PORTFOLIO

HANNING LIU
UNIVERSITY OF PENNSYLVANIA
MSD-AAD

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EDUCATION

2018/08 - PRESENT
University of Pennsylvania, PA., United States of America
Weitzman School of Design
Major: Architecture
Degree: Master of Science in Design (MSD), Advanced Architecture Design

2013/06 - 2018/06
Jiangsu Normal University, Jiangsu Prov., China
School of Geography,Geomatics and Planning
Major: Architecture (GPA: 3.6/4.0) – 5years
Degree: Bachelor of Engineering

University of Pennsylvania - Teaching Assistant | https://www.design.upenn.edu/
Responsibility: Summer Workshop Teaching Assistant, MSD-AAD Design Studio Graduate Teaching Assistant

WORK EXPERIENCE

2019/06 - 2019/07
2018/06 - 2018/07
2017/07 - 2018/01
MUDA Architects (Chengdu) - Internship | *http://www.mrda-studio.com/*
Projects: Altay Airport Design | Altay, China
Xinglong Lake Bookstore Design | Chengdu, China
Responsibility: Concept Design, Digital & Physical Modeling, Rendering, Diagraming, Prepare Presentation

2016/07 - 2016/09
UA Architectural Design (Shanghai) - Internship | *http://www.uachina.com.cn/*
Projects: Hongqiao Exhibition Center Design| Shanghai, China
Responsibility: Make Construction drawings, Prepare presentation file

2015/07 - 2015/09
HSA Architects (Nanjing) - Internship | *http://www.huasen.com.cn/*
Projects: Nanjing Art Institute Renovation | Nanjing, China
Responsibility: Digital & Physical Modeling, Diagraming

AWARDS & SCHOLARSHIP & COMPETITION

First Class Scholarship | Jiangsu Normal University
Second Class Scholarship | Jiangsu Normal University
Xinglong Lake Bookstore Architectural Creative Design Competition - Teamwork | *FIRST PRIZE*
2019 Architizer A + Awards Popular Choice Winner | Commercial - Unbuilt Commercial

SKILLS

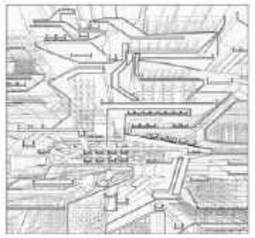
Adobe Suit | Photoshop, Illustrator, Indesign, Lightroom
2D & 3D | Maya, Cinema 4D, Rhino, Grasshopper, Revit, AutoCAD, Sketchup
Rendering | Vray, Keyshot, Lumion
Environmental | Ladybug, DIVA

LANGUAGE

Mandarin Chinese
English

CONTENTS

PROFESSIONAL WORKS



01

MULTI-LAYERED MACHINE

Terminal for Cargo & Passenger in JFK

Architecture Design

Teamwork Members: Hanning Liu, Yingxin Zhang, Xiaoqing Guo

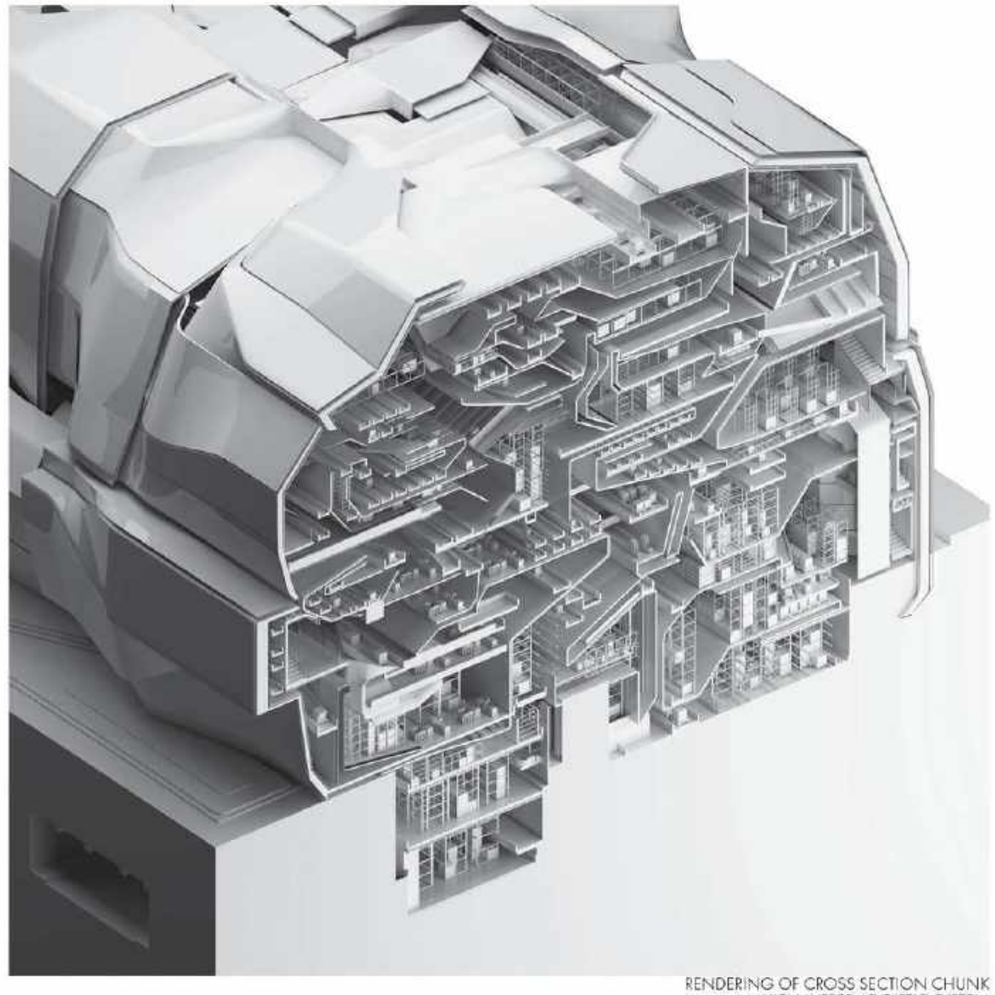
Fall 2018

New York City, New York, United States

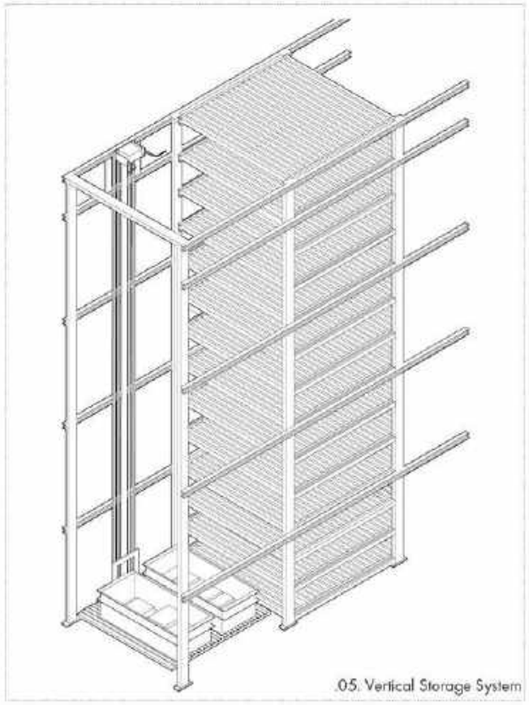
MULTI-DIMENTIONAL MINIMAL SURFACE

With the rapid advancement of urbanization in Asia like India and China, especially some big cities in east Asia, such as Shanghai, Shenzhen. plenty of capiutal flow into Asia. Even if there is New York City would still remain its dominated states among the globl economical system, the competition from the other side of the ocean is becoming increasingly apparent.

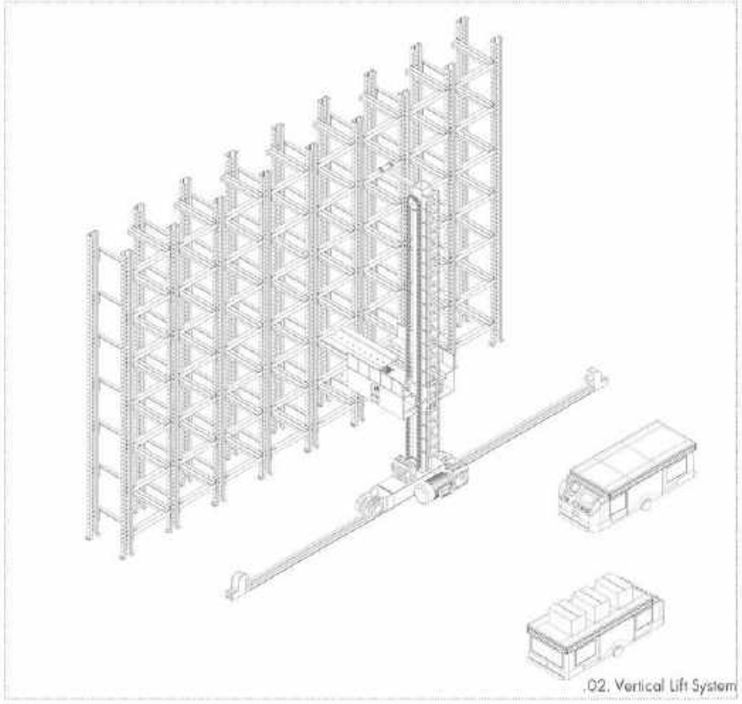
New York's JFK Airport is one of the busiest international airports in the world, with tens of thousands of passengers coming to the United States every day or to other countries, and with the rise of e-commerce giants such as Amazon, for air cargo transportation. Demand is increasing rapidly, while the profit of transporting goods in the same space is much higher than that of transporting passengers, so the location of passengers and goods will be interchanged in the future.



RENDERING OF CROSS SECTION CHUNK
MULTI-LAYERED LOGISTIC SYSTEM



.05. Vertical Storage System

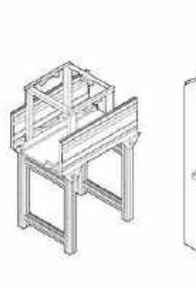


.02. Vertical Lift System

.03. Sorting System

.04. In-between Storage System

.01. Conveyor System

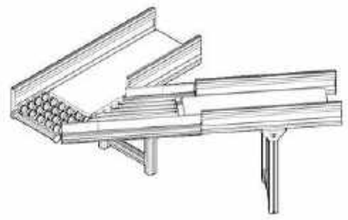


LABEL SCANNING

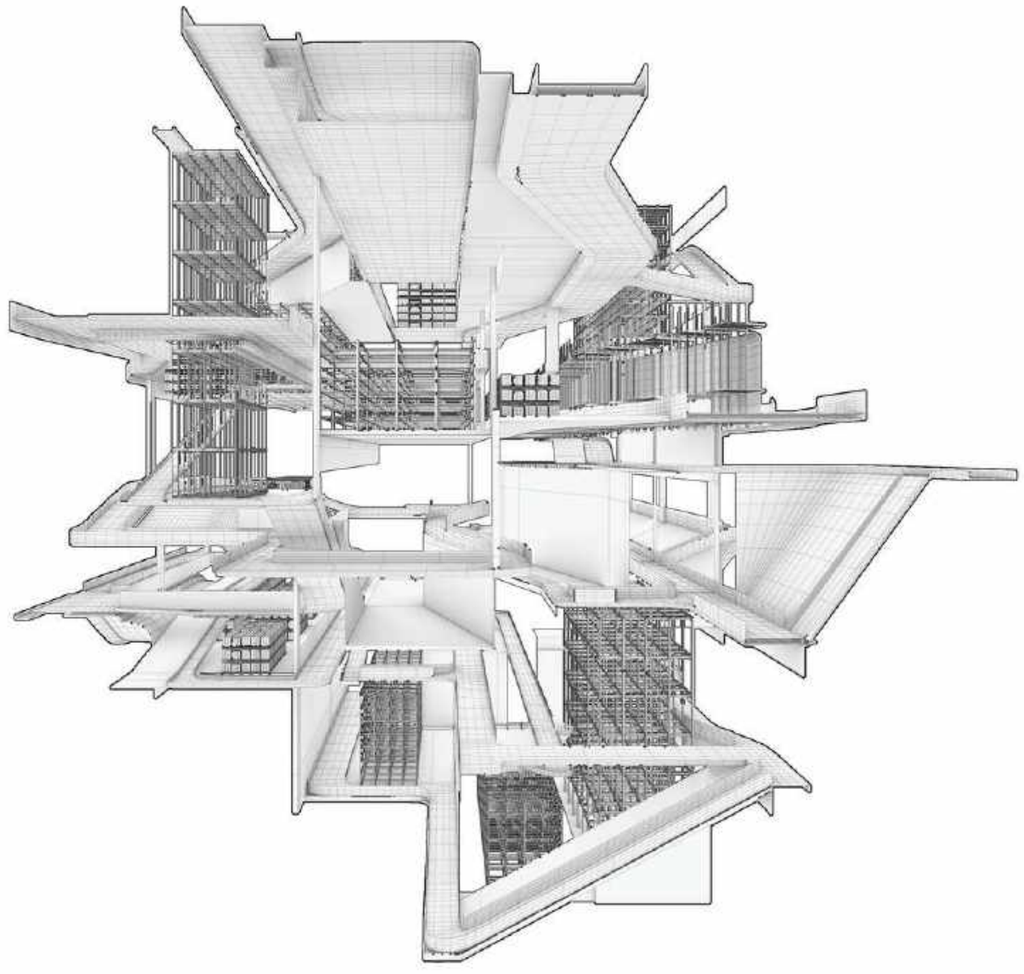
XRAY SCANNING

CONVEYOR SYSTEM A

CONVEYOR SYSTEM B



SORTING SYSTEM



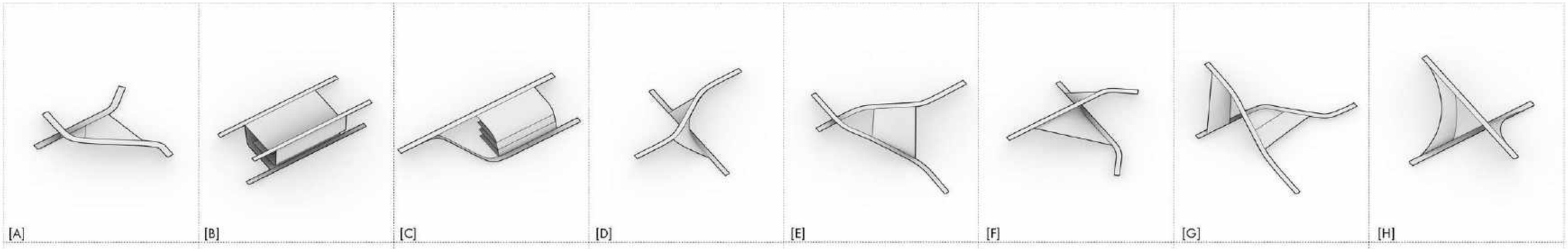
LOGISTIC STUDY

Through research on different logistics systems, such as Vertical Storage System, Vertical Lift System, Sorting System, In-between Storage System, Conveyor System. Then try to connect them with multiple surfaces.

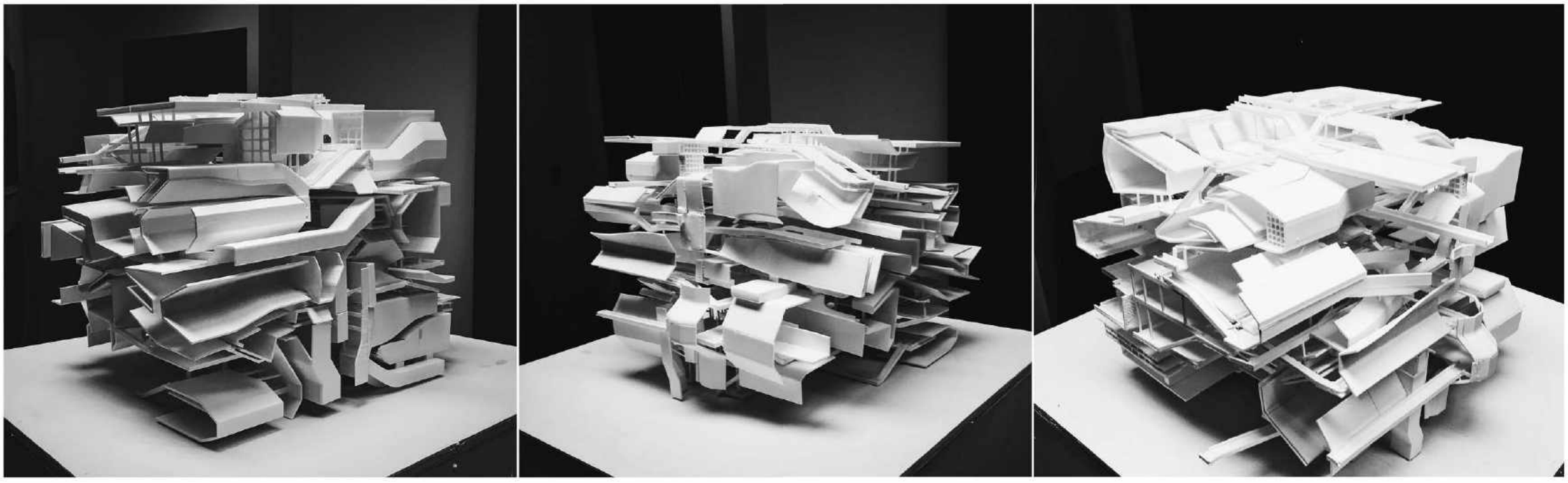
This relationship is translated into spacial qualities through the contrast between heavy and light. The dense and heavy logistics system is placed in the center of our building.Different from the traditional structure, the storage space of the airport is entirely composed of squares. The storage space of the airport is composed of logistics systems. They are both a storage space and a logistics space, which are designed to be placed between different levels. According to the size of the goods and the actual function requirements, a large, medium and small multi-layer logistics system is set up.

DIAGRAM OF SURFACE

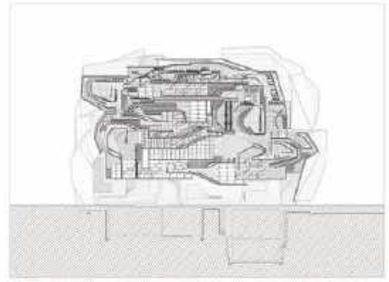
Based on the bifercation study, We then study the topology of surfaces which connecting the conveying belt.Based on the bifercation study, We then study the topology of surfaces which connecting the conveying belt.



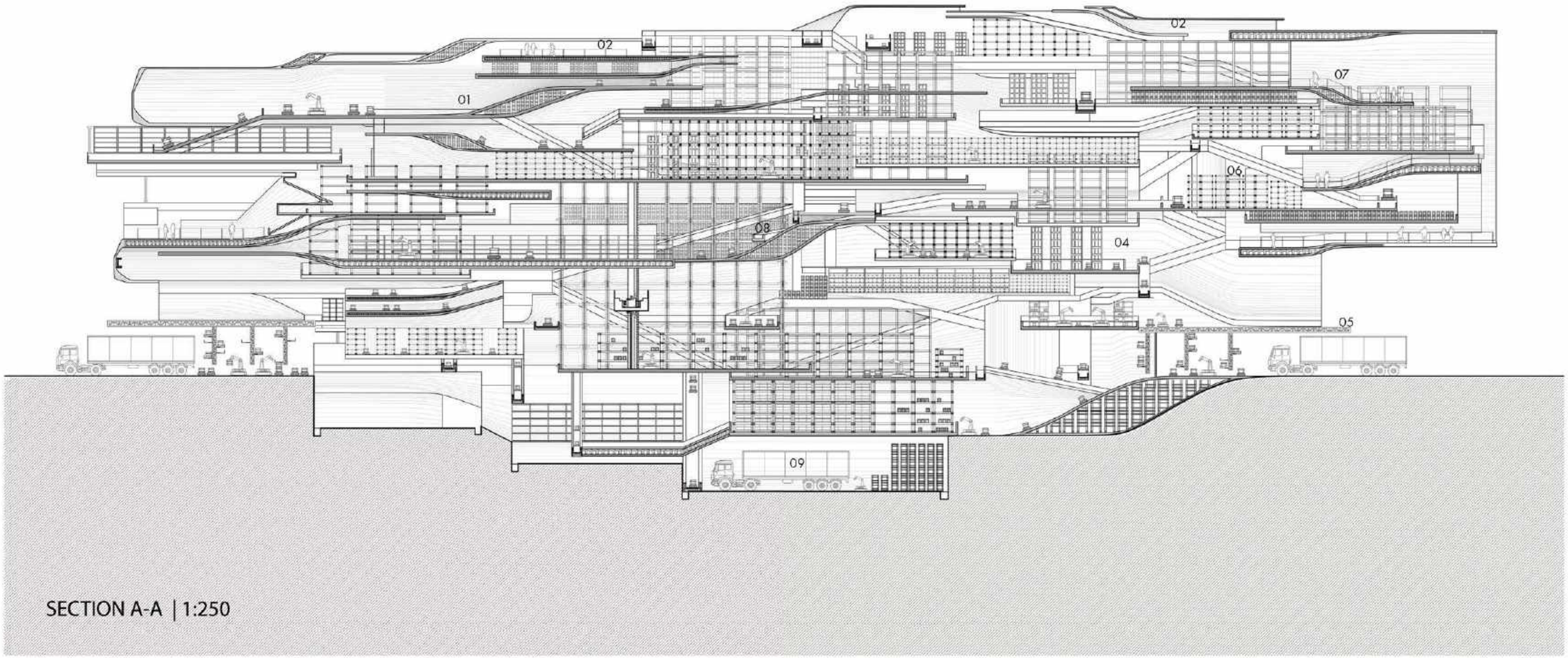
PROGESS PHYSICAL MODELING



LONG SECTION
01 SORTING SYSTEM
02 CARGO TRASNPORTATION SYSTEM
03 LUGGATION RECEIVING SORTING SYSTEM
04 TEMPORARY STORAGING AREA
06 FLOATING MINIMAL SPACE
05 LONGTIME STORAGING AREA
06 OFFICE
07 CORRIDOR TO BOARDING GATE
08 HEAVY LOGISTIC SYSTEM
09 TRACK EXPRESS SYSTEM



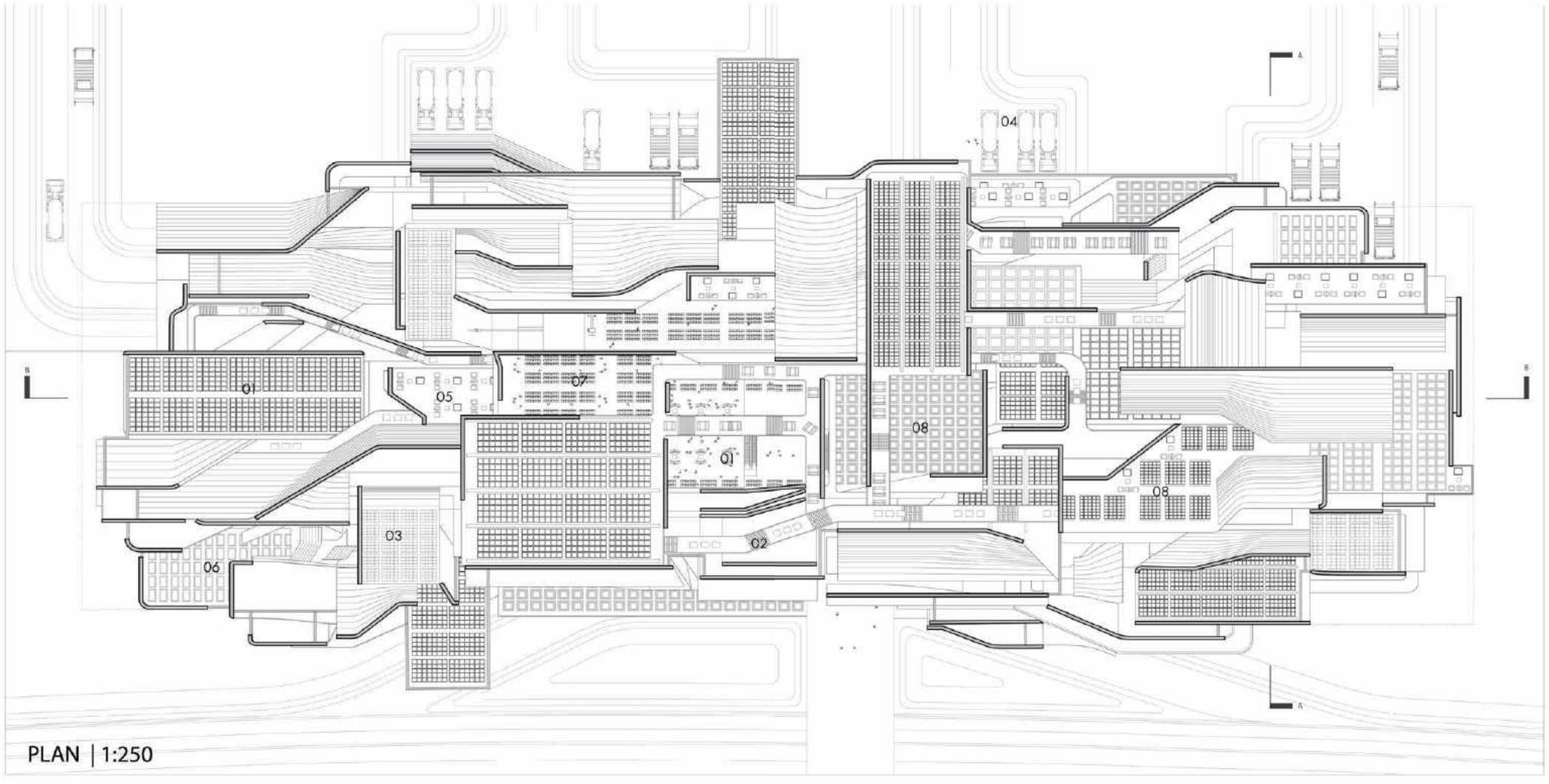
Section B-B



SECTION A-A | 1:250

FLOOR PLAN
01 HEAVY CARGO STORAGE SYSTEM
02 CARGO TRASNPORTATION SYSTEM
03 MEDIUM LOGISTIC SYSTEM
04 PARKING LOT SYSTEM
05 PASSENGER LEISURE SPACE
06 TEMPORARY STORAGING AREA
07 PASSENGER DEPARTURE HALL
08 HYBRID STORAGE SYSTEM

Section A-A

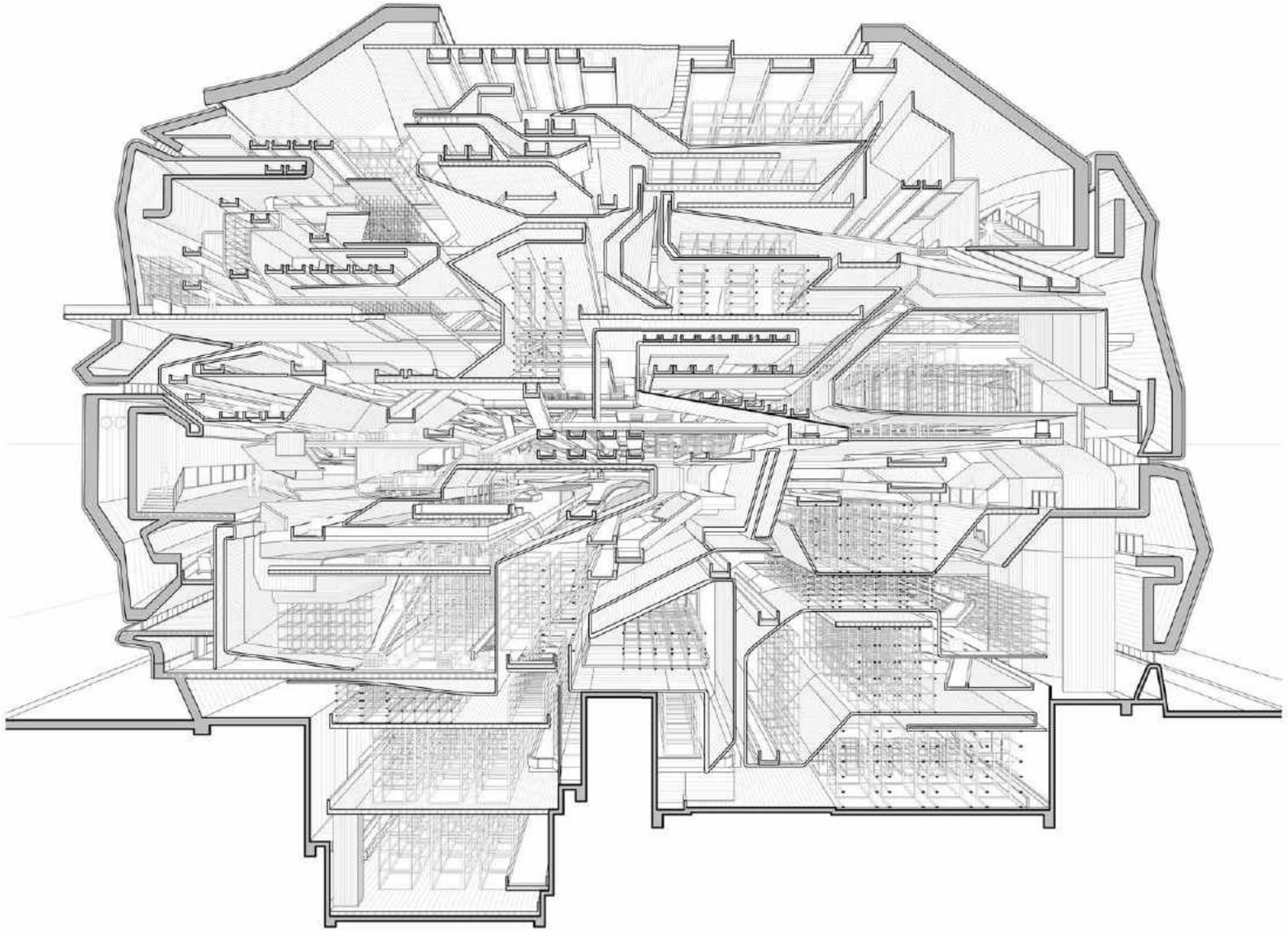


PLAN | 1:250

GROUND PLAN

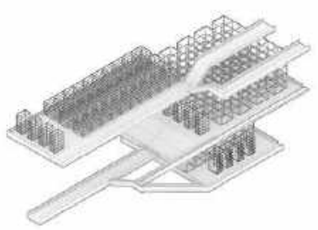
The airport will be able to generate the most profit based on the volume of freight. On the other hand, passenger parking is a secondary focus, but will encounter such an efficient logistics system shooting around the passenger corridor. This project renegotiates the conventional relationship between humans and cargo. Different from traditional airport, where the circulation of cargos is not apparent, we aim to design a future airport where people can see clearly the whole process and movement of cargos being transported into planes. This relationship is translated into spacial qualities through the contrast between heavy and light. The dense and heavy logistics system is placed in the center of our building. People can experience it while moving around it through a series of light multi-layers surfaces. In that way, the passengers will experience the machinery and the effective atmosphere of the airport.

ONE-POINT PERSPECTIVE OF AIRPORT CH

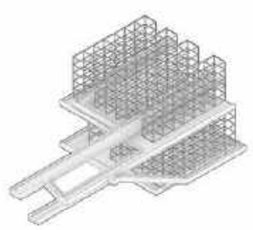


Topology of Bifurcation

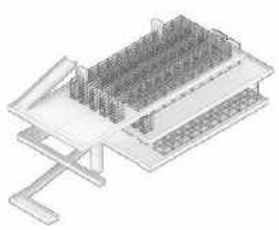
Through a combined study of surfaces and logistics sys
integration.



