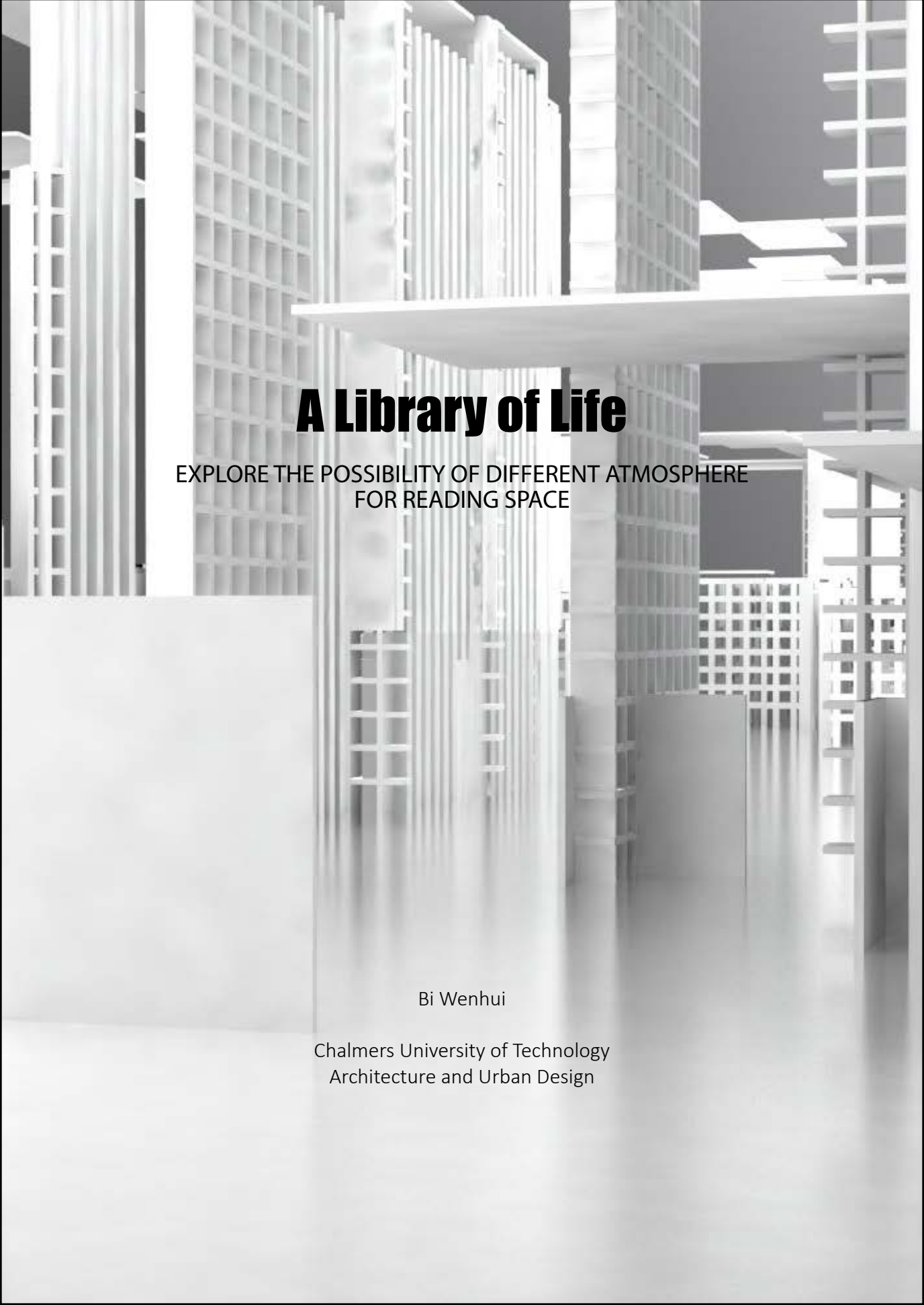

A Library of Life

EXPLORE THE POSSIBILITY OF DIFFERENT ATMOSPHERE FOR READING SPACE

Bi Wenhui

Chalmers University of Technology
Architecture and Urban Design

CHALMERS
UNIVERSITY OF TECHNOLOGY

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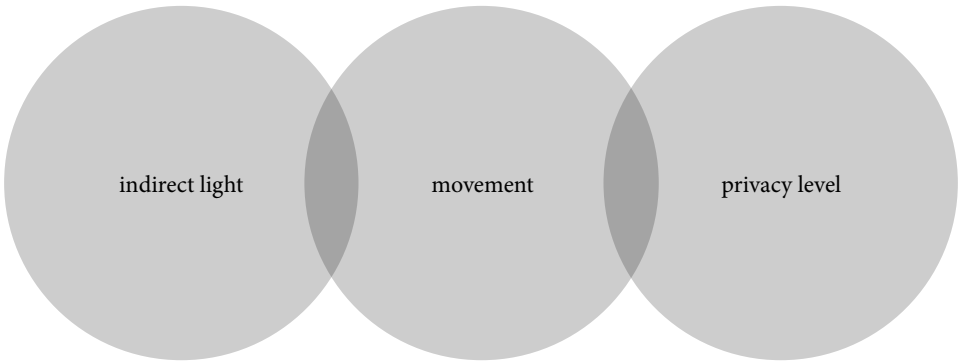

indirect light
movement
privacy level

Abstract

This project concerns mainly the relationship between social interaction and atmosphere. The aim of this project is to create a comprehensive and intimite place for rebuilding the interaction between people using indirect light.

The main progress of this project lies on the logic of organization. All the testing and generating start from a simple logic and become more and more complex as the logic mutiples. Every step of processing is setted as much as possible under control.

The examination of the relationship between indirect light and intimacy becomes prototype. Overall there are two aspects of the examination, changes within one single space and layers of spaces. Then the formation part is mainly about the organization of space using the results from prototype phase.

The design method and process are tightly attached to the toolbox. Two digital tools mainly used in this project are Rhino and Grasshopper, with all the peremiters for testing and shape generating coming from the logic of organization, which means the formal analysis and research. Thus the digital program could be based on a logical foundation.

The result of this project is not a completed design, but a structural space with all the potentials remained to be explored. Results from the first phase are systematic but not full-scaled. Yet the method and design process are completed and will be used for further exploration.

In the article, Borges claimed three pairs of concept:

Geometry & Infinity

Every hexagon forms a chamber with particular character. All the hexagon chambers are connected, together composing a boundless world.

Isolated & Unified

Inside the chamber, generates the feeling of enclosure. Yet experience of similar themes gives the feeling of a whole.

Clarity & Ambiguous

Form cooperating with character locate the observer. Yet through the movement, the maze provides a possibility to get lost.

Borges, Jorge Luis. "The library of Babel."
Collected fictions (1998).

Chapter 1
Background

Second-hand Bookstore

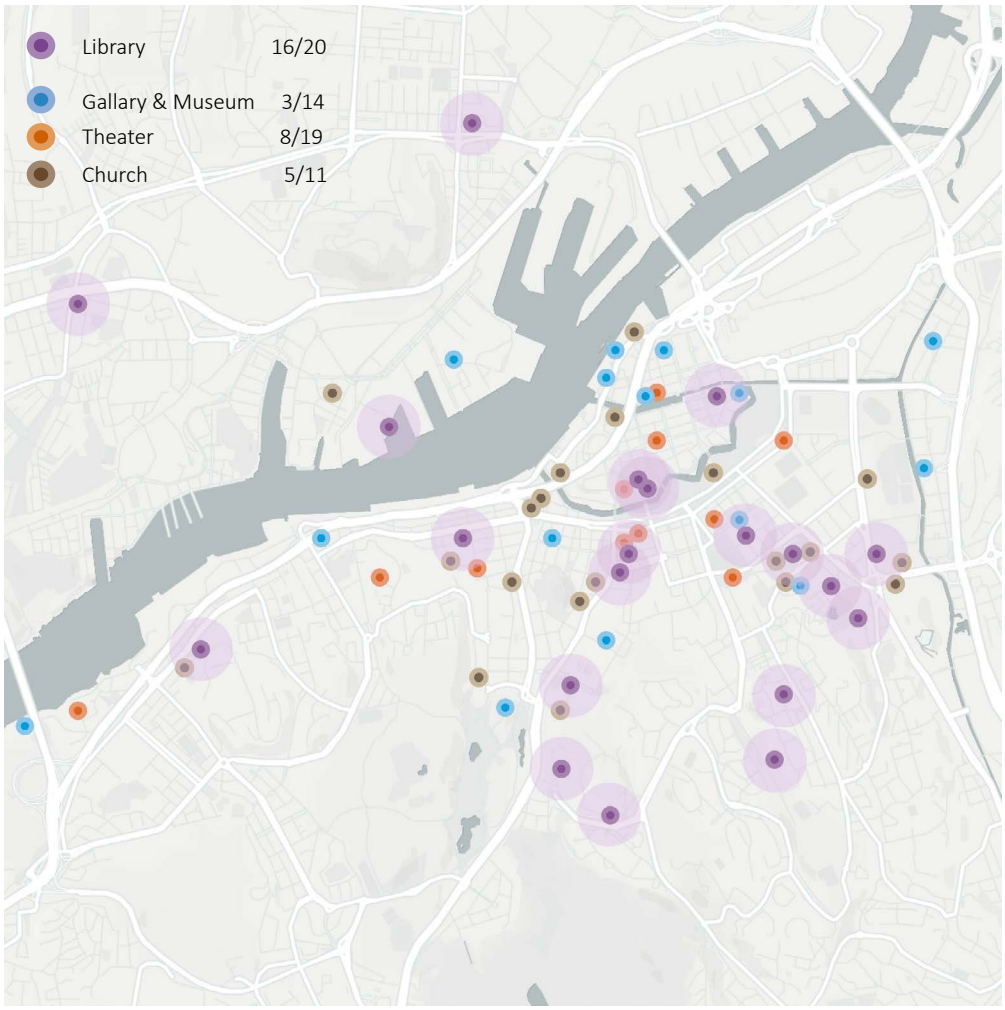
Limited reading space, crowded book-shelves create a puzzle-like movement.

Library

Organized book-shelves, intimate reading space inside a larger open space.

Recearch of Göteburg Central Area

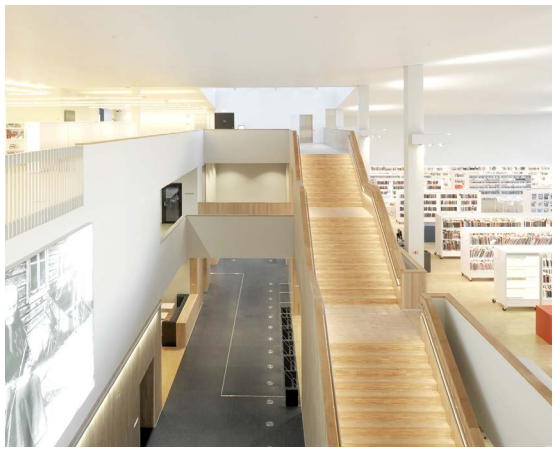
About density and distance for libraries and public facilities

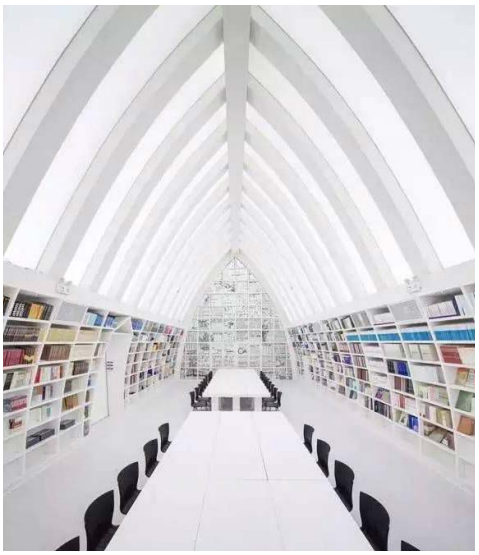


Twenty libraries including university libraries are picked up as samples for this survey. The public facilities included are museums, theaters, and churchs.

For museum, apart from the bookstore of their own, 1/4 are within 500m distance from the nearst library. For theater and church, the percentage nearly reach 50%.

