

[MOVE IS MORE]

Architectural Portfolio
Sixiong Wang

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Personal Academic Page:

<https://sixiong-wang.github.io/academic-page/>





PROLOGUE

My academic journey in architecture orbits around a central theme – the exploration of "movement" in architectural design.

Inspired by Francis Bacon's triptych and guided by John Hejduk's interactive architectural works, I delved into the intricate dance between static spaces and dynamic narratives. Leading a team in the Structural Construction course, we conceived "Square Utterance," merging interactive structures with visitor activities. This endeavor propelled me to represent the school internationally and set the stage for subsequent pursuits. The project "The Ninth Box: Reconstruction of the Unseen" earned the Masterpiece Award, exploring architectural "movement" through segmentation, dispersal, and re-construction.

As my studies progressed, I ventured into the invisible realms of architecture, exploring psychoanalytic mapping's impact on collective experiences. Through workshops and projects like "Jumping Funland: Pressure Evacuation Park," I sought to materialize philosophical insights into narrative-driven critical designs, echoing concerns about China's evolving context. This prologue encapsulates my dedication to unraveling the essence of "movement" within the architectural tapestry.

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EDUCATION

Chang'an University (*Project 211*)

Sep 2016 - Jul 2021

Field of Study: Architecture (5yrs) | Bachelor of Architecture Degree

2021

Average Score: 78.86 out of 100

2020

Core Courses: *Architectural Design (93), Practice in Design Institute (94), Ancient Architecture Measuring (91), Graduation Project (A).*

2019

AWARDS & PUBLICATIONS

Outstanding Graduation Design - National Transportation Architecture Joint Graduation Design
Tied for Second Place (*first place vacant*) - 2020 Future Community International Design and Innovation Competition

2021
2020

Third Prize - Zhongshan OCT Happy Coast Center Green Axis Public Space Design Competition

2021

Masterpiece Award - UA Creation Award & International Concept Design Competition

2018

Presented paper (*the only undergraduate group*) - The 3rd National Architectural Criticism Symposium Selected Paper

2019

ACADEMIC EXPERIENCES

Architectural Workshops:

2022

Figural Translation: Materiality Ensembles - Nate Hume (*senior lecturer of UPenn*)

2022

• Reassessing and reorganizing the integral material relationship between volumes and enclosures.

Designer's Utopia: Reclaiming the Autonomy - Lifeng Lin (*founder, principal architect of LIN architecture*)

2022

• Situationist thinking research: nomadic, drifting life is used to counteract the spectacle society.

Philosophical Archetypes and Techno-Critical Architectural Narrative - Yu Yan (*assistant professor of SAUP*)

2021

• J. Lacan's psychoanalytic theory research: evacuation of the body by building.

Structural Constructions:

2020

Light Wings (3m×2.4m, H=2.7m) - foam board | interlocking

2017

Folding Cave (3m×2.4m×2.3m) - plastic polypropylene sheet | single-sided cutting, folding

2017

Square Utterances (5m×3m×3m) - composite board, square timber | mortise and tenon interlocking

PRACTICAL EXPERIENCES

Hainan Provincial Design and Research Institute Co., Ltd

May 2023 - Present

Provincial, Grade A Architectural Design Firm | Architectural Intern

Hainan

- Achievement | Developed a comprehensive AI algorithm-based architectural workflow (Stable Diffusion-based). Contributed to the acceptance of **more than 10 commissioned projects**.

- Responsibility | Schematic design, technical drawing (primary); rendering, profile formatting (secondary).

- Design | Designed over 20 building units and multiple residential area masterplans, achieving an adoption rate of over 80%. Focused primarily on university campuses, libraries, infrastructure warehouses, and residential areas.

- Technical Work | Produced and revised over 30 sets of technical drawings, including sunlight duration, green area, and parking layout calculations.

Shenzhen Huahui Design Co., Ltd

Aug - Oct 2020

Grade A Architectural Design Firm | Architectural Intern

Guangdong

- Achievement | Won 1 public tender competition and completed 3 commissioned projects.

- Design | Designed 6 building forms and 3 sets of urban design master plan drafts, with 7 of them being adopted.

- Technical Work | Adjusted floor area indicator and modified 4 sets of planning layouts accordingly. Revised over 12 node sample drawings based on client feedback.

- Communication | Independently produced over 60 pages for the final reporting atlas, all of which were fully utilized.

- Communication | Participated in 2 communication meetings with developers and government officials.

Shaanxi Provincial Bureau of Cultural Relics Protection | Mapping Group Member

May 2019

Ancient Architectural Mapping - Main Hall of Xiyue Temple Complex: Hao Ling Hall

Shaanxi

- On-site Mapping | Utilized a total station to capture point cloud data of the building and accordingly created 4 sets of technical drawings (including truss top views). Conducted research on Donggong brackets.

- Responsibility | Independently completed 11 sets of node sample drawings for all Dougong

SKILLS & CERTIFICATES

Languages: English (IELTS 6.5/6), Chinese (native), Lin'gao dialect (near-native)

Software Skills: Rhino, Sketchup, Auto CAD, V-ray, Photoshop, Illustrator (main, proficient)

Grasshopper, Enscape, D5 Render, InDesign (intermediate)

Arc GIS, Blender, Keyshot, VS Code, PyTorch (novice)

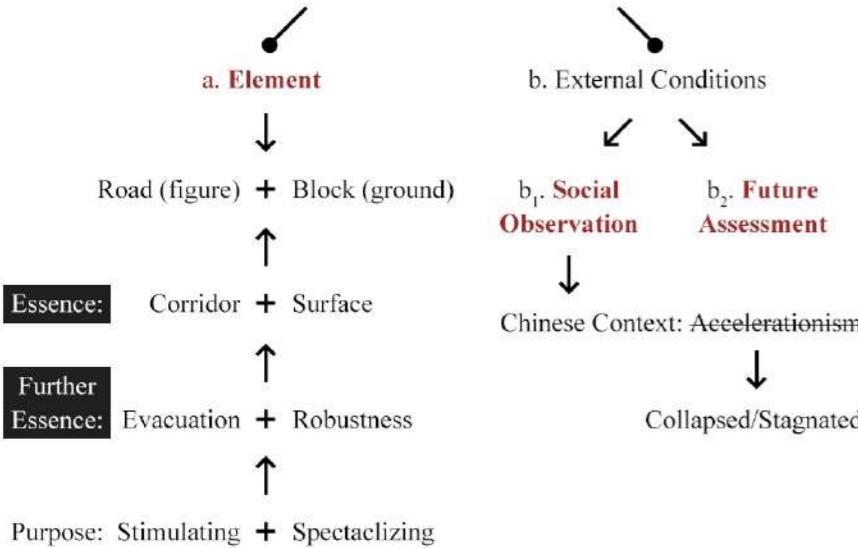
[Self-introduction] (of Thinking Pattern)

This self-introduction serves as an **informal project 0**, with the aim of replacing my profile image while showcasing the logical thinking patterns manifested in other projects. I earnestly hope that you can perceive my steadfast ideals, as I am dedicating/shaping myself to the realm of architectural design.

Wishing you an enjoyable reading experience.

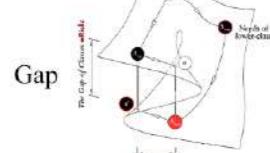
1. Self-formulated Project Task Book / Brief

1.1 Site (The only limitation: do NOT create site conditions for the sake of design.)



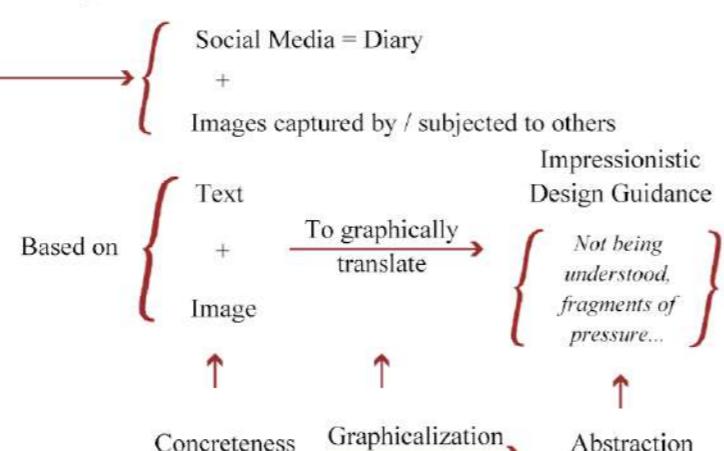
b₂. Future Assessment

- Is the future [disjointed]? - No, parent-child relationships are not more severed than the previous generation.
- Is the future [anti-religious]? - Yes, work patterns lead to the contraction of the time and space for religious activities.
- Is the future [centralized] or [decentralized]? - Centralized. Despite everyone's desire for decentralization, due to



1.2 Condition: Personality Self-introduction

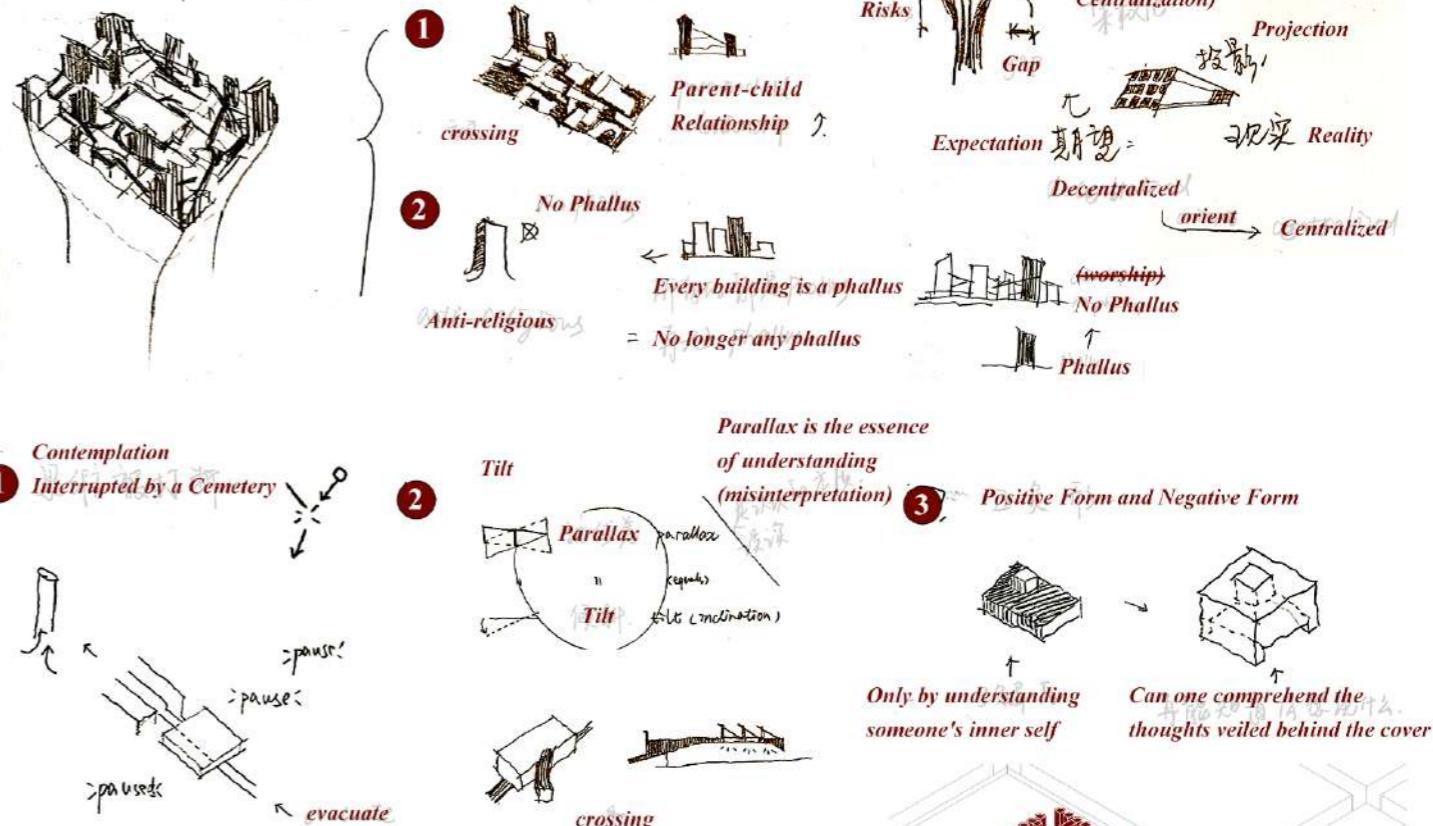
Instruction: extract content from PHYSICAL text or images of the task book and ABSTRACT it.



2. (Abstract) Design Guidance

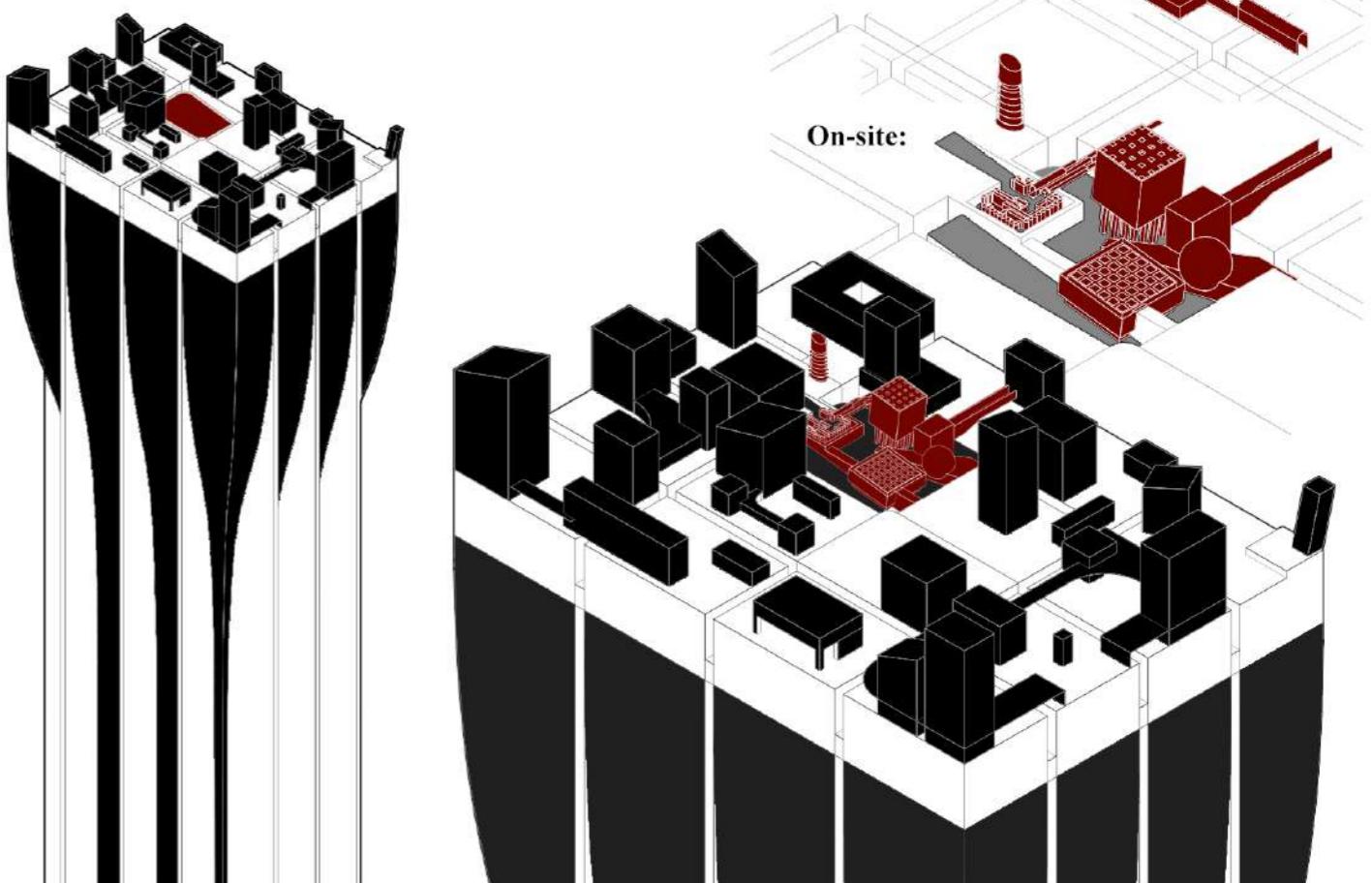
Instruction: hand-sketching INSTINCTIVELY, with original intentions, and even foolishly.

Manuscript:



3. Form Translation

Instruction: RE-MATERIALIZE the abstract guidance.



4. Self-reflection: Analysis of the Formal Core

Instructions: In the earlier formative stages, I deliberately required myself to be intuitive and foolish.

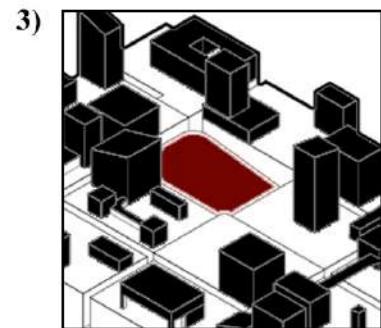
Afterward, analyze and rethink my core to attribute my design actions.

1) Why consider the "graph" in the graph-bottom relationship as robustness? Why spectacize?

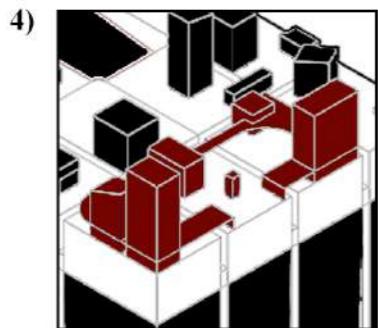
- Answer: This comes from my observations working in the field of architectural design. Clients seem to universally pursue grand spectacles. Street views have been dominated by billboards from commercial buildings.

2) Why, when selecting the site in a self-formulated project brief, did you answer the question of "whether the future is disjointed" from the perspective of "parent-child relationship"?

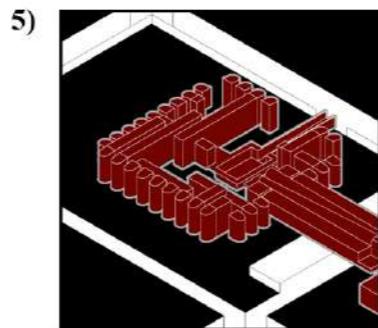
- Answer: I instinctively responded this way. In the upbringing environment of my generation in China, parents often play an authoritative and stern role. **When I entered the workplace, I experienced a similar feeling once again.** Perhaps it's because the senior management in companies is of a similar age group to our parents.



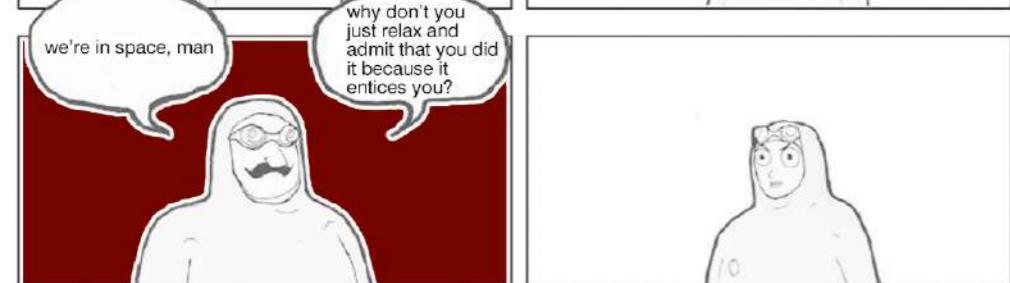
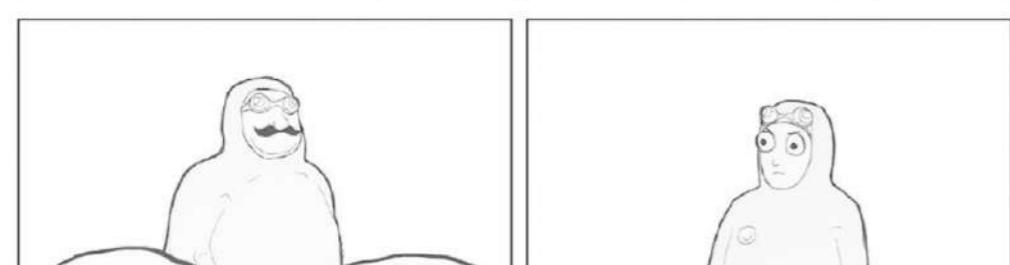
Tilt — it's a confrontation with the urban environment. This tilted parallax is my imitation of the urban-rural relationship.



Backward Embrace — Perhaps it's just envy.



Inconsistent External Enclosure — fake facade — is a means of self-protection.



5. References

- Koolhaas, R. (1978). Delirious New York. [Place of Publication: Publisher]
Deleuze, G., & Guattari, F. (1987). A Thousand Plateaus.
Fink, B. (1995). The Lacanian Subject: Between Language and Jouissance.
Lai, J. Y. (2012). Citizens of No Place: An Architectural Graphic Novel.

CONTENTS

[Selected Works]

01 Jumping Funland: Pressure Evacuation Park

P4~P8

Workshop: Philosophical Archetypes and Techno-Critical Architectural Narrative

Individual Work | Instructor: Yu Yan (Yimvyu@qq.com)

Abstract: Architectural Forming Study of Philosophical Theories, J. Lacan's Psychoanalytic

Theory Research, P. Sloterdijk's Sphere Space Theory Research, Cedric Price's Fun Palace Study

02 Reclaiming Autonomy, Against the Spectacle Society

P9~P14

Workshop: Rethinking the Role of the Design Institute

Teamwork | Instructor: Lifeng Lin (lin@lin.archi)

Abstract: Utopia Architectural Theory Research, C. Nieuwenhuys' New Babylon Theory Study

03&04 “Healthy City Digital Mapping” Neurified Monitoring Urban Design & “Cultural Framing, Immersed Within” Architectural Design

P15~P22

Outstanding Graduation Design: 2021 National Transportation Architecture School Joint

Graduation Competition (Collaborative Urban Design and Individual Architectural Design Part)

Teamwork | Instructors: Lei Zhang (zl.wc@chd.edu.cn), Qian Chen

Abstract: Computational Design, Urban Monitoring, Working-age Population Mobility, Urban Disjunction Issue, Rural Hollowing Issue

[Other Works]

05 Square Utterances

P23~P24

Structural Construction: Wooden Materials, Mortise and Tenon Interlocking (5m×3m, H=3m)

Teamwork | Instructors: Yifan Zhou (40773670@qq.com), Wei Zhang

Abstract: Interactive Structures, Mortise and Tenon Connection Node Sample Design

06 Main Hall of Xiyue Temple Complex: Hao Ling Hall

P25

Ancient Architectural Measurement: On-site Measuring, Technical Drawing

Teamwork | Instructors: Siliang Chen (Siliang.chen@qq.com)

Abstract: Ancient Architecture Group Measurement, Total Station Using, Technical Mapping

[In Progress / Unfinished]

07 Particizing - Prisons for Low-living Silver-haired

P26

08 15 Years After Israel's Withdrawal from Gaza Settlements

P26

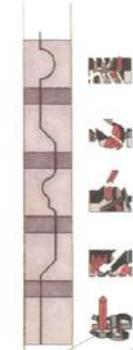
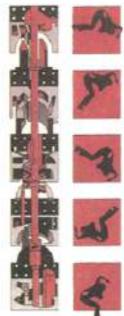
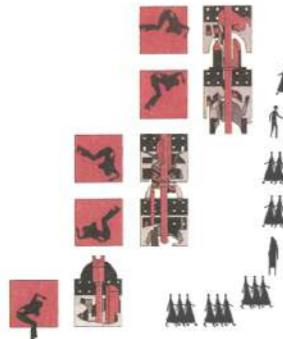
[Practical Project / Technical Drawings / Renderings]

P27

[AI Algorithm-based Architectural Workflow]

P28

01 Jumping Funland Pressure Evacuation Park



Imagine Reference: Tschumi, B. The Manhattan Transcripts

J. Lacan's Graph of Desire depicts an ascending **drive** which functions to relegate Jouissance to the peripheries of the body. This castration of the body culminates in acts such as speaking or excreting.

To elucidate this drive, this project positions the post-2008 subprime crisis era as a narrative frame. In this period, characterized by suicidal leaps from buildings, bankers deemed it necessary to utilize force to kickstart capital's recirculation. They hijacked the drive, buried it in buildings, and packaged it into an amusement park to rejuvenate the financial landscape.

Are the bankers truly protecting individuals jumping from edifices, or are they even capitalizing on such desperate acts—the most lethal means of alleviating stress—to secure their own financial interests?

Suddenly, we became aware that our labor-centric way of life is being driven by an imperceptible force. Now, do you know what this **force** is?

