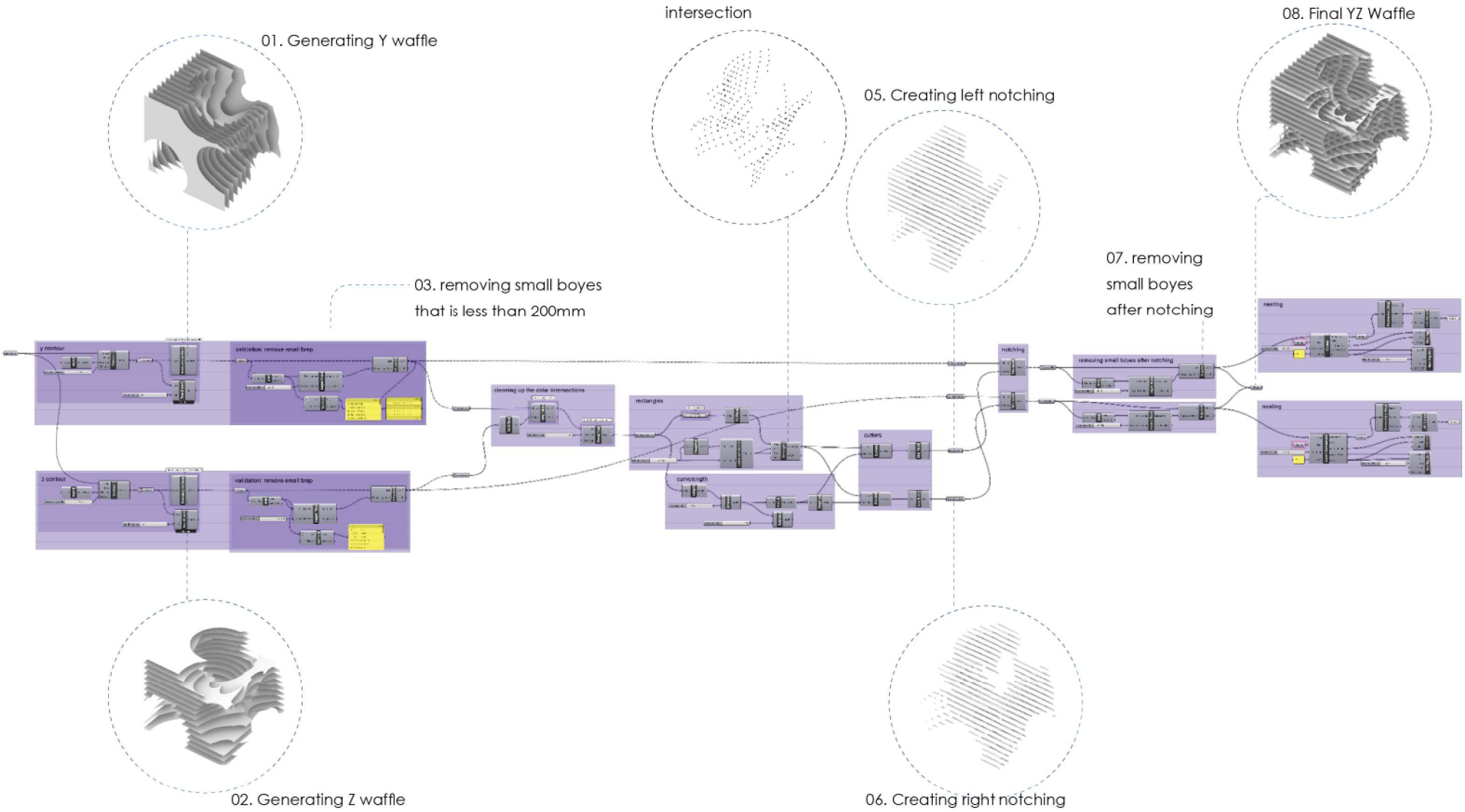




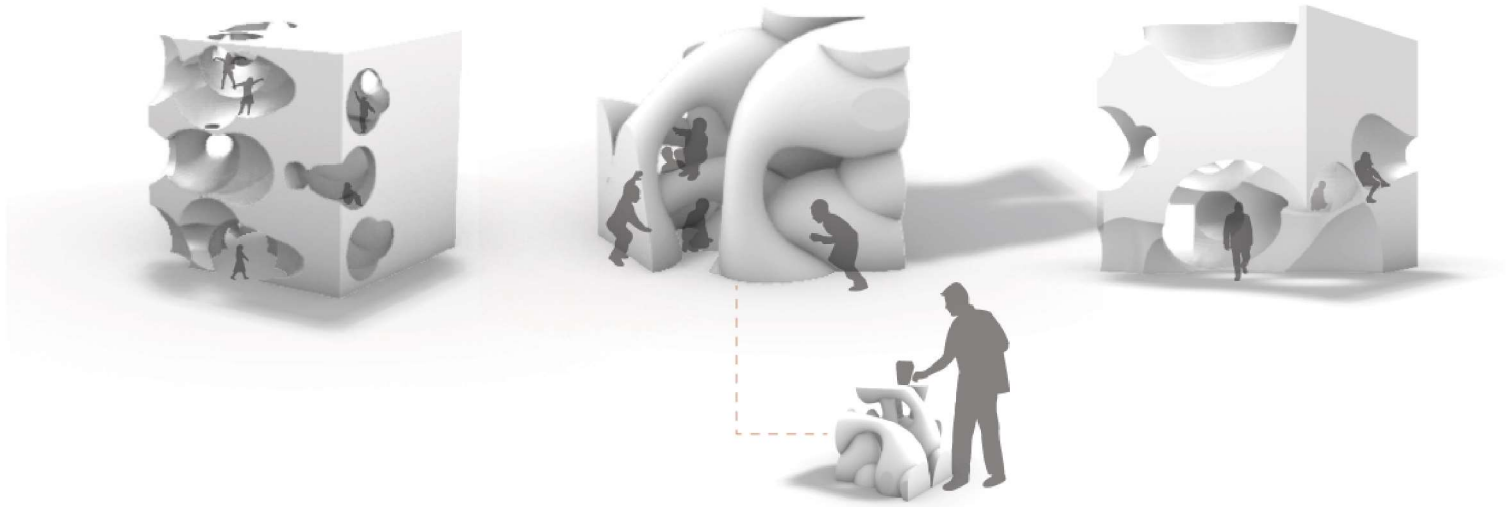


Annotation

Computation Workflow



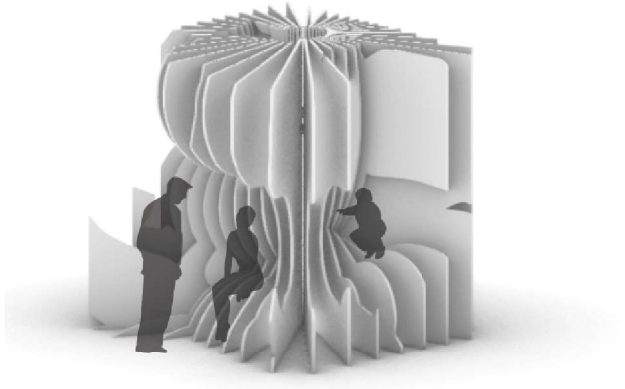
Scale Testing



Iteration 01 was chosen as a 3 level building scale which the opening could be open terraces, windows or entrances. People could walk through the building from the face with less area. People could circulate through the hall ways and encounter different visual connections. This quality is helped by the directionality of the pipes by attractor point.

Iteration 02 is could have 2 different scales which mainly scaled as a playground. Kids could play with the different heights, crawl or climb and have areas to hide. Through the back area, people could also see what kids are doing through the small opening. Another scale would be a tablescale for people to put objects.