The Need From Inside



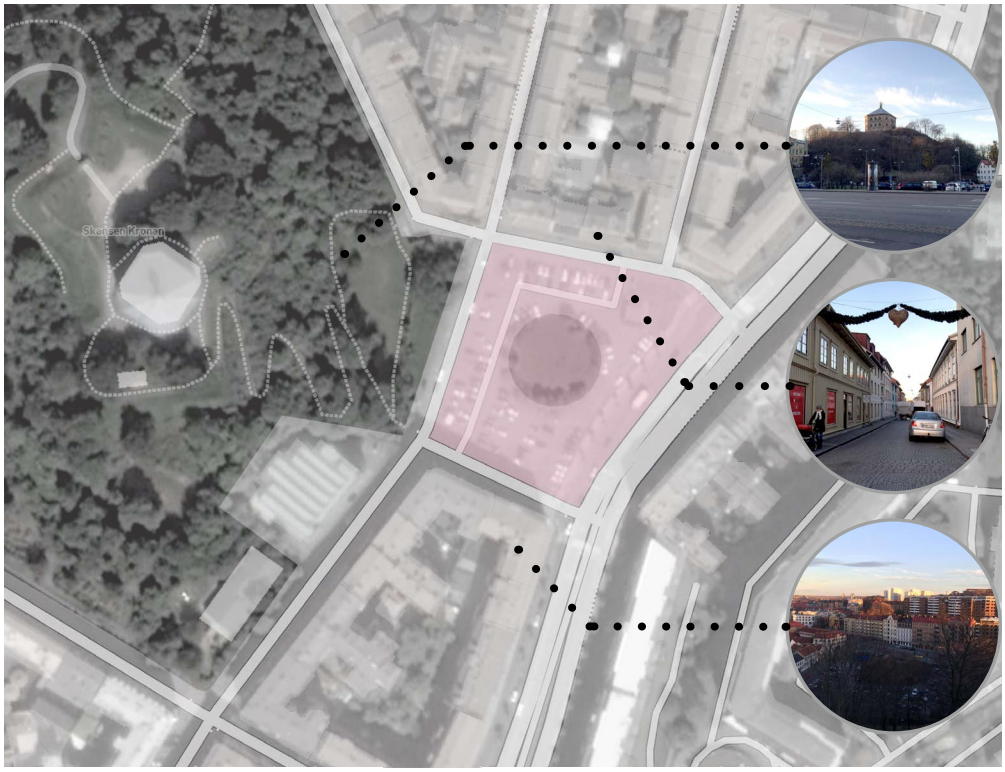


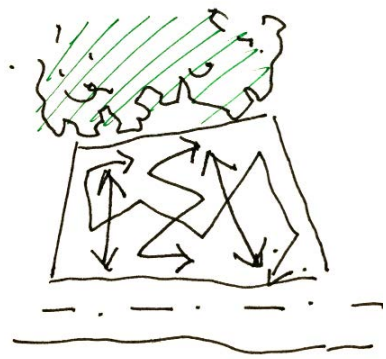
Topic Revelent
Functional attached
Samiliar atmosphere

Chapter 2

Context & Site

Site condition



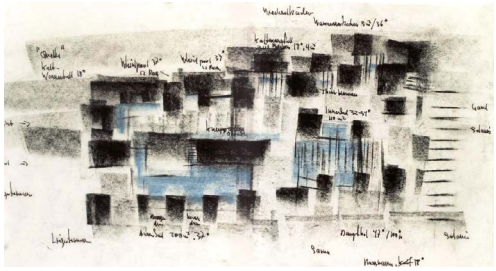


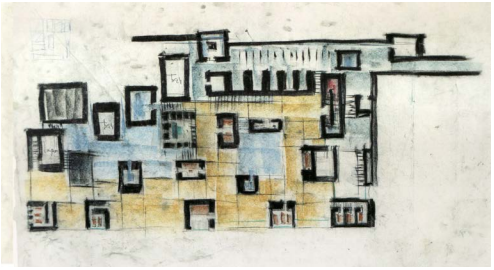
How to approch an inviting and interaction encourging atmosphere?

How to organize the route between different sides?

Reference

Thermal Vals, Switzerland
Peter Zumthor, 1996



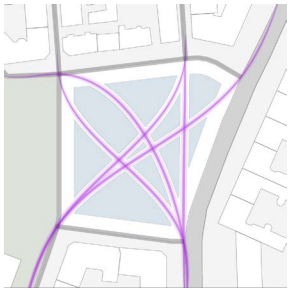


- Pack up the private function to all the units
- Change density of the units to create a transition from artificial side to natural side
- Create coutryards by units that become a more public area

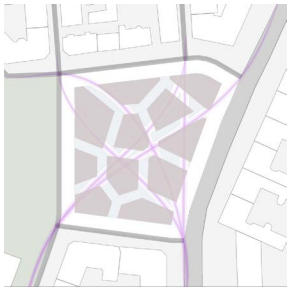
Route Organization

- Possible routes divide the site into several zones
- Privacy Gradient ranging from main road to pathways
- More publicity around the crossings

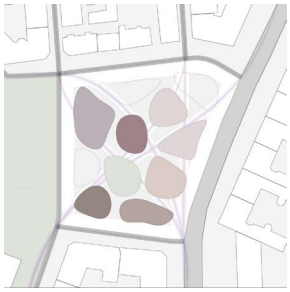
- Privacy Gradient with routes



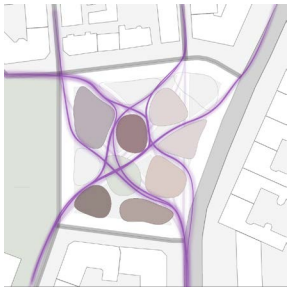
1, Get possible movement and people flow within this area, then naturally the site is divided into 11 zones.



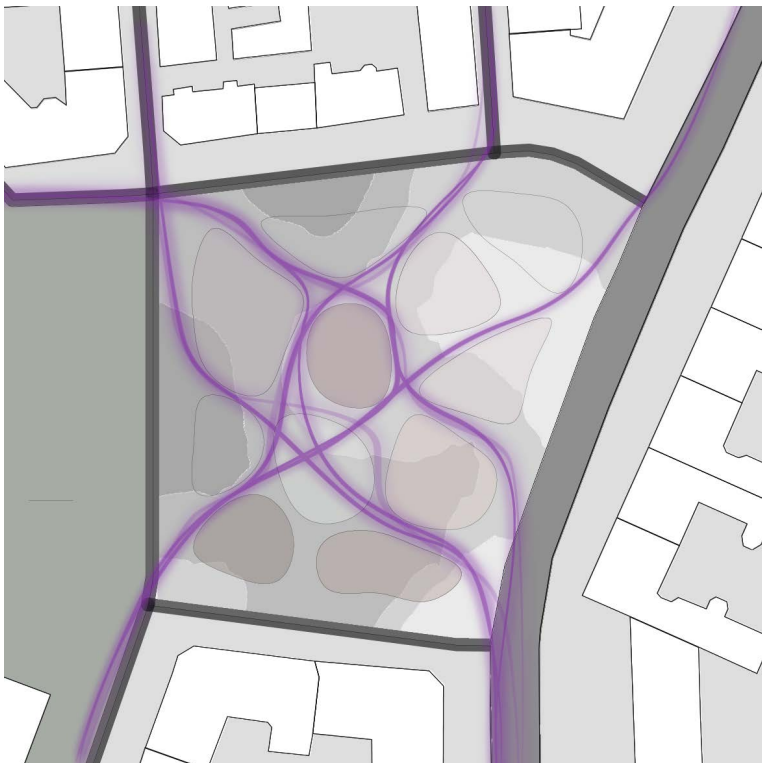
2. Use grasshopper to generate a new zoning plan in which all zones are nearly equal size, while mostly preserving the routes.



3, Transfer the edges of zones from straight lines to curves, in order to get more open space around crossings, give a less impression of direction.



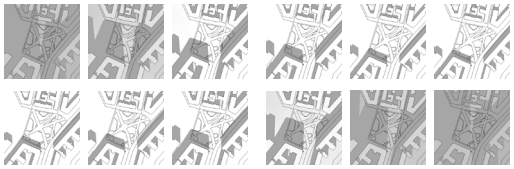
4, The zone that covers the largest amount of routes is setted as open courtyard. The zone at the northeast corner of the site is given back to the street.



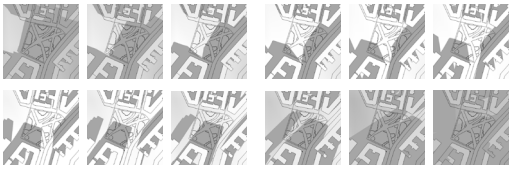
- Principle for generalizing the plan form is to maintain the origin routes of the site while creating more average areas that fit the public-private level of the site.

Light Condition

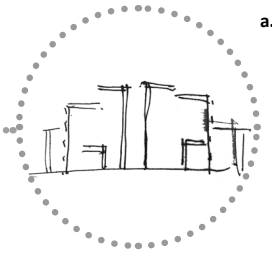
- Shadow darkness gradient from 15th of every month around a year



- Shadow darkness gradient from around daytime on 15th December

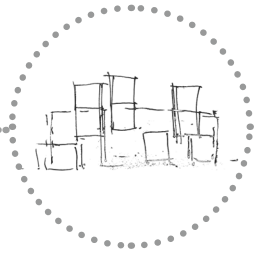


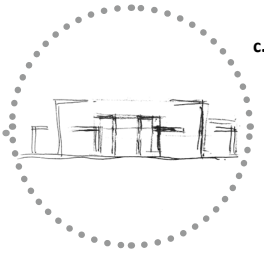
Plan Strategy



a. Area: 484m2
Medatition space
Book Type:
[100] Philosophy & Psychology
[200] Religion

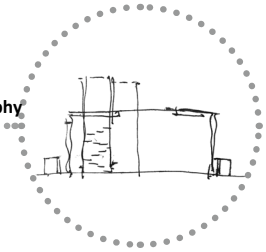
b. Area: 270m2
Group Room
Book Type:
[300] Social Science
[400] Language





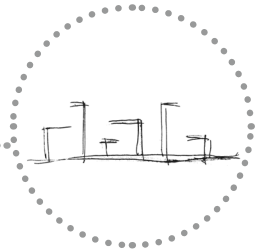
c. Area: 586m2
Gallary
Book Type:
[700] Art & Recreation

d. Area: 356m2
Theater
Book Type:
[800] Literature
[900] History & Geography



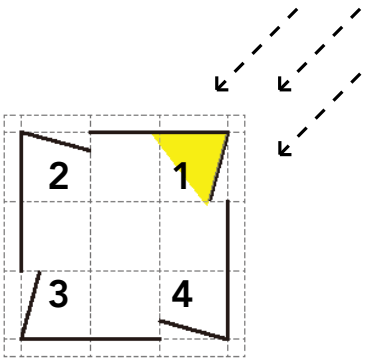
e. Area: 280m2
Media Center
Book Type:
[000] General Wook, Computer Science

f. Area: 247m2
Focusing study room
Book Type:
[500] Pure Science
[600] Technology