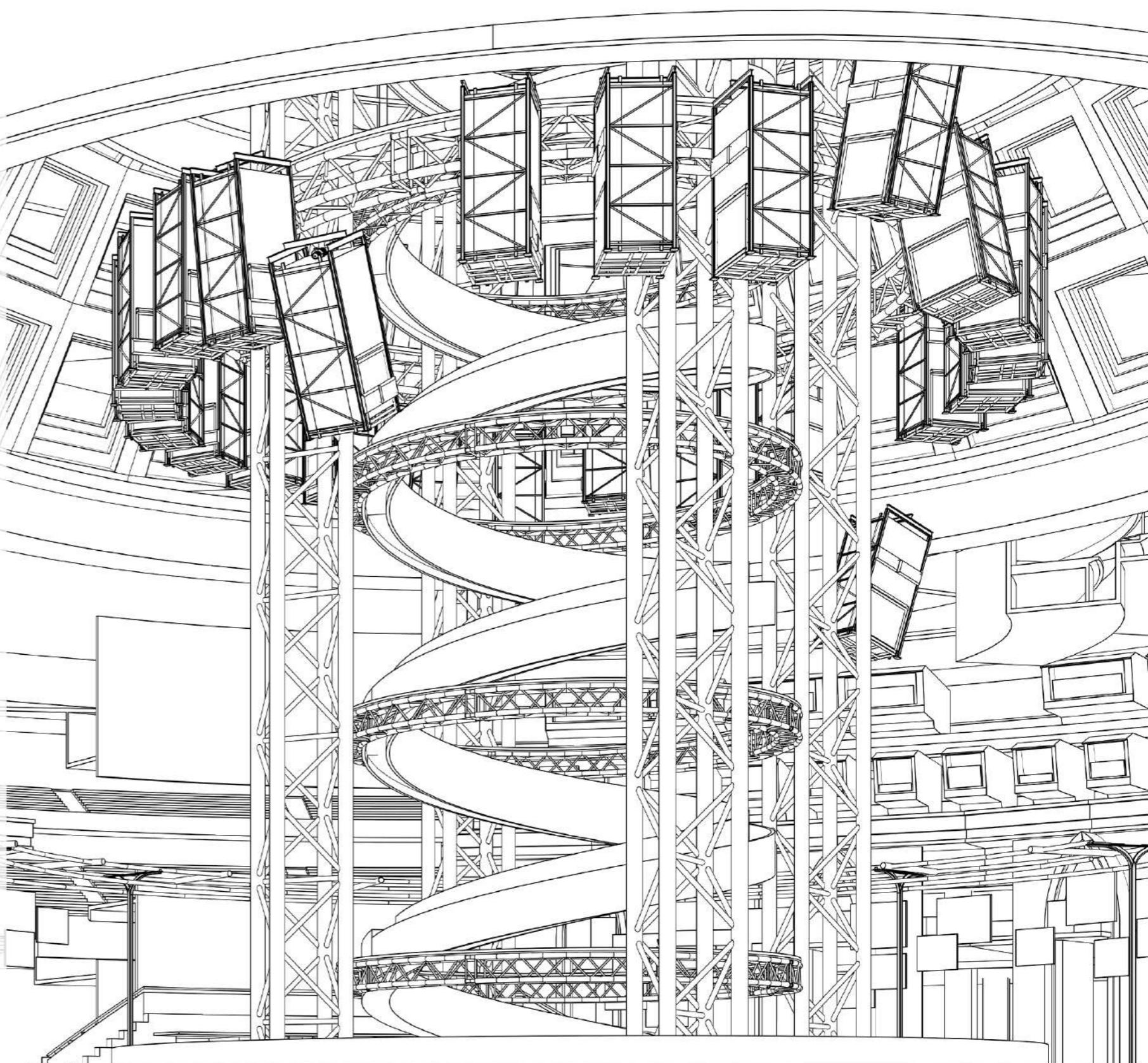
Project Define: Philosophical Archetypes and Techno-Critical
Architectural Narrative Workshop

Location: Paper Architecture

Role in the process: Individual Work

Level of the project: Oct 2021, After Graduation

Instructor: Yu Yan (Yimvyu@qq.com)

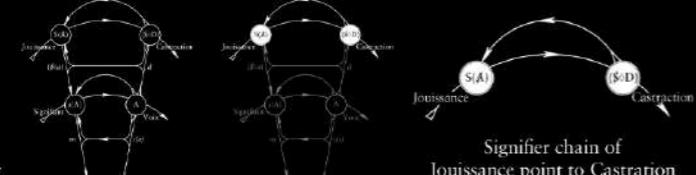


■ Philosophical Prototype

■ An irresistible drive



Jacques Lacan
Psychoanalytic theory
Graph of Desire L4



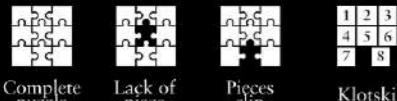
• $(\mathcal{S} \diamond D)$ read as a **drive**. Its location is close to the edge of the organ, and it can drive the signifier chain to slip.
 • S/A read as a **signifier of a lack in the Other**. A signifier that signifies fundamentally lack of any possible signification.

Jouissance is described as being a caustic enjoyment, a pathological enjoyment by Lacan, which being as a tickle and turns into an inferno.

Castration here refers to the evacuation of enjoyment to the margins of the body, a draining of excitation to the body extremities like earl, anus, scopic (gaze) and invocatory (voice).

Lack creates movement:

In order to make the signifier chain slip, we need to create lack.

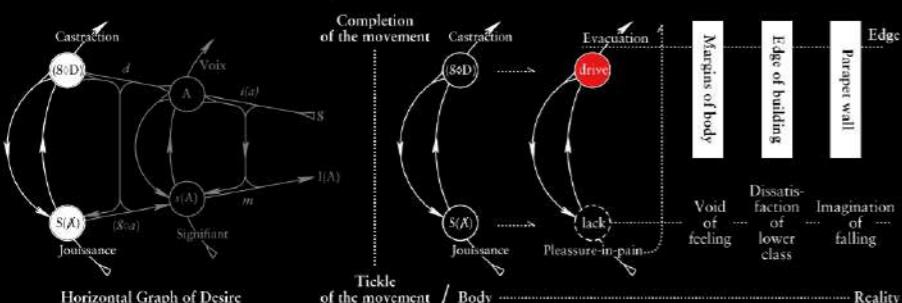


We use an irresistible $(\mathcal{S} \diamond D)$

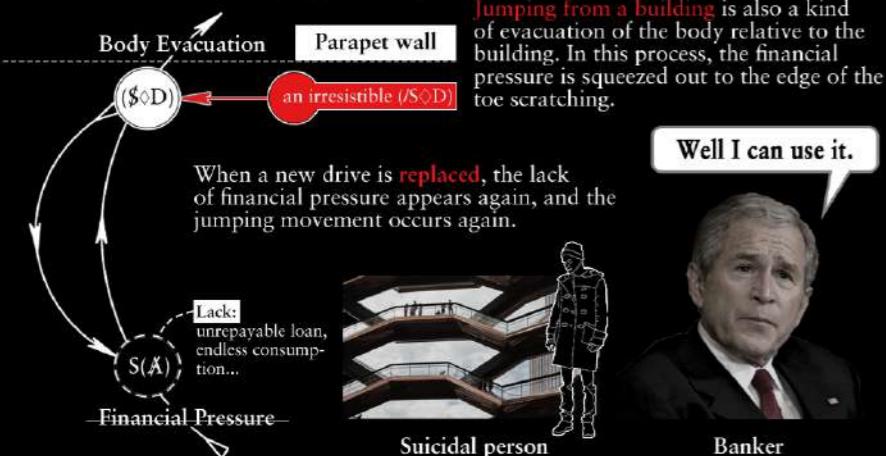


If a puzzle does not lack pieces, it is a stationary picture. When it is missing a piece, it creates movement, like a klotski.

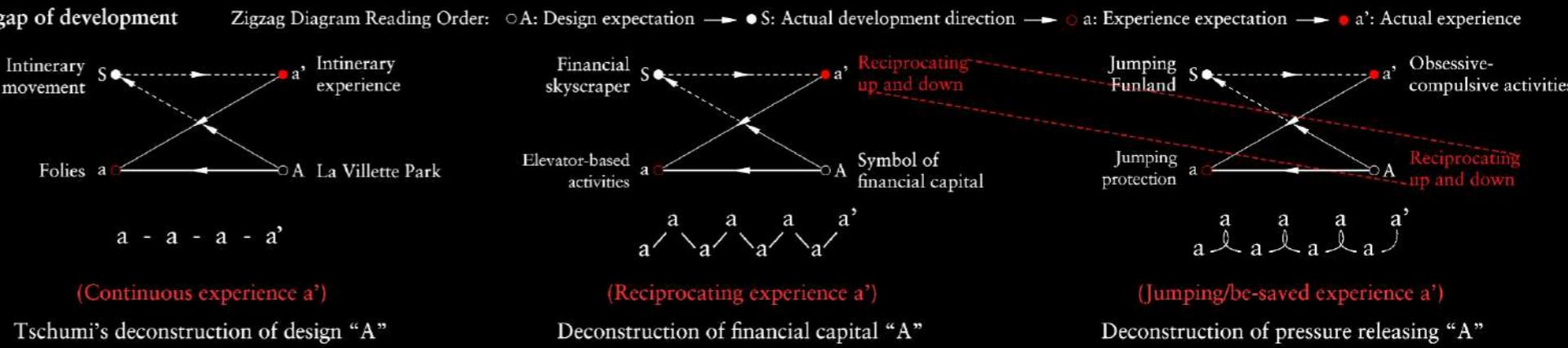
■ Castration of jouissance by drive



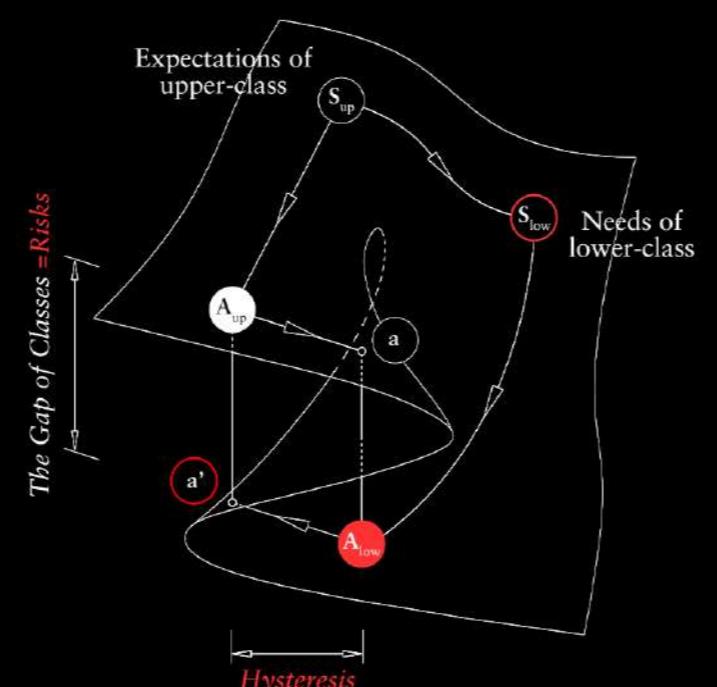
■ Evacuation of the body by building



■ The gap of development



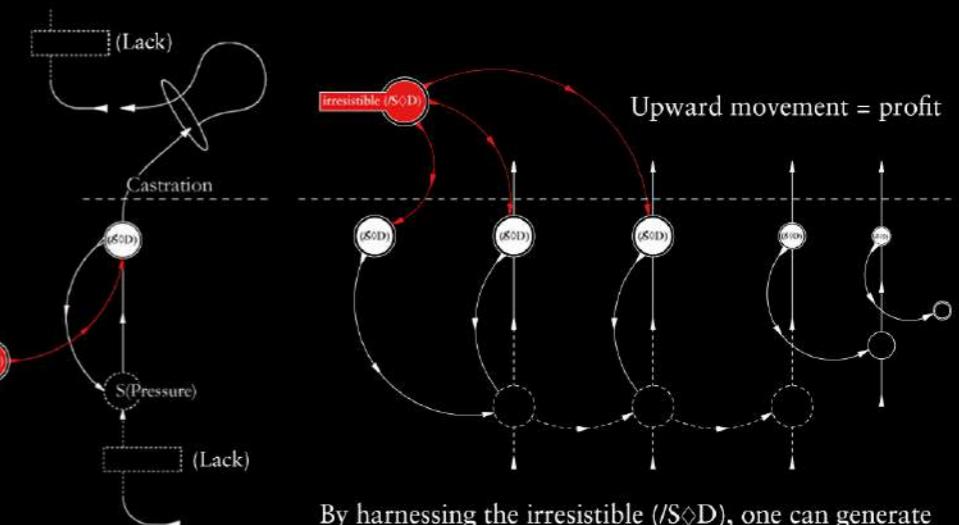
■ The gap of classes/Elevation difference in view



Despite the upper class's earnest desire to enhance the well-being of more people, additional means of improvement are often misinterpreted as negative scenarios of inefficiency in the context of social class division, which in turn carries implicit risks.

■ Obsessive-Compulsive Disorder

The pressure that was in the Jouissance position was pushed to S/A , leaving it **lack**.

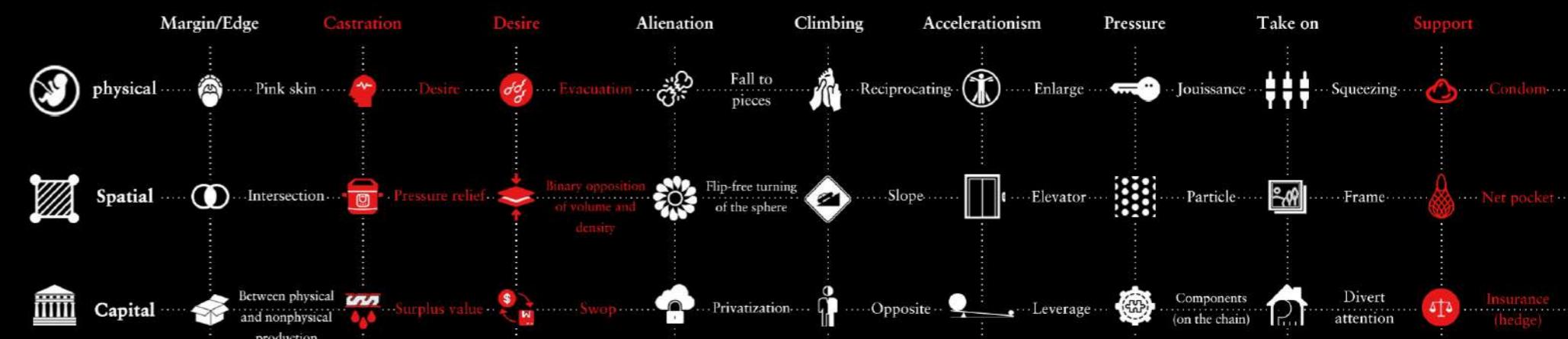


By harnessing the irresistible $(\mathcal{S} \diamond D)$, one can generate ceaseless upward movement.

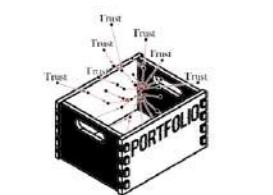
■ (Homogeneous) Upward momentum slot machine



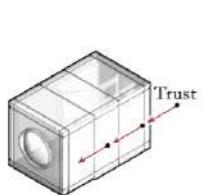
■ Analogy diagram



■ Analogous Narrative



Bankers synopetically hide the TRUST in a fund portfolio box

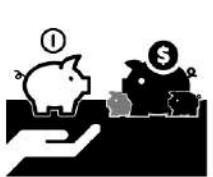


The end of trust is residence (capsule)



2021 (After 15ys of discussion)
中銀カプセルタワービル
is facing demolition

Stage 1



Financial Crisis of 2008
the credit rating of the loan was downgraded



Sub-Prime Mortgages were used to build more capitalist edifices



Fund portfolios were snaped up by investors



Hedge insurances were tailor made by rhetoric



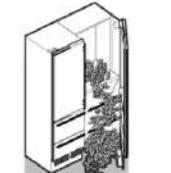
Insurance compaines BET
CDO would not go wrong



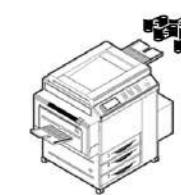
Investors BET
CDO would go wrong



The collapsed capsules were hidden in the bottom of the pit



Cash is frozen in a refrigerator



Money printing machine: serving as a financial risk safety net



Net weaving worker: threads originate from the spider

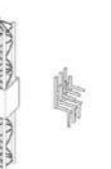
■ Philosophical Form Generation Chain

Prototype



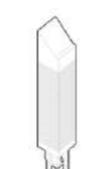
Turbo-Drop
Amusement park

Extraction

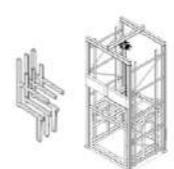


Truss column and seat

Spatial Translation



Citigroup Center (corner) structure

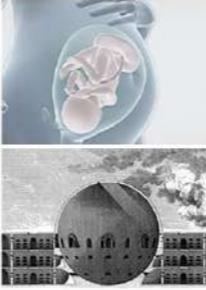


Elevator up and down frequently

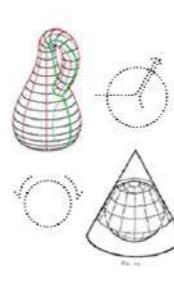


Turbo-Drop Elevator
sent visitors to hotel room

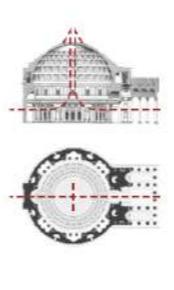
Stage 1



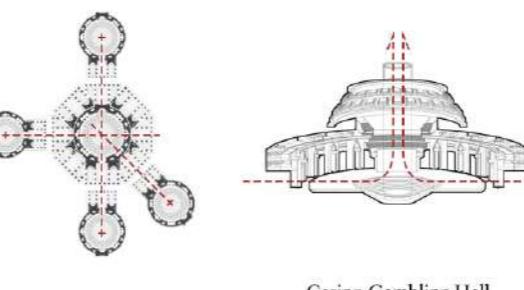
Sphere Space Theory
Peter Sloterdijk



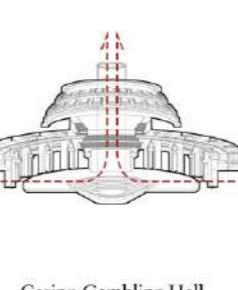
Deformed Sphere:
extrusion movement



Pantheon Section:
internal upward extrusion



Multiple Implicit Spheres:
multi-axial centrality

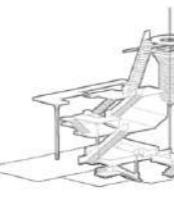


Casino Gambling Hall
indoor central hall;
surround the elevator

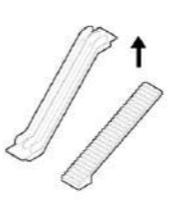
Stage 2



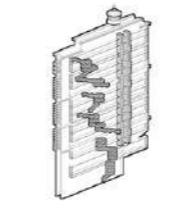
The Drawbridge
Piranesi
1749-1750



Scattered, Endless Stairs:
evoking disturbance



Increasingly Steeper:
accelerationism



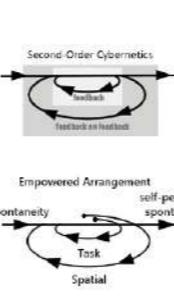
Two Sets of Flows:
workers' stairs
and bankers' elevators



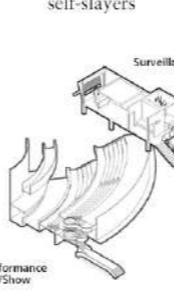
Jumping Machine
neutralized danger;
guide visitors to the top



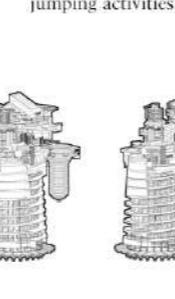
Psychoanalysis
Jacques Lacan



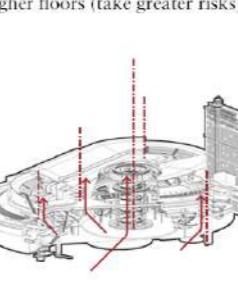
Phallus
and condom



Net Pocket:
catch jump off
self-slayers



Jumping Protection:
ensures the circulation of
jumping activities

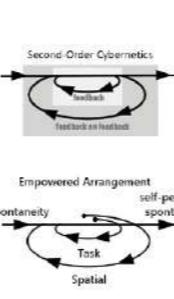


Jumping Edifice
credulous individuals will climb to
higher floors (take greater risks)

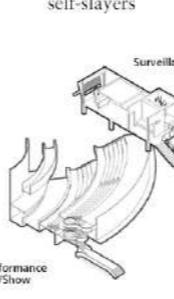
Stage 3



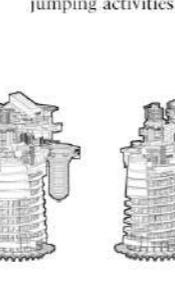
Fun Palace
Cedric Price
1964



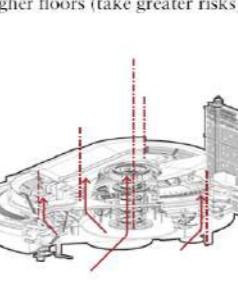
Second-Order Cybernetics
Surveillance
Empowered Arrangement
Task
Spatial



Performance / Show



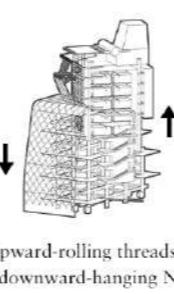
Perspective Deception:
stability = imbalance



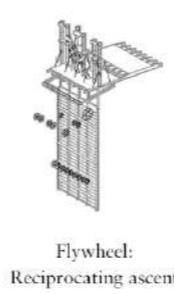
Eccentric Casino + Theater
imperceptible climbing variation;
induce "spontaneous" climbing



Weaving Machine
After the first industrial
revolution; 1760s

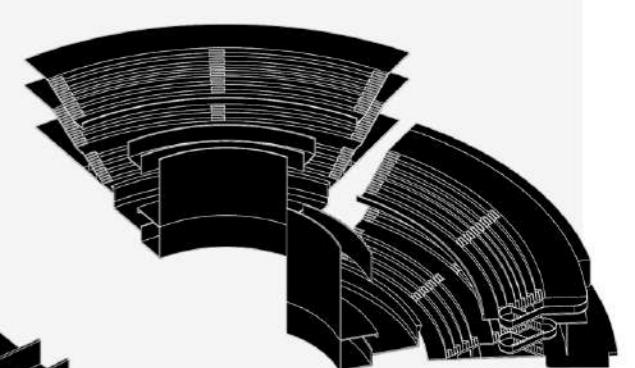


Upward-rolling threads and
downward-hanging Nets
Flywheel

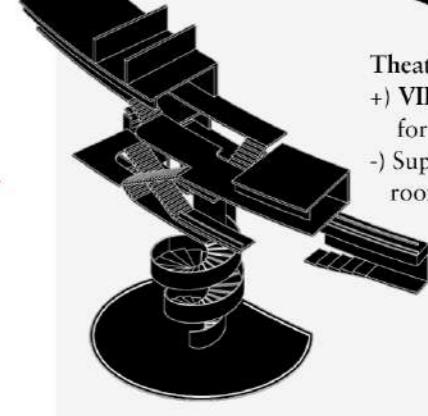


Manpower Consumption:
queueing/sequentially
entering the factory

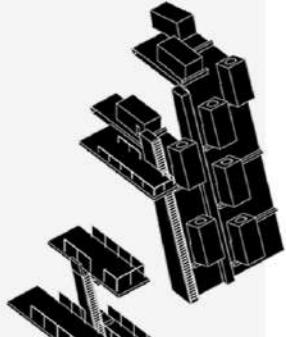
■ Variations of Climbing Forms



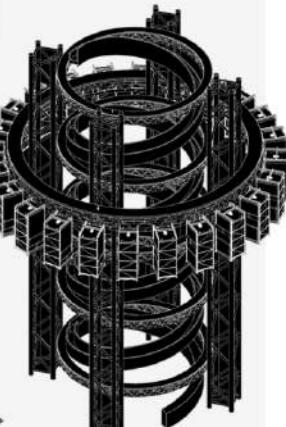
Theater's Elevated Seating:
+) VIEW is the perfect excuse for spontaneous ascent;
-) Supporting columns and rooms below



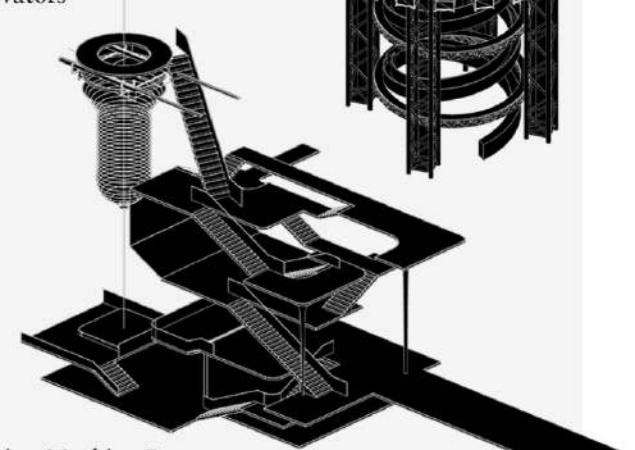
Spiral Staircase and Scenic Bridge Corridor:
+) Beautified to attract visitors to climb
-) Handrails



Diving Platform:
-) Pool depth
-) The enveloping protection of liquid
+) Conversion to the diving platform for capsules



Turbo-Drop Elevator:
-) Modern workers' reliance on elevators;
-) Low failure rate of elevators

