

[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

Average Score: 78.86 out of 100

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

AWARDS & PUBLICATIONS

Outstanding Graduation Design - National Transportation Architecture Joint Graduation Design

2021

Tied for Second Place (first place vacant) - 2020 Future Community International Design and
Innovation Competition

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:

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:

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

2020

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

2017

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. 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 Donggong

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)

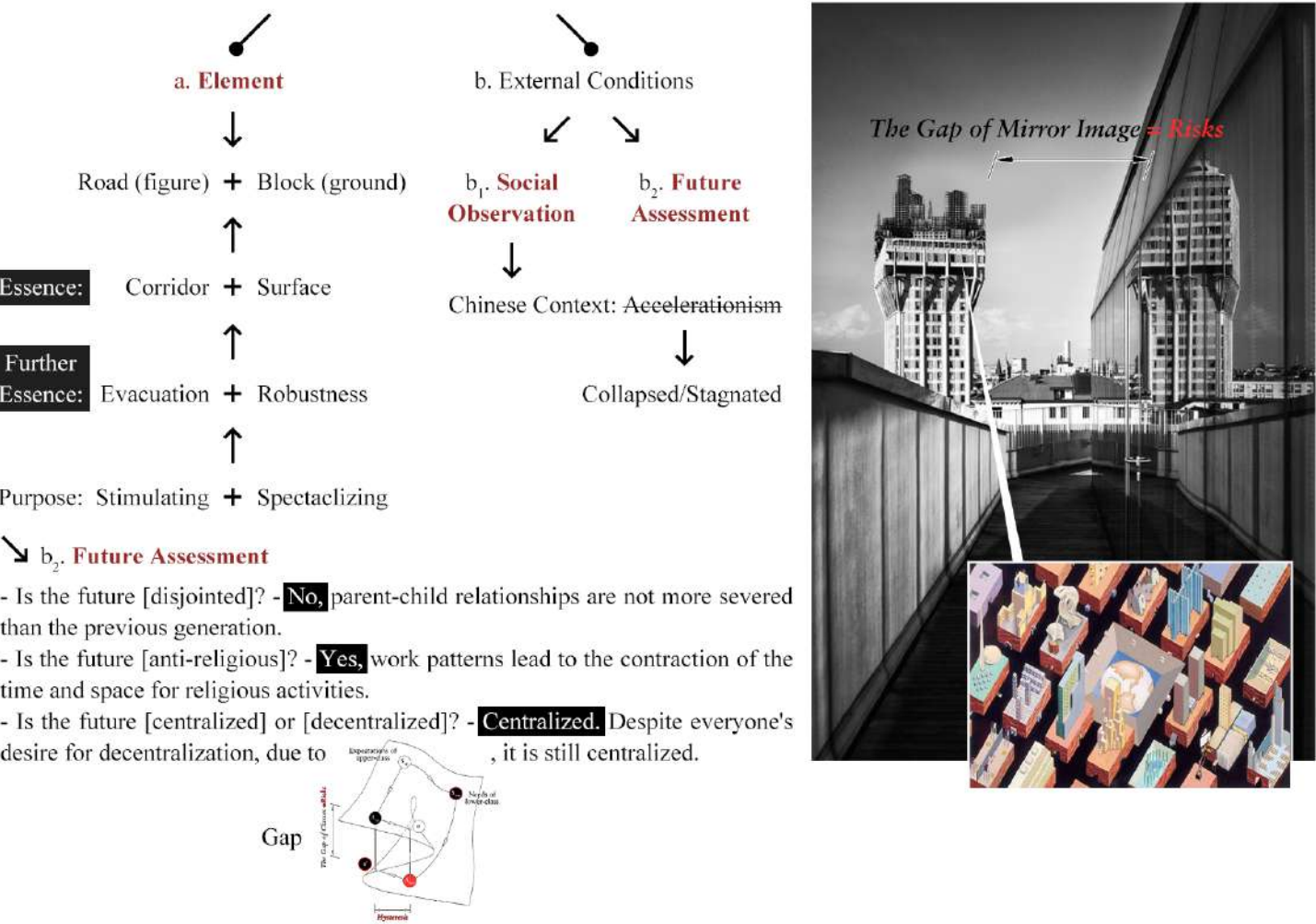
[Self-introduction (of Thinking Pattern)]

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.

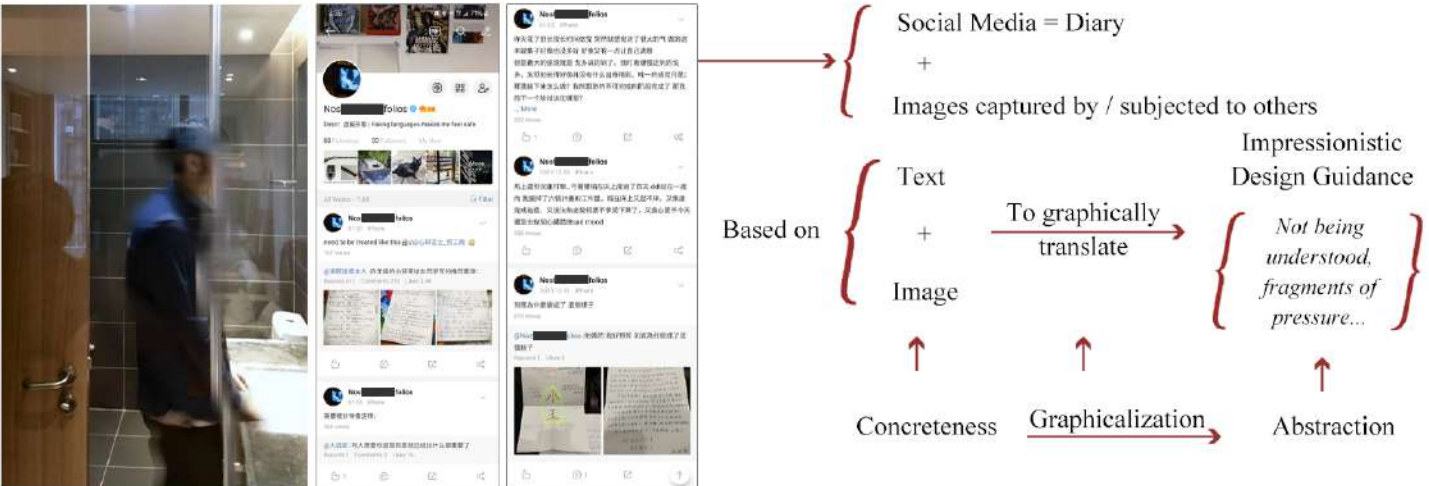
1. Self-formulated Project Task Book / Brief

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



1.2 Condition: Personality Self-introduction

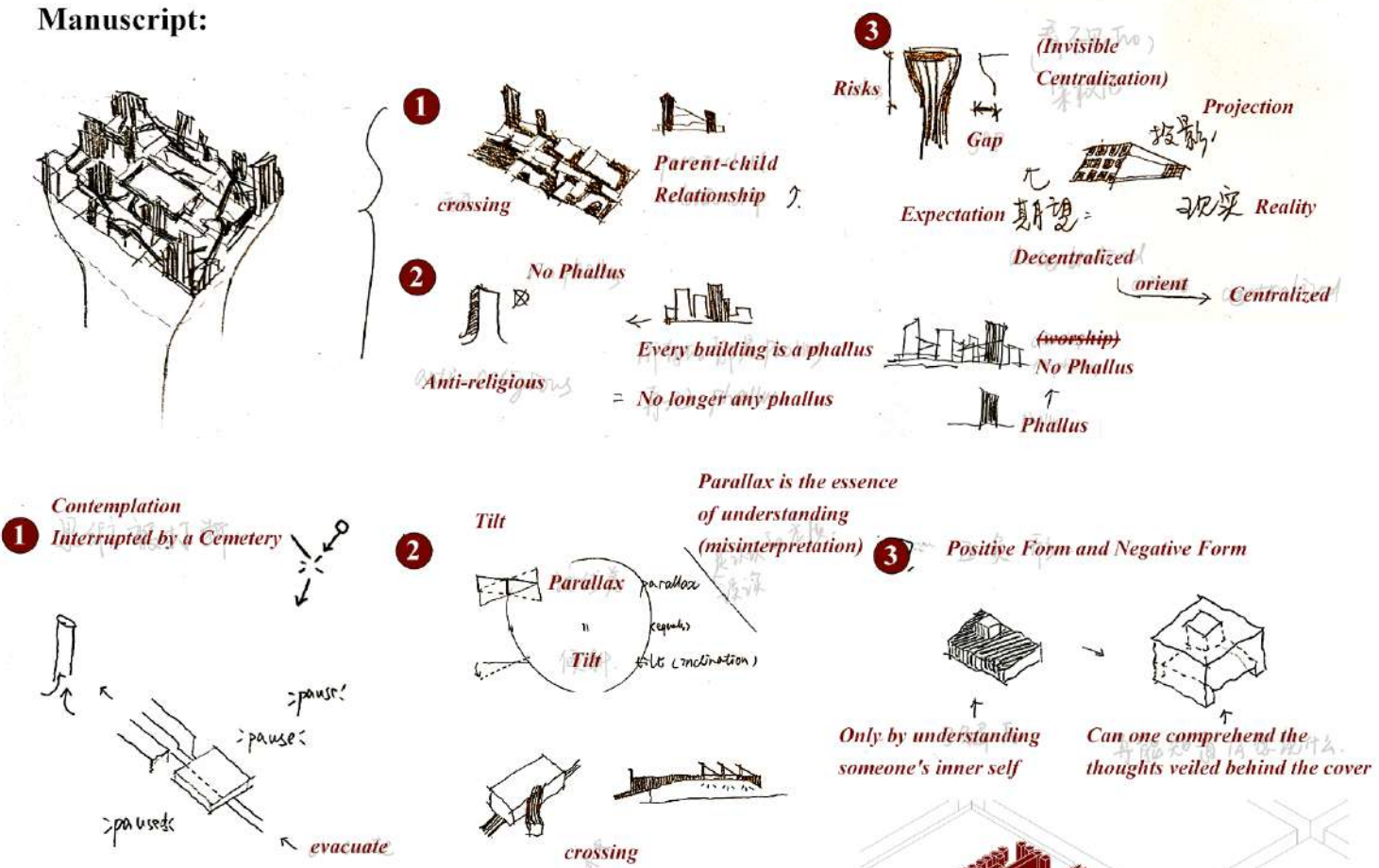
Instruction: extract content from PHYSICAL text or images of the task book and ABSTRACT it.



2. (Abstract) Design Guidance

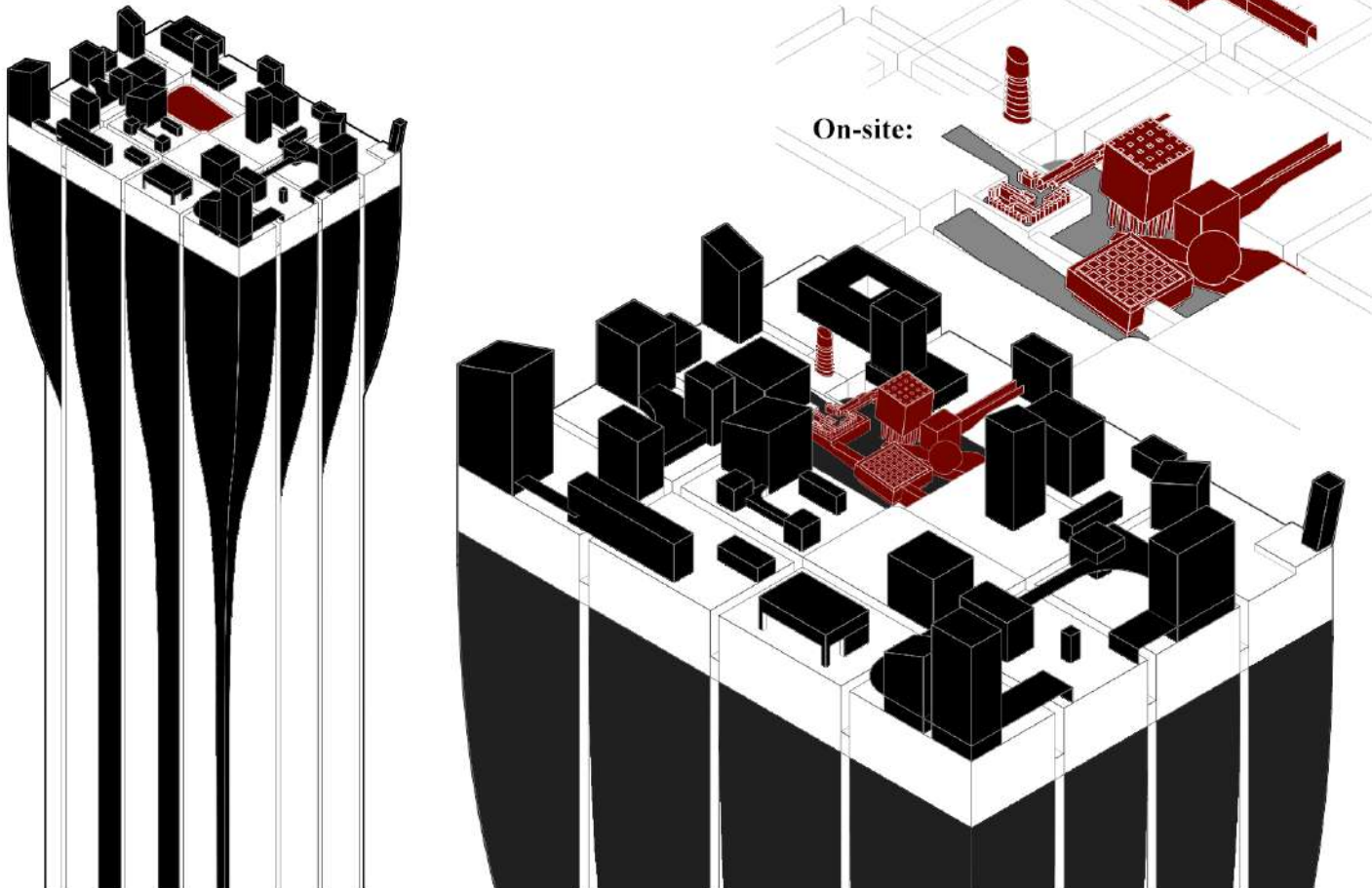
Instruction: hand-sketching INSTINCTIVELY, with original intentions, and even foolishly.

Manuscript:



3. Form Translation

Instruction: RE-MATERIALIZE the abstract guidance.



4. Self-reflection: Analysis of the Formal Core

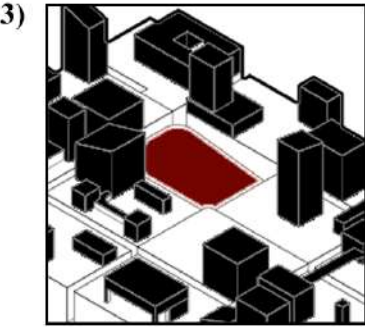
Instructions: In the earlier formative stages, I deliberately required myself to be intuitive and foolish. Afterward, analyze and rethink my core to attribute my design actions.

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

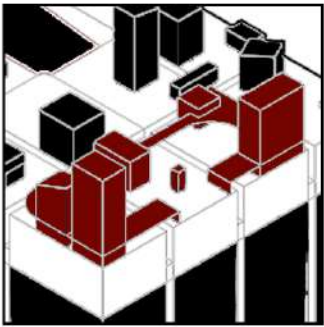
- Answer: This comes from my observations working in the field of architectural design. Clients seem to universally pursue grand spectacles. Street views have been dominated by billboards from commercial buildings.

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"?

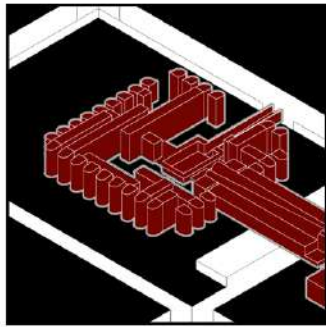
- Answer: I instinctively responded this way. In the upbringing environment of my generation in China, parents often play an authoritative and stern role. **When I entered the workplace, I experienced a similar feeling once again.** Perhaps it's because the senior management in companies is of a similar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

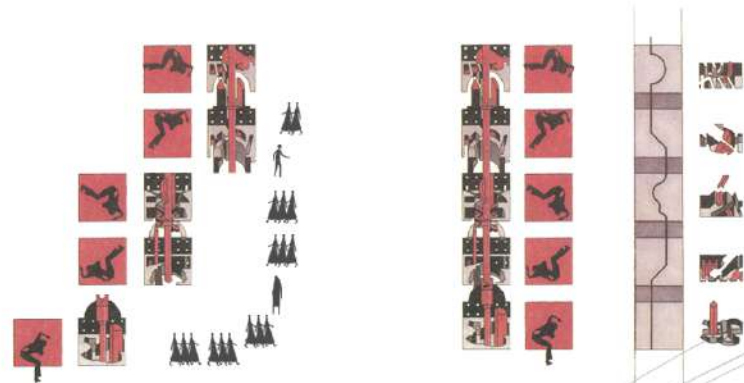
07 Particlizing - Prisons for Low-living Silver-haired P26

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: Tschimi, 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?