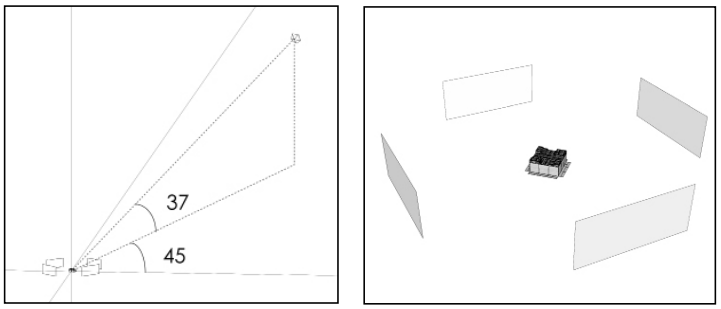


Chapter 3

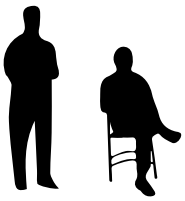
Experiment 1. Corner Unit



GRID



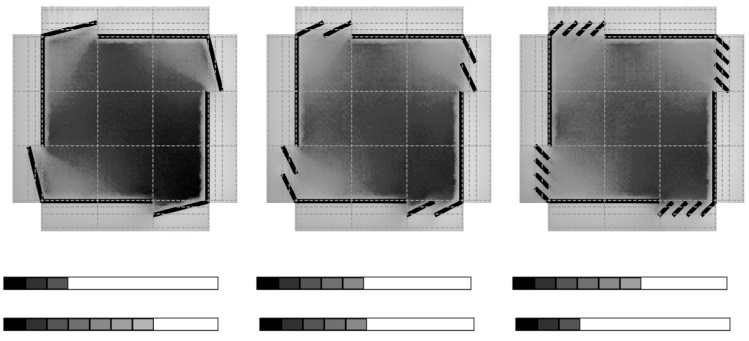
LIGHT



600/1200/2400

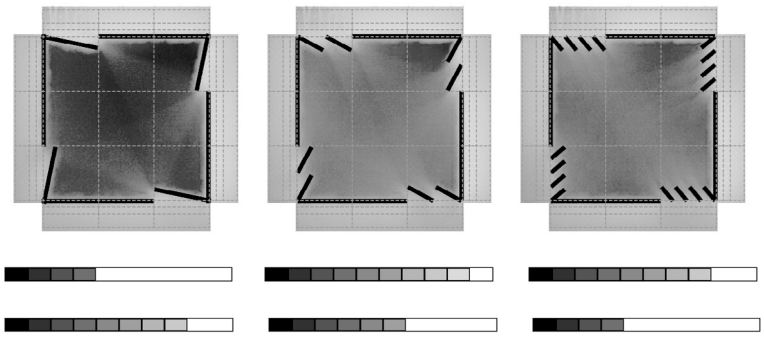
MODULE

Rotating | Wall



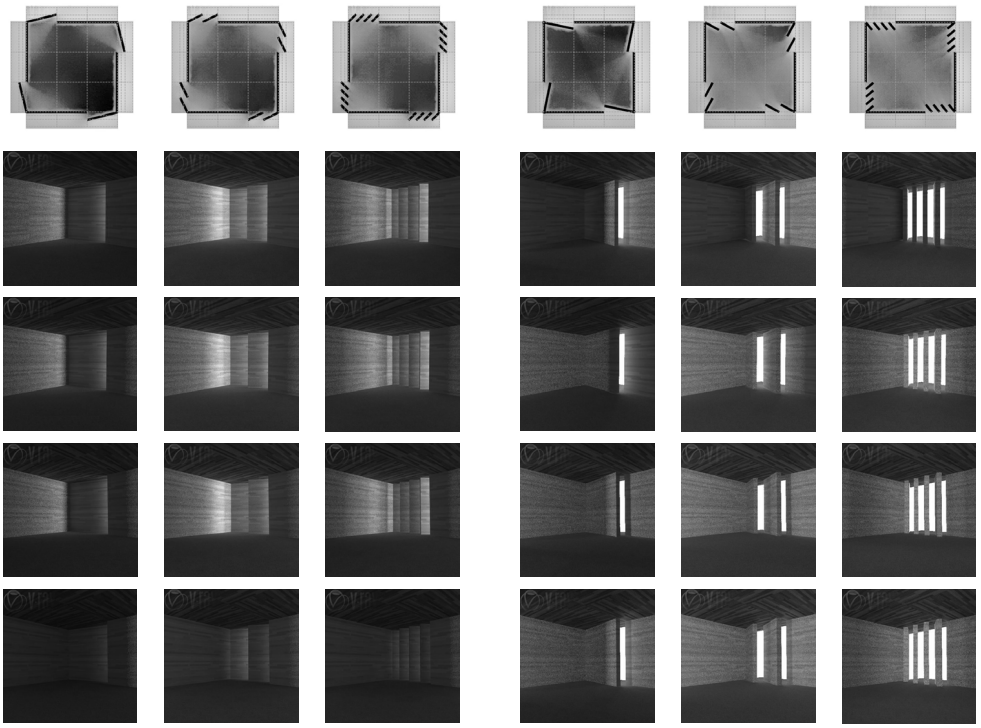
Rotating Outside:
Smaller divided>>Brighter/Blurring edge

- The firest corner provides the largest amount of light, so the forth corner is the brightest
- The inside area of the first corner is the darkest

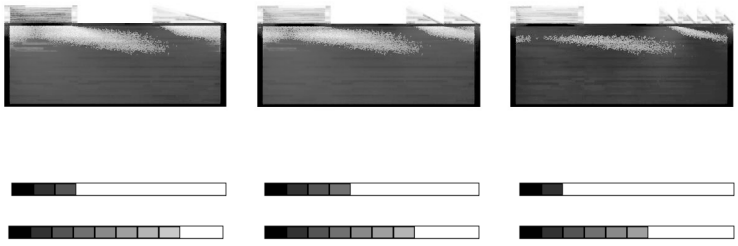


Rotating Inside:
Smaller divided>>Brighter/Blurring edge

- The firest corner provides the largest amount of light, so the first corner is the brightest
- The inside area of the forth corner is the darkest



Rotating | Ceiling



Rotating Outside:
Smaller divided>>Brighter/Blurring edge

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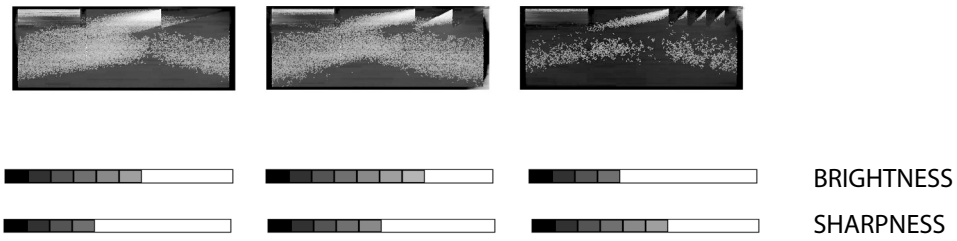

Rotating Inside:
Smaller divided>>Brighter/Blurring edge

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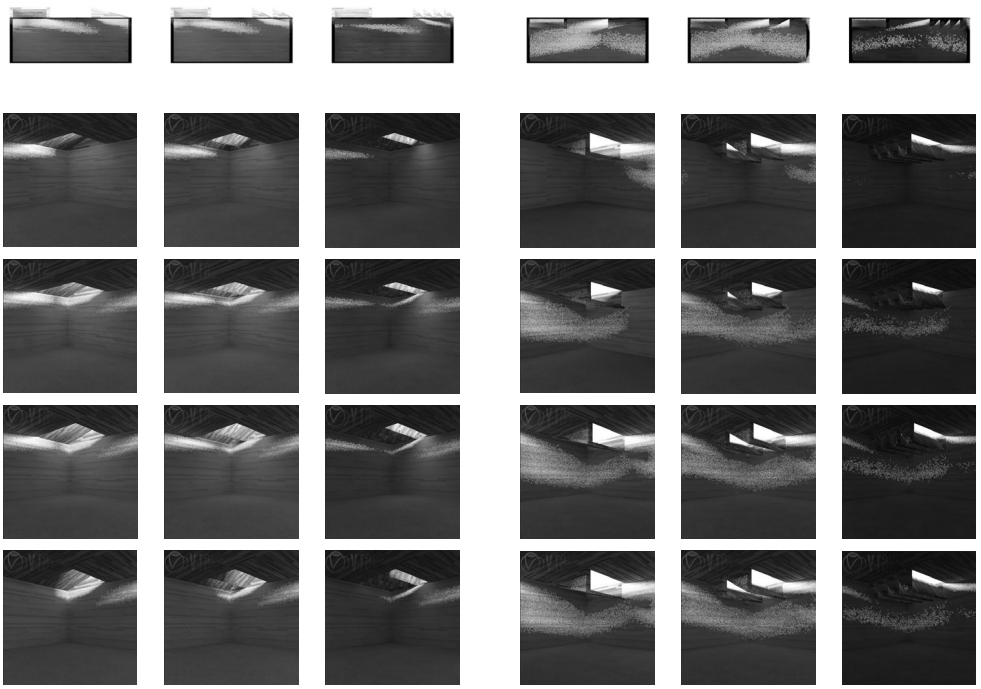
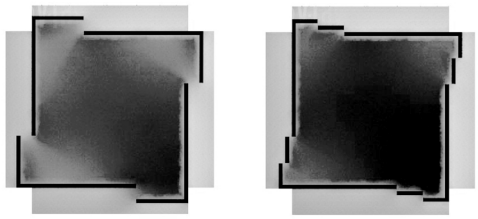
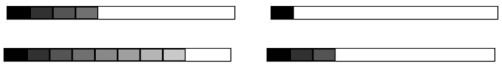


Panning | Wall



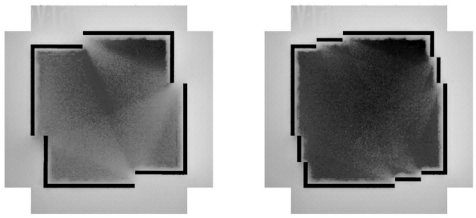


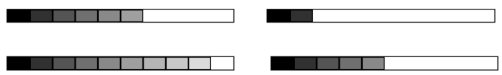
BRIGHTNESS

SHARPNESS

Panning Outside
Smaller divided>>Darker/Blurring edge

- The firest corner provides the largest amount of light, so the forth corner is the brightest
- The inside area of the first corner is the darkest



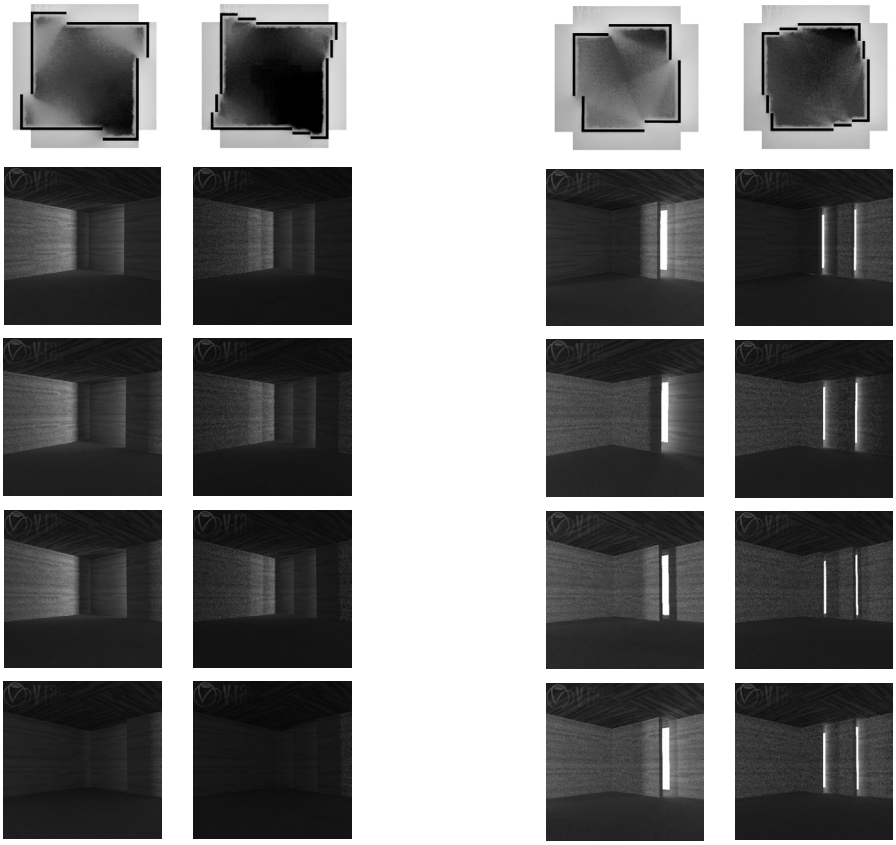


BRIGHTNESS

SHARPNESS

Panning Inside
Smaller divided>>Darker/Blurring edge

- The firest corner provides the largest amount of light, so the first corner is the brightest
- The inside area of the forth corner is the darkest



Panning | Ceiling




BRIGHTNESS



SHARPNESS

Panning Outside
Smaller divided>>Darker/Blurring edge

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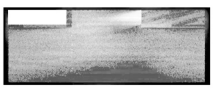




BRIGHTNESS



SHARPNESS

Panning Inside
Smaller divided>>Brighter/Blurring edge

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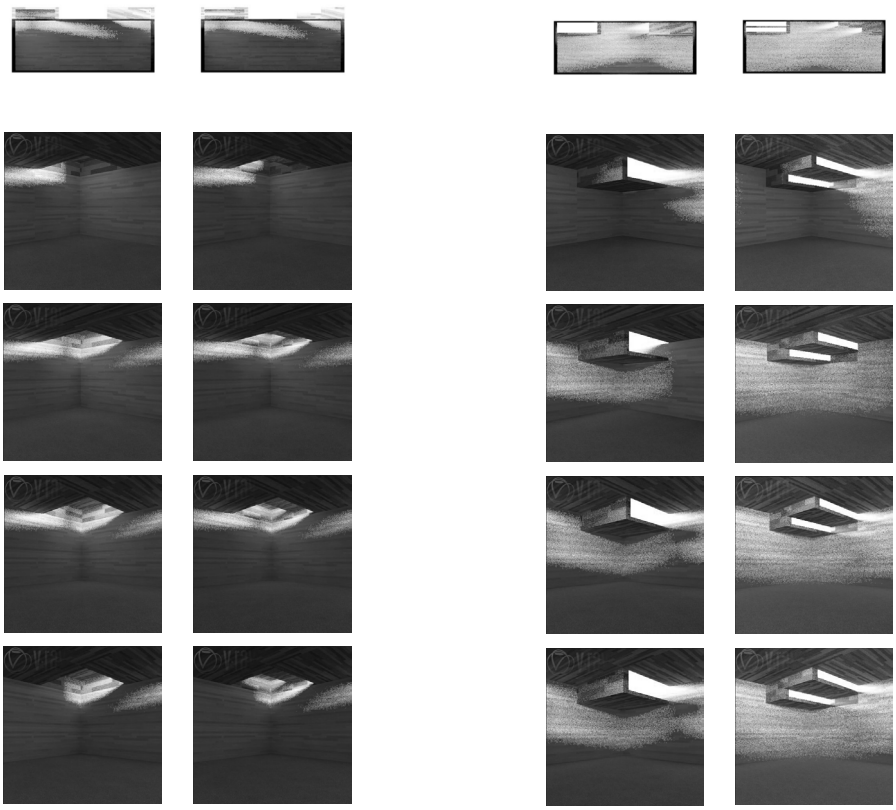
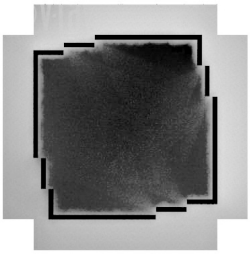
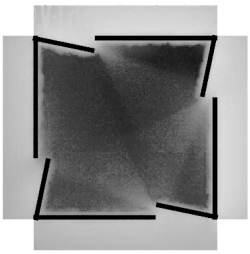
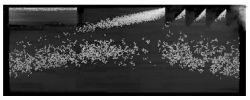
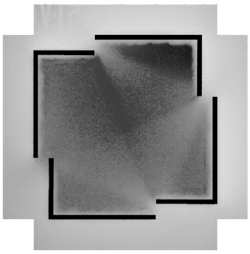
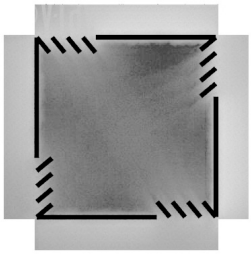
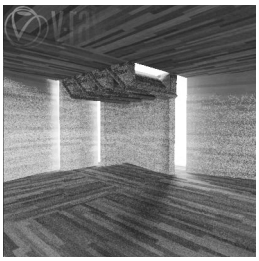
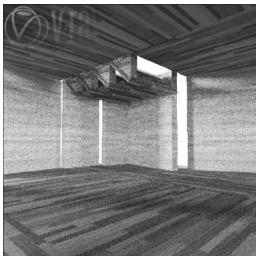
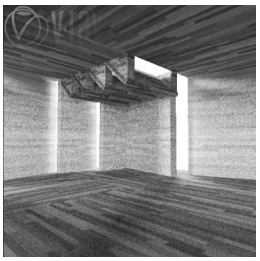
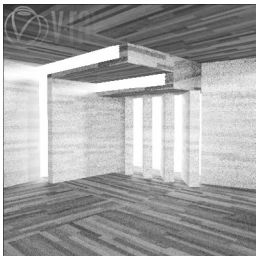
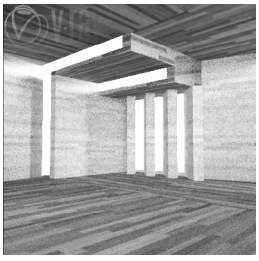