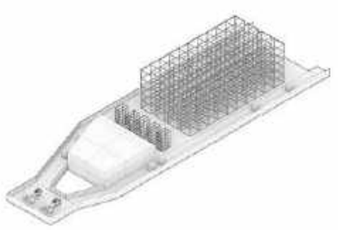
Topology A



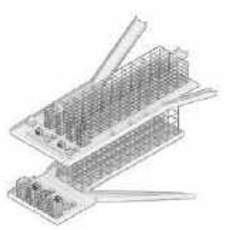
Topology B



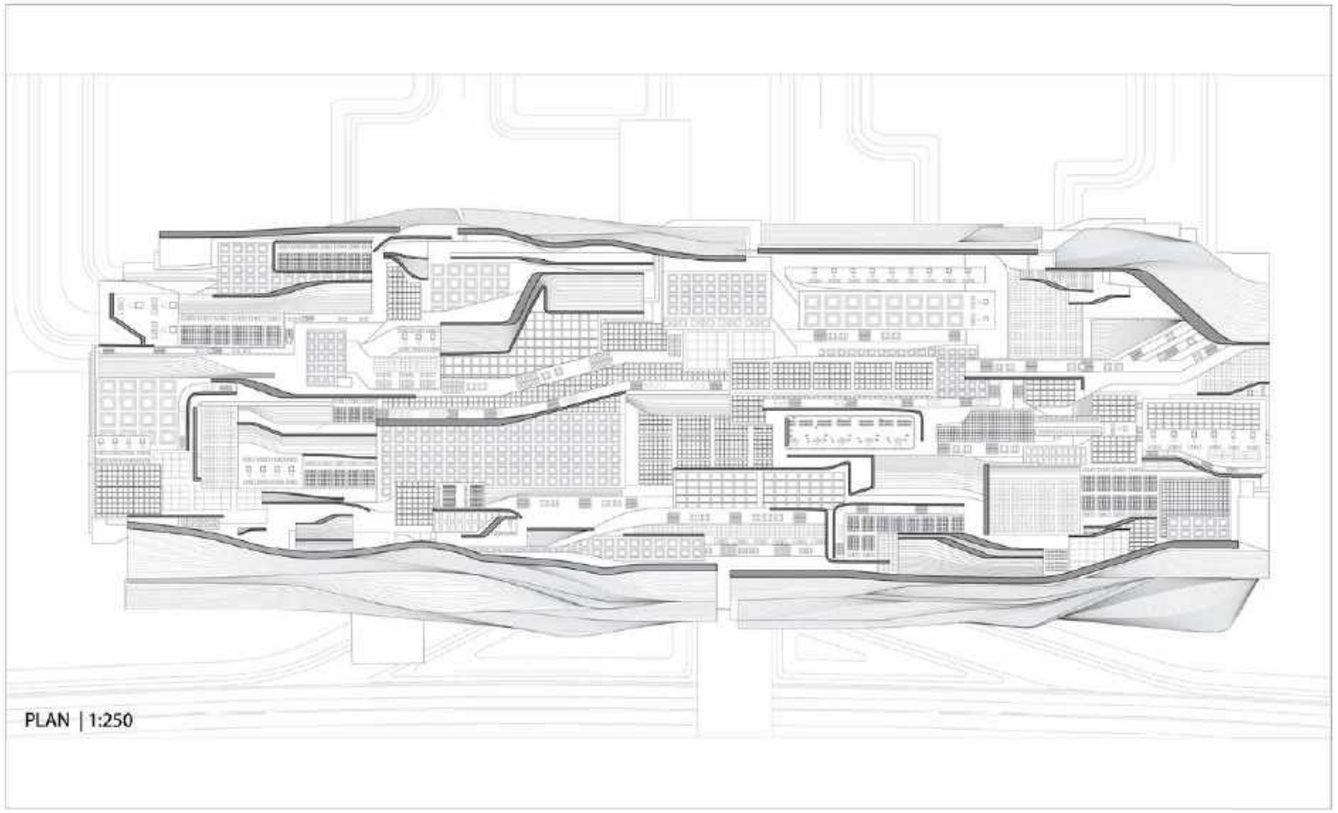
Topology C



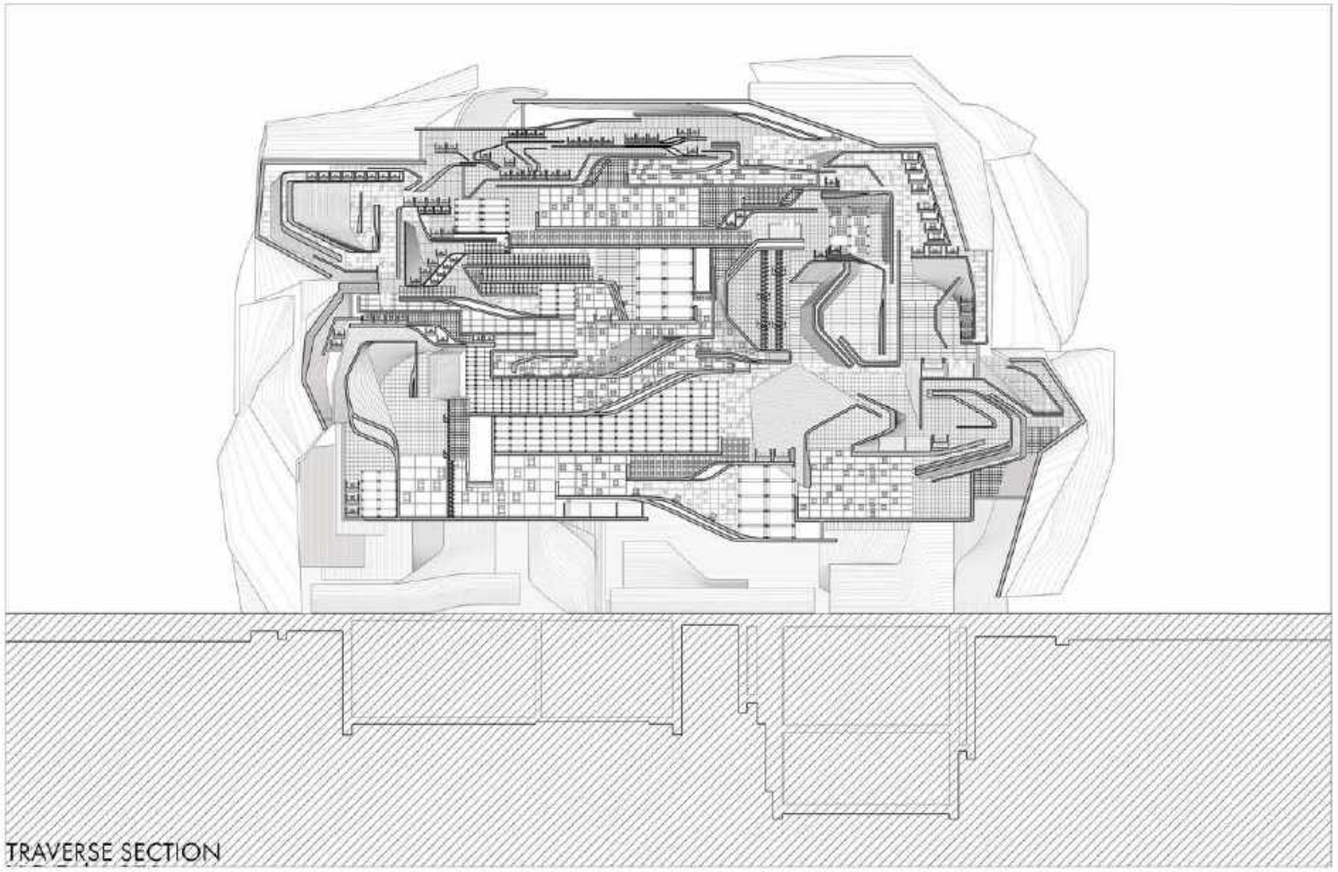
Topology D



Topology E

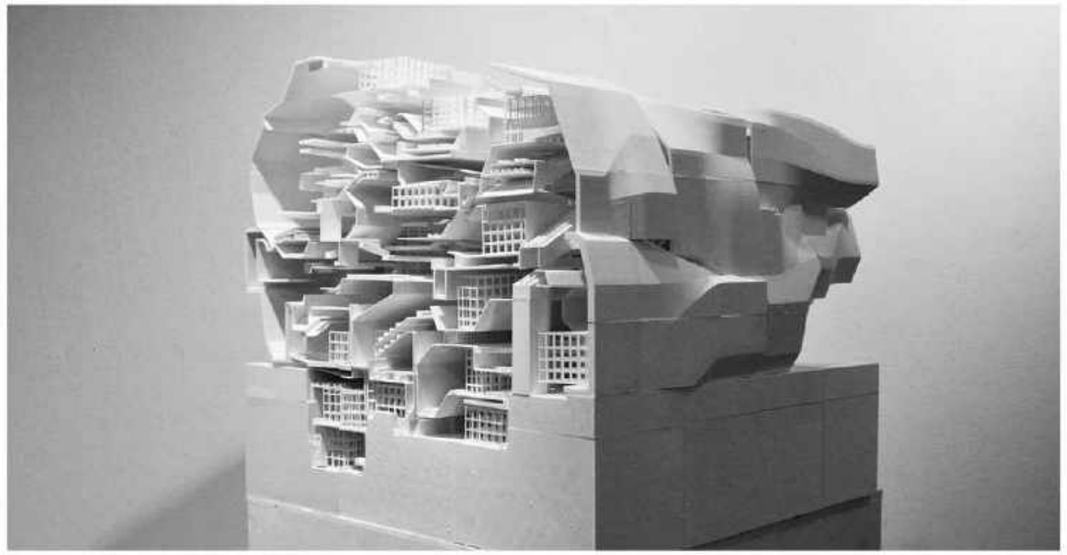


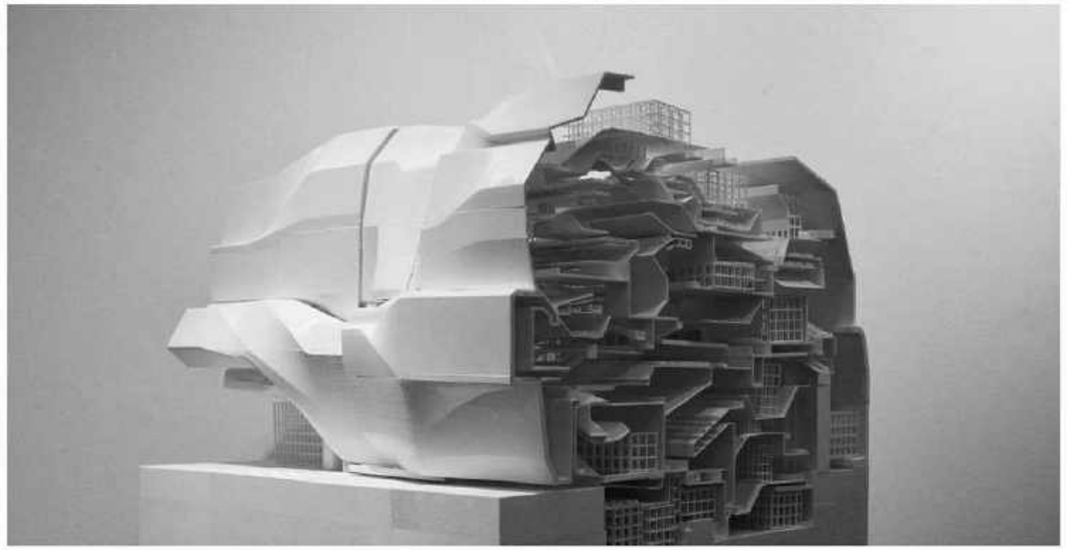
PLAN | 1:250

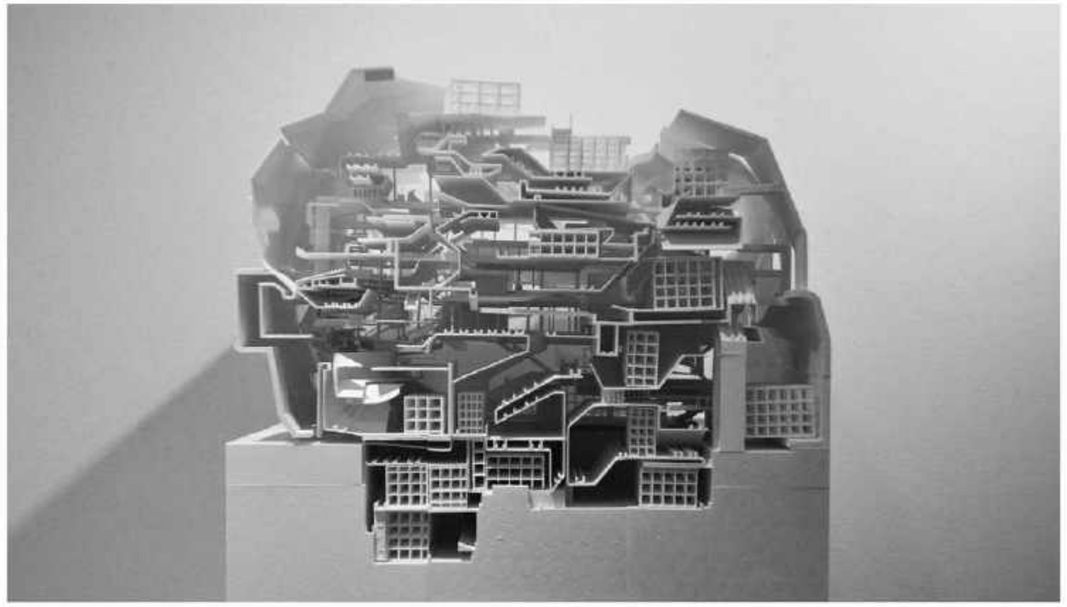


TRAVERSE SECTION

PHYSICAL MODEL OF AIRPORT CHUNK







02

SUPERCAR EXHIBITION CENTER MIAMI

Contemporary Detail to Aesthetics

Architecture Design

Teamwork Members: Hanning Liu, Yutian Tang

Spring 2019

Design District, Florida, United States

CONTEMPORARY DETAILS

The project started with design research focusing on car aesthetics and created new spatial typology exploring relationships between machine and human. We selected 3 aesthetic details, interlocking, nesting, converging, and specific design techniques are developed through various iterations. We explored different possibilities of these details and techniques to develop an object intending for delicate integrations.

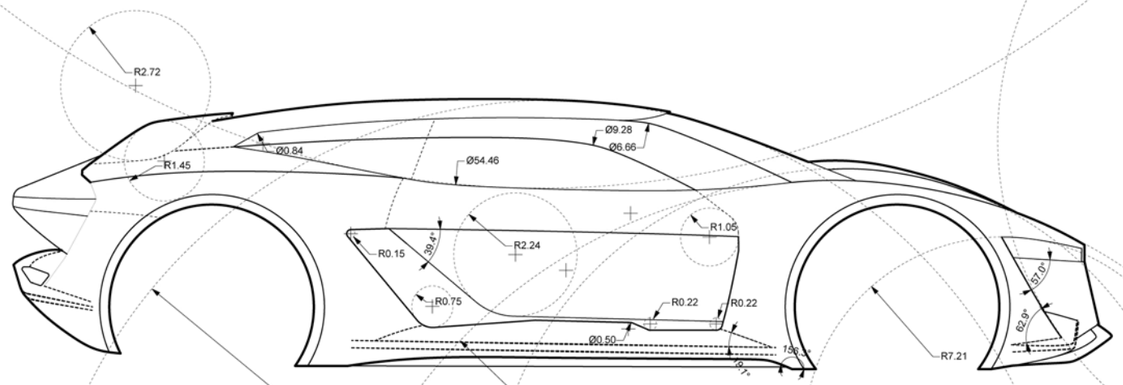
We also studied materials from car industry and tested them in the details. Then we proposed to apply these techniques in architectural scale. We designed a community centre whose program is mainly car exhibition. The exterior surfaces has been carefully designed through aesthetics techniques we researched. Aesthetical seams are flowing on the surface and theses seams also connected with structural details from visual and functional aspect.

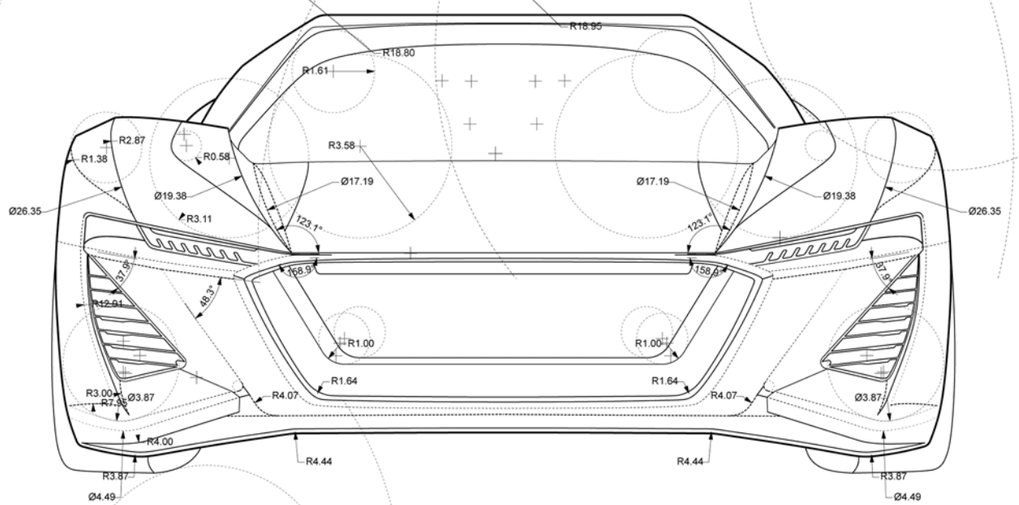
Also some parts of the façade was poked by structural volumes which not only play a role in supporting interior structure, but also create a contrast between the soft seams and the sharp edge. For the interior structure, A series of volumes are developed to be interlocking and supporting with each other for car space. The volumes are acting as the primary structure of the building are human spaces are nesting with them. A dichotomy between human and machine is created regarding these two kinds of spaces. And we further developed the relationship with various interactions between car and human. The glass tubes on the volumes are designed through converging technique to literally hold the cars, providing new experiences for people to look at the cars.

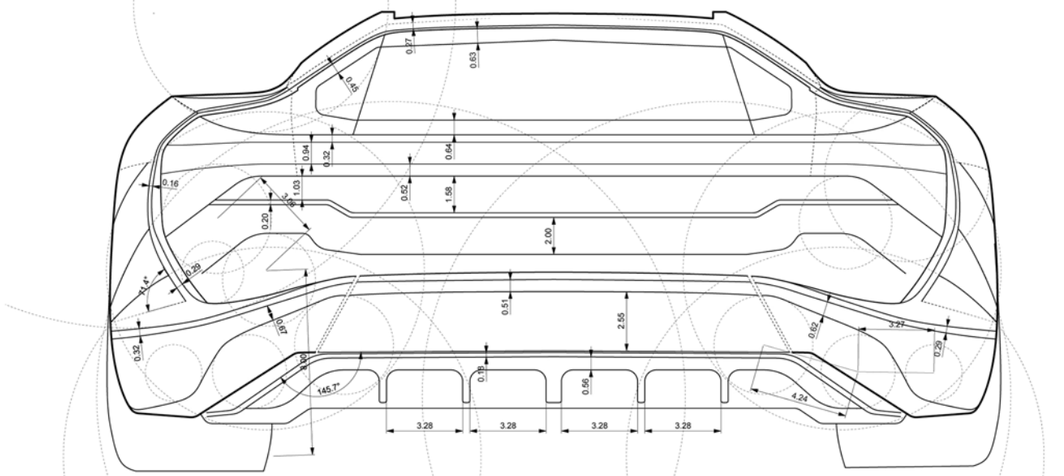
ZOOM-IN RENDERING OF FACADE DETAILS

SEAMS REFERENCE AND ANALYSIS

Through studying details in contemporary culture and shift them into the discipline and scale of the detail of architecture. We will start with the detail of the finest surface on automobile and expand the detail to a volume and finally to experience.





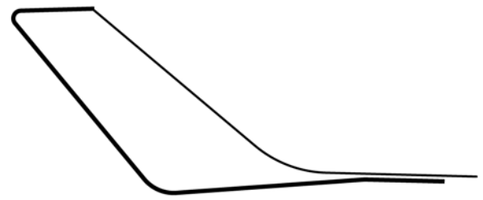


Outline
Soft Fold
Hardline Die out
Hard Fold
Material Change
Seam Break
Spacing Seam

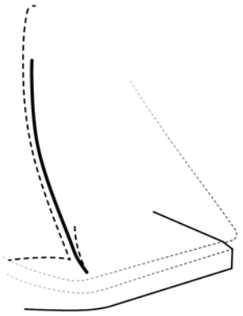
EXTRACTED SEAMS

a.

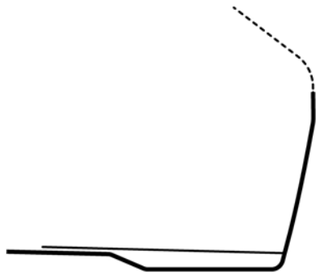
b.



c.



d.



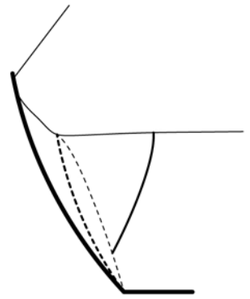
e.

e.

f.

g.

h.



i.

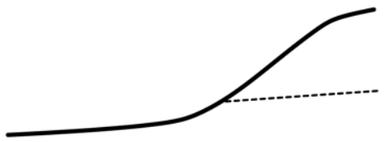
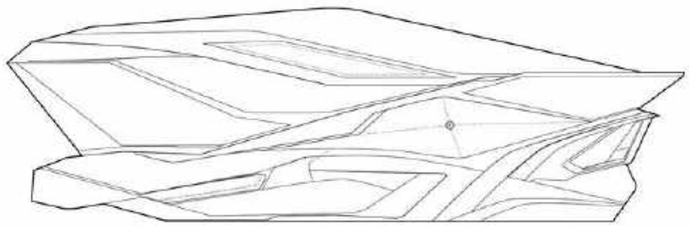
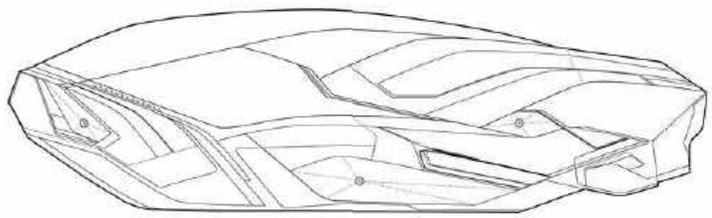


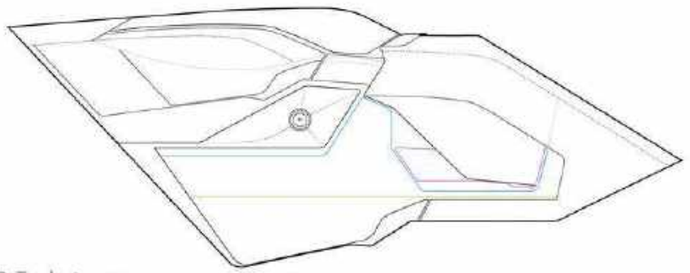
DIAGRAM OF SEAMS

2D Techniques Form: Sufaces-volumes

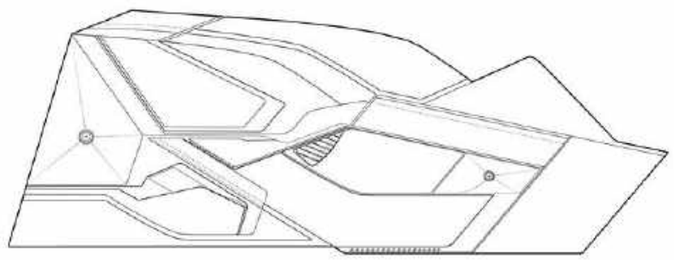


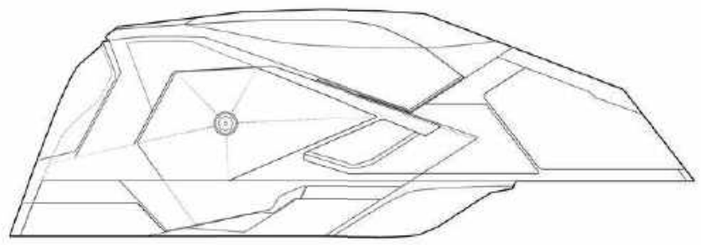


2D Techniques Form: Seams-Material Change

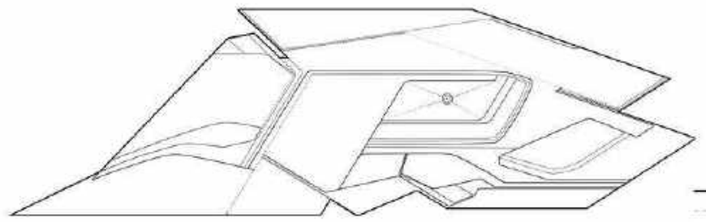


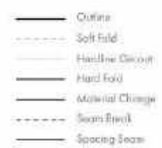
2D Techniques Form: Curve-convergence



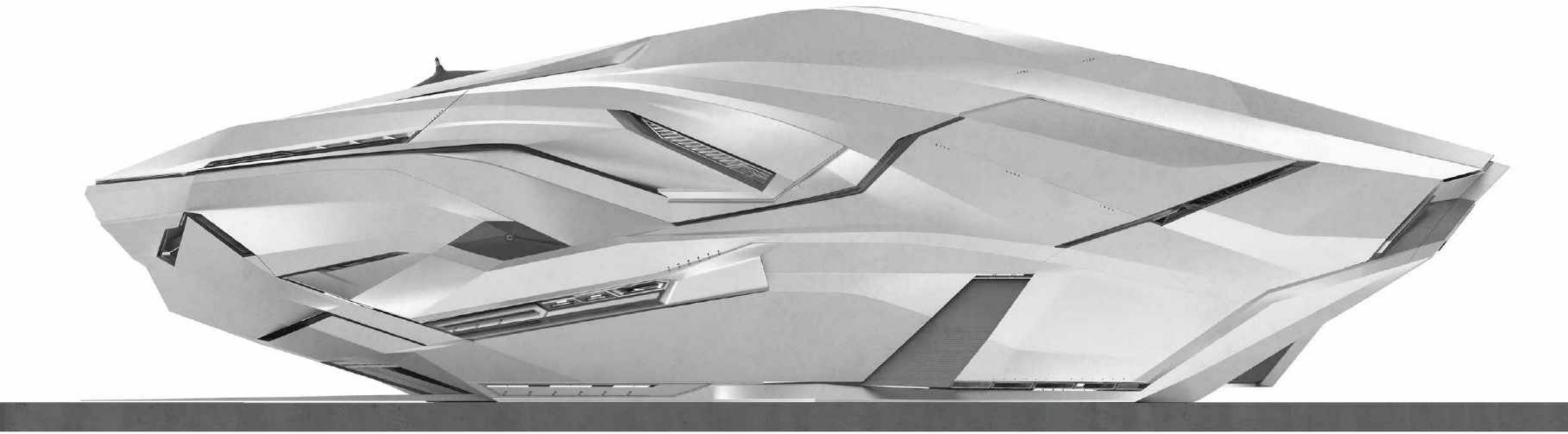


2D Techniques Form: Seams-Nesting object





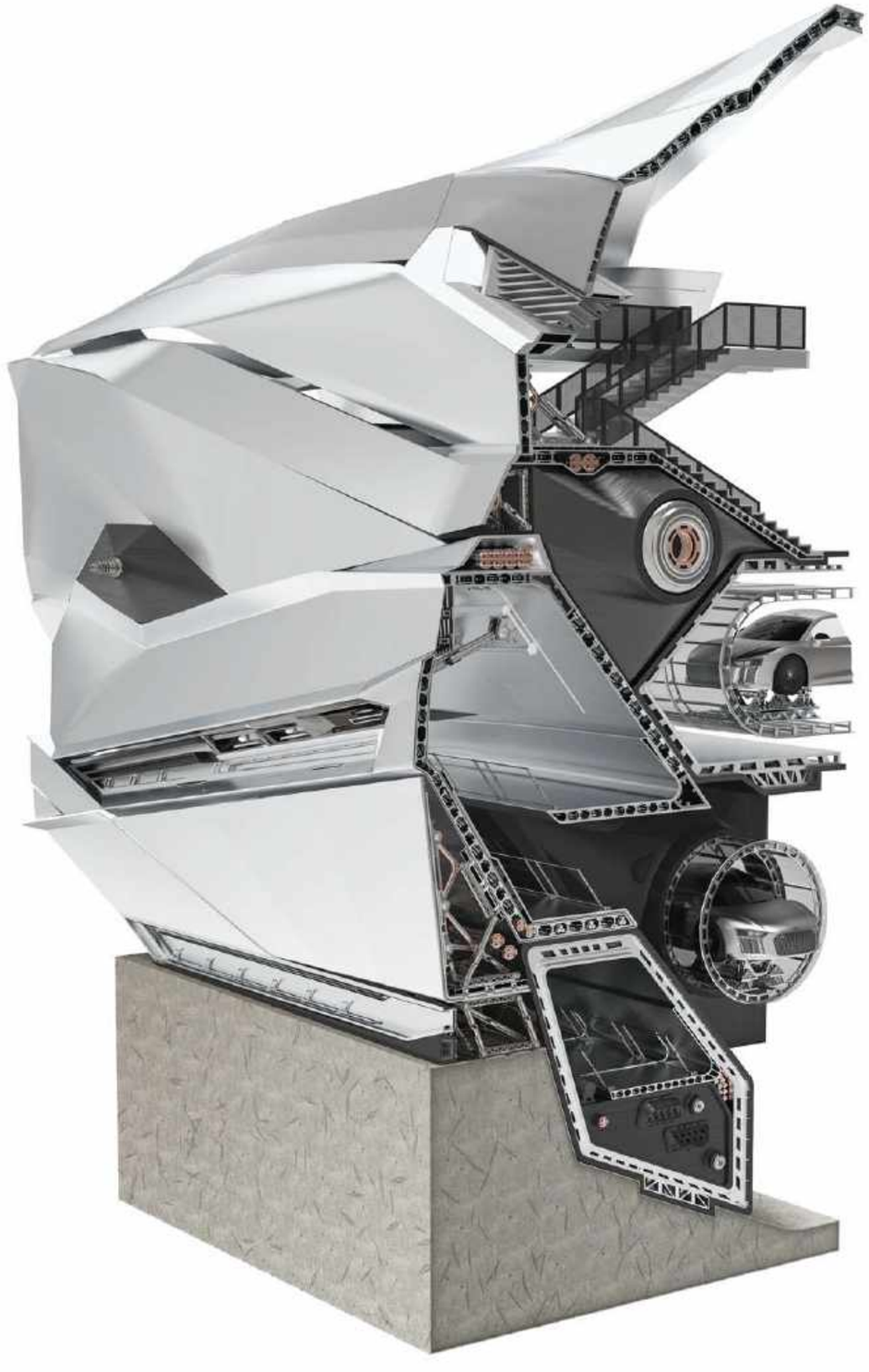
Through the aesthetic study of the seam, we reorganize these lines organically and form our own aesthetic lines, while the changes in the lines are accompanied by changes in materials, such as the transition from aluminum to carbon fiber, or lines. Change will form a transition from a two-dimensional line to a three-dimensional shape. At the same time, the lines are constantly changing from being apparent to nothing and from nothing to being apparent, forming a unique aesthetic feature.



