



# Portfolio

SHENG FANG  
SELECTED WORKS

# I Academic



## Hypohyle

### **Ecological Aesthetics and an Architecture of Assembly**

**Advisor: Barry Wark**

COLLABORATOR - ESTELLA LIU

Software: Rhinoceros, Houdini, Zbrush, and Photoshop

The project is focused on the exploration of ecological aesthetics that move architectural design beyond the disciplines ongoing nature – architecture dialogue. Rather than see the two as separate entities, we tried developing architecture that purposefully displays and celebrates buildings enmeshment with their environments.

Promoting weathering, non-determinate plant growth and the general degradation of our buildings goes against architectures modus operandi. It subverts both the ontological ideas prevalent throughout modern history that we and by extension our artefacts are separate and elevated above everything else on the planet; as well as potentially undermining the primary performative function of architecture to mitigate our environment and provide us with comfort.

We undertook the project that reconceive architecture not as a static whole, fixed at the date of its initial construction, but as an assembly of matter constructed and reconstructed where its qualities and configurations are perpetually changing and being regenerated, part by part. In this way, building can possess both qualities of ‘dirtiness’ and pristineness simultaneously as different parts will display different levels of environmental enmeshment, thus avoid trending purely towards obsolescence and ruin.

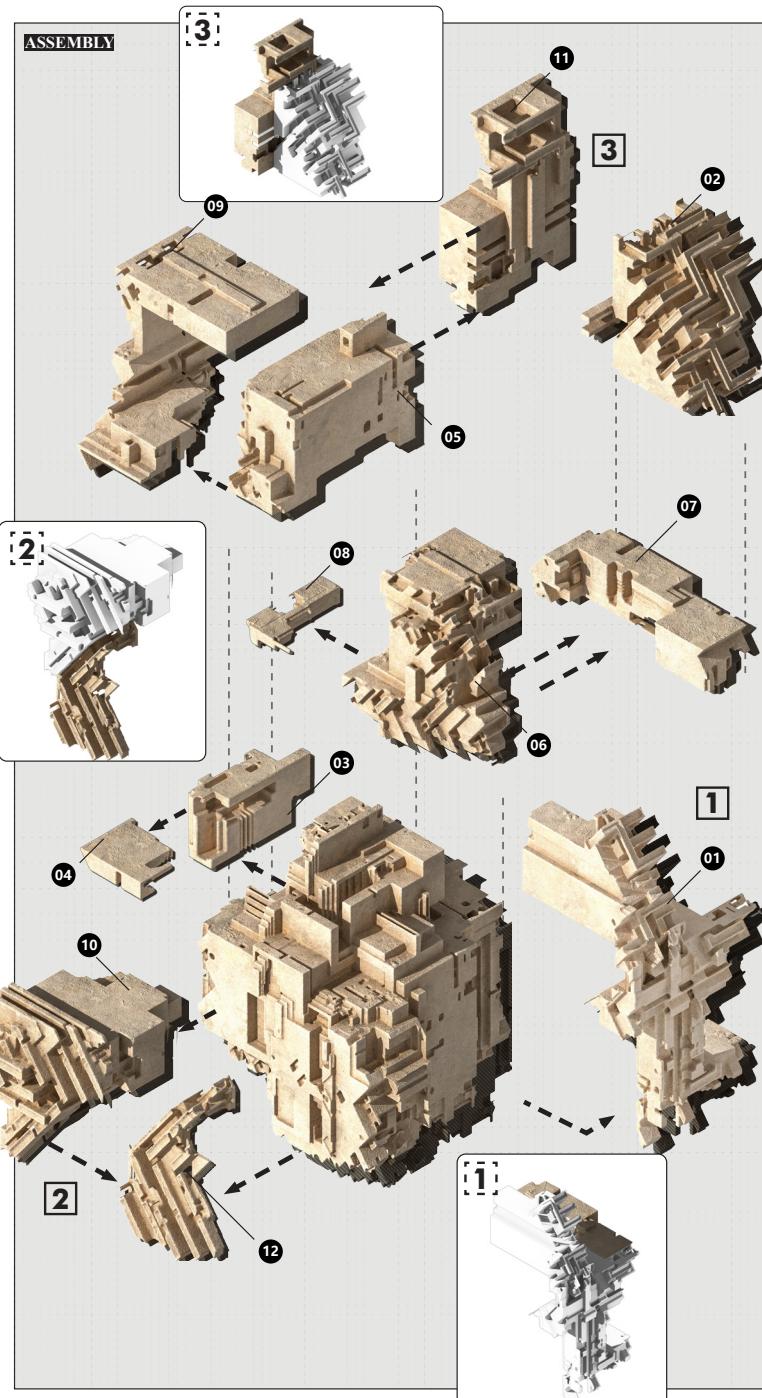
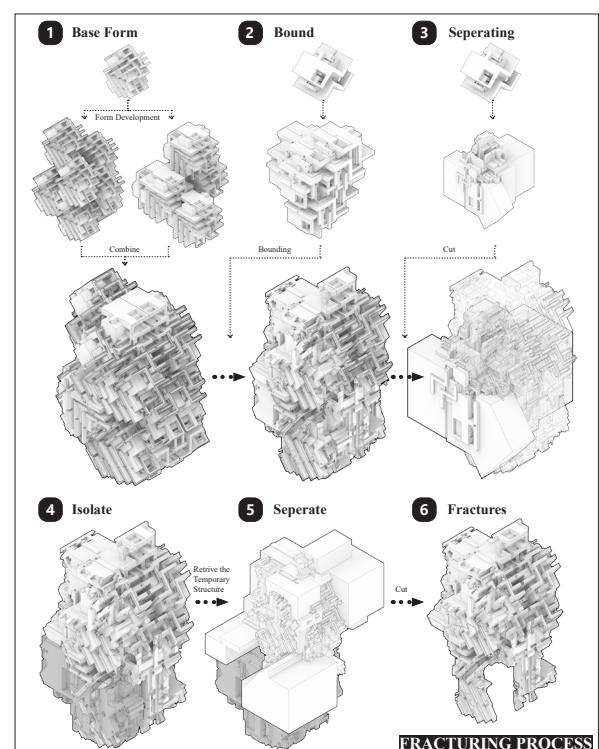
## Methodology Exploring

In an age of increasingly extreme weather, we considered the characteristics of the public spaces of the future and specifically in Southern Spain which is faced with increasing desertification. In extreme heat, public spaces with open and exposed condition may no longer be appropriate.

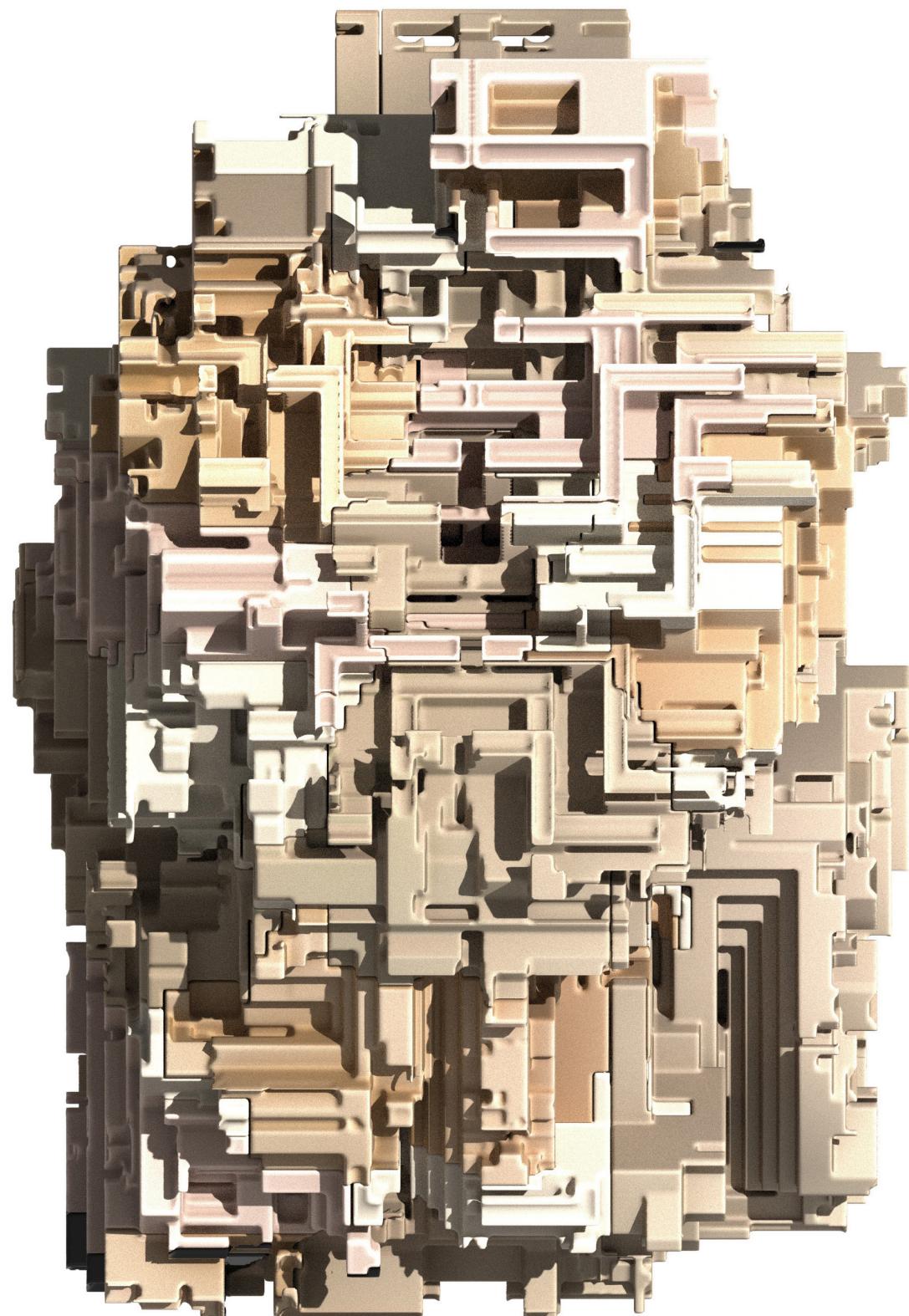
Many projects of the early Moorish work reject giving privilege to the façade and focus on the areas of interior inhabitation. One of the most spectacular spaces that exists in many of these buildings is the hypostyle, a grand hall characterized by its columns and arches. Inspired by these spaces, we designed a new hypostyle as civic space, characterized not by void but by matter. This matter should be an assembly that creates spaces, associated functional requirements, and provide cooling and shading for the increasingly hot Andalucian climate. We explored how these spaces could become reimagined through new structural potentials beyond the stone lintel and arches that characterized the early typologies.

In addition to this, we considered how the assembly of matter designed to display its enmeshment with environment might make visible the ecological. In this vein, the proposals should promote biome specific weathering and non-determinate flora propagation and promote new forms of environmental engagement in the city.