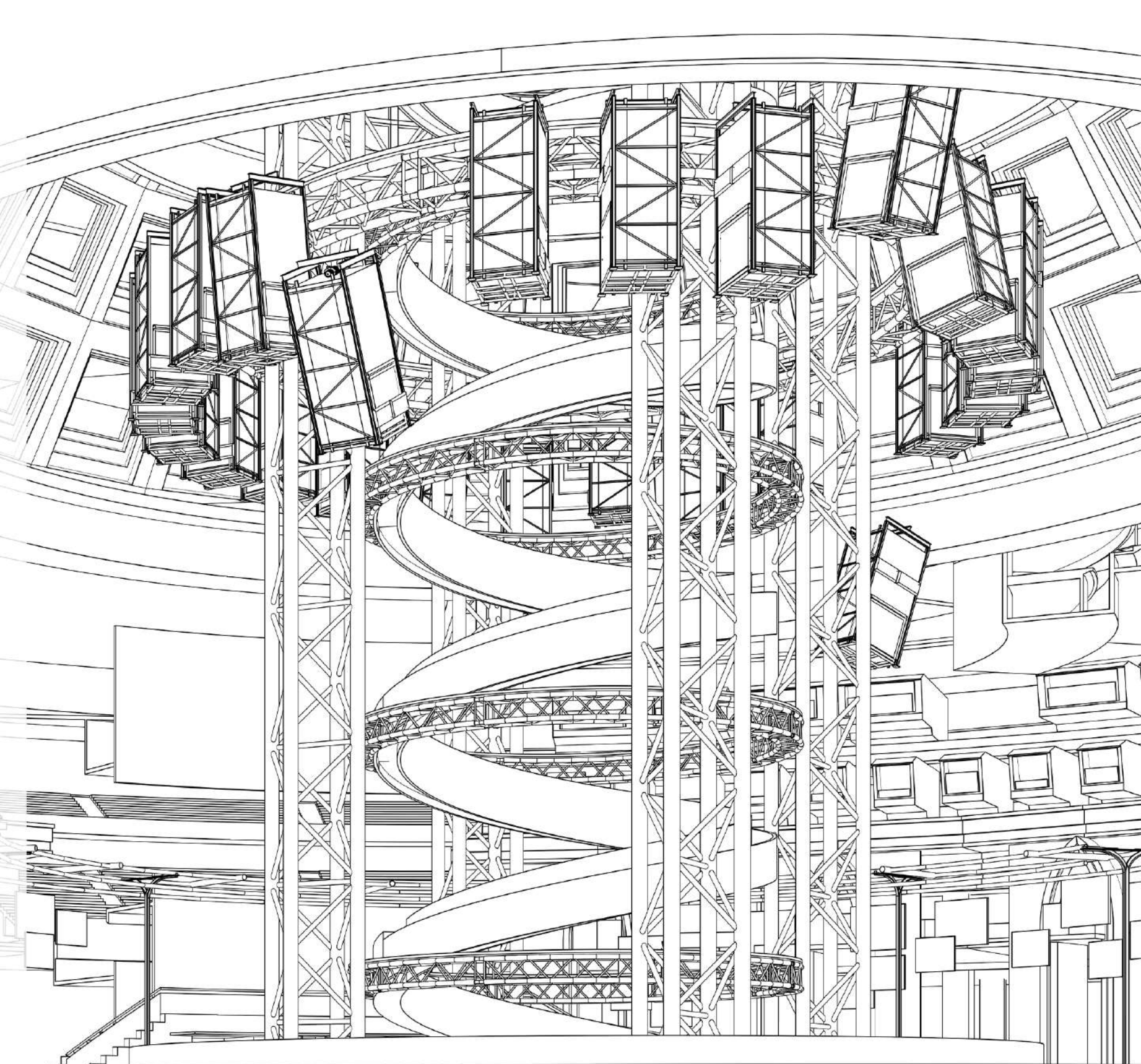
Project Define: Philosophical Archetypes and Techno-Critical
Architectural Narrative Workshop

Location: Paper Architecture

Role in the process: Individual Work

Level of the project: Oct 2021, After Graduation

Instructor: Yu Yan (Yimvyu@qq.com)

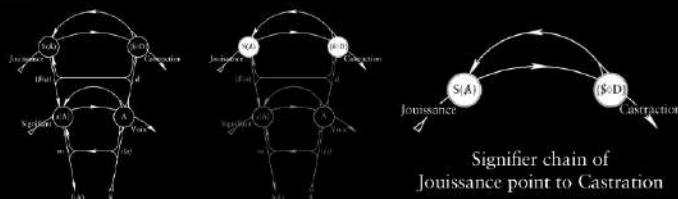


Philosophical Prototype

An irresistible drive



Jacques Lacan
Psychoanalytic theory
Graph of Desire I.4



"... the demand made upon the mind for work in consequence of its connection to the body."

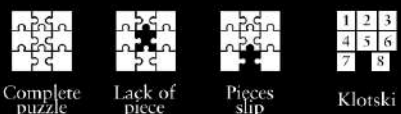
- $(S \diamond D)$ read as a **drive**. Its location is close to the edge of the organ, and it can drive the signifier chain to slip.
- $S(A)$ read as a **signifier of a lack in the Other**. A signifier that signifies fundamentally lack of any possible signification.

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 oar, anus, scopic (gaze) and invocatory (voice).

Lack create movement.

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



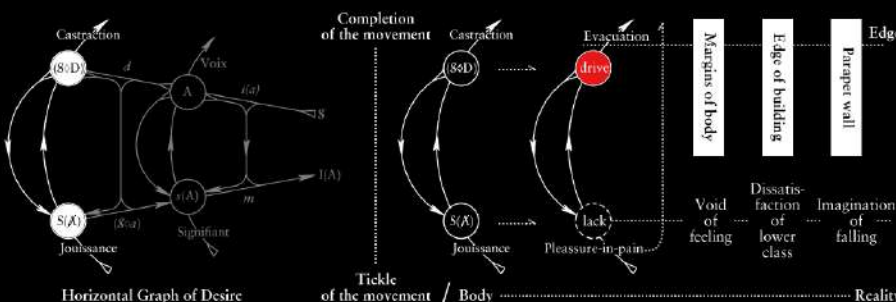
If a puzzle does not lack pieces, it is a stationary picture. When it is missing a piece, it creates movement, like a klotski.

We use an **irresistible $(S \diamond D)$**

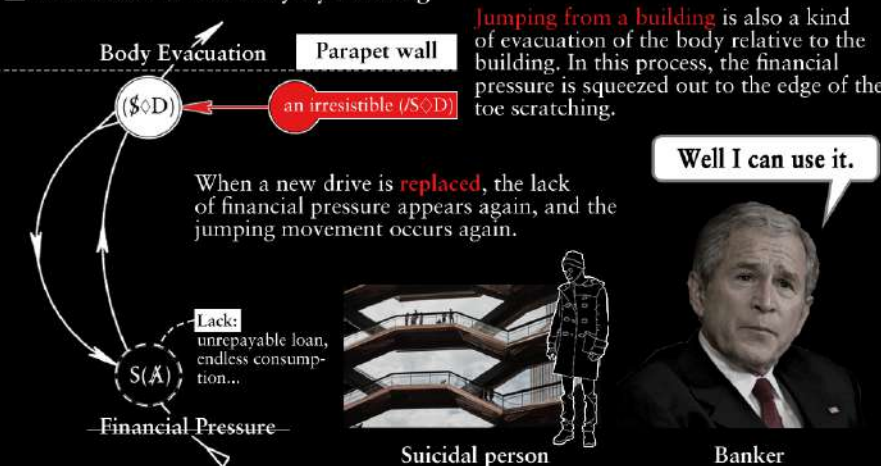


to create a **new $S(A)$** . Then we create slip.

Castration of jouissance by drive

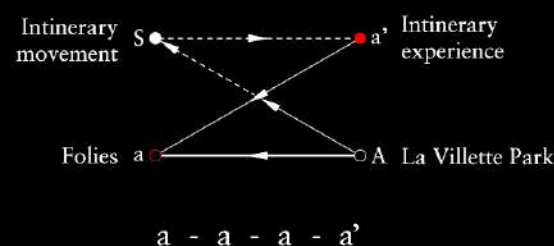


Evacuation of the body by building



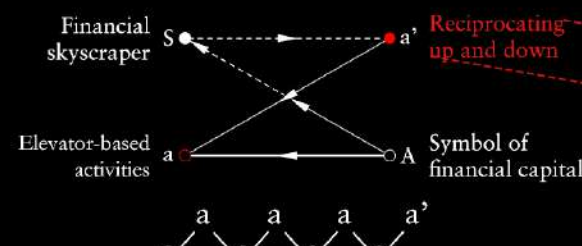
The gap of development

Zigzag Diagram Reading Order: $\circ A$: Design expectation $\rightarrow \bullet S$: Actual development direction $\rightarrow \circ a$: Experience expectation $\rightarrow \bullet a'$: Actual experience



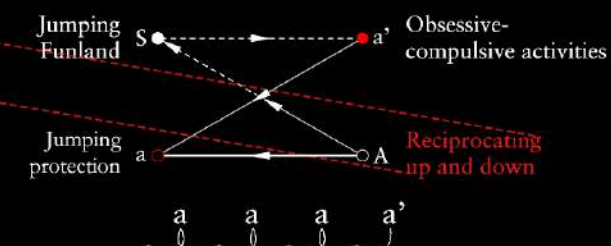
(Continuous experience a')

Tschumi's deconstruction of design "A"



(Reciprocating experience a')

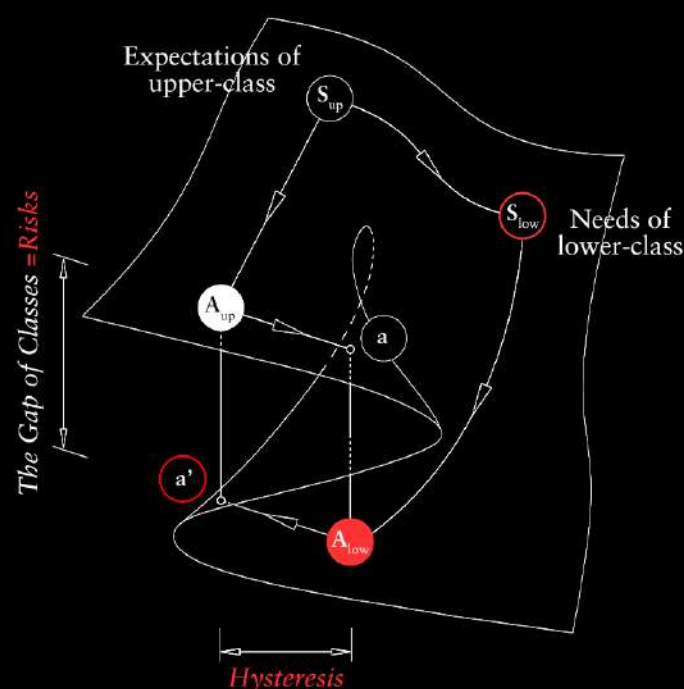
Deconstruction of financial capital "A"



(Jumping/be-saved experience a')

Deconstruction of pressure releasing "A"

The gap of classes/Elevation difference in view

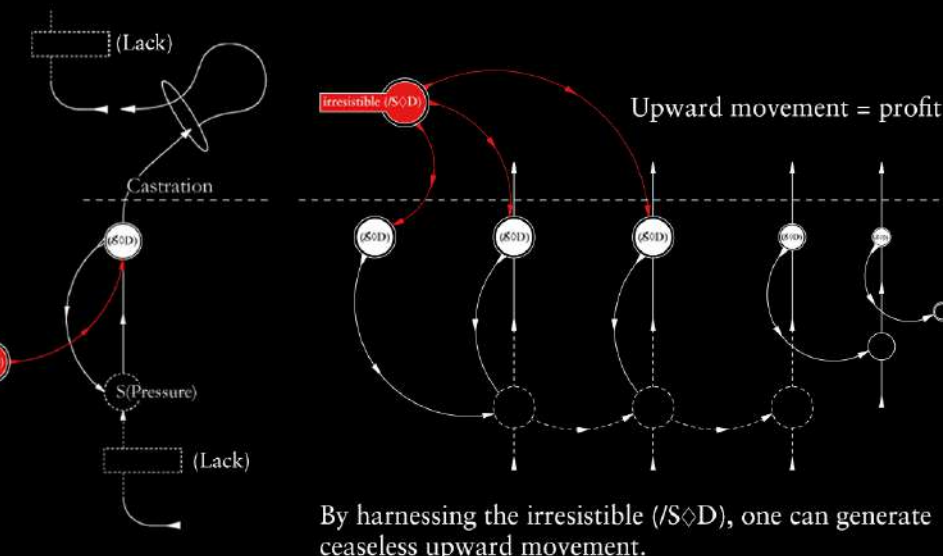


(Despite the upper class's earnest desire to enhance the well-being of more people, additional means of improvement are often misinterpreted as negative scenarios of inefficiency in the context of social class division, which in turn carries implicit risks.)

Obsessive-Compulsive Disorder

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

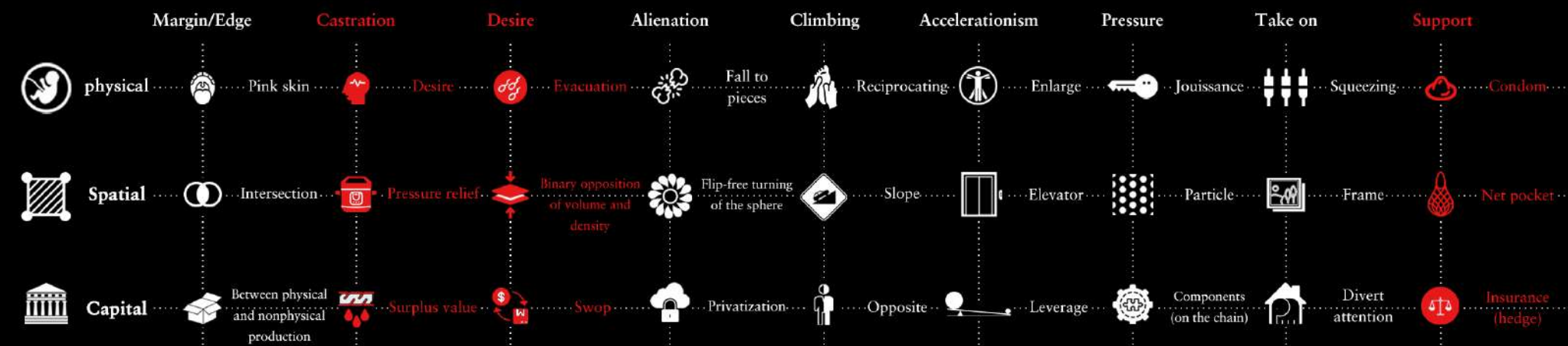
This, in turn, compels the body to chase pressure relentlessly, much like an OCD.



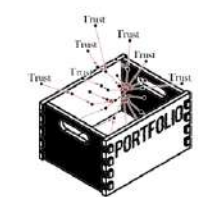
(Homogeneous) Upward momentum slot machine



Analogy diagram



■ Analogous Narrative



Bankers
synoptically hide the TRUST
in a fund portfolio box



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



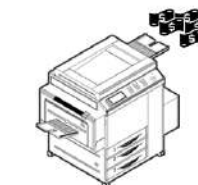
Fund portfolios
were snapped up
by investors



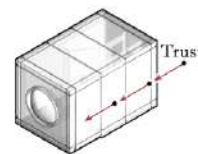
Insurance companies
BET
CDO would not go wrong



The collapsed capsules
were hidden
in the bottom of the pit



Money printing machine:
serving as a financial risk
safety net



The end of trust
is residence (capsule)



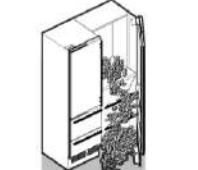
Sub-Prime Mortgages
were used to build
more capitalist edifices



Hedge insurances
were tailor made
by rhetoric



Investors
BET
CDO would go wrong



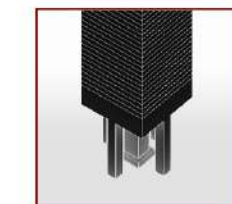
Cash is frozen
in a refrigerator



Net weaving worker:
threads originate from
the spider



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



1978y Hurricane Ella
Citigroup Center
structure was threatened



2016 Luke Atkins
skydived at 25000 feet
without parachute



Caesars Palace interior:
gambling against two side



"Let's visit
the Jumping Park for
some excitement."