WALLSECTION

The aesthetic characteristics of the interior space are also the same as the exterior, which is interlocking, nesting, converging, The black part consisting of carbon fiber supports and connects the entire internal space, and in this space, people are no longer the dominant space, the car becomes the space, and the whole space is for the car.

For the internal structure, a series of spaces have been developed which are connected to each other and supported each other to obtain a car space. These volumes are the main structure of a building, a space in which human space and its nesting. With regard to these two spaces, there is a dichotomy between man and machine. We have further developed the interactive relationship between cars and people. The glass tube on the volume is designed by fusion technology to fix the car and provide a new experience for people to watch the car.



ROOF ASSEMLY

METAL PANELS
WATERPROOFING MEMBRANE
JOIST STEEL
R30 BATT INSULATION
GRC INTERIOR WALL PANELS

INTERIOR WALL ASSEMBLY

GRC INTERIOR WALL PANELS
JOIST STEEL
ADJUSTABLE STEEL FASTENINGS
VENT INSTALLATIONS
WATERPROOFING MEMBRANE
SHEATHING PANELS
METAL PANELS

DRAINING ASSEMBLY

SHEATHING PANELS
WATER INLET PIPE
BREATHING STRIPS

MIDDLE FLOOR ASSEMBLY

SHEATHING PANELS
JOIST STEELS
R30 BATT INSULATION
H-CHANELL STEEL BEAM
VERTICAL BRACING STEEL FRAME
AIR-CONDITIONER DUCTS
WATER INLET PIPE
STEEL HANGING JOIST STEELS

GLASS PANEL ASSEMBLY

LIGHT GREY TEMPERED GLASS
WATERPROOFING STRIPS
C-CHANNEL ALUM FRAME
STEEL ENHANCING JOINTS

RHONE ASSEMBLY

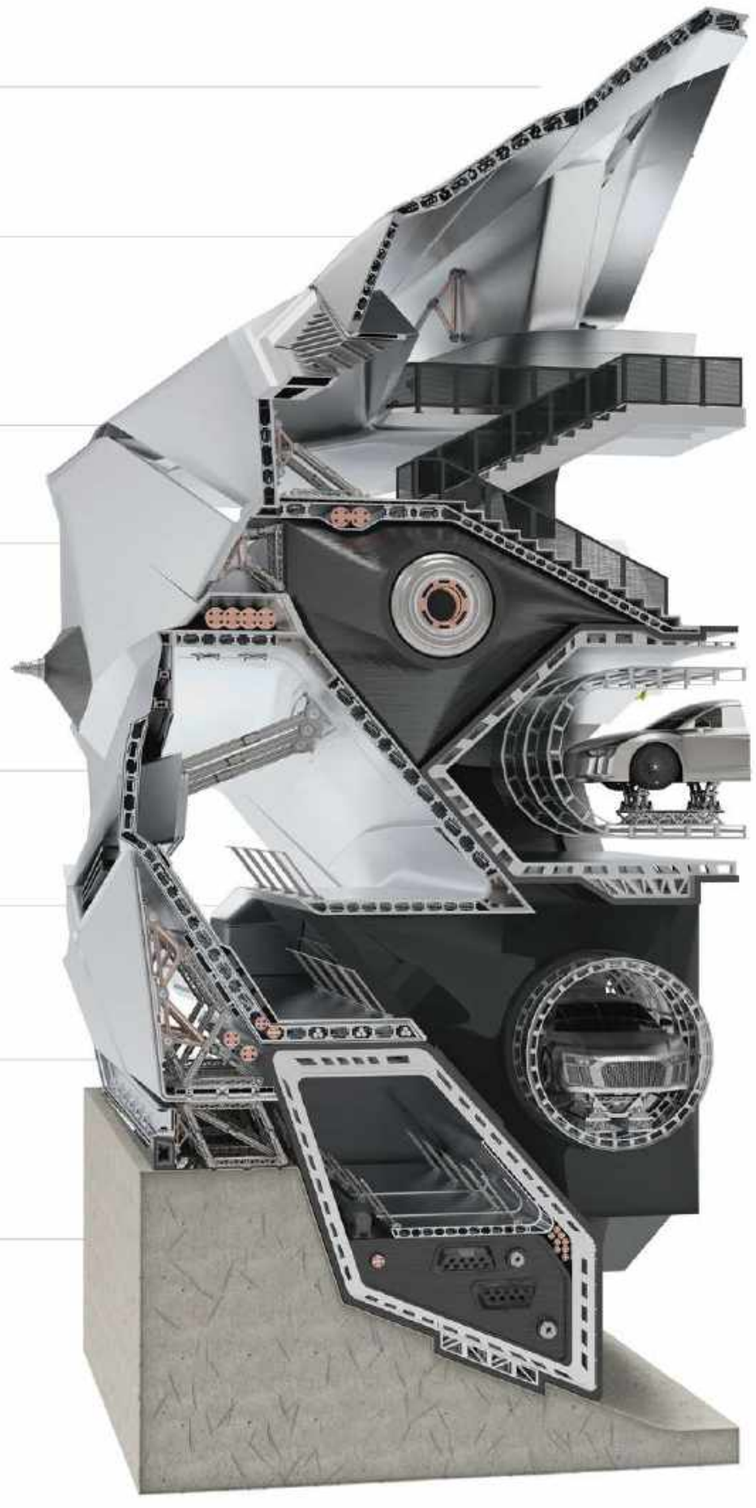
SHEATHING PANELS
WATERPROOFING MEMBRANE
ALUMINUM PLATE COVER
STEEL FRAME
RAIN DRAIN PHONE

BASE FLOOR ASSEMBLY

SHEATHING PANELS
HOIST STEELS
R30 BATT INSULATION
H-CHANNEL STEEL BEAM
VERTICAL BRACING STEEL FRAME
AIR-CONDITIONER DUCTS

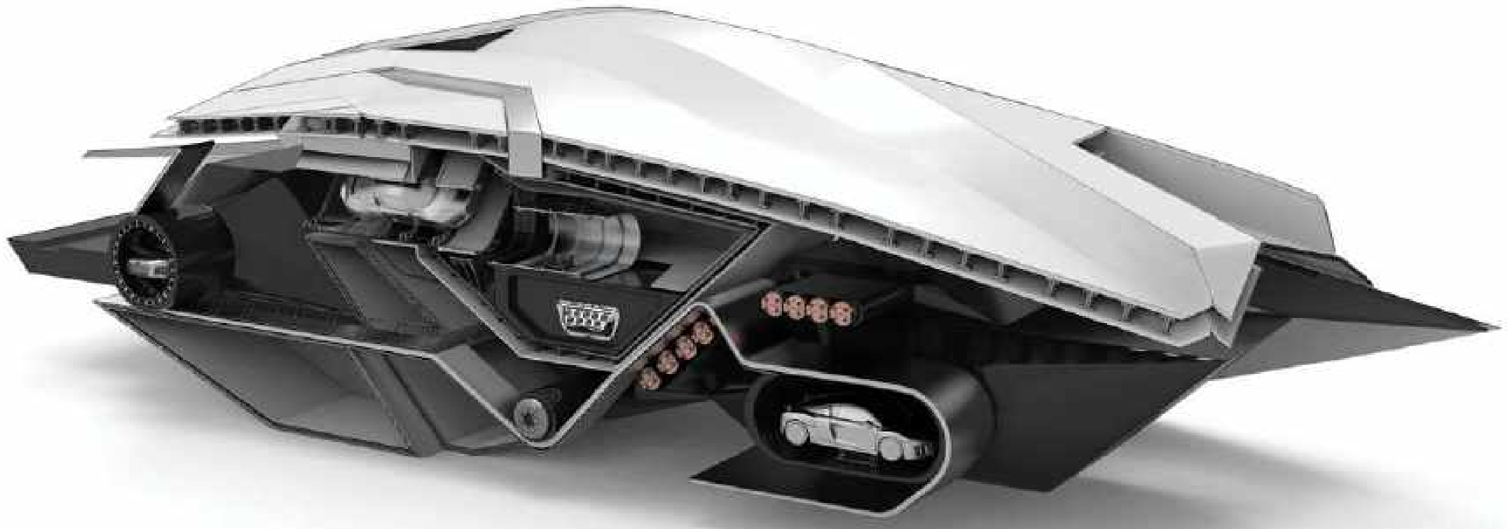
TRUSS-WALL ASSEMBLY

TRIANGULAR SPACE TRUSS
HINGE JOINT
LED LIGHT STRIPS
AIR-CONDITIONER DUCTS
WATERPROOFING MEMBRANE
VERTICAL BRACING STEEL FRAME

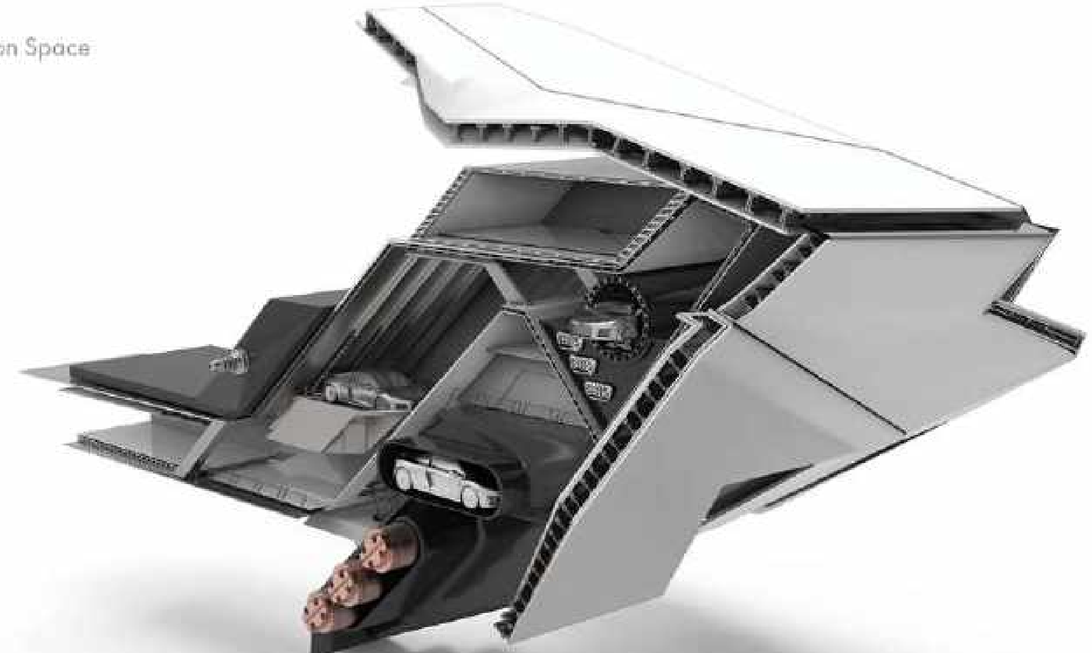


SPATIAL CHUNK

a.Interior Exhibition

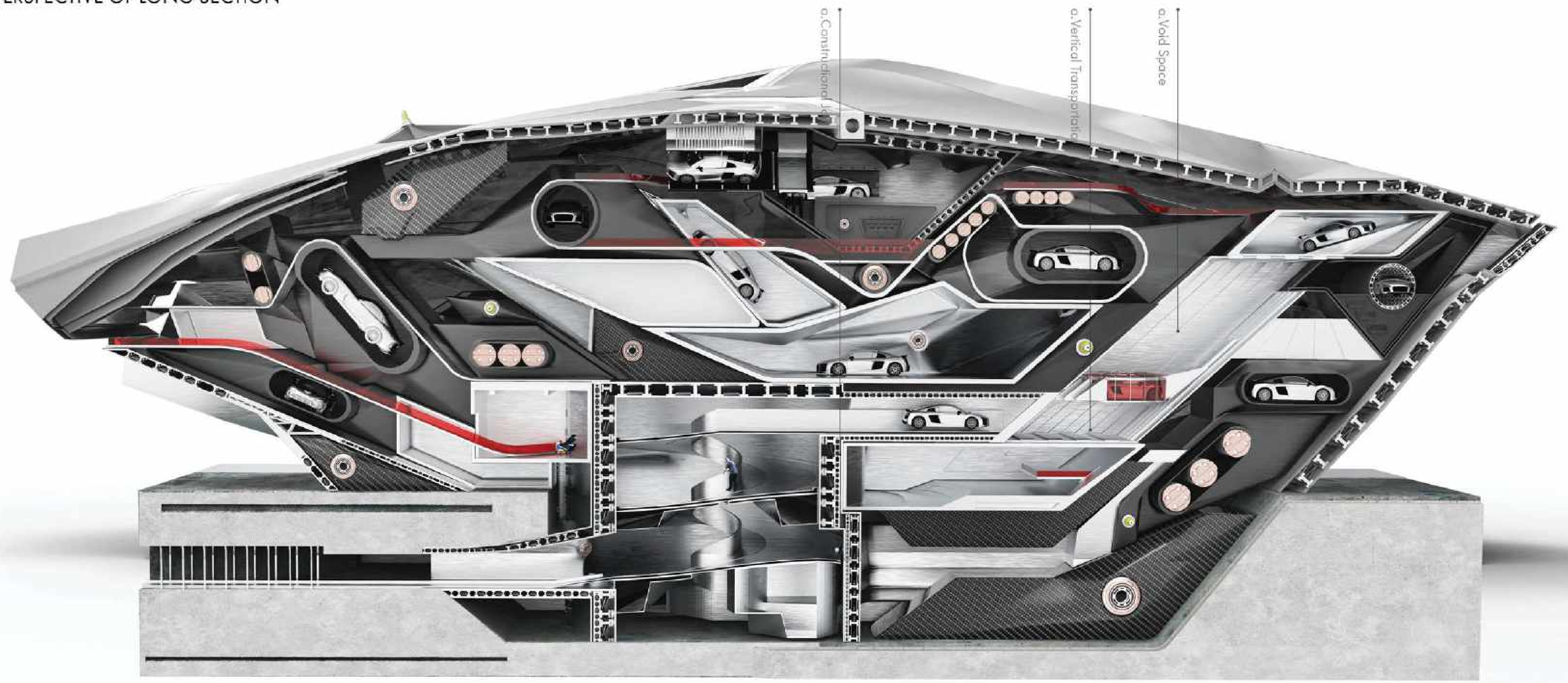


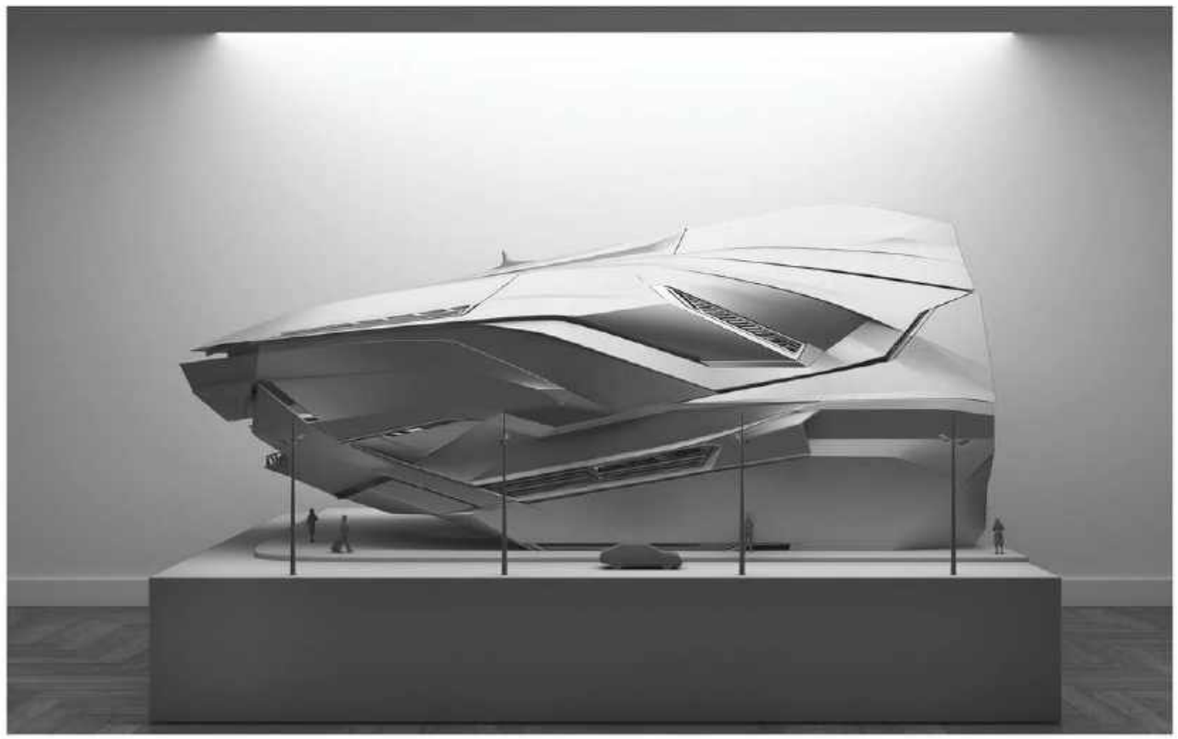
b.Transition Space



The internal space can actually be divided into several spatial units, which are combined to form an overall space atmosphere. Consistent with the wall profile, the person's position is in a secondary position, and the dominant [illegible]. The feeling brought about by the experience is not completely the same as the outside, even if the elements are the same. In the long section, the whole space is unfolded around the middle of the rotating lane, and the car can be hung up as a product in the display window, and the [illegible] people can shuttle in the inner space. While for the underground space, the building forms a circular lane running through the interior of the building.

PERSPECTIVE OF LONG SECTION

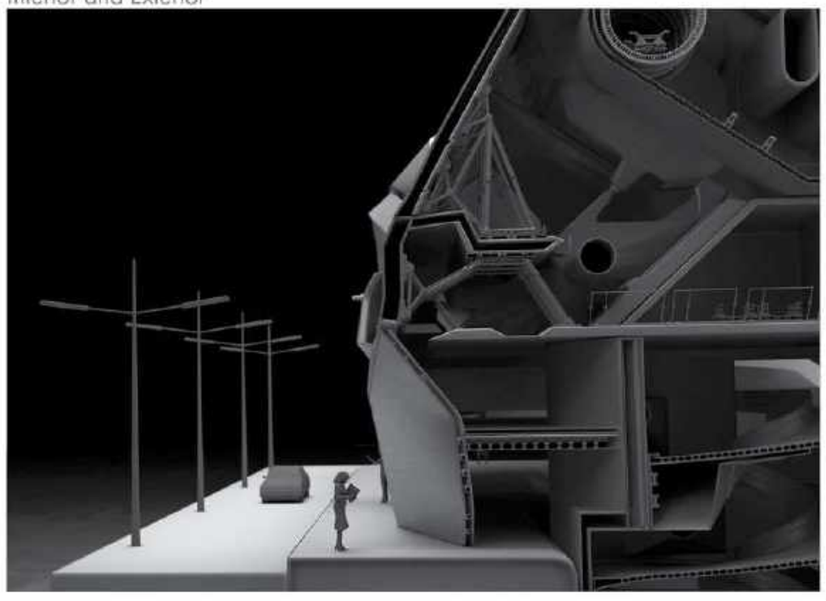




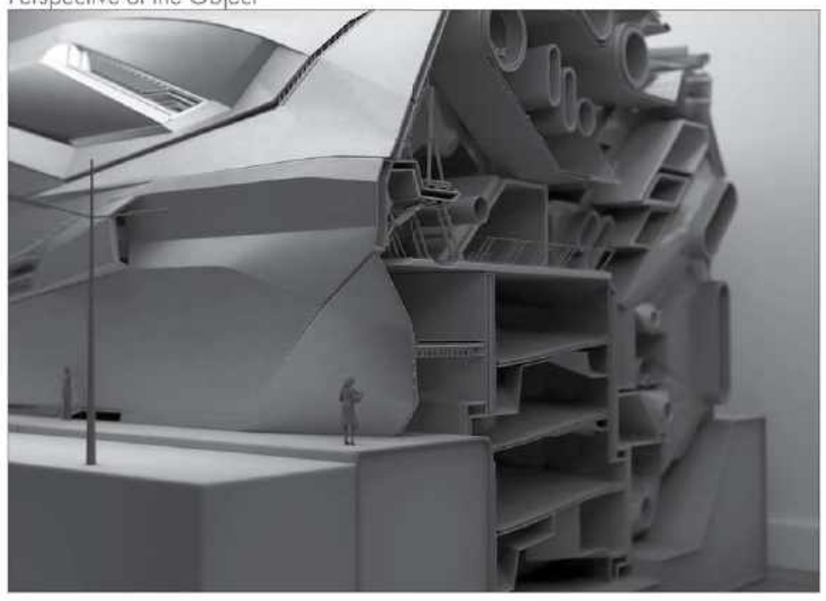
PHYSICAL CROSSECTION MODEL

The Miami Design District is a neighborhood north of Midtown in Miami, Florida. The Design District is home to over 130 art galleries, showrooms, creative services, stores, antiques dealers, eateries and bars. Every second Saturday of each month a community wide Art & Design Night is held from 7-10 p.m. Based on the characteristics of the current context, the dynamic façade of the exhibition center can attract people to gather, and it can also promote the formation of public spaces. It can also stand out from the very exciting neighborhoods.

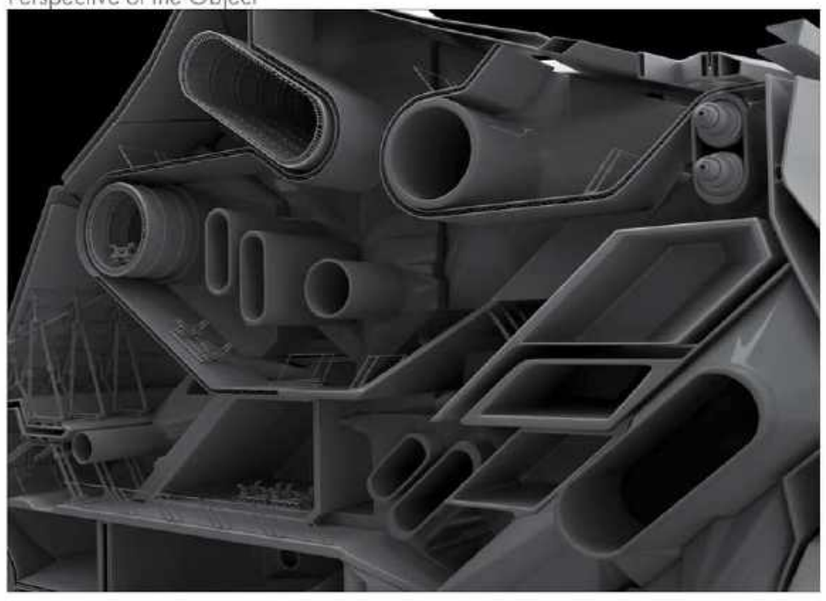
Interior and Exterior



Perspective of the Object



Perspective of the Object



AERIAL VIEW OF THE SITE

From the aerial view of the site, Some parts of the façade are also pierced by the structural volume, which not only plays a role in supporting the internal structure, but also creates a sharp contrast between the soft seam and the sharp edges. The fluid seams on the facade is one of the major asethestic characters of the exhibition center.At the same time, as the position of the joint changes, an opening is naturally formed, introducing natural light into the building space. The continuation of the seam also implies a constant change in the material, from metal to carbon brazing

03

KRAKAHN COMPOUND BEINGS

Architecture Design

Teamwork Members: Hanning Liu, Sanxing Zhao

Fall 2019

Yongsan Gu, Seoul, Korea

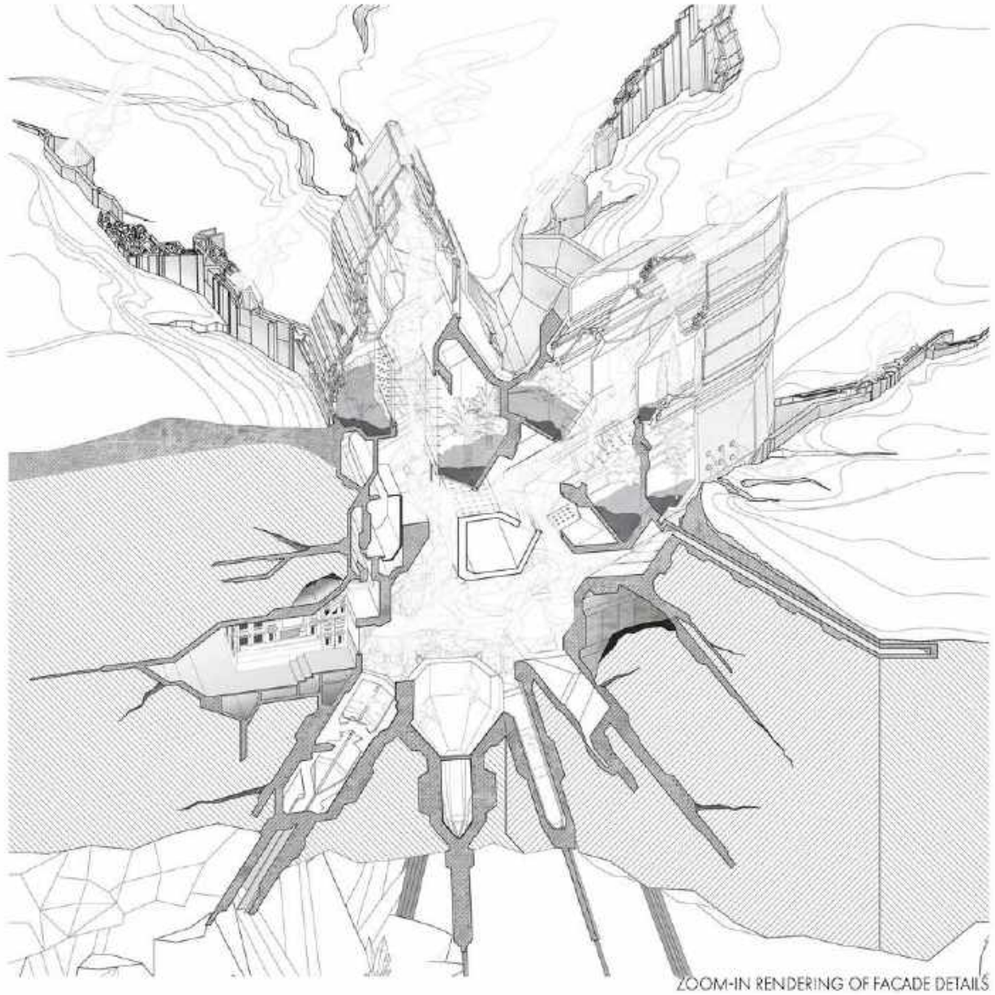
DEVIOUS TYPOGRAPHIES

As a starting point for the agency between human and non-human spaces, this design mainly discusses whether the building can be blurred by the self-development posture in this context. A coexistence effect.

In this regard, we oppose the formation of buildings led by people, but let the building expand spontaneously through the external environment and its own attributes. The growth process of roots like roots expands organically, but because of the nature of its architecture, the specific process of expansion is not so organic in form, but rather similar to the growth of crystal caves.

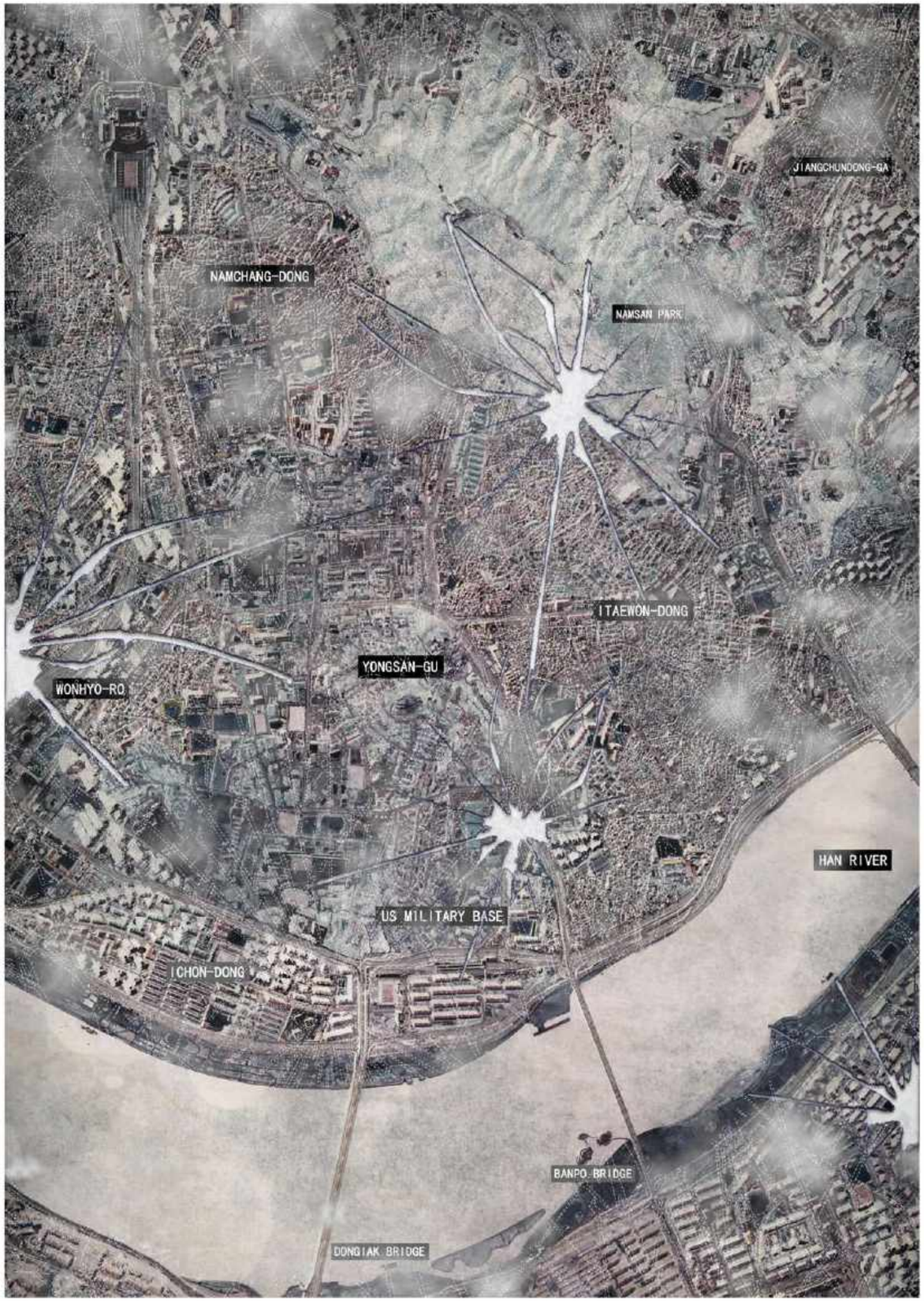
At the same time, in terms of function, we have shaped it into an engine, or seed, for changing a range of micro-ecosystems. When he was planted, based on the support of the geothermal energy system, water vapor was used to release heat, moisture and nutrients into the surrounding soil and atmosphere, while planting through the plants in the incubator.

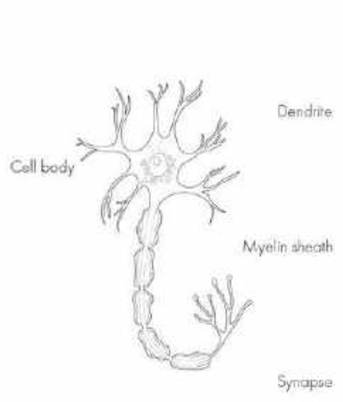
As an intention, spices and hookah indicate the complex components rich in water vapor, and also indicate that the building is in a state of continuous outward propagation to change the environmental components.