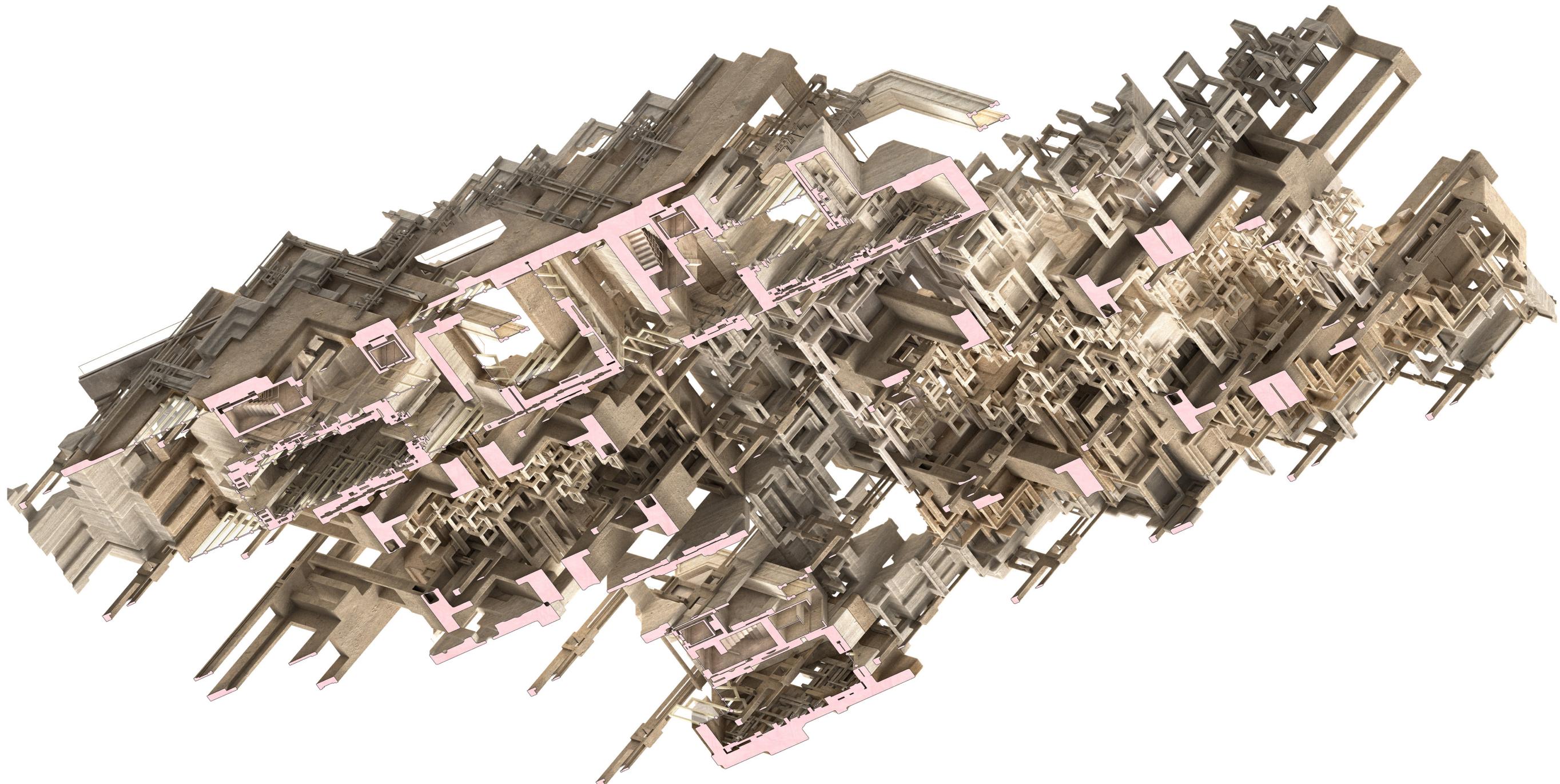
## Prototype: Assembly Process



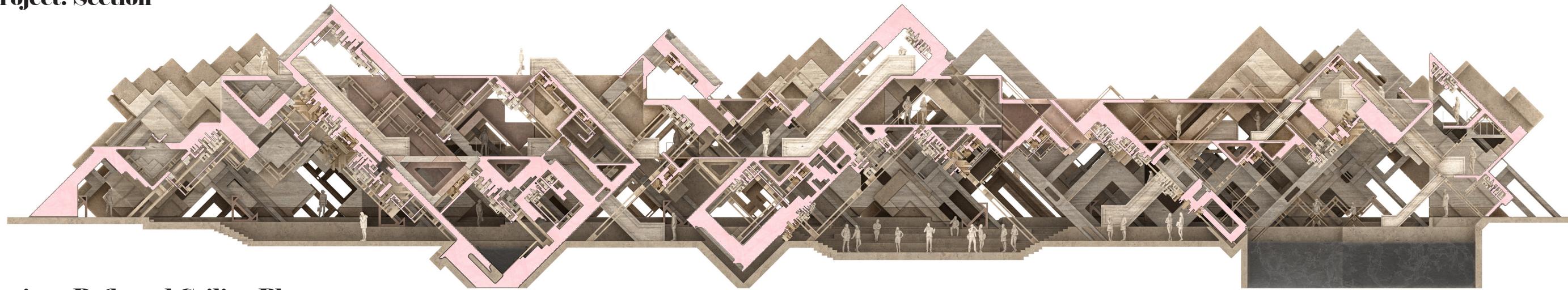
## Prototype: Facade



**Project: Choisy(Worm's eye view)**

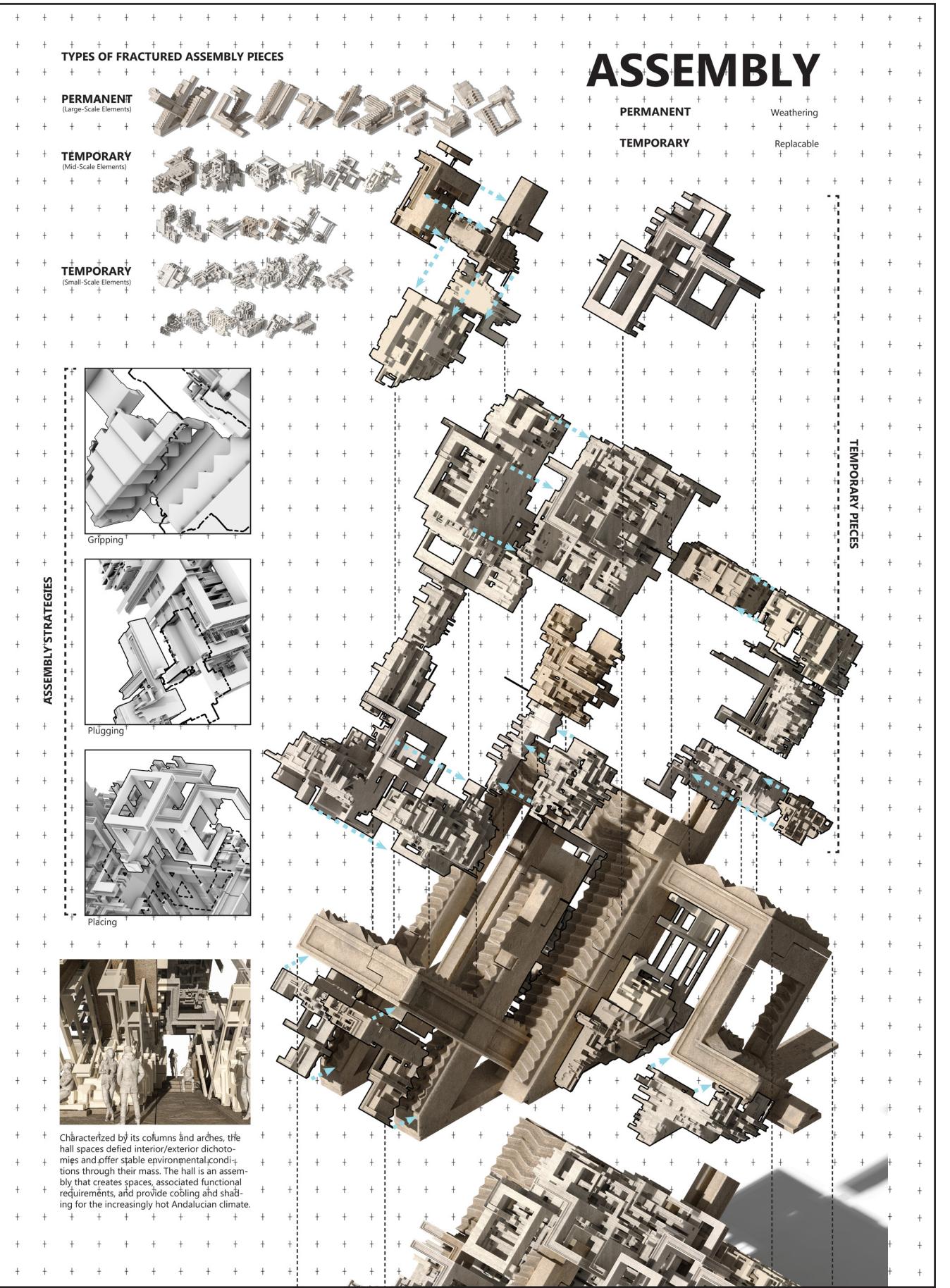


**Project: Section**



**Project: Reflected Ceiling Plan**

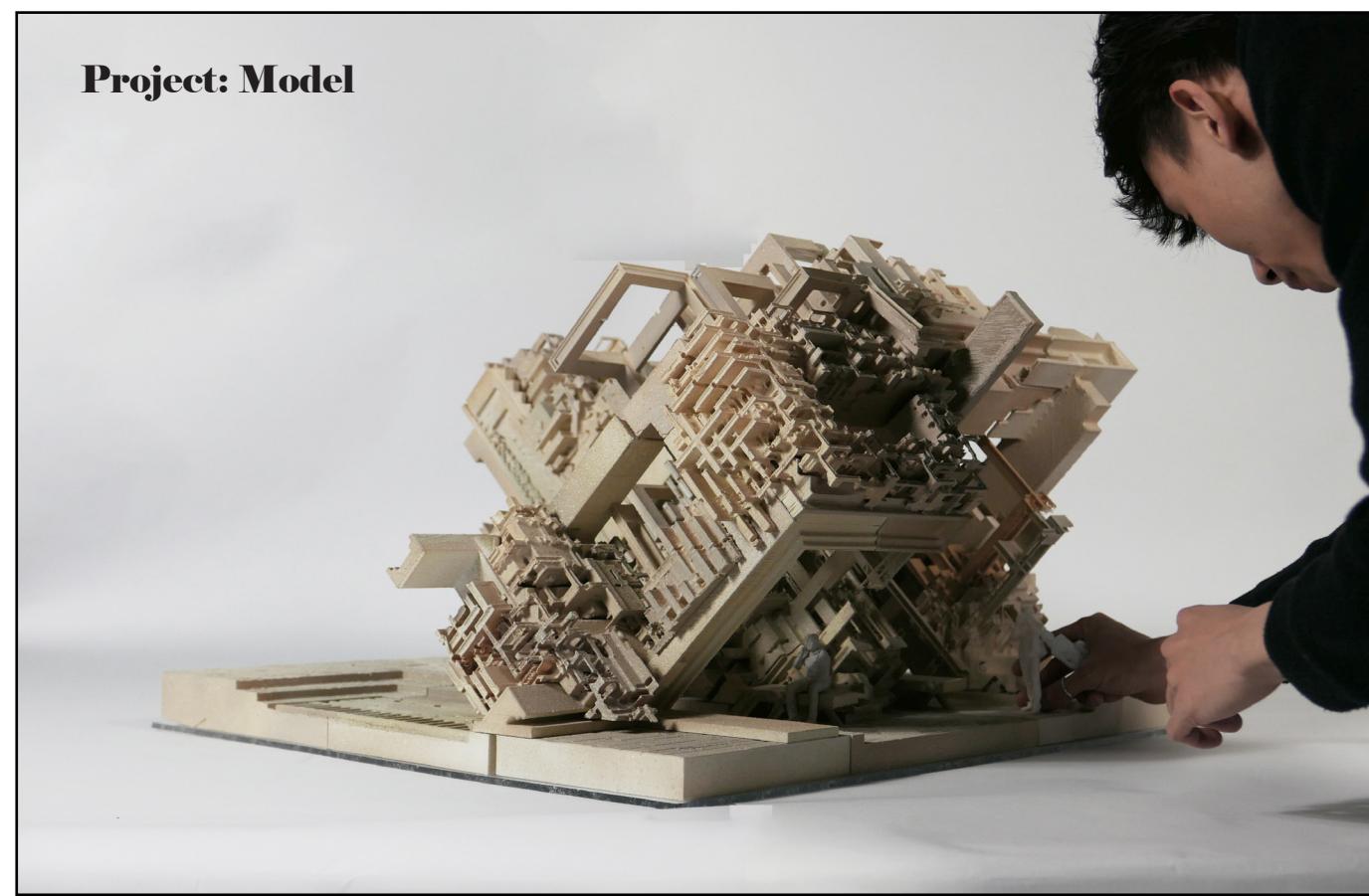




**Project: Model**



**Project: Model**





## DIGITAL IMAGINERIES & PRODUCTION ALTERNATIVES

In the existing contemporary landscape of visually oriented fields of study, casual compositions and other formless expressions have begun to re-emerge, particularly in the disciplines of art, architecture, and popular image culture. In architecture, with the rise of the digital, the last two decades have witnessed a field in pursuit of novel styles through the use of the latest digital tools and the newest software release package. More recently, over the last five years or so, one of the conditions that the field has experienced is a more novelty-apathetic attitude; one permeated with project proposals that use digital software platforms in order to generate a form in a state of duress, or aggregate a collection of volumes and objects into casual, non-hierarchical compositions.

Notions of disordered and formless aesthetics are not new to the discipline of architecture. Prior to the wholesale immersion of computers in the practice, deconstructivist architects such as Zaha Hadid, Peter Eisenman, Bernard Tschumi, and Frank Gehry to name a few, were working through projects that defied the laws of physics, confronted wholeness with finite libraries of elements, challenged geometric truths, and resisted conventional typologies and assemblies. In a way, the deconstructivists were intuiting digital processes before they became widespread.

At present, the architectural discipline is occupying a moment of cultural and visual (even representational) disorientation and a subsequent digital reprieve; a cleansing of sorts that emerged out of a collective—and I would even argue an almost mandatory—desire to question the present status of the digital. During this moment of pause, some emergent practices have returned to more de-constructed, dis-assembled, and formless affinities. One can argue that an alternative mode of decon is resurging as a result of an intricate contemporary condition that demands a pluralistic architecture with the capacity to respond to cultural and visual phenomena, economical and political instabilities, and geological and ecological problems.

In a world that is missing a central theoretical voice (for example what Jacques Derrida and Gilles Deleuze with Felix Guattari provided for deconstructivism and the digital project), now more than ever it is time to solicit these emergent voices on the topic of an alternative formlessness through a sense of destabilization.

Advisor: **Viola Ago**

COLLABORATOR - **ESTELLA LIU**

PROJECT PUBLISHED : **PRESSINGMATTERS**

Software - Rhinoceros, Maya, Grasshopper, Zbrush, and Photoshop

Models - Venture Lab, Robotic Flocking, Laser Cutting, 3D Printing, and Thermoforming