Iteration 3 is considered to be an installation scale. People could walk through easily by crouching to walk towards the centre point where sunlight would shine in. The qualites generated by intersected pipes create angles where people could sit comfortably, walk pass, and a large public area at the centre.



the installation scale is used to the 02 iteration as people could also pause comfortably with an overhead over them. Due to its radial manner, there is no enhancement in porosity, however i argue that people could experience different view when sitting in diffe

The 01 iteration was given the same scale as the previous 3d print structure, which is roughly 1:100 scale where people could walkthrough and sit comfortably, The YZ waffle manage to enhance porosity and enhace experiences of visual connection and a sense of suprise.

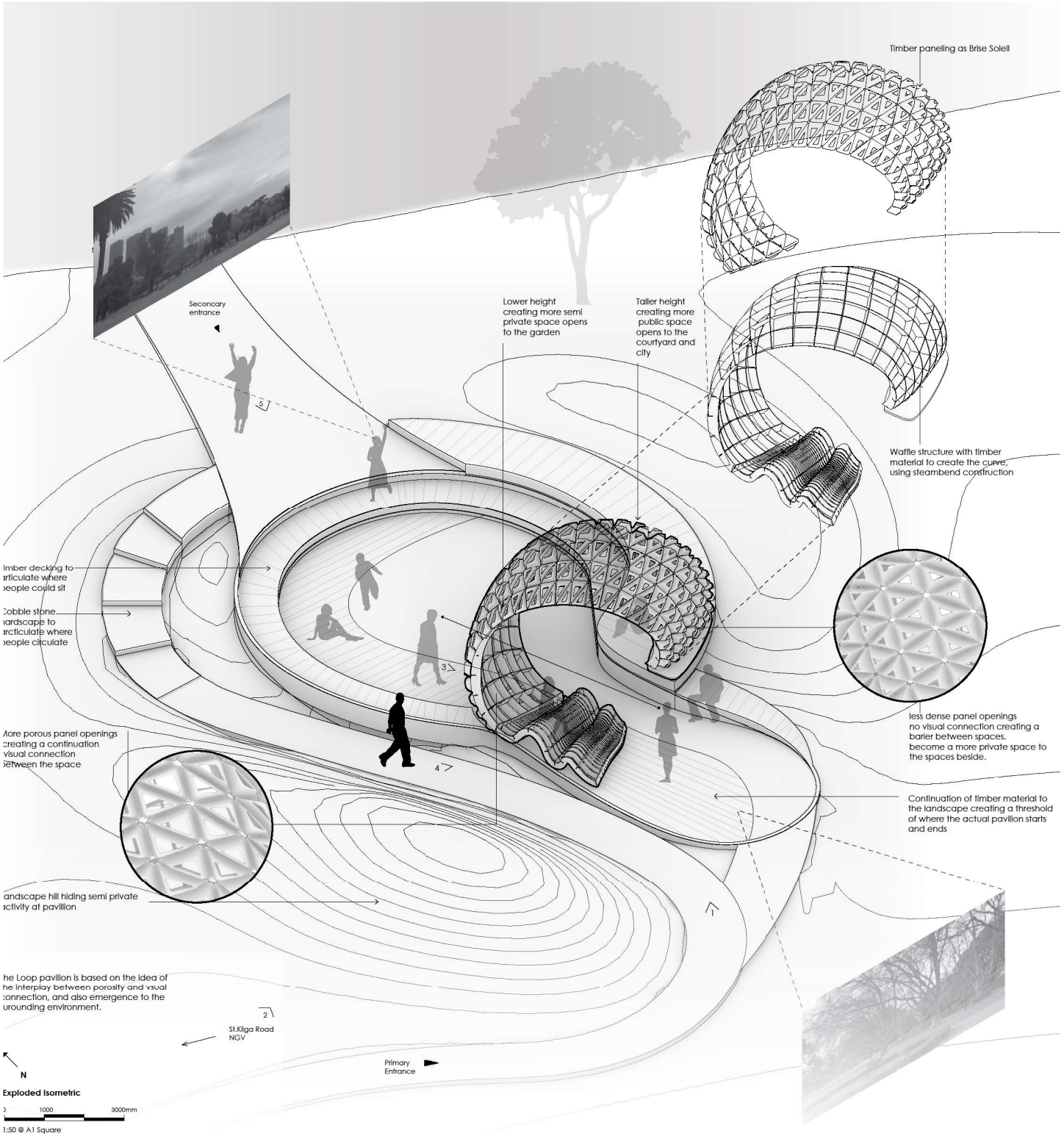
The LOOP Pavilion

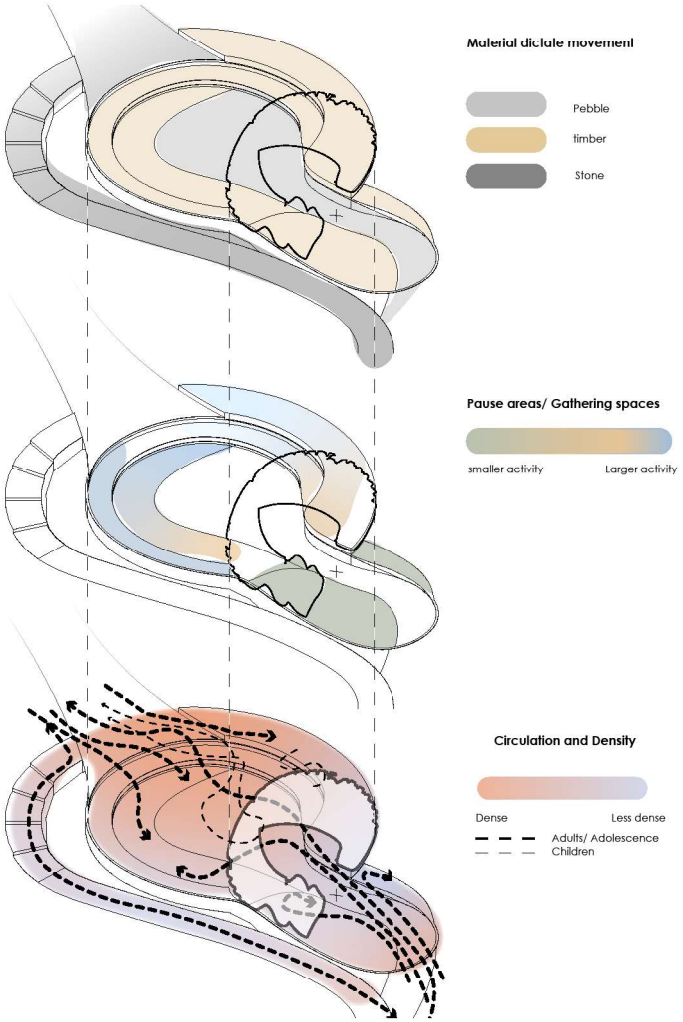
The concept of this pavilion is based on the idea of interplay between porosity and visual connection. And also having in mid the idea of emergence from the environment and how the pavilion touches the ground. This is derived from my m1 and m2 studies.

The timber waffling and panel pavilion extends on one end to provide seating areas where the seminar could be held, oriented to give shade om the afternoon. And on the other end of the pavilion, the timber material also extends to the more open space for the quartet performance. The timber material is extended to the landscape to articulate where people could sit, as well as other hardlandscaping using pebble and cobble stone is used to articulate where people could move/ walk.