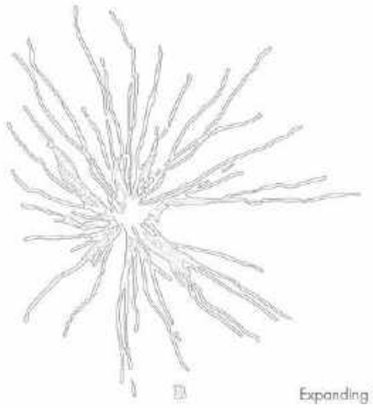


ZOOM-IN RENDERING OF FACADE DETAILS

SITE CONCEPT COLLAGE



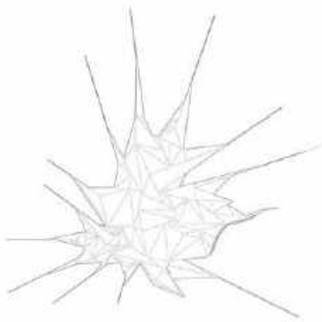




Expanding Network

Neural Steam System

Crystalized Expansion



Petrifaction

Krakahn

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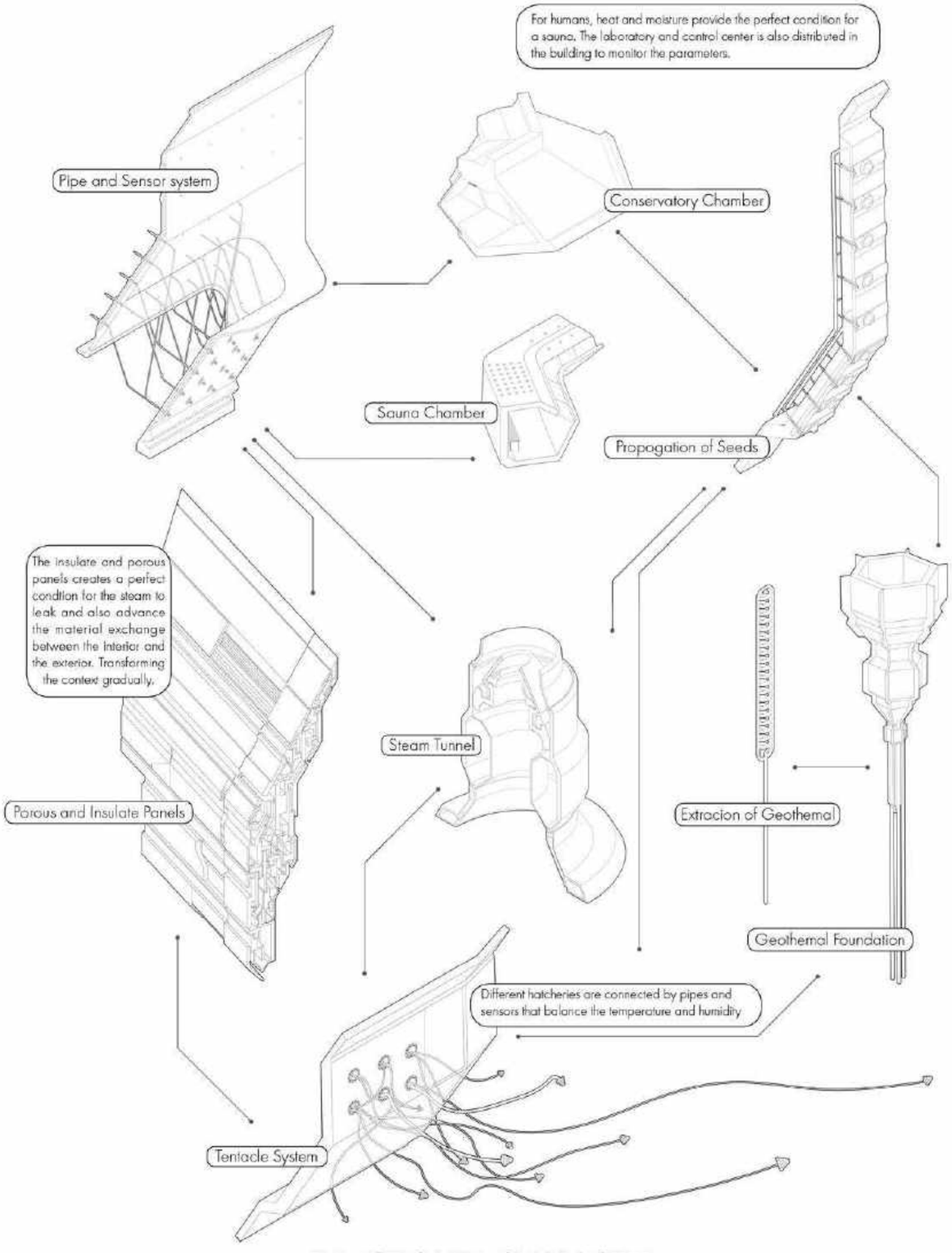
The growth of taproot system

Hookah

Crystal Cave

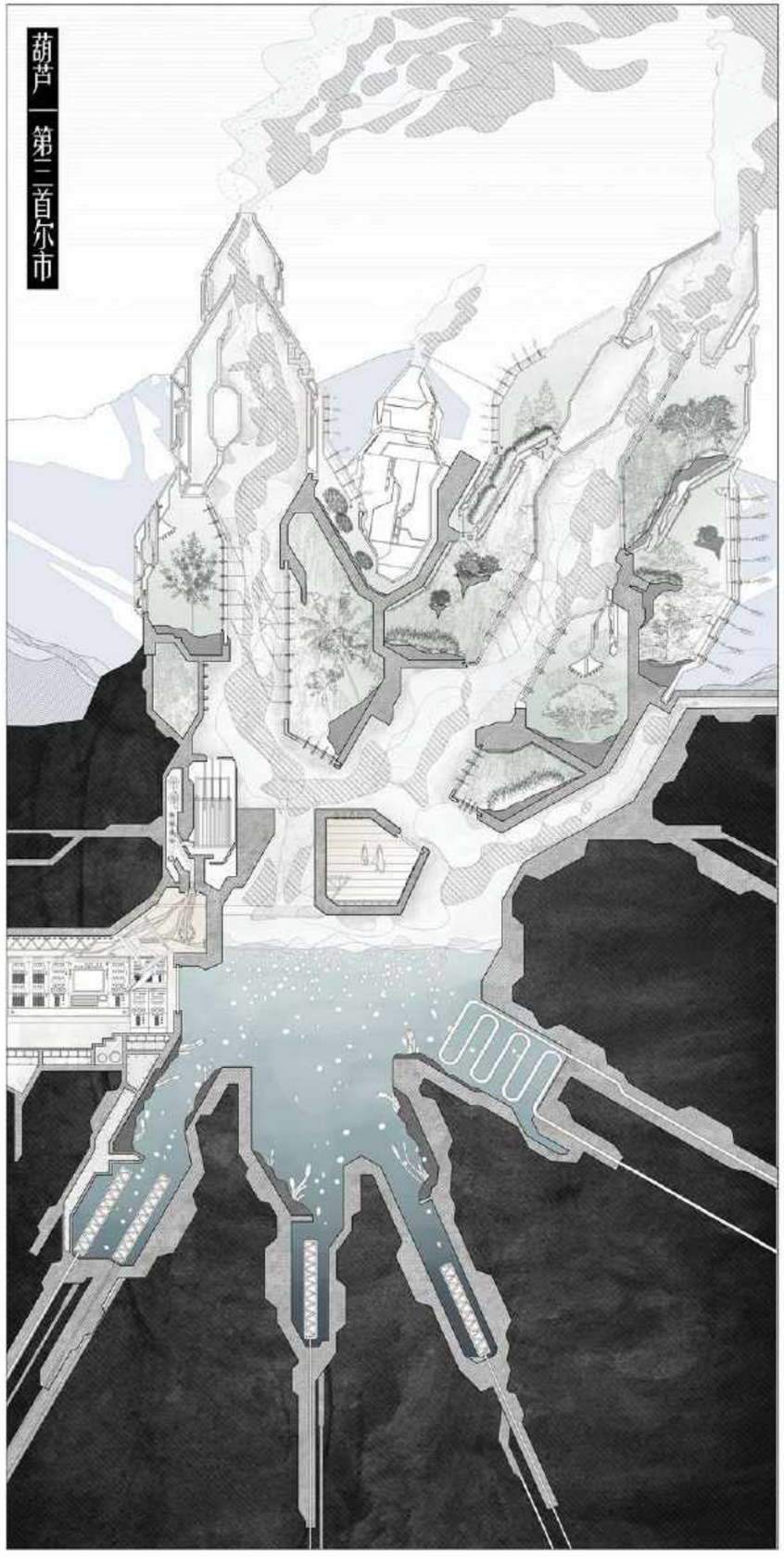
Dry flower & Spice



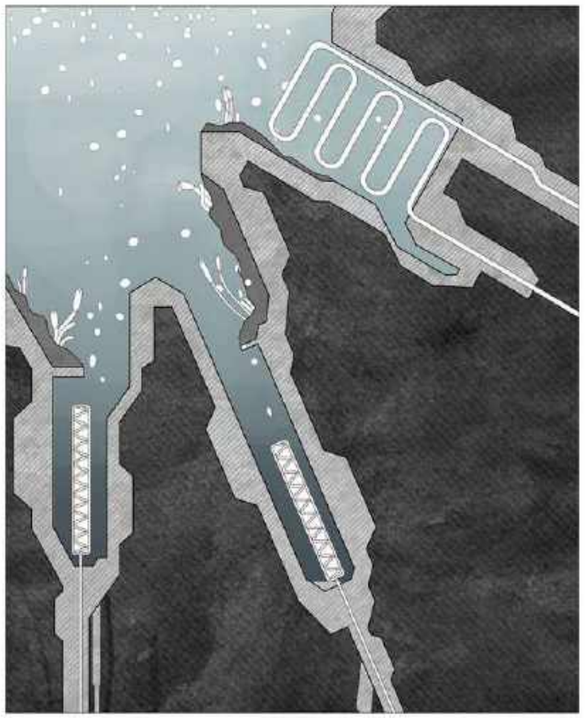
FUNCTIONAL CHARACTER

Through the section view, we show the main operation of the system. The geothermal system extracts moisture and heat to generating necessary prerequisites for the plants in the hatchery, and these plants are also located at different locations and altitudes based on their temperature and humidity requirements. Water vapor and plant seeds are spread out at the end of the process. Different hatcheries are connected by pipes and sensors that balance the temperature and humidity in different compartments.

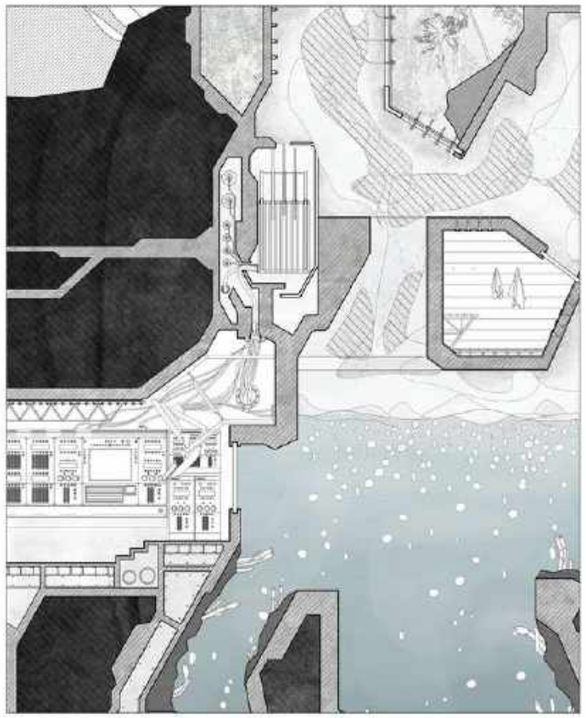
葫芦 | 第二首尔市



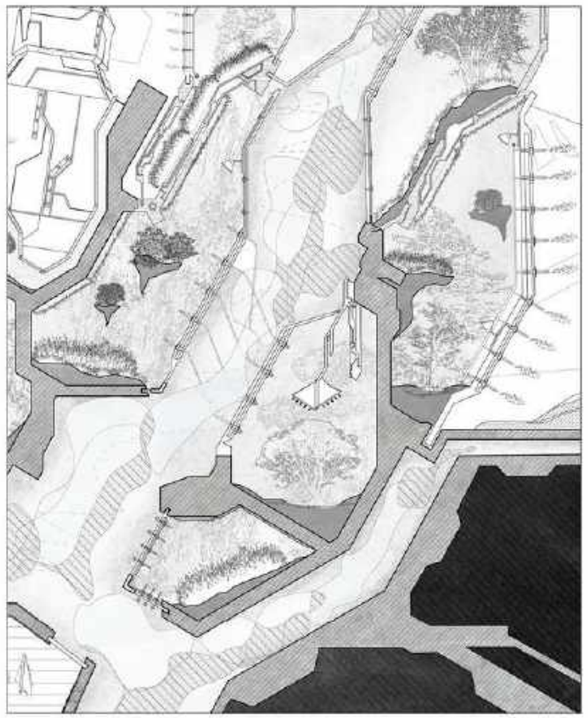
SECTION DRAWING DETAILS



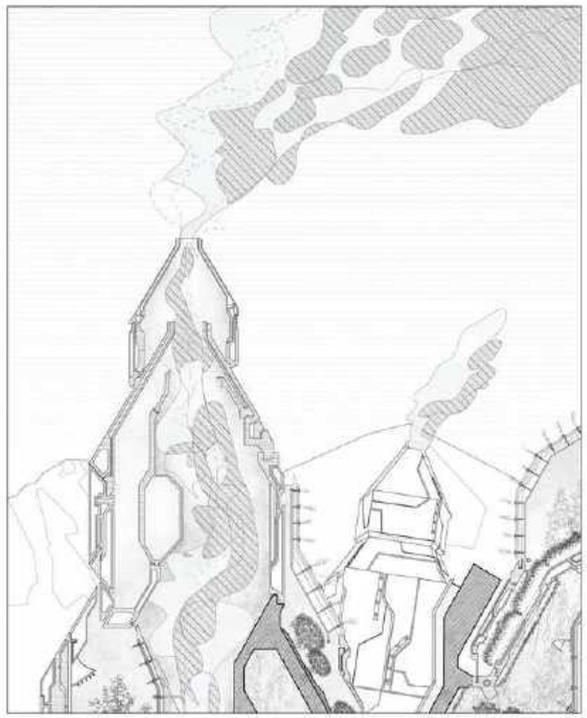
Geothermal



Setun laboratry & Sauna

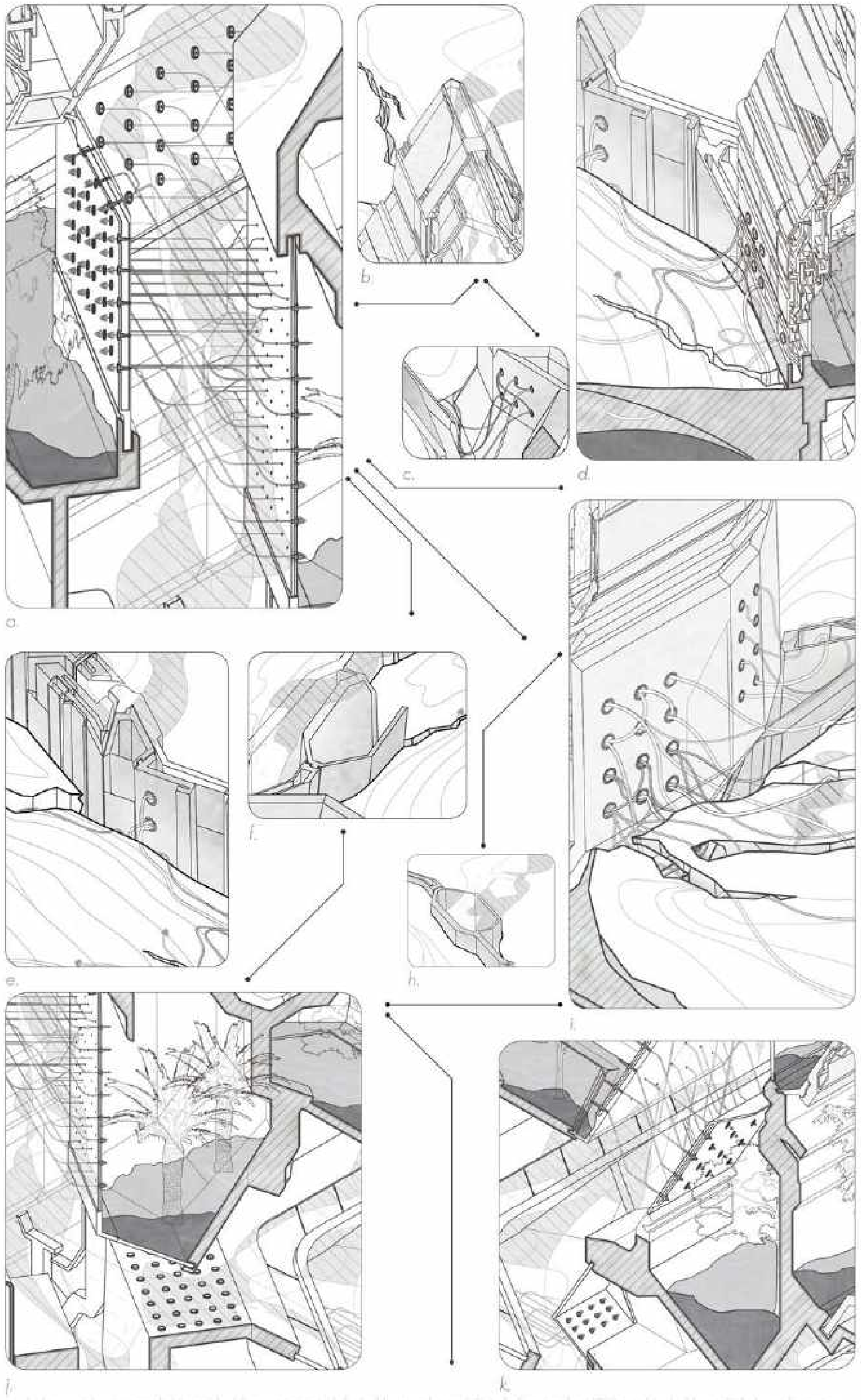


Spawn Chamber



Trachea & Wind pipe

CHAPTERS: PIPING EXPANDING



In this axon drawing, we slightly enriched the context in which the building was located. First of all, we made a 180° cut of the building which showed a greater relationship between architecture and the environment. The building is in a fault above the underground cavern and due to its own growth, the earth has cracks, the soil layer has been stacked and collapsed, and stone has permeated from these gaps, suggesting that this growth is taking place underground.
At the same time, due to the deposition of minerals, a large number of crystallization reactions occurred in the water storage parts of the caves and buildings. Crystals, architecture, and caves created a subtle connection.

AXONMETRIC DRAWING

Left: Root and bifurcation
Right: Fission

AXON DRAWING DETAILS

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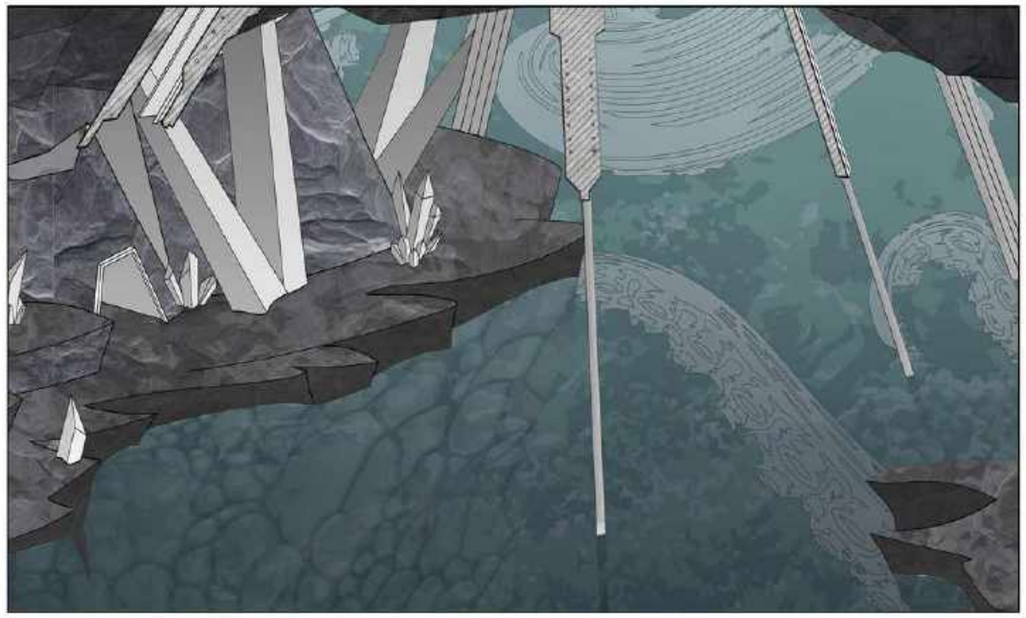

UP: Under World Cave
DOWN: Mono Rail, Cracks and Steam

INTERNAL AND EXTERNAL ENVIRONMENT

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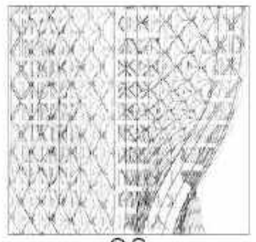


03

BREATHING TOWER AGAINST FOG

Student Tall Building Design Competition

Architecture Design

Personal Work

Spring 2016

Xuzhou City, JiangSu, China

Breathing Celluar

Through the deployment of rotating system the glass panel could achieve the opening and the closing.The vertical bearing seat control the lever to move upside down through the functioning of interior gear system.
The movement of facade sturcture is consistent with the varied air quality. When PM 2.5 exceed the standard and the air is extremely toxic, the rotating system will be operated to reduce the angle of glass panel and the whole system is shrinking to avoid too much pollution to penetrate.
The breathing system will also be operated to address light pollution due to the mass utiliztion of glass curtain behind the system, through the adjustment of the specific unit or several units ,the facade manage to remain relatively environmental-friendly which measn less pollution inside the tower and less consumption of electricity and manpower cost. This breathing tower might be one possible response to the severe pollution.

Accelerating Economy and Deteriorating Air

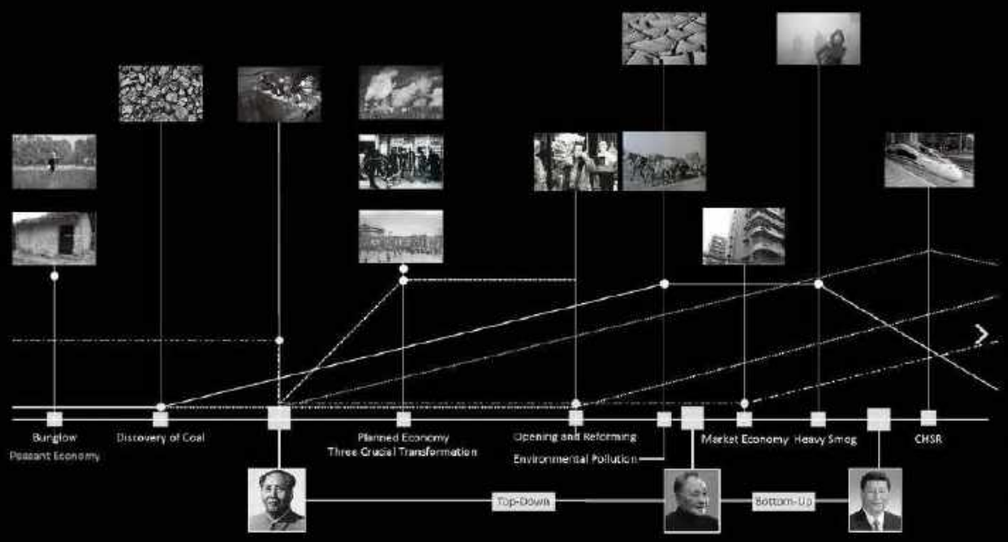




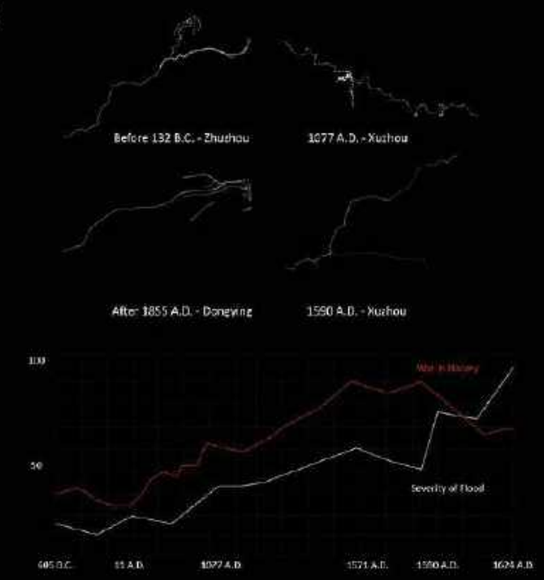
Xuzhou

Critical Historicism

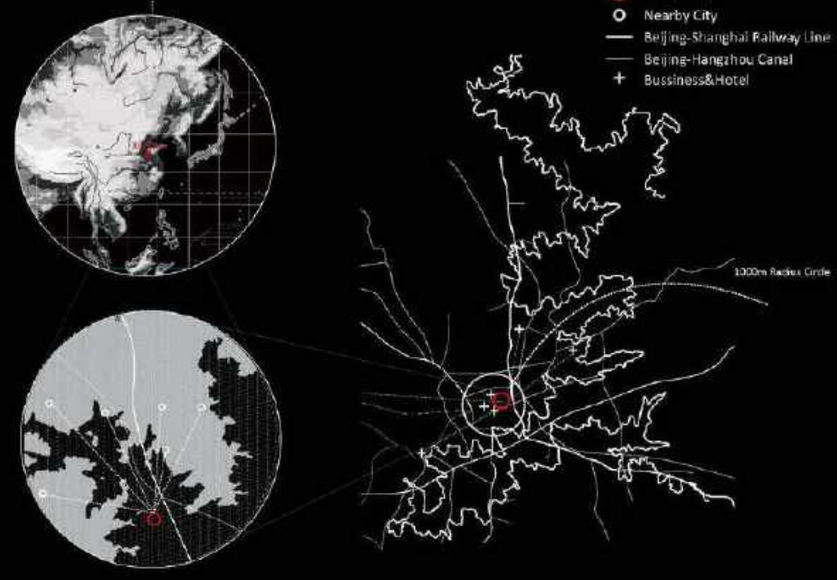
The coal which is used to be the expediting engine of the enhancement of the economy became increasingly tough for the government to deal with for the past 50 years of mining and abusing of Coal resulting in unbeblievable environmental dissater including the severe air pollution- the smog.Luckily, the advancement of technology bring brand new insight in transforming the conservative way of development.



Shifting the Yellow river



The chronical potential towards xuzhou is the mother river-the yellow river wich has changed its channel 1743times in the past 2000 years, the ancient xuzhou suffered from the flood almost every times. the 20m mud burried substantial historical remains beneath the ground.



Xuzhou is China's second largest railway hub, the Beijing-Shanghai railway, the Longhai Railway two main line in this intersection. In 2011, the Beijing-Shanghai high-speed rail opening marked Xuzhou into the "high-speed rail era", while entering the Yangtze River Delta and Bohai Sea 3-hour economic circle. "Xuzhou pass, then the national pass",and modern high-speed rail "double cross" pattern formal stereotypes.

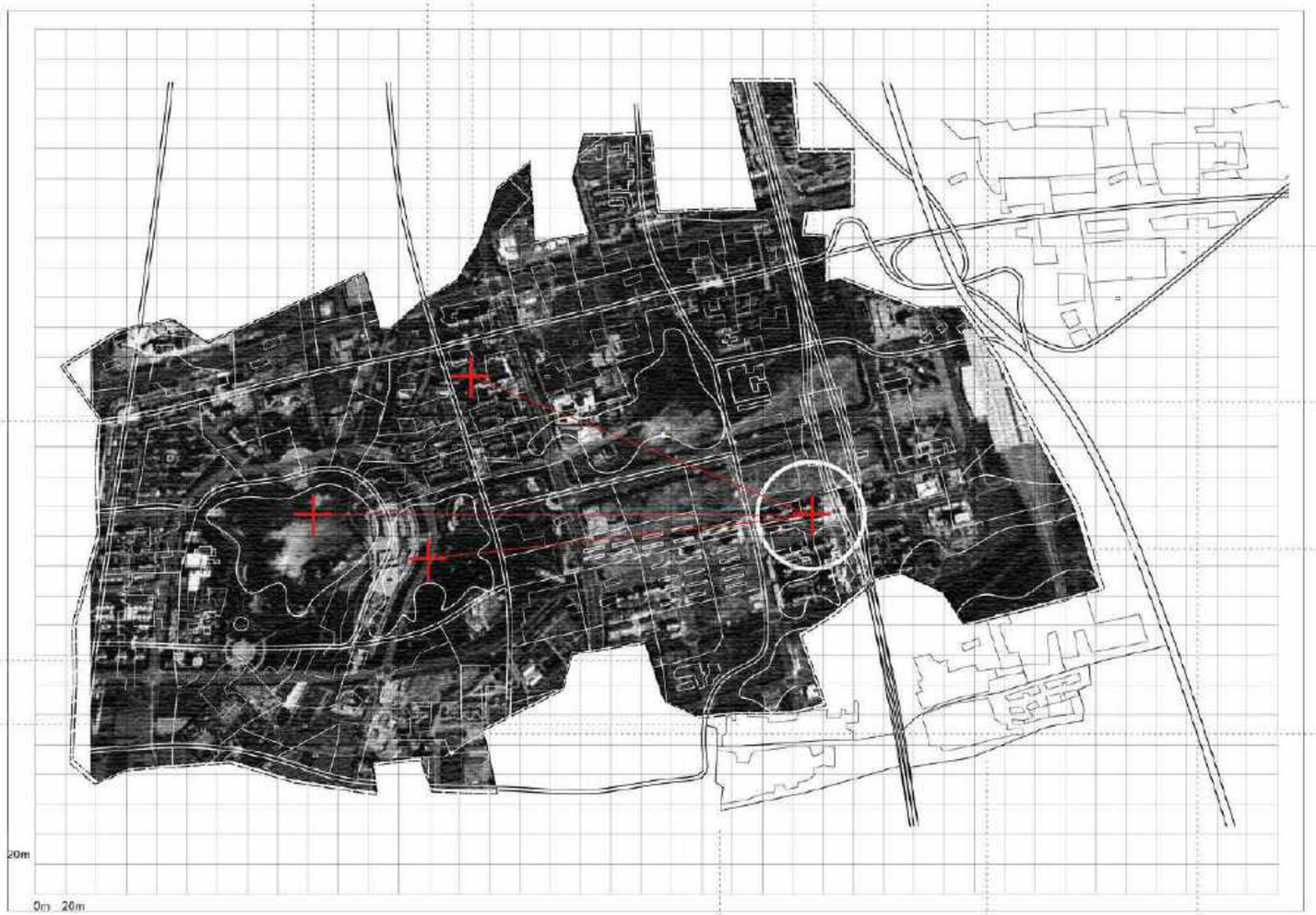
Natural Viewing — Dalong Lake Park — WuMing Hill Park — WanDa Outdoor Activity Center — Site — FengHuang Hill Park

Adjacent Bussiness&Hotel

LvDi Plaza

JingFeng Plaza

WanDa Shopping Mall



Mobility Infrastructure

Beijing-Shanghai Line

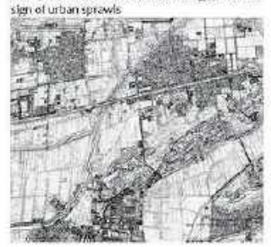
XuZhou CHSR East Station

Planned Metro Station

Xuzhou East Bus Station

Adjacent Villiage Location — Dahu Villiage — Xu Villiage — AnRan Villiage

In 2004
The surrouding area reflects the traditional and conventional texture of Chinese village, show no sign of urban sprawls



In 2007
Nearby villiages was in a fast development and expand its scale and the some of the infrastructure of trasportation also constructed

In 2008
With the construction of Xuzhou east railway station ,vast surrounding area become transformed into urban area.