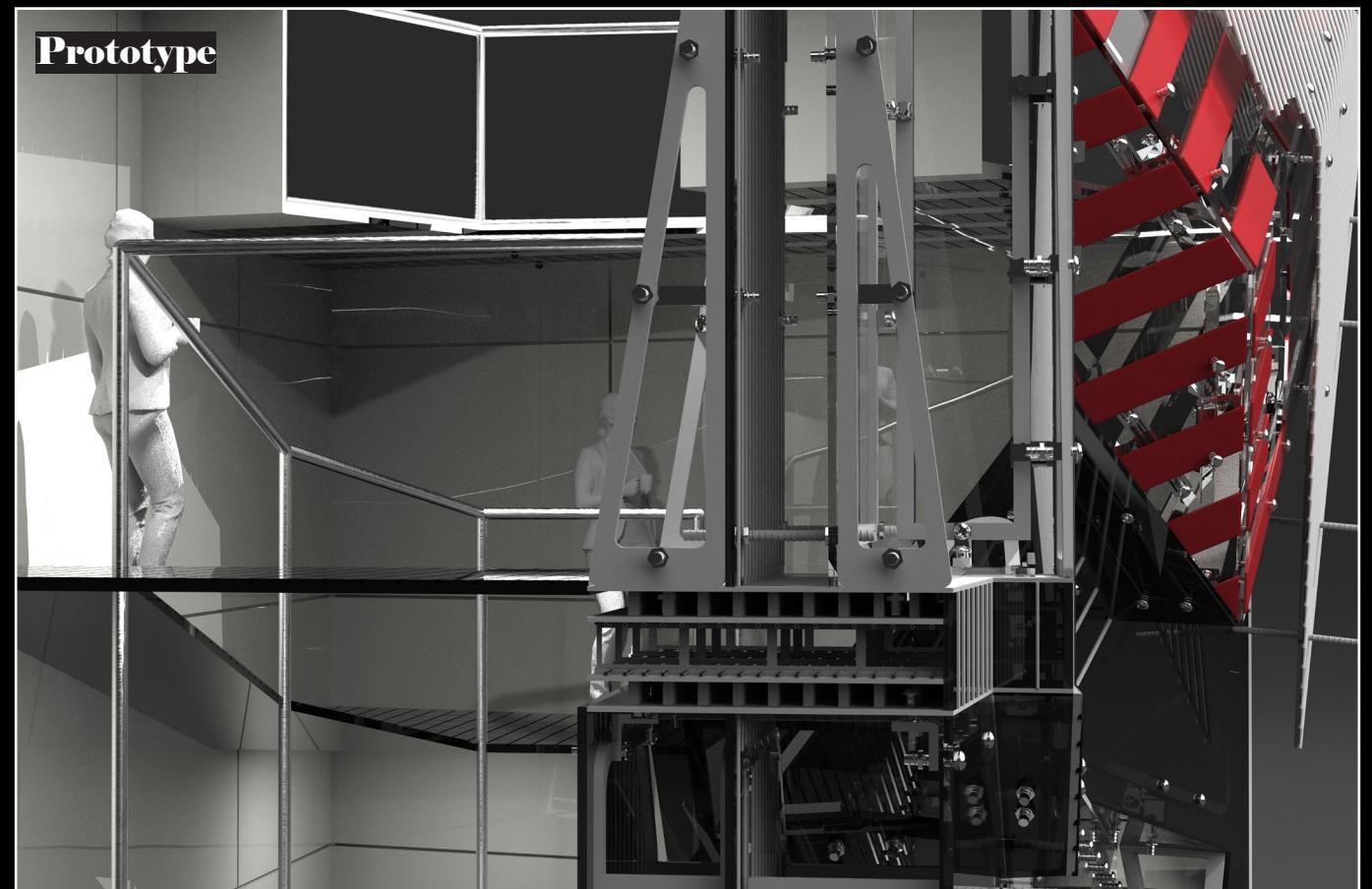
**Prototype**



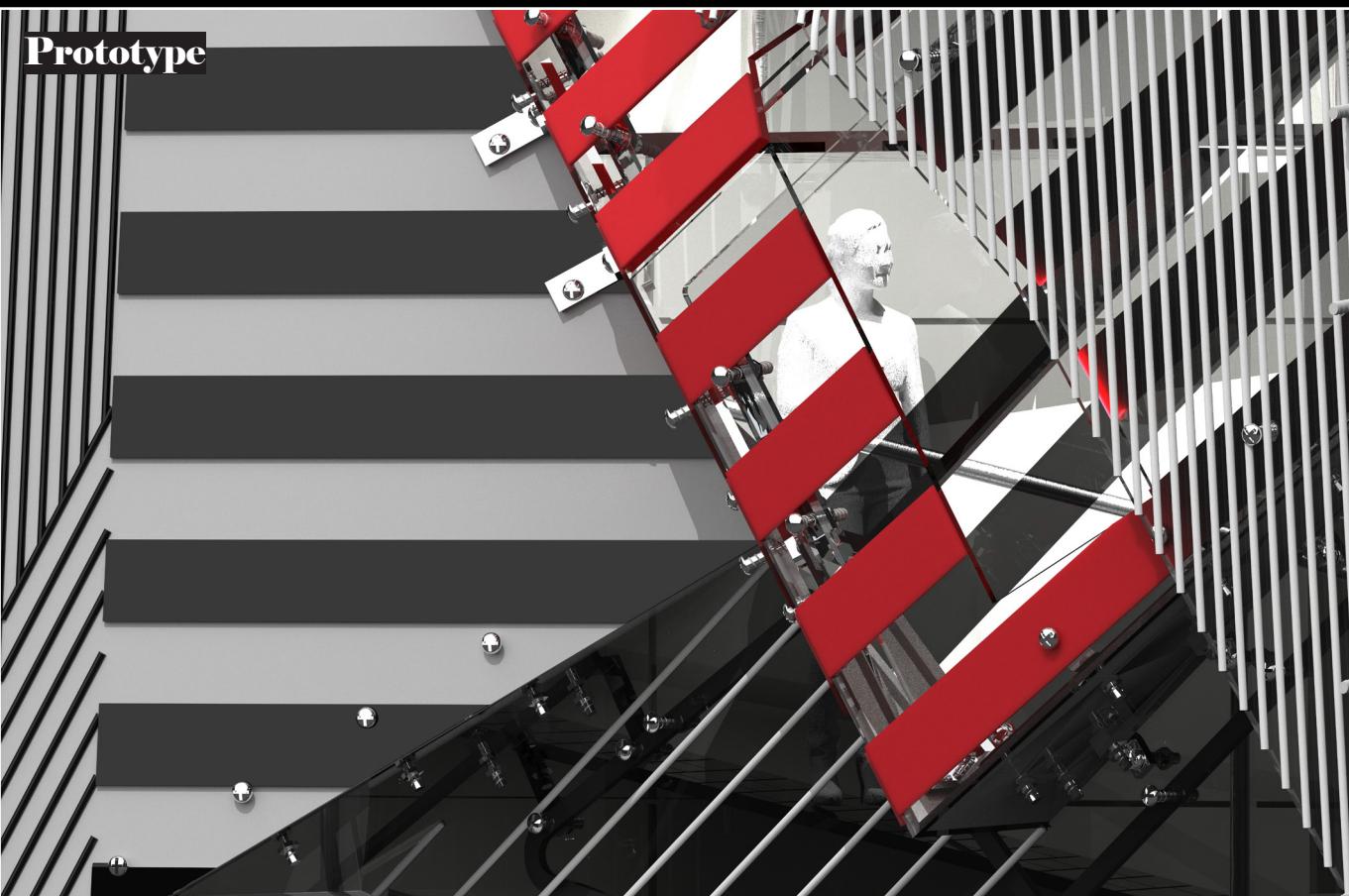
**Prototype**



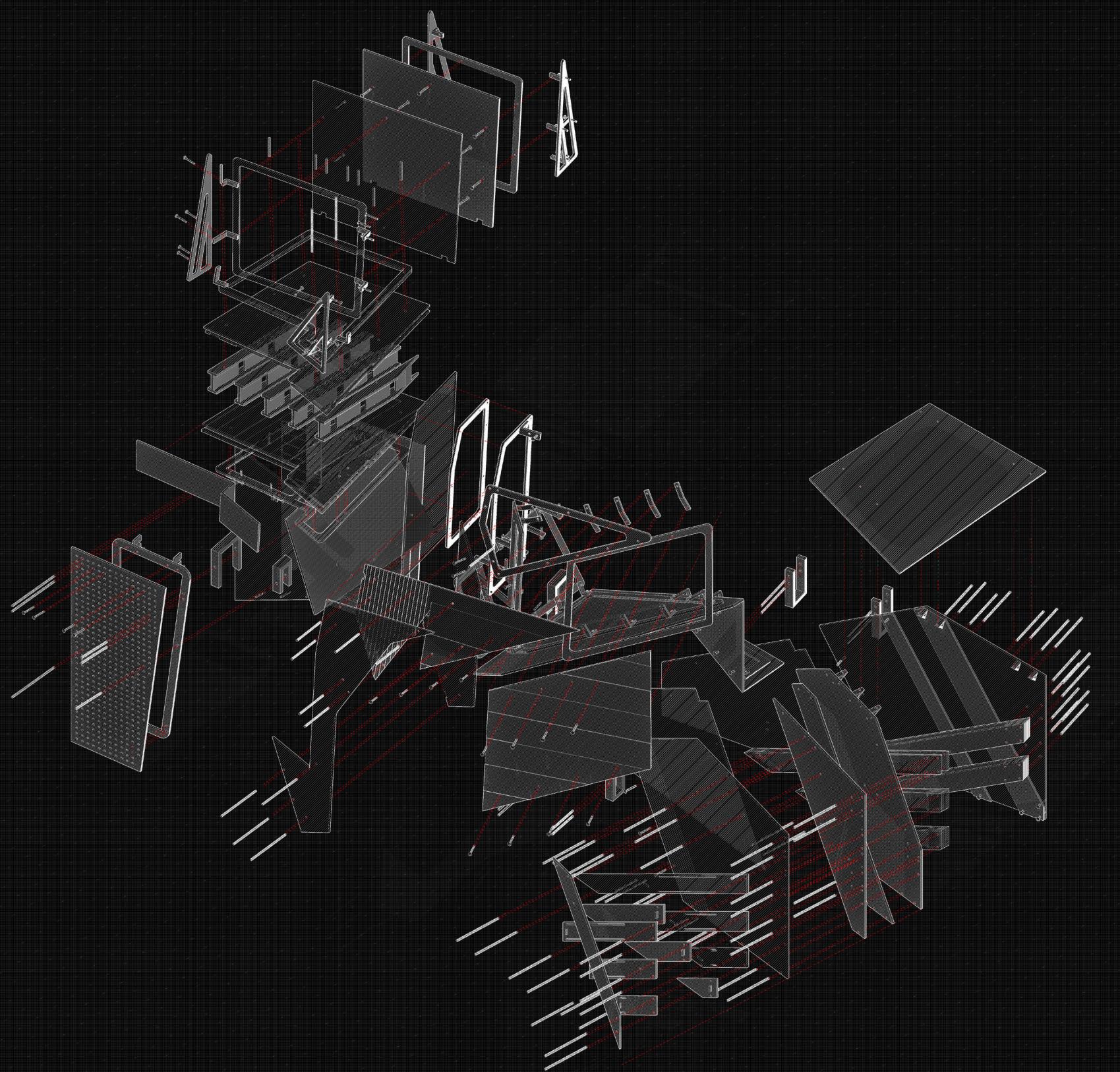
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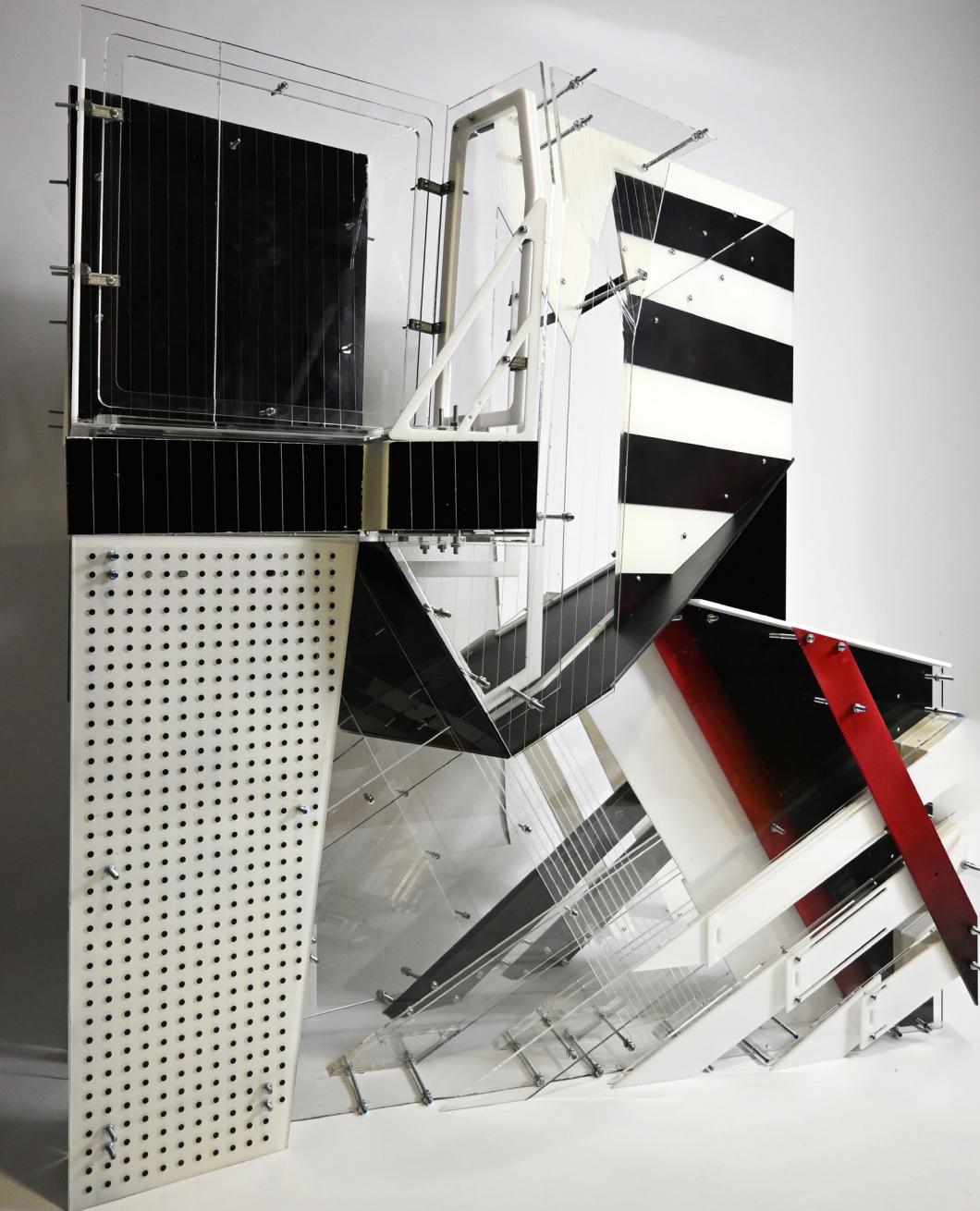
**Prototype**

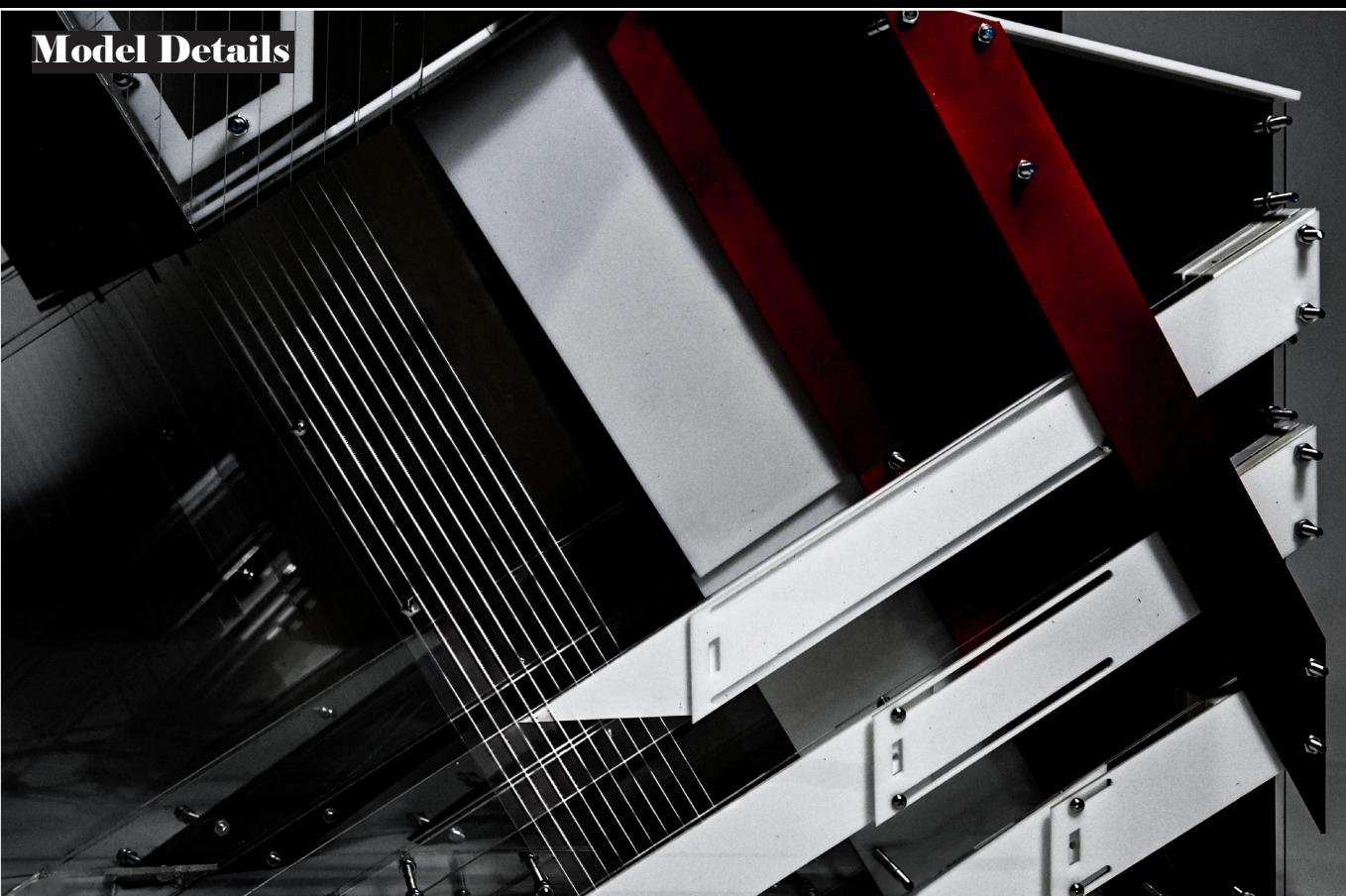
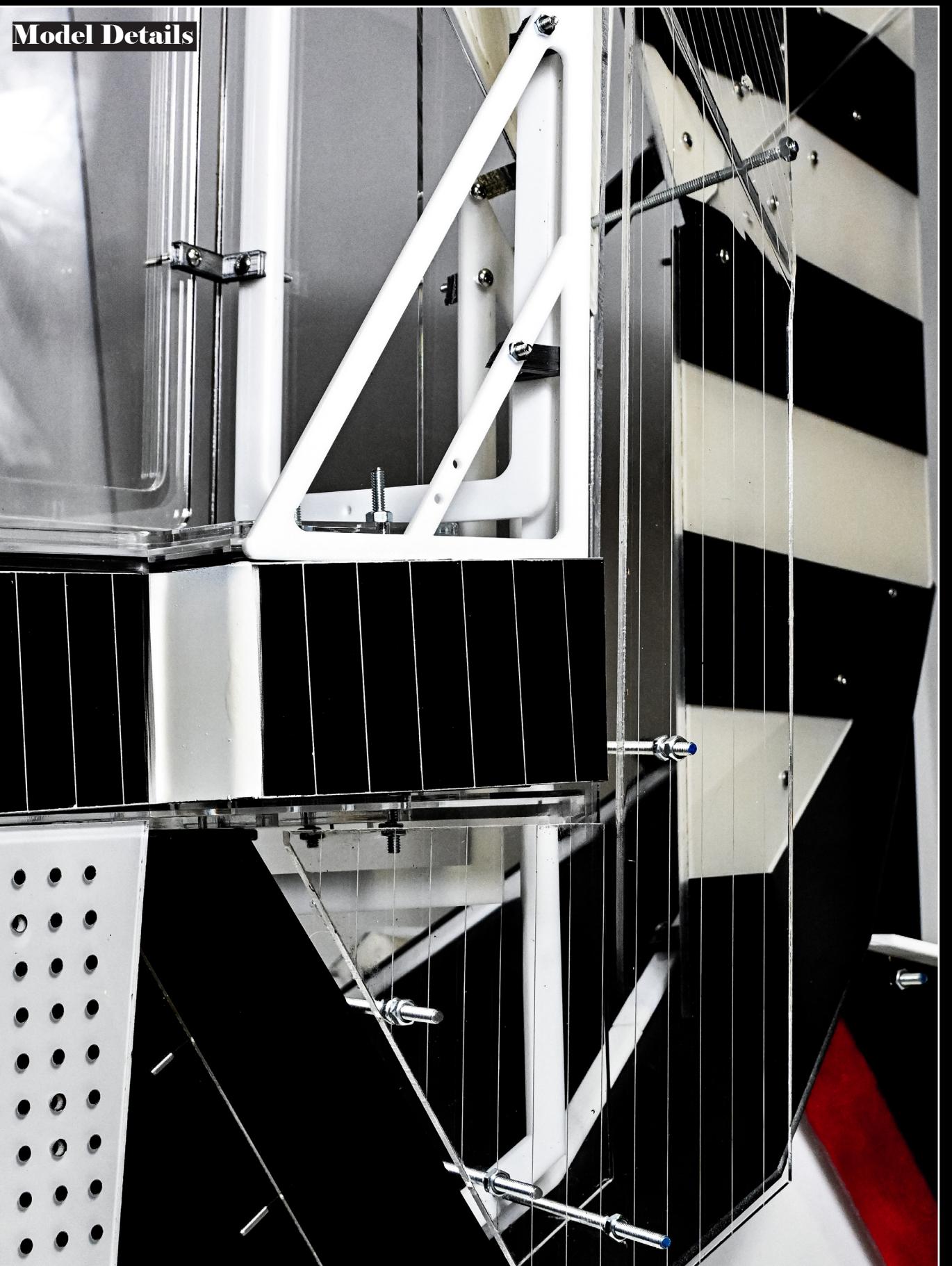


**Assembly Diagram**



**Model**





**Advisor:** Ali Rahim  
**Special Advisor:** Fabian Llonch

## NFT's and the Future of the New York Stock Exchange

*"The City will become the Center of Bitcoins."*  
 —Eric Adams, NYC Mayoral Candidate Elect