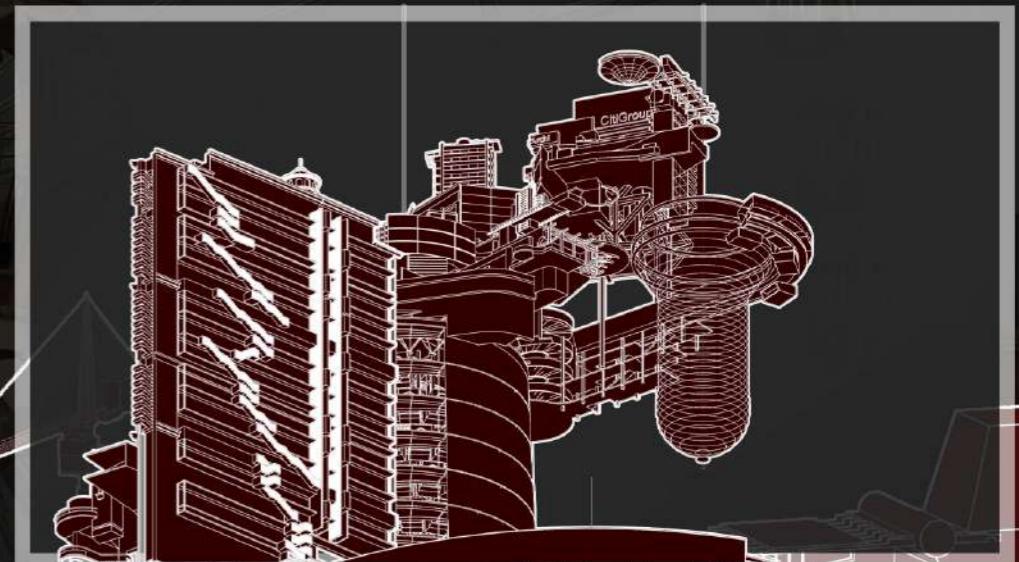


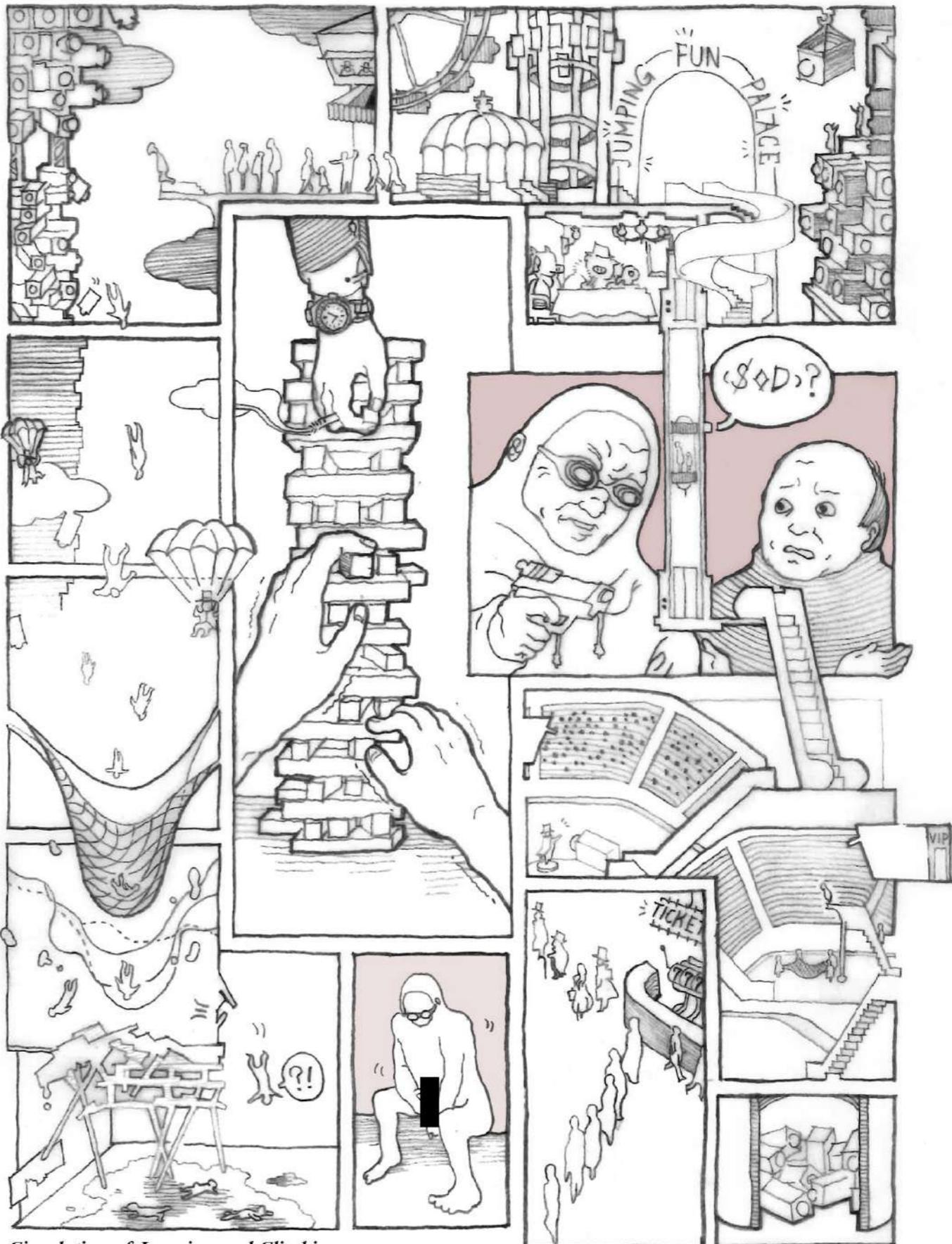
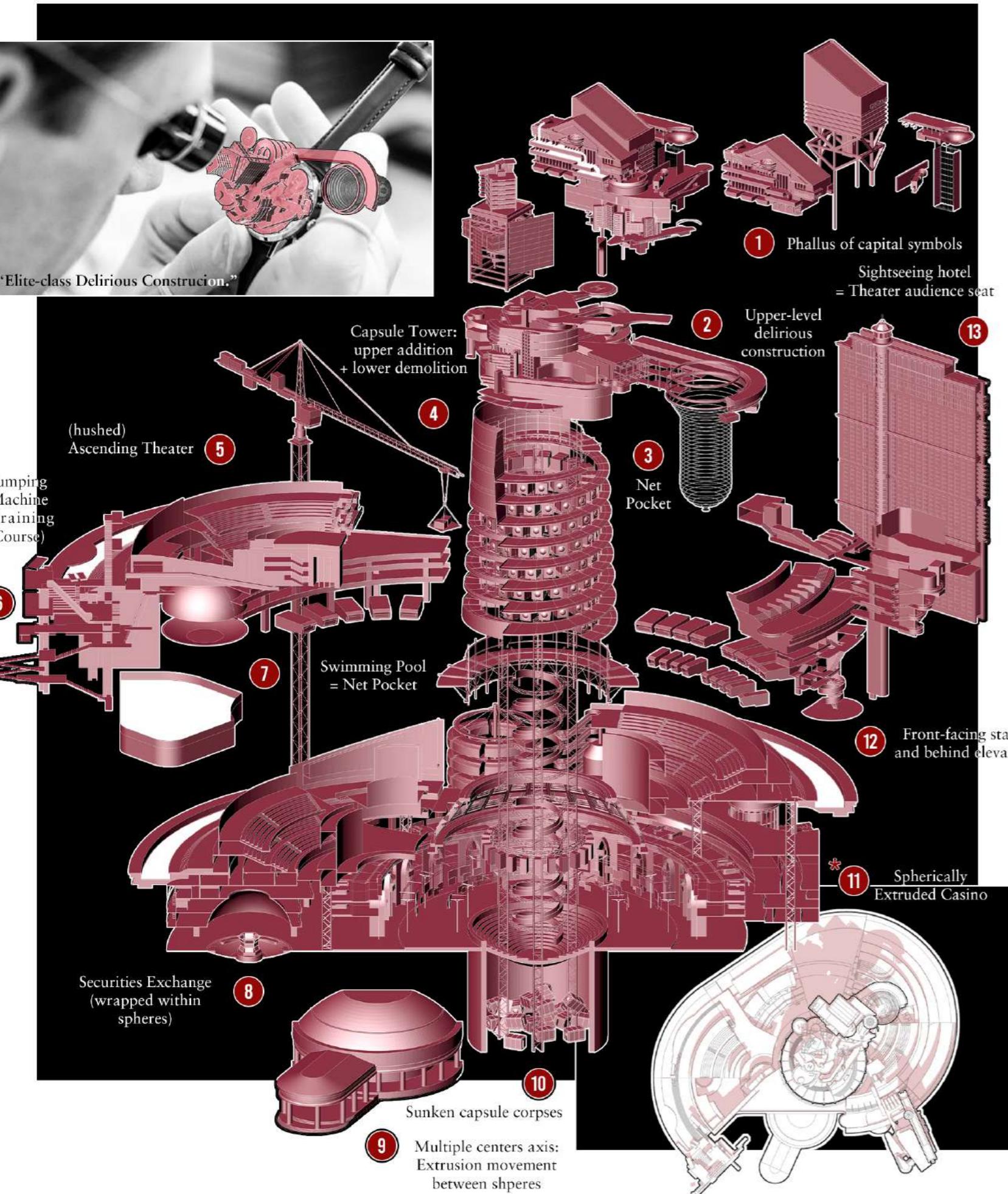
Jumping Machine Prototype:
The next jumping cycle is facilitated by a trustworthy protection

"The building is a huge jumping machine."



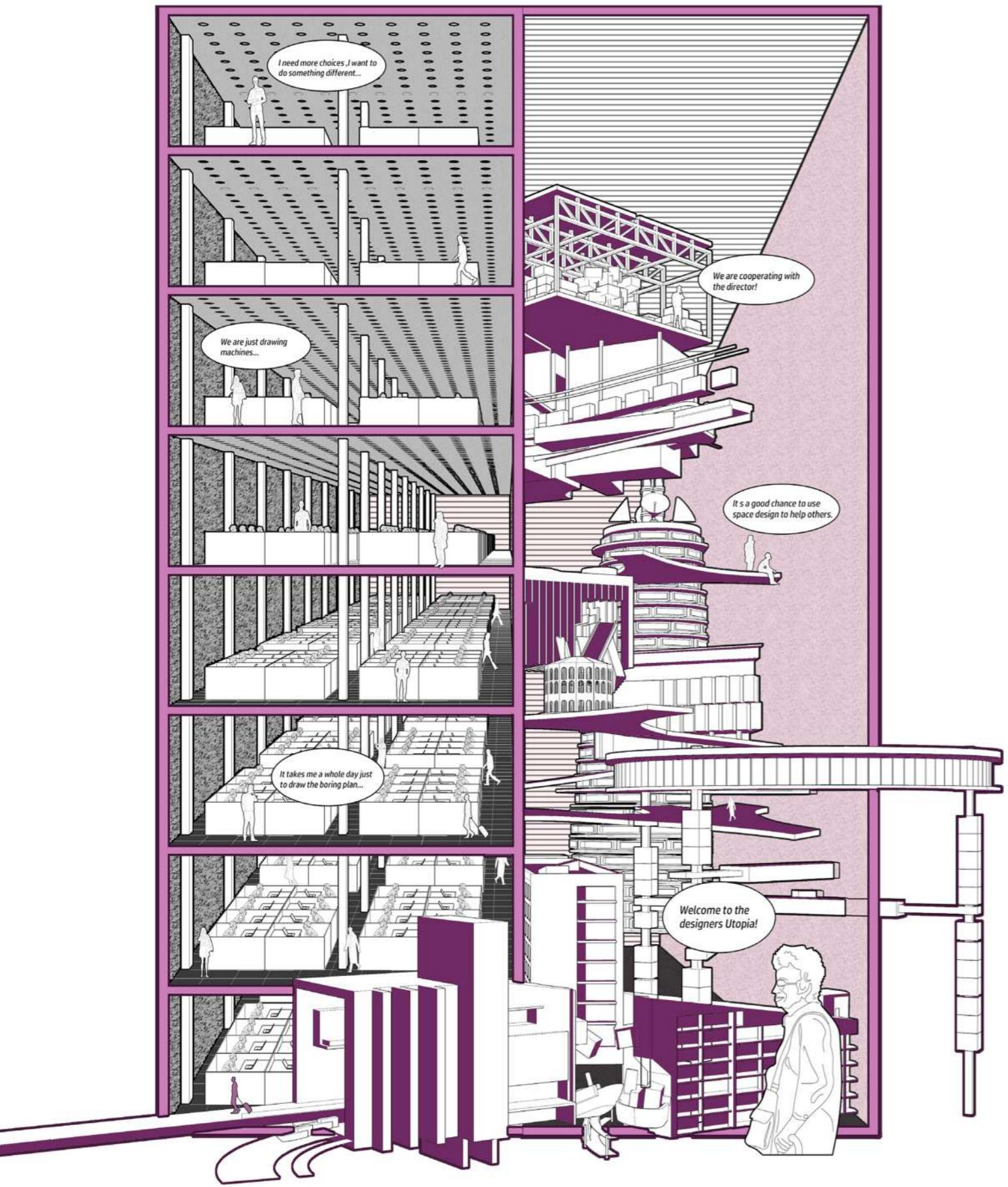
"Why take the stairs when you have an elevator?"





Circulation of Jumping and Climbing

© Comic drawn by the project creator, Sixiong Wang, 2021, paying homage to Jimenez Lai's 'Citizens of No Place'.



Wrapped-up “boring design”

In a rapidly production-oriented construction market, the notion of 'ideal design' is confined within extremely short design cycles and constrained by the unequal power dynamics between developers and design firms. Designers find themselves stuck at the boring early stages of design exploration, no longer able to fully engage their creativity, reduced to the role of mere tools on the assembly line.

02 <Reclaiming autonomy, against the spectacle society>

Designer's new-Babylonian Utopia

The summarized definitions of the term "boring design":

- 1. Homogenized, uninteresting space design
 - 2. Redundant, unrelated to the essence of the design work content
 - 3. Compressed design cycles
- Non-autonomous, wrapped-up working model under the main body of real estate finance

- Strategy to resist
- 1. Self-operated [self-built & self-marketed] as a bottom-line guarantee
 - *2. Leading the movement, itself is a kind of positivization of an absence of the carrier - the design institute building
 - 3. Developing towards an anti-Real Estate direction

The relationship between real estate companies and architects is gradually shifting from a client-servicer to a space customer-developer relationship.

Real estate - Architect

(Buyer - Seller)

(Client - Servicer)

Space customer - Space developer

In this process of architects gradually gaining/reclaiming their autonomy, a state of time and space in which they can find their belonging, reflect on the rules and regulations, and awaken their sense of autonomy has become a necessity for space development.

Under ideal infrastructural conditions, a pure spatial design sector can be liberated from burdensome functional demands and caustic constraints of laws and regulations. In this vision, a self-sustaining spatial orientation is a logical but also indispensable choice to support architects' autonomy.

Project Define: Rethinking the Role of the Design Institute, Utopia Architectural Theory Research Project

Location: Paper Architecture

Collaborators: Haolun Sheng, Xiaoyu Zhang

Role in the Process: 70% Theoretical Research, 40% Modelling, 30% Drawing

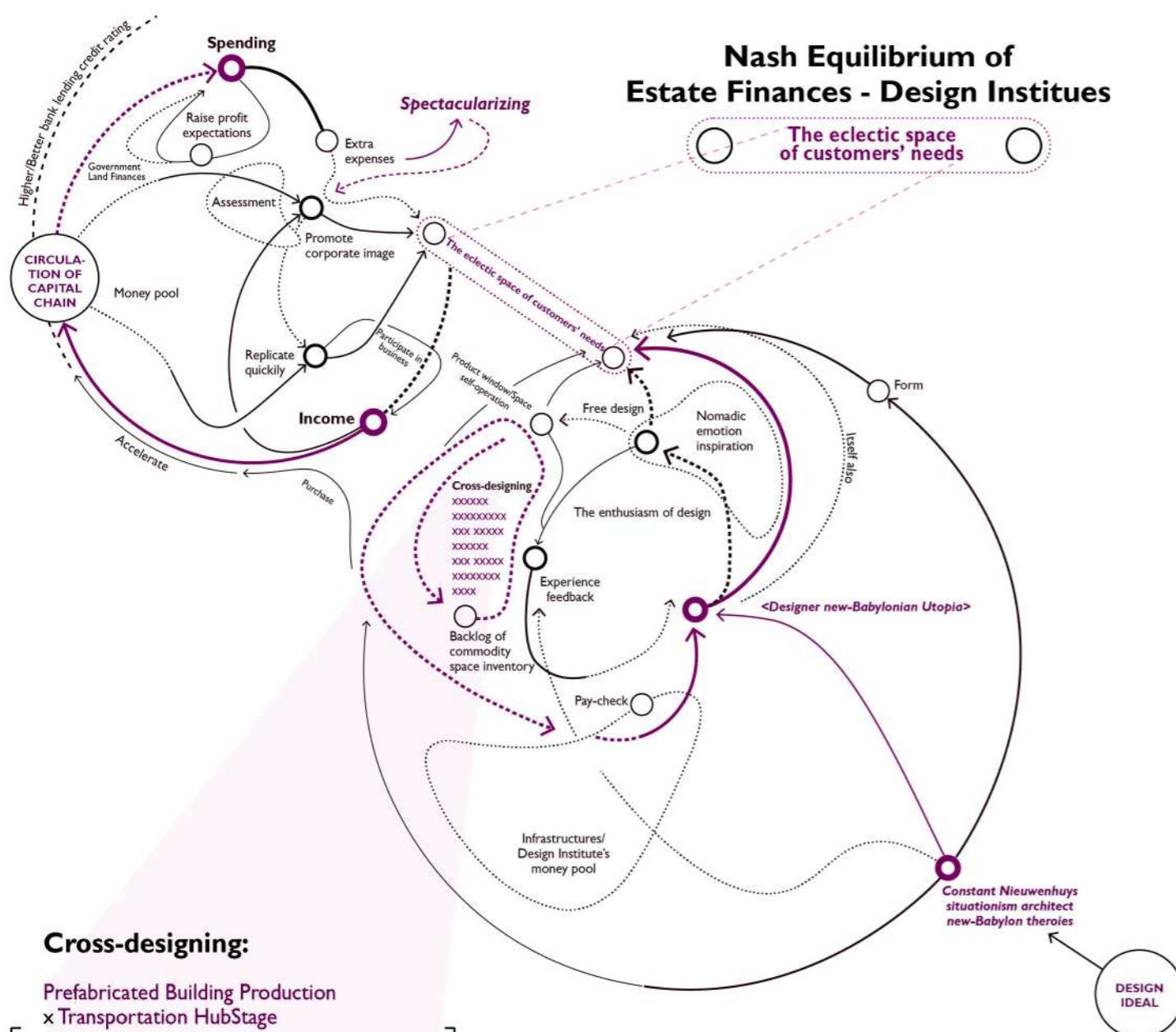
Level of the Project: Aug 2022, after graduation

Instructor: Lifeng Lin (lin@lin.archi)

■ Design Institute in Anti-Spectacle Utopia

0. Under the Nash Equilibrium

The transaction in space represents a Nash equilibrium reached between the cash flow of real estate finance and the fervor of architects' ideal execution. This utopia, while maintaining Nash stability, aims to provide architects with greater opportunities for spontaneous design.



Cross-designing:

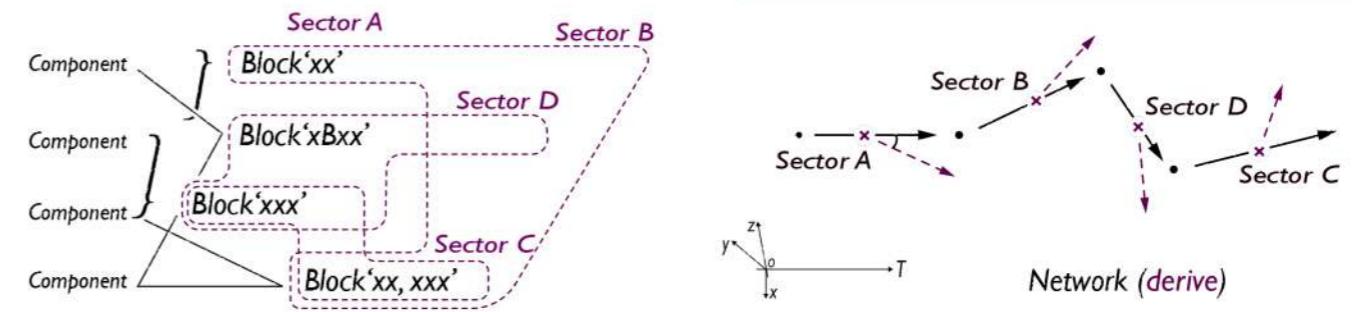
- Prefabricated Building Production x Transportation HubStage
- Medical Space Design x Residence
- VR Space Design x Virtual Prison
- Entertainment Space Design x Supermarket
- Live Streaming x Factory
/// Broadcasting Room x Factory
- Design with Experiment x Exhibition
- Data Center x Land Art Generator
- Design x Hotel

1. Targeted Strategy: Crossing-designing

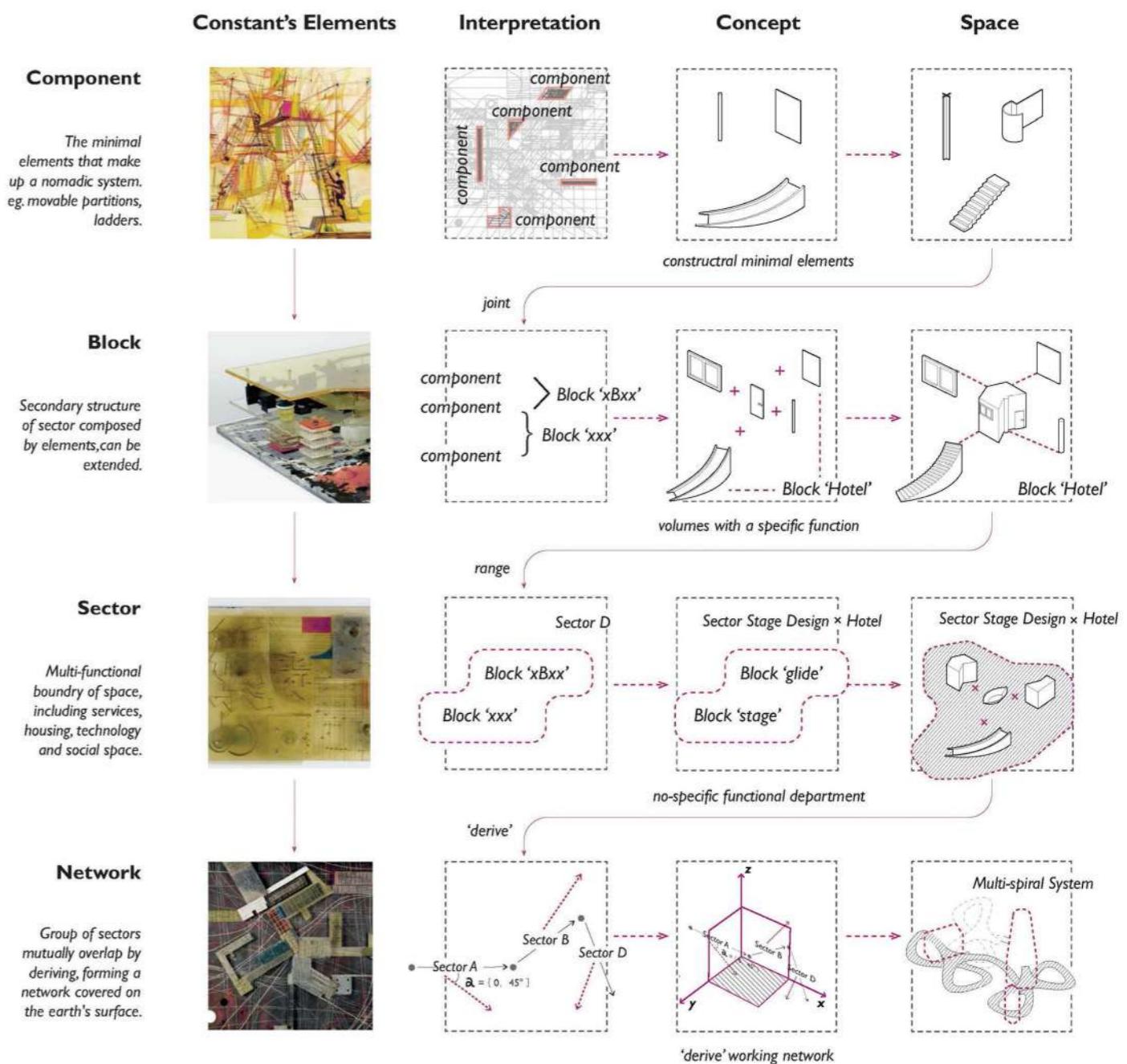
Cross-designing can provide a spatial definition that **escapes the confines of existing real estate vocabulary**. Shifting toward an anti-real estate lexicon can open up more possibilities for space to depart from the conventional and establish new functional definitions.