In 2016
The Xuzhou east railway station stimulate the rapid alternation of urban texture which has been significantly transformed

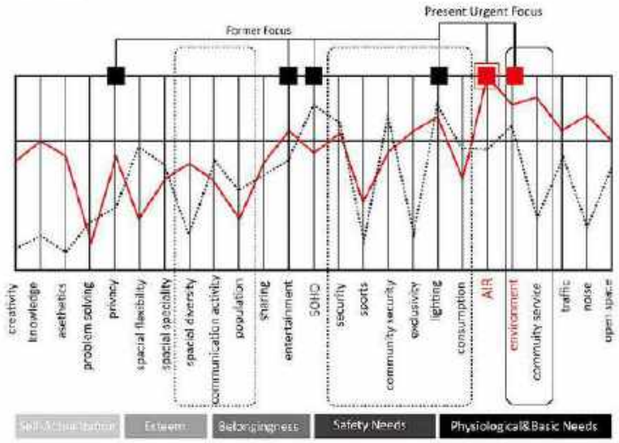
Rural Development

Site Analysis

Base in Xuzhou Kun Peng Road and Cuihu Road between the north adjacent to the front station in front of Xuzhou East Station, east of Xuzhou East Station, south of the planned subway station reserved mouth, in the base of the west there are large lake area and large.
Longshan natural resources, at the same time in the vicinity of the base is also the distribution of several factories and mines dormitory area and the local natural villages, in the base east of the Beijing-Shanghai high-speed export ramp, at the same time said before, the base of the surrounding business needs.
The traffic is rich in the vicinity of the base, the future owners travel more convenient, taking into account the base in the Xuzhou East Railway Station High-speed rail business district, the flow of people, but the residence time is short, need to pay attention to the pedestrian stream line.

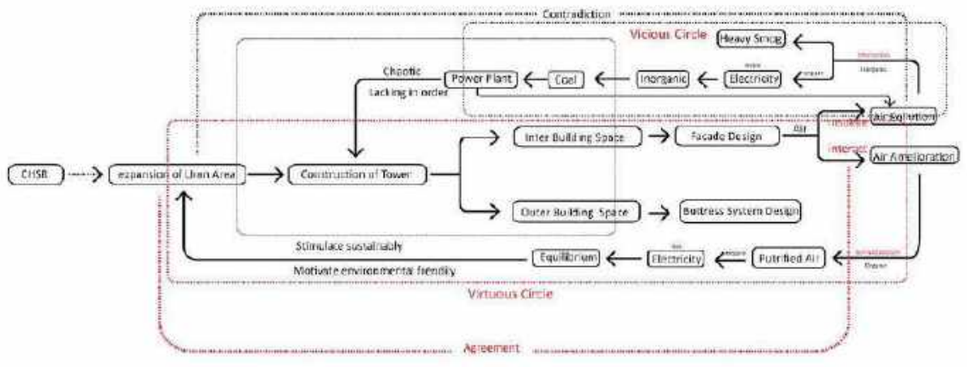
Analysis of needs

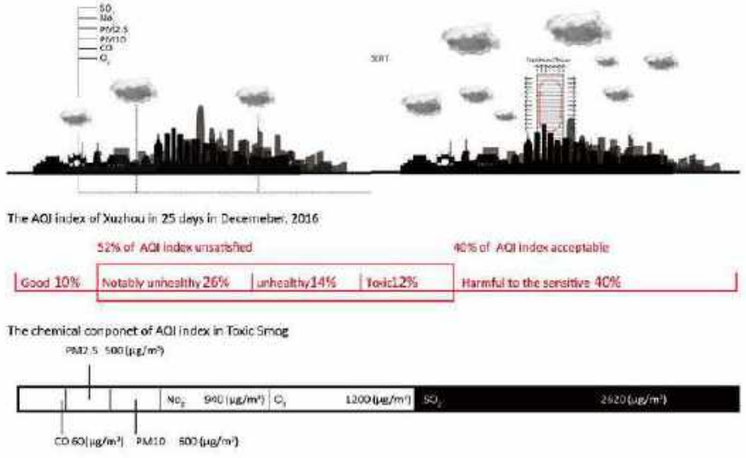
The following pattern reflects the basic need of morden Xuzhou reisdents that is based on the Maslow's theory,the chart obvioously relfects that the residents require puried and clean air and confortating environment.

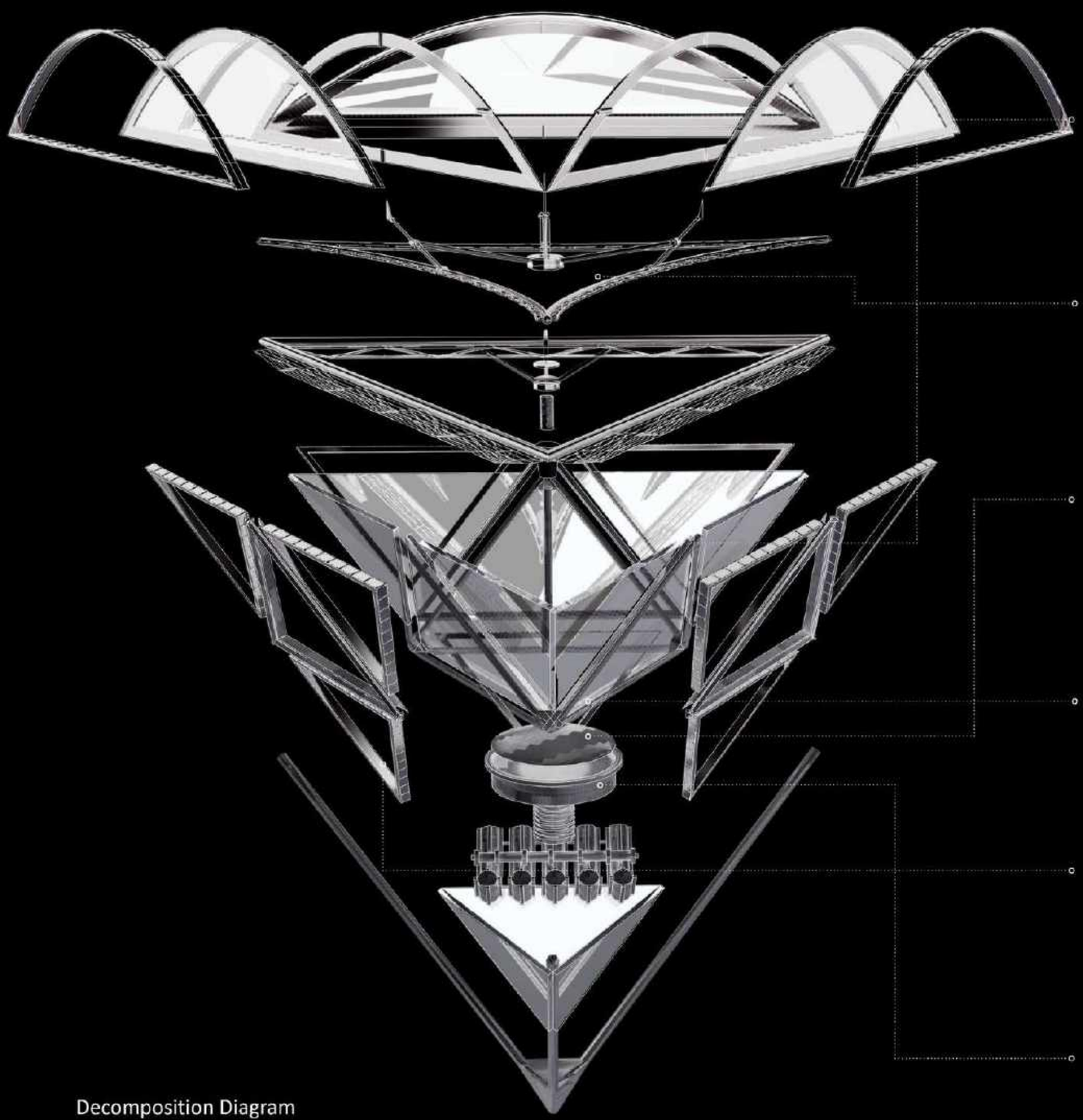


Analysis of haze

Haze, a combination of fog and haze. Many areas of China will be fog together into the haze as a catastrophic weather phenomenon for early warning and forecast, collectively referred to as "haze weather." Haze is the result of the interaction of specific climatic conditions with human activities. High-density population of economic and social activities will inevitably discharge a large number of fine particulate matter (PM 2.5). As a result,Haze often occurs when dust and smoke particles accumulate in relatively dry air.







Decomposition Diagram

Glass Curtain Panel

the surrouding glass curtain panel consit the most part of the device and allow the sunlight and the airt to pass and get in

Glass Curtain Mesh

the surrouding glass curtain panel consit the most part of the device and allow the sunlight and the airt to pass and get in

Rotating System

rotatary suppot device ,through the triangle of the boder and the central hydraulic telescopic device,through the bottom of the power device for engergy ,so that the telescopic device to move up and down, by the contact arm control glass panel opening and closing

Reactioner

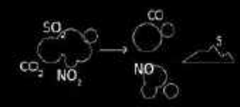
Absorbtion Shell

where the polluter air first confronted is the absorbtion shell which consists of HEPA panel the successfully absorb the PM2.5 and the PM10, deluted the noxious air.

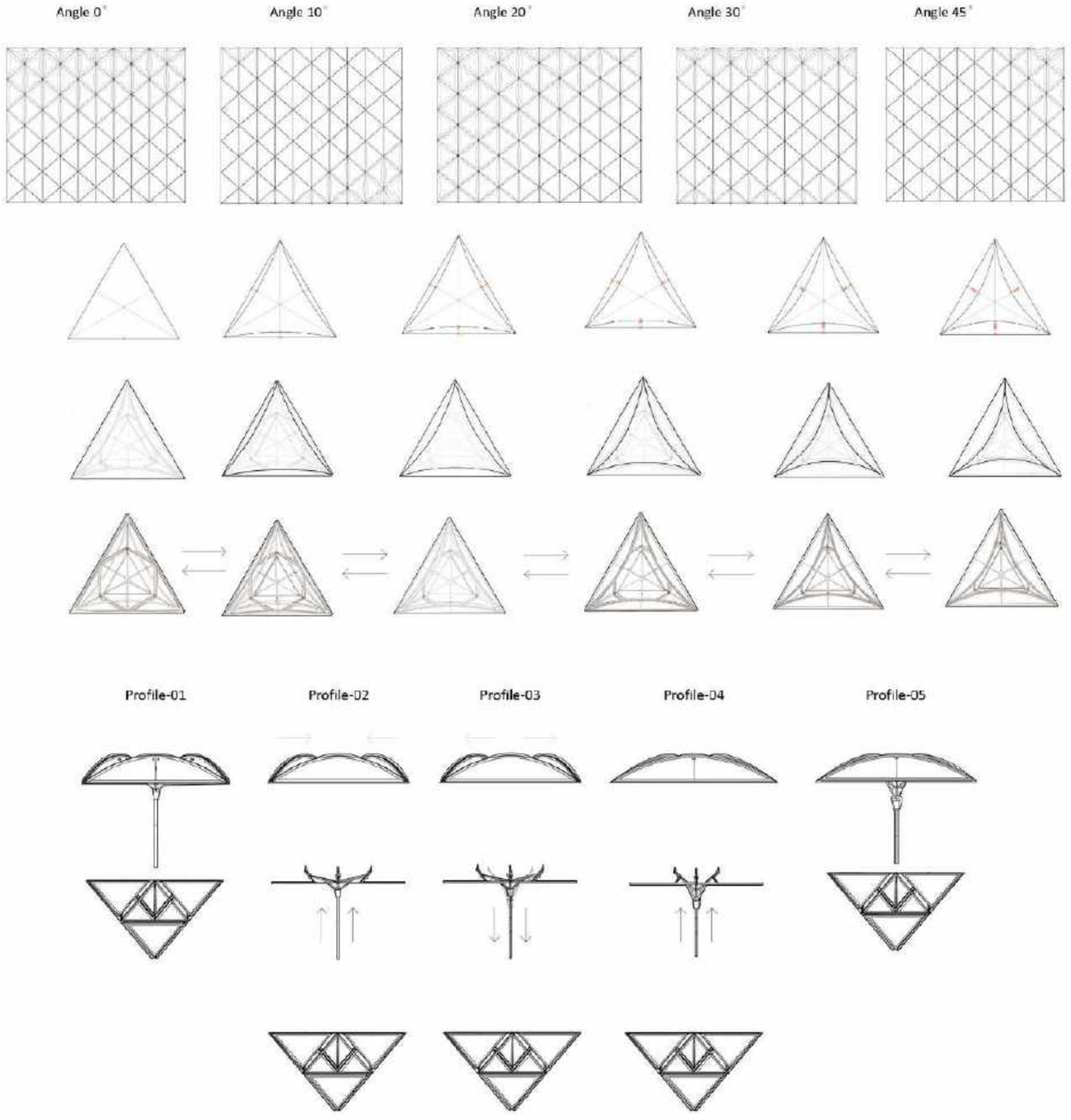
Purifying Container

the last part of the reactioner is the chemical reaciton container,in other words the Purifying Container,which ddress the final part of delusion of the pulltion in the air and assure the in-coming air is stisified for the residence

Sterilizing Engine



when the delluted air floww to the sterilizing engine ,it keeps transforms it into the sterilized and indifferent state and assure the coming in air is purified.



Changing Facde Structure

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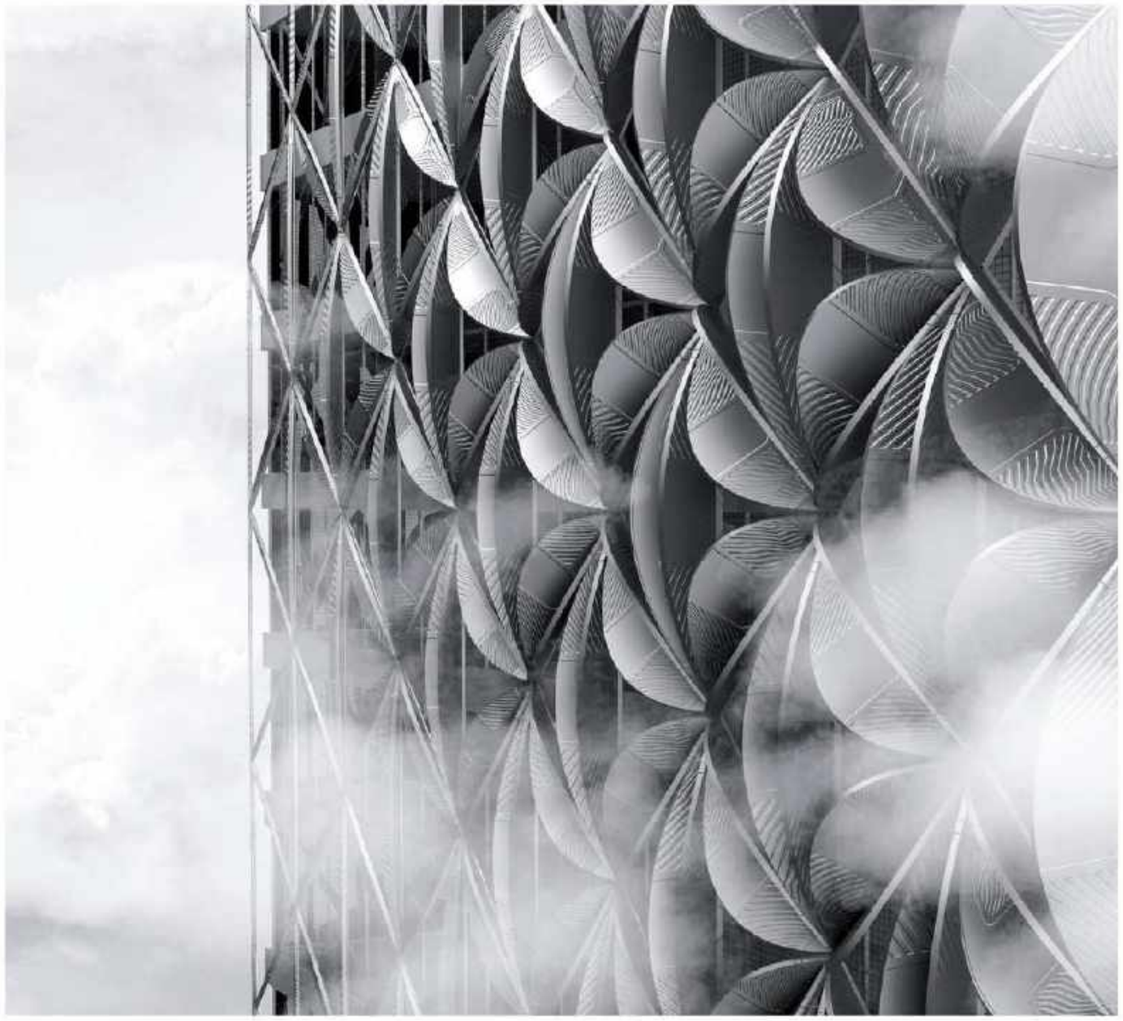
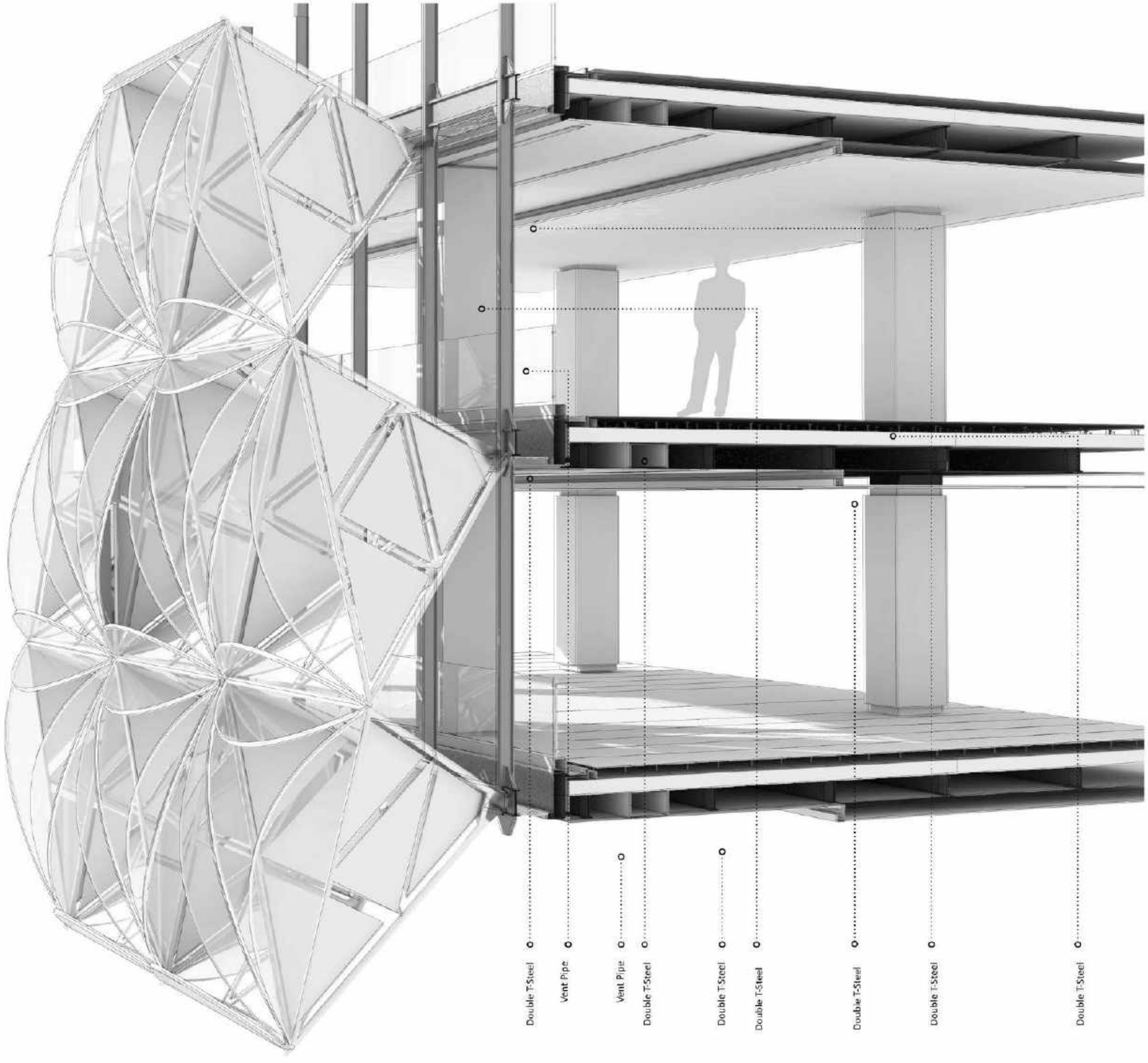
Interacting With Smog

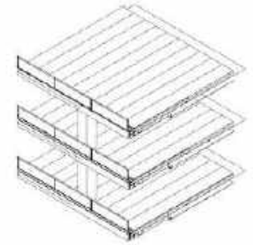


Focus of the District

Facade Units

The facade units interacting and purifing the polluted air are constructed seperately on the steel truss , consequently, the steel truss that also consilidate the facade system is attached to each floor plane firmly. People in the tower can view the outside landscape directely through the facade units and the glass pannelled balustrade securing the safety.



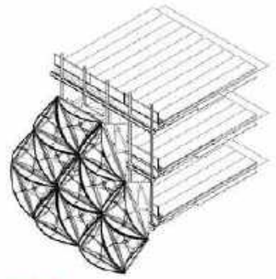


Single glass pannel

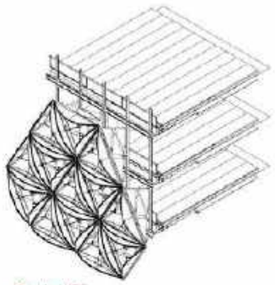
Glass pannel with curtain wall

Single curtain wall

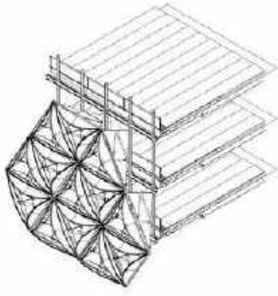
Multilayer curtain wall



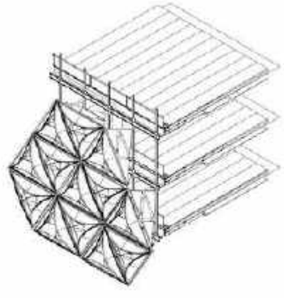
Angle 0°



Angle 15°



Angle 30°

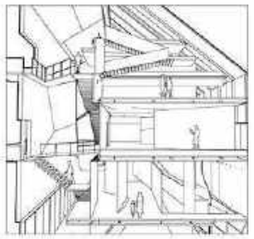


Angle 45°

Facade Shifting

The facade units can actually alter its glass curtain pannel to specific angle which is based on the temperature, weather and the severity of fog outside .This change is achieved through the rotating device and may result in stimulated shadow allowing into the tower, namely, curtail the expendenture of maintaing the inside environment of the tower.

The attached device ensure the continuity of purified air to pull into the tower
The newly design of tall building-breathing twisted tower ensure its interactiong between the inside and the outside
Twisted tower connect the environment with the surrouding environment



04

NEW ART MUSEUM GOTTINGEN

Gottingen Art District (KuQua) New Art Museum Competition

Architecture Design

Personal Work

Spring 2017

Gottingen Art District, Lower Saxony, German

REVERSED BOUNDARY IN DOUBLE SYSTEM

The Lucifer Effect was written in response to his findings in the Stanford Prison Experiment. Zimbardo believes that personality characteristics could play a role in how violent or submissive actions are manifested. In the book, Zimbardo says that humans cannot be defined as good or evil because we have the ability to act as both especially at the hand of the situation. Examples include the events that occurred at the Abu Ghraib Detention Center, in which the defense team—including Gary Myers—argued that it was not the prison guards and interrogators that were at fault for the physical and mental abuse of detainees but the Bush administration policies themselves.[8] According to Zimbardo, "Good people can be induced, seduced, and initiated into behaving in evil ways. They can also be led to act in irrational, stupid, self-destructive, antisocial, and mindless ways when they are immersed in 'total situations' that impact human nature.

STREET PERSPECTIVE OF THE NEW ART MUSEUM

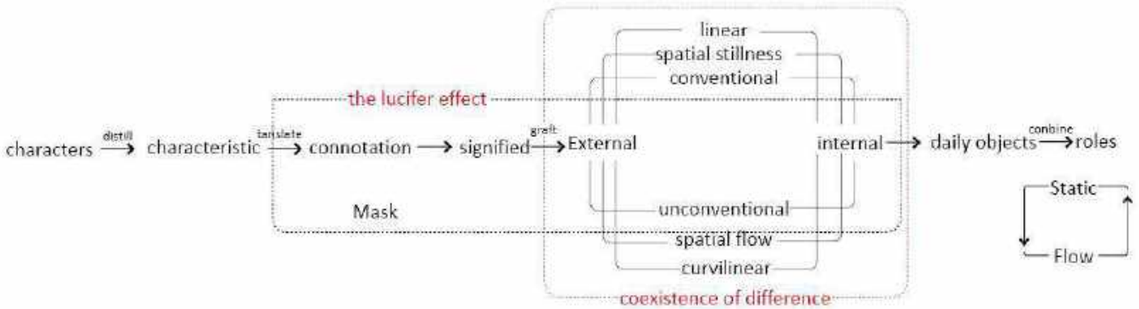
Rene Descartes
(1596-1650)

George Orwell
(1908-1970)

Philip Zimbardo
(1933-)

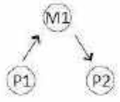
Thom Mayne
(1944-)

Double System

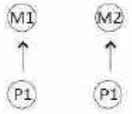


According to the methodology concluded from the Lucifer Effect, it is easy to observe that there is also no absolute "good" or "evil" in the process of designing and constructing architecture. After i distill the characteristic from the exterior charcters of the surroudings, which is filled with countless houses of celebrities, i choose the linear and conventional facade and totally reverse the internal space in the museum for that i prefer that there is also no absolute linear or curvilinear, spatial static or spatial flow and conventional either. This two opposite stuff can be integrated inside one design- that is my design of thsi art museum. Moreover, when observing daily objects, people are have the intention to judge something just though the appearence. however, through designing this art museum ,i also want to prove this intention is idealogically untenable.Thus, this judgement is also ironic from my perspective

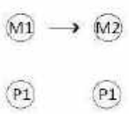
Interactionist dualism



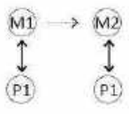
Epiphenomenonism



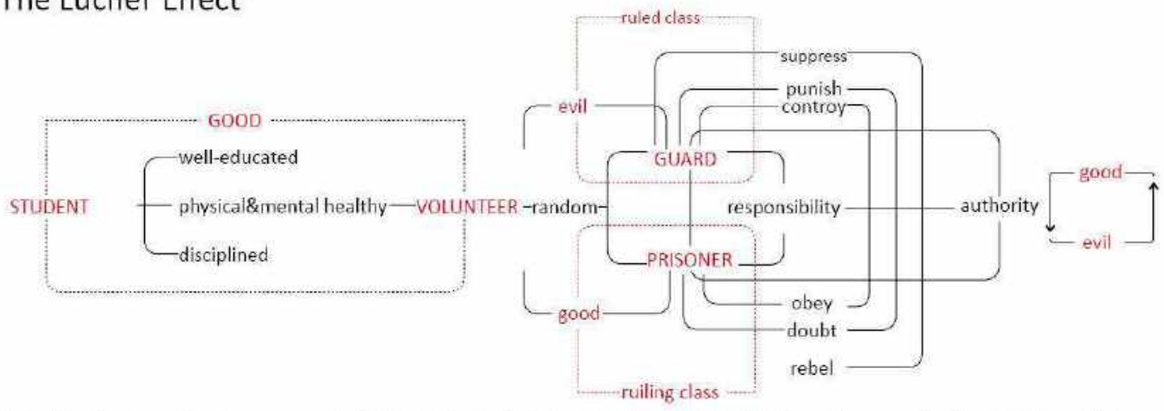
Psychophysic parallelism



Nonreductive physicalism

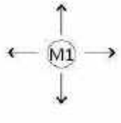


The Lucifer Effect

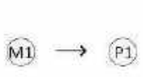


The Lucifer Effect was written in response to his findings in the Stanford Prison Experiment. Zimbardo believes that personality characteristics could play a role in how violent or submissive actions are manifested. In the book, Zimbardo says that humans cannot be defined as good or evil because we have the ability to act as both especially at the hand of the situation. According to Zimbardo, "Good people can be induced, seduced, and initiated into behaving in evil ways. They can also be led to act in irrational, stupid, self-destructive, antisocial, and mindless ways when they are immersed in 'total situations' that impact human nature in ways that challenge our sense of the stability and consistency of individual personality, of character."