The capitalist edifice
hangs on a
beautiful big net

Stage 1

Stage 2

Stage 3

■ Philosophical Form Generation Chain

Prototype Extraction Spatial Translation



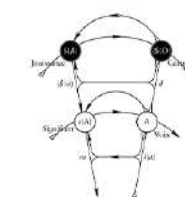
Turbo-Drop
Amusement park



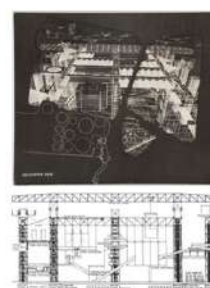
Sphere Space Theory
Peter Sloterdijk



The Drawbridge
Piranesi
1749-1750



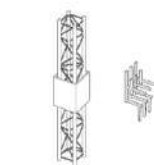
Psychoanalysis
Jacques Lacan



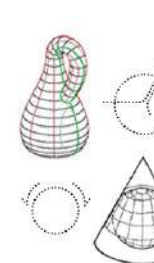
Fun Palace
Cedric Price
1964



Weaving Machine
After the first industrial
revolution; 1760s



Truss column
and seat



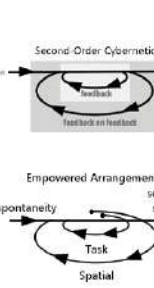
Deformed Sphere:
extrusion movement



Scattered, Endless Stairs:
evoking disturbance

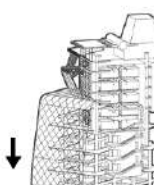


Phallus
and condom

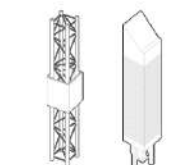


Net Pocker:
catch jump off
self-slayers

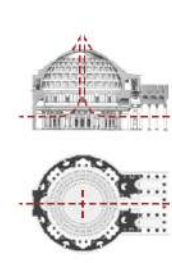
Funland / Cybernetics:
compulsive spontaneity



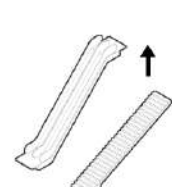
Upward-rolling threads and
downward-hanging Nets



Citigroup Center
(corner) structure



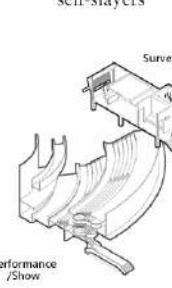
Pantheon Section:
internal upward extrusion



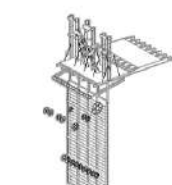
Increasingly Steeper:
accelerationism



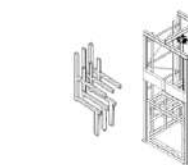
Net Pocker:
catch jump off
self-slayers



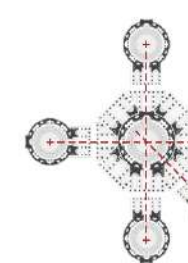
Scenic Production:
action control



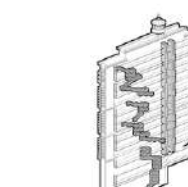
Flywheel:
Reciprocating ascent



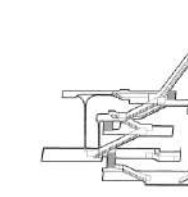
Elevator
up and down frequently



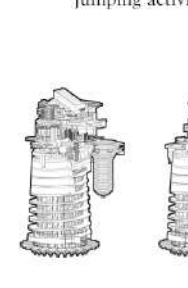
Multiple Implicit Spheres:
multi-axial centrality



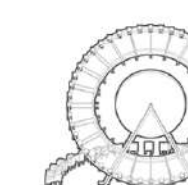
Two Sets of Flows:
workers' stairs
and bankers' elevators



Jumping Protection:
ensures the circulation of
jumping activities



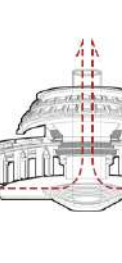
Perspective Deception:
stability = imbalance



Manpower Consumption:
queuing/sequentially
entering the factory



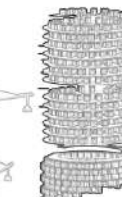
Turbo-Drop Elevator
sent visitors to hotel room



Casino Gambling Hall
indoor central hall;
surround the elevator



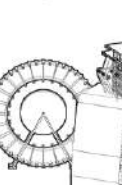
Jumping Machine
neutralized danger;
guide visitors to the top



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

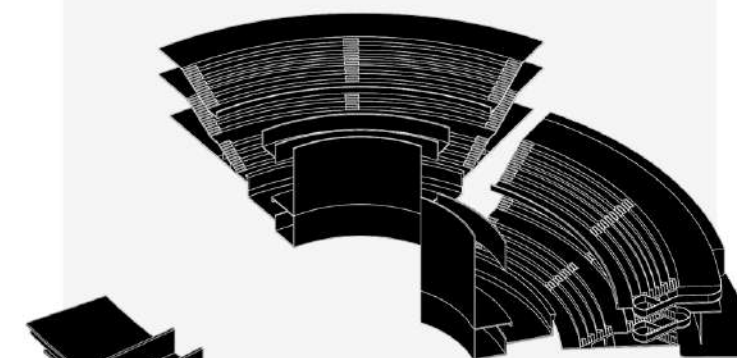


Eccentric Casino + Theater
imperceptible climbing variation;
induce "spontaneous" climbing

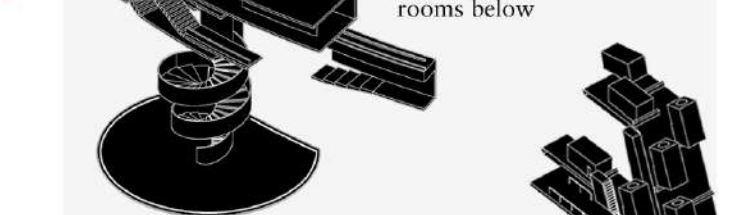


Weaving Factory
+ Ferris Wheel Elevator Dormitories
taxation / providing net pocket

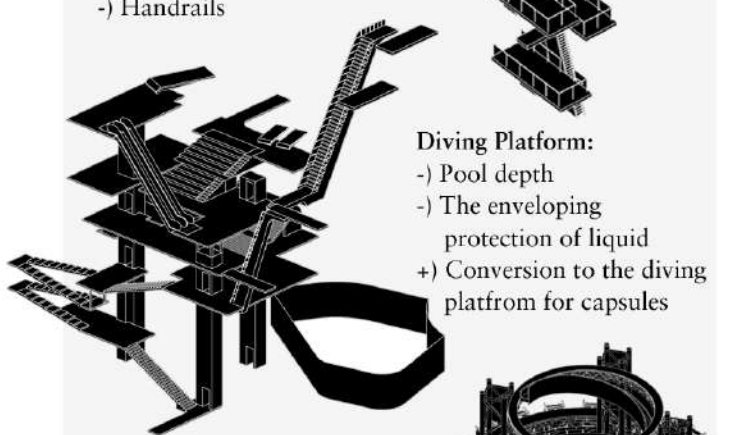
■ Variations of Climbing Forms



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



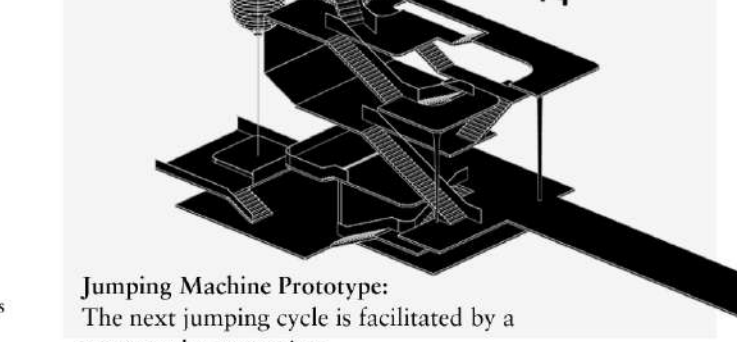
Spiral Staircase and
Scenic Bridge Corridor:
+) Beautified to attract
visitors to climb
-) Handrails



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



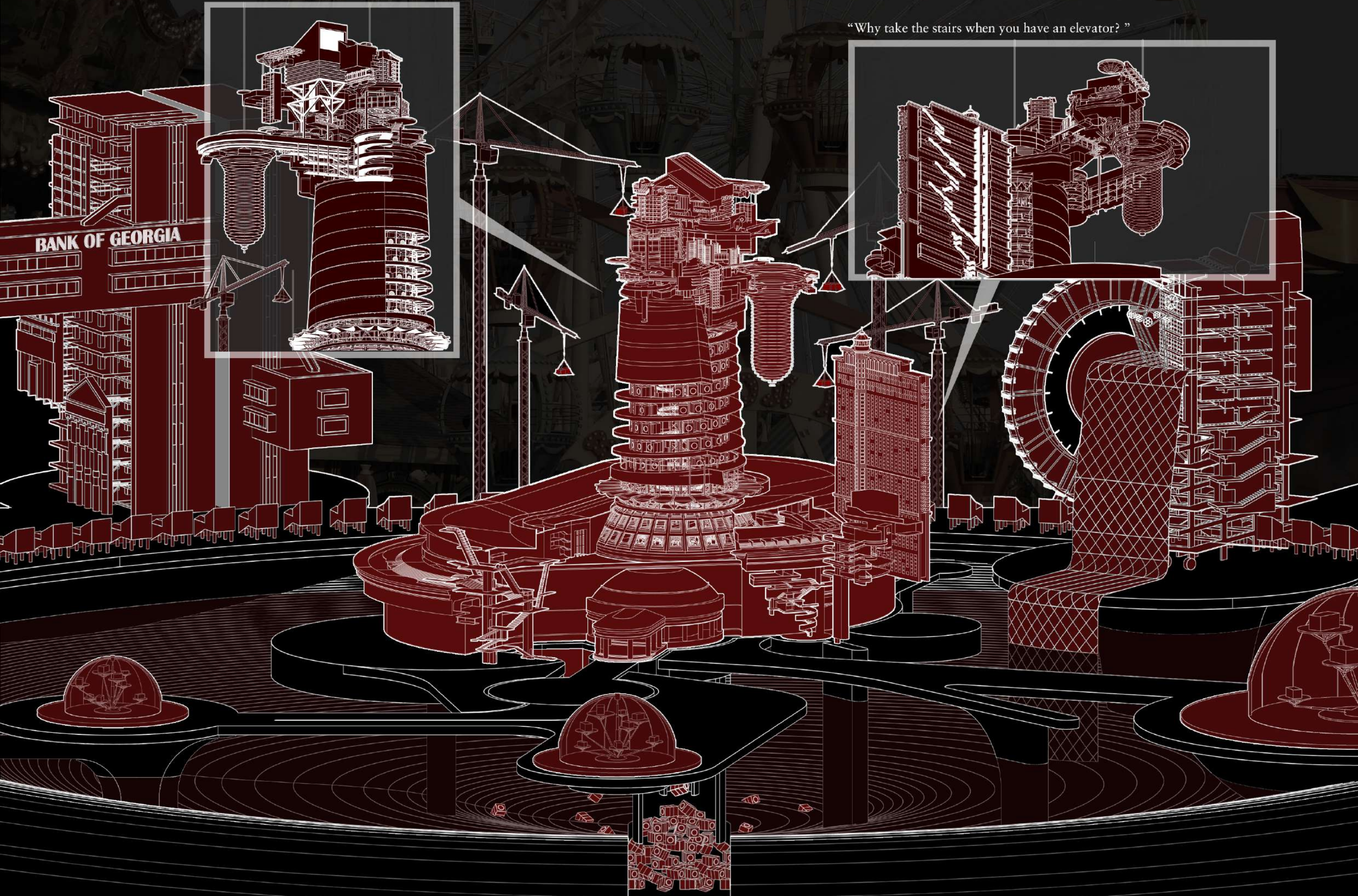
Turbo-Drop Elevator:
-) Modern workers' reliance
on elevators;
-) Low failure rate of
elevators

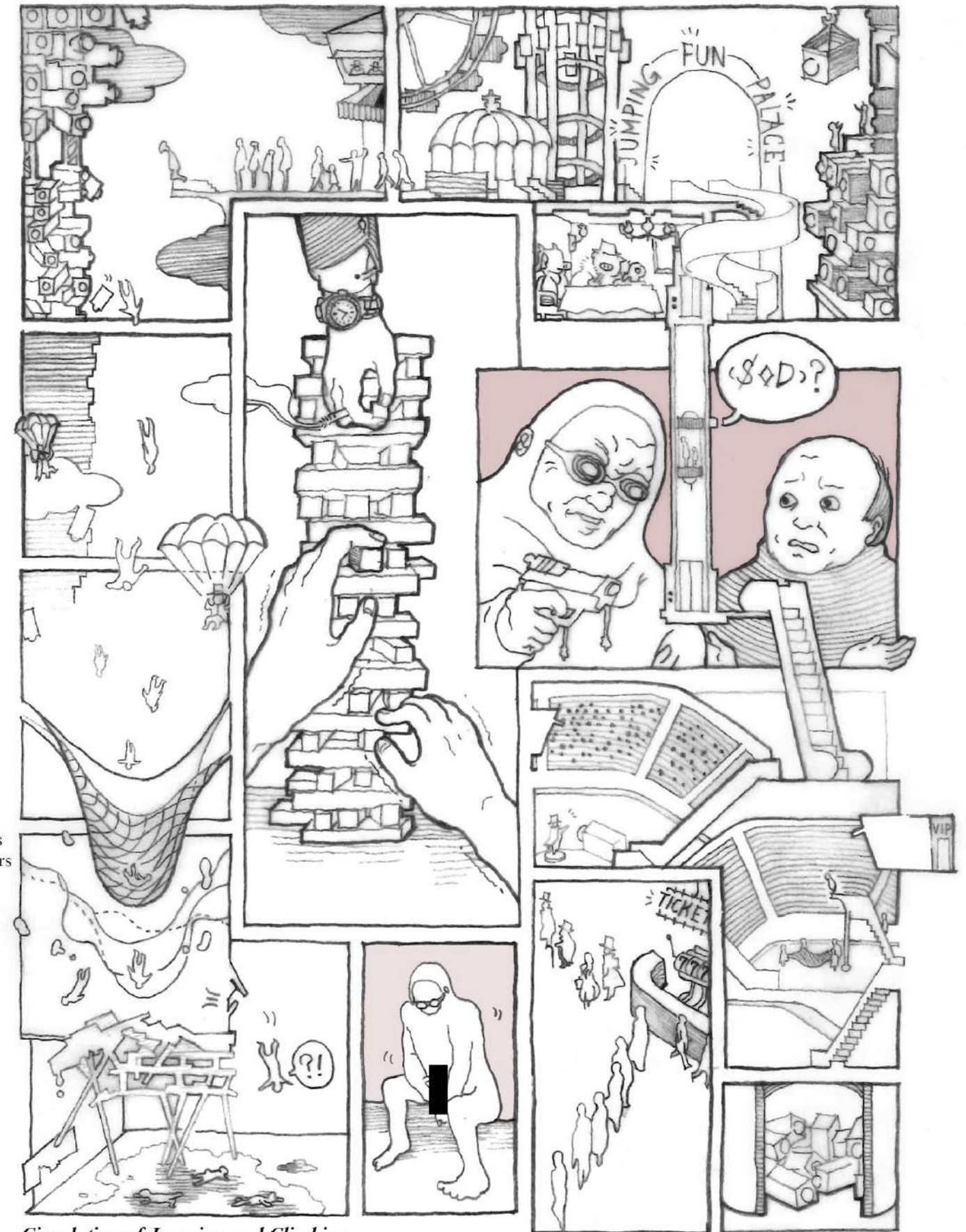
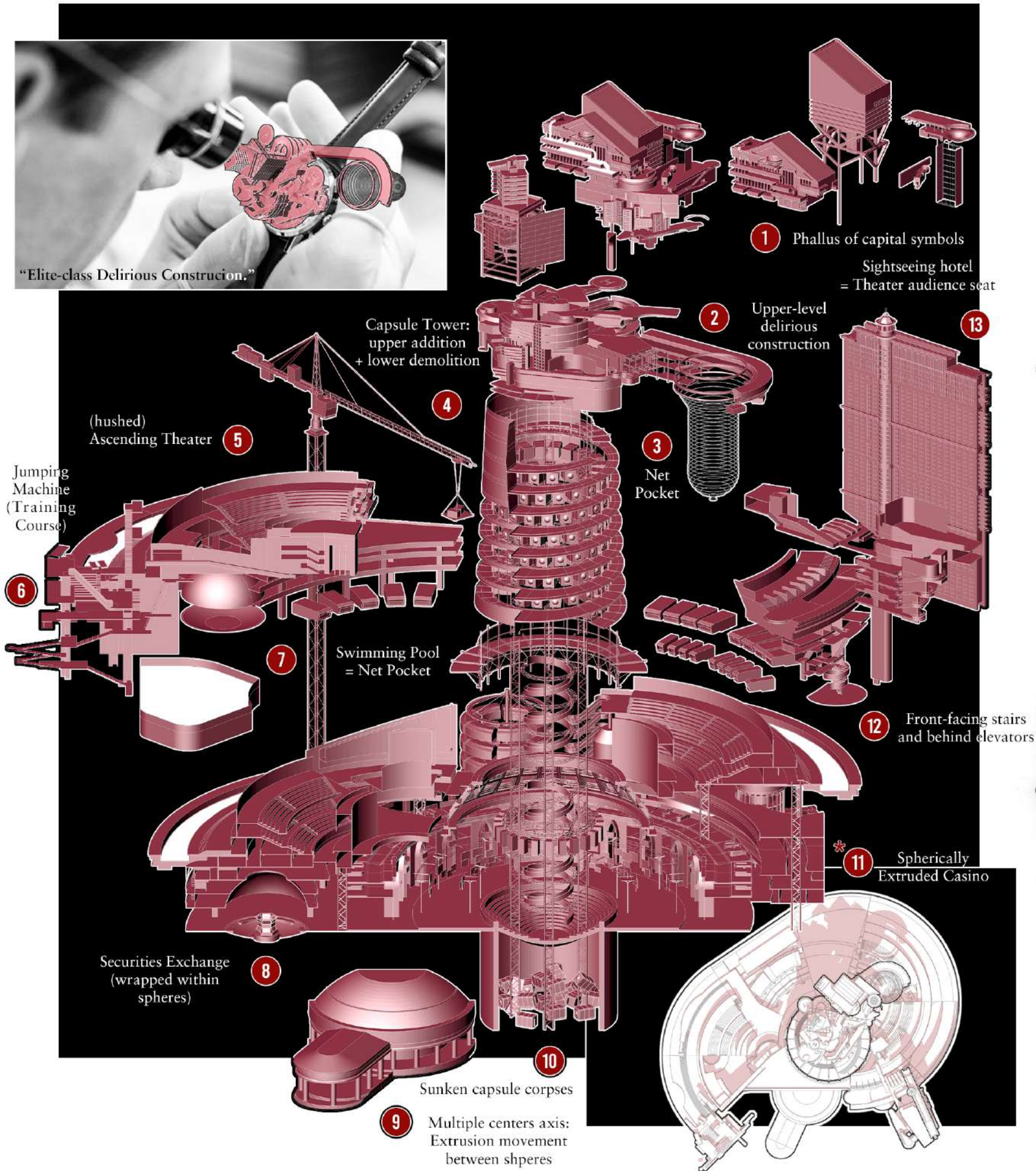