- With all the result above, we could choose the combination that is needed

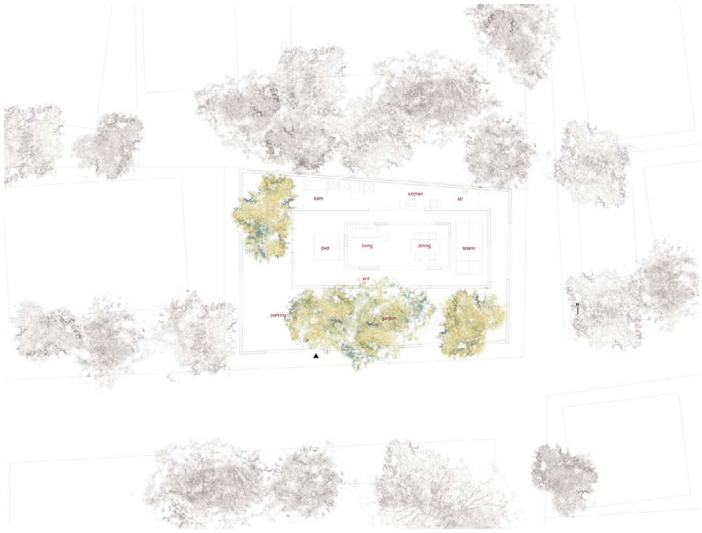





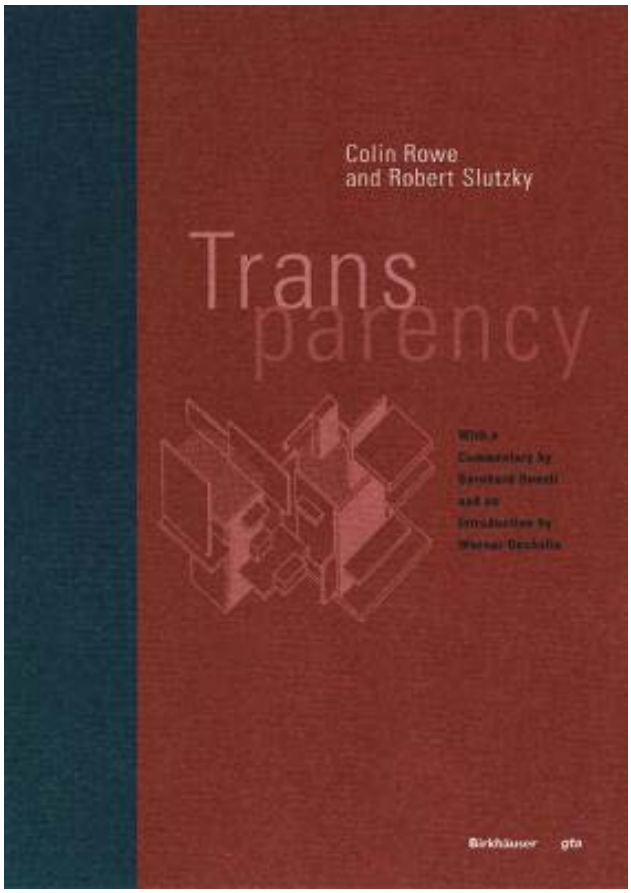

Chapter 4

Experiment 2. Layer of Space

Reference



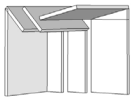
House N, Japan
Sou Fujimoto, 2008



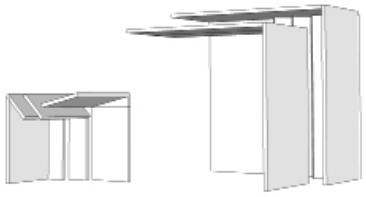
- Transparency means a simultaneous perception of different locations.
- interpenetrate without optical destruction of each other
- Indacating, hidden, interpenetrating space

Test of shell system

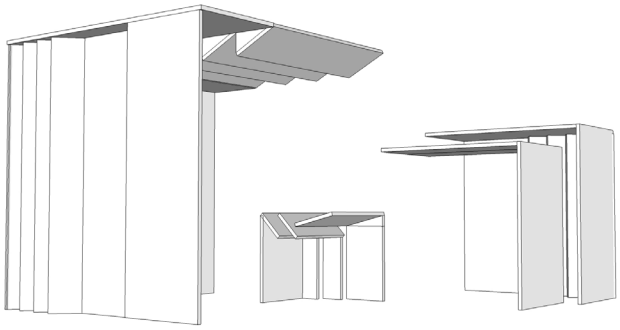
- SCALE I, 2400mm
- Set on each line facing defferent directions

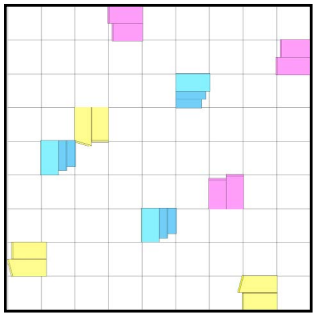


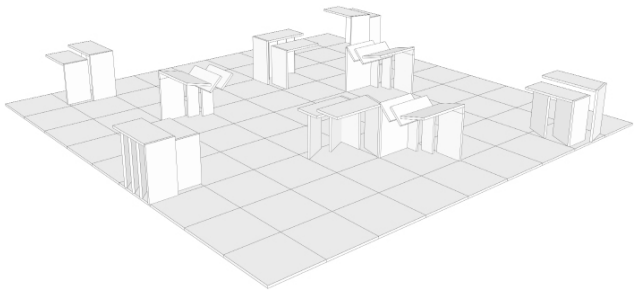
- SCALE II, 4800mm
- Set on every two lines facing defferent directions
- Overlapping and maximun spatial diversity

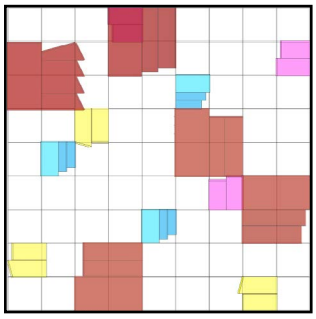


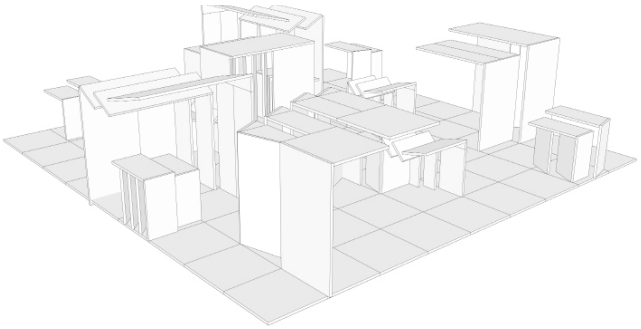
- SCALE I, 7200mm
- Set on every three lines facing defferent directions
- Overlapping and maximun spatial diversity

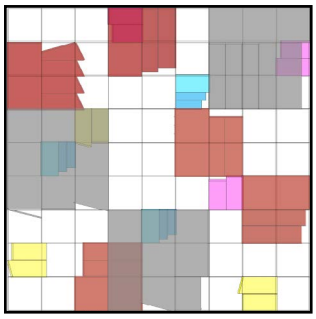


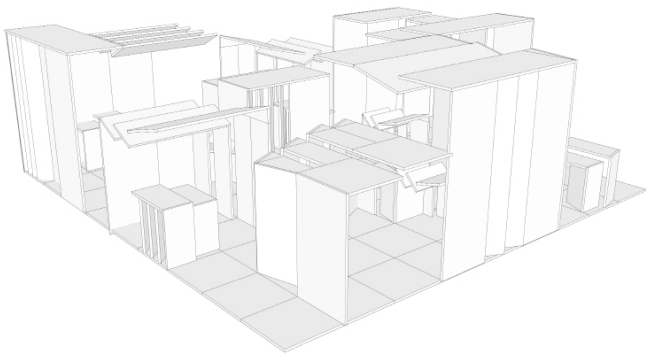


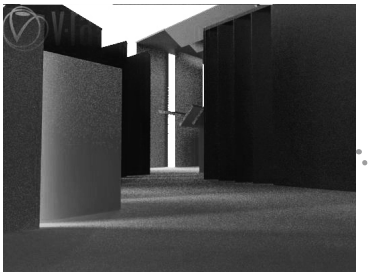


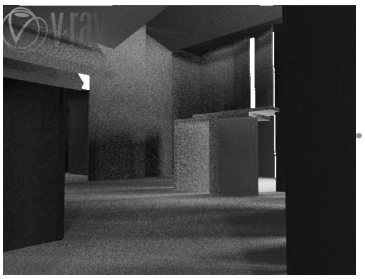


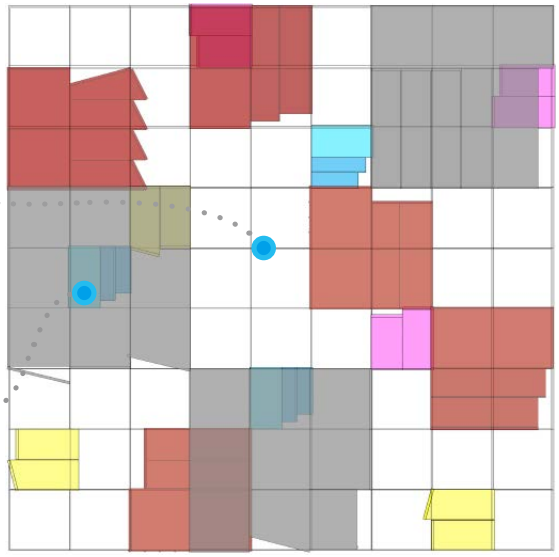






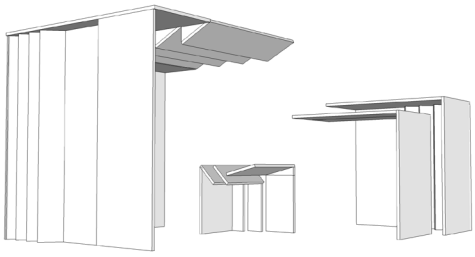


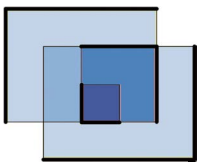




- Pathway
- Light from inside to outside enables the interaction

- Public area setted around private area
- The shadow from layers falls on the ground, arising conciousity about the layers





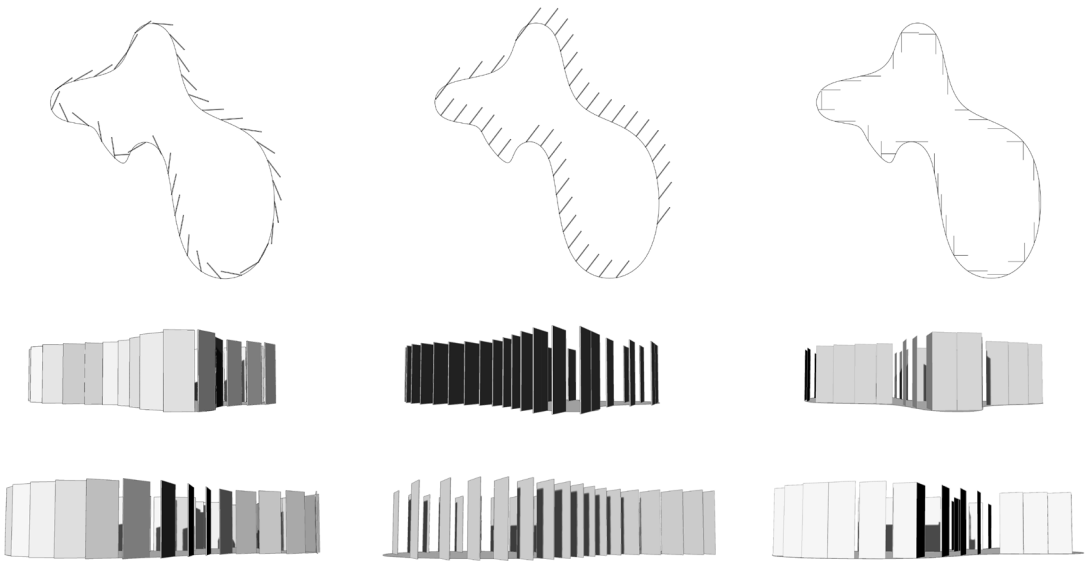
- The privacy level
- The more shells overlap, the more the privacy level will be

Chapter 5

Experiment 3. Zone & Boundary

Boundary

Wall structure deal with the curvilinear boundary



· Type 1

The fans rotate along the direction of curve, intensity of light controls the range of angles.