■ Constant's new-Babylonian Nomadic Theory

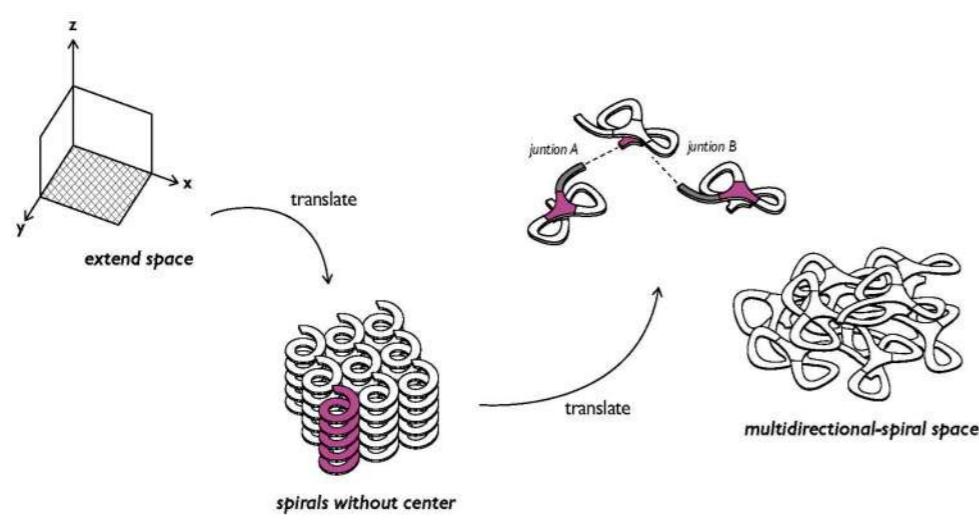
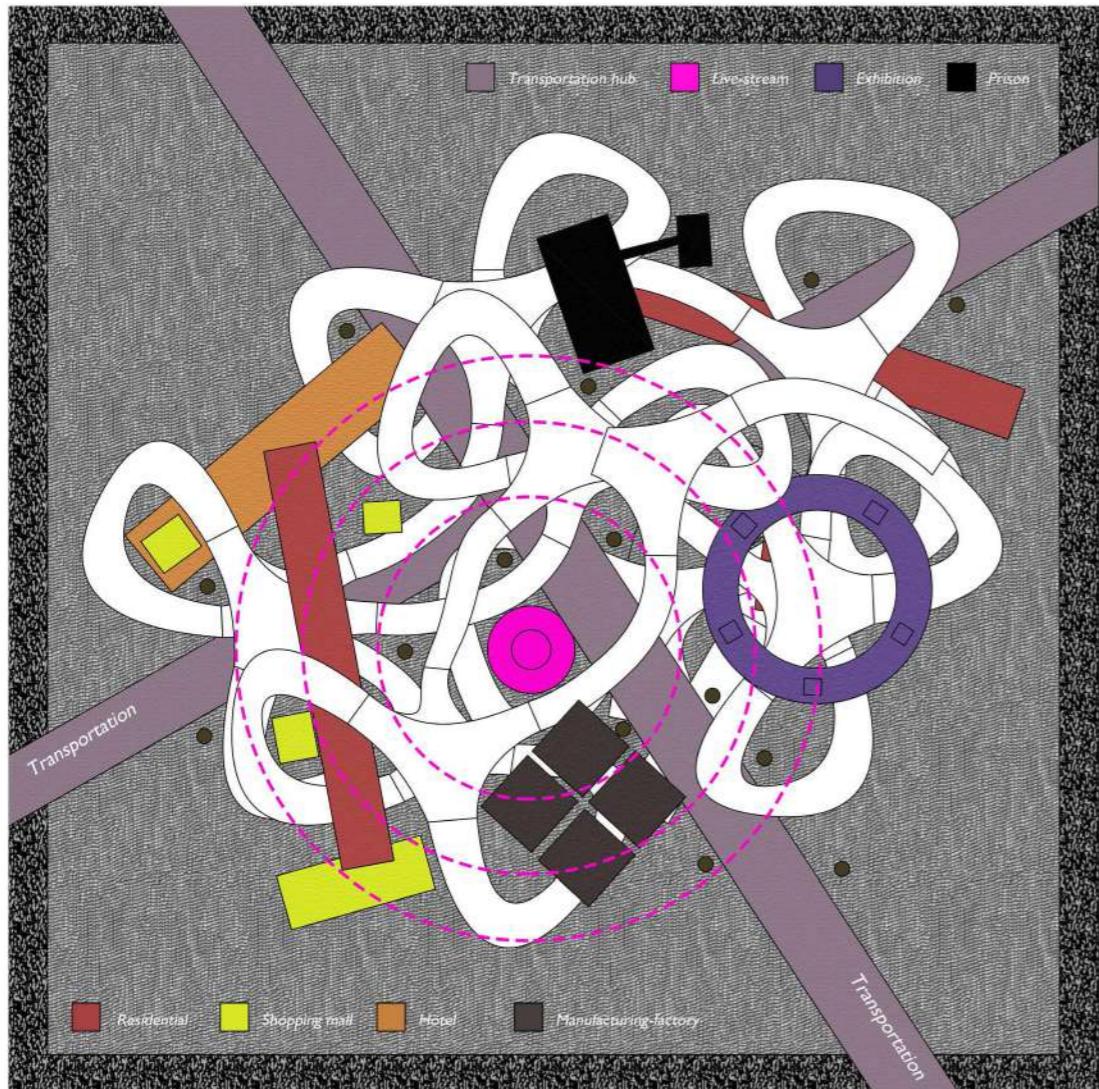
2. Overall Strategy: Nomadic City of Drift



As a member of the Situationist International, Constant presents us with a vision of the nomadic city within an anti-spectacle society. Only by employing the concept of 'derive' (drift) can we truly **disrupt the unidimensional state of societal operation mode** and restore individual autonomy.

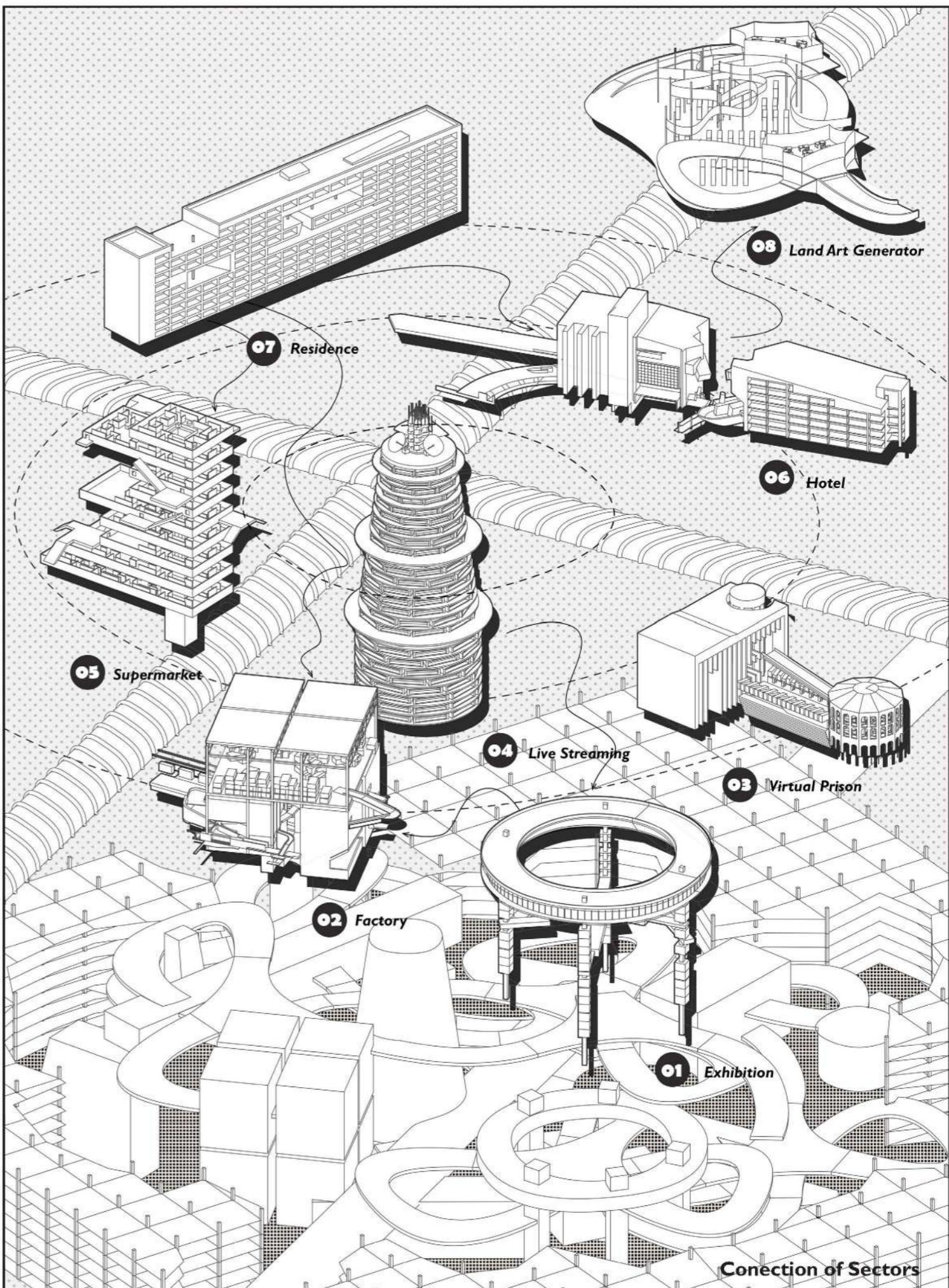


■ Design Institutes' Expansion of New Babylon Theory



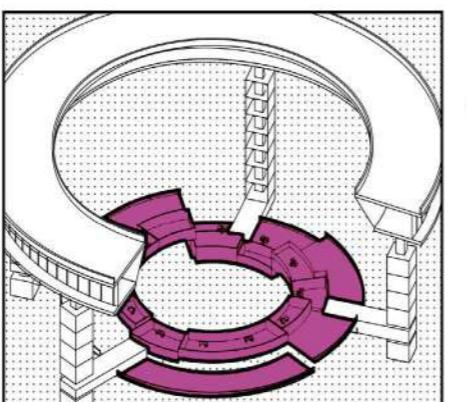
□ Translation at the Network Level - Unite Sector Libraries with Multi-Centric

The spiral represents an endlessly extending movement. Each spiral, capable of accommodating the creation of infinite space, signifies a design category or the design organization it represents. Connecting them through a process of drifting will inspire more opportunities for spontaneous choices.



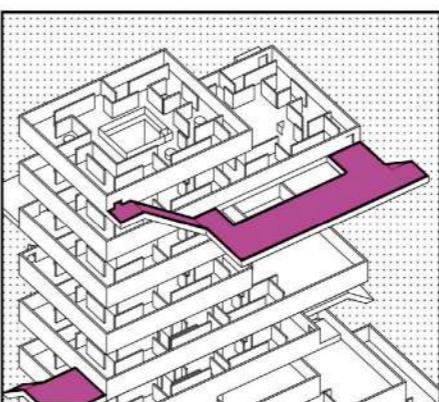
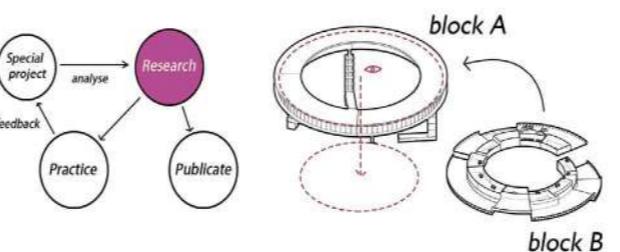
■ Cross-Designing Products in New-Babylonian Utopia

The possibility of the space design



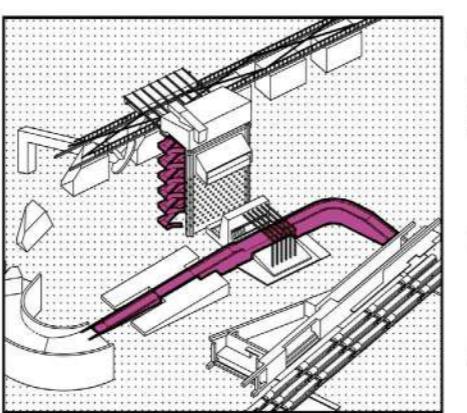
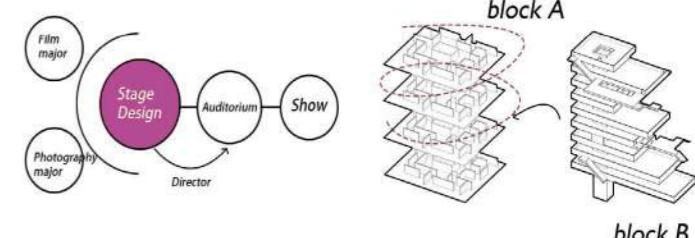
01 Design with Experiment x Exhibition

The office staff conduct research on the spiral, and the state of their research is that the exhibits in the pavilion are available for viewing.



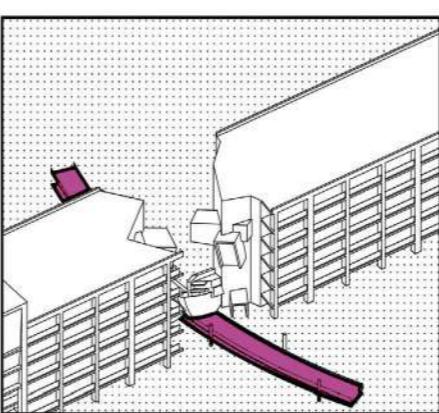
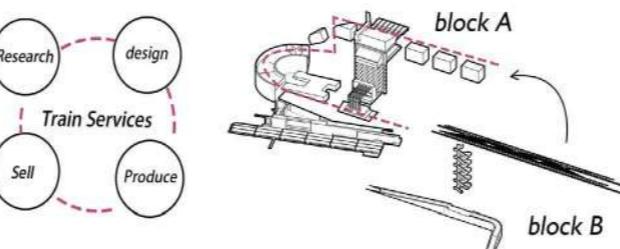
05 Entertainment Space Design x Supermarket

When the entertainment space is combined with the supermarket, it will become an entertainment maze composed of shelves, and the goods in the supermarket are the "gold coins" in the maze. There are multiple routes for people to choose to get what they want.



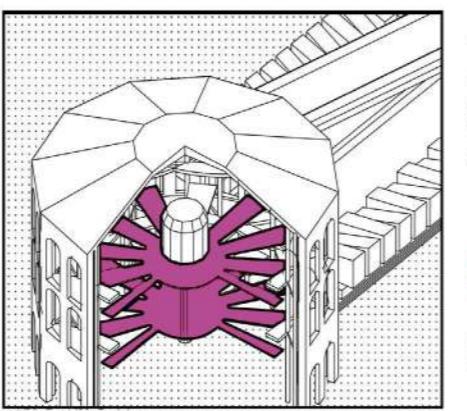
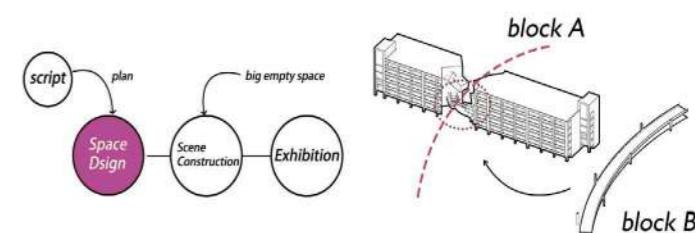
02 Prefabricated Production x Transportation Hub

Both the assembly factory and the transportation hub have an obvious line to connect, and the transportation hub helps the fast operation of the factory assembly line.



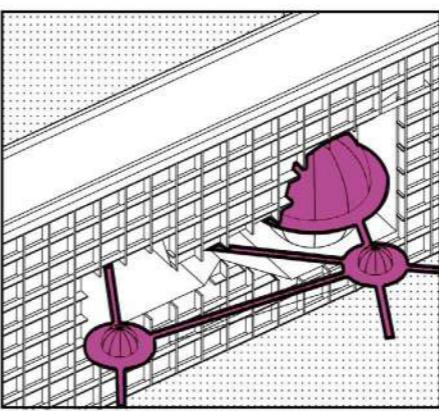
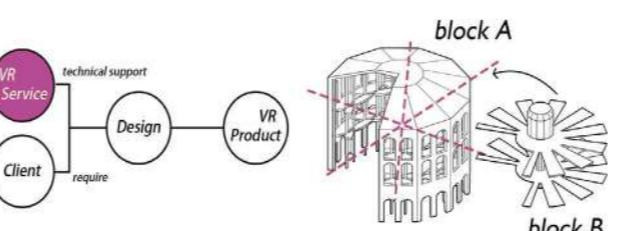
06 Stage Design x Hotel

A stage space is implanted from a certain part of the hotel. This is where the space designer and the stage designer work, and also serves as a work of art for the hotel people to stop and watch.



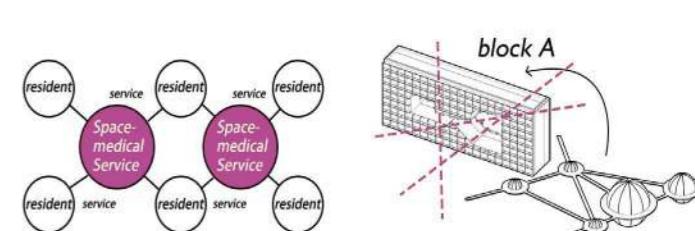
03 VR Space Design x Virtual Prison

Prison is a closed environment, which limits the freedom of prisoners to contact the outside world, and VR design can provide prisoners with a virtual world so that they still have the conditions to perceive the world.



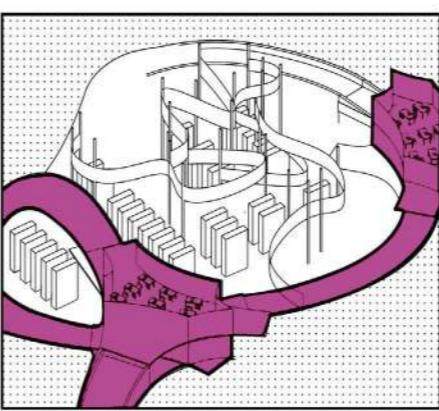
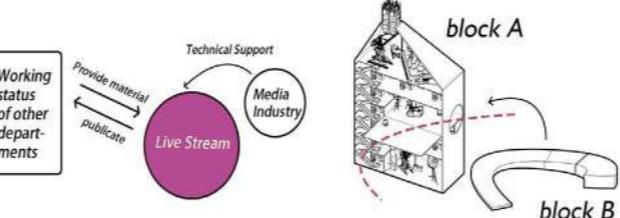
07 Medical Space Design x Residence

A point-shaped space medical service point is inserted into the apartment, and each service point provides psychological services for residents within a certain range. The space medical department can also create soothing spaces in the residence to regulate the mood of the residents.



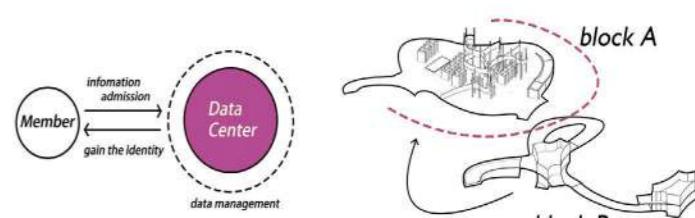
04 Live Streaming x Factory

The Live Tower is a separate large propaganda building. It is located in the middle of other space office areas. It records the work process and space works of each group of employees every day and broadcasts it to the outside world to promote the entire company.



08 Data Center x Land Art Generator

There are many arrayed monuments on Land Art, and each time a new employee is recorded in the data center, there is one more monument. This represents respect for the identity of each employee.

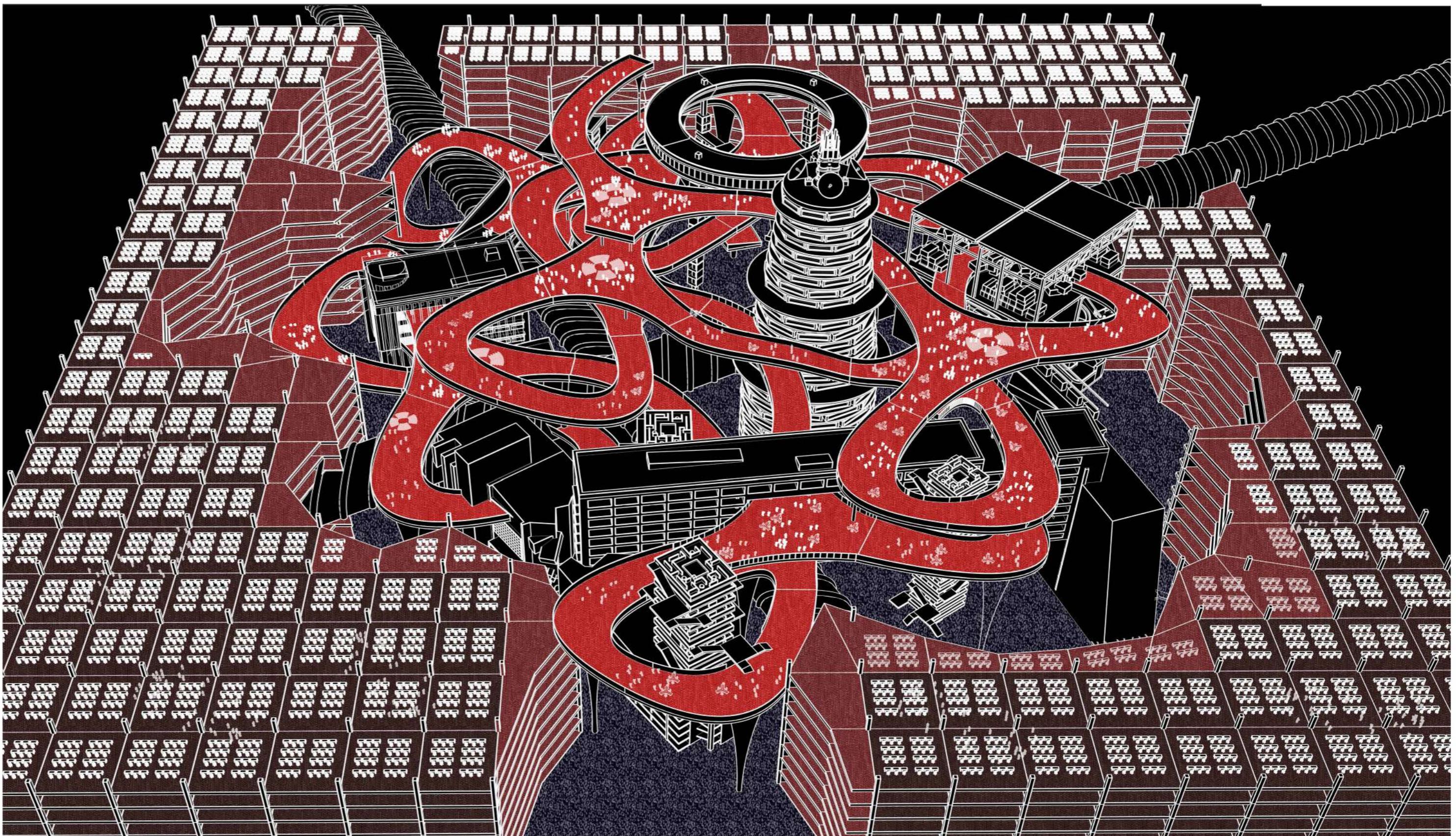


□ Translation at the Sector level

Joint component libraries with topological relationship

The scope of space design should be broad. Compared with traditional design buildings, we should try to expand its boundaries and integrate space office design into occasions that can be seen everywhere in life.

And that's why we use the concept of "misuse of space" to implant these different models of space design product departments into buildings with other functions, giving them a more vivid office scene. This emphasizes the freedom and dominance of designers.

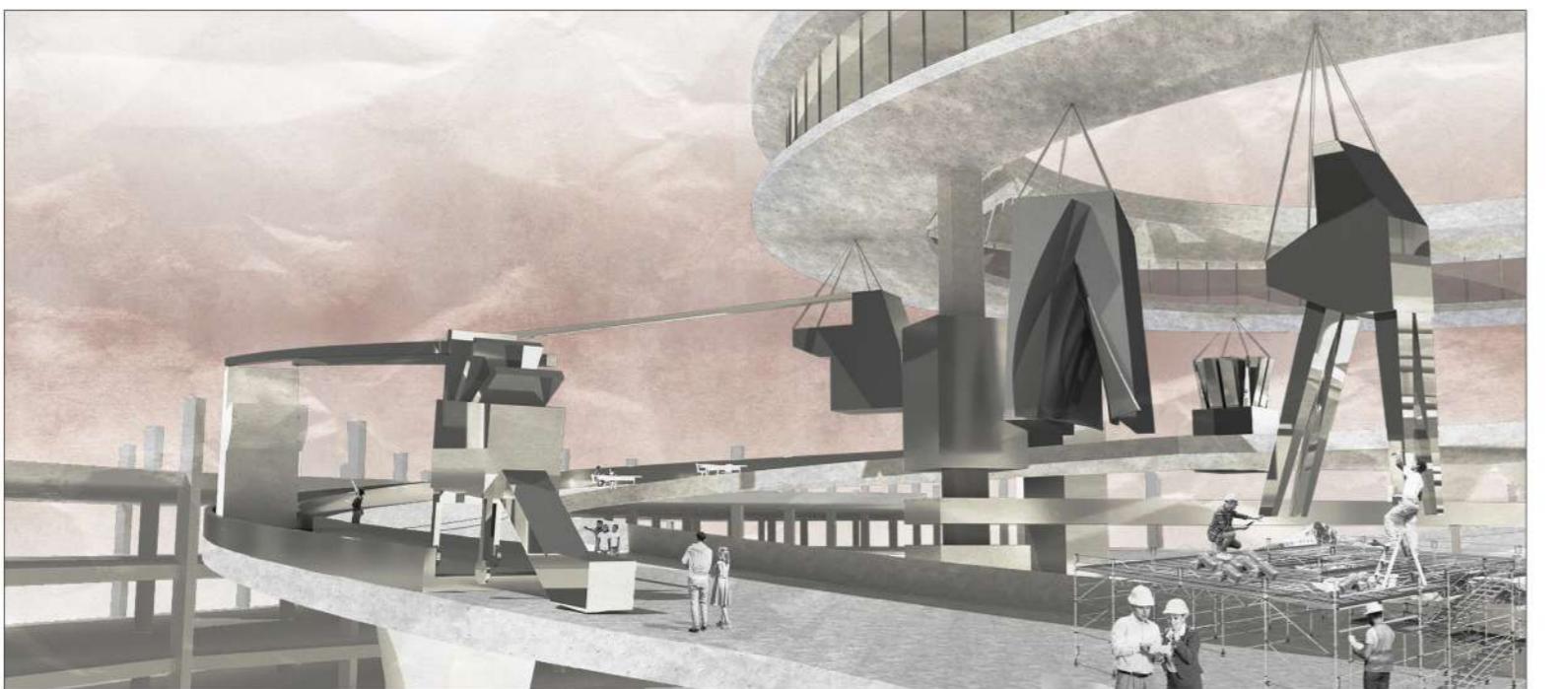


■ Design Institutes' Purpose - Positive Erosion

The disordered nomadic creation erodes the existing rigid and monotonous domino system, constituting an essentially positive response to the oppressive working environment and content.