Jumping Machine Prototype:
The next jumping cycle is facilitated by a
trustworthy protection

"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'.

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.

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.



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

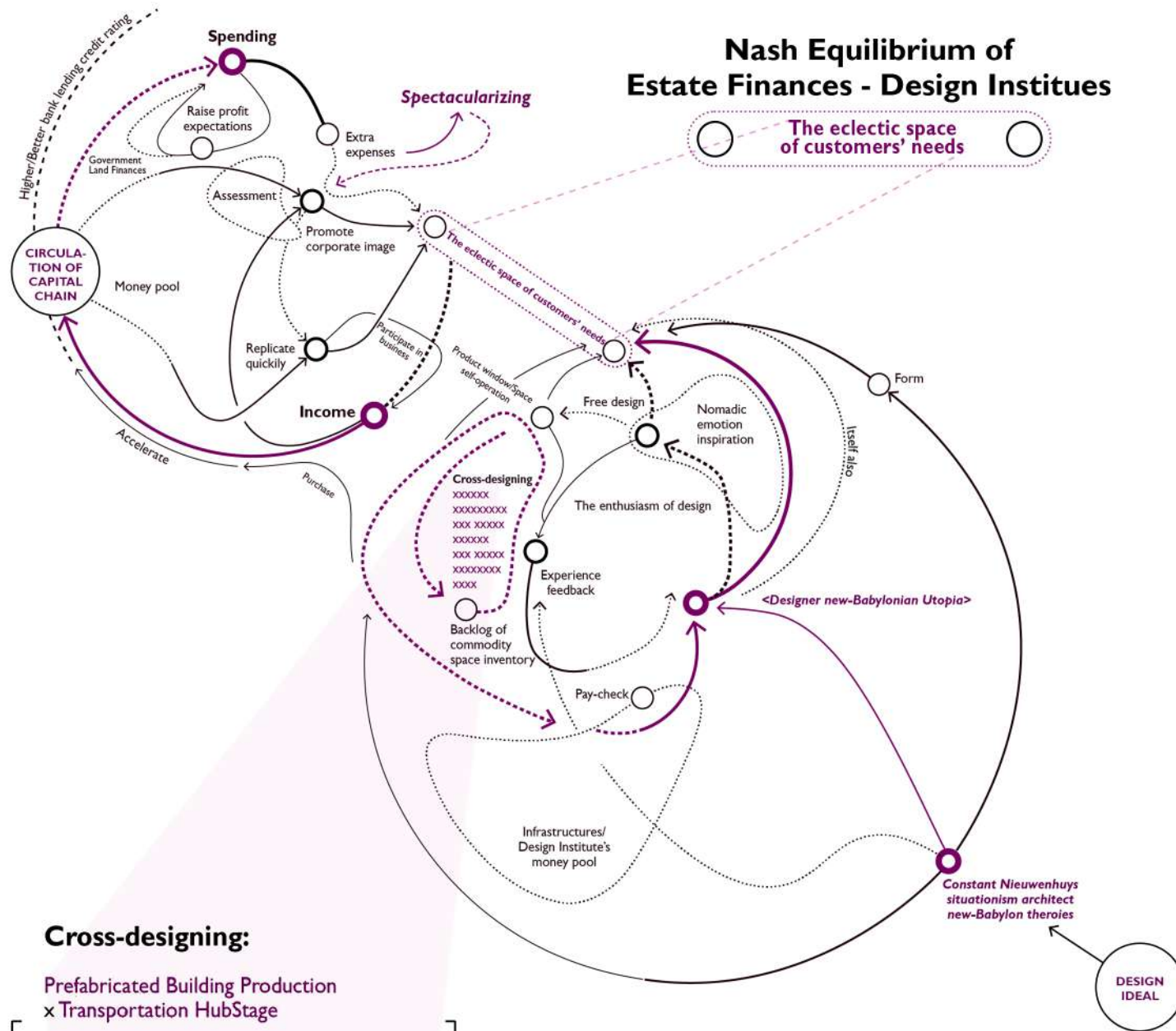
Level of the Project: Aug 2022, after graduation

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:

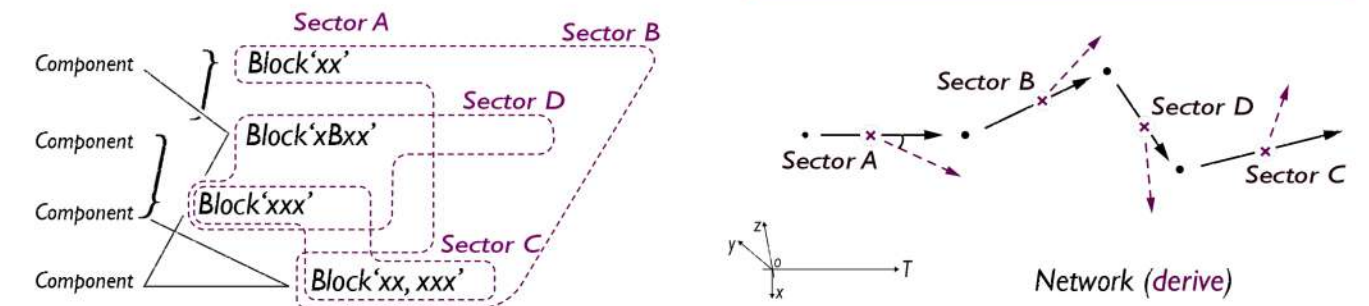
- Prefabricated Building Production x Transportation HubStage
- Medical Space Design x Residence
- VR Space Design x Virtual Prison
- Entertainment Space Design x Supermarket
- Live Streaming x Factory
- /// Broadcasting Room x Factory
- Design with Experiment x Exhibition
- Data Center x Land Art Generator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

1. Targeted Strategy: Crossing-designing

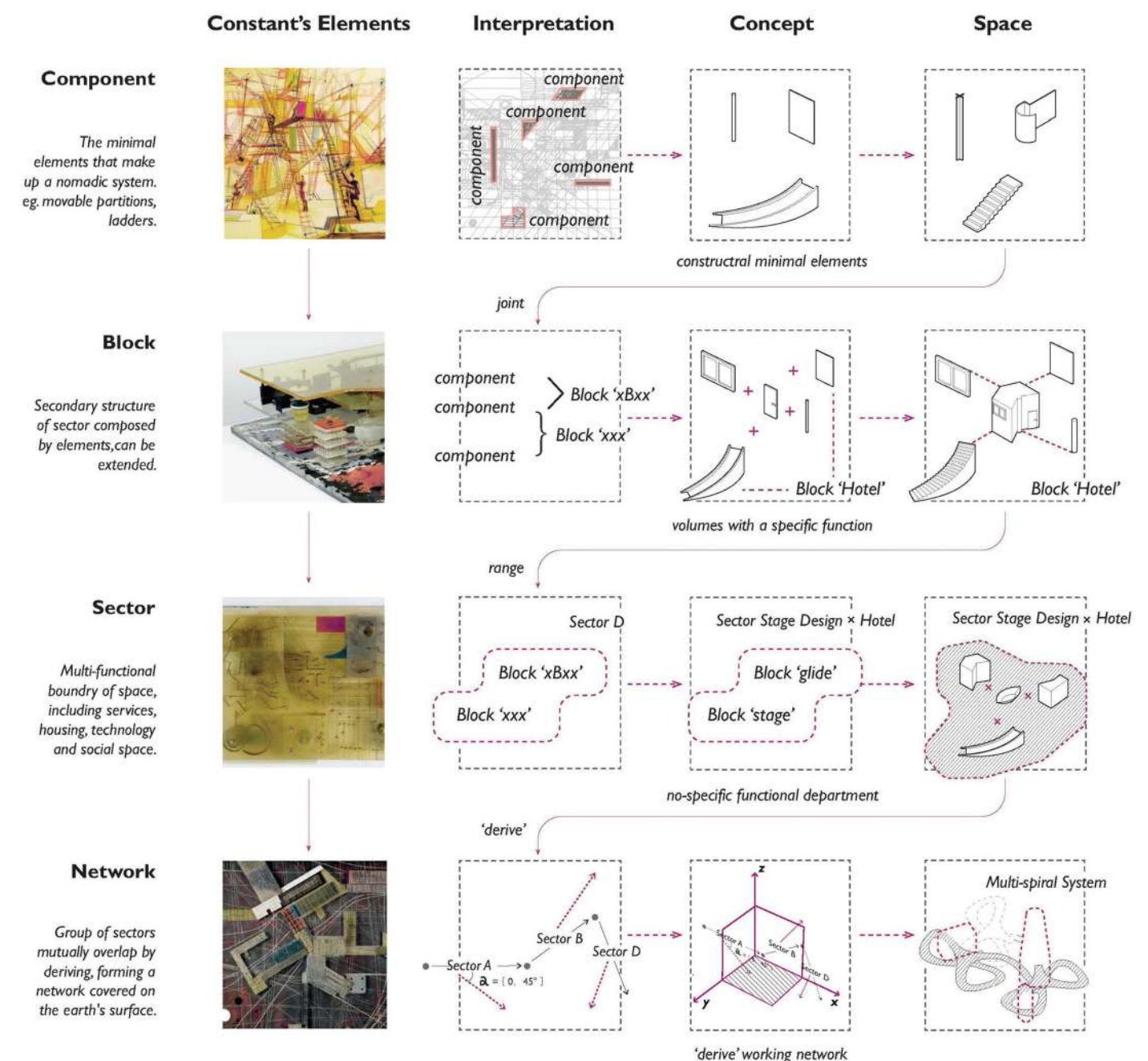
Cross-designing can provide a spatial definition that escapes the confines of existing real estate vocabulary. Shifting toward an anti-real estate lexicon can open up more possibilities for space to depart from the conventional and establish new functional definitions.

Constant's new-Babylonian Nomadic Theory

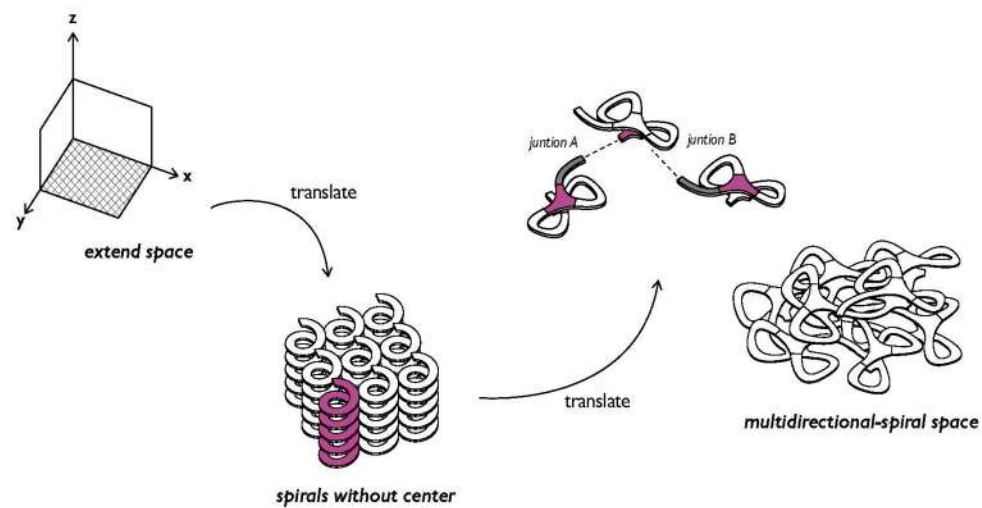
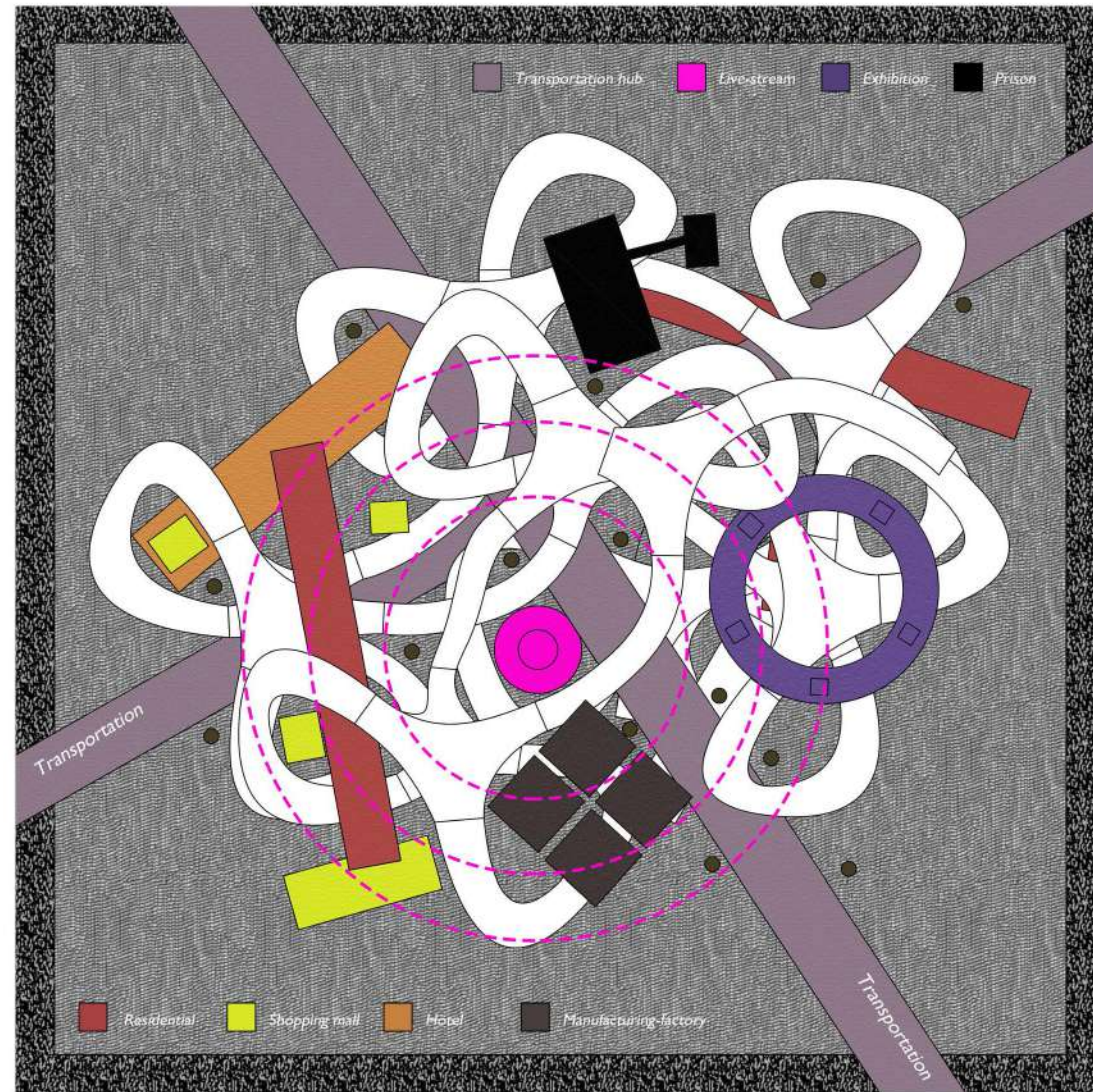
2. Overall Strategy: Nomadic City of Drift



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.