Monism

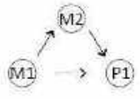


Physicalism



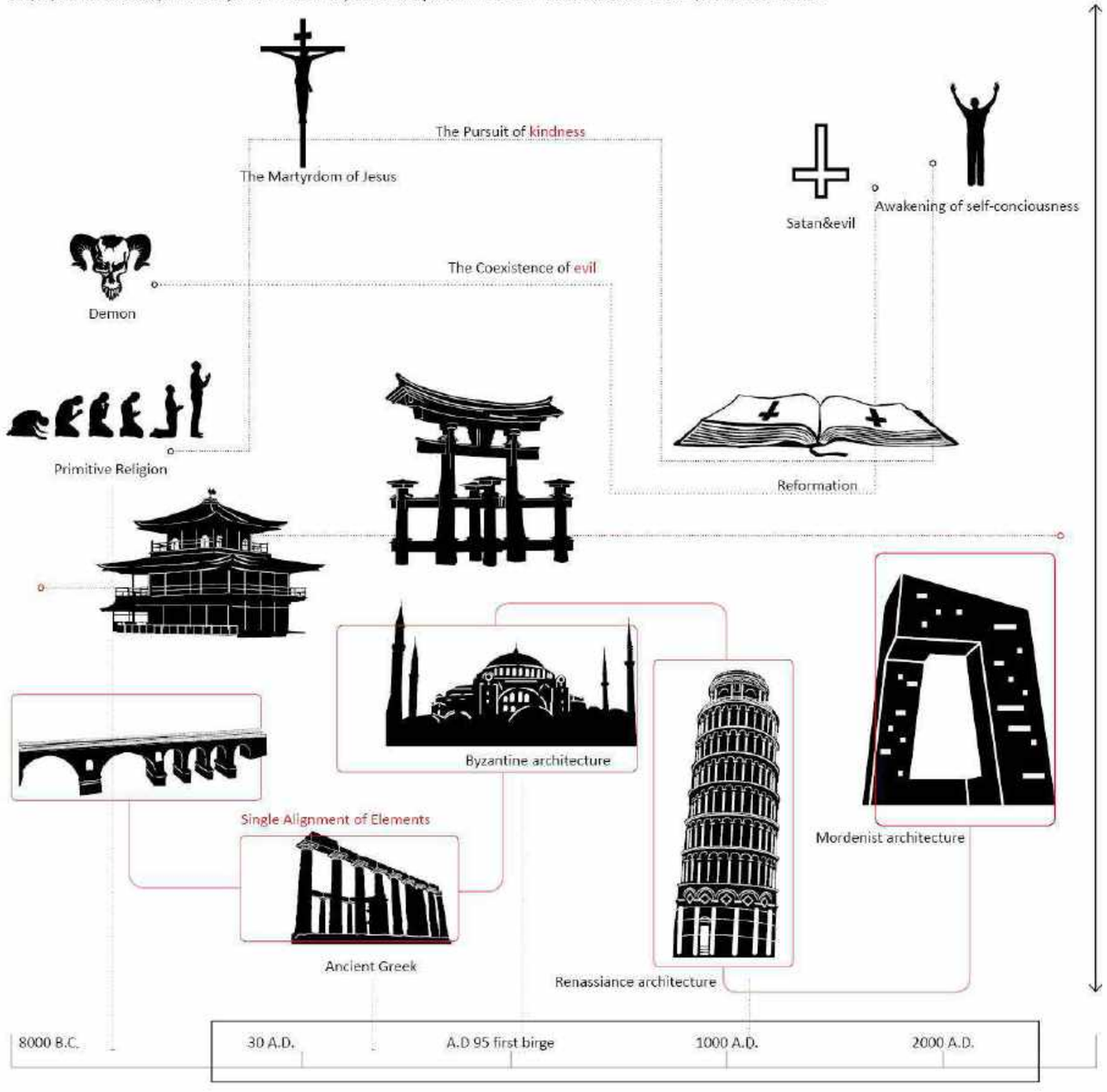
Idealism

Neutral mosnsim



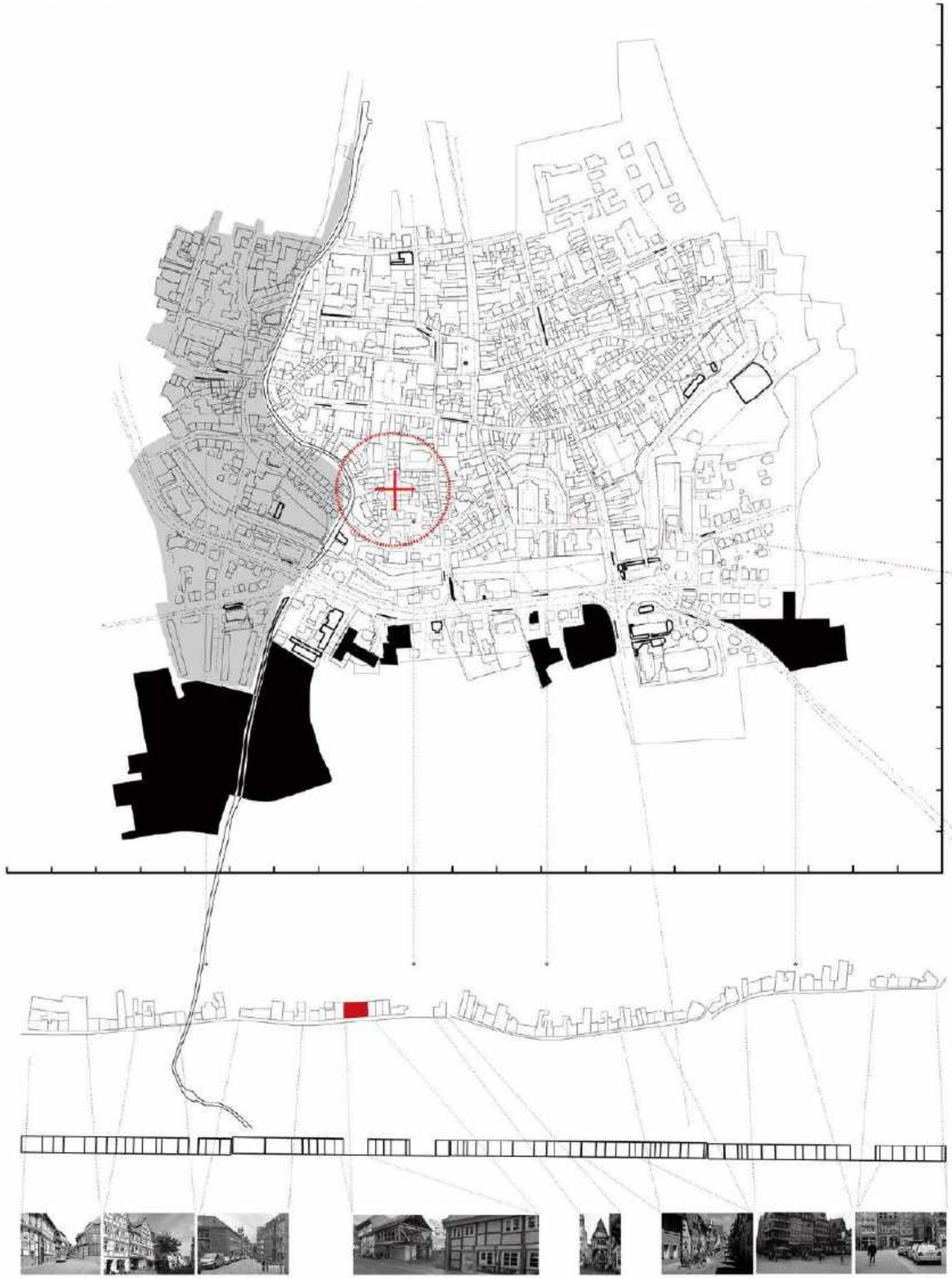
Analysis of contradiction

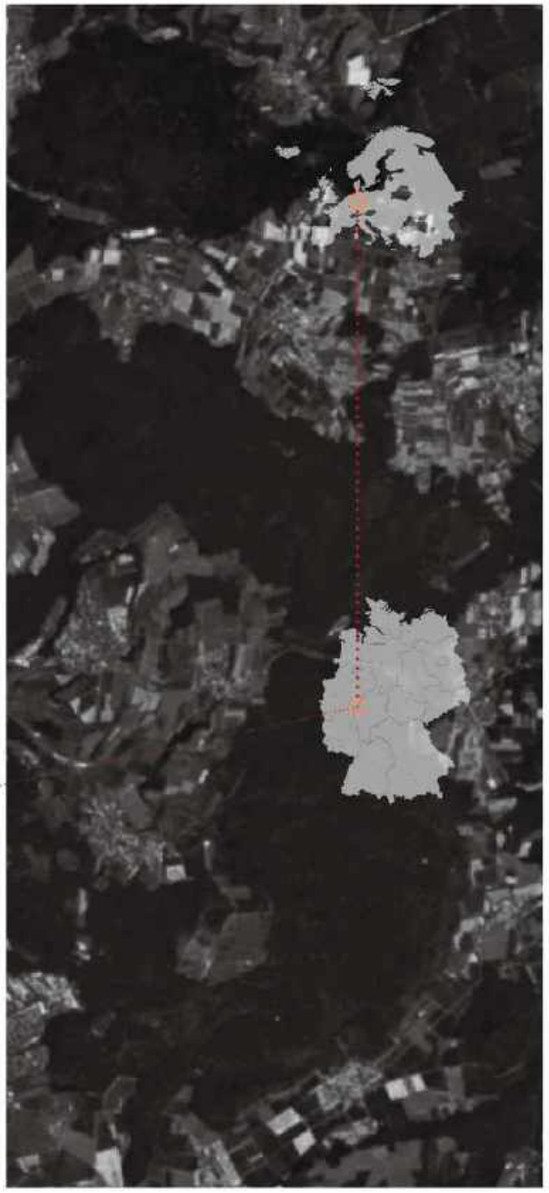
The Lucifer Effect was written in response to his findings in the Stanford Prison Experiment. Zimbardo believes that personality characteristics could play a role in how violent or submissive actions are manifested. In the book, Zimbardo says that humans cannot be defined as good or evil because we have the ability to act as both especially at the hand of the situation. Examples include the events that occurred at the Abu Ghraib Detention Center, in which the defense team—including Gary Myers—argued that it was not the prison guards and interrogators that were at fault for the physical and mental abuse of detainees but the Bush administration policies themselves.[8] According to Zimbardo, "Good people can be induced, seduced, and initiated into behaving in evil ways. They can also be led to act in irrational, stupid, self-destructive, antisocial, and mindless ways when they are immersed in 'total situations' that impact human nature.



Existing Cultural Network in Gottigen

This project is located in Gottingen, a university city in Lower Saxony, German.The River Leine runs through the town where is filled with houses of celebrities who have fame in scientific field, Theatres,Museums,collections and Gardens.Thus, the texture of Gottigen is basically preserve the original form of middle age when it was borned and its building technology is inheriting form local timber frame and conventional architecture language. Gottigen,focusing on protecting traditional culture and promoting the fostering of art, is in lack of modern standard art museum in south part of the city





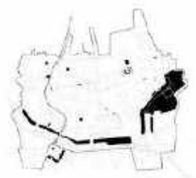


Diagram of Locality

Diagram of Public transport

Diagram of Amenity

Diagram of roads sprawls

Diagram of Shop

Diagram of Natural

Diagram of Sports

Diagram of Waterway

7:00 am

Wow,new art museum!

7:05 am

7:06 am

7:10 am

7:20 am

7:30 am

8:20 am

8:25 am

8:30 am

9:10 am

9:45 am

Emmm..... nice.

10:15 am

10:35 am

10:40am

Oh,this is a new exhaubition.

11:42am

The transition space is unique

11:35am

11:37am

11:40am

Oh,the step is outside.

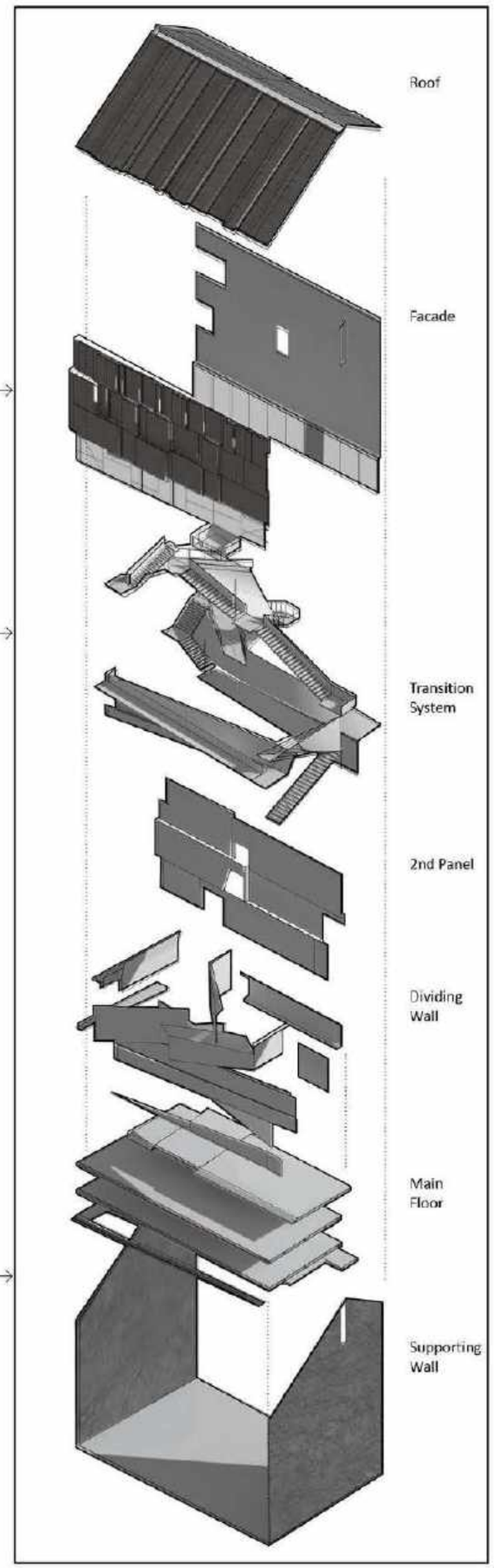
11:50am

12:00am

Whoooh!the backyard is there.

12:14am

Explosion view of art museum



Static and Flow Exhaubition

Through a designed spatial experience,the sequential scenes connecting various functional space in series,together.The facade inhereting local construction language blur the boundary of the museum and the surrouding. Time and space enlongate inside the flow space embeded in this art sequence.

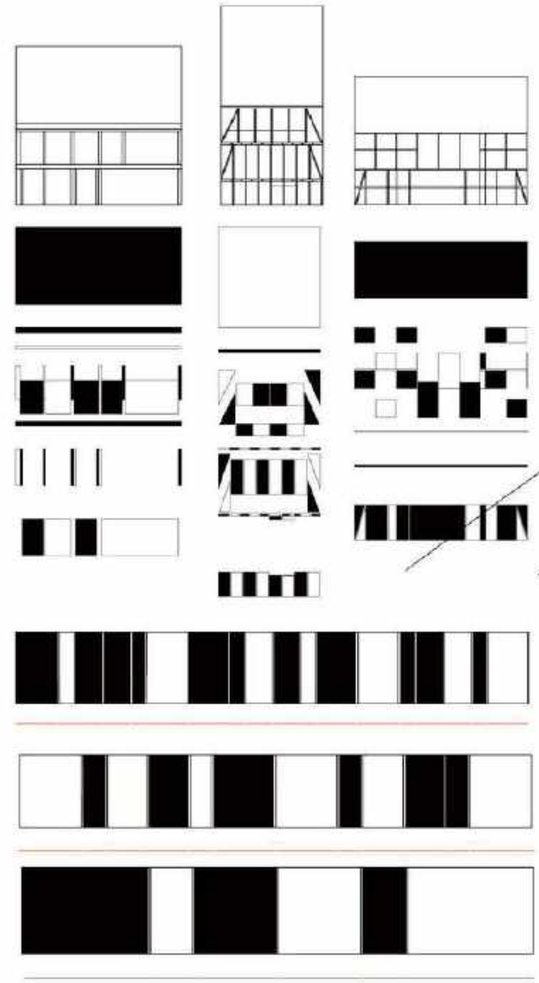
Class of Consisting elements

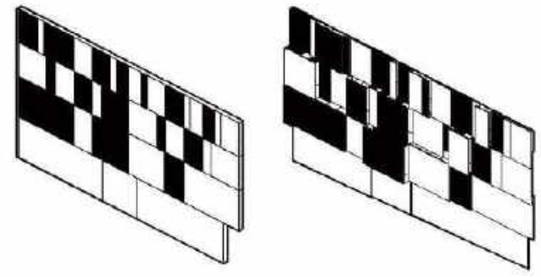
The front and back facade ensure the consistence between the art museum and the surrouding ancient building constructed in traditonal way, and allow the connection of street and the back garden. On the contrary, the interior space is on the opposite of the front view, which is employing flow space and sequence experience to from an atomsphere that promoting appreaciating arts and experiencing the seperate space in the art museum.Moreover, the transition sysytem is also the continuation of the flow space.

Redefining of Gottingen Streefront

The site is situated at the intersection between a building constrcuted in 15th and one consturcted in 19th.Through a serious abstract and applied strategies, the project distill the prototype of streetfront in Gottigen. Then with the further singulation and interaction, the basic elements representing Gottingen traditional building is defined. Simultineously , by refer the famous instances form 195BC to 2016, Imagining the site as a conjunction of of a concentration of the back and future ,however, the facade is also integrating into the streetfront.

Evolution of facade pattern





195BC

Panthoen-the holly temple of Rome, feid the precious stuff

15TH-19TH

Timber framing-the traditional way to constuct the Germany architecture

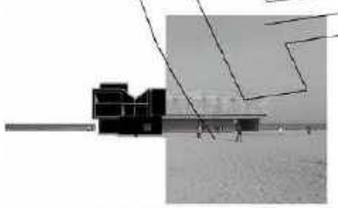
1949

Glass house -designed and constructed by Philp.johonson

1950

Farnsworth House-designed and consturcted by latte .

2014



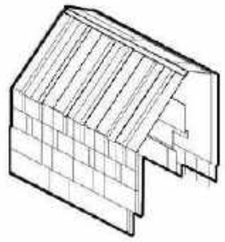
Library located by the seaside, designed and constructed by Chinnese architecut -Dong Gong

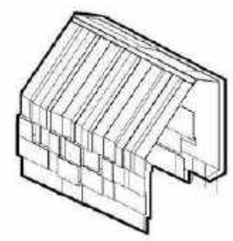
2016

Church located at the seaside

2017

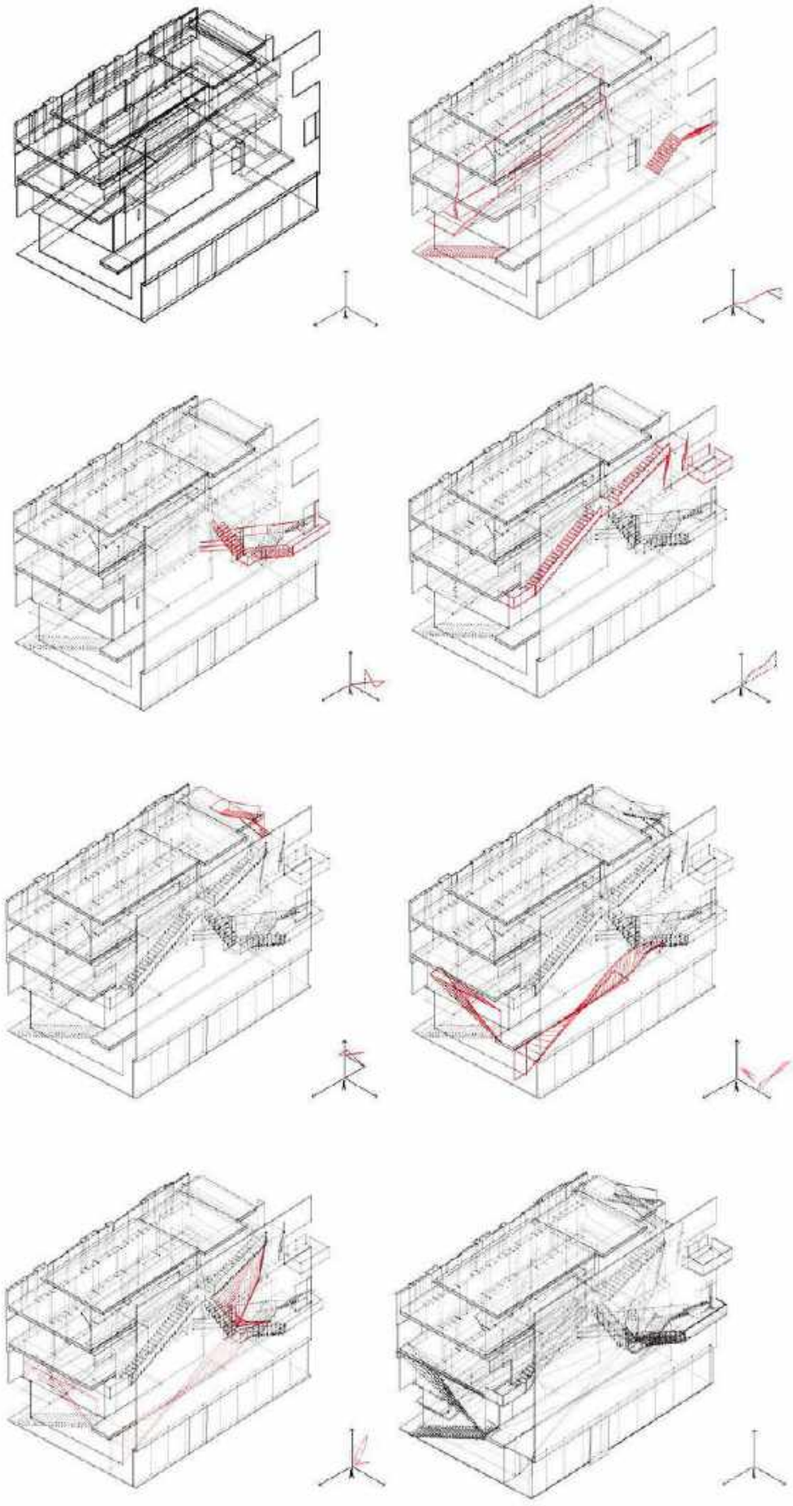
Art museum in Gottingen





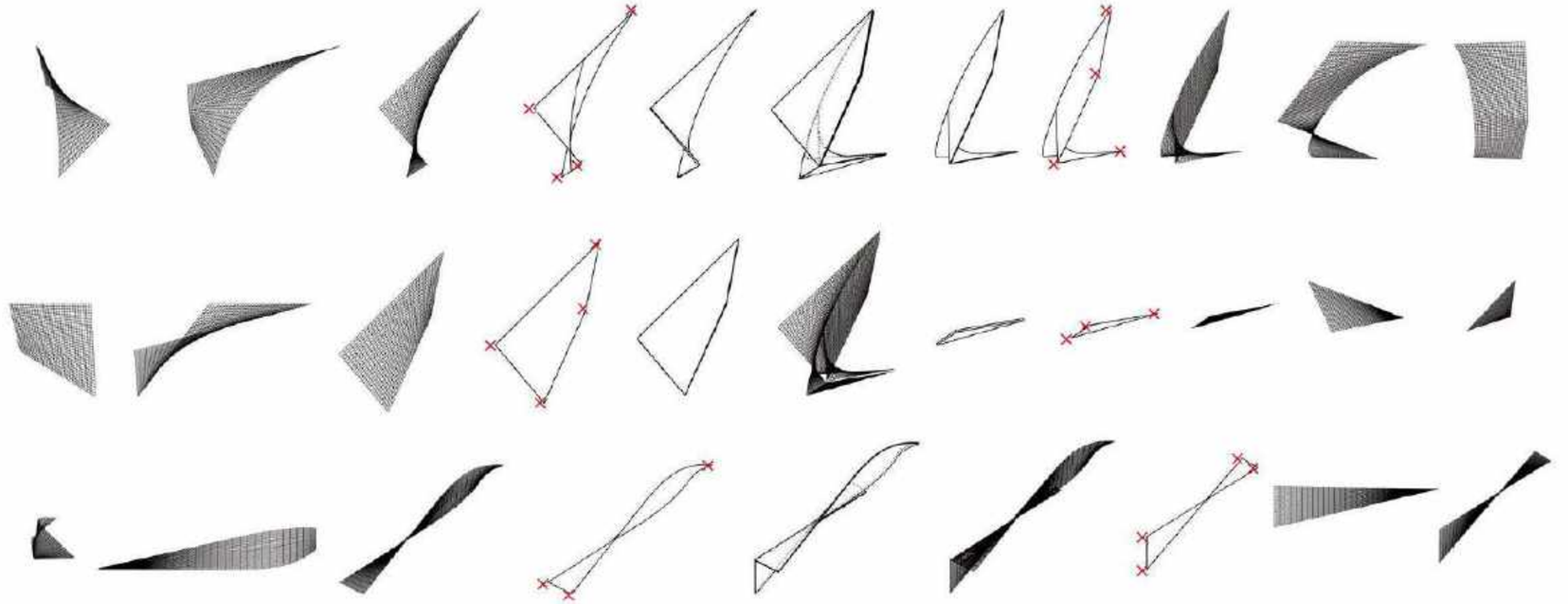
Evolution of transition system

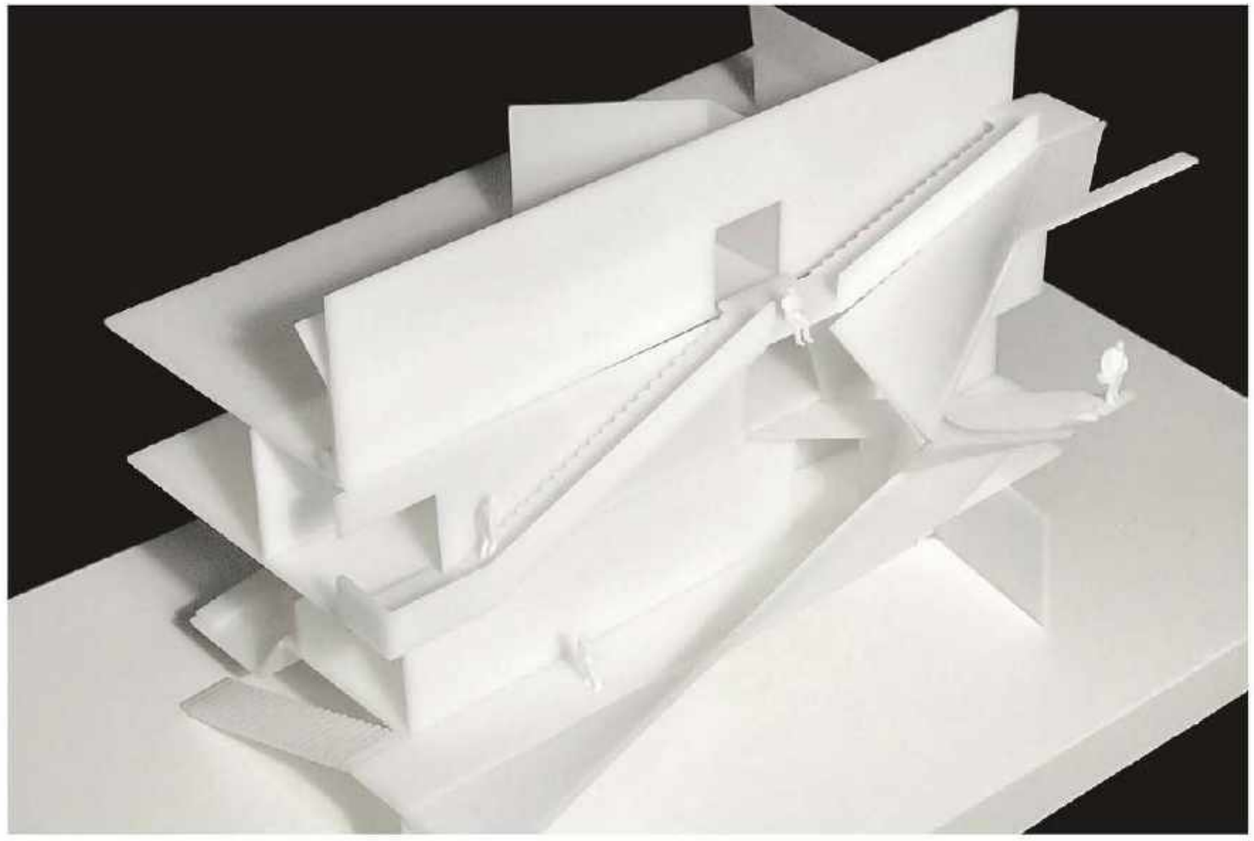
Through defining the transtion system that consisted of stairs, plane,balustrade and twisted mesh.In the first sight, it is the stairs in the entrance and outside stairs connecting the interior and exterior.Moreover, the twisted mesh are the main portion of the flow transition system.The wall and the floor is integrated into the twisted mesh , namely, the horizontal and vertical space are coalesced in one specific element.



Analysis of twisted mesh

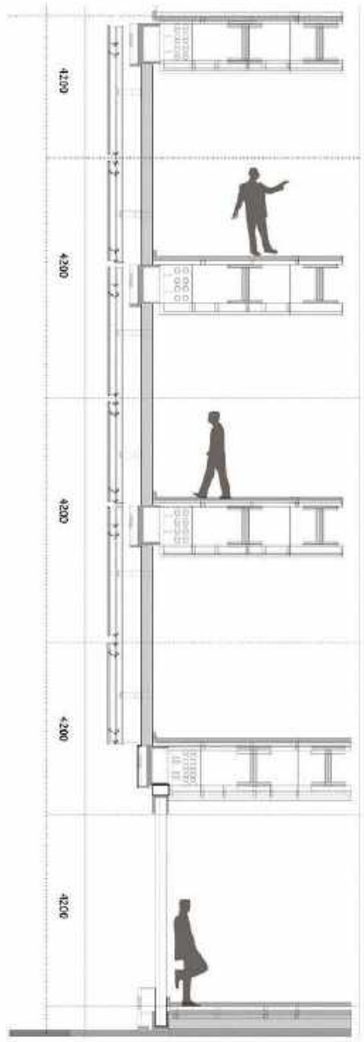
The central twisted mesh is consiste of four different portion possessing separate function in appreaciation. Each mesh employ its own curve, surface and curvature, as a result. each mesh demonstrated distinctive features and each one can be constructed by metal truss system and its design is not a wonder but in fact can be achieved. Then the space in this art museum is actually be twisted and flowed.



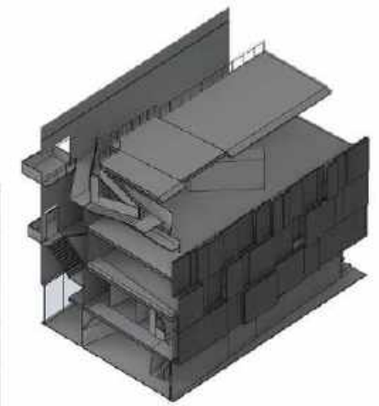


Transition System

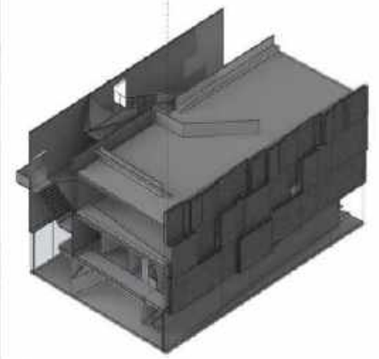
The back facade of the museum employ the glass curtain lessening the sense of gravity of the art museum constructing of concrete. However, in order to avoid the nihility of space experience. I designed one unit of concrete wall to maintain the balance between the sense of gravity and nihility. And the glass curtain providing the connection it blurs the boundary of internal and external space. It is a well-illustration of the relationship between the residents and the society and nature.It also allow the sunligt to alleviate the illumination.