Multidirectional spiral walkway & Live Streaming x Factory Sector

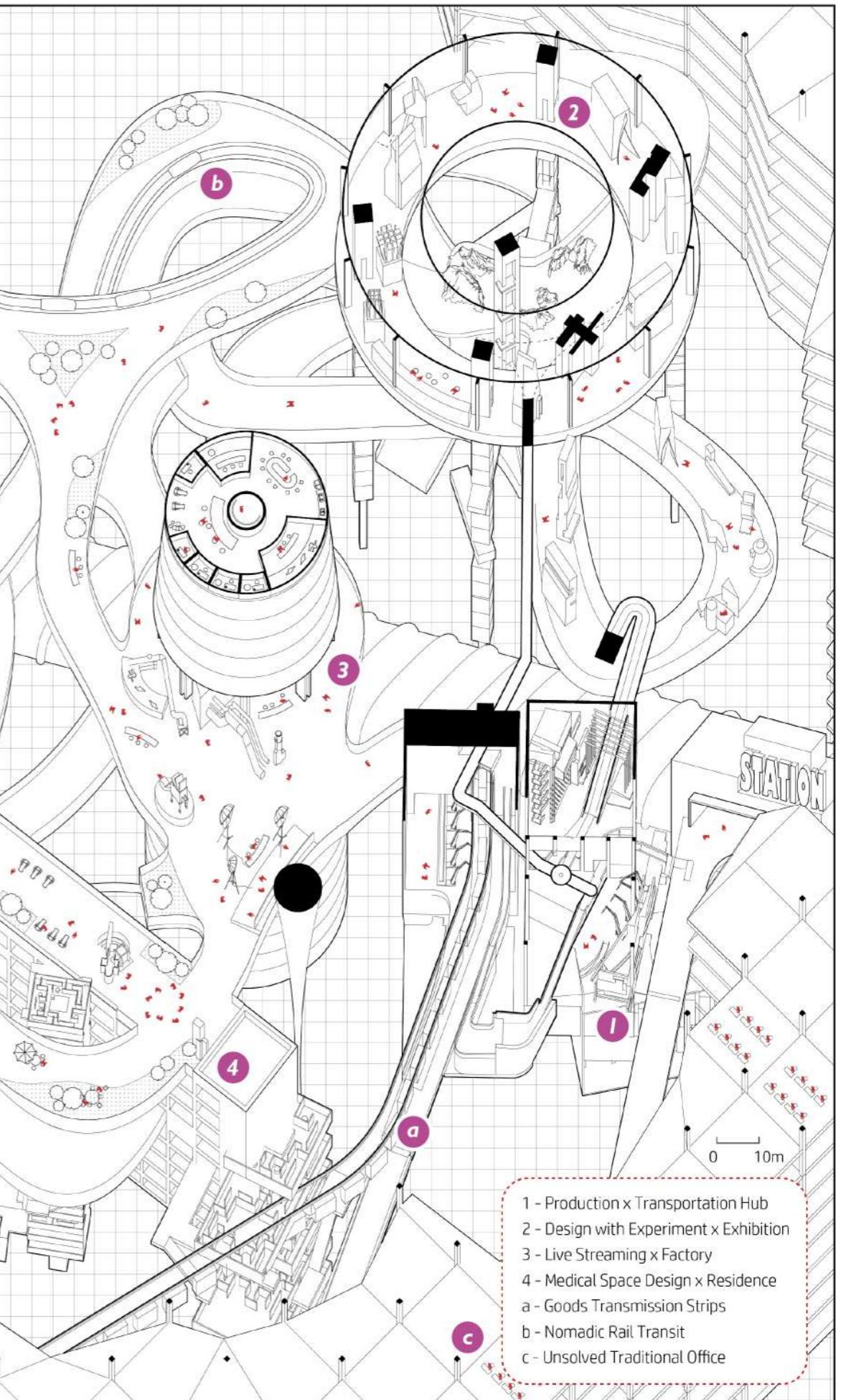


Design with Experiment x Exhibition Sector

■ Vision - Pictures of driftingly nomadic working mode

The essence of nomadism is derived from misadventures based on behavioral activities. This deviation from the original course represents a spontaneous compensation for the space designer.

Free and spontaneous space design is the first step, followed by a softening of the boundaries of professional identity and work content. The working mode and environment are no longer a one-dimensional transfer or transportation, but rather a warm encounter, fusion, and satisfaction.



Detail Plan

03 2021 NATIONAL TRANSPORTATION ARCHITECTURE JOINT GRADUATION DESIGN - "HEALTHY CITY, DIGITAL MAPPING": URBAN DESIGN FOR INTEGRATED DEVELOPMENT IN THE VICINITY OF ZHANGJIAKOU STATION BASED ON COMPUTATIONAL FORMING METHOD. (SELECTED)

PROJECT DEFINE: Urban Design + Personal Architectural Unit Design (1/4)

Location: Zhangjiakou City, Hubei

Collaborators: Qin Wang, Luoting Zhu, Birong Liu

Role in the Process: 60% Urban Design Concept, 40% Algorithm, 40% Thesis Contribution

Level of the Project: Spring 2021, Graduation Semester

Instructors: Lei Zhang (zl.wc@chd.edu.cn), Qian Chen

ABSTRACT:

The sudden outbreak of the acute public health crisis in 2020 has prompted a reevaluation of urban health monitoring systems. While the traditional concept of a healthy city has aimed to ensure the physiological well-being of urban residents, it has **overlooked the health of the city's operational systems**, specifically the dynamic effectiveness of **monitoring and feedback**.

Looking ahead to 2022, a crucial period for Zhangjiakou as a Winter Olympics host city and for the integrated development of the Beijing-Zhangjiakou-Tianjin region, the area surrounding the Zhangjiakou Station (hereafter referred to as Zhang Station) is undergoing significant population migration and new land development. In light of this temporal and spatial context, our research team has undertaken theoretical and practical exploration in the construction of a **neurified** urban monitoring and feedback system. This system aims to provide real-time self-assessment of the health of urban structural transformations induced by the short-term mass movement of people. The study seeks to elucidate a new concept in the healthy city paradigm, focusing on neurified self-assessment, and aims to contribute fresh perspectives to urban design within the framework of the healthy city concept.

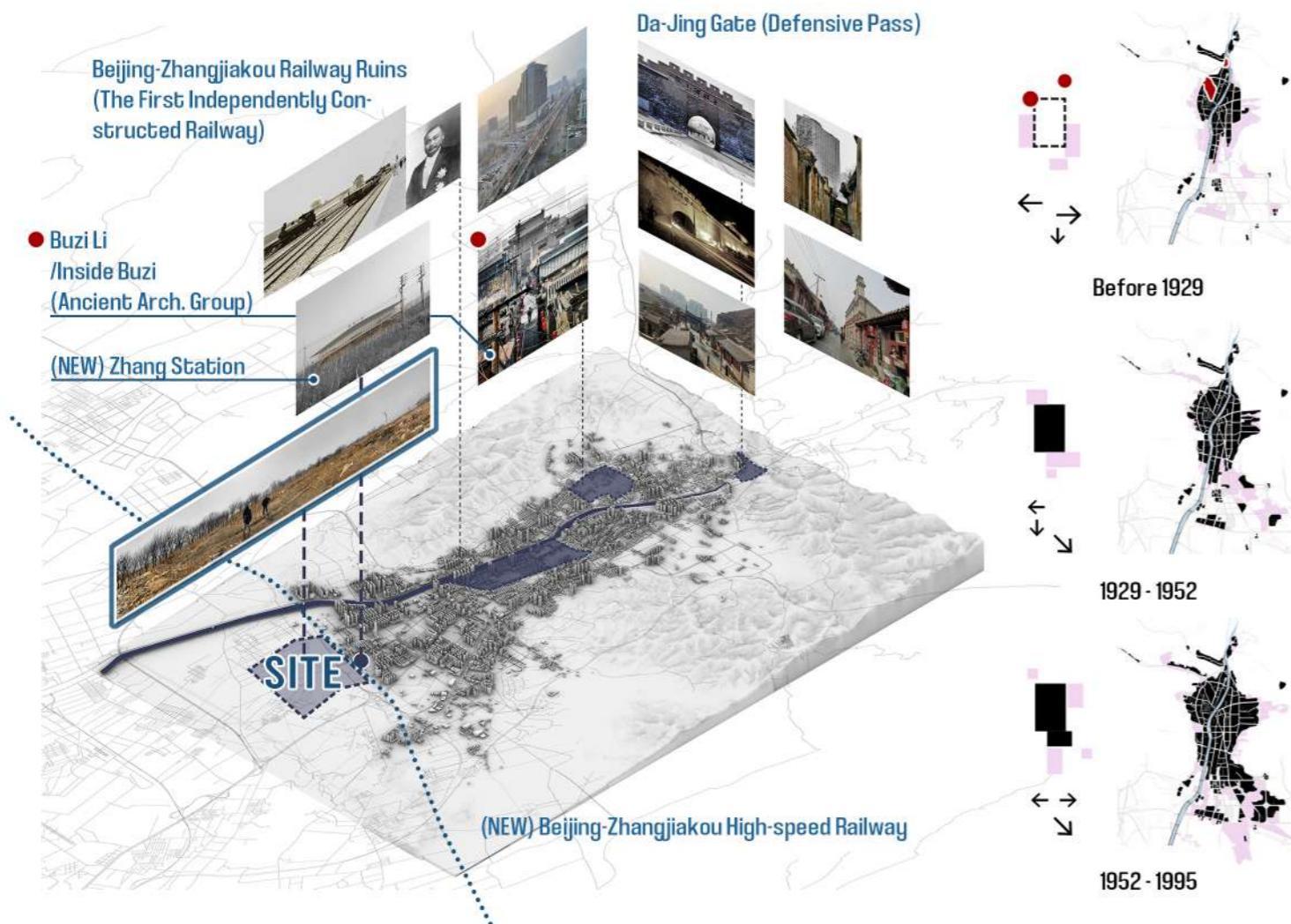


© Sketch by Sixiong Wang, April 2021 (Mid-stage).

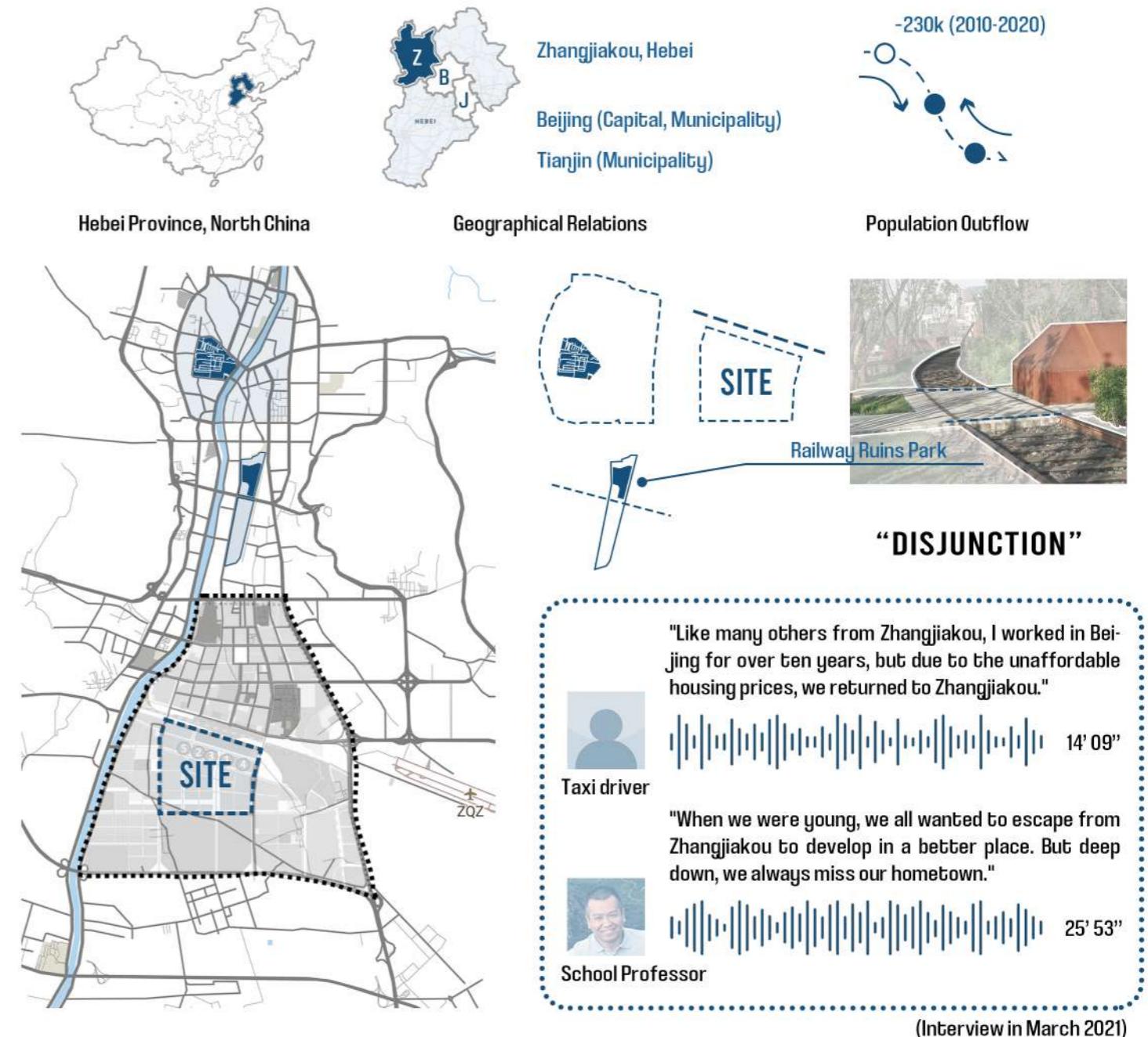
1. (LOCAL) PROBLEM IDENTIFYING



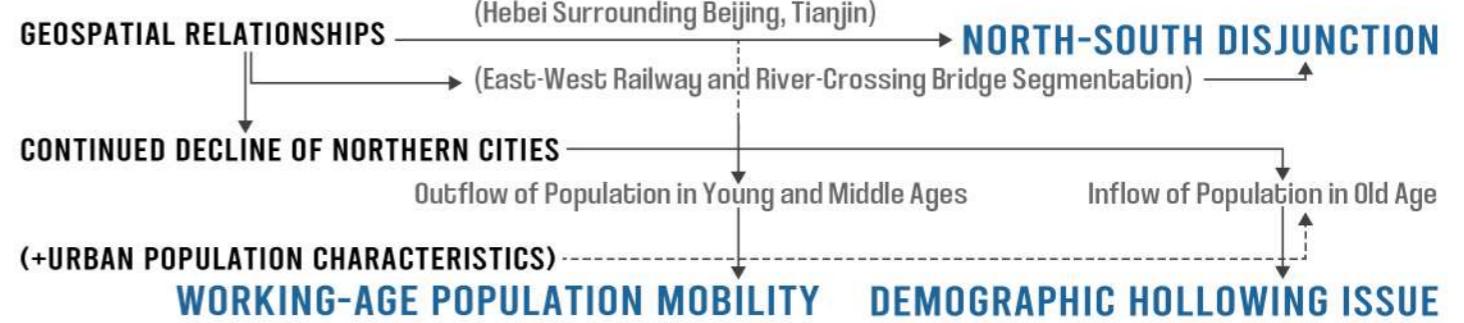
1.1.1 Before implementing the monitoring and feedback mechanism, it is essential to initiate the assessment of urban health indicators and establish an evaluation system. Our team members conducted on-site research and utilized online data crawling and integration methods to accomplish the initiation of urban health assessment indicators.



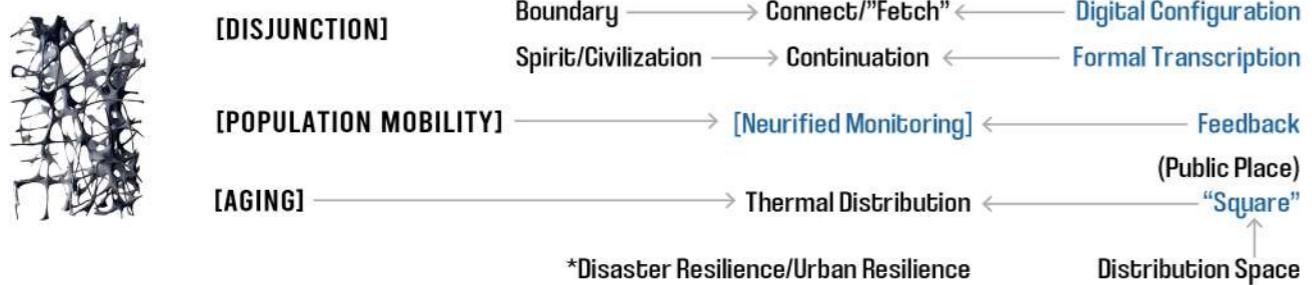
1.1.2 Geospatial relationships and administrative hierarchy conditions have shaped the uneven economic development in the Beijing-Tianjin-Hebei region, leading to imbalances in population migration outcomes. From 2010 to 2020, there has been a sustained net outflow of the young and middle-aged population from Zhang City to the other two cities.



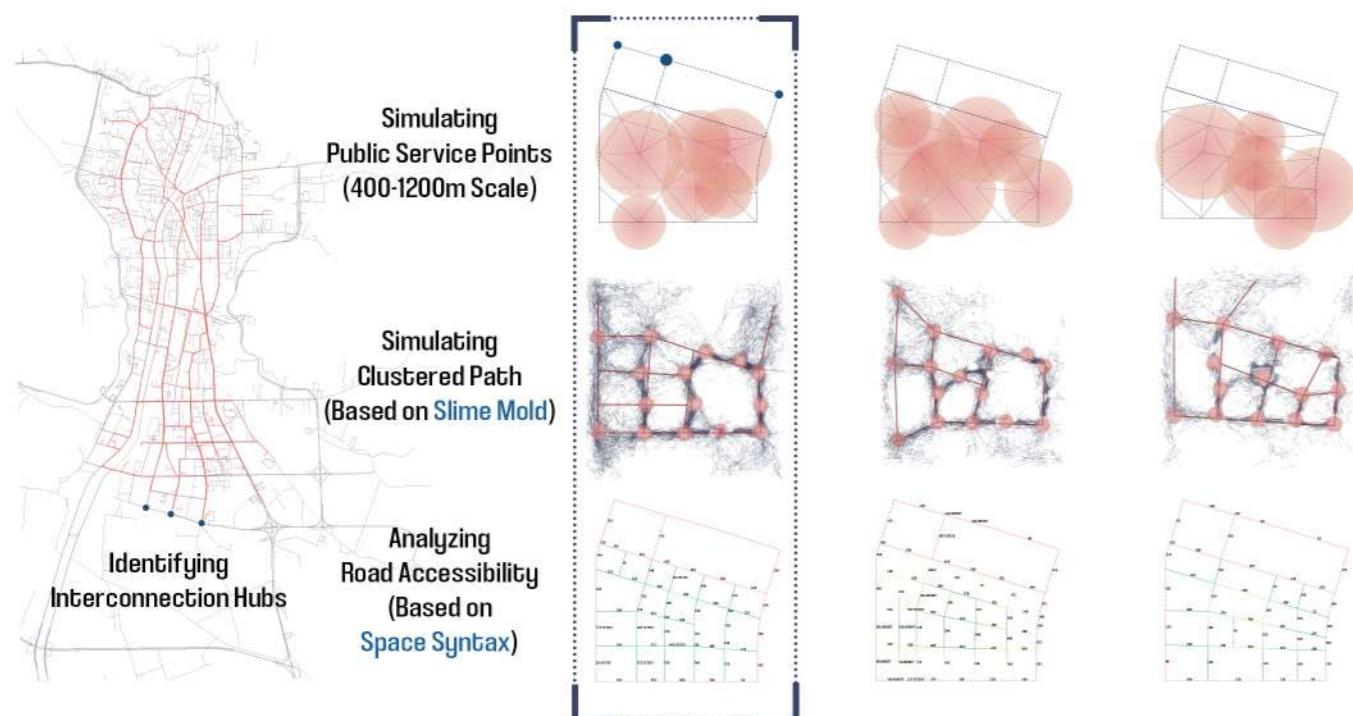
1.2 RESULT/CONCLUSION



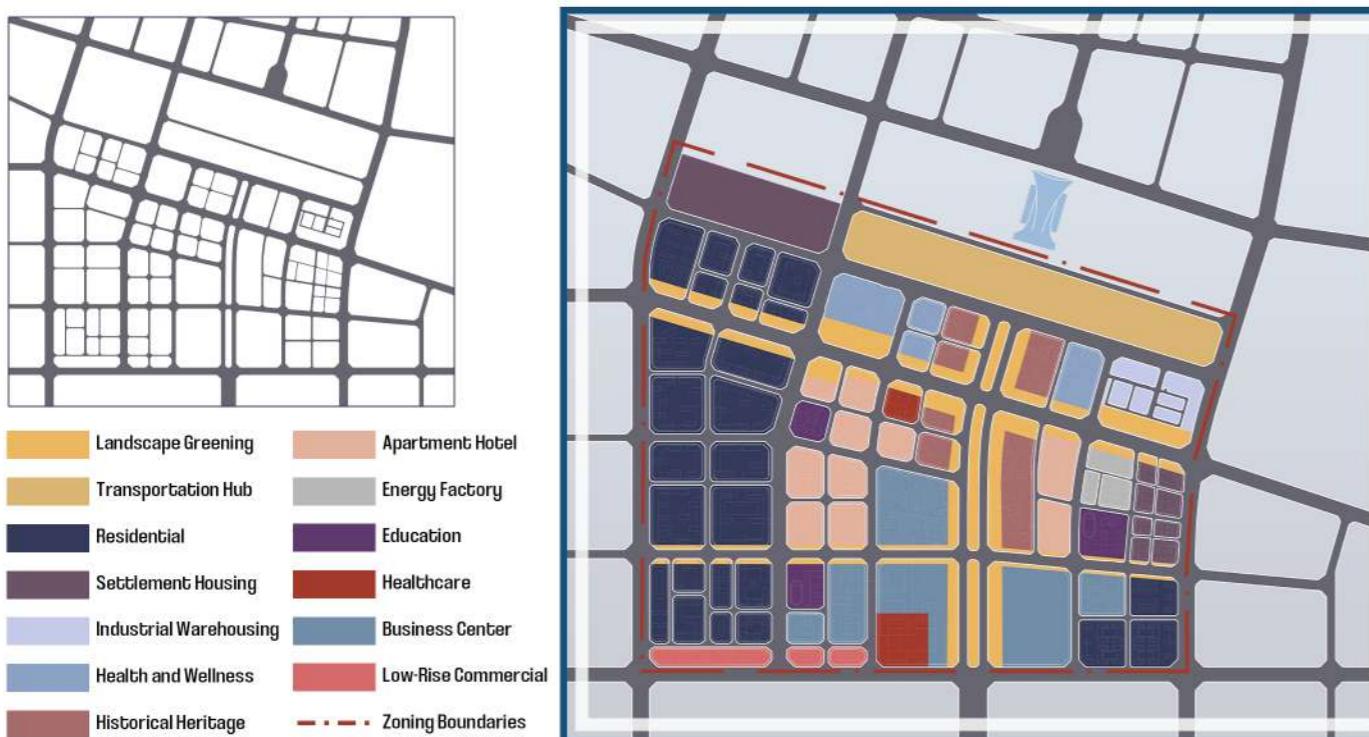
2. RESOLUTION STRATEGIES (MUST ALIGN WITH THE TITLE "HEALTHY CITY, DIGITAL MAPPING")



2.1 OPTIMIZING PATH SELECTION (COMPUTATIONAL)

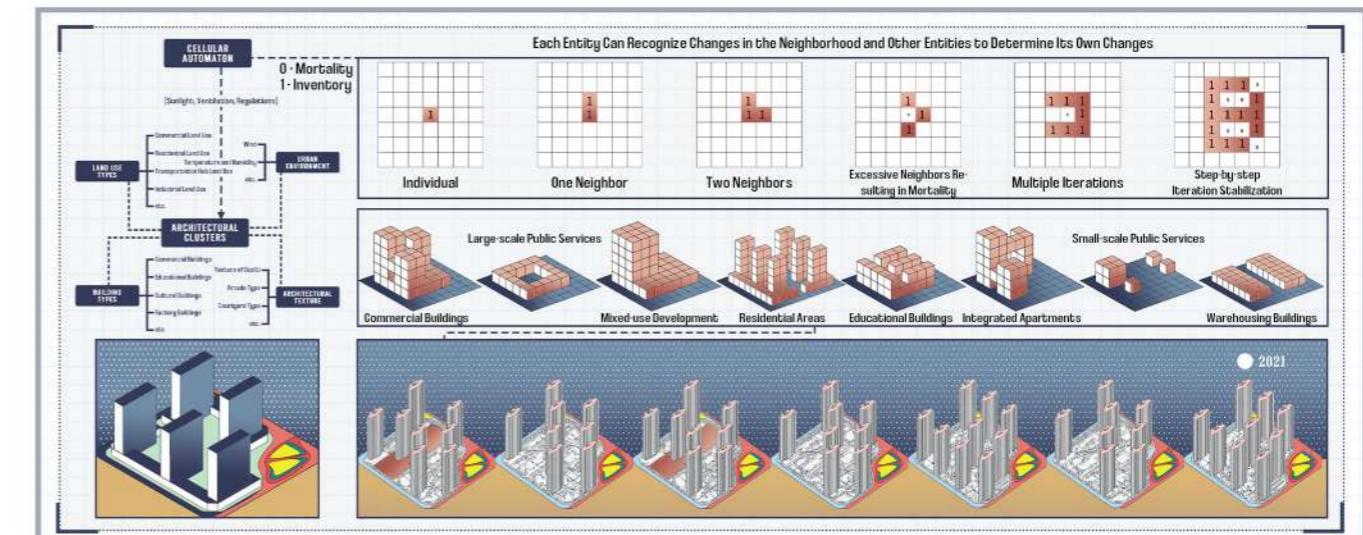


2.2 REGULATORY PLAN (HANDMADE)

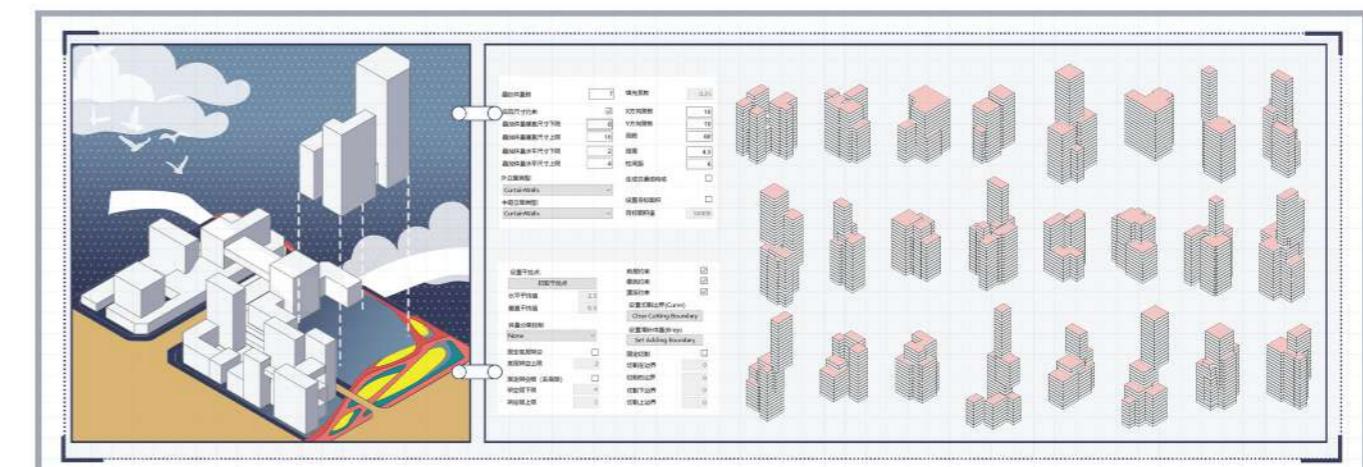


Monitoring vast and dynamic urban areas is resource-intensive. Inspired by neural systems, our decentralized approach connects multiple points, enhancing health surveillance efficiency. This system, mimicking neurotransmission, enables swift urban feedback and responses to dynamic city changes.