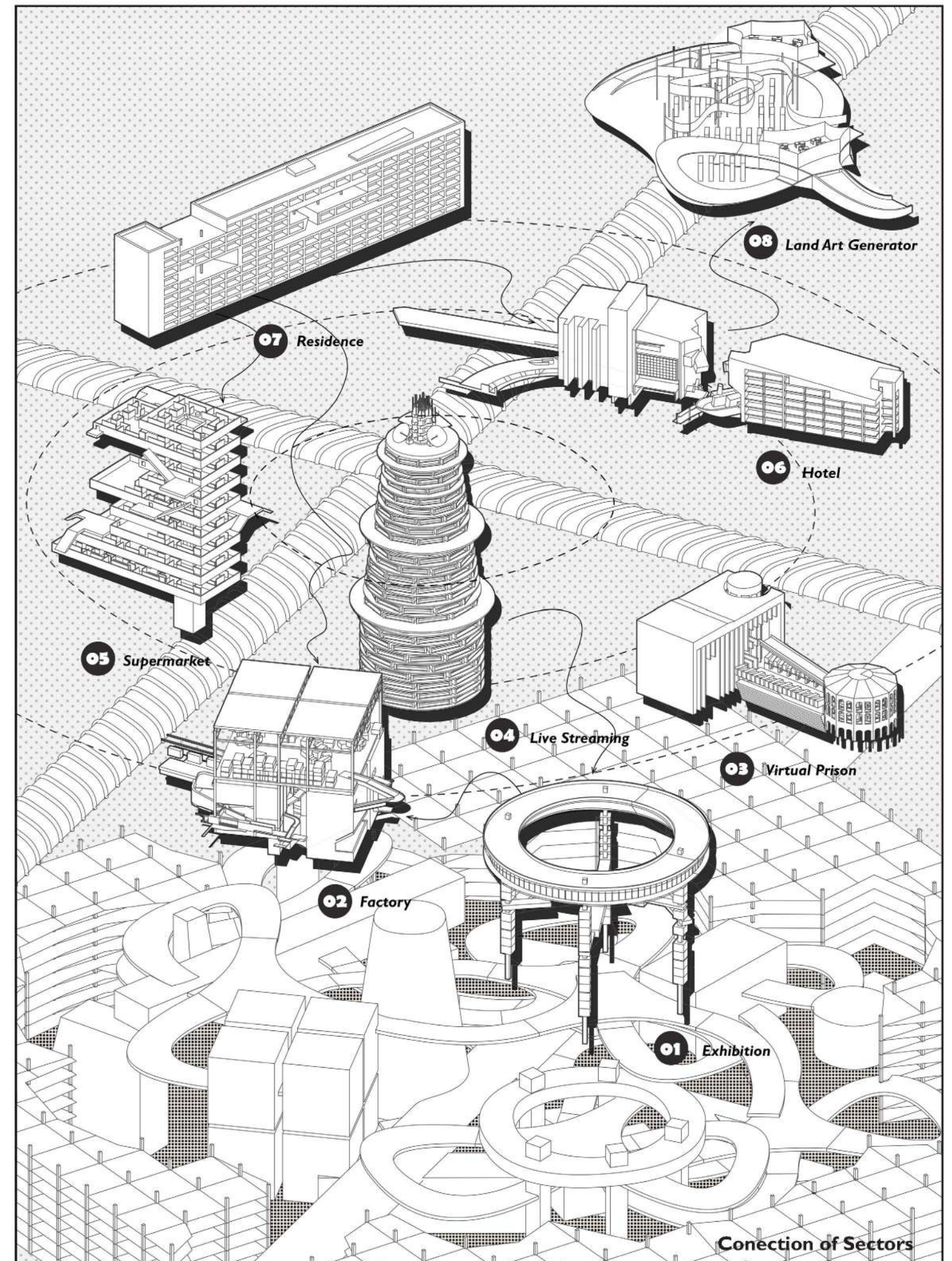


■ Design Institutes' Expansion of New Babylon Theory



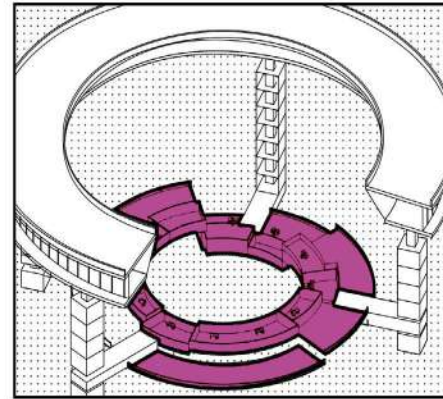
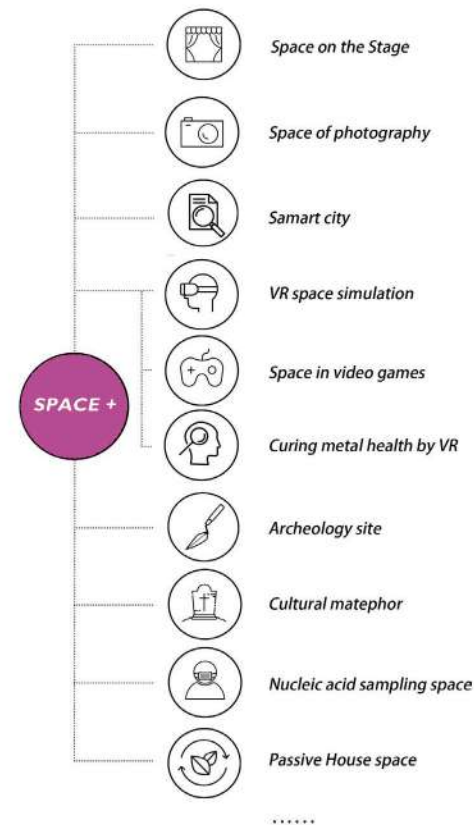
□ Translation at the Network Level - Unite Sector Libraries with Multi-Centric

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.



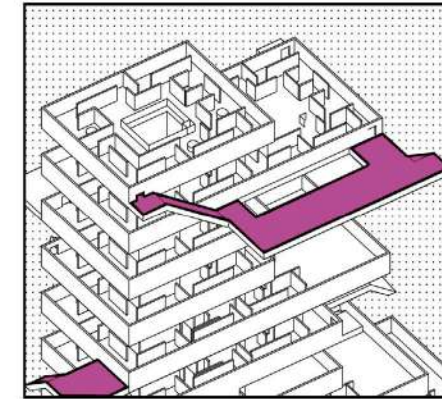
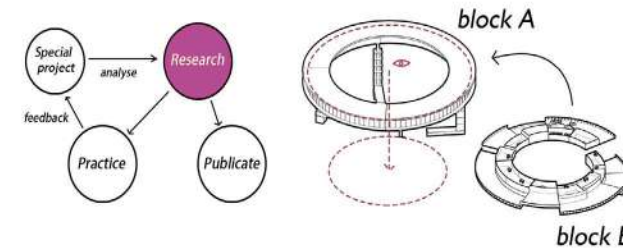
Cross-Designing Products in New-Babylonian Utopia

The possibility of the space design



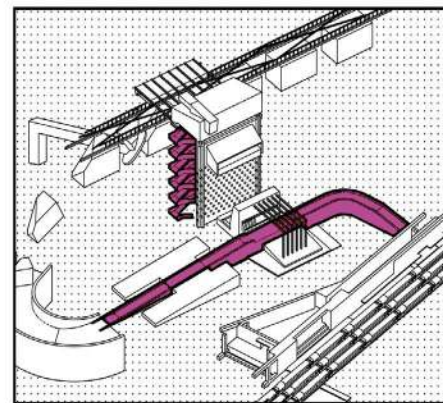
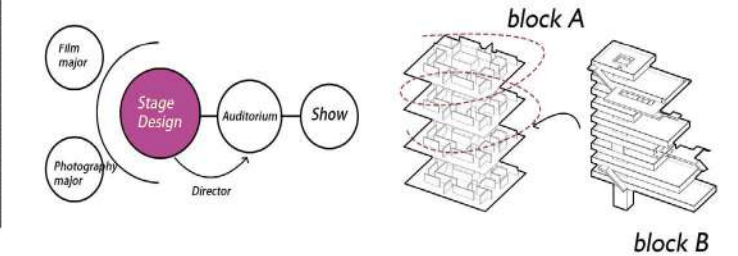
01 Design with Experiment x Exhibition

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.



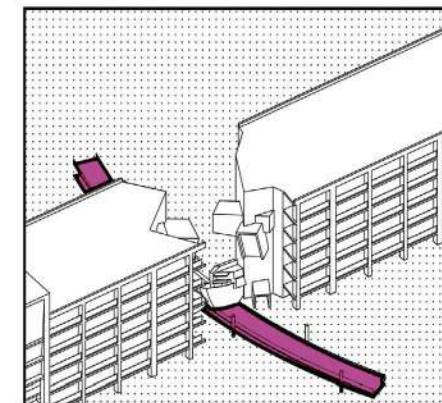
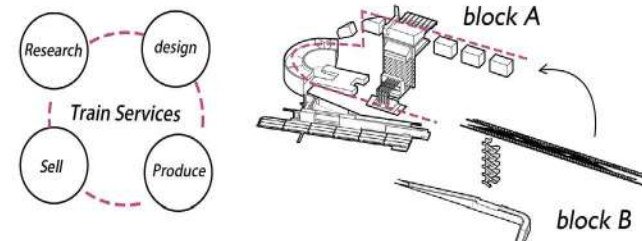
05 Entertainment Space Design x Supermarket

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.



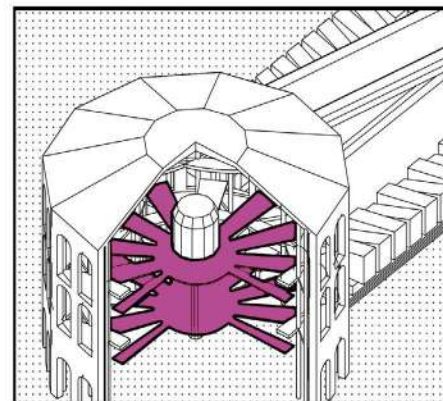
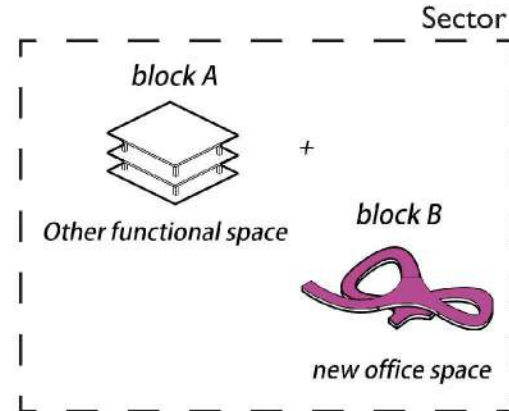
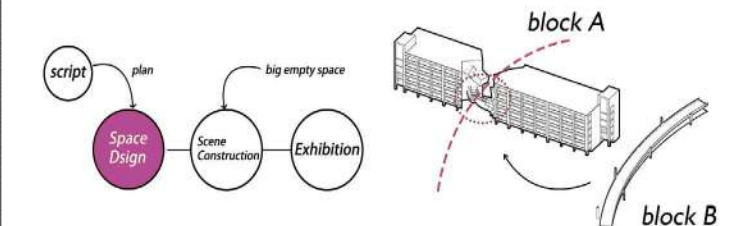
02 Prefabricated Production x Transportation Hub

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.



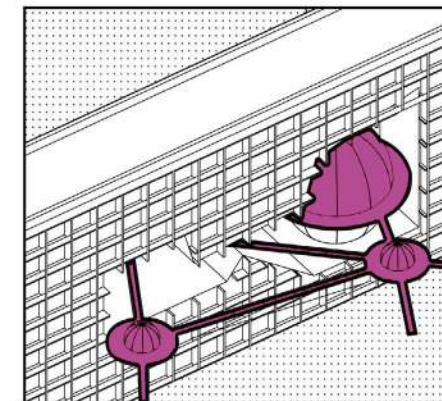
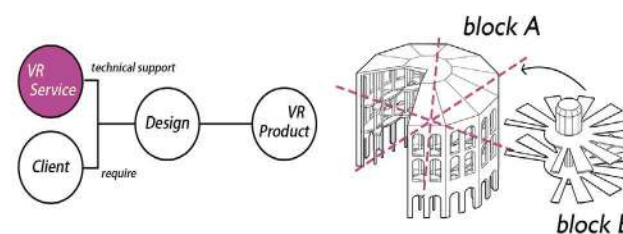
06 Stage Design x Hotel

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.



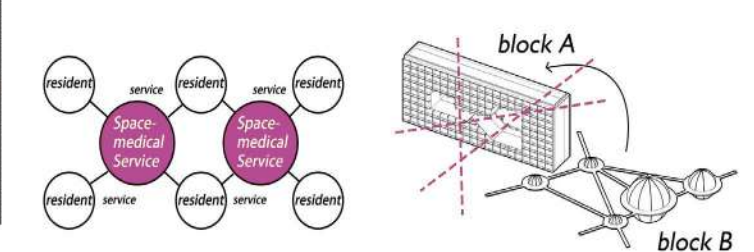
03 VR Space Design x Virtual Prison

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.



Translation at the Sector level

Joint component libraries with topological relationship

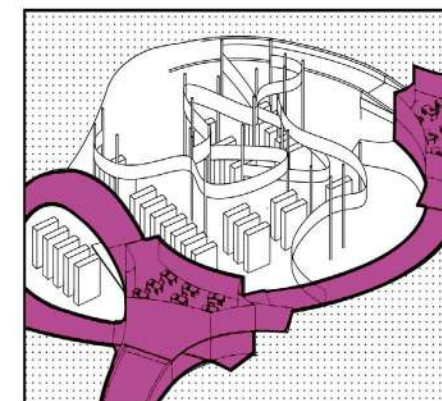
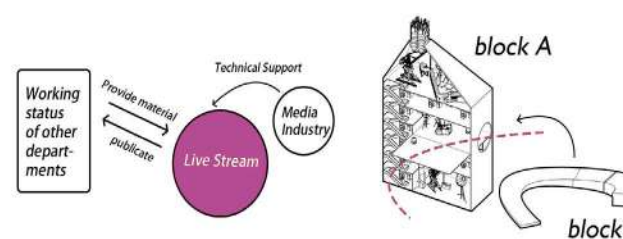
The scope of space design should be broad. Compared with traditional design buildings, we should try to expand its boundaries and integrate space office design into occasions that can be seen everywhere in life.

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.