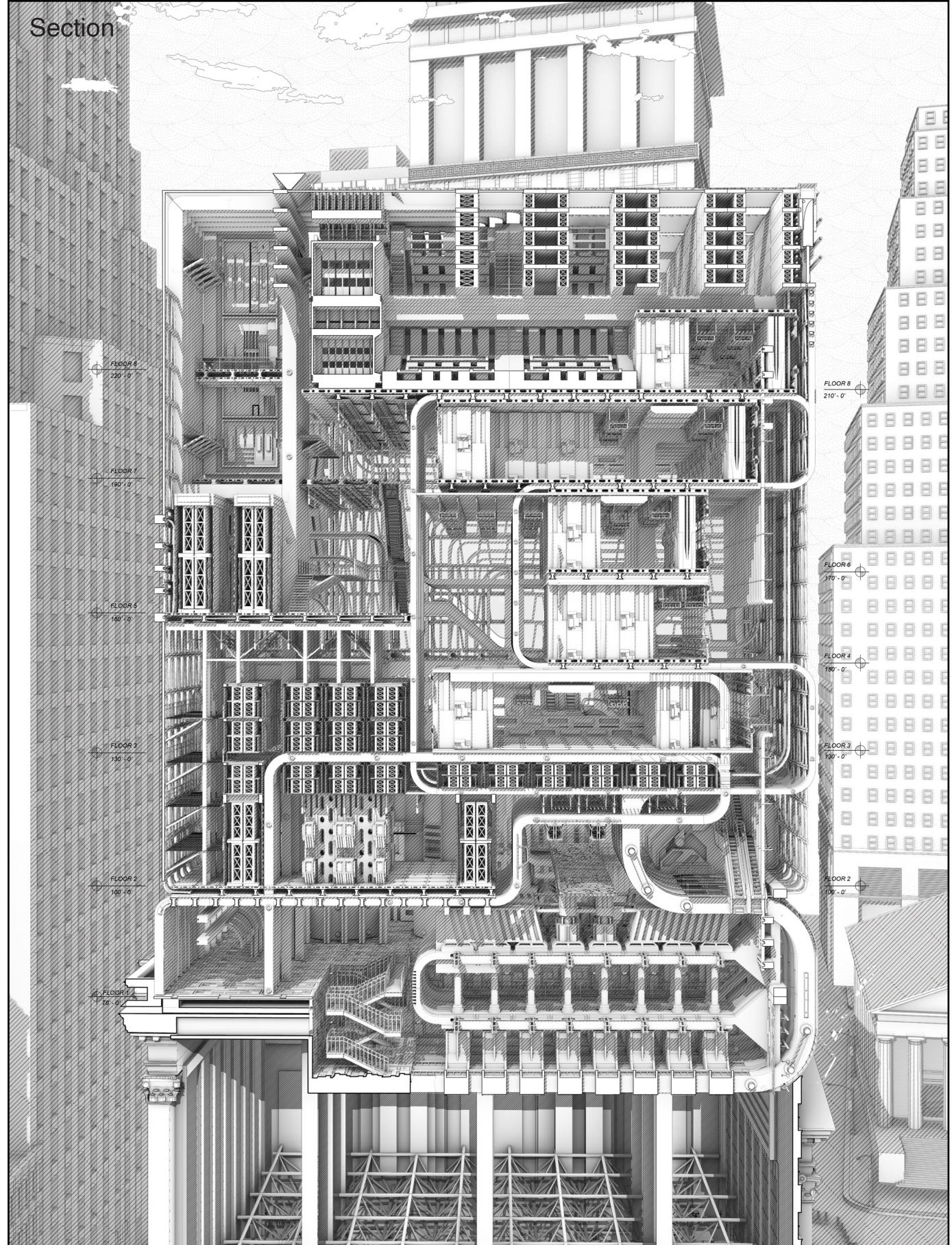
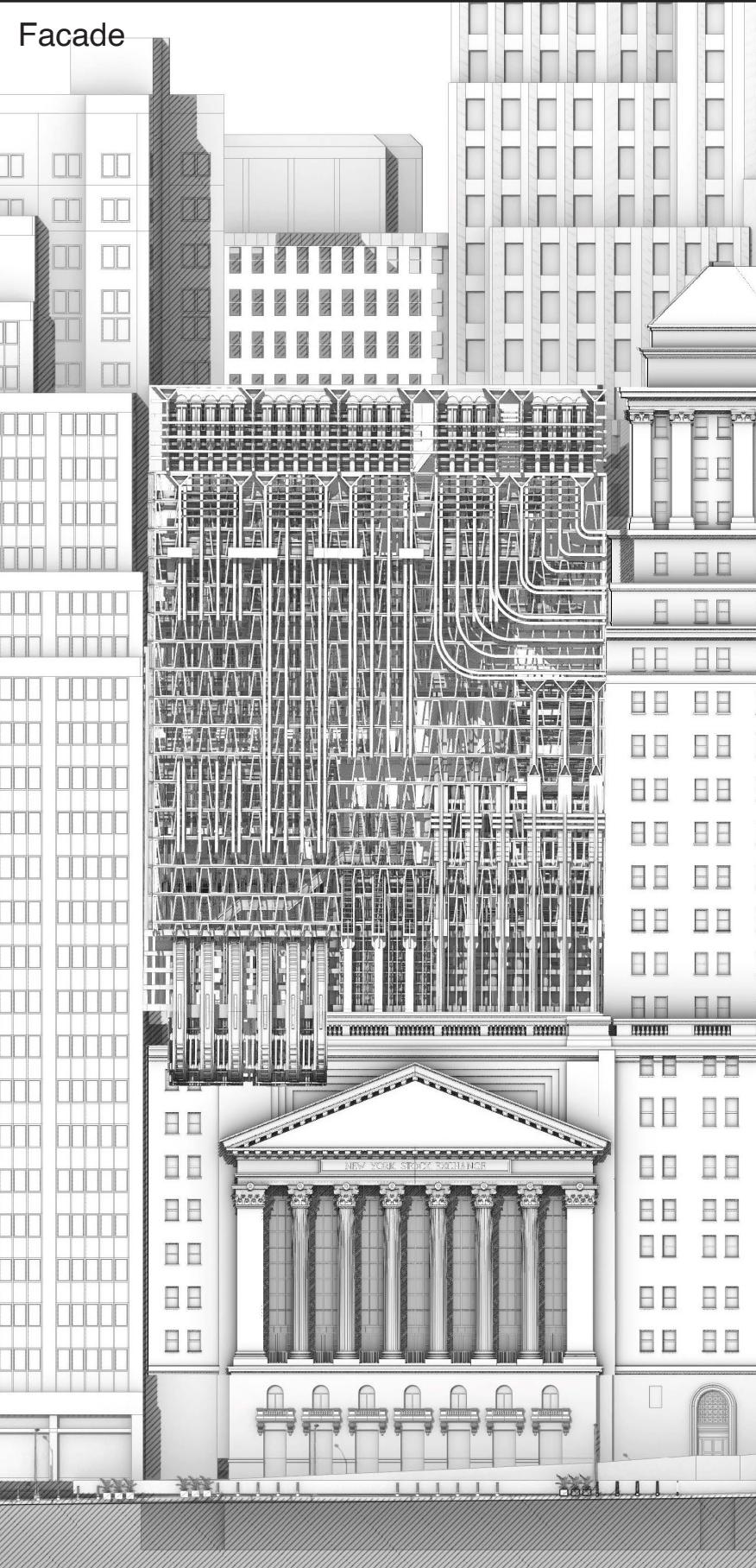
The center of the US and global economy is the stock market which started as an exchange for goods and developed into a marketplace that exchanged shares of American companies. However, due to uncertainty in global relations, some foreign Governments are pressurizing their own companies to de-list from the New York Stock Exchange adds volatility to the financial market. In the long term the withdrawal of these substantial global companies will affect the NYSE adversely. To continue its global leadership the NYSE needs to expand its core business.

New York City needs to raise capital as the Federal and State Governments have not helped New York's finances in any way. If New York City mines Non-Fungible Tokens (NFT's) that are pegged to Real Estate value in the city, residents and visitors alike can invest in the City's future. Non-fungible tokens are a unit of data stored on a digital ledger, called a blockchain, that certifies a digital asset to be unique and therefore not interchangeable. If this token is accessible to all its residents and visitors allows for the increase in value to sustain and even develop some of the city's services, in addition the increase in value over time will monetarily help each resident and tourist who invests in the future of NYC. An expansion of the New York Stock Exchange to include Cryptocurrency trading and mining of its own Ethereum using hydrogen as its powersource will counteract the decline of the decreasing value of the NYSE and will invigorate its growth well into the future.

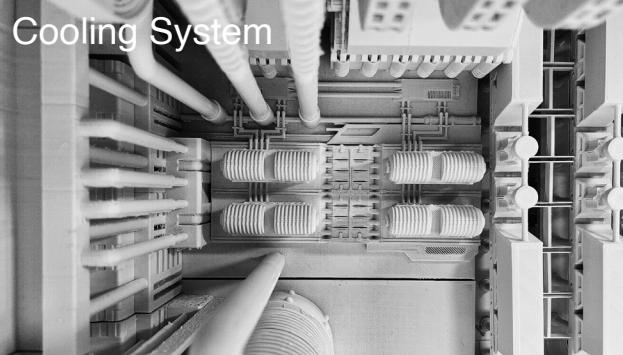
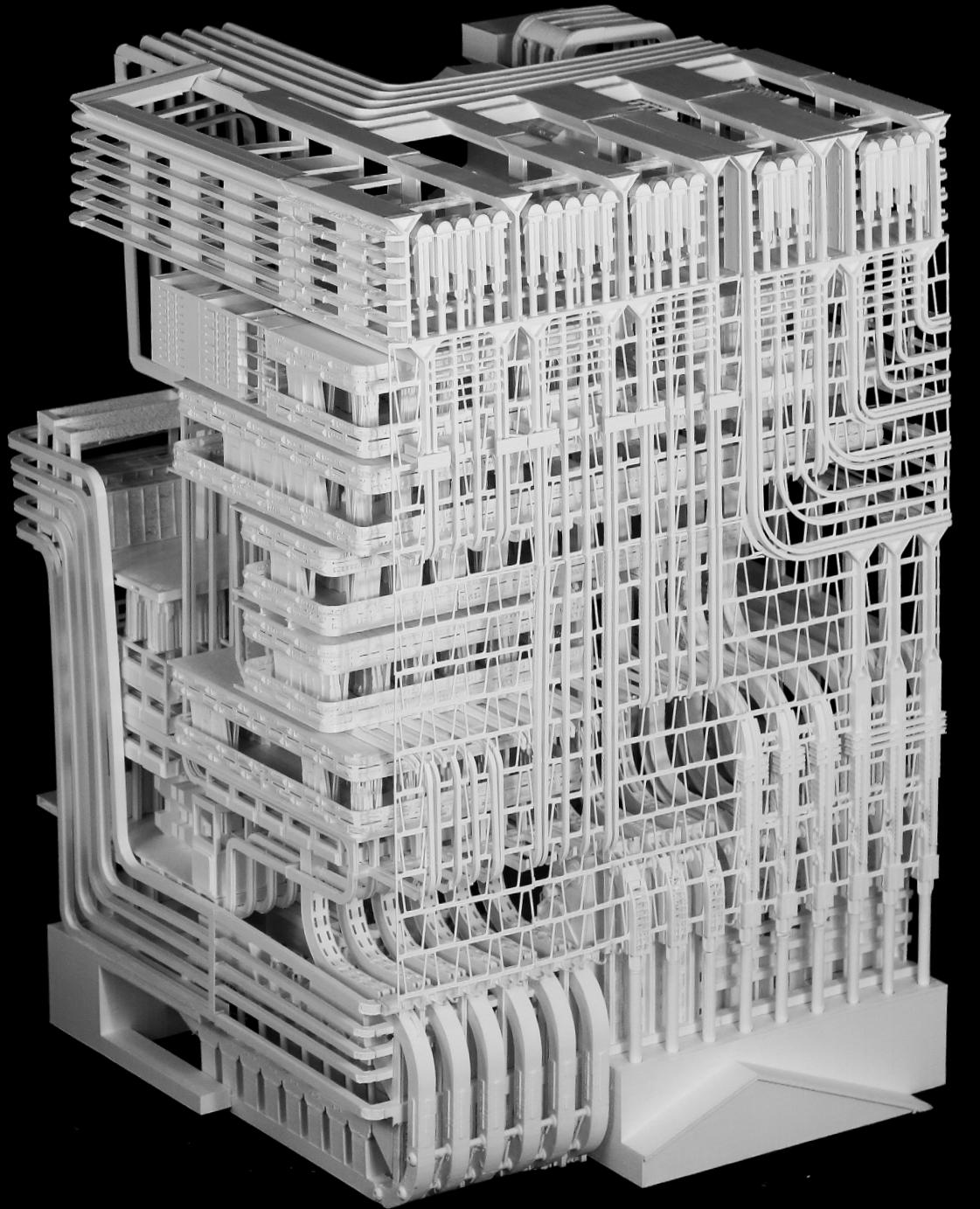
## Evolution of the Stock Exchange

One of the central questions concerning us is what should the 21st century Stock Exchange, moving beyond the free plan of the Beaux Arts era? The building as it currently exists was built in 1903, and is located between the corners of Wall Street and Exchange Place, and was designed in the Beaux Arts style by George B. Post. There are two main feature spaces in the current Exchange building, the trading hall which and a dining club on the 6th floor which has been closed. In addition, there are 200 miles of cables under the Stock exchange as in person trades have been replaced with digital trades. During Covid the building was closed to people, but the exchanges continued to operate as usual.

The Future stock exchange will be expanded to mine Ethereum NFT's for New York City and serve as a Crypto Currency Exchange for global trades. To educate the public about the value of the purchase of NFT's an NFT Museum will be incorporated in the building proposal.



Model





## Hyperbolic Gradient Wave

Air Filled Membrane Structure Room Sprayed by Mechanical Arm

Advisor: Yunsheng SU, Kangyi ZHENG

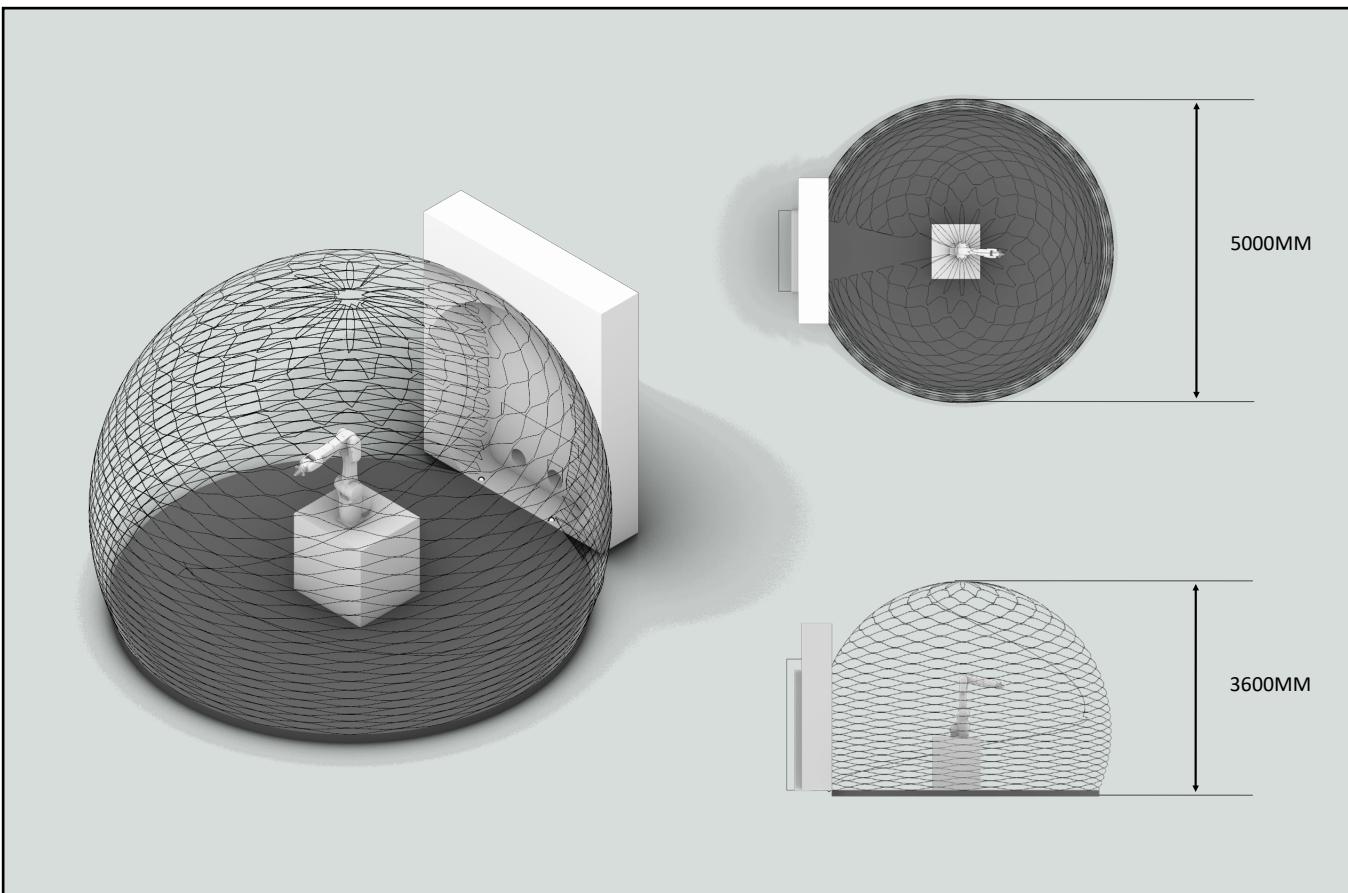
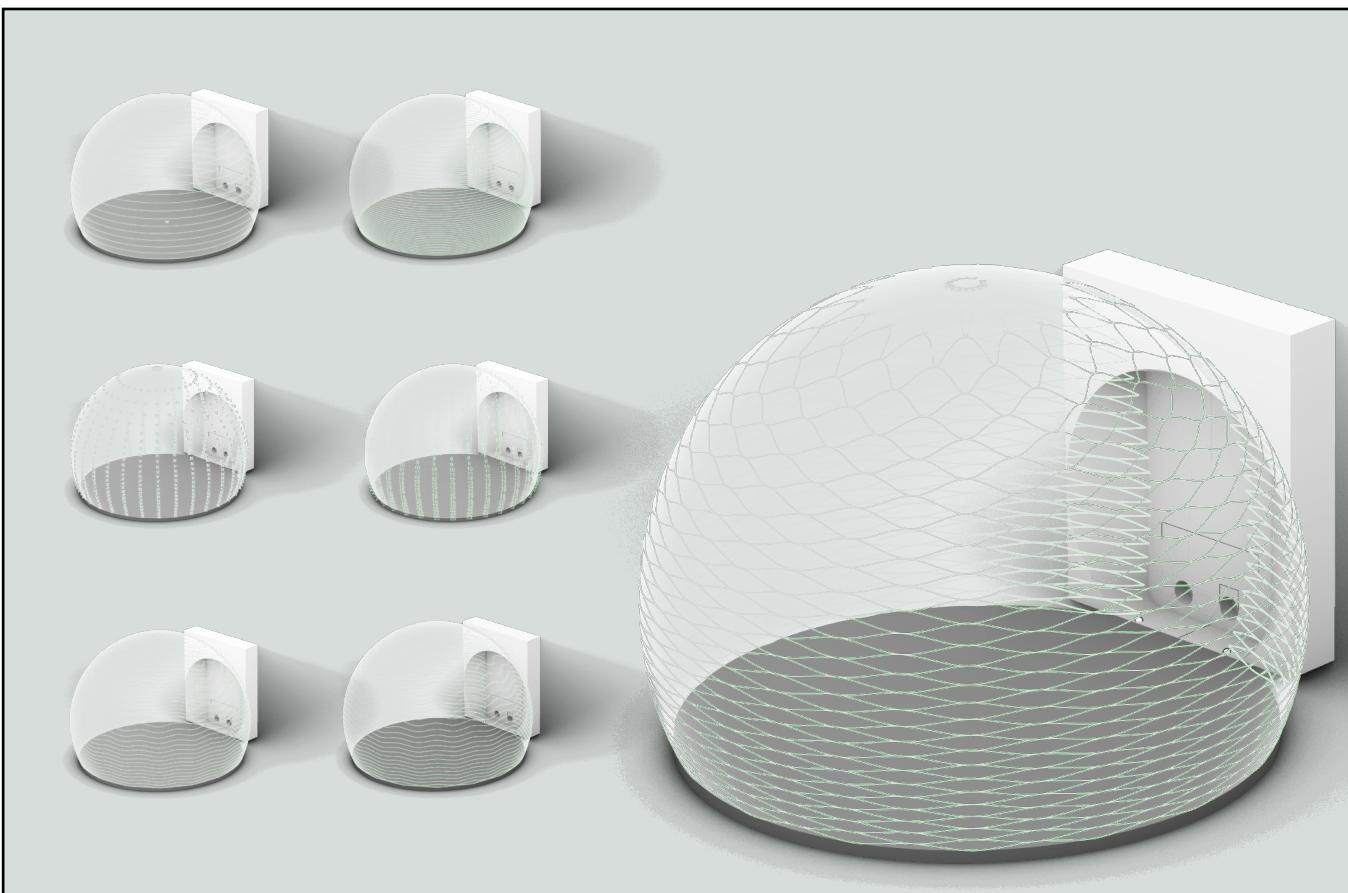
COLLABORATORS - WEI WU, ZIHUAN ZHANG, YUTING CHEN