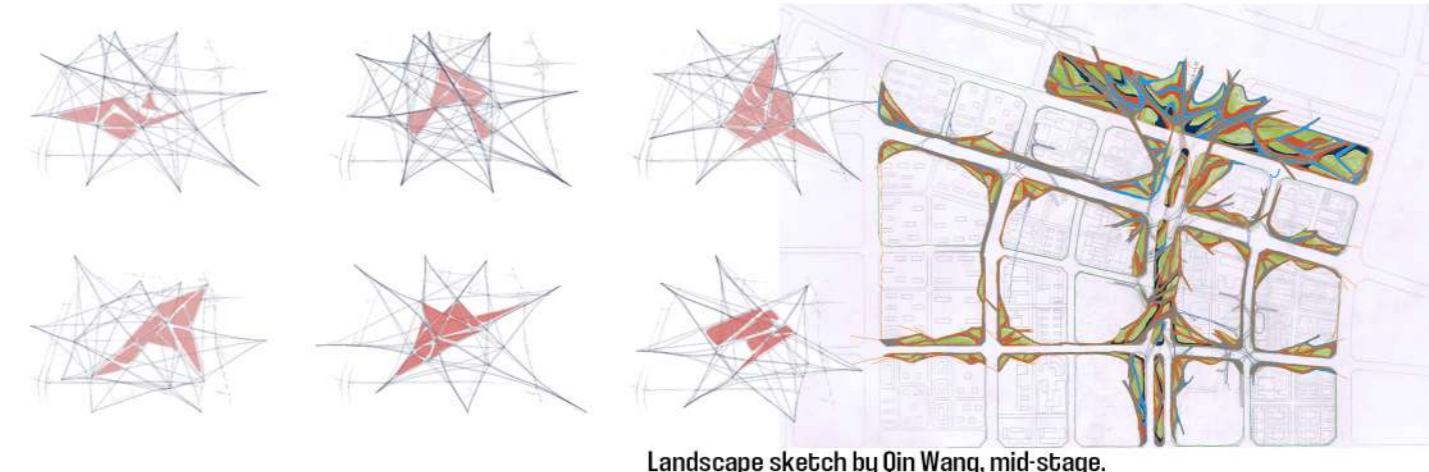
2.3 CLUSTER FORMATION (BASED ON CELLULAR AUTOMATA TYPOLOGY)



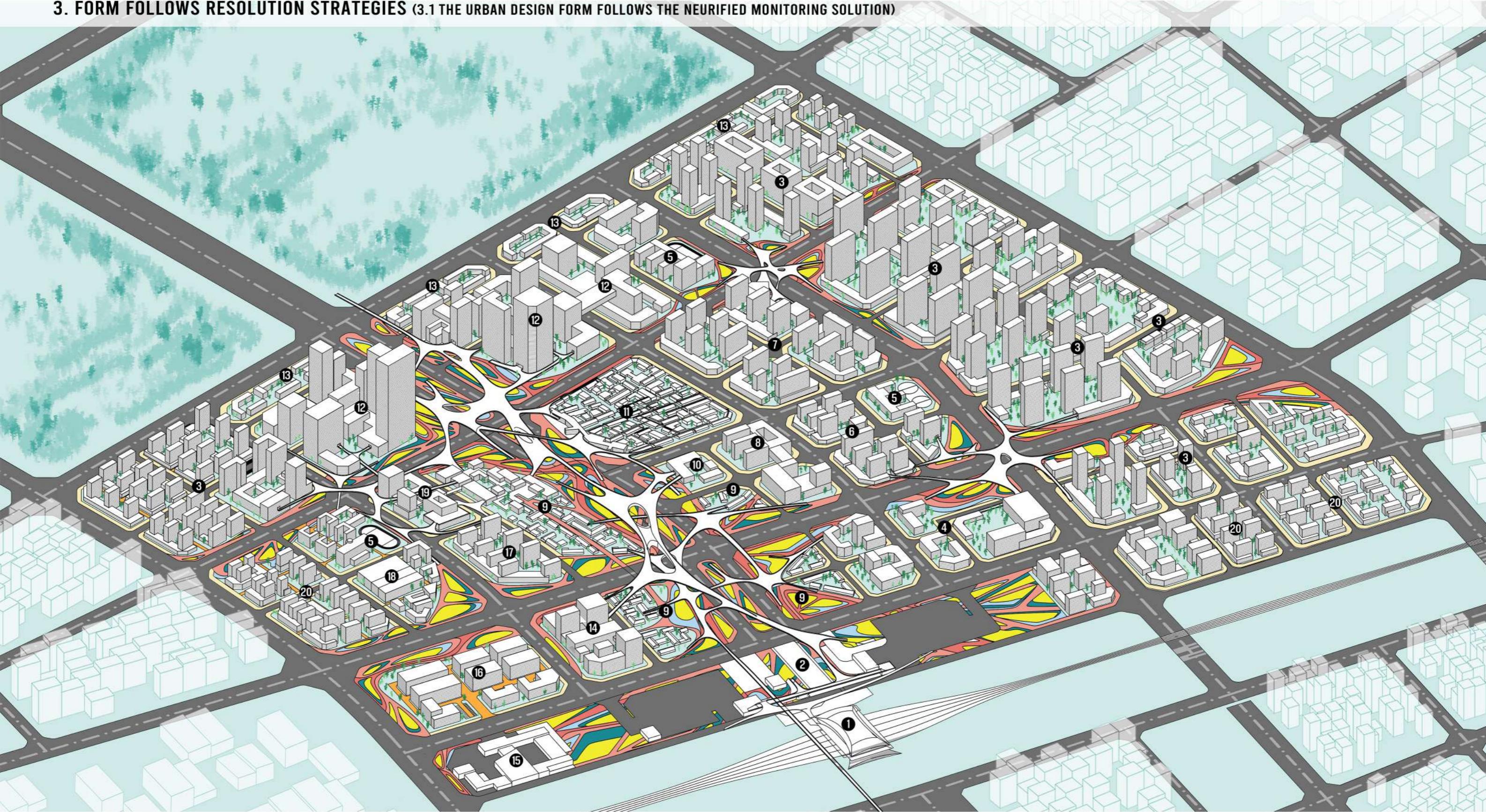
2.4 ARCHITECTURAL MASSING GENERATION (BASED ON PBMDGO ALGORITHM)



2.5 LANDSCAPE GENERATION (BASED ON THE WOOL ALGORITHM)



3. FORM FOLLOWS RESOLUTION STRATEGIES (3.1 THE URBAN DESIGN FORM FOLLOWS THE NEURIFIED MONITORING SOLUTION)



① Zhang Station

② Station Front Square

③ Residential Area

④ Wellness and Care Center

⑤ School

⑥ Hotel-Style Apartments

⑦ Short-Term Rental Apartments

⑧ Medical Center

⑨ Cultural District

⑩ Museum

⑪ Historic Character Commercial District

⑫ Commercial Complex

⑬ Low-Rise Commercial District

⑭ Exhibition Hall

⑮ Police Station

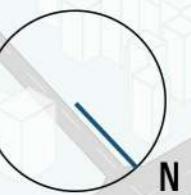
⑯ Industrial Warehouse Area

⑰ Apartment

⑱ Energy Plant

⑲ Cultural Complex

⑳ Settlement Housing



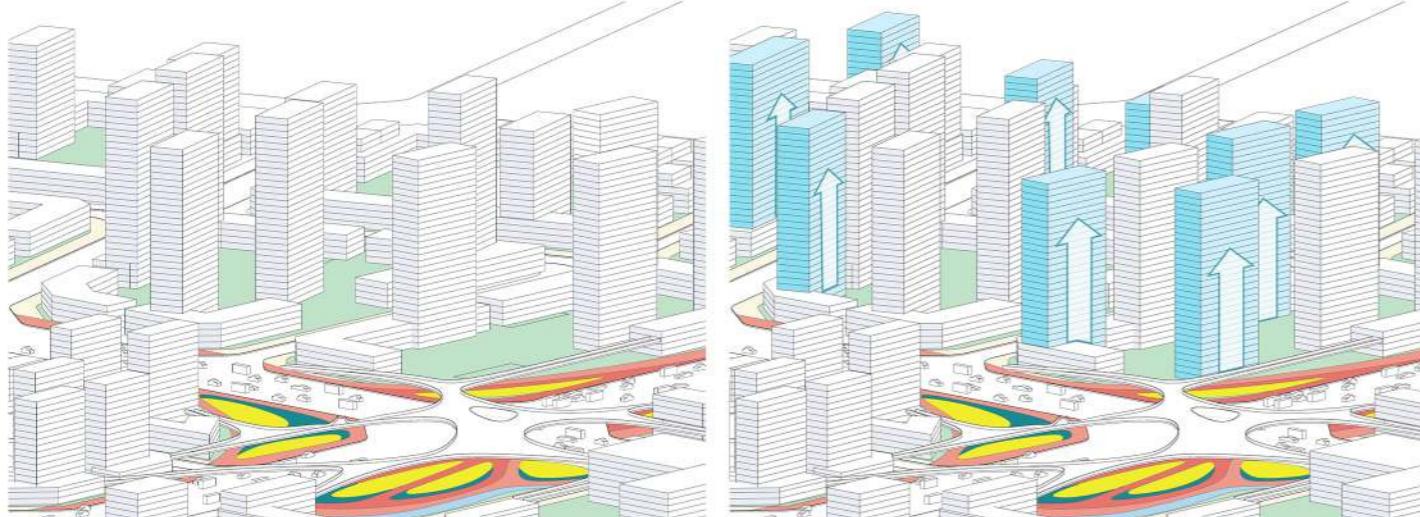
3.2 SPATIAL STRUCTURE FORM FOLLOWS THE DYNAMIC PLANNING STRATEGY



INTEGRATION OF BUILDING SECOND FLOOR AND BRIDGE



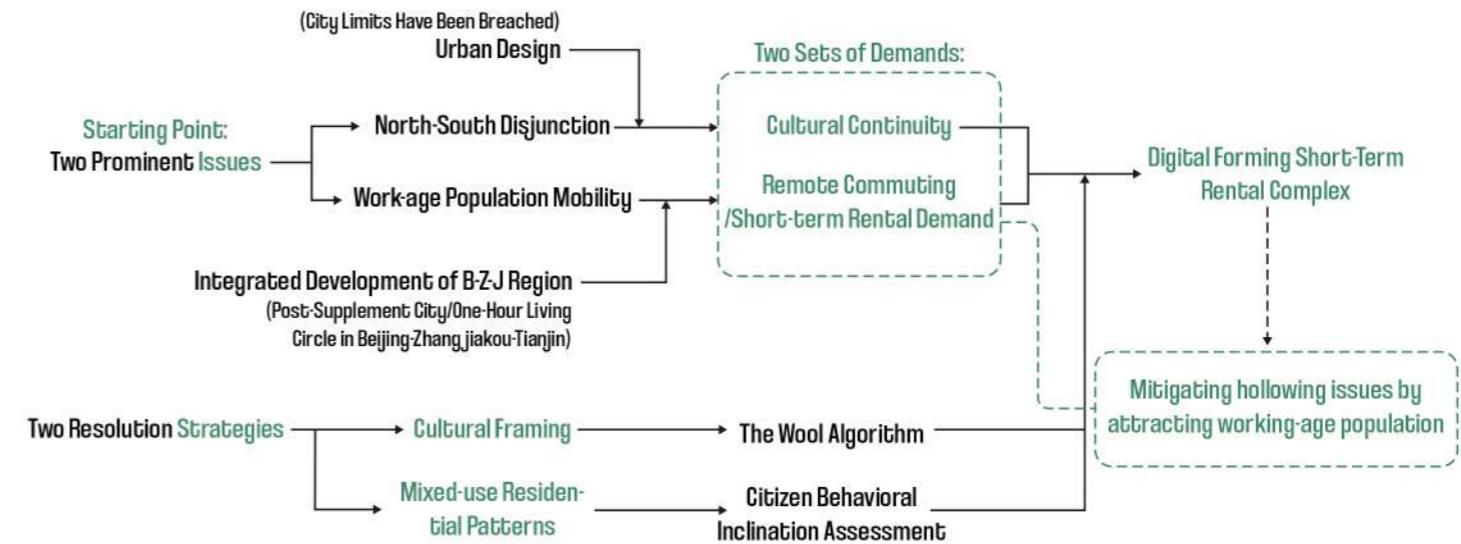
REGIONAL RESTRICTIONS BASED ON BRIDGE ENDPOINT MONITORING



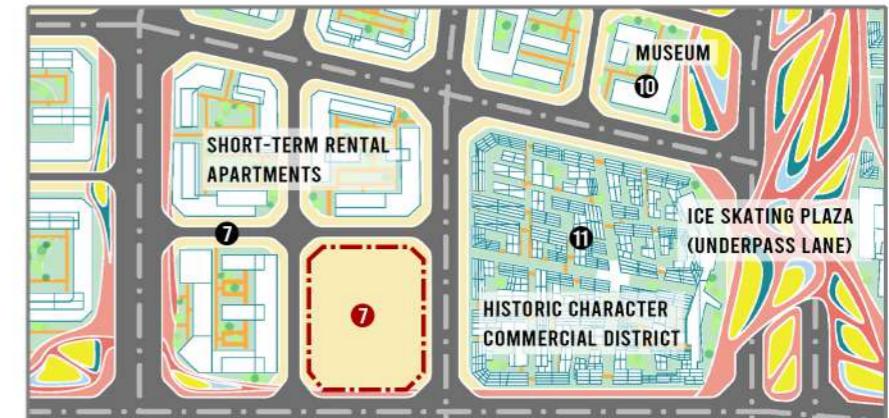
LONG-TERM MONITORING PROVIDES DYNAMIC UPDATES AND RECOMMENDATIONS FOR PLANNERS AND DECISION-MAKERS.

4. INDIVIDUAL PART - "CULTURAL FRAMING, IMMersed WITHIN": MIXED-MODE SHORT-TERM RENTAL COMPLEX DESIGN

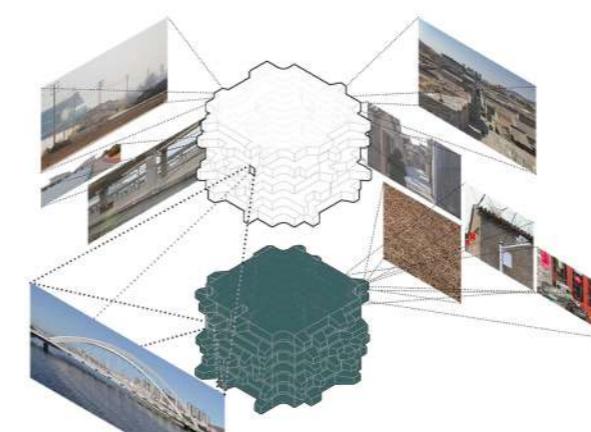
4.1 TARGETED ISSUES AND RESOLUTION STRATEGIES



4.1.1 LOCATION SITE

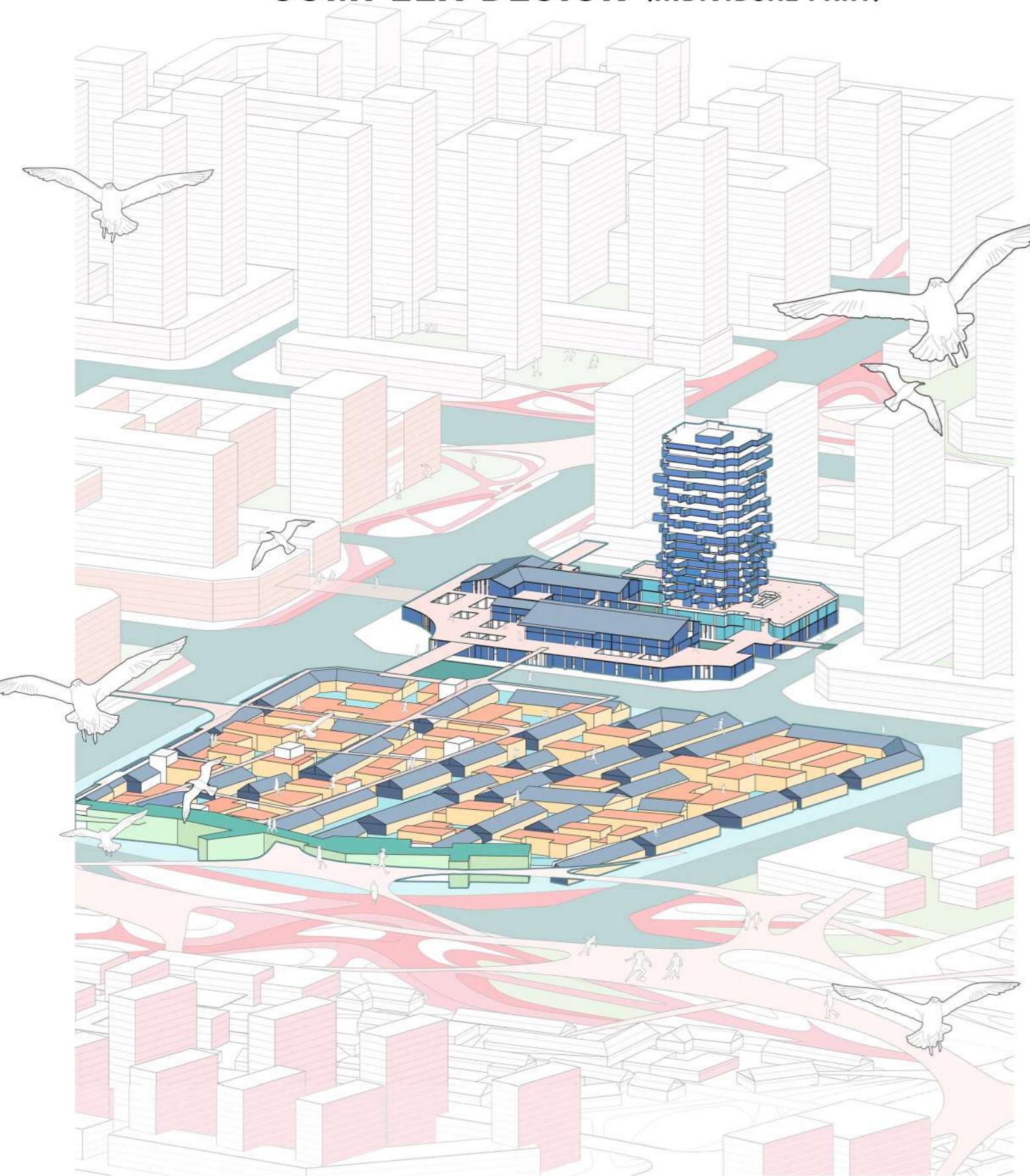


(Following the cultural continuity strategy)



4.1.2 The cultural ambiance demands a sense of "being in it (immersed within)," creating subtle and immersive living scenes through framing the surrounding cultural points of interest. In the unique context of Zhang City's high population mobility, coupled with the synergy of the Beijing-Tianjin-Hebei coordinated development, a mixed and short-term residential model exhibits significant vitality.

04 “CULTURAL FRAMING, IMMERSED WITHIN”: MIXED-MODE SHORT-TERM RENTAL COMPLEX DESIGN (INDIVIDUAL PART)



4.2 FORM FOLLOWS STRATEGIES

Orient observation points toward the surrounding landscapes. Establish a citizen behavior inclination assessment for Zhang City, guiding the functional distribution of individual buildings. Furthermore, utilize a double-pass Wool algorithm to determine the primary pedestrian flow, guiding both spatial circulation and furniture arrangement.

4.2.1 BEHAVIORAL INCLINATION DIAGRAM FOR ZHANG CITY RESIDENTS



Mode of transportation: Walking and driving in clear opposition, guiding the structural connection of elevated walkways and the separation of pedestrians and vehicles.

Public squares, crucial leisure spots for city residents, coupled with a significant share of food consumption, guide residents

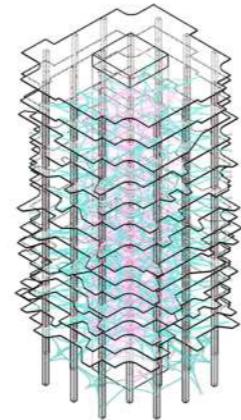
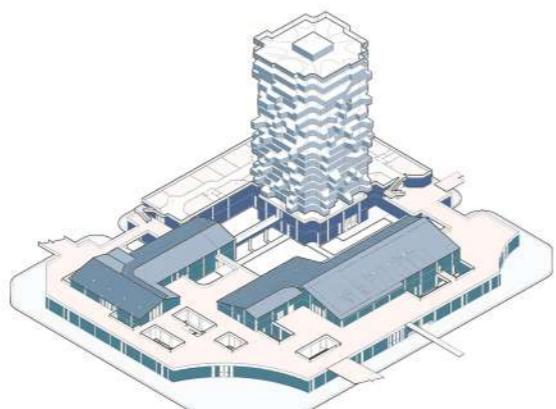
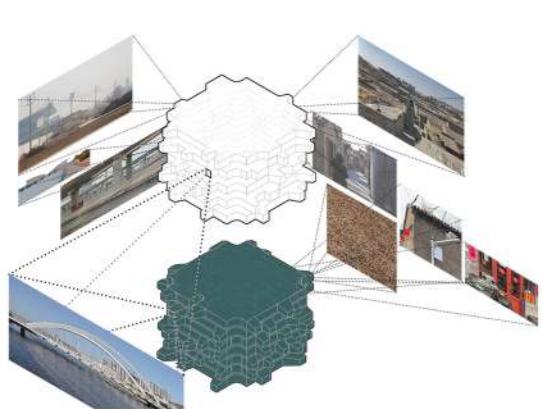
A unique workforce in Zhang City frequently commutes to and from Beijing. With no clear pillar industry locally, developing the service sector and guiding long-distance commuting are crucial to adapting to employment opportunities within the Beijing-Tianjin-Hebei coordinated development region.



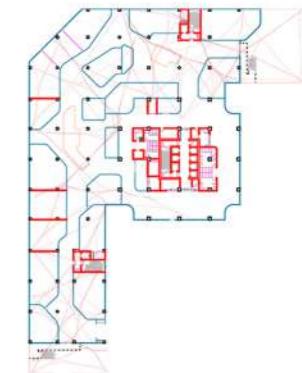
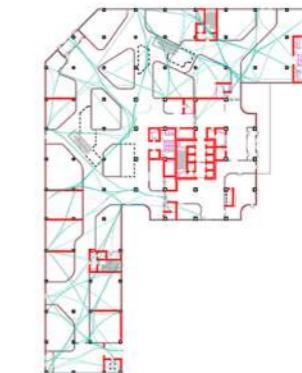
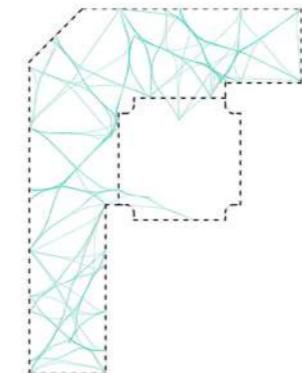
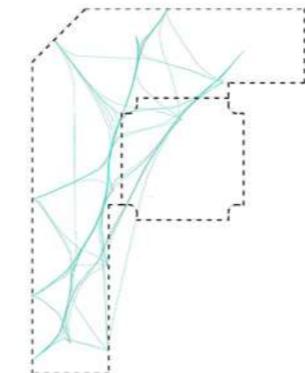
Plan a mixed-use model based on citizen inclination assessment indicators.

Plan the layout of building functions based on the net difference between expectations and current conditions. Implement vertical segregation between public and private through floor height, and introduce transitional public service spaces (or additional access control gates) horizontally.