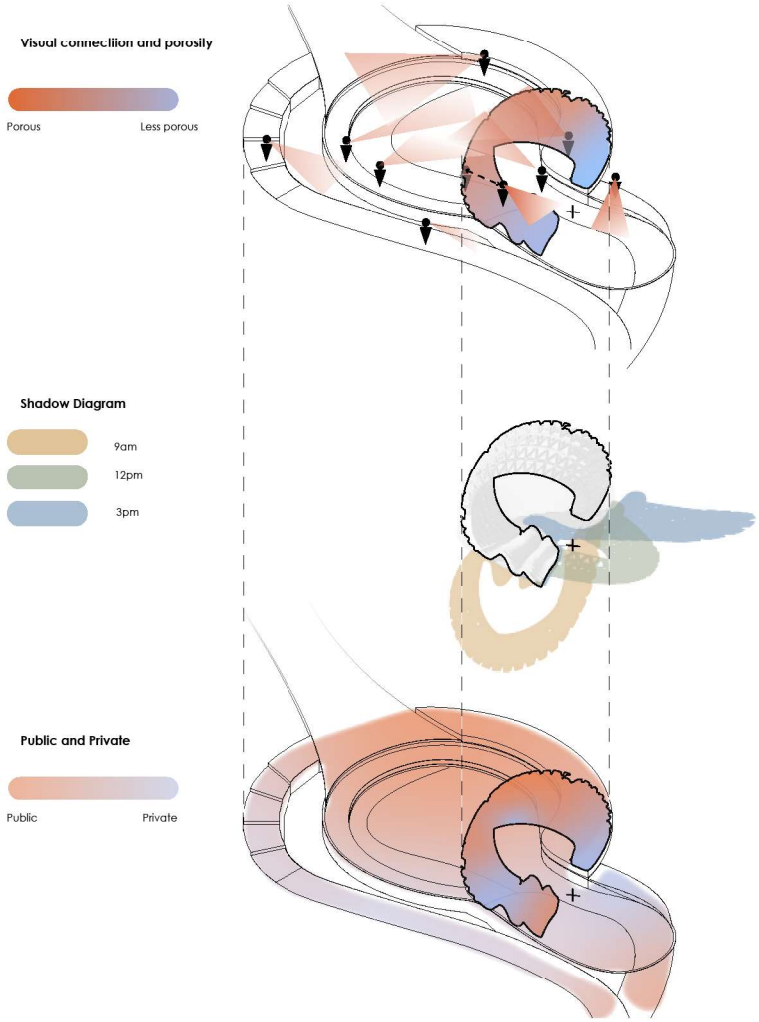
The porosity of the panel opening create visual connections as well as public and private space. Where less porous panels create more shade and provide privacy throughout the pavilion.

Isometric

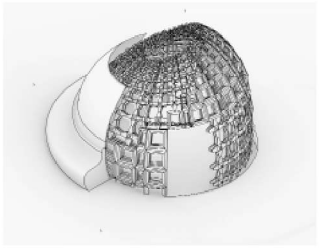

Timber paneling as Brise Soleil
Seconcary entrance
Lower height creating more semi private space opens to the garden
Taller height creating more public space opens to the courtyard and city
Waffle structure with timber material to create the curve, using steambend construction
imber decking to rticulate where eople could sit
obble stone ardscape to rticulate where eople circulate
less dense panel openings no visual connection creating a barier between spaces. become a more private space to the spaces beside.
Continuation of timber material to the landscape creating a threshold of where the actual pavilion starts and ends
lore porous panel openings reating a continuation isual connection etween the space
andscape hill hiding semi private ctivity at pavilion
he Loop pavilion is based on the idea of he interplay between porosity and visual connection, and also emergence to the urounding environment.
St.Kilda Road NGV
Primary Entrance
N
Exploded Isometric
1000
3000mm
1:50 @ A1 Square

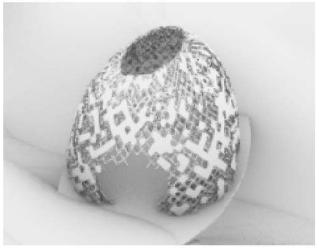


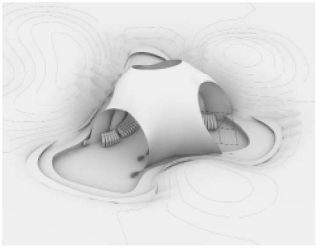
Circulation Diagram



Threshold Diagram







First iterations with consideration to the idea of porosity and visual connection to the surronding environment