Using a mechanical arm to spray fast-solidified polymer building materials on the surface of the inflatable air film to construct a room, and discuss an intelligent construction method that integrates a variety of construction technologies and design software.

Through parametric design, the possibility of user-customized building shapes is studied. The effects of polyurethane density, material composition, setting time and other building material properties on spraying construction were studied. The shape of the air film is determined by a handheld three-dimensional scanner, and the structure thickness is calculated in real time. The strength of the variable section of the same material is determined by using three-dimensional structure software, and the accuracy guarantee of the construction method of the manipulator is studied. Finally, through the integration of multiple building technologies, the technical possibilities of mass customization of products and buildings are realized.

In the group of pattern design, we explored the possibility of construct spray path with parametric approach. We started from digital pattern design, while the construction group fill the membrane room with air. After that, we do the on site verification and observation to develop the design. The air membrane would change shape due to the changing air pressure.

We tested the curve tension with kangaroo simulation. After several iterations, we choose the final one with a gradient of wavy pattern. This design satisfies the requirements for the bottom tamping of the film-filled sprayed pavilion.



## Work Flow

In order to best support the sphere itself, we started spray from the bottom up, with the bottom a lot thicker than the upper part. The overlapping components can stabilize sphere and decrease the shape morphing in strong liquid spraying. This design can meet the requirements of the behavior of robotic arm. On the meantime, it gives an appropriate time and temperature to initiate a chemical reaction when spraying from bottom to top.

### 1. Pattern Design



### 2. Fill the membrane room with air



### 3. Verification



### 4. Observation of real-time movement



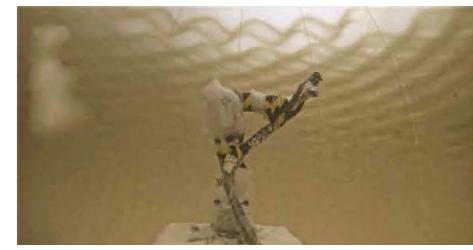
### 5. Pattern Development



### 6. Complete the spray



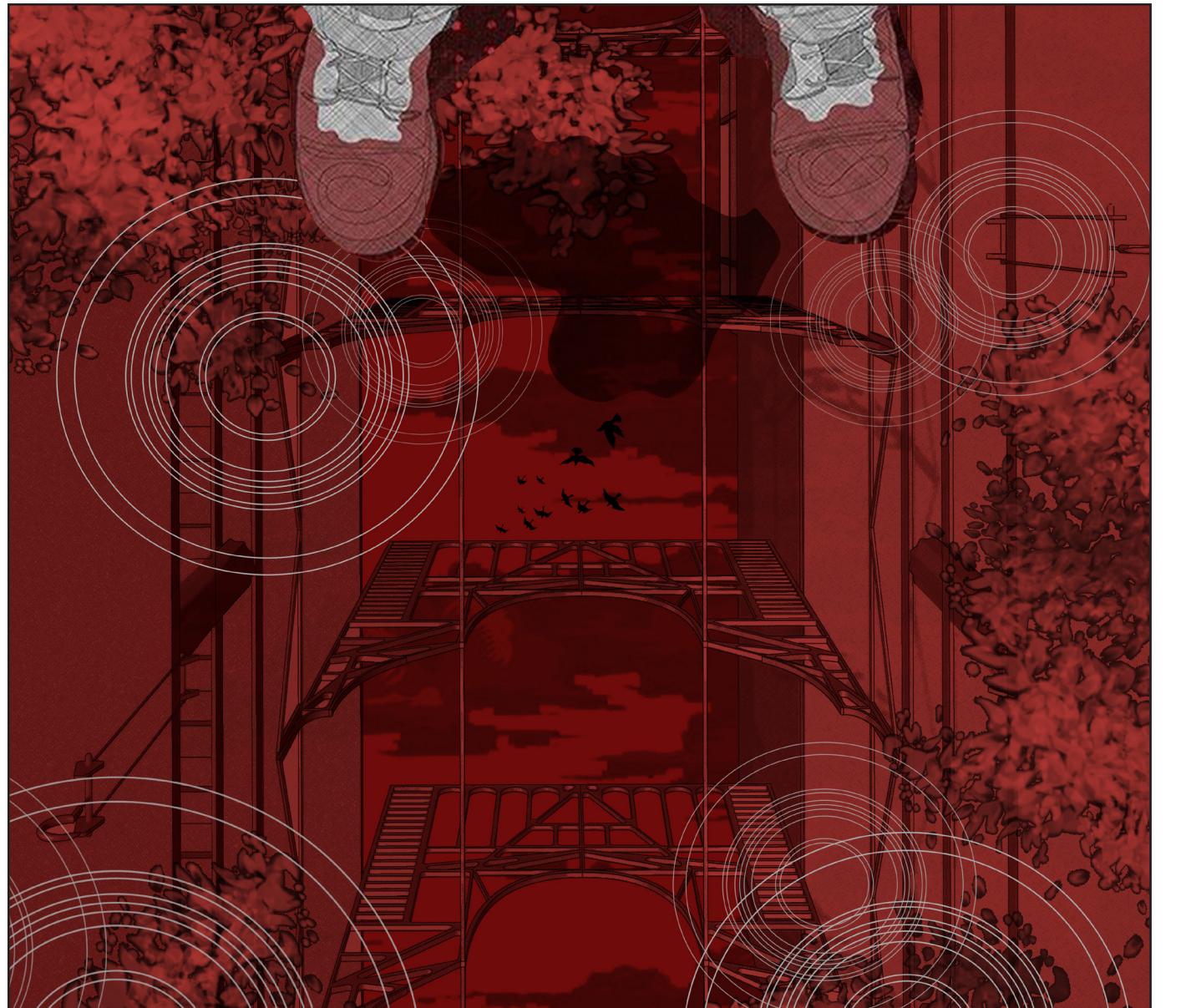
## Construction



## Material - Polyurethane







## METAPHOR AND RITUAL-ORIENTATION

Reconstruction of Anchor Points under Historical Misreading

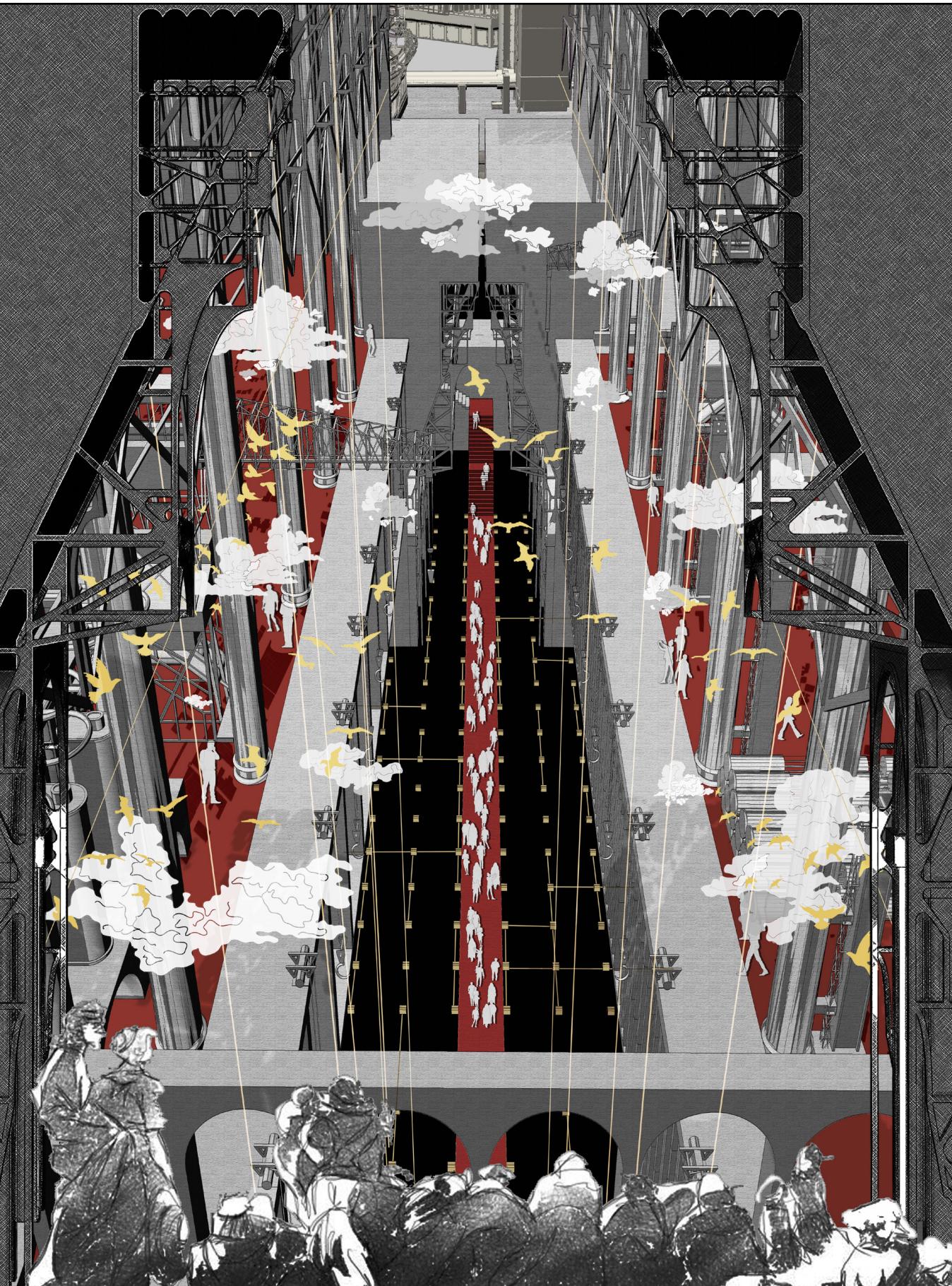
Advisor - Yu WANG

*\*Project was selected as the first place of Guangdong University of Technology's undergraduate outstanding graduation design and exhibited in the 2022 Asia College Graduation Design Exchange Exhibition.*

Observing, comparing and combing the history of Guangzhou's foreign trade with the ancient port of Whampoa and Fuxu as the core and the history of Western development will reveal an interesting contradiction between Chinese and Western views, the so-called historical duality.

I tried to misread this period of history deliberately, and reconstruct the historical anchor from an absurd perspective. Compared with the traditional promotion of this great history of foreign trade, I chose to restore the essence of this history from a fictional story, that is, an equal trading platform forcibly built on completely unequal strength.

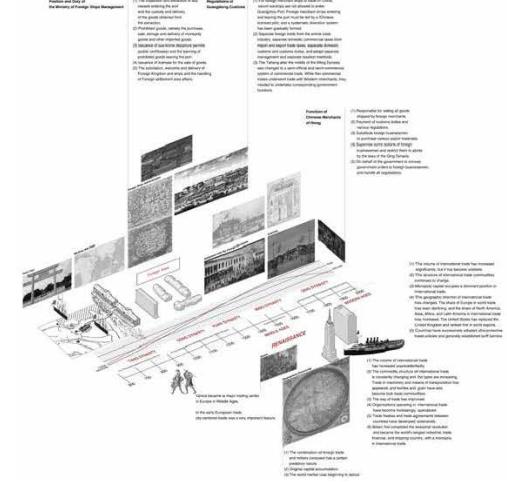
By constructing the implicit symbol of Monolith, a classic monument form in architecture, to convey narrative, it metaphors the beginning and end of different eras of mankind. At the same time, this sense of ritual makes the building full of divinity, heralding the end of the old system and the emergence of new enlightenment. The relationship between the transformation and extinction in the history of foreign trade in China and the West, that is, the peak of glory suddenly goes to destruction and barrenness to prosperity. It also conforms to the traditional Chinese philosophy of transformation and echoes Nietzsche's philosophical theory.