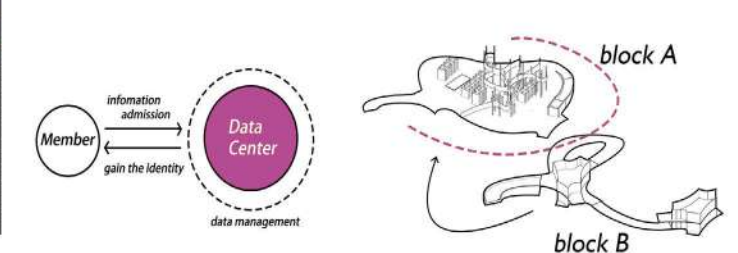
04 Live Streaming x Factory

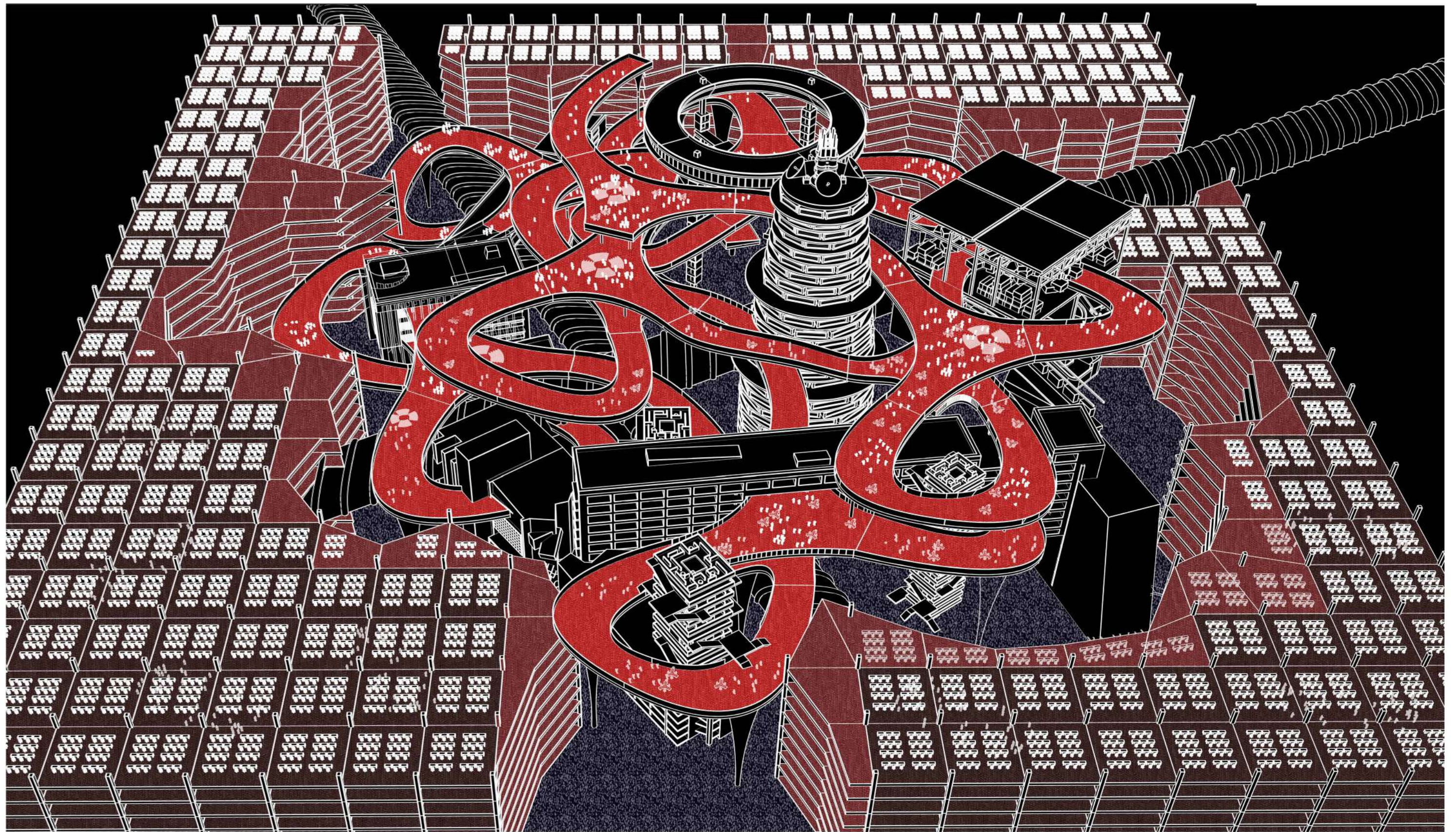
The Live Tower is a separate large propaganda building. It is located in the middle of other space office areas. It records the work process and space works of each group of employees every day and broadcasts it to the outside world to promote the entire company.



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.



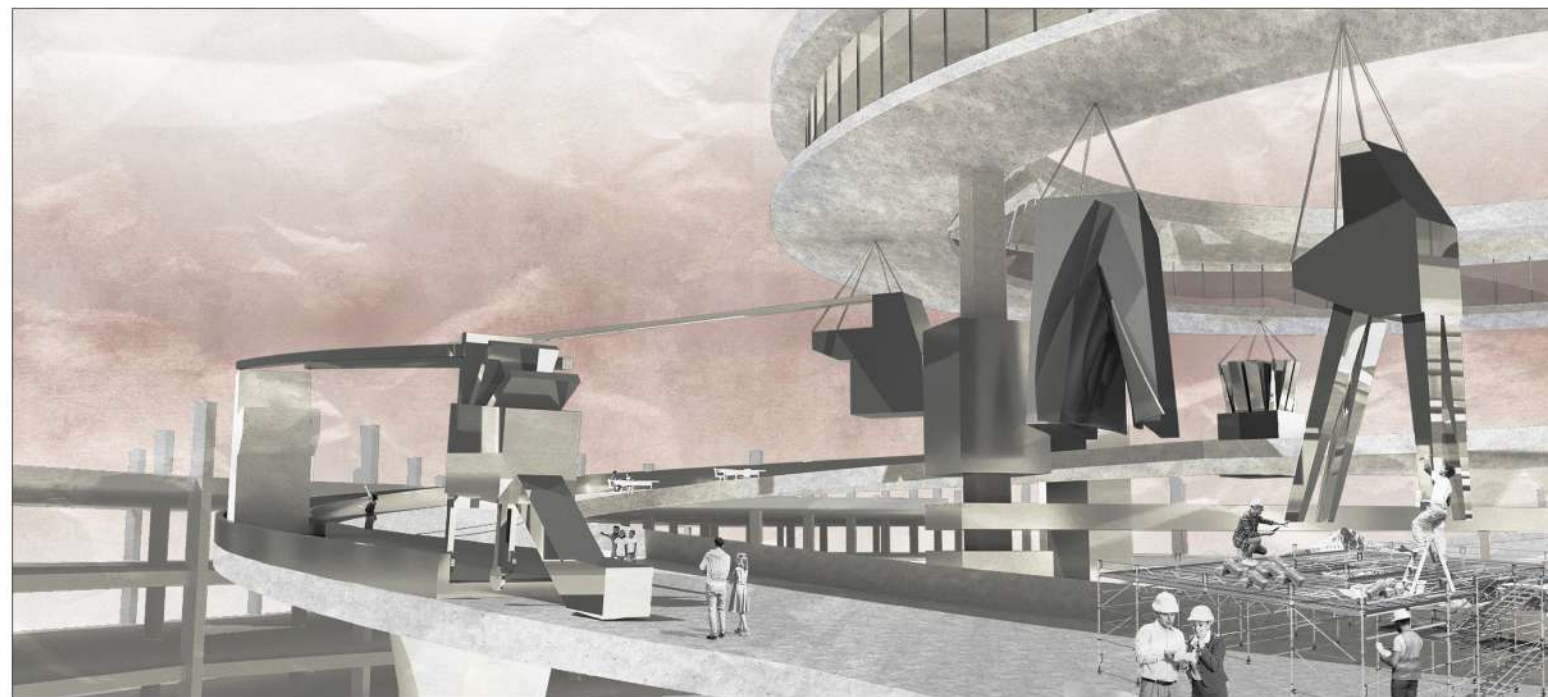


■ **Design Institutes' Purpose** - *Positive Erosion*

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

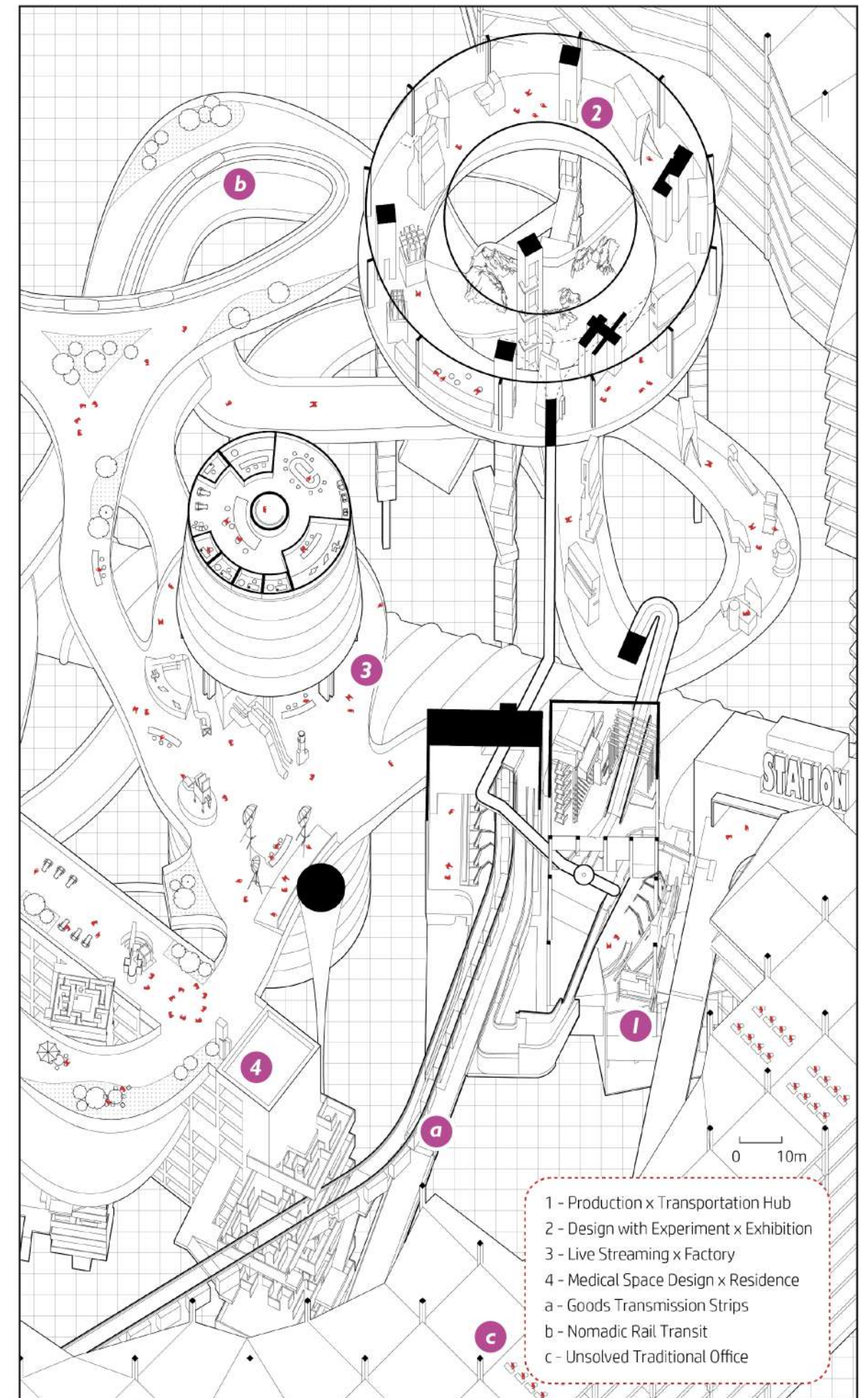


Design with Experiment x Exhibition Sector

■ 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**.

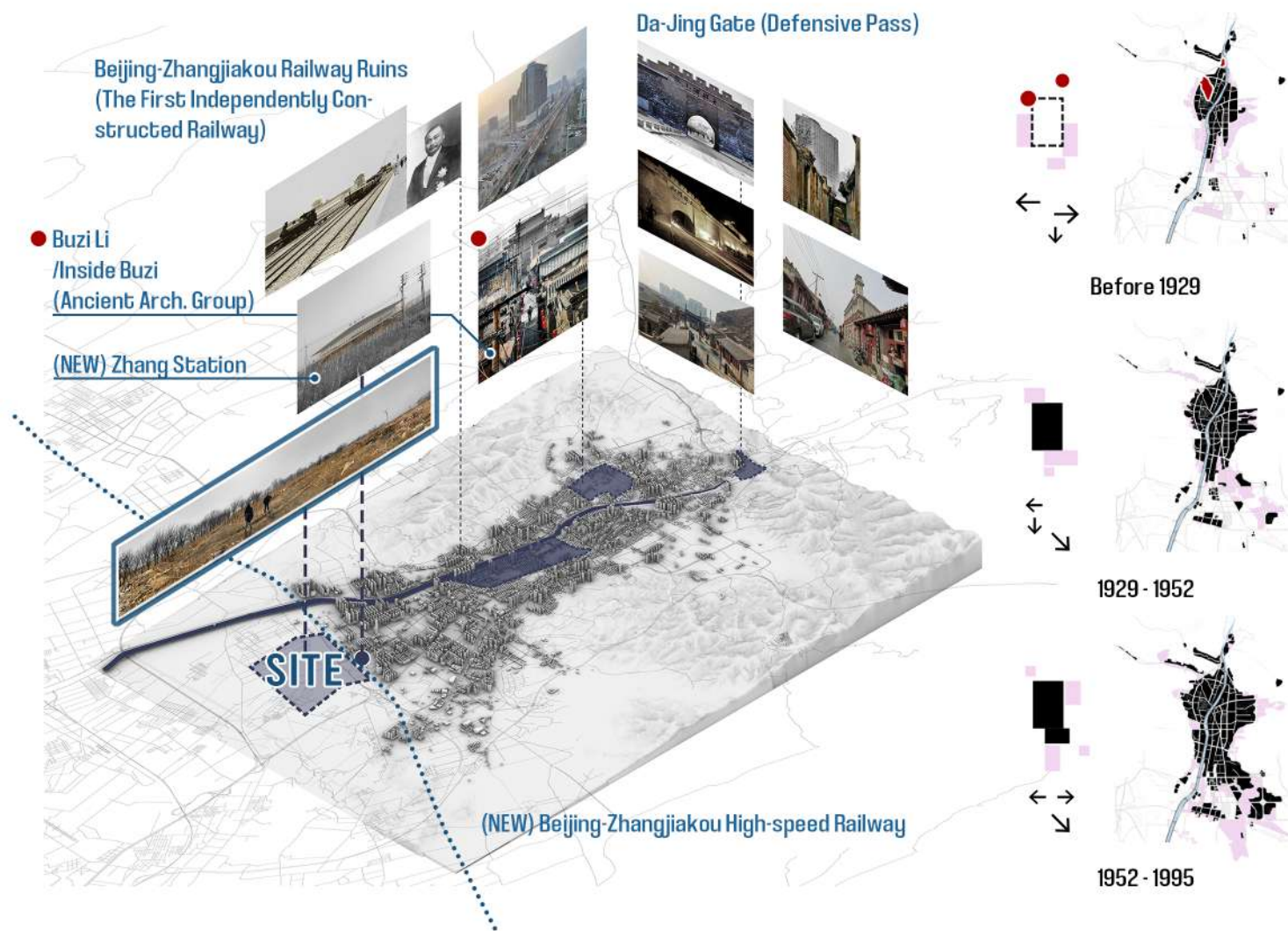
Looking ahead to 2022, a crucial period for Zhangjiakou as a Winter Olympics host city and for the integrated development of the Beijing-Zhangjiakou-Tianjin region, the area surrounding the Zhangjiakou Station (hereafter referred to as Zhang Station) is undergoing significant population migration and 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).