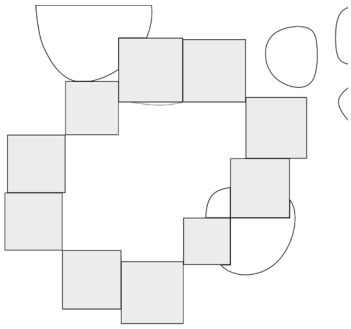
· Type 2

The fans pan along the shape of curve, direction of light controls the direction of fans.

· Type 3

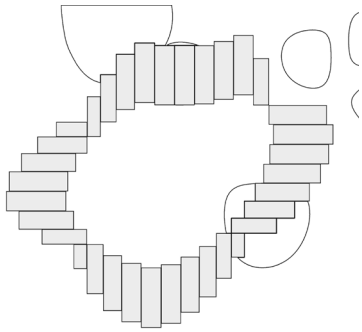
The fans are perpendicular to each other, setted along the curve, intensity and direction of light control the direction of fans.

Different divided unit of roof and wall structure



· Type 1

Divided into larger fragments, the perception of the space will be private corners.

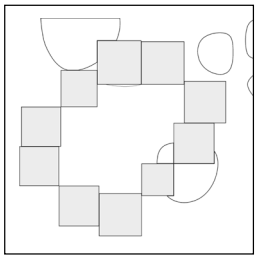


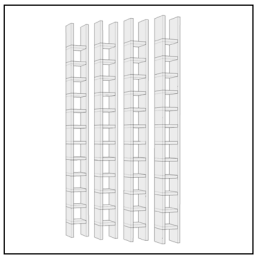
· Type 2

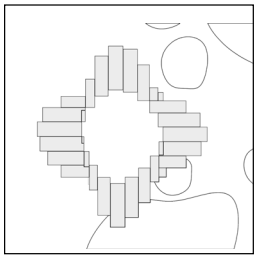
Divided into smaller fragments, the perception of hte space will be the larger public zone.

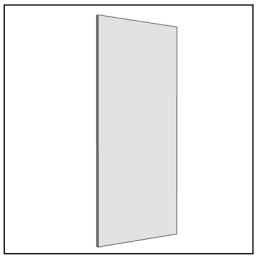
Organization 1

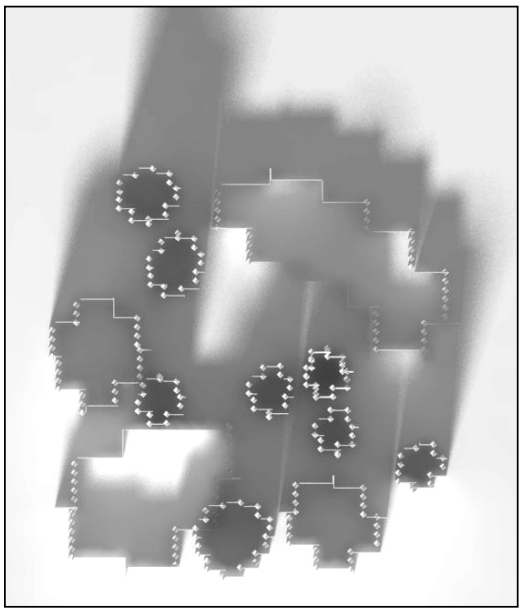
- Larger area divided into larger pieces
- Smaller area divided more fregmentally
- Fans turns to bookshelves





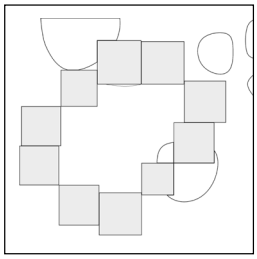


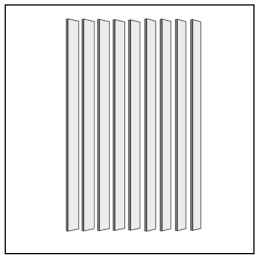


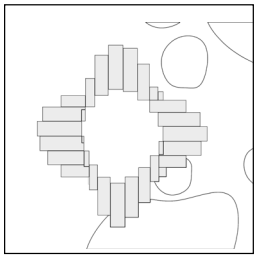


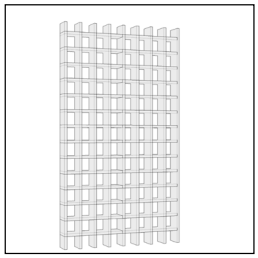
Organization 2

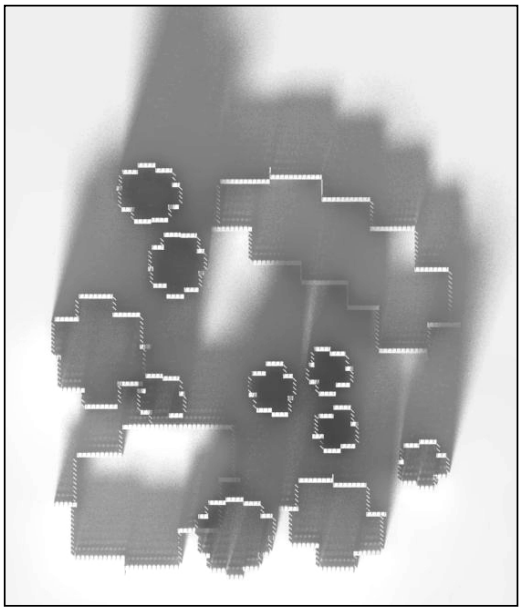
- Larger area divided into larger pieces
- Smaller area divided more fregmentally
- Walls turns to bookshelves

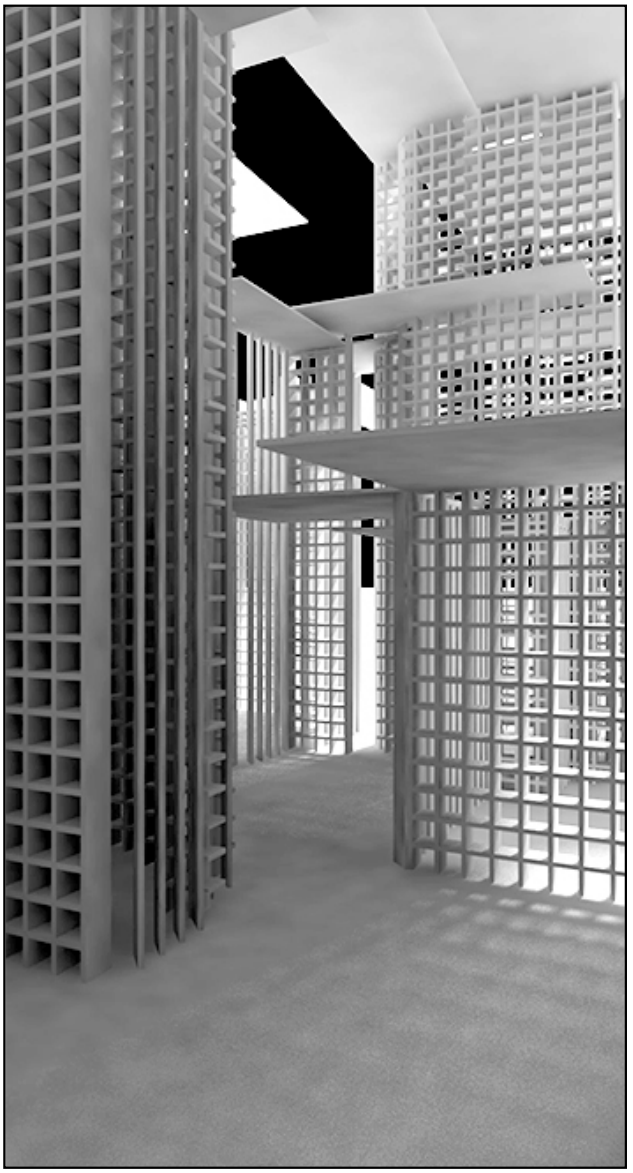






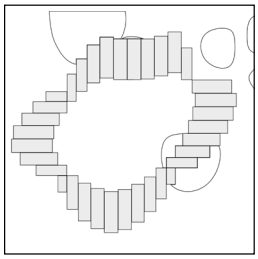


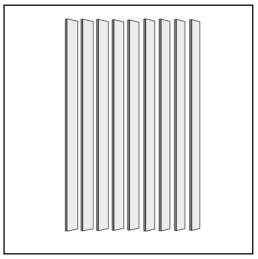


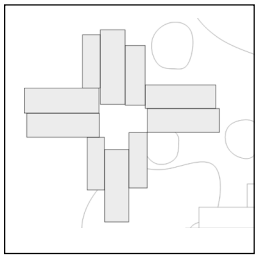


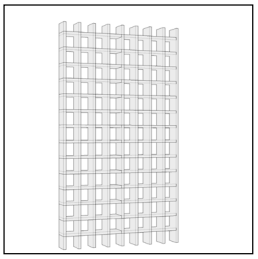
Organization 3

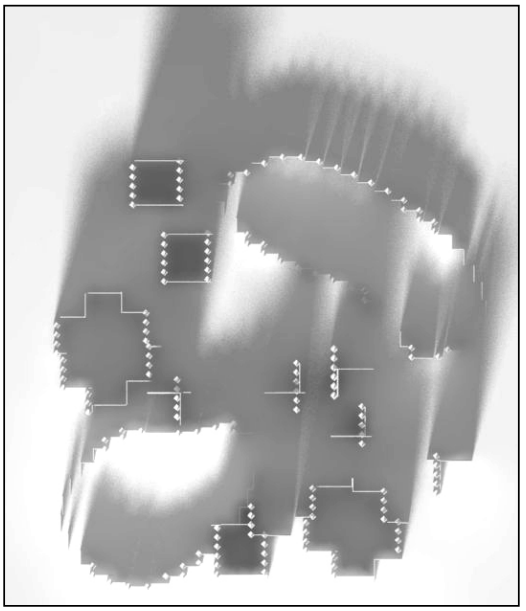
- Larger area divided more fregmentally
- Smaller area divided into larger pieces
- Walls turns to bookshelves





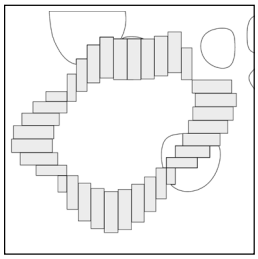


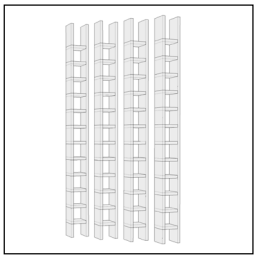


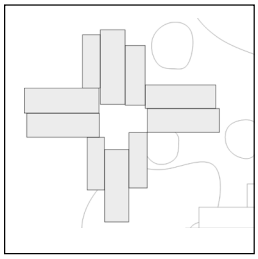


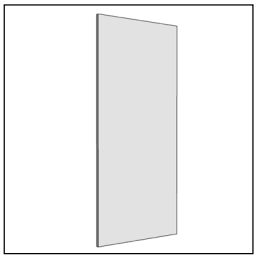
Organization 4

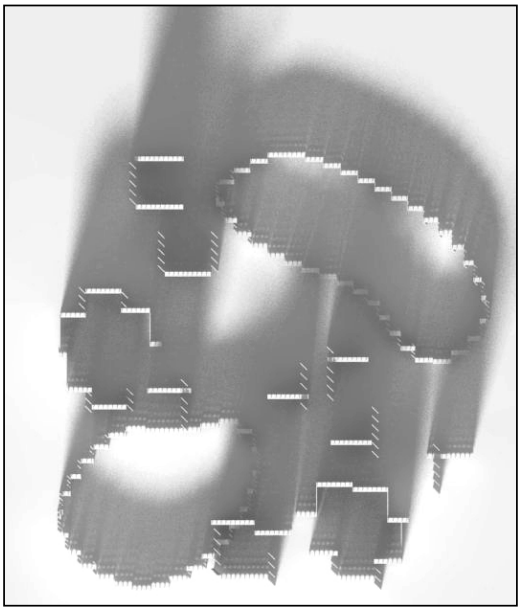
- Larger area divided into larger pieces
- Smaller area divided more fregmentally
- Fans turns to bookshelves