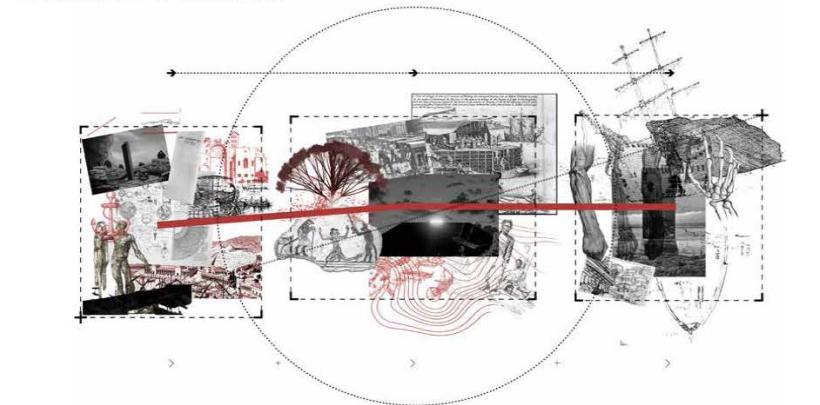
## SITE OVERVIEW&GEOLOGY HISTORY



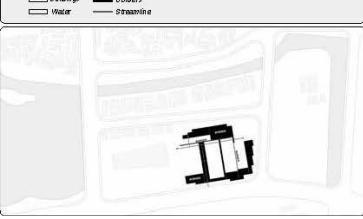
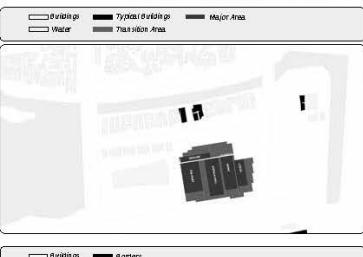
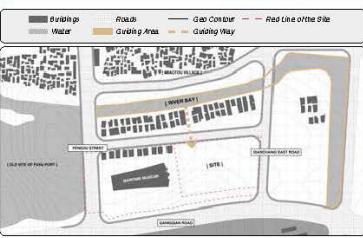
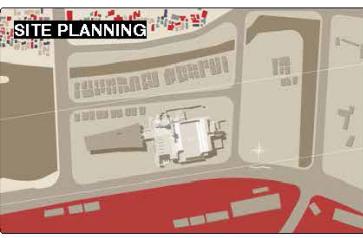
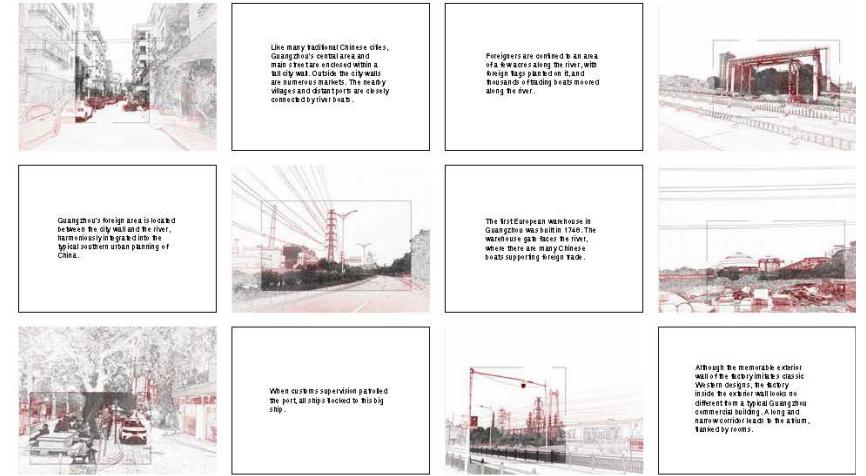
### Comparison of the History of Foreign Trade between China and Foreign Countries



## METAPHOR OF THE MONOLITH



### Collection of Seen and Unseen Moments of the Site and History

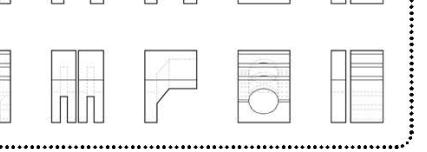
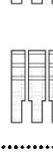
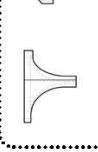
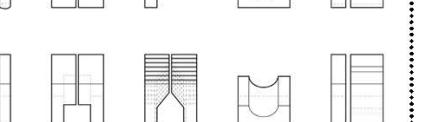
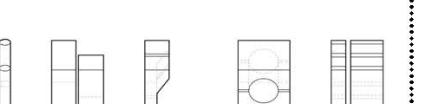
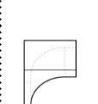
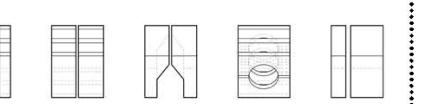
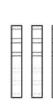
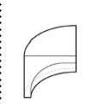


My intuition is that without using a bunch of textbook explanations, but some absurd ways to define, the theme can also convey something with more depth and meaning. Under this deliberate misunderstanding, the relationship between history and the city can be viewed in an alternative way.

After categorizing and misreading, the meaning in history is like the index and description of a novel, showing the relevant storyline through logic and icons. At this time, I will not have to quote obscure historical texts or esoteric doctrines.



### Early Sketches



### ELEMENT CONVERSION

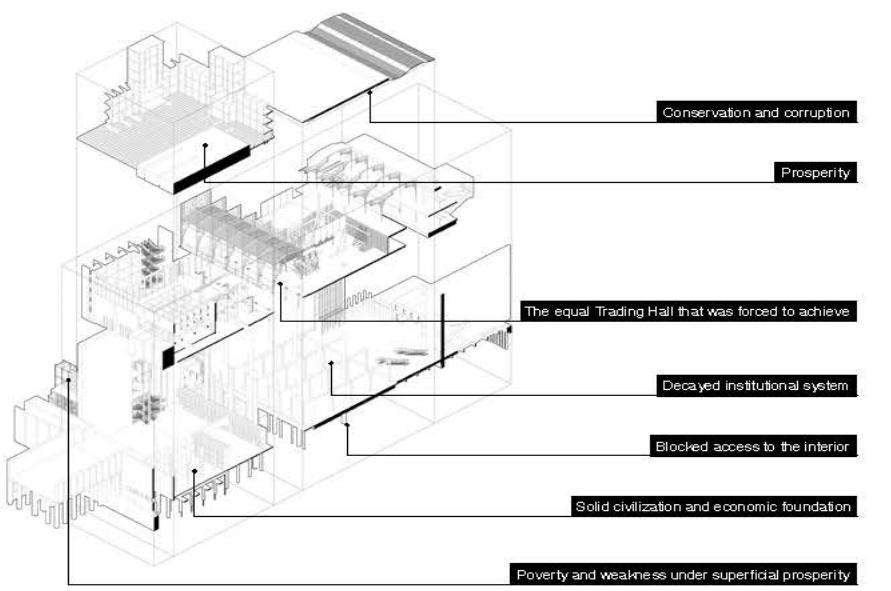


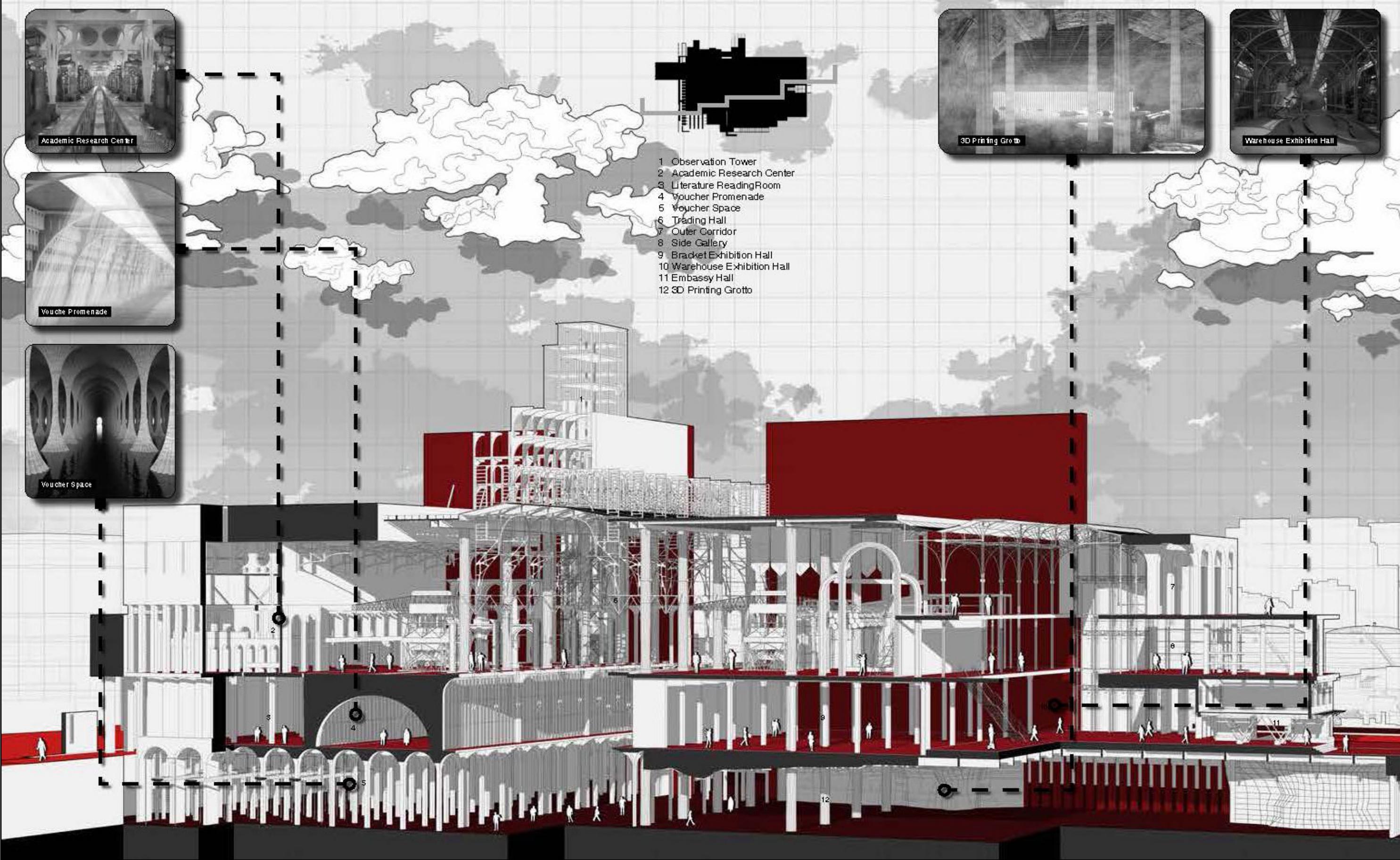
## The Construction of Historical Anchor Based on the Philosophy of Transformation

After categorizing and misreading, the meaning in history is like the index and description of a novel, showing the relevant storyline through logic and icons. At this time, I do not have to quote obscure historical texts or esoteric doctrines.

On the basis of historical misunderstanding and transformation philosophy, the construction of megastuctures is the repositioning and construction of historical anchors. The building is built around a huge Monolith with historical elements transformed and constructed, and Monolith is also microscopically present in all spaces. The barriers and revelations created by it correspond to the interrelated relationship between history and region. The Monolith looks down on the entire megastucture with its extremely pure form and its own unmoving attitude, which is a metaphor for the self-achievement and self-termination of China and the West in the history of foreign trade.

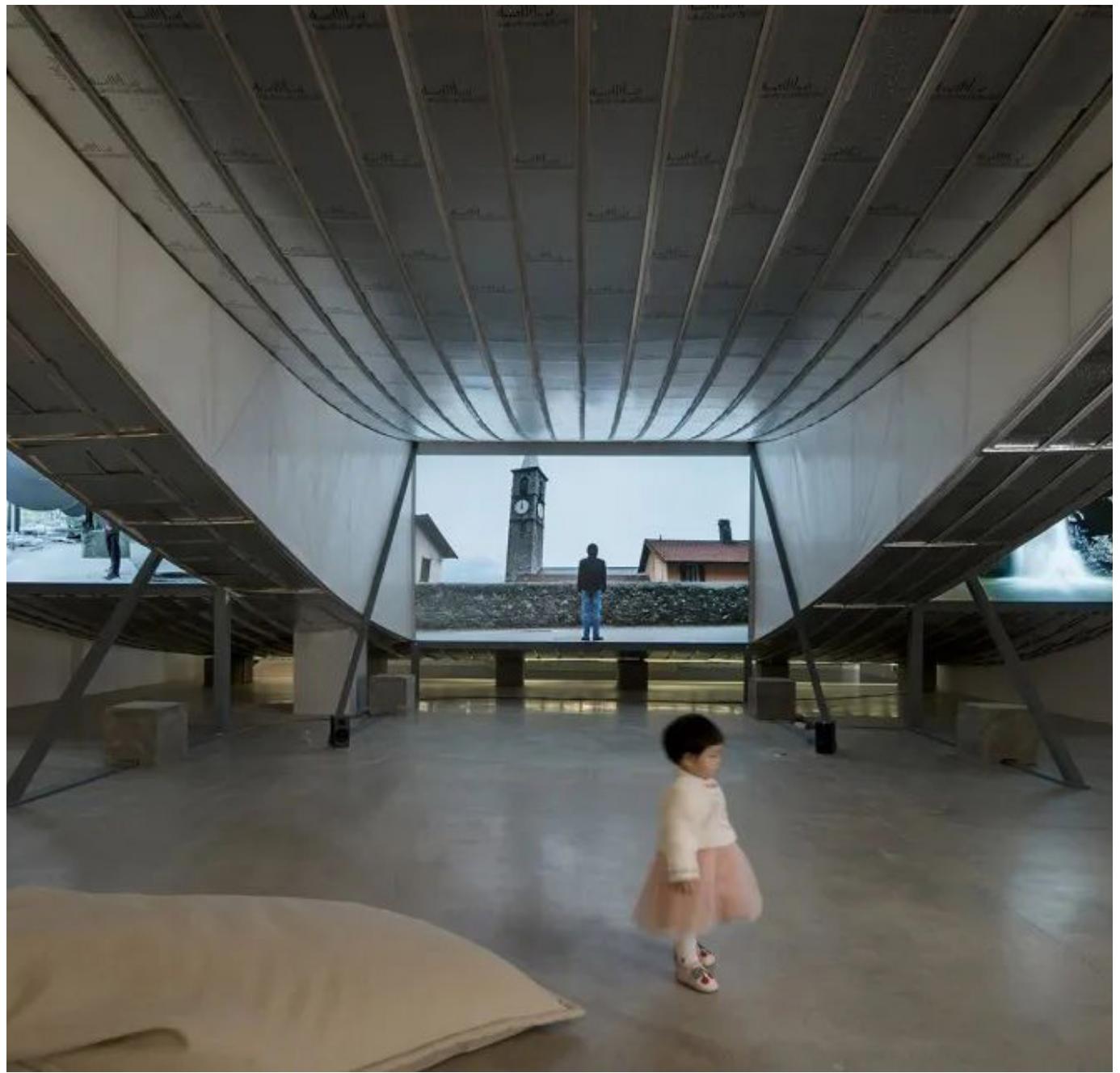
The Trading Hall is the culmination and core of the entire architectural narrative. The two cities complete the exchange of resources in this seemingly equal Trading Hall, but under this huge illusion of prosperity is the shaky foundation of one side and the gradual change of the role of the other side from a trader to a predator.





# II

# Professional



Overview of the exhibition hall: Under the roof

## NINE-TIERED PAGODA: SPARTIAL AND VISUAL MAGIC IV - CINEMA PARADISO

FIRM: WAU Design Office

PRINCIPAL: LINSHOU WU

DESIGN TEAM: SHENG FANG, ZIYU TANG

PROJECT LOCATION: PINGSHAN ART GALLERY, SHENZHEN, CHINA

DESIGN & COMPLETION TIME: 2020

\*Note: the using of all images in the portfolio has been approved by WAU Design Office. Only Publicized projects are introduced here.

Taking the emotional resonance of the architect and the artist, "the hometown that can't be returned" as the starting point, the slightly nostalgic sloping roof divides the different atmospheres of "dichotomy": inside and outside, daily life and liturgy. This kind of juxtaposition is a kind of translation between Lacanian psychoanalysis "Symbolic order" and "the Reality", just like the juxtaposition between church and heaven.

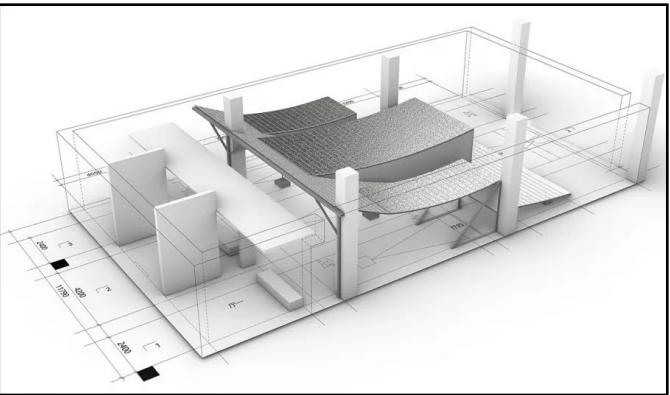
Under the roof, the action of "material alienation" makes the space multifaceted. The visitor's mood changes with the presentation of images such as "Bells", "Free Farming", "Seabirds", etc., and the abstract space can be continuously metaphorized and exchanged: the colony, the church, the courtyard, the parish ....., and thus carries the symbolization and emblematization of personal emotions.

Beyond the roof, we hope to present a chaotic space where the sense of spatial scale disappears and time stands still. The video "The Last Letter" is projected on the roof that disappears from the horizon, perhaps for Li Pengyuan, he is having a conversation with his father in heaven; in this alienated space, perhaps for the viewers, "there is a true meaning here, which I want to argue, but have forgotten to say it", and with the help of this space, we can peep into the real world of the inner depths.

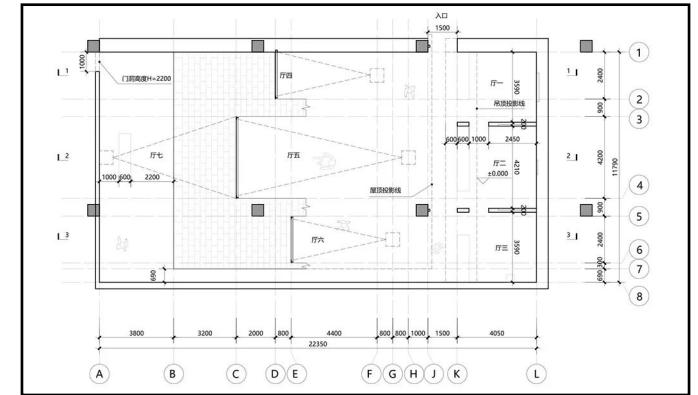
We directly deconstructed the "three-room" house common in the southern countryside, presenting the roof, porch, and room as separate fragments. We hope that the visitor's physical experience will be associated with the space and the video work in memory.