4.2.2 TWO-PASS WOOL ALGORITHM TO GENERATE FLOOR PLANS



In the high-rise residences, our design strategy prioritizes **cultural continuity**. By optimizing each unit's view based on nearby points of interest, we enhance residents' local identity. The building's programmatically oriented floor plan anticipates landscape evolution, ensuring adaptability for future updates.



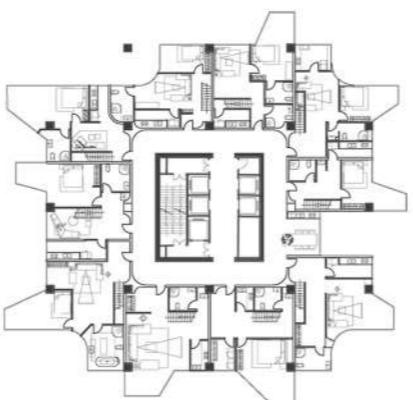
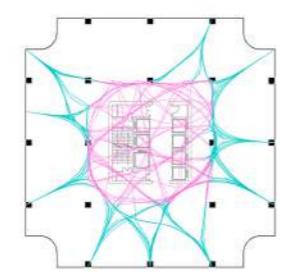
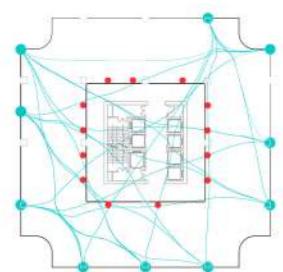
Wool Deduction Process for Internal Commercial Section on Floors 1-2

Guide the generation of main pedestrian pathways: Outer hotel transportation hub/Inner dining-illuminated atrium route.

Break through boundaries with partial wool lines, indicating the need to supplement flow branches; establish inner corridors to form inner courtyards.

Establish shared office spaces in the core area.

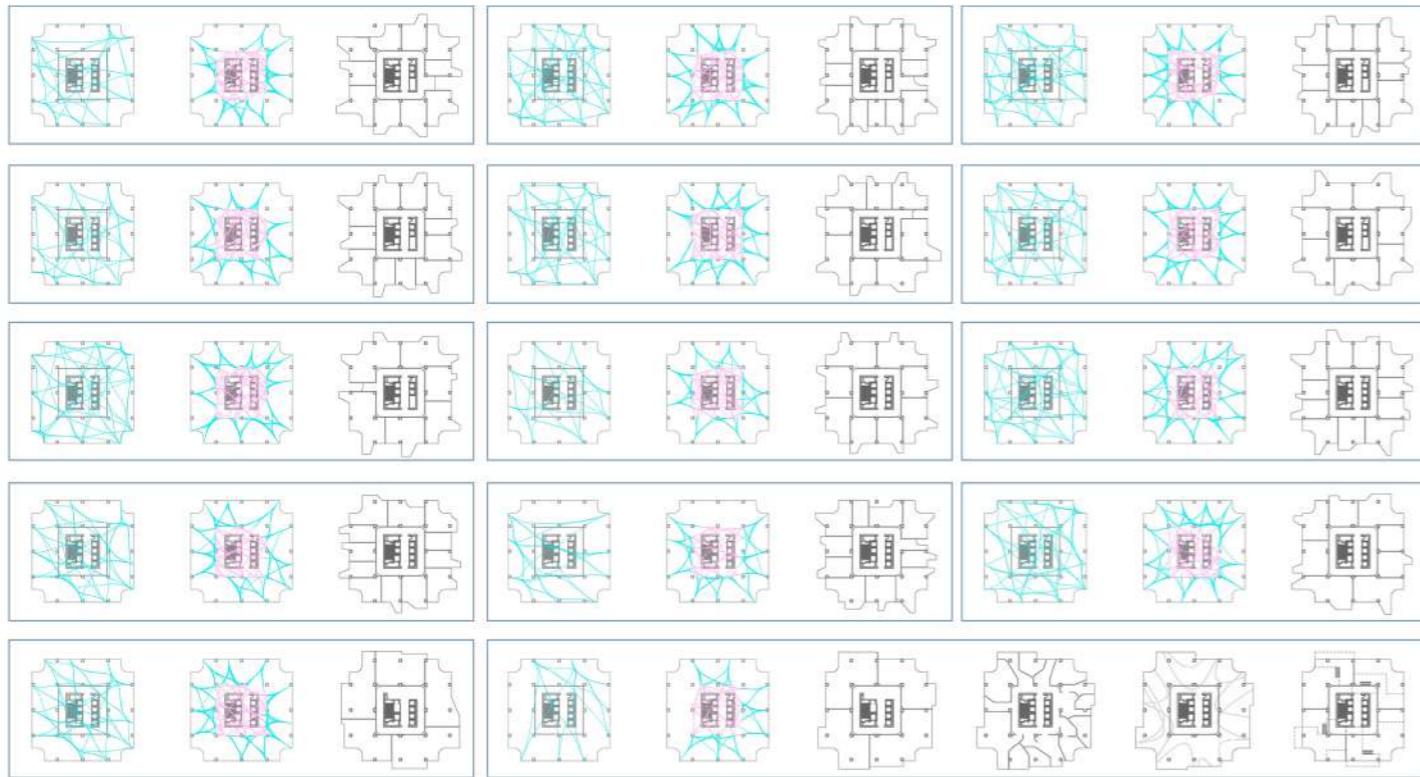
In the current Studio model, workplaces serve both as production spaces for product design and as retail spaces, leading to the transformation of office spaces towards a more display-oriented approach.



1) Obtaining **core intersections** through **first-pass wool algorithm**.

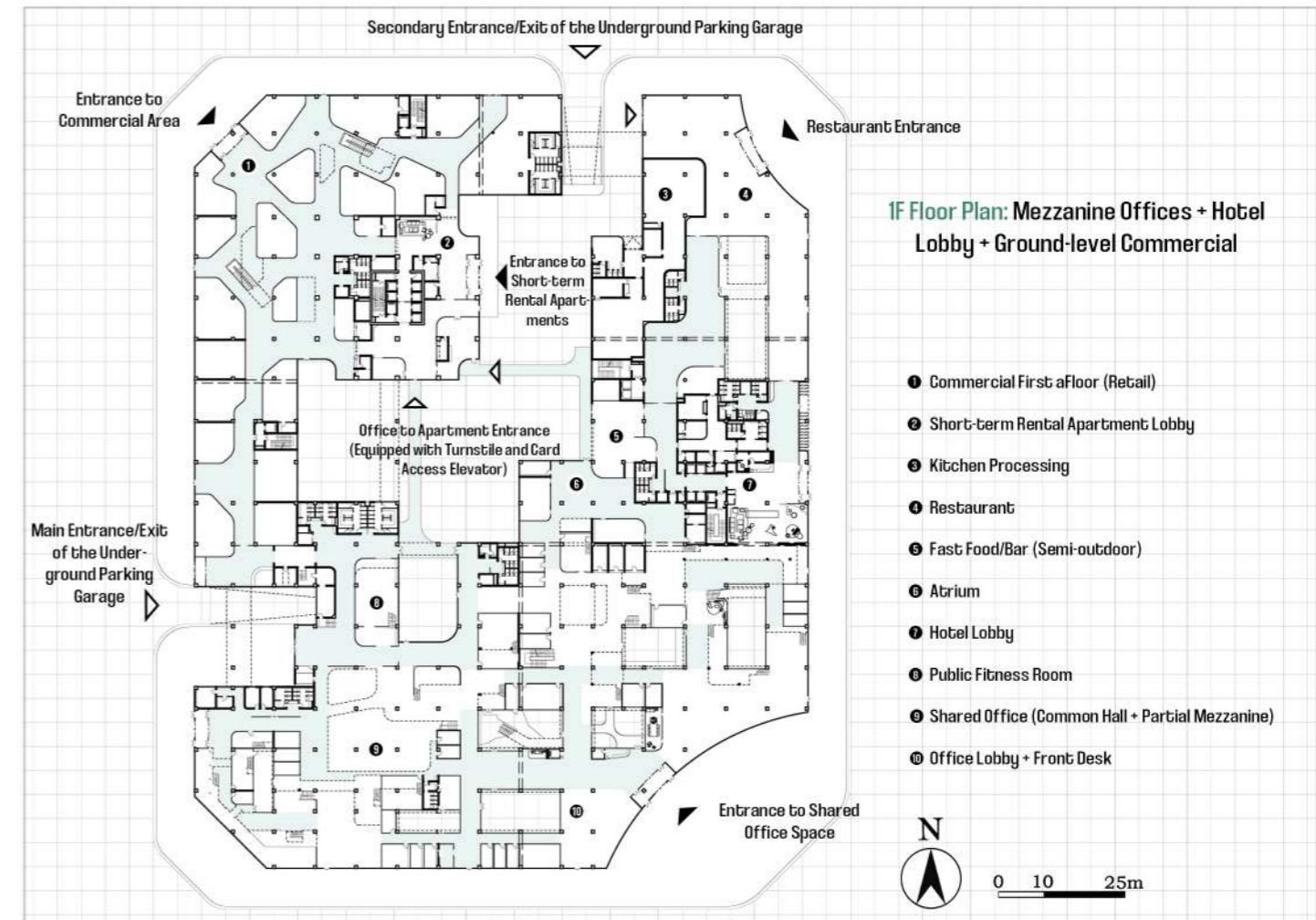
2) Determining **dominant motion paths** through **second-pass wool algorithm**.

3) Employing conditional operation logic to generate planes and guide path generation.



Floor Plans

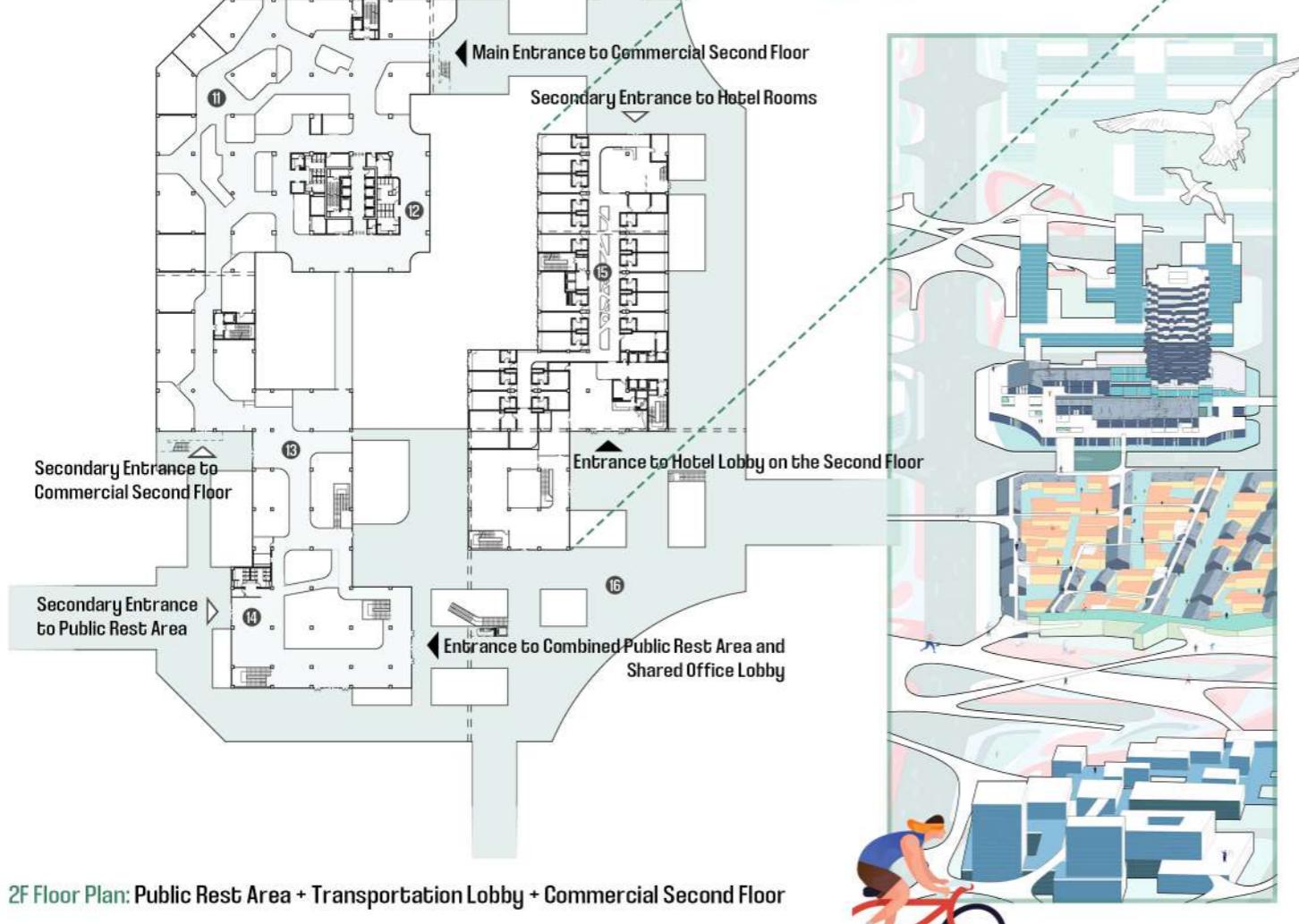
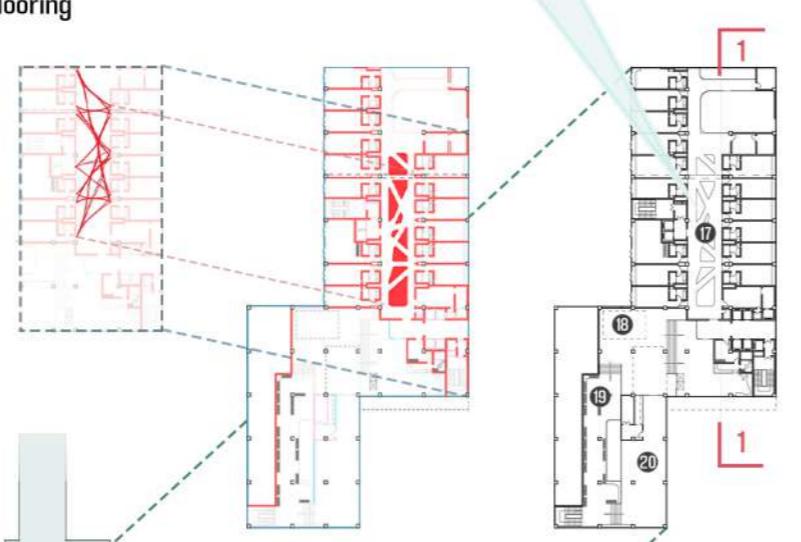
Can guide spatial layout and also inform the subtraction (negative space) of the plan.





1-1 Section: Central Island Planting/Blurred Indoor/Outdoor Flooring

- ⑪ Commercial Second Floor (Tea Restaurant + Retail)
- ⑫ Fitness Activity Floor/Changing Rooms
- ⑬ Shared Activity Hall
- ⑭ Shared Office Lobby
- ⑮ Hotel Rooms (Indoor Planting)
- ⑯ Corridor Platform
- ⑰ Hotel Rooms (Central Island/Double-height)
- ⑱ Flexible Retail/Adaptable Business
- ⑲ Bookstore/Corridor
- ⑳ Coffee Shop

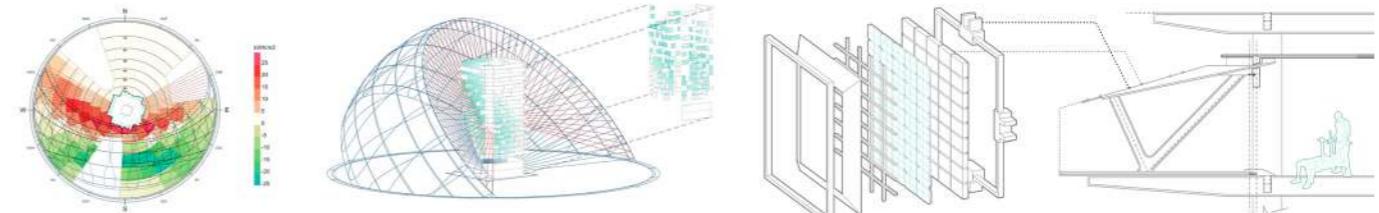


2F Floor Plan: Public Rest Area + Transportation Lobby + Commercial Second Floor

4.3 STRUCTURE FOLLOWS FORM

4.3.1 ENERGY STRUCTURE (IN COORDINATION WITH ZHANG CITY'S SOLAR ENERGY ADVANTAGE)

City: Zhangbei District - Zhangjiakou
Resource: CSWD



Use Chinese Standard Weather Data (CSWD) to analyze annual sunlight distribution and sun trajectory in Zhang City for meteorological insights.

Generate interference curves by intersecting sunlight with buildings, adjusting parameters to create solar panel layouts with gradient openings.

Design solar photovoltaic panels with customized modular dimensions for practical and efficient production.

Develop an along-window structure independent of the main structure, allowing for future installation and removal while maintaining structural integrity.

4.3.2 CEILING HEIGHT ALLOCATION + STRUCTURAL TYPE SELECTION

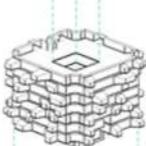
Rooftop Shared Terrace



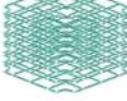
Apartment Main Structure: Frame Tube + Beams



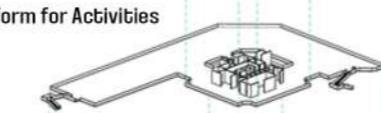
Floors 4-11: Apartments with 3.3m Ceiling Height



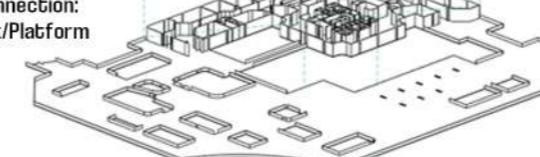
Sloped Roof Rafters



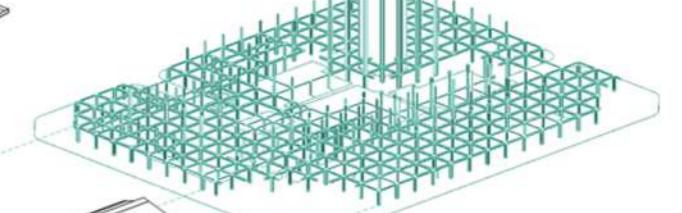
Height-Isolated Sky Platform for Activities



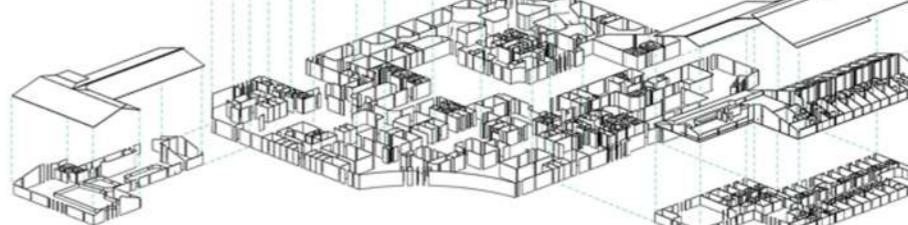
Structural Connection: Urban Skywalk/Platform



Structural Joint on the Second Floor Platform: Beams Disconnected at Nodes



Shared Office: Duplex Space with 2.7m Ceiling Height



3.3m Eastern Value System Hotel (Direct Access to Castle-like Simulated Commercial Street; Blurred Indoor/Outdoor Floor Elevation Differences)

Shared Office Second Floor: Rest Area + Transportation Lobby

Exploded Diagram: Vertical Functional Zoning with Height + Structural Configuration Options



[OTHER WORKS]

PROJECT DEFINE

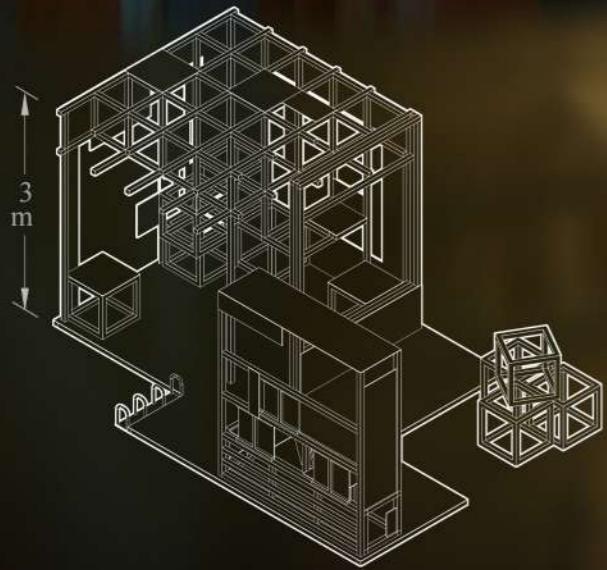
Project Name: Square Utterances

Architectural Type: Structural Construction

Location: Shaanxi, China

Materials: Composite Board, Square Timber

Connection Method: Mortise and Tenon Interlocking

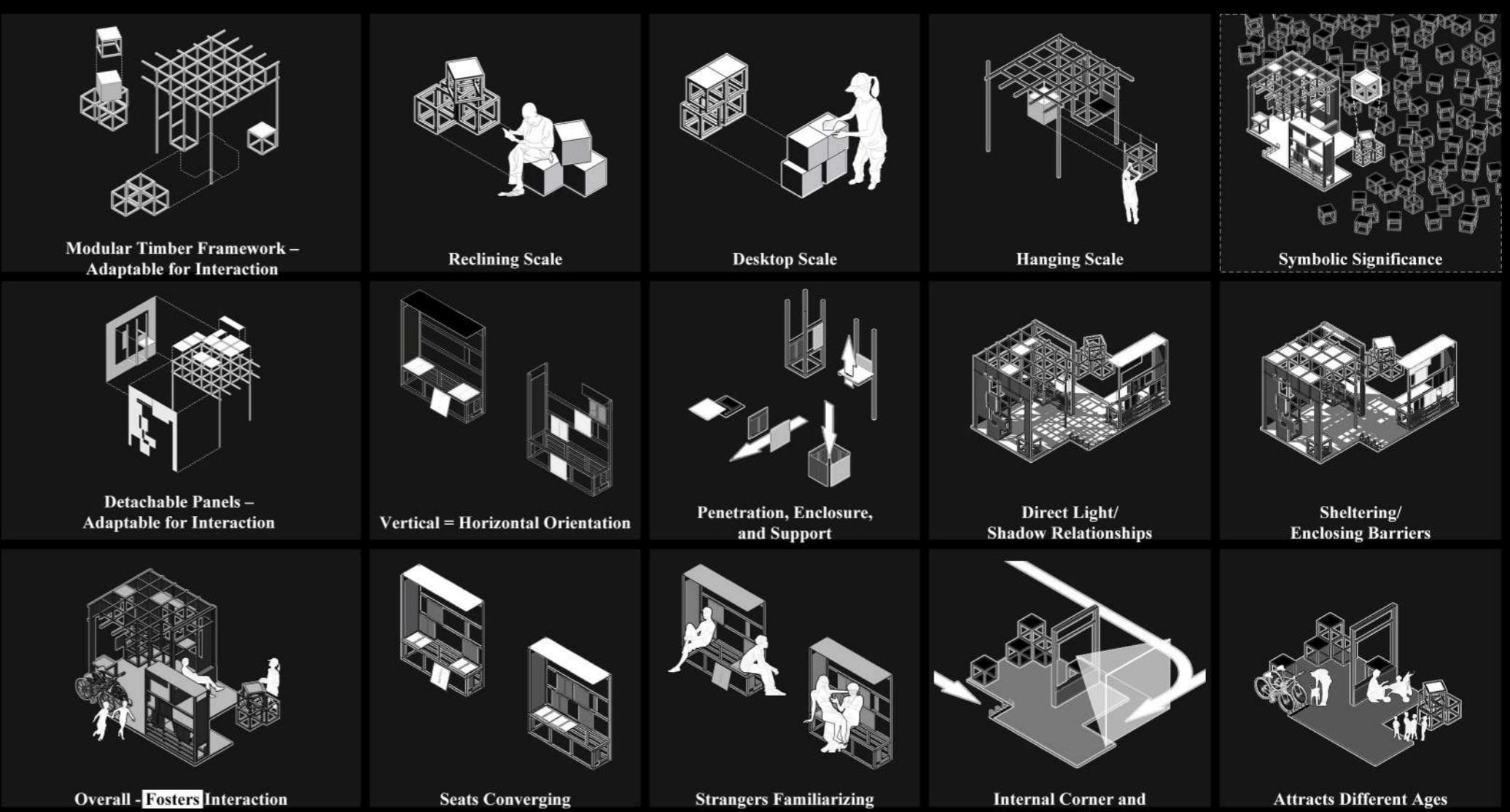
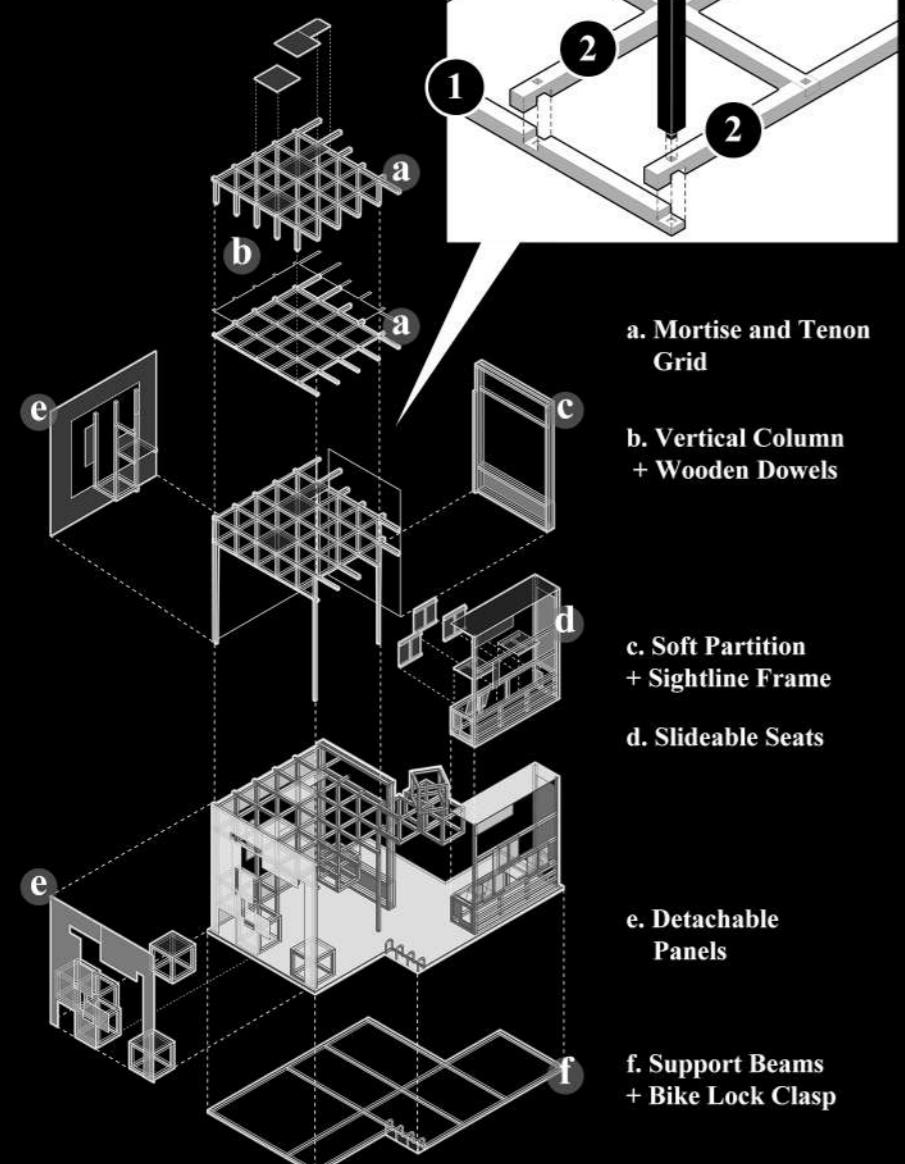