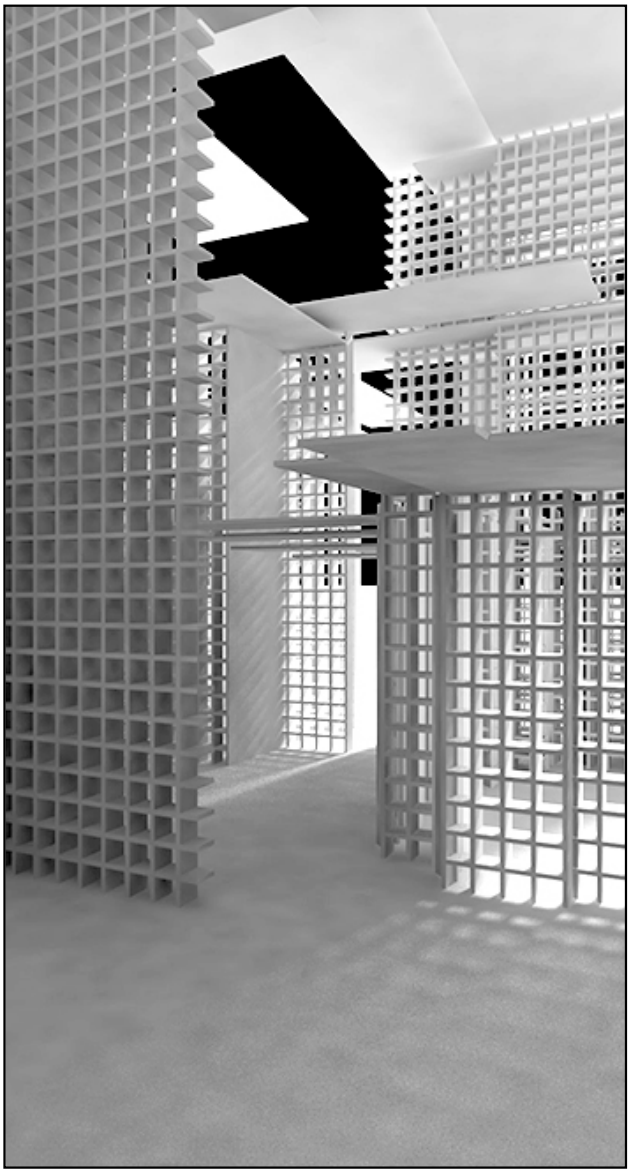


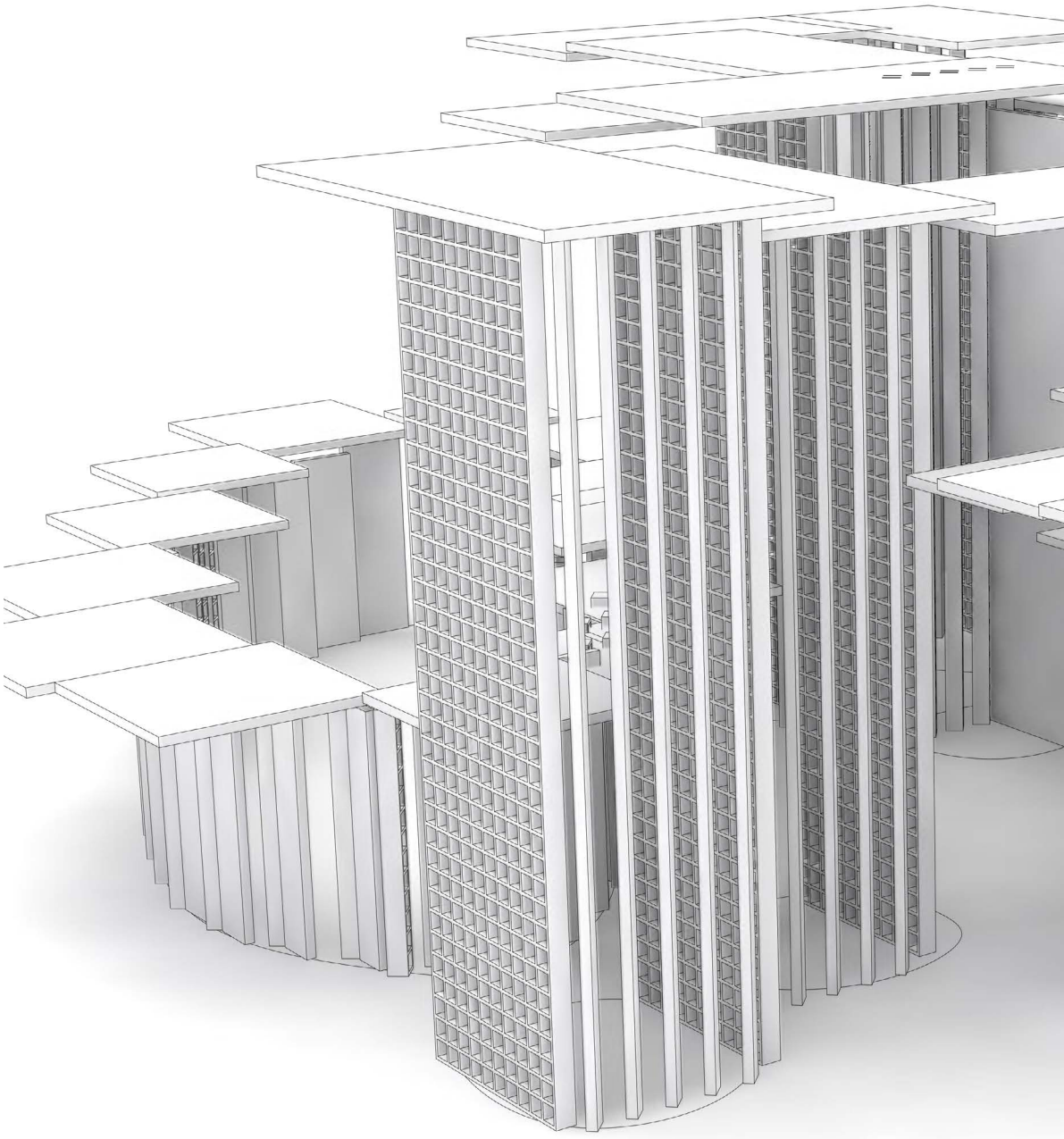


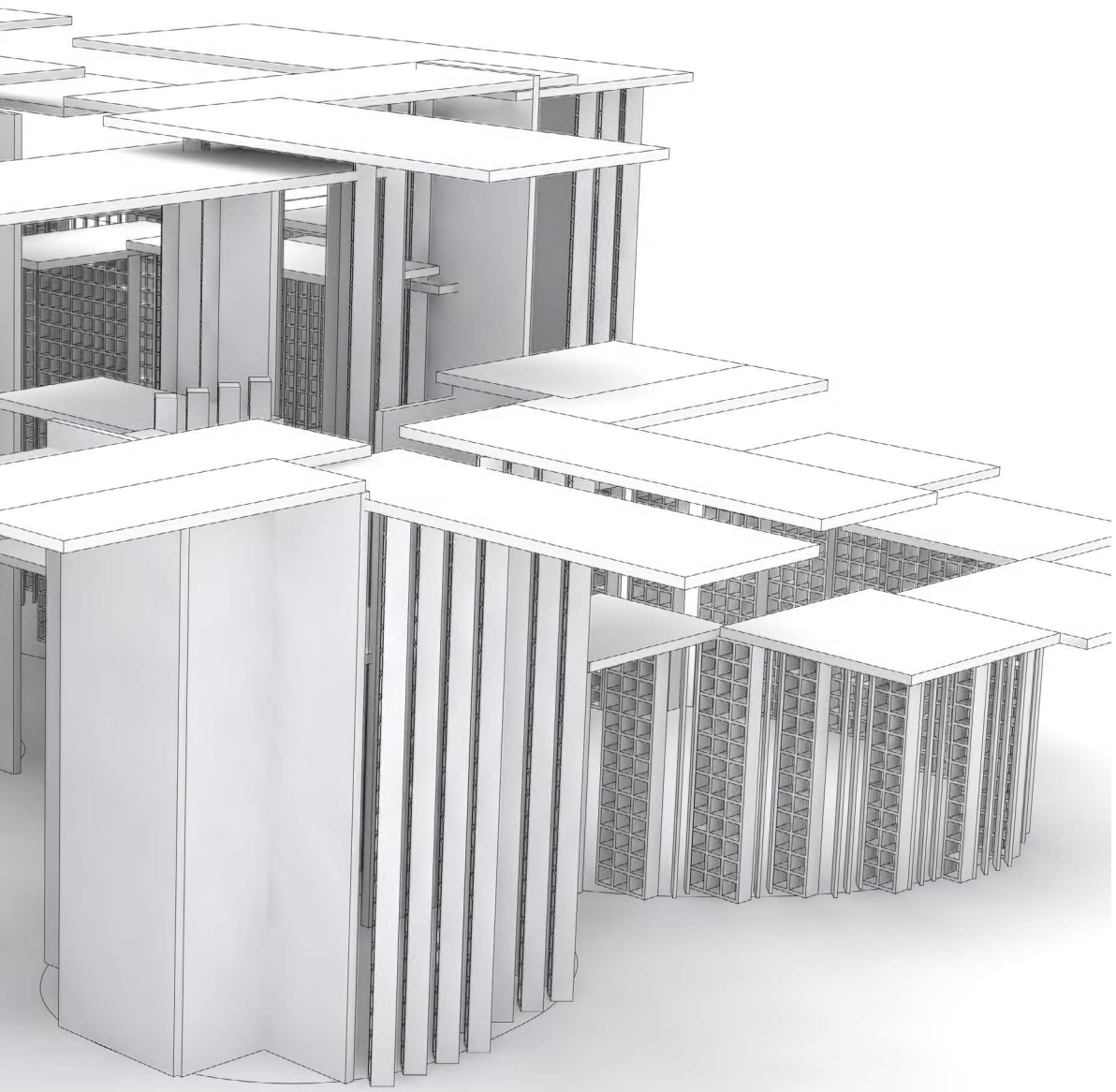


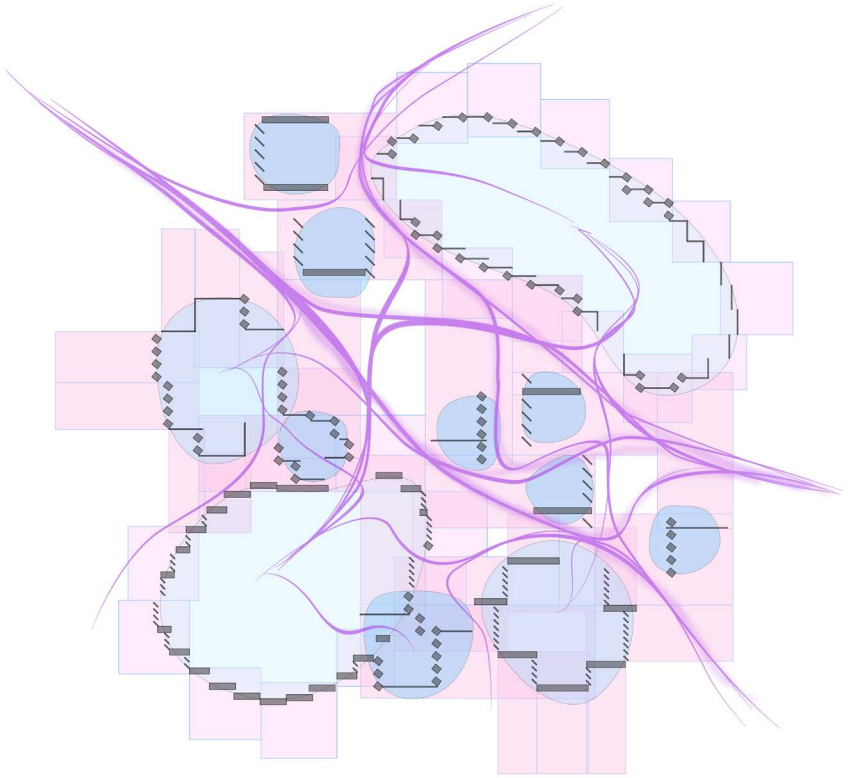


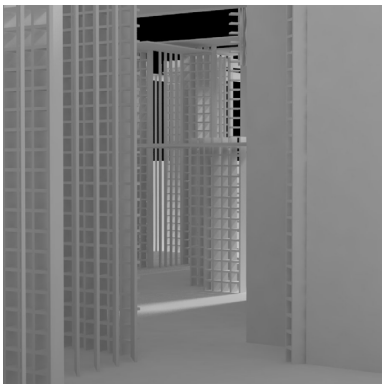


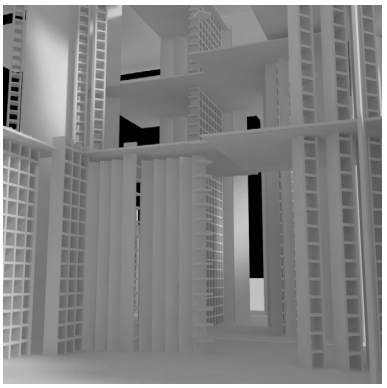


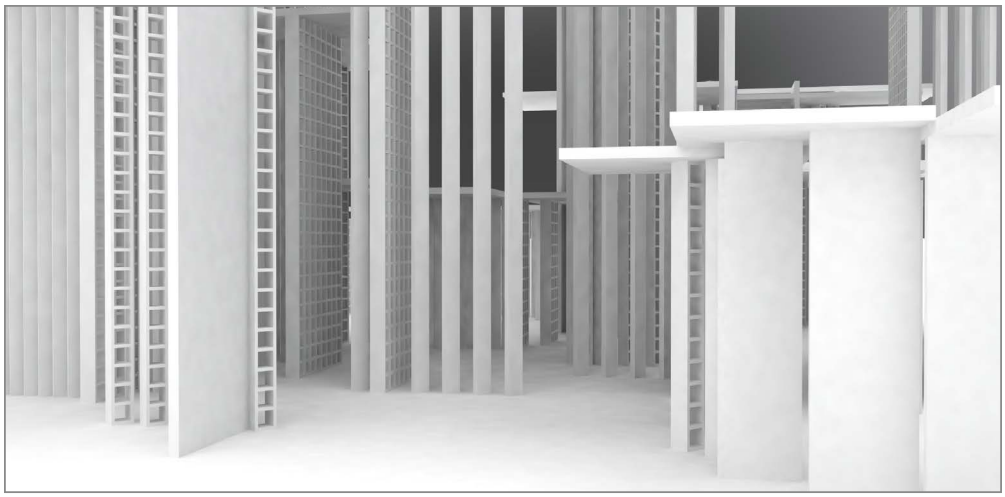


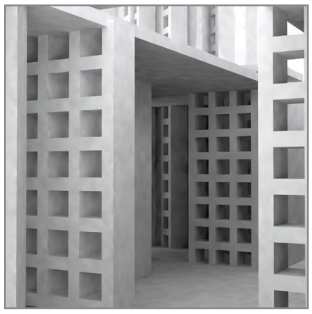






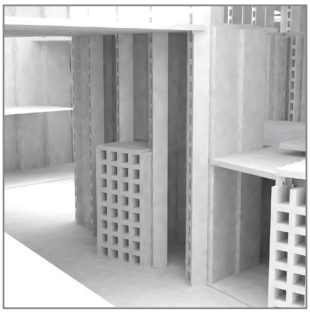






View of first level

limited view, filled by book-shelf structure, guided by the direction of structure



View of second level

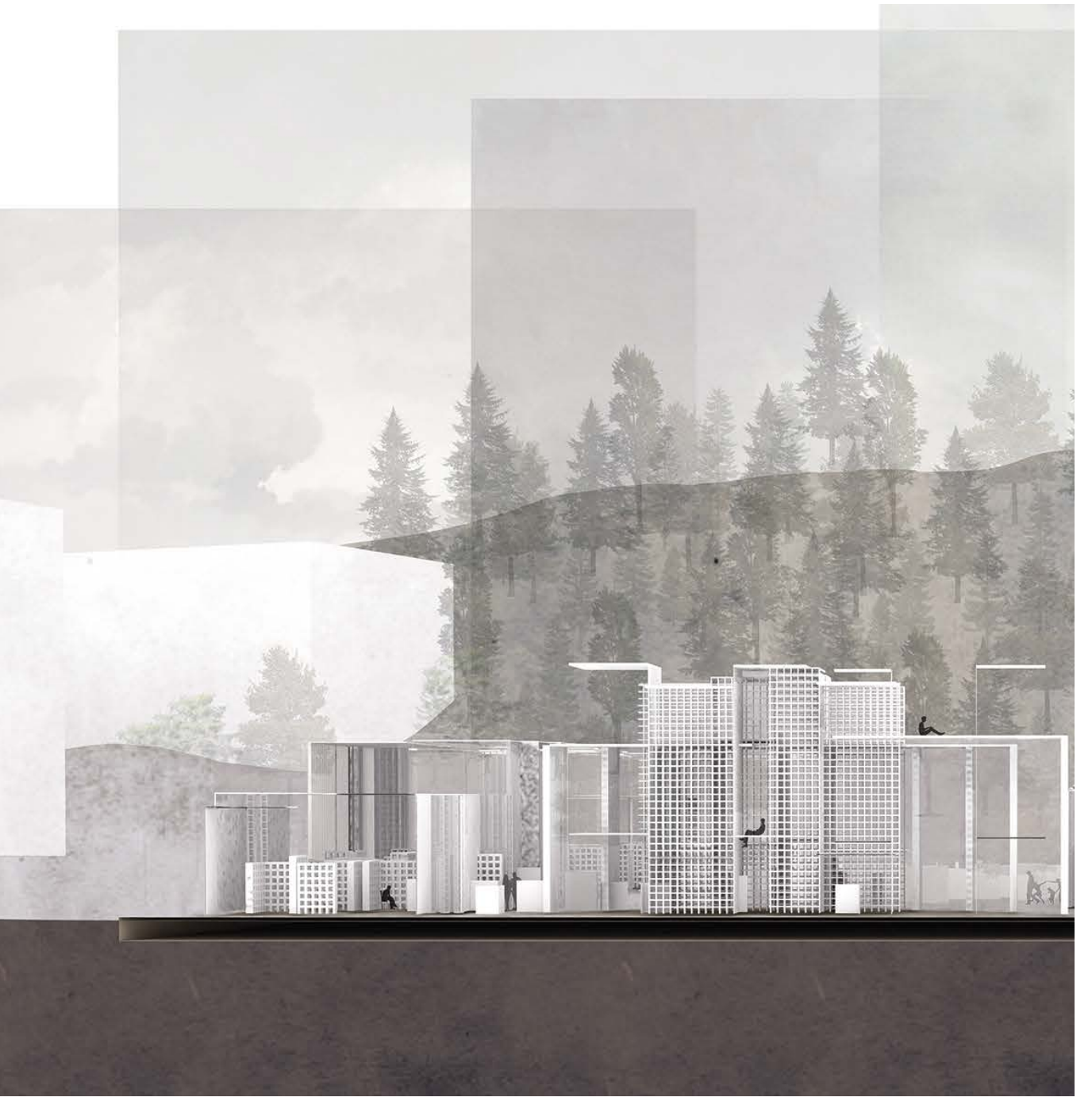
recognize the contract of structure, more openess

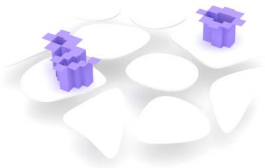
View of third level

recognize the plan form, guided by route

Chapter 6

Design Result



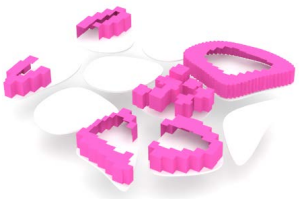


Forth Layer

- Creating the tranquil light

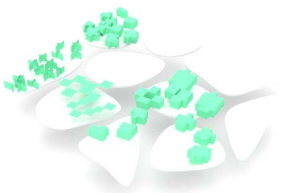
Third Layer

- Defining the boundary of zone
- Setting another layer



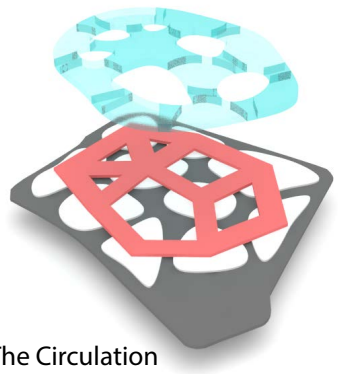
Second Layer