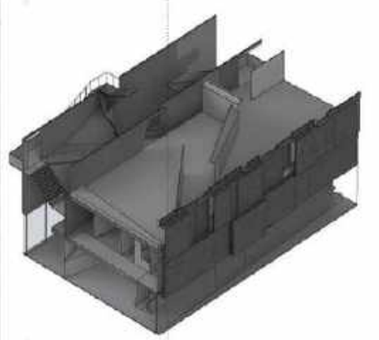
Fifth Floor Axonometric



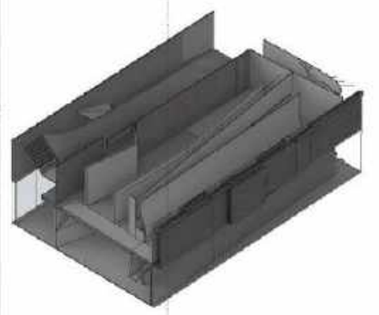
Fourt Floor Axonometric



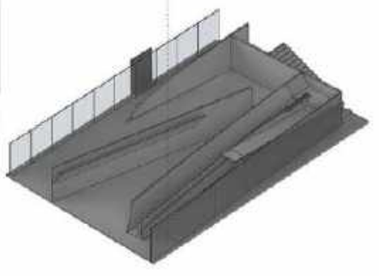
Third Floor Axonometric

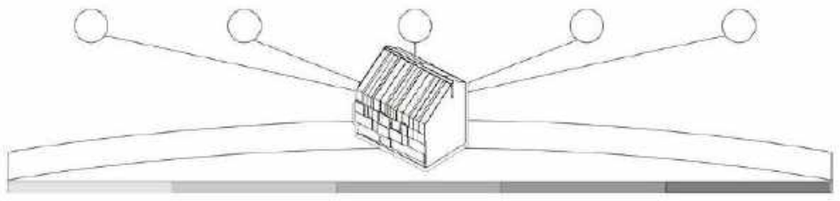


Second Floor Axonometric



First Floor Axonometric

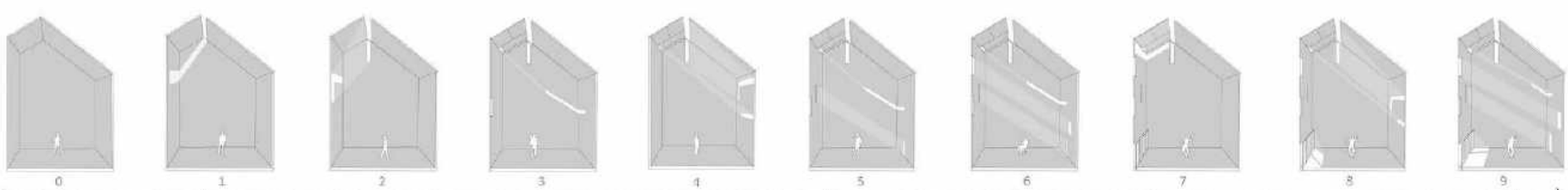




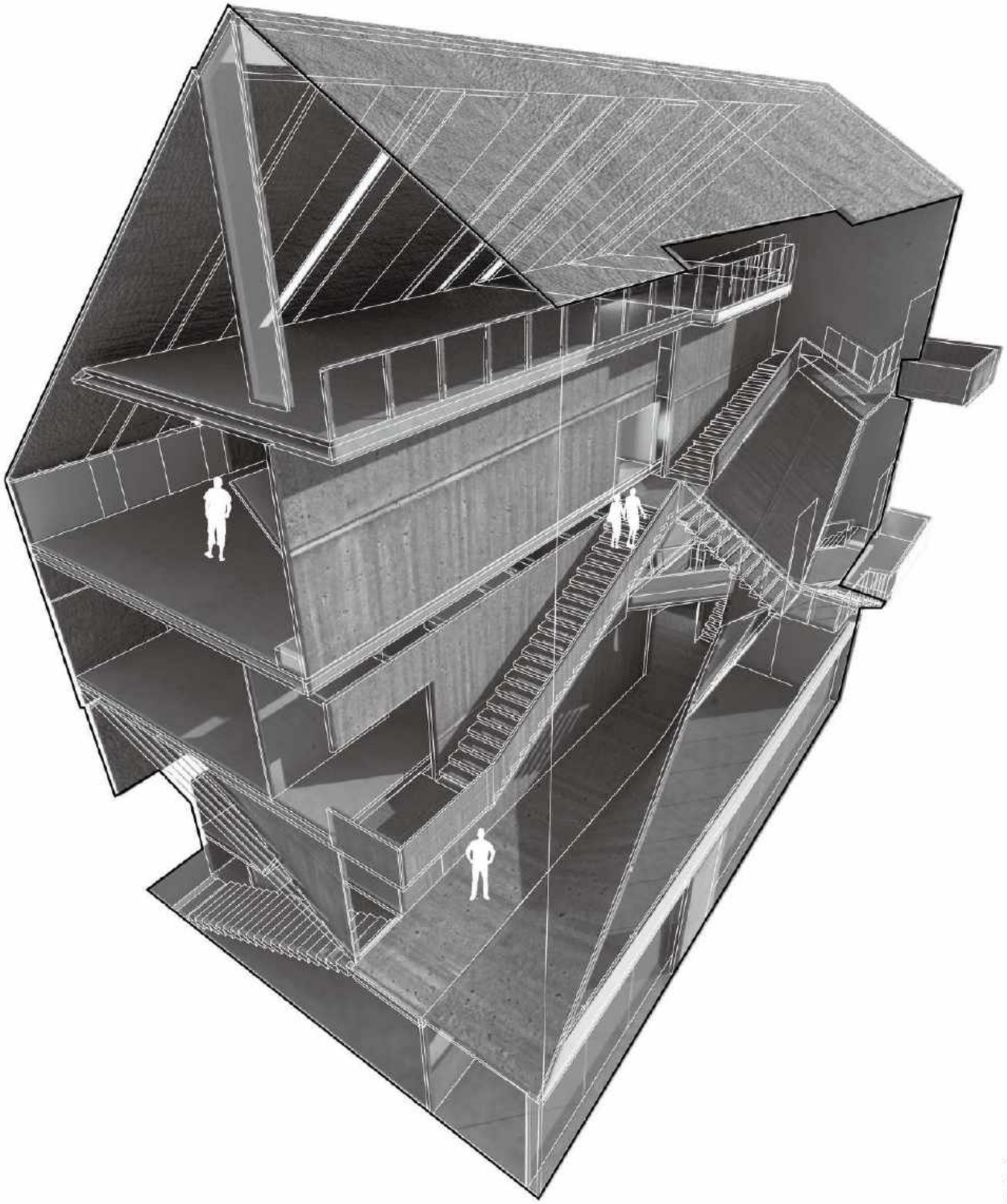
Evolution of Lighting

In order to create different and unique space experience of the art museum, i designed areaway to allow the sunlight project through the glass curtain and he concrete wall.However, intending to avoid the sunlight to disguise the beauty of art collections in the art museum, the areaway are only deployed in the back portion of the museum where is also the transition system.

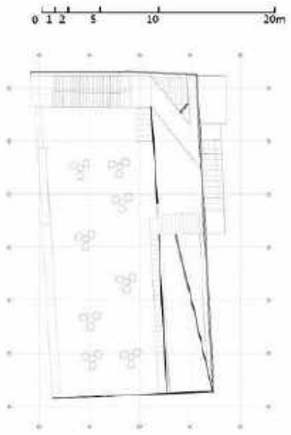
The following diagrams illustrated the illumination of seperate moment during one day ,it is obviously that through shifting of sun, the beam is also demonstrated entirely different situation and allow visiters to experience specific space during the different time of the day.Moreover, the sunlight also blur the boundary between the interior space and the exterior space, in other words. the employment of sunlight allow the time to become one of the variable that control the space experience of the art museum.



Pespective View of Flowing

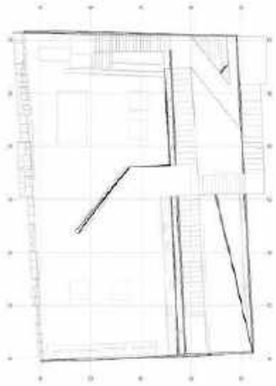


Fifth Floor Plan



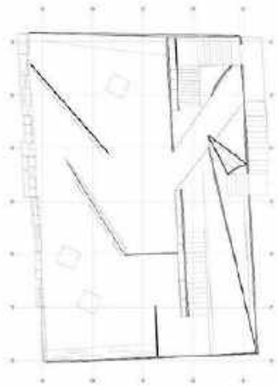
1.resting space
2.transition system

Fourth Floor Plan



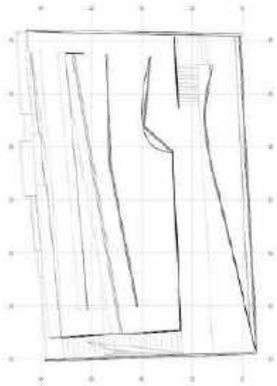
1.History Hall
2.resting space
3.transition system

Third Floor Plan



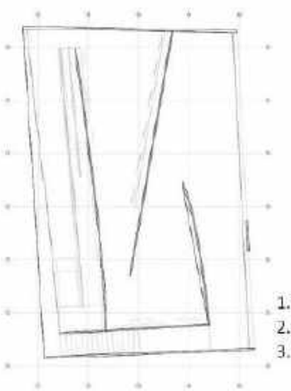
1.regional gallery
2.Interior partition
3.Oblique stairs

Second Floor Plan



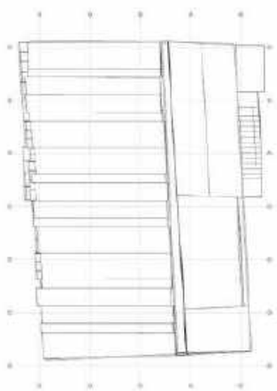
1.Art exhibition
2.resting space
3.transition system

First Floor Plan



1.Entrance stairs
2.resting space
3.Interior partition

Roof Plan



1.Facade
2.Dormer
3.Outdoor stairs

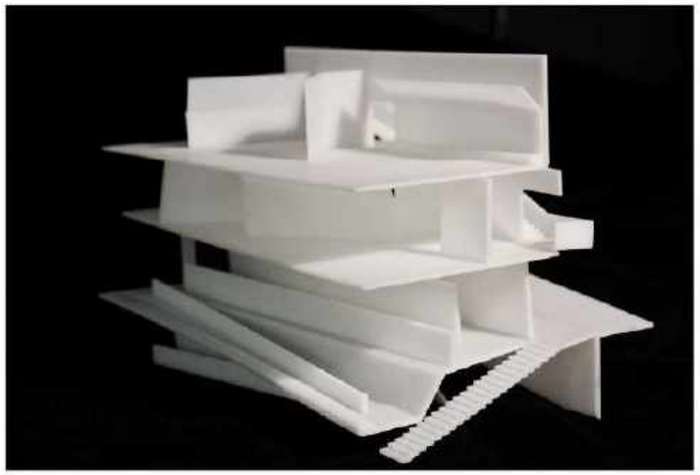
The entrance of the art museum guiding visitors to he second floor directly, then visitors can go any preferred gallery through the transition system which is consisted of twisted mesh.The first , second and third floor is filled with different kinds of art and cultrual collections including the regional one and oversea. At the fouth floor there is a resting space allowing visitors to take a break and enjoy the flowing space through the upper areaway .

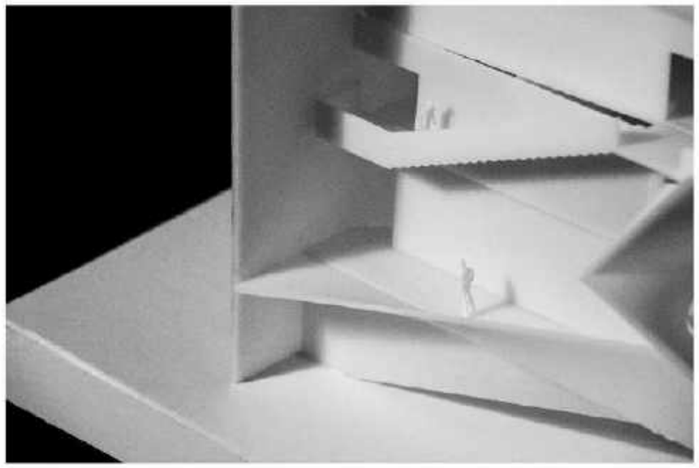
The New to The Old

The transformation the facade and the esteem of the traditonal constrcution skills shape the front view of the street together, through this remodeling offers new spatial qualities both interior and exterior and the museum itself evoluted into the visual focus and tourism center of Gottingen.The utilization of glass curtain of the first floor allow the interior lighting to permeate into the street. At night the lighting of the museum will attract the perdestrian naturally. At daytime, the transcluent glass also neutralize the sense of weight of the facade pannel.

The Flow to The Stillness

The interior space of the museum is obviously contradictory towards the exterior appearance of it for employing various flow spatial shape and room.However, serveral partition still utilize the vertical shape.





05

BRIDGED DEVICE

NISSHIN Competition 2017

Architecture Design

Teamwork Members: Hanning Liu, Mengwei Wang, Hongyu, Pan

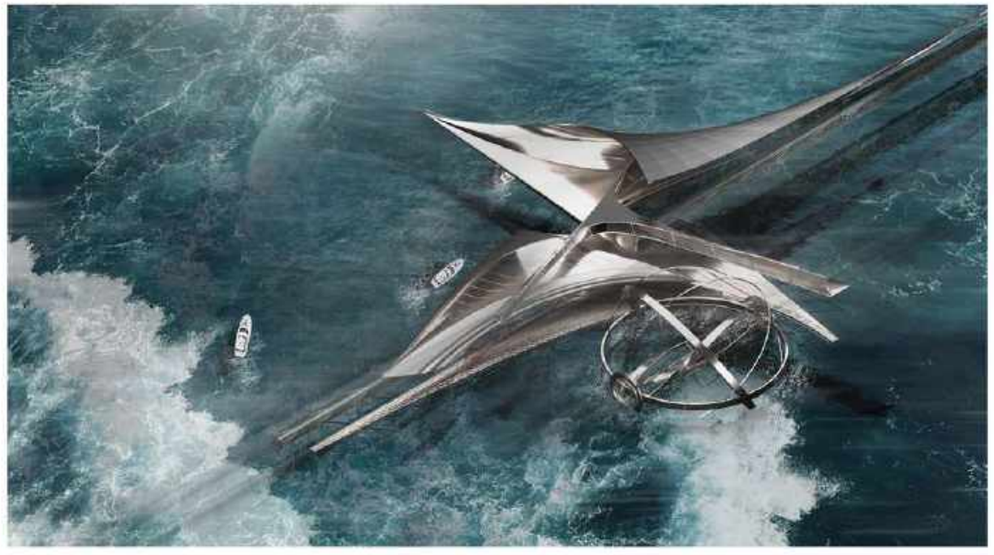
Fall 2017

Sendai City, Miyagi Prefecture, Japan

AVALIABLE TSUNAMI

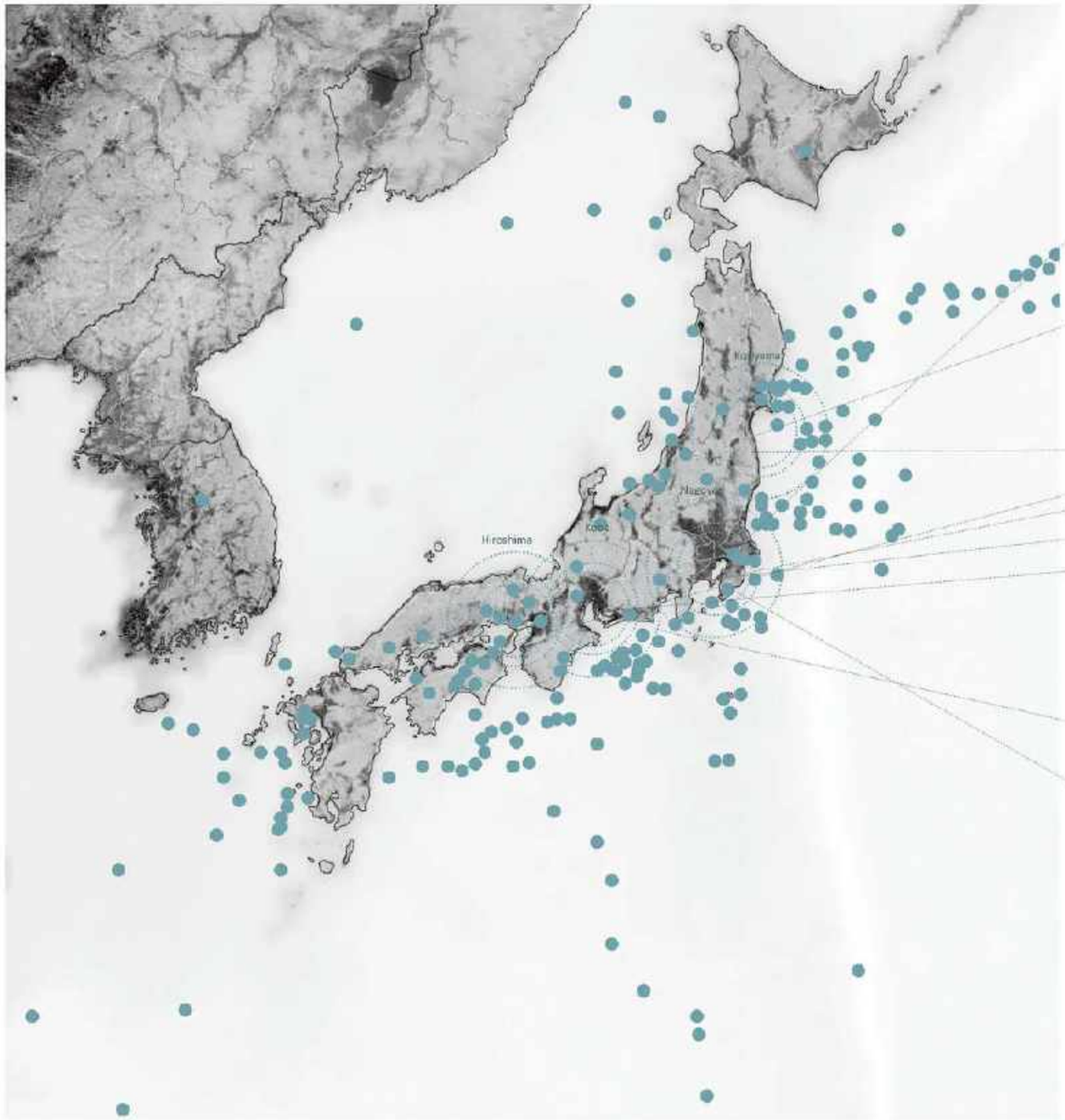
The islands of Japan are primarily the result of several large oceanic movements occurring over hundreds of millions of years from the mid-Silurian to the Pleistocene as a result of the subduction of the Philippine Sea Plate beneath the continental Amurian Plate and Okinawa Plate to the south, and subduction of the Pacific Plate under the Okhotsk Plate to the north.Japan is situated in a volcanic zone on the Pacific Ring of Fire. Frequent low intensity earth tremors and occasional volcanic activity are felt throughout the islands. Destructive earthquakes, often resulting in tsunamis, occur several times a century.Demonstrated from the document, there are approximately 54 earquakes strike Japan and nearly 90% of them lead to massive Tsunami .

The transition system is constructed out of metal truss and glass panles.One part of this system can be utilized to generate power and lessen the intervention of wind and sea and strengthen the intensity of the main system. Also, The transition system play a significant role in solving the connection and delivery between the system and the cosatline.The upper part of the transition is designed for the passengers to walk through and the lower part of it is created for those heavy cargo delivery. The specific device designed to handle the destructive tsunami will be attached to the main portion of the systme when the sea is pacific.However, when the earthquake happened, the monitor system will response and then the specific device will be projected from the gear system on the main portion of the system.

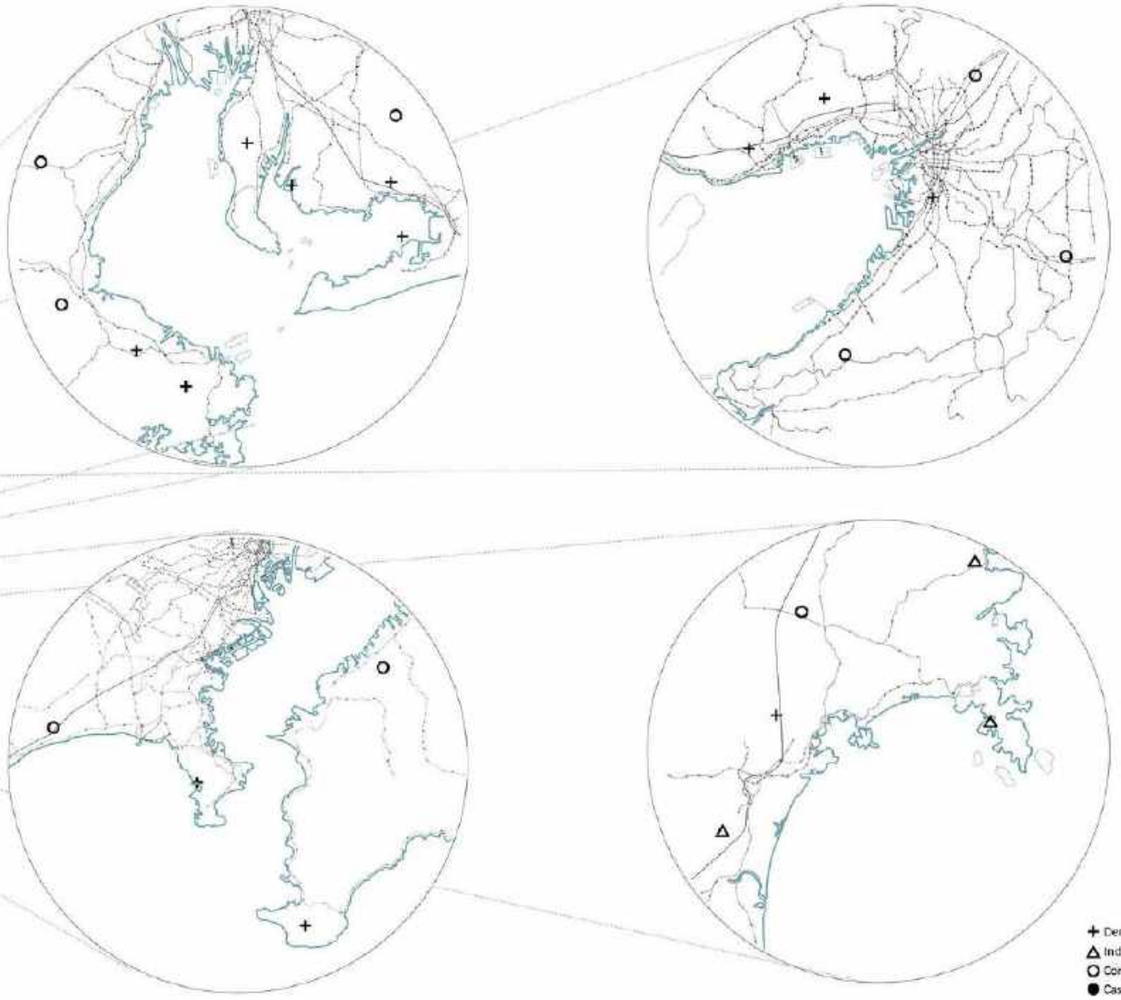


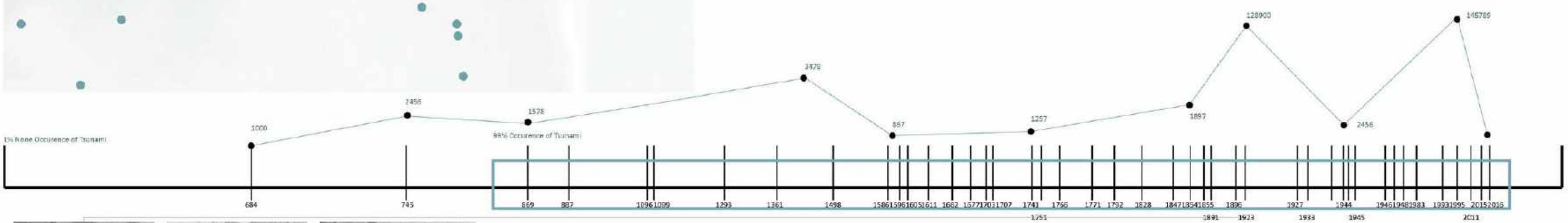
Destructive Chronic Strike

The islands of Japan are primarily the result of several large oceanic movements occurring over hundreds of millions of years from the mid-Silurian to the Pleistocene as a result of the subduction of the Philippine Sea Plate beneath the continental Amurian Plate and Okinawa Plate to the south, and subduction of the Pacific Plate under the Okhotsk Plate to the north.Japan is situated in a volcanic zone on the Pacific Ring of Fire. Frequent low intensity earth tremors and occasional volcanic activity are felt throughout the islands. Destructive earthquakes, often resulting in tsunamis, occur several times a century.Demonstrated from the document, there are approximately 54 earquakes strike Japan and nearly 90% of them lead to massive Tsunami .

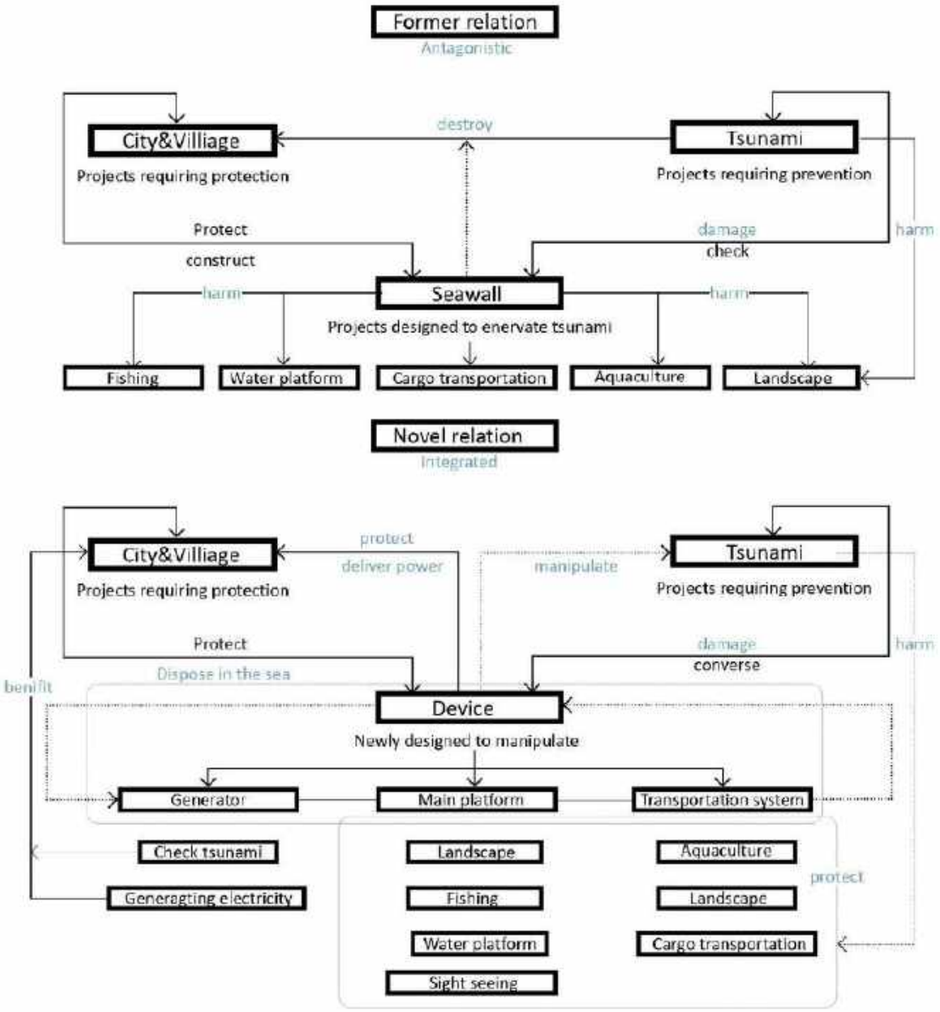


Serious Suffering of Gulfs

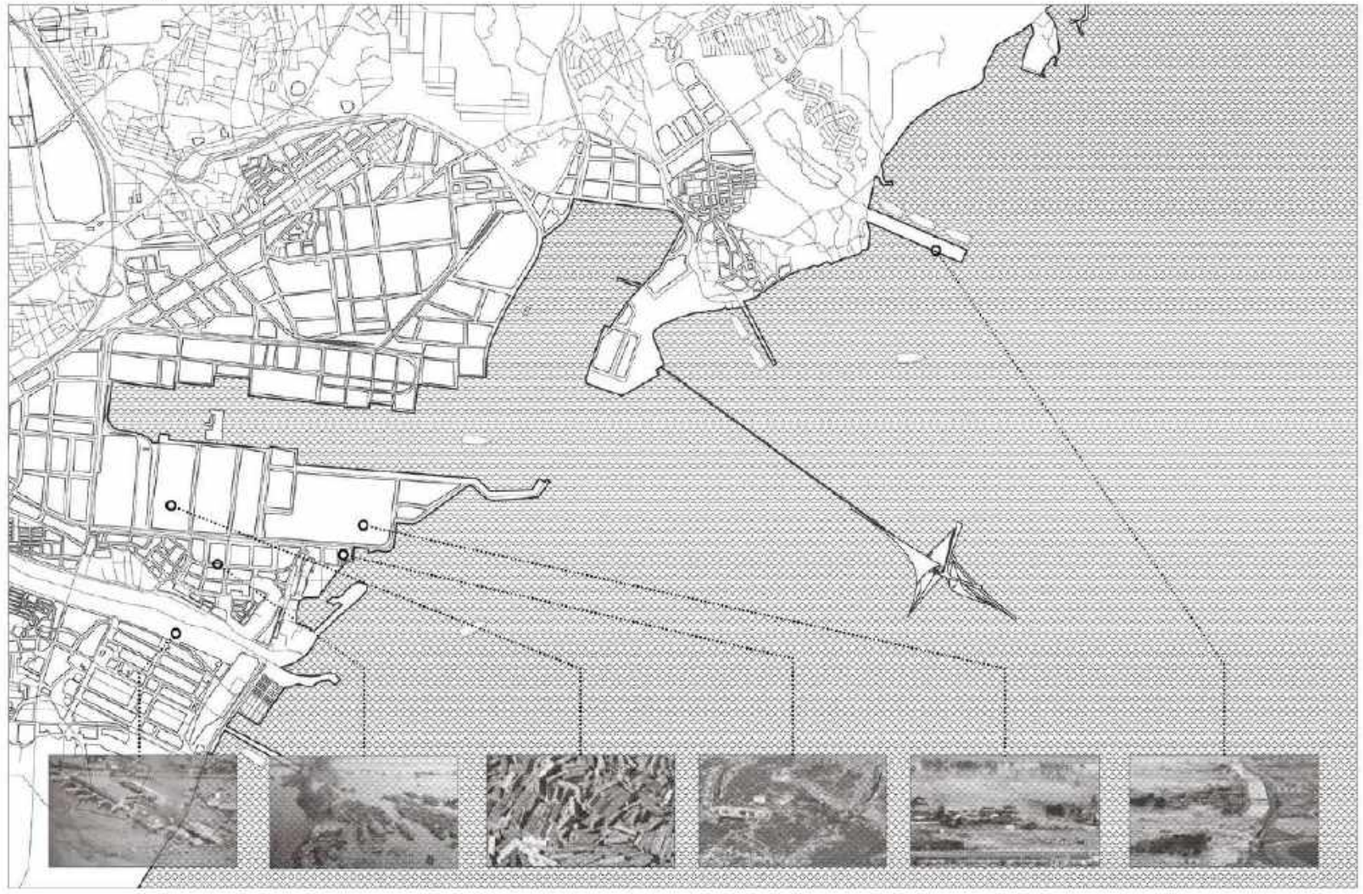




Irreconcilable to Intergratation

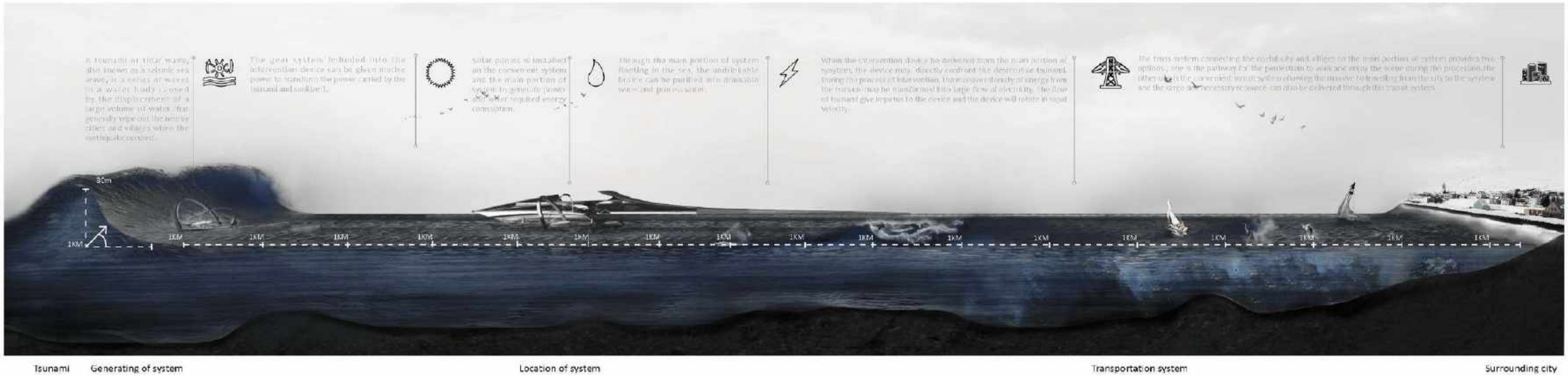


The Possibility of Conversion



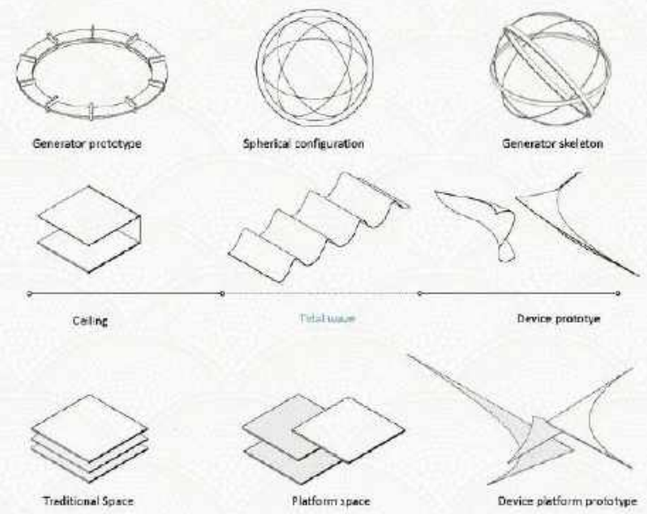
Following World War II, the city was rebuilt, and Sendai became a vital transportation and logistics hub for the Tōhoku region with the construction of major arteries such as the Tōhoku Expressway and Tōhoku Shinkansen.Sendai is the center of the Tōhoku region's economy, and is the base of the region's logistics and transportation.The population density in this area was 6,879.9 persons per km², more than 5 times higher than the city's average population density at that time, 1,286.6 persons per km².