Collaborators: Ziyi Xu, Tao Ma, Yangchen Zhu, Siqi Du, Haixi He

Role in the Process: 80% Structural Node Design, 40% Conceptual Design, 30% Wood Cutting

Level of the Project: May 2017, Freshman Year, Course Design

Instructors: Yifan Zhou (40773670@qq.com), Wei Zhang



PROJECT DEFINE

Project Name: Main Hall of Xiyue Temple Complex:

Hao Ling Hall

Architectural Type: Ancient Architectural Measurement

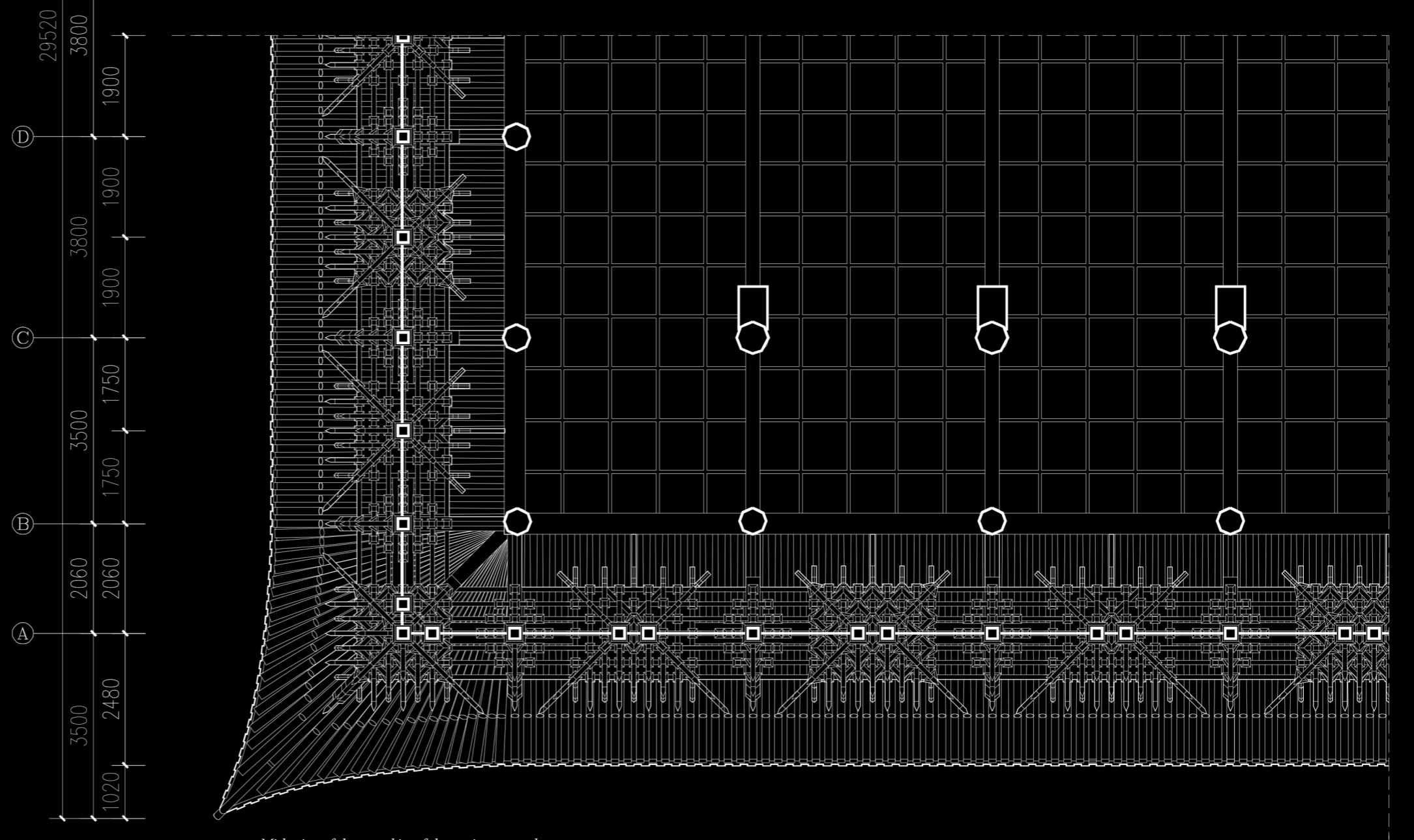
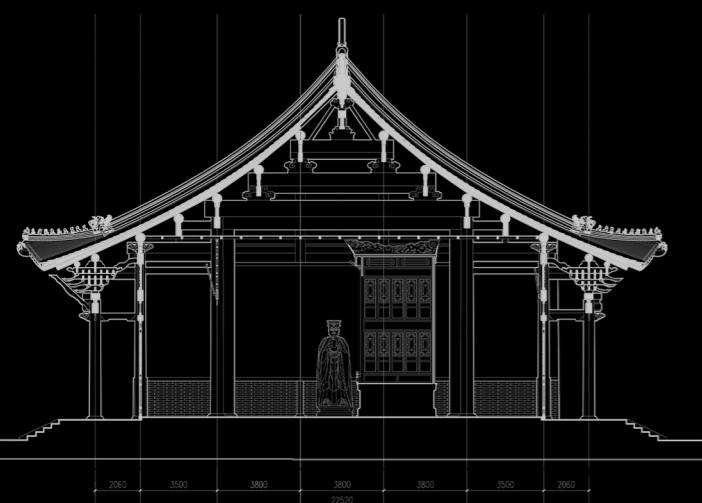
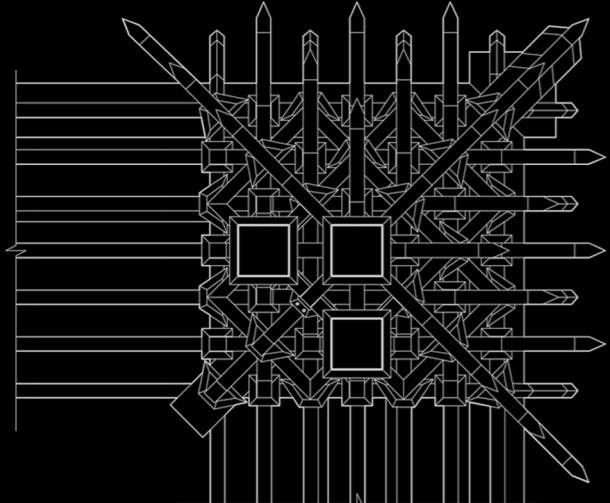
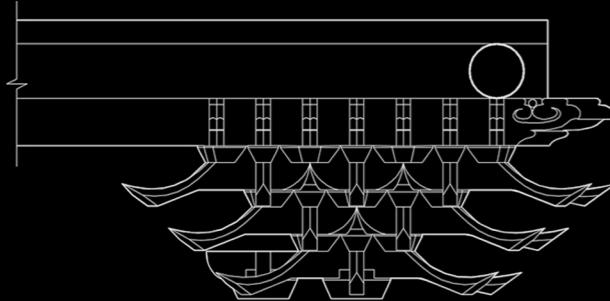
Location: Shaanxi, China

Collaborators: Yue Feng, Qin Wang, Zhande Cai

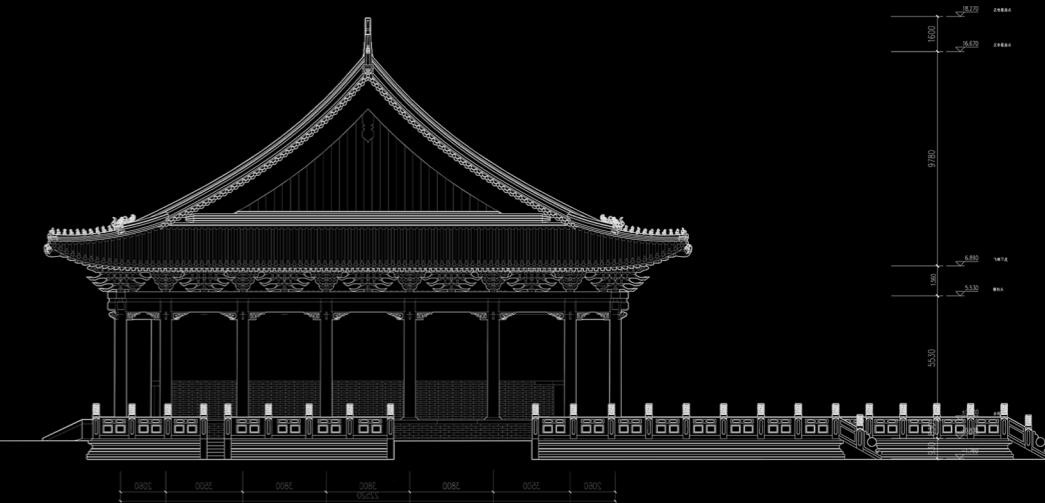
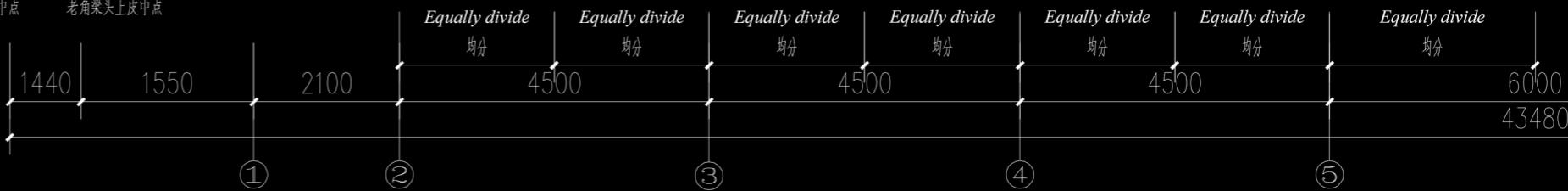
Role in the Process: 100% Structural Node drawing,
40% Total Station Point Setting, 30% Measuring

Level of the Project: May 2019, 4th Year, Practical Module

Instructor: Siliang Chen (siliangchen@qq.com)



Midpoint of the top skin of the main corner beam
Midpoint of the bottom skin of the secondary corner beam



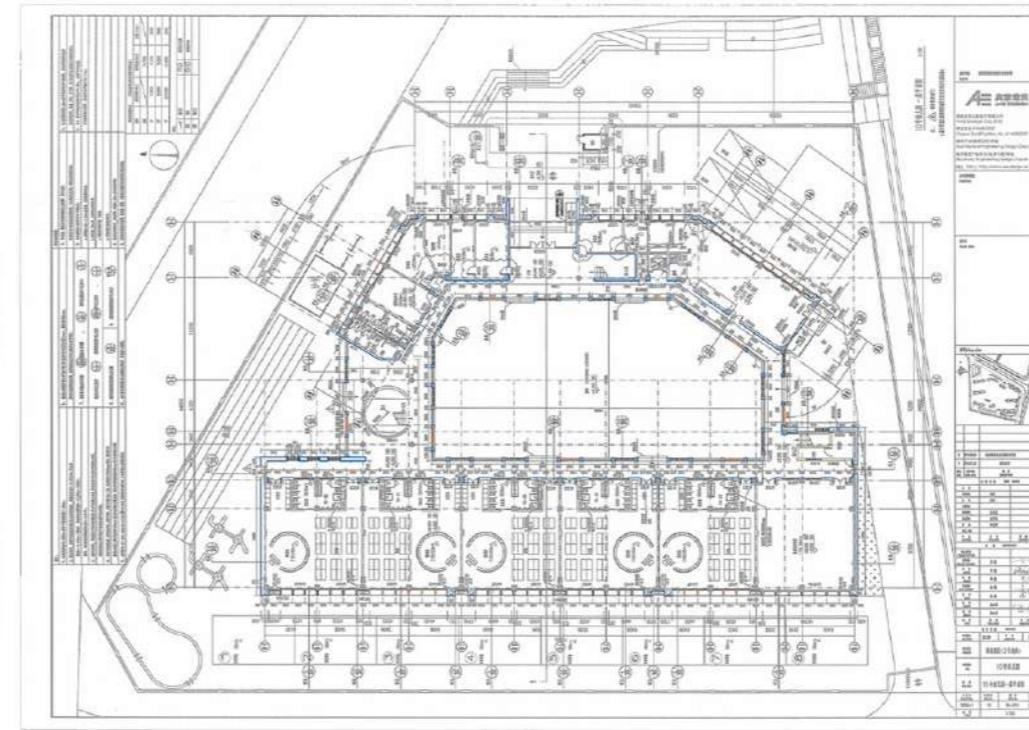
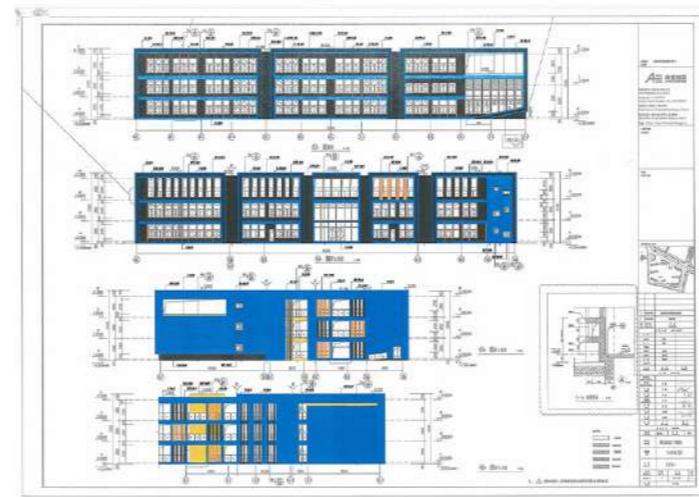
[Practical Project / Technical Drawings / Renderings]



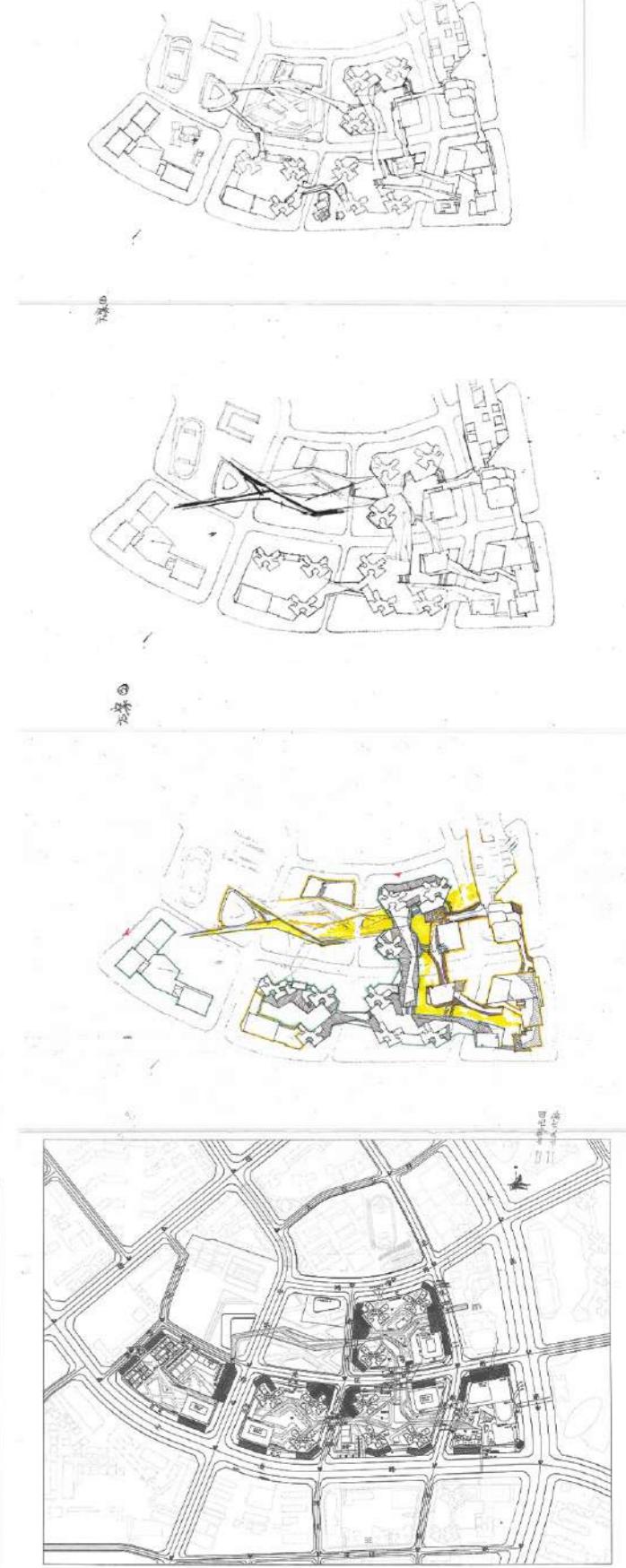
Practical Project: Personal Commission - Han Sheng Xiangshan Coastal Project



Practical Project: Vanke - Dongcheng Sports Center

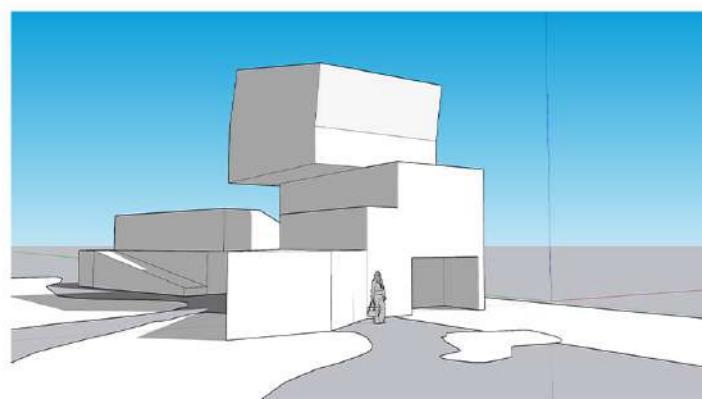


Practical Project: Huawei - Talent Housing Green Island Garden Kindergarten

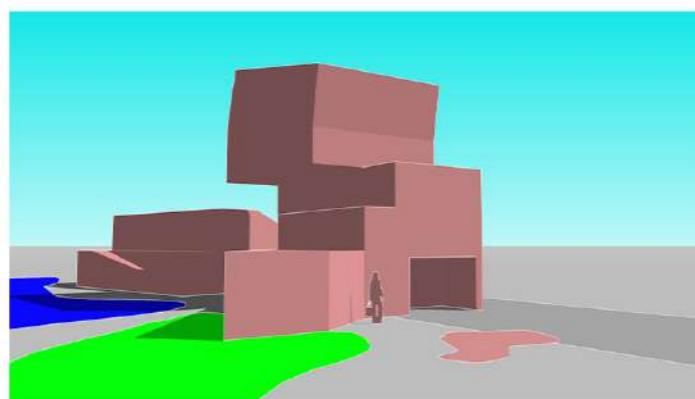


Practical Project: Zhongzhou - Longhua Commercial Center Urban Renewal

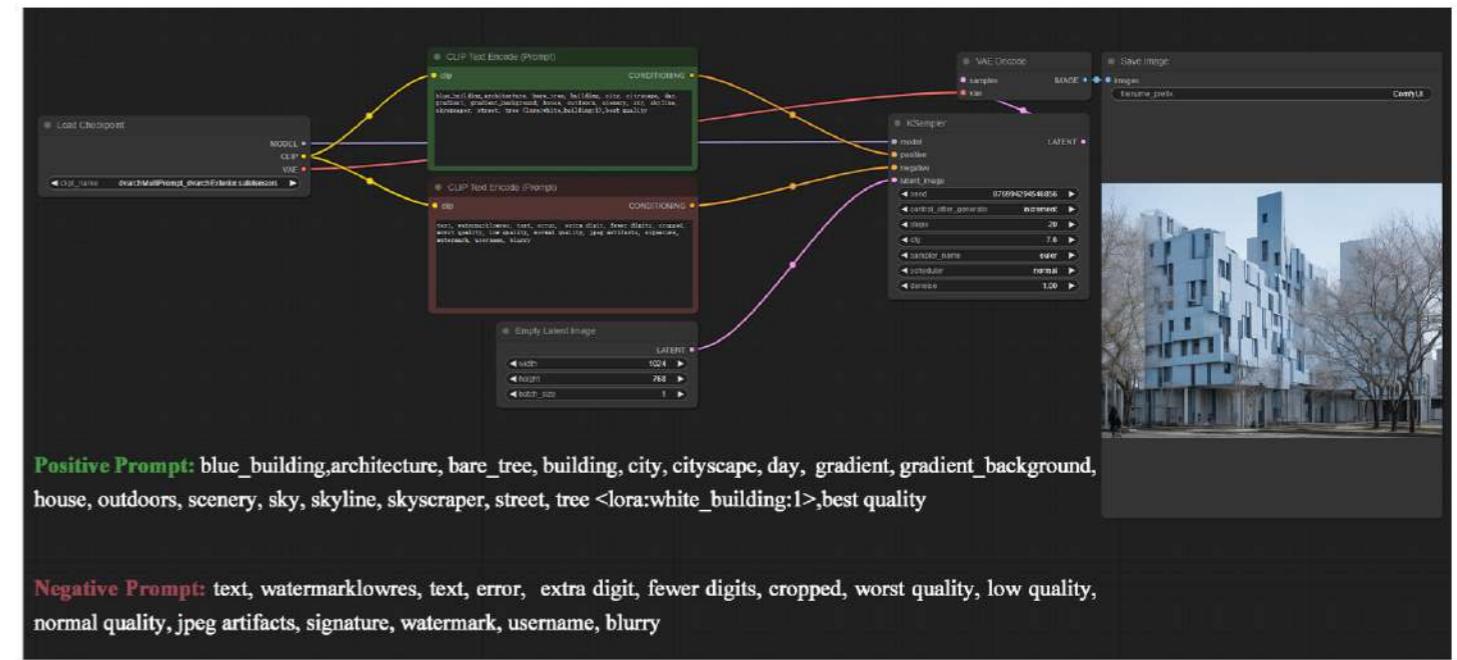
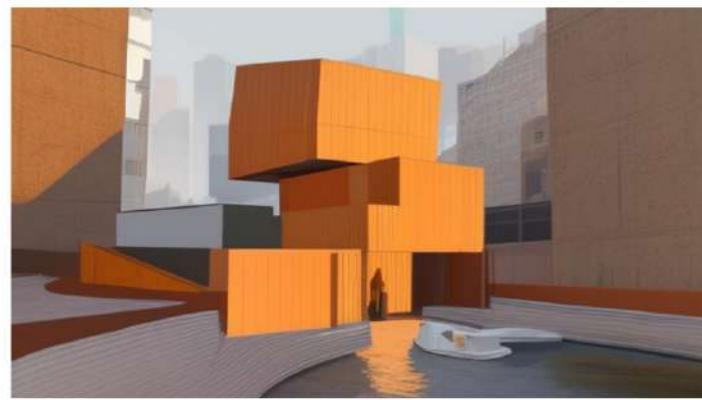
[AI Algorithm-based Architectural Workflow]



Outline Layer: Predefined Display Style for Modeling Software



Semantic Segmentation Layer: SEG Standard Color Chart Based



Stable-Diffusion Workflow: Based on Architectural Checkpoints (left) and Lora Style Transfer (right)

Tutorial Link for Colleagues in the Design Institute: <https://zwj5uynwae3.feishu.cn/docx/JMfOdyG2xoNIREx4FPncLXtDnXb>

Reference/Credit:

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LAN, J. (2014). PETER SLOTERDIJK'S SPHEROLOGICAL SPACE STUDIES: FROM BUBBLES TO CRYSTAL PALACES. *Marxism and Reality*, 60-67.

Drawing/Composition: Sixiong Wang in 2023, Hainan, China

Best regards / Thank you.