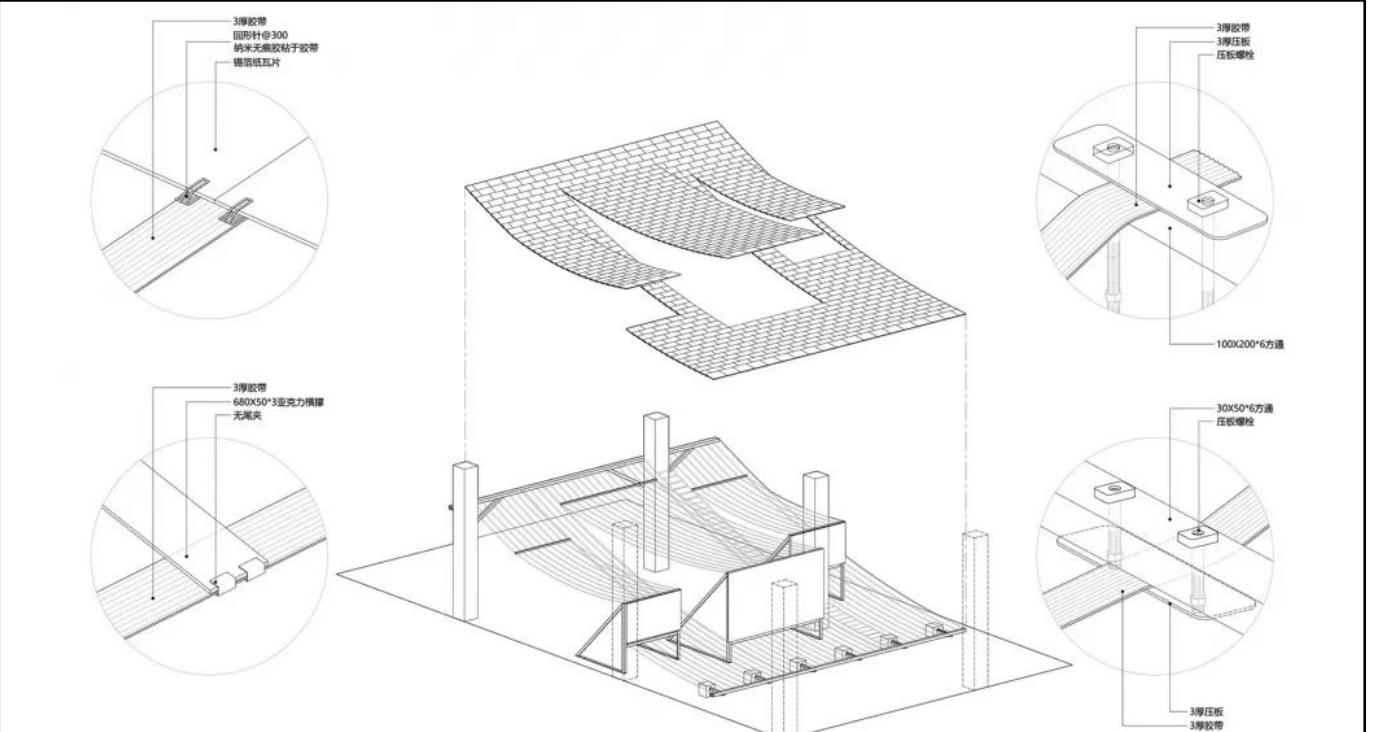
Overview of the exhibition hall: Three-room



Spatial presentation



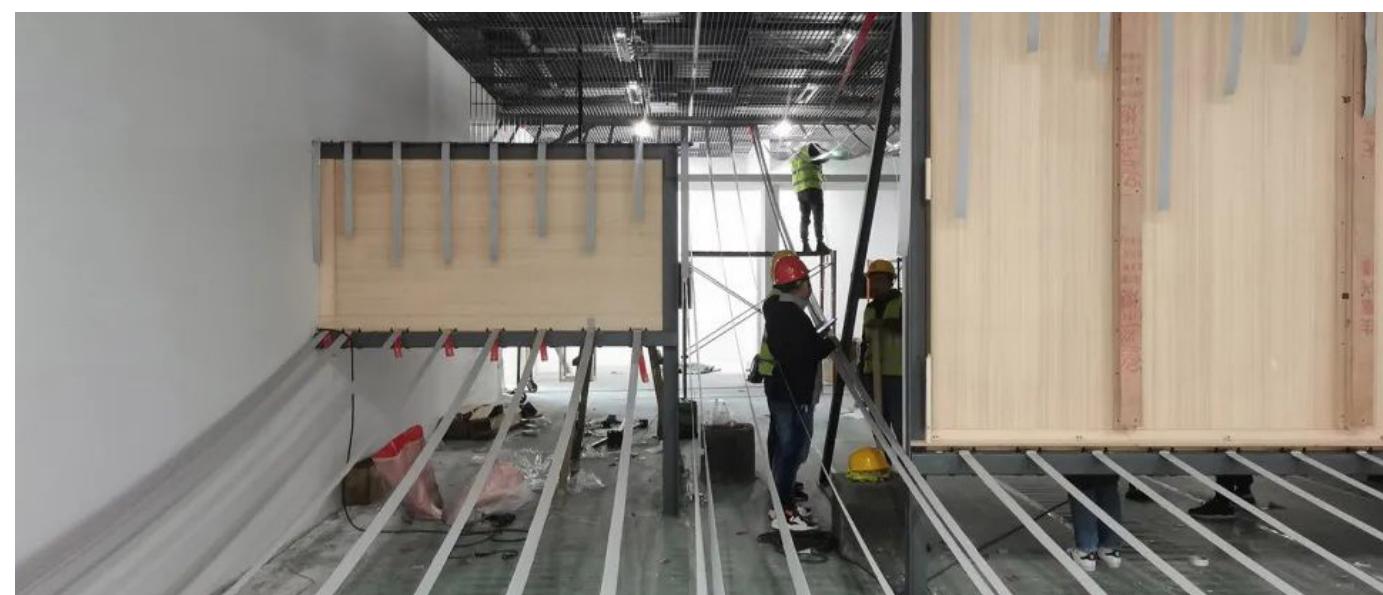
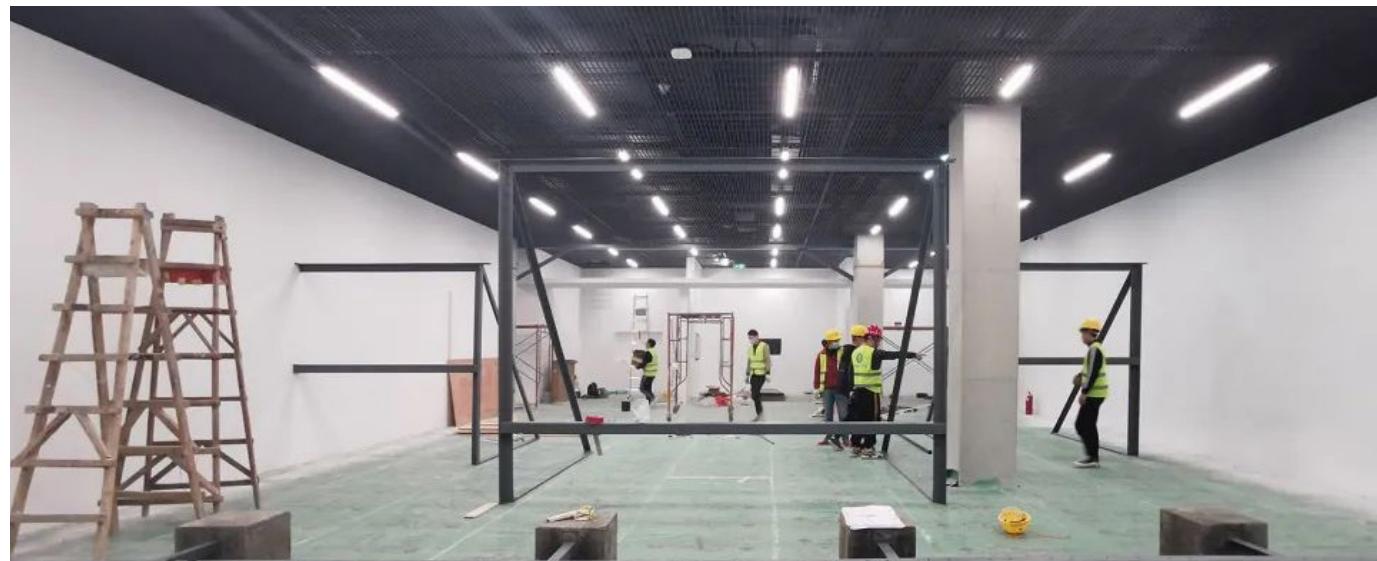
Plan



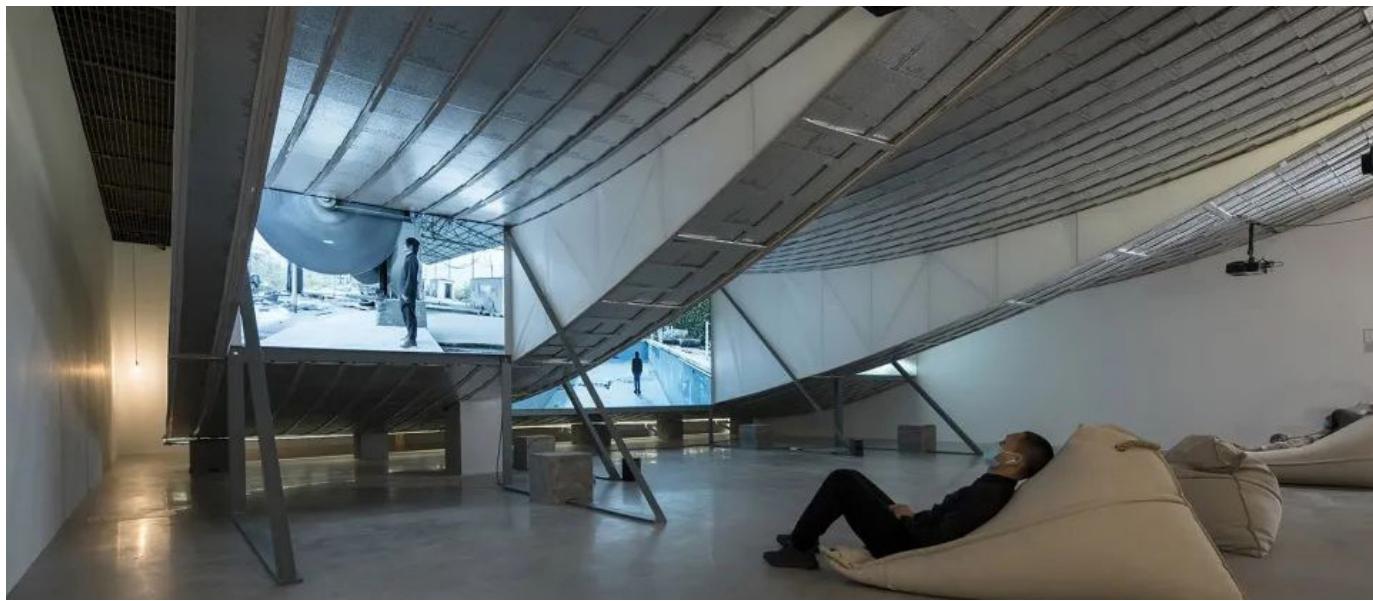
Structural and Nodal Analysis



Suspended chain line purlin



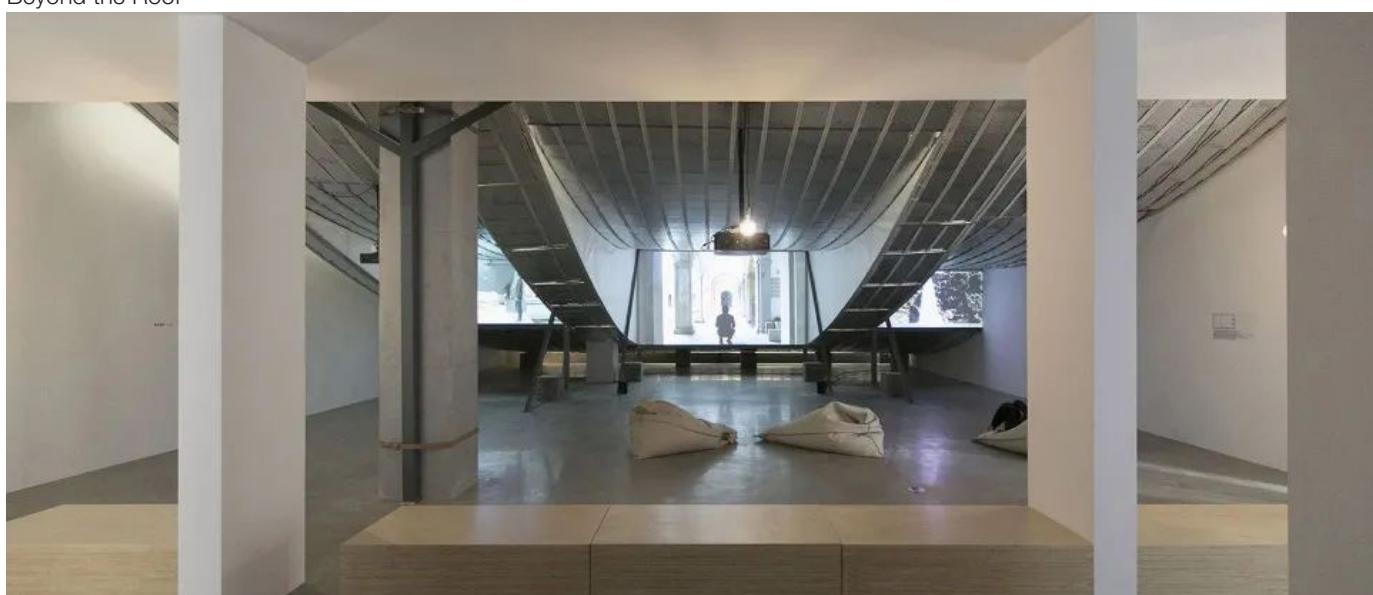
Photos of the construction process



Roof morphology of zero-moment suspension chain lines



Beyond the Roof



Under the Roof



## Smart Water Hall

FIRM: WAU DESIGN OFFICE

PRINCIPAL: LINSHOU WU

DESIGN TEAM: WEIYING ZHANG, QIANPING LUO, SHENG FANG

PROJECT LOCATION: JIANGMEN, GUANGDONG, CHINA

DESIGN & COMPLETION TIME: 2020/2021

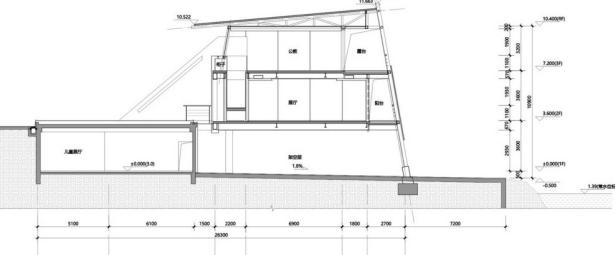
The Project is located by the Tiansha River in Pengjiang District of Jiangmen. The exhibition hall serves as a centralized display of the water-control achievements of Pengjiang. It is an important place for external science popularization of water control and environment protection and for the exchange of water control salon. In addition, it is also served as the rostrum for the Dragon Boat Race which is held once a year. The Owner hopes to open it to the public on the World Water Day after the Spring Festival of 2021. It will take only 8 months from design to completion and opening, including the Spring Festival holiday and one and a half months of indoor exhibition arranging. This is a fast-construct building, and a project where construction strategies dominate.

We put forward the construction strategy of "breaking up the whole into parts", decomposing the building into two parts that can be constructed simultaneously: the bottom part is the children's exhibition hall of concrete structure, and is flush with the elevation of the walkway along the river; the upper part is the achievement exhibition hall and the public education room of steel structure, and is elevated on the river bank walkway, connecting to the main square at the road.

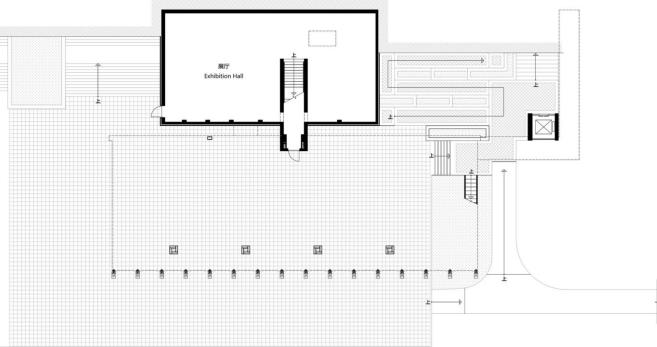
Due to the demands of flood control, we adopt the concrete shear wall structure at the bottom part. The 200m<sup>2</sup> children's exhibition hall is within the scope of the demolished old building, leaving a large area of walkway space far away from the river bank, which can reduce earthwork excavation.

The elevated building provides a shady rest space for people in the riverside park. The neatly exposed inclined steel columns are reminiscent of the paddles of dragon boat, and the suspended upper part looks like a boat floating on the water. The doors of the public education space on the top floor can be fully opened for watching the dragon boat race.