- Defining the boundary of zone

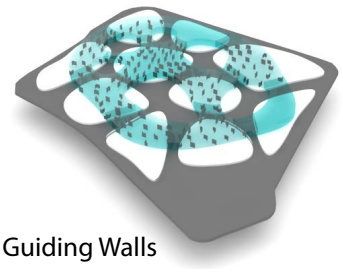


First Layer

- Creating the private space

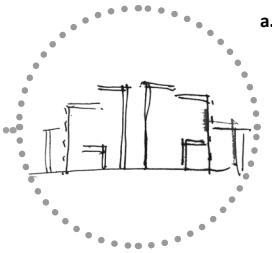


The Circulation



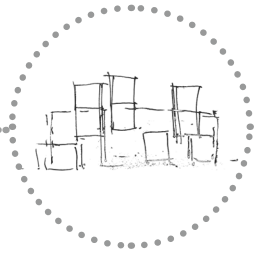
The Guiding Walls

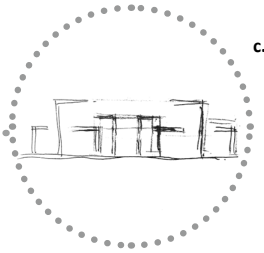

a.
b.
c.
c.
d.
f.
e.



a. Area: 484m2
Medatition space
Book Type:
[100] Philosophy & Psychology
[200] Religion

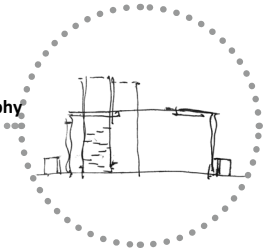
b. Area: 270m2
Group Room
Book Type:
[300] Social Science
[400] Language





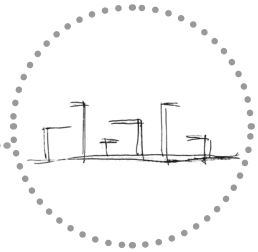
c. Area: 586m2
Gallary
Book Type:
[700] Art & Recreation

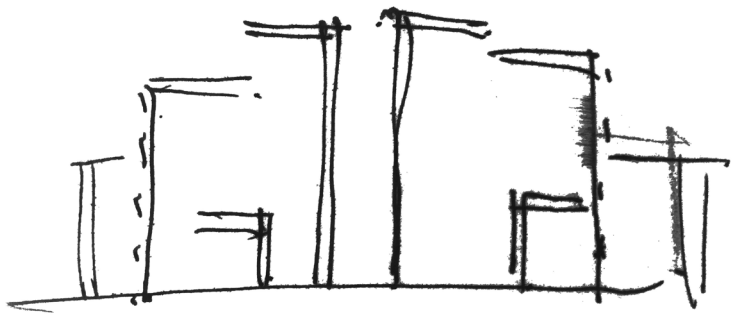
d. Area: 356m2
Theater
Book Type:
[800] Literature
[900] History & Geography

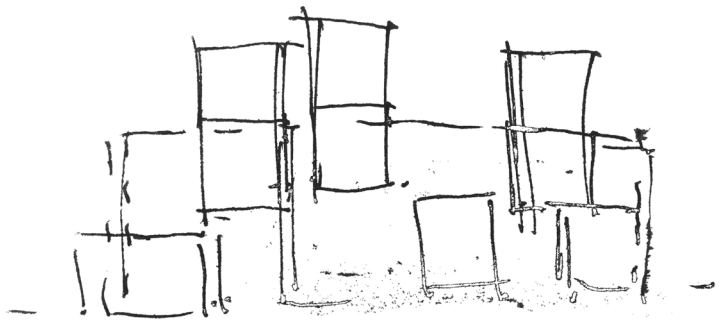


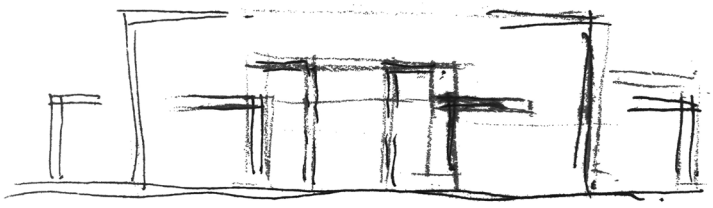
e. Area: 280m2
Media Center
Book Type:
[000] General Wook, Computer Science

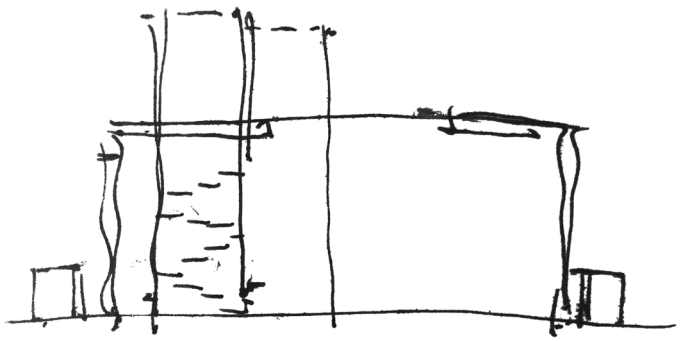
f. Area: 247m2
Focusing study room
Book Type:
[500] Pure Science
[600] Technology