Form Finding
Surface development

Paneling Trial
on surface 2

use twisted box surface pufferfish to form panels

initial surface was not used as there is not much circulation

Waffling and notching parametric:
length of opening in between loop

6

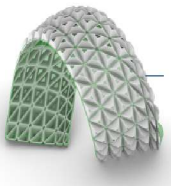
XY Waffle

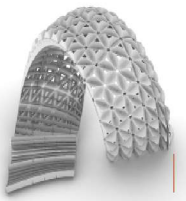
Waffling and notching +panels

Thinner section to open more circulation. less opportunity to sit multiple people.

Computation Workflow

Final Pavilion

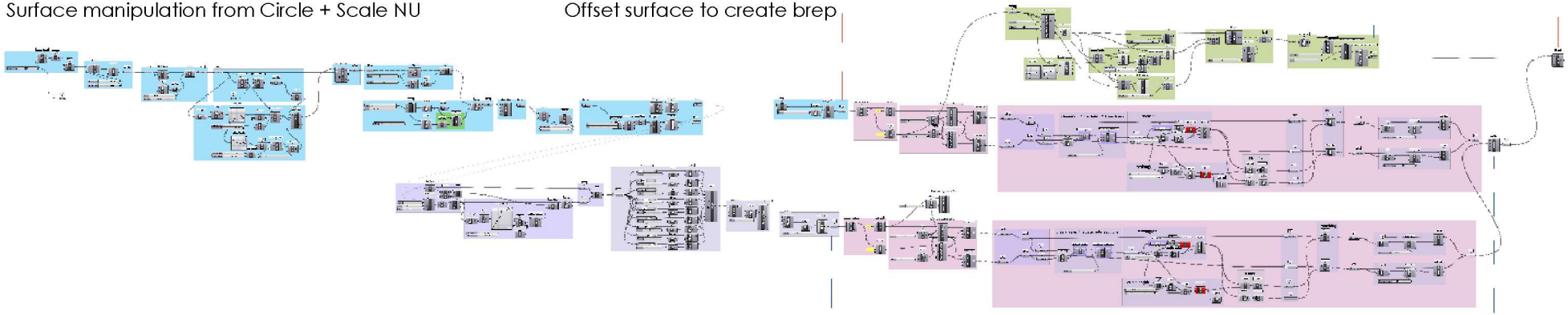




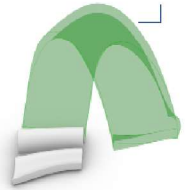
Panel development, opening determined using distance from points

Surface manipulation from Circle + Scale NU

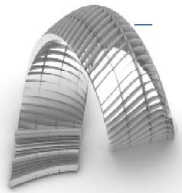
Offset surface to create brep



Seat Developed as an extention from Surface manipulated using graph mapper + divide curve



Waffling using curve line + offset + Notching intersection with 16mm gap



View from Primary Entrance

1

View from NGV

2

View capturing
panel openings

3

View capturing
Privacy

4

View capturing
Landscape and
Height of Pavillion

5

Animation sequence

0 sec

3 sec

5 sec

6 sec

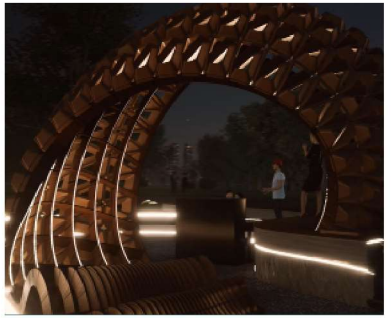
8 sec

13 sec

14 sec

19 sec

21 sec



24 sec

Digital Design

Semester 1, 2021