Sendai has been subject to several major earthquakes in recent history, including the 1978 Miyagi earthquake, which was a catalyst for the development of Japan's current earthquake resistance standards, and the 2005 Miyagi earthquake. Most recently, the coastal area of Sendai, including Sendai Airport, was severely damaged in the 2011 Tohoku earthquake and tsunami.The tsunami reportedly reached as far as Wakabayashi Ward Office, 8 kilometers (5.0 mi) from the coastline. Hundreds were killed, and countless more were injured and/or made homeless. Sendai's port was heavily damaged and temporarily closed, but reopened on 16 April 2011.



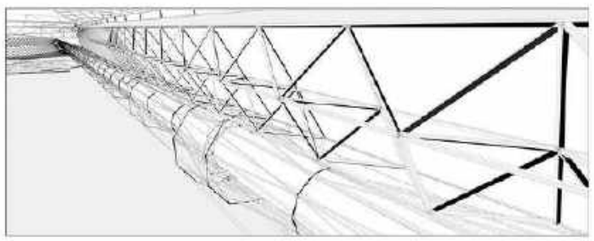
Tsunami Generating of system Location of system Transportation system Surrounding city

Sculptural Space Evolution



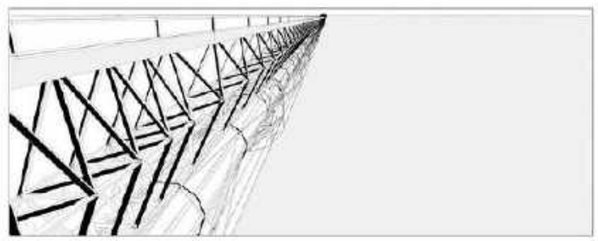
Considering the functional units that the system required,it camed out of three basic prototype then inspired by the shape of the tidal wave I transform the cubic shape into streamline shape to become more harmonious when observed.Moreover, the specific device is also considered to become more efficient when facing the Tsunami and the sphere shape is likely to be the firm frame.

Mitigate towards System



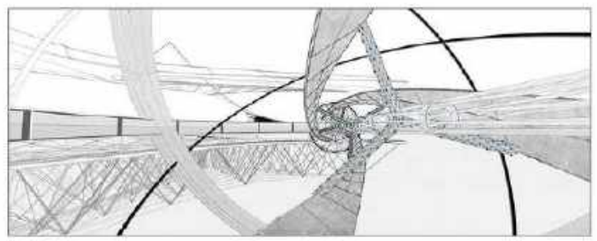
The transition system is constructed out of metal truss and glass panles.One part of this system can be utilized to generate power and lessen the intervention of wind and sea and strengthen the intensity of the main system.

Discharge to the Coastline



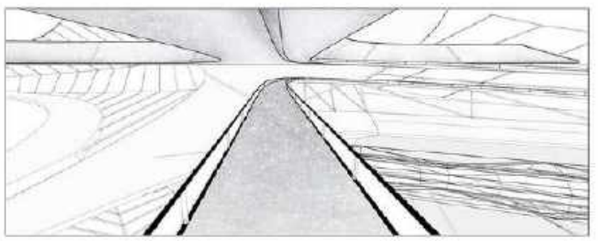
The transition system play a significant role in solving the connection and delivery between the system and the cosatline.The upper part of the transition is designed for the passengers to walk through and the lower part of it is created for those heavy cargo delivery.

Resist the Tsunami

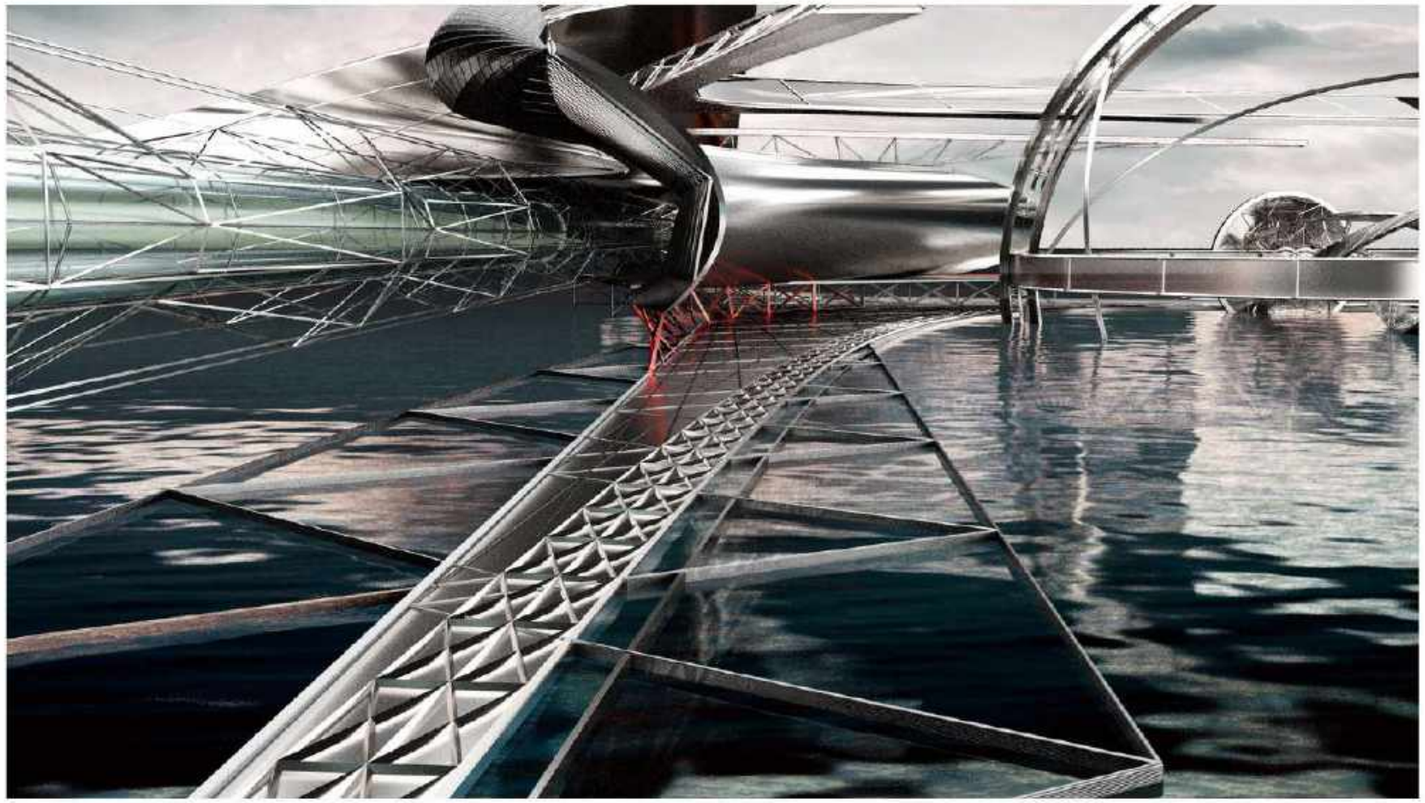


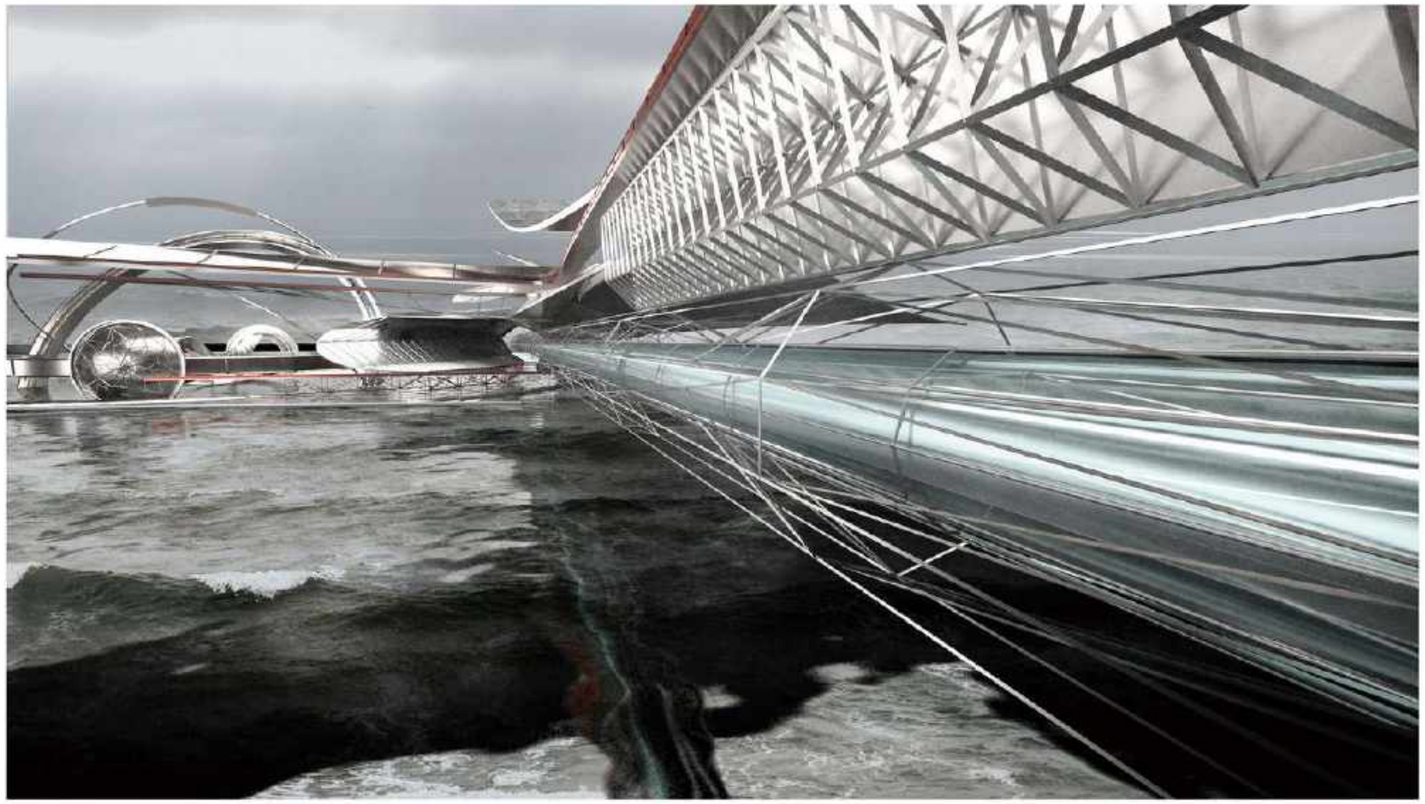
The specific device designed to handle the destructive tsunami will be attached to the main portion of the systme when the sea is pacific.However, when the earthquake happened, the monitor system will response and then the specific device will be projected from the gear system on the main portion of the system.

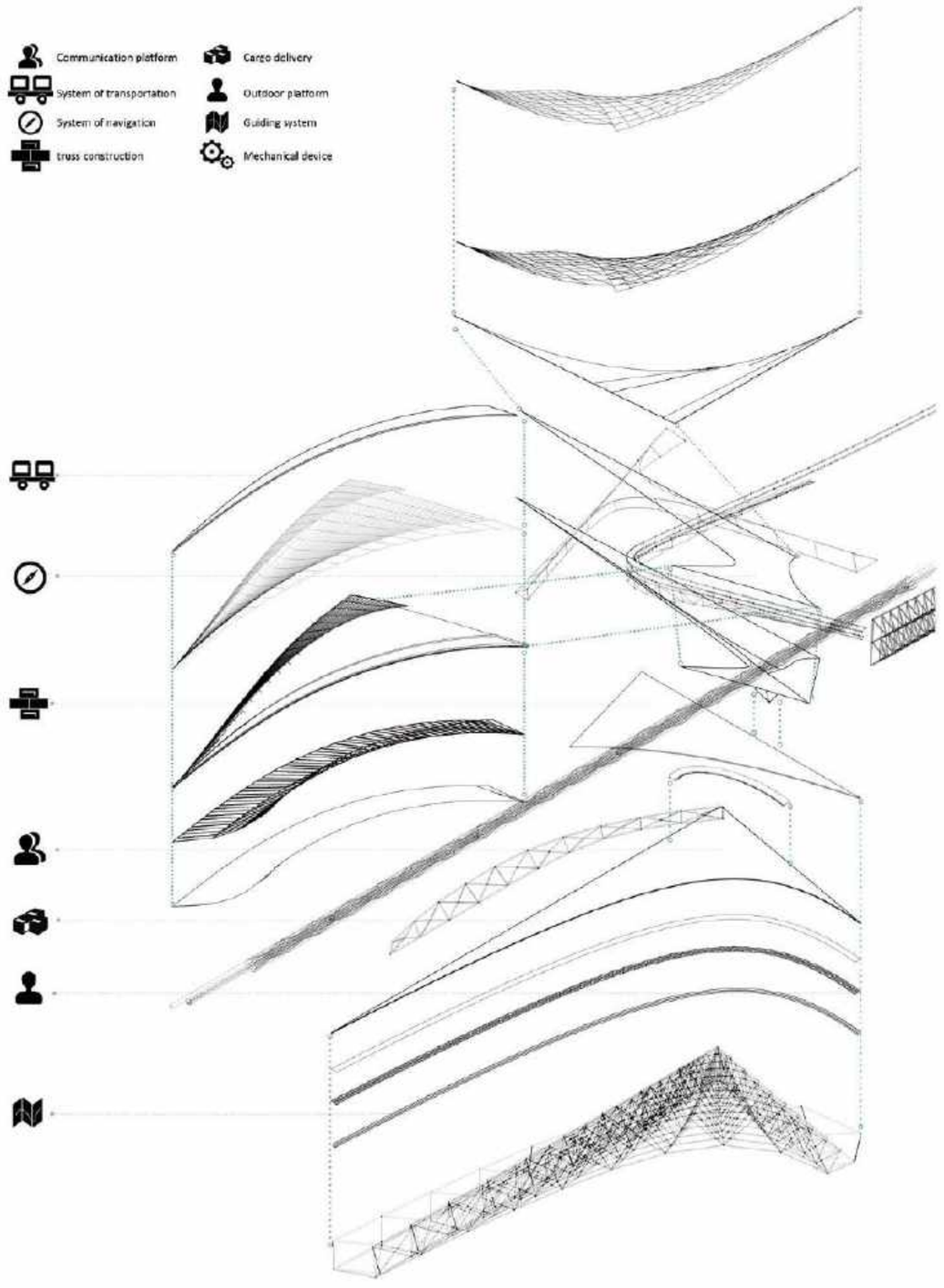
Store and Delay



The multiple layer of the main portion of the system possess several units to provide the passangers aside from the engineer and technical stuff who are responsible for executing the device with entertainmental space to amuse themsevles and enjoy the unbeliable scene that can not be observed on the land.



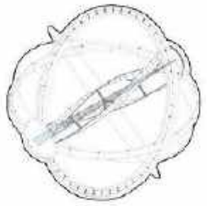




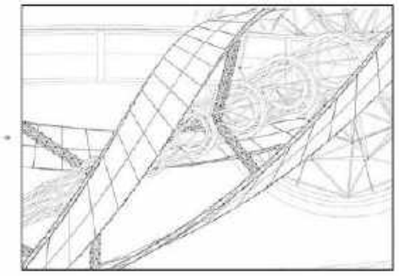
Explosive view of the device

The main portion of the system utilize the design methology that each functional unit should be designed and executed seperately and can still be used when other untis are no longer working.The lower truss system undertaked the role in supporting the whole system. Among the upper three part of the platform is designed to cooperate with the device handling the tsunami and the techonical problems and issues. The upper three part of the platforms are for tourists and passaners to enjoy the view which is comparable to the platform along the coastline.Moreover, inside the main portion of the system there is a transtion system to carry passengers and cargo to maintain to communication between the land and this intergrated system.

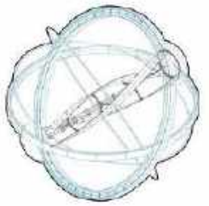
Illustration of Equipment



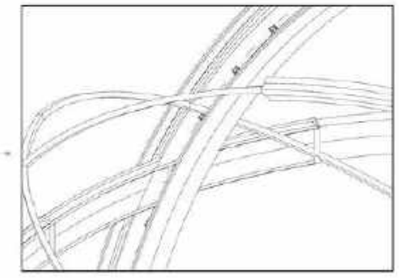
The central arbor



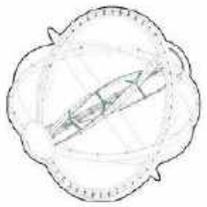
The central arbor is imbeded into the main system and maintain the function of the systeam to avoid the unnecessary intervention .



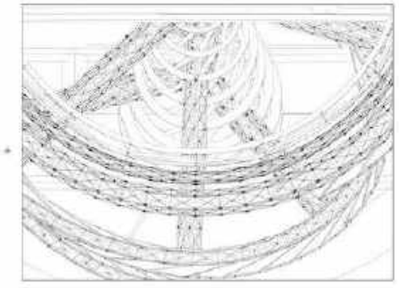
Rotating frame



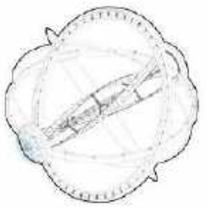
These three rotating frame is close geared together and the frame is mechanically moveable. When these frame confront the large amount of seawater carried by the Tsunami, they begin to move and rotate to assimilate those destructive power.



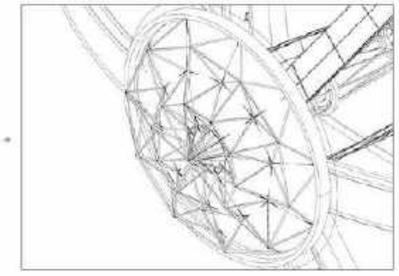
Spain truss system

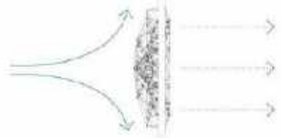


The spain truss system is utilized to strenthen the firmness of the system to avoid be deformed by the Tsunami.

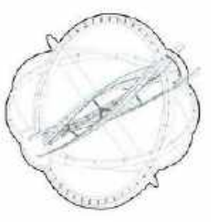


Shelding system

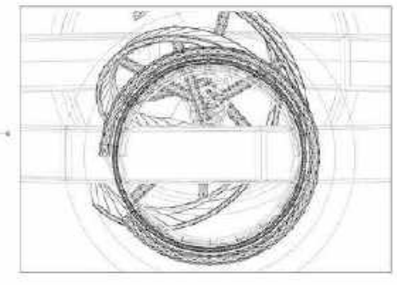




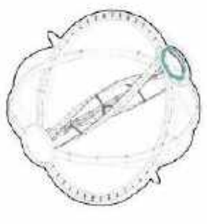
With the depolyment of the sheilding system, the strongest momentum of the tsunami can be alleviated and its inner power can be aborbed.The main part of the seawater is also be channeled into serveral seperated volume which are much more easy to handle.



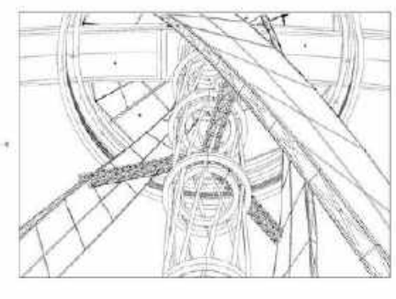
Accelerator

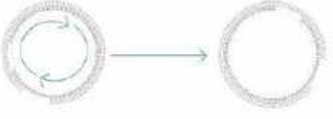


The accelerator is designed or provided with a form that presents very little resistance to a flow of air or water, increasing speed and ease of movement. Withe this accelerator the detached waterstream can be transmited much faster along the accelerator"s panels.



Antimatter engine





As the major power source of the device ,the antimatter engine have functional units and eahc of them will generate power in turn.The power provided by this engine will progressively increase which can be utilizde to execute the whole system and assist the rotating system in transforming the destructive power into usable one.

PROFESSIONAL WORKS

01 Airport in Altay

First Prize of the Competition
Work in MUDA Architects
Team Work
Contribution: Concept Design.Rendering.Digital&Physical Modeling. Diagraming
Jul-Aug.2017
Location: Altay.China

Physical Model

The building structure column is wide on the top but narrow at bottom, creating a cantilevered curve. The surface structure in opposite formation rises "arch" trend constituting the structural unit of powerful supporting body; truss structure is exposed out of uniform distribution in neat array to show the structure aesthetic.

In the aspect of structural stress, the contact area of the upper structure column can increase the column cap and loose structure, in order to better withstand the load of upper structure came. The narrowing of the column feet is intended to reach more beautiful body and improve space utilization.

Perspective view of the interior

Interior design is the extension and sublimation of external characteristics. The main entrance hall employs symmetrical layout, looking ordered and elegant. Roof skylights are evenly arranged between the structural units bringing inside sufficient sunlight. Moreover, this arrangement is also the extension of facade structure. When standing inside, you will feel like being exposed to the nature, surrounded by ecological landscape panoramic view.' that impact human nature in ways that challenge our sense of the stability and consistency of individual personality, of character, and of morality."

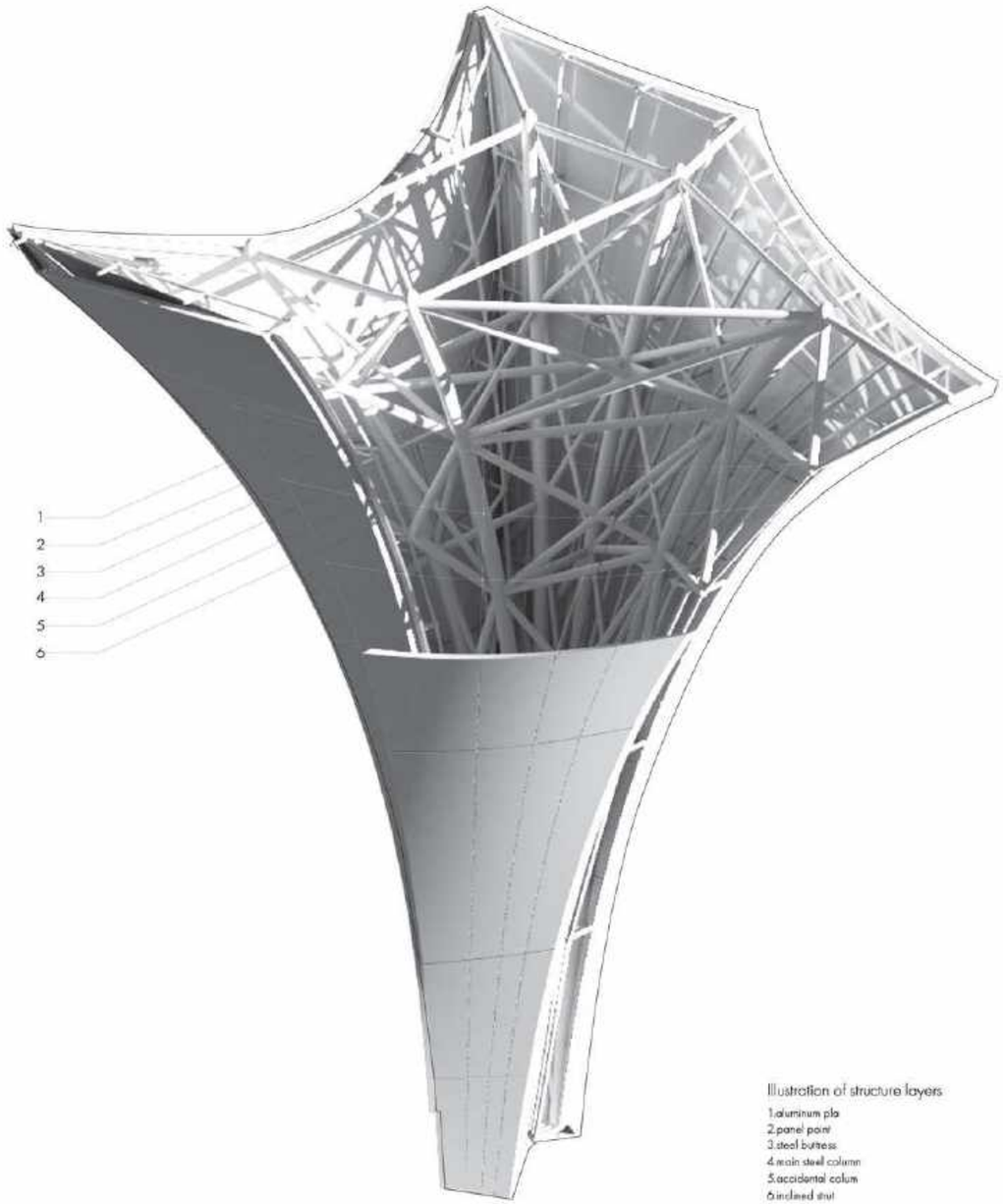


Illustration of structure layers
1.aluminum pla
2.panel point
3.steel buttress
4.main steel column
5.accidental colum
6.inclined strut

ANALYSIS OF THE STRUCTURE

The main structure of the airport adopts steel keel structure, which has the advantages of uniform force and reasonable structure. At the same time, the construction measures of steel plate keel external aluminum plate are adopted in the main structure column, which not only ensures the external appearance of the column, but also strengthens the stability of the structure . In the five structural columns inside the adjacent truss connection, to strengthen the structural integrity, formed by the external aluminum plate to support its steel frame, and the main body of the steel frame to connect the organic whole.to strengthen the structural integrity, formed by the external aluminum plate to support its steel frame, and the main body of the steel frame to connect the organic whole.

Compared with the real beam, the steel truss uses the sparse web instead of the whole web, and the bar is mainly subjected to the axial force, which can often save the steel and reduce the structural weight. This makes the steel truss particularly suitable for structures with large span or height. In addition, the steel trusses are also easy to make according to the different requirements of the use of various needs. Moreover, since the amount of webs used in the web is smaller than that of the real web, the steel trusses can often be made to have a greater height and thus have a greater rigidity. However, the steel truss of the bar and the node more, more complex structure, manufacturing more labor."

Steel trusses can be divided into ordinary, heavy and light steel trusses by internal force, bar section and nodal structure

02 Xinglong Lake Bookstore

First Prize of the Competition
Work in MUDA Architects
Team Work
Contribution: Rendering, Diagraming,Physical Modeling
Jun-Aug.2018
Location: Chengdu.China

South West Side Perspective View

The building structure column is wide on the top but narrow at bottom, creating a cantilevered curve. The surface structure in opposite formation rises "arch" trend constituting the structural unit of powerful supporting body; truss structure is exposed out of uniform distribution in neat array to show the structure aesthetic.

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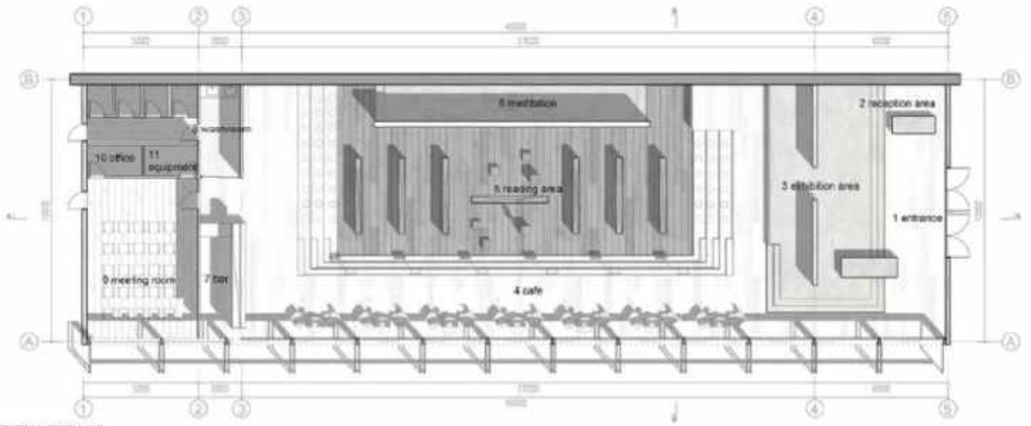
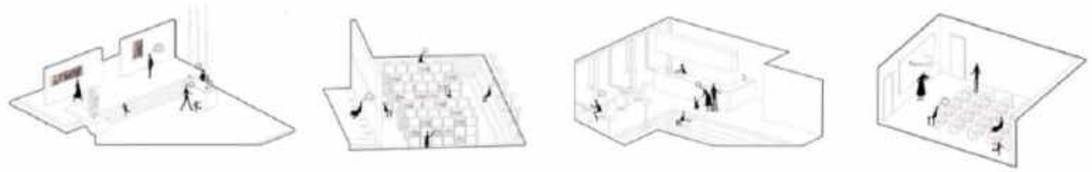
Perspective View From the Lake

Interior design is the extension and sublimation of external characteristics. The main entrance hall employs symmetrical layout, looking ordered and elegant. Roof skylights are evenly arranged between the structural units bringing inside sufficient sunlight. Moreover, this arrangement is also the extension of facade structure. When standing inside, you will feel like being exposed to the nature, surrounded by ecological landscape panoramic view.' that impact human nature in ways that challenge our sense of the stability and consistency of individual personality, of character, and of morality.'

FLOOR PLAN



SPACE DIAGRAM



PHYSICAL MODELING