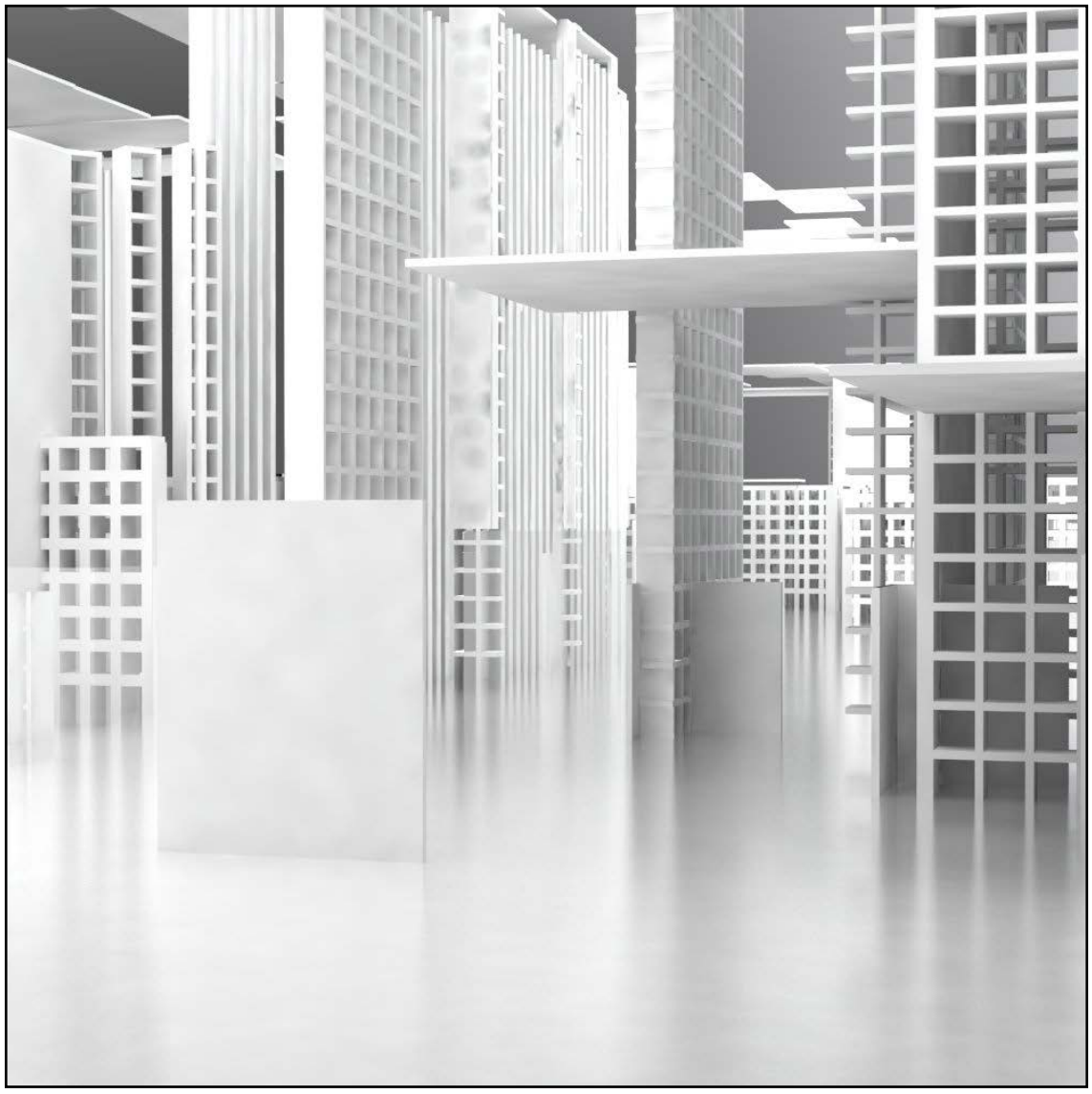


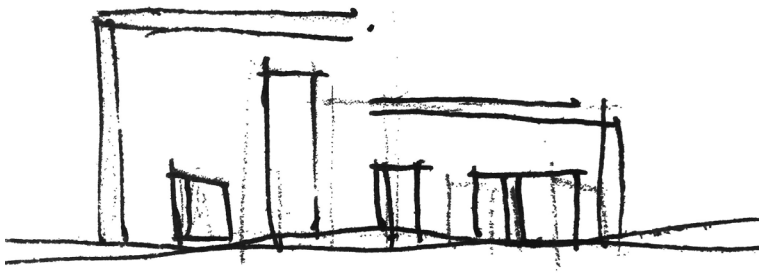


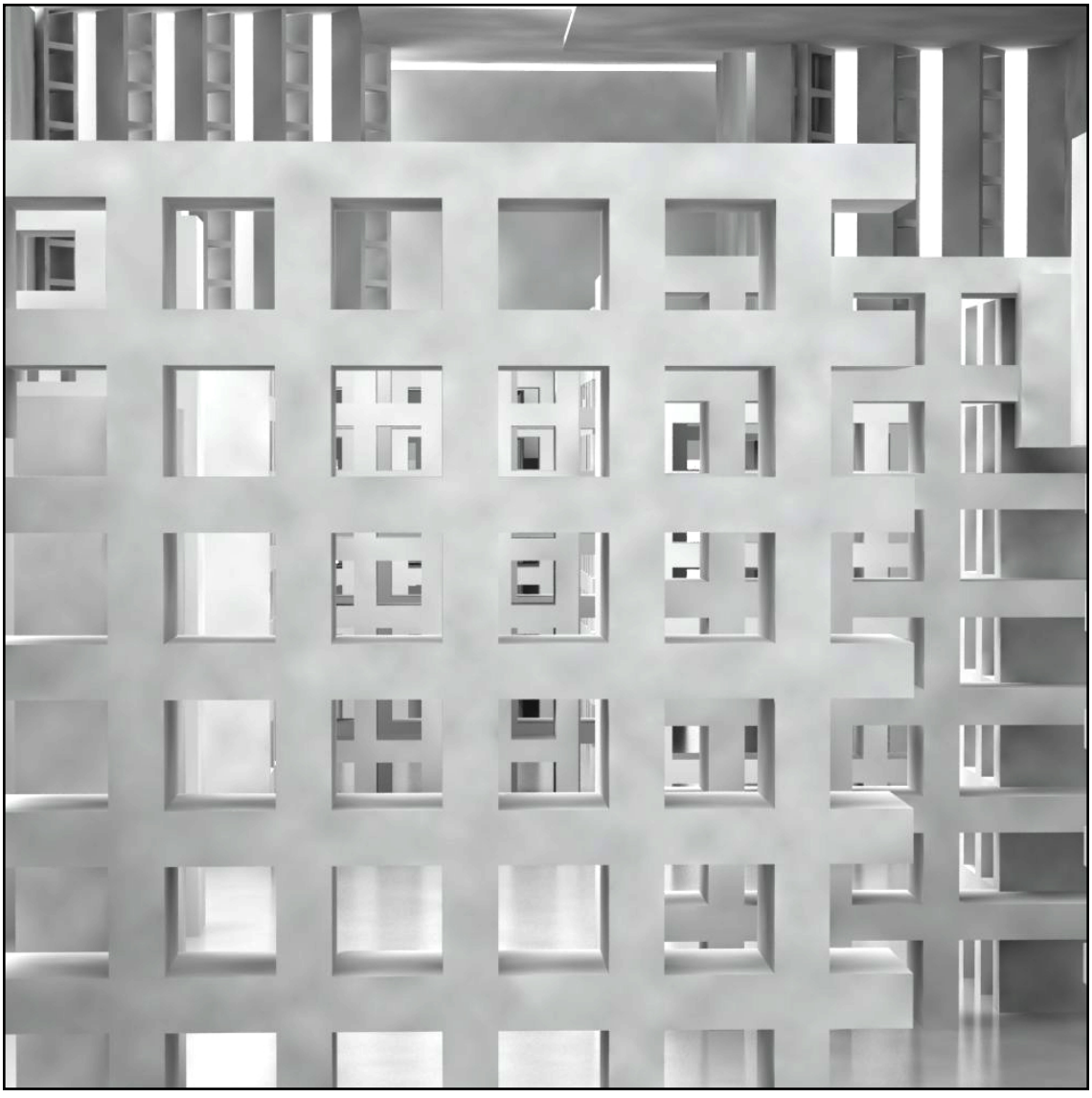


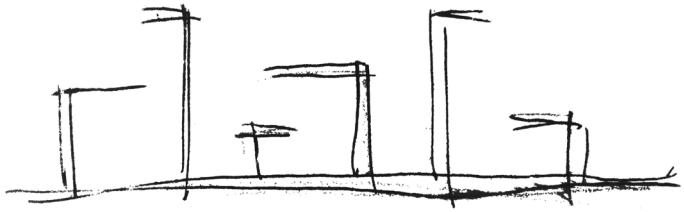


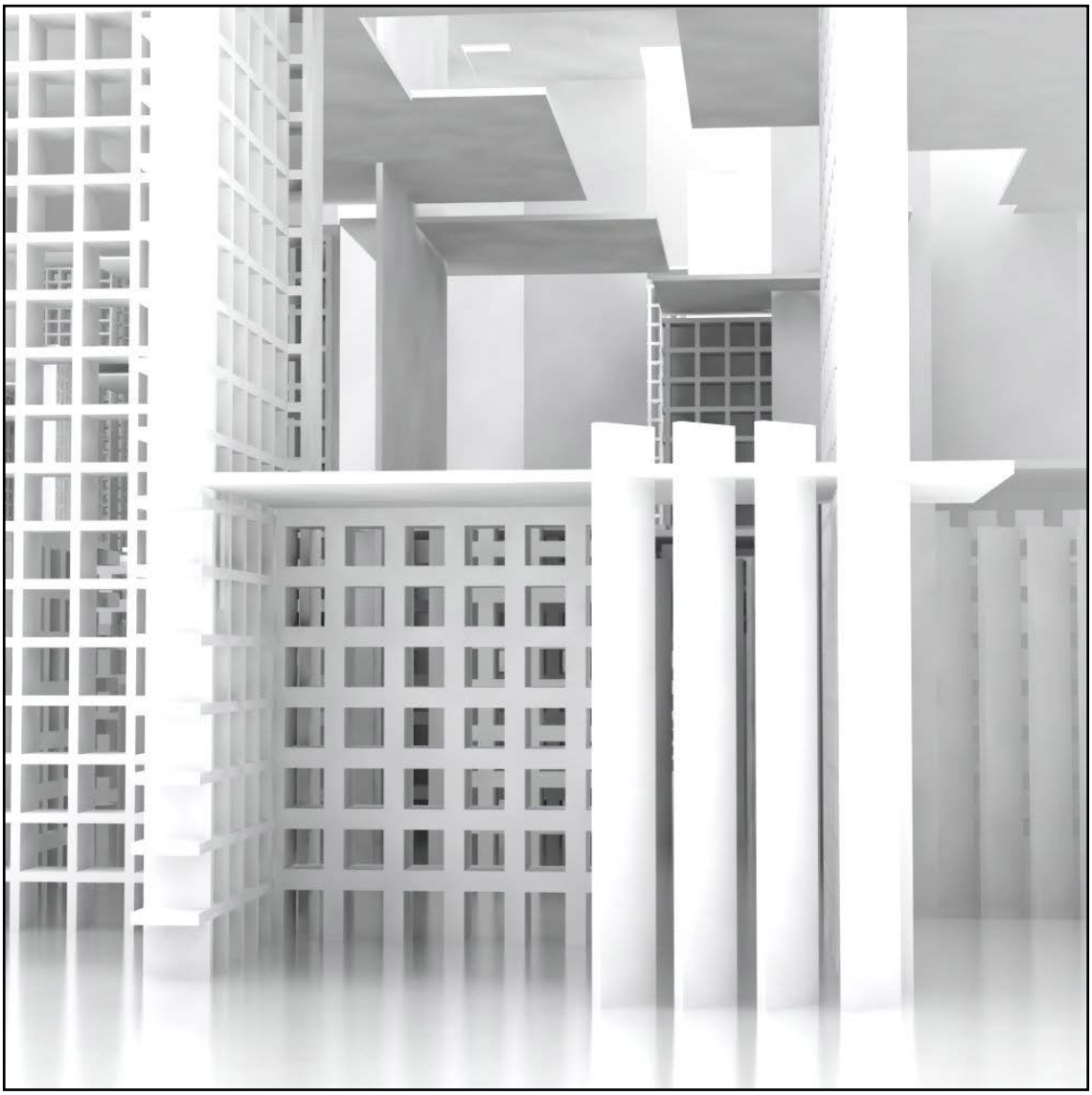












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