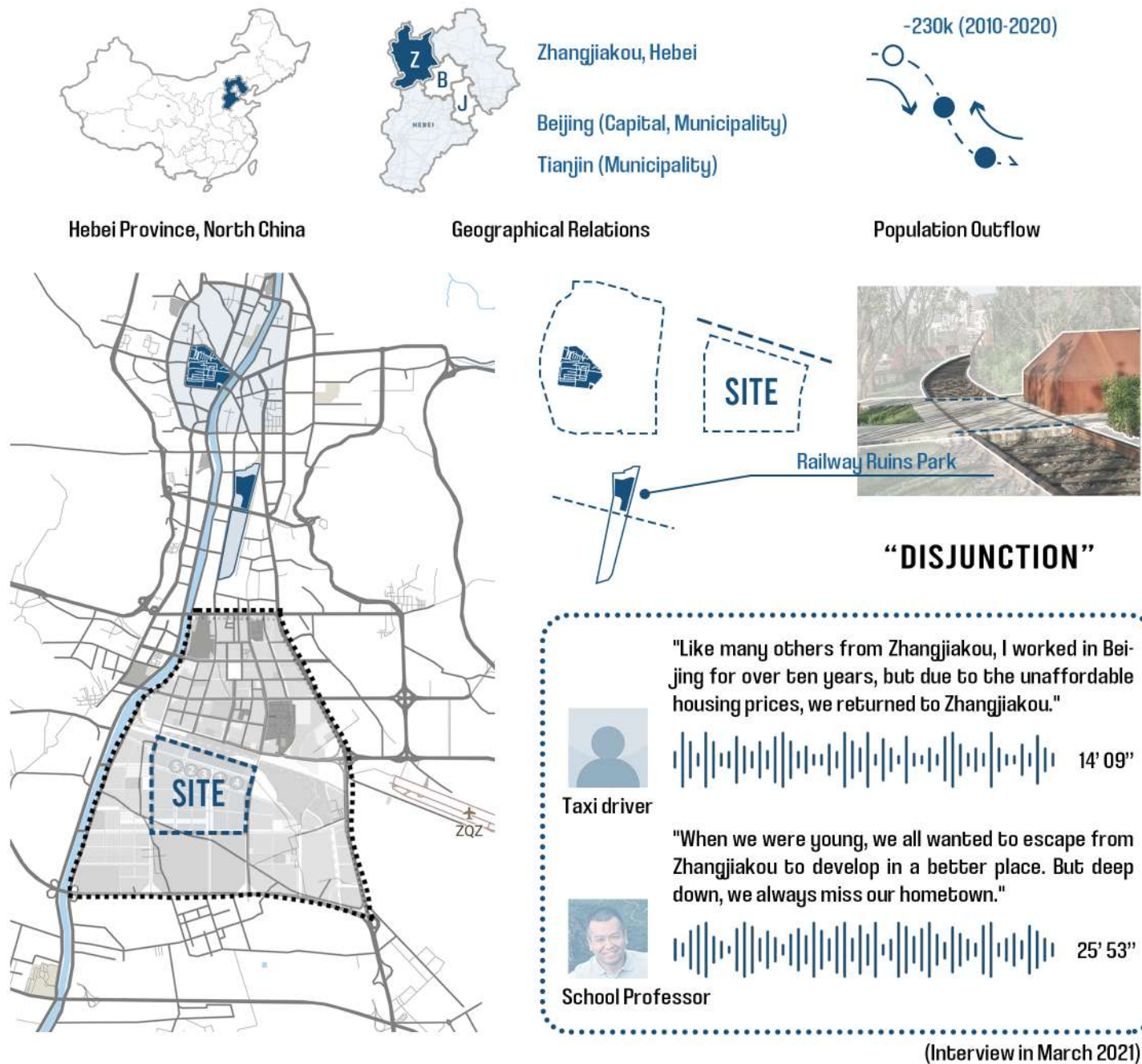
1. (LOCAL) PROBLEM IDENTIFYING



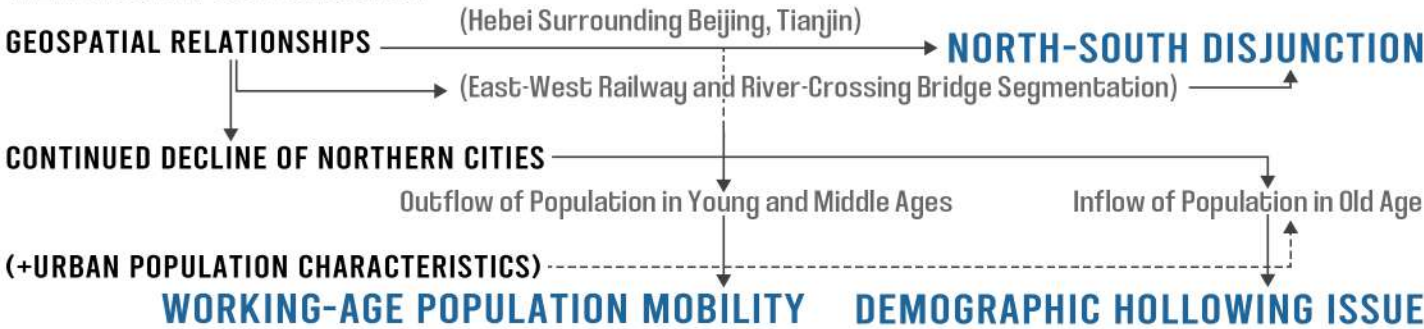
1.1.1 Before implementing the monitoring and feedback mechanism, it is essential to initiate the assessment of urban health indicators and establish an evaluation system. Our team members conducted on-site research and utilized online data crawling and integration methods to accomplish the initiation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



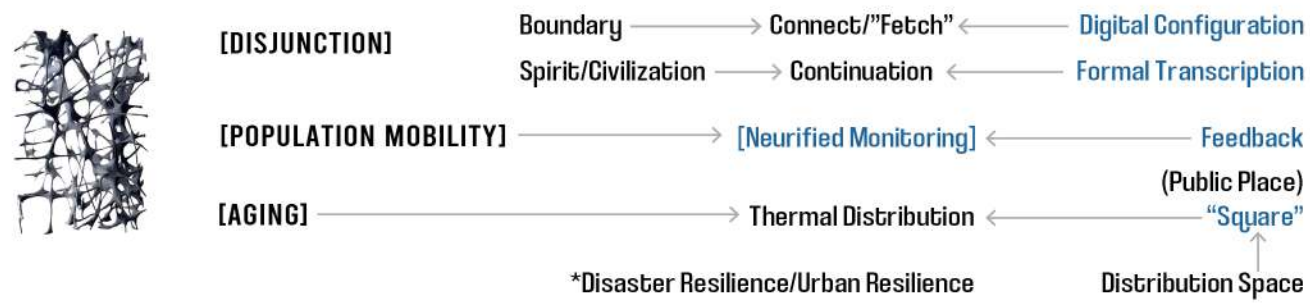
1.1.2 Geospatial relationships and administrative hierarchy conditions have shaped the uneven economic development in the Beijing-Tianjin-Hebei region, leading to imbalances in population migration outcomes. From 2010 to 2020, there has been a sustained net outflow of the young and middle-aged population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



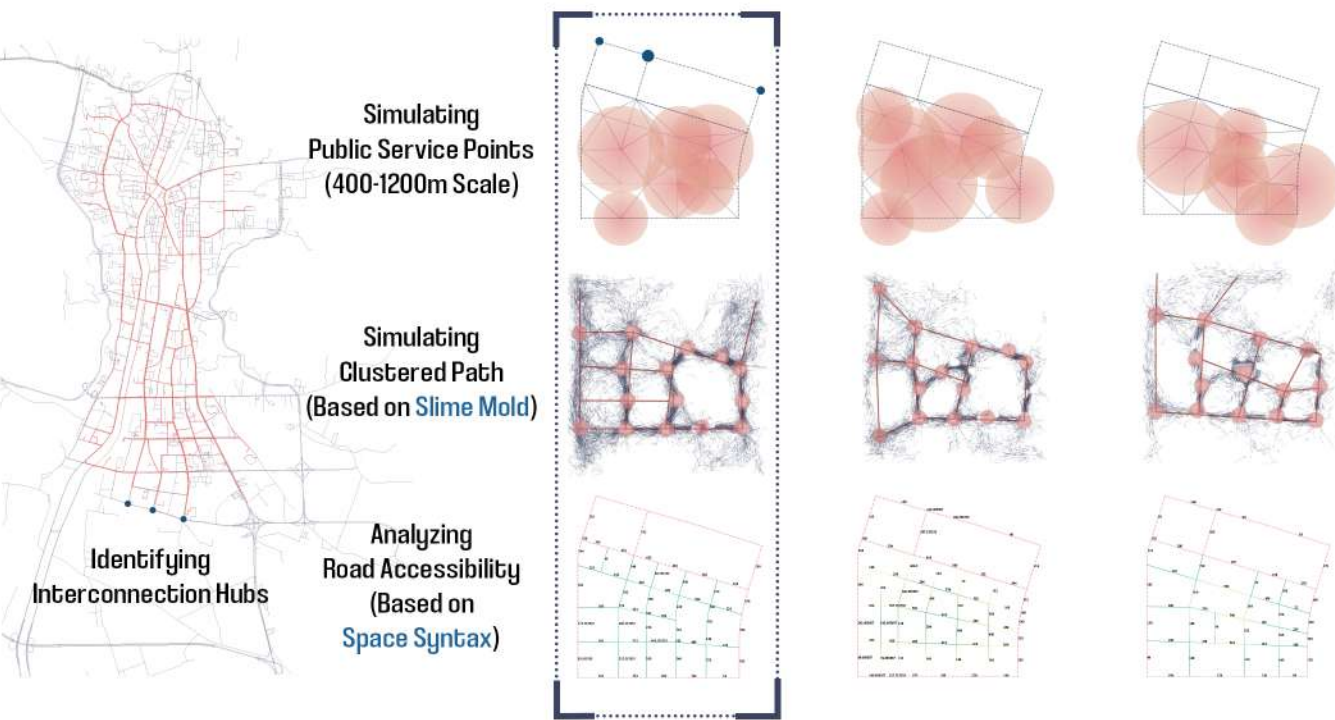
1.2 RESULT/CONCLUSION



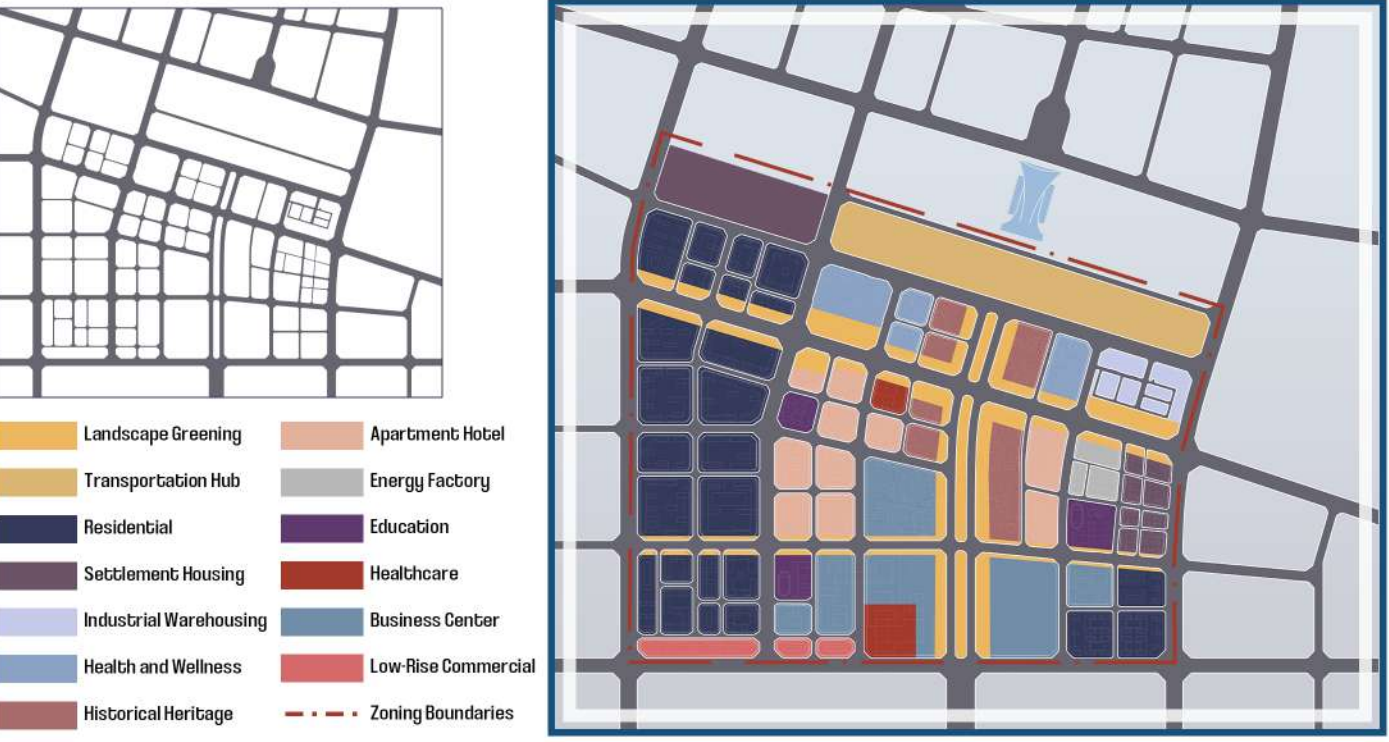
2. RESOLUTION STRATEGIES (MUST ALIGN WITH THE TITLE “HEALTHY CITY, DIGITAL MAPPING”)



2.1 OPTIMIZING PATH SELECTION (COMPUTATIONAL)

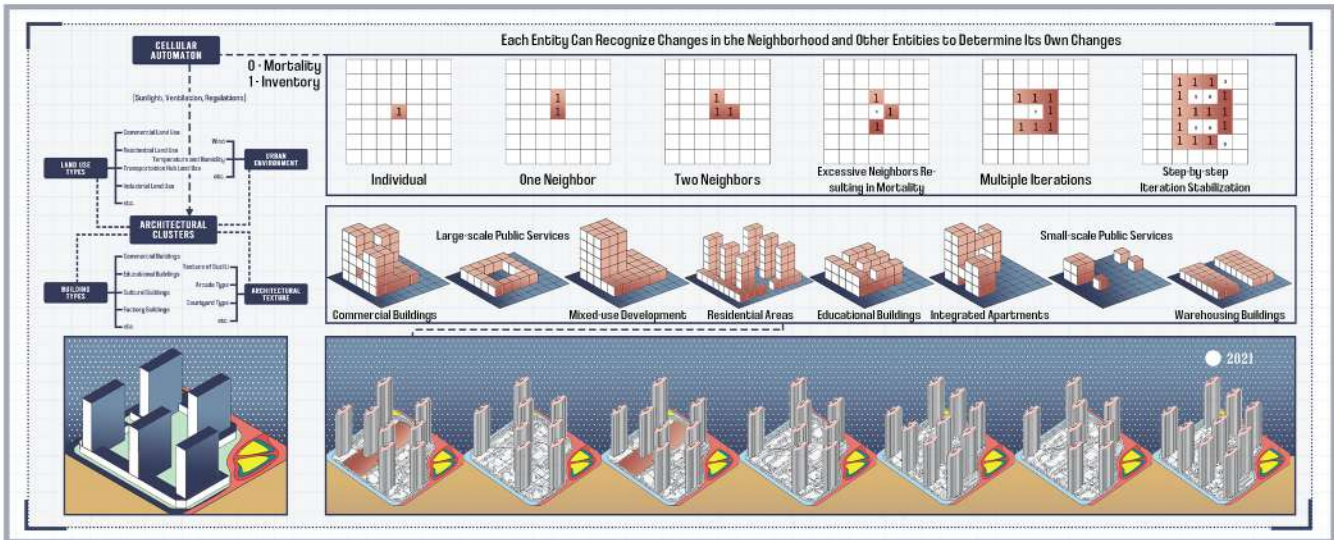


2.2 REGULATORY PLAN (HANDMADE)

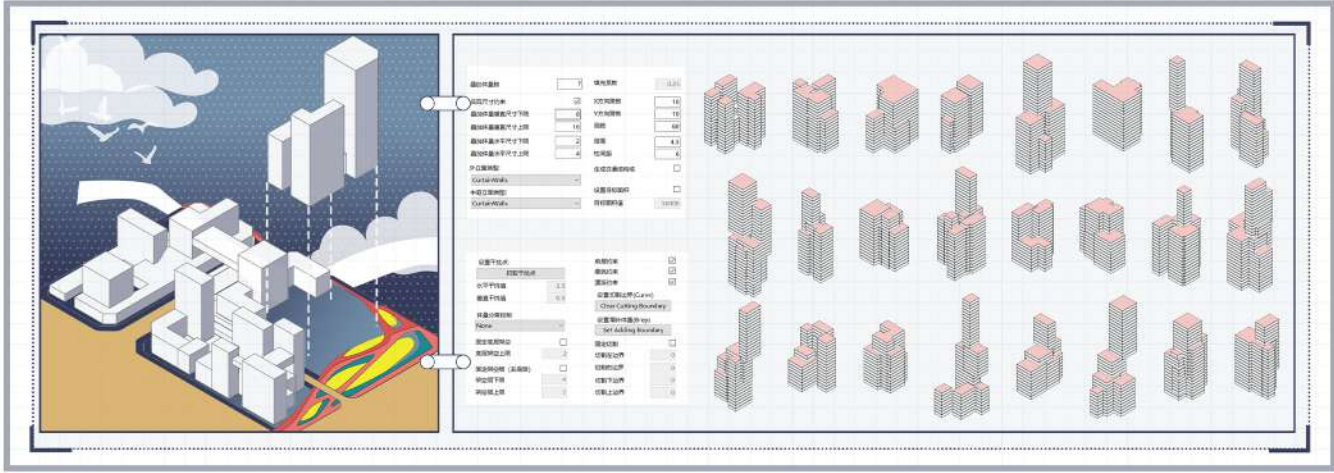


Monitoring vast and dynamic urban areas is resource-intensive. Inspired by neural systems, our decentralized approach connects multiple points, enhancing health surveillance efficiency. This system, mimicking neurotransmission, enables swift urban feedback and responses to dynamic city changes.