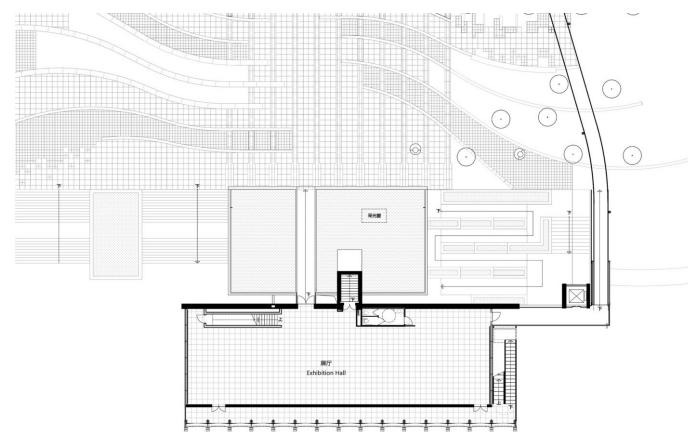
Because we have actively taken the construction steps and cycle into consideration during design, we ensure that the project is completed in a very short time. One year after its completion, it has become a major popular science education base on environmental governance for children.



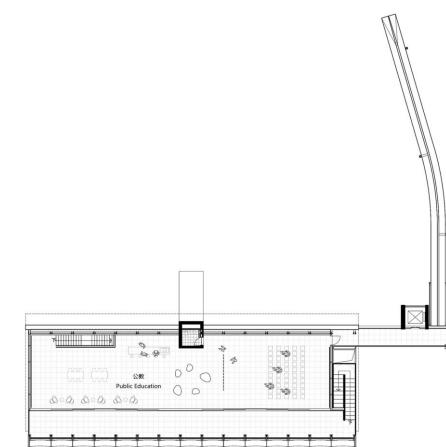
Section



Ground Floor Plan



Second Floor Plan



Third Floor Plan



Suspended floor avoids the original walkways



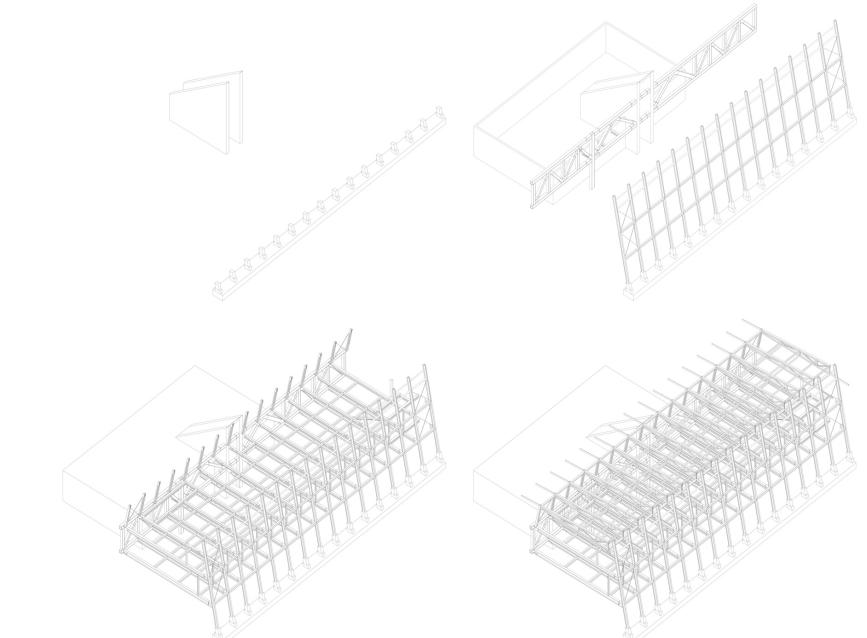
Sunken garden and the concrete structure



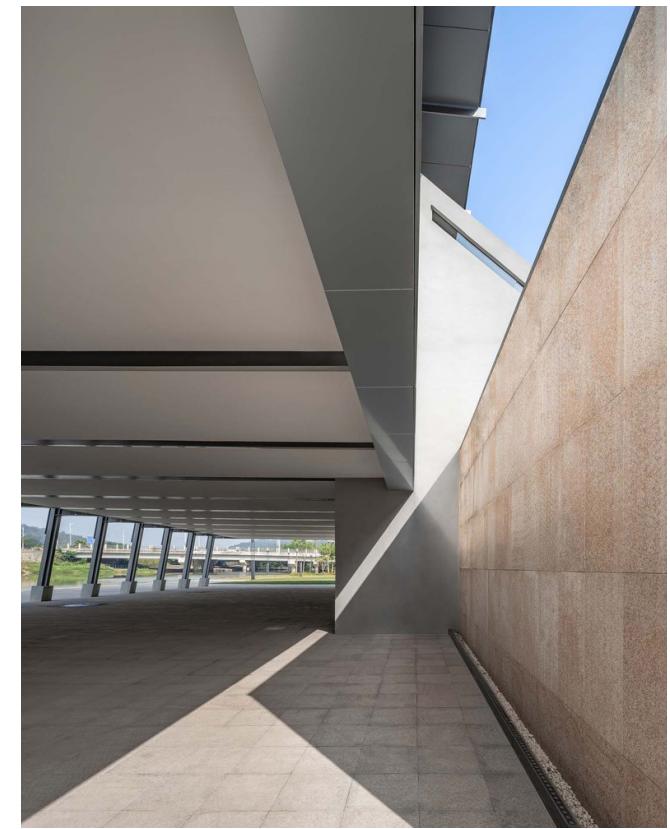
Walkway on the upper floor



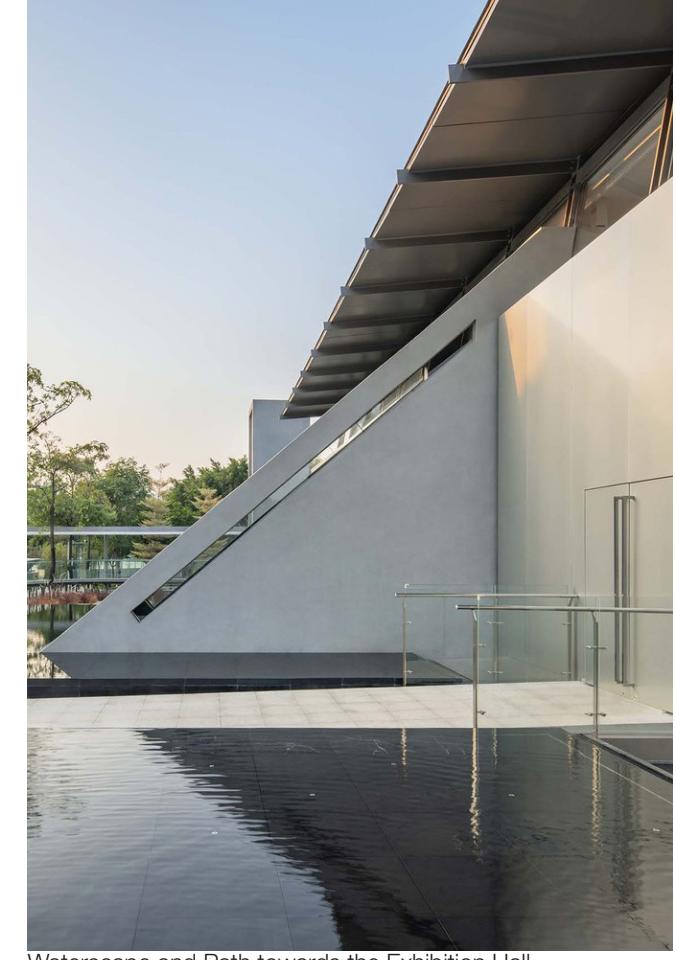
Construction Process



The steel structure of standard repeating units is adopted for the upper part. After half a month of pile foundation construction, the prefabricated structural components can just be transported to the site for installation. The column span is 2.4m with the modulus of 0.6m, which can make the fixed furniture plates, floor tiles, doors and windows, railings and wall panels very compatible, ensuring good quality control of rapid construction. The suspended upper part perfectly avoids the original landscape walkways and trees. The upper and lower parts of the building are staggered in plane and are only connected by stair, which is the only structural connection.



Scattered Structures



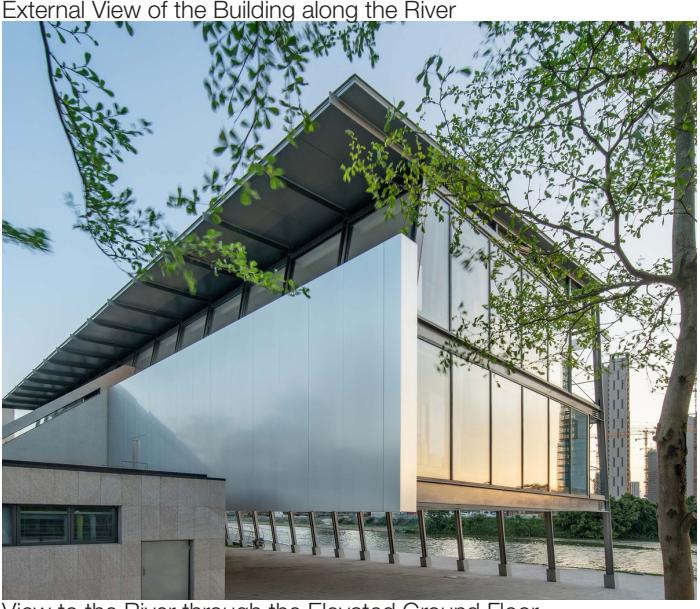
Waterscape and Path towards the Exhibition Hall



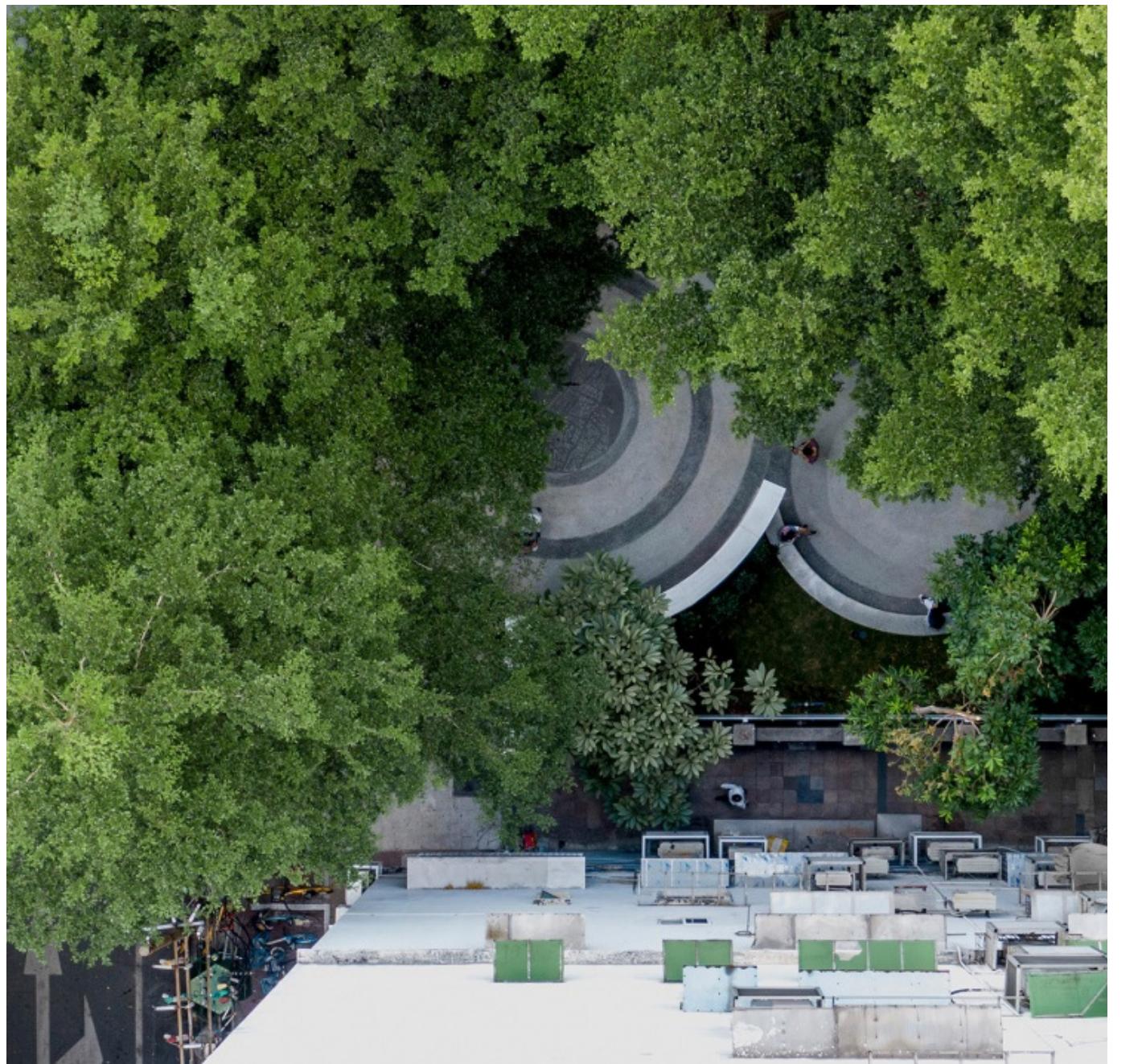
Elevated Walkway



External View of the Building along the River



View to the River through the Elevated Ground Floor



## Dongshan Young Master Park

FIRM: WAY ARCHITECTS

PRINCIPAL: NING WANG

DESIGN TEAM: WEIPENG HUANG, YURI, MOSES, LOOKIE, SHENG FANG

PROJECT LOCATION: GUANGZHOU, CHINA

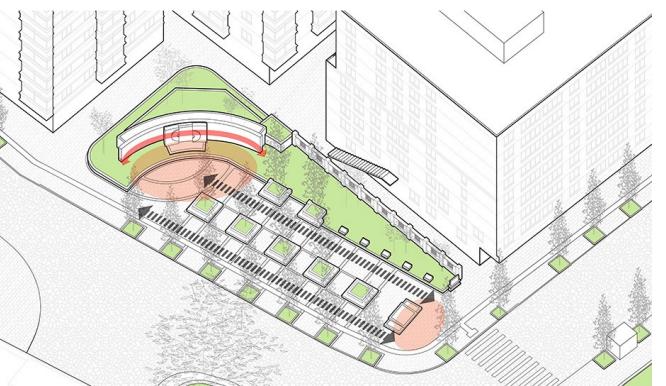
DESIGN & COMPLETION TIME: 2020.3/2020.9

Dongshan Shaoye Plaza (Dongshan Young Master Park) is located in a very unique location in Dongshankou, Yuexiu District, Guangzhou. It has always been the intersection of Dongshankou's commercial vitality axis and residents' life axis, and the starting point and ending point of the bus terminal. It is also a public node place that people must pass through when going to the Xinhepu Historic Preservation Area by subway. Dongshan Shaoye Plaza (Dongshan Young Master Park) underwent a renovation in 2000. Ten years later, the plants are still full of vigor, but the overall quality of the square is low that limits the composition of the crowd, and inadequate public maintenance has caused the landscape structure area to become negative, which makes the park become a hygiene loophole and security blind spots.

The circulation of the site has changed from a boring straight line to a more exploratory and interesting curve. The goal of this upgrade is to enable more community residents to use this public place like using their own living room, that is comfortable and proud, and to attract more foreign tourists to learn about the regional culture of Guangzhou Dongshan through the square tour. In the end, because of the increase and diversification of the user population, the youthful vitality and cultural transmission are ignited, and the energy transmission from one community public node to the next community public node is truly activated.

The scenery and characters of Dongshan Shaoye Plaza (Dongshan Young Master Park) together construct a three-dimensional, time-changing spatial picture, in which trees play a very important role in limiting space. Madagascar almond have distinct branches, and the non-overlapping leaves allow sunlight to pass through in layers and dappled on the ground. People move in the lower part and have a clear vision. The light passes through the leaves to form a natural and beautiful light pattern. The air is smooth and not fast, and a feeling of comfort and tranquility emerges spontaneously.

Obviously, the appearance of the site was not imagined by the architect, but the site users spontaneously constituted its initial genes. After the architects and managers have rationally added multiple attributes, the variables of time have been put in, and long-term maintenance is implemented. The way the supervision is used is guided. Only such a venue will be loved by the public for a long time after the renovation, and will play a diverse mission that is more in line with the development and changes of the future city in addition to beauty.





## NO. 41 SHA MIAN STREET

FIRM: WAY ARCHITECTS

PRINCIPAL: NING WANG

DESIGN TEAM: WEIPENG HUANG, YURI, MOSES, LOOKIE, SHENG FANG

PROJECT LOCATION: GUANGZHOU, CHINA

DESIGN & COMPLETION TIME: 2020.8/2020.12

\*Note: the using of all images in the portfolio has been approved by WAU Design Office. Only Publicized projects are introduced here.