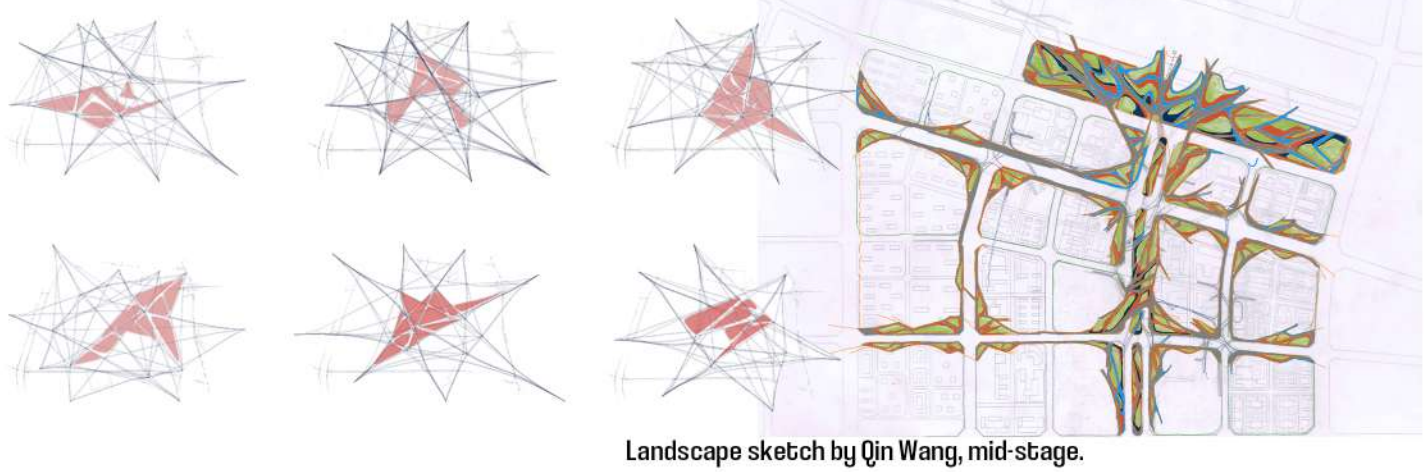
2.3 CLUSTER FORMATION (BASED ON CELLULAR AUTOMATA TYPOLOGY)



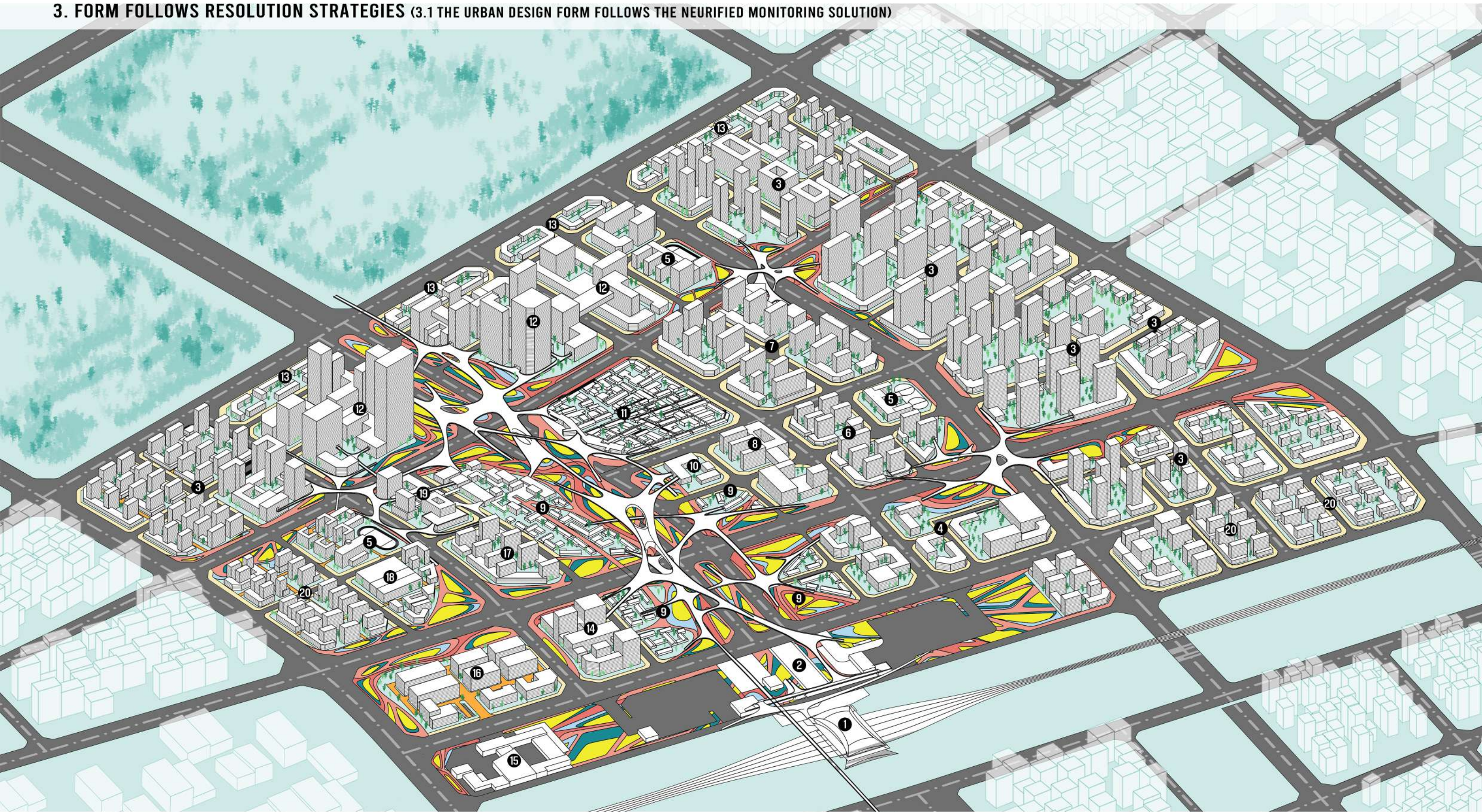
2.4 ARCHITECTURAL MASSING GENERATION (BASED ON PBMDGO ALGORITHM)



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 | 5 School | 9 Cultural District | 13 Low-Rise Commercial District | 17 Apartment |
| 2 Station Front Square | 6 Hotel-Style Apartments | 10 Museum | 14 Exhibition Hall | 18 Energy Plant |
| 3 Residential Area | 7 Short-Term Rental Apartments | 11 Historic Character Commercial District | 15 Police Station | 19 Cultural Complex |
| 4 Wellness and Care Center | 8 Medical Center | 12 Commercial Complex | 16 Industrial Warehouse Area | 20 Settlement Housing |



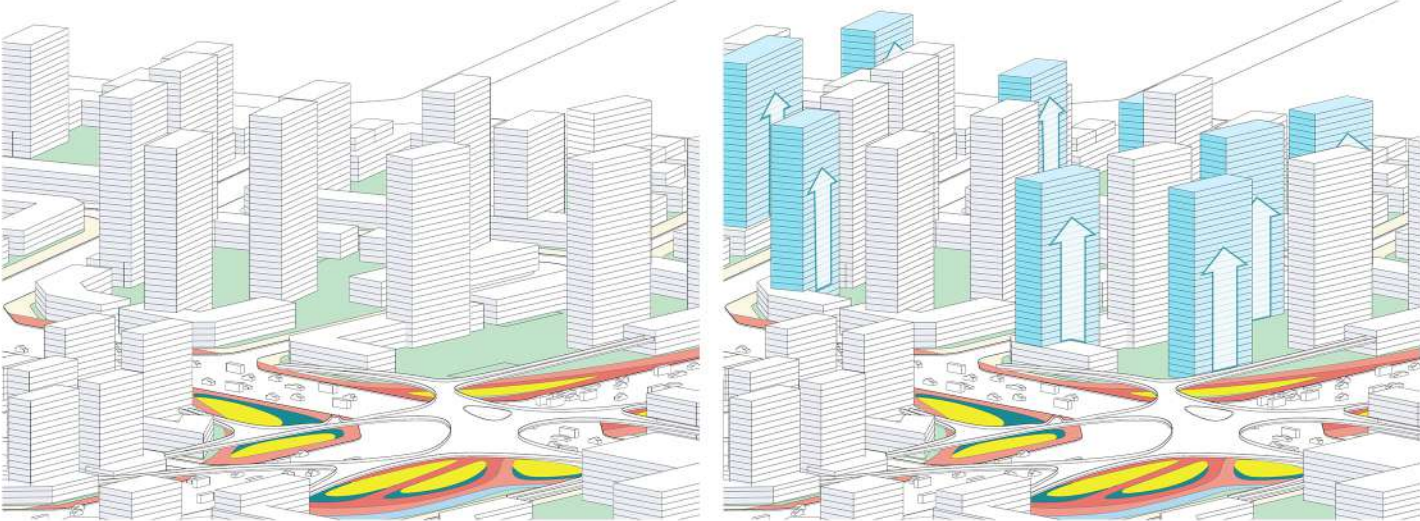
3.2 SPATIAL STRUCTURE FORM FOLLOWS THE DYNAMIC PLANNING STRATEGY



INTEGRATION OF BUILDING SECOND FLOOR AND BRIDGE



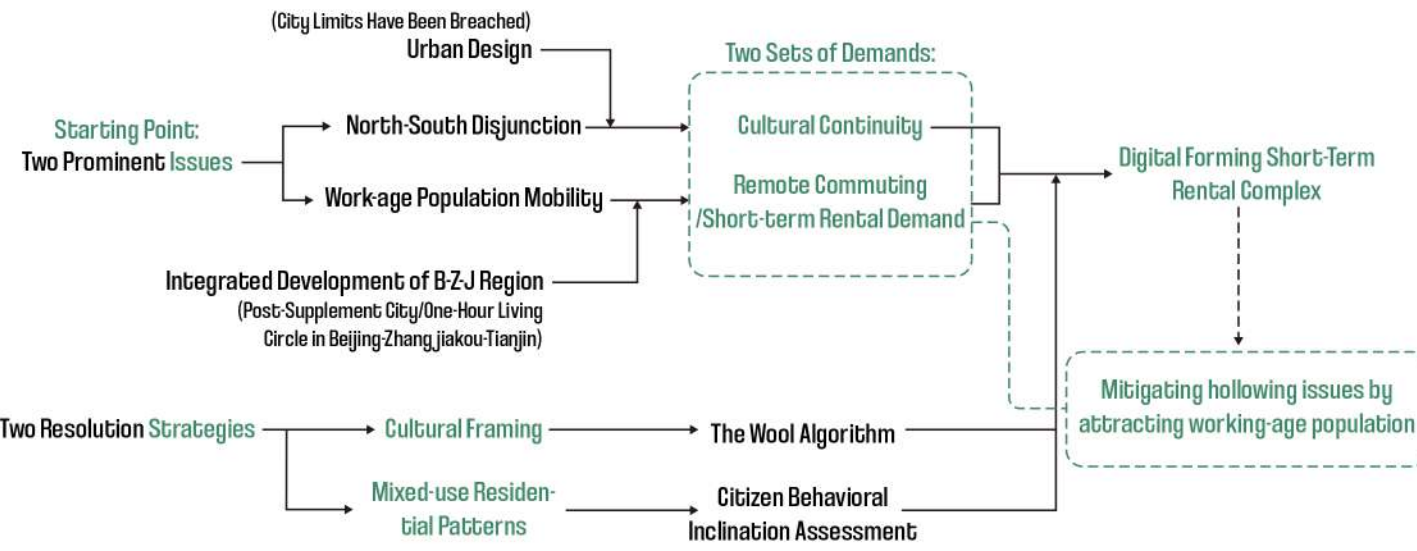
REGIONAL RESTRICTIONS BASED ON BRIDGE ENDPOINT MONITORING



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

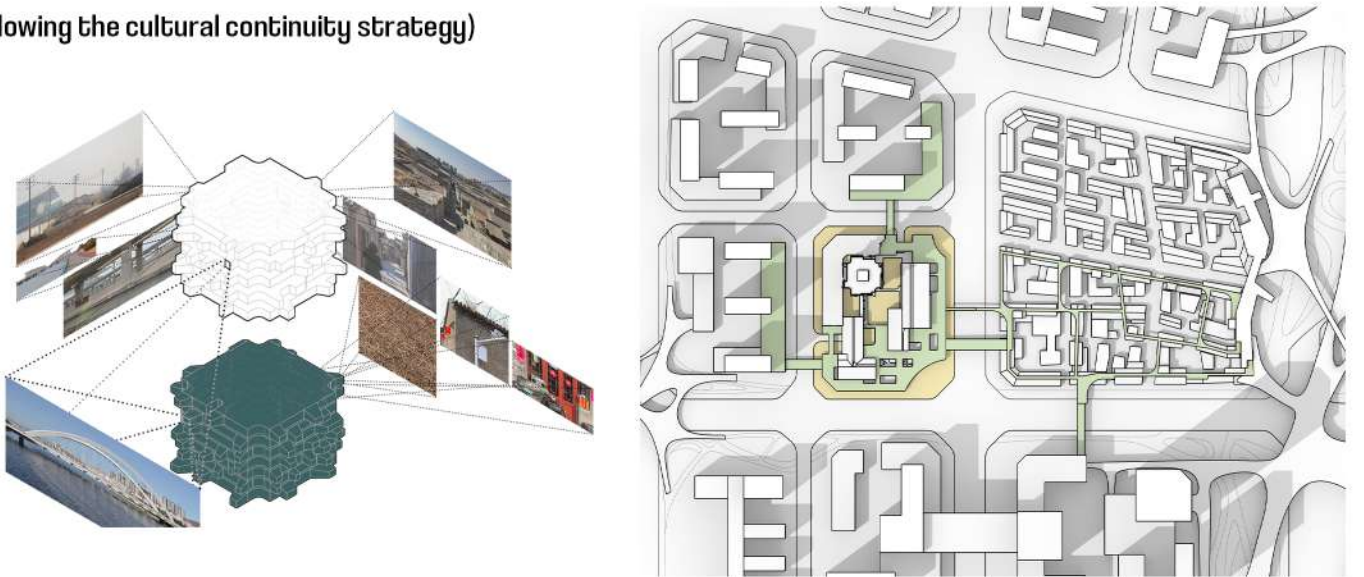
4.1 TARGETED ISSUES AND RESOLUTION STRATEGIES



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



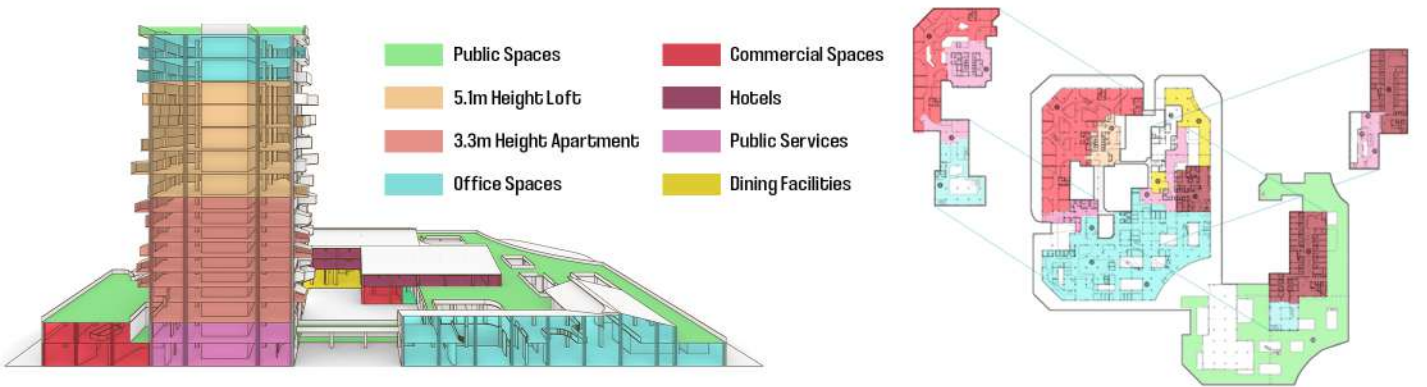
Mode of transportation: Walking and driving in clear opposition, guiding the structural connection of elevated walkways and the separation of pedestrians and vehicles.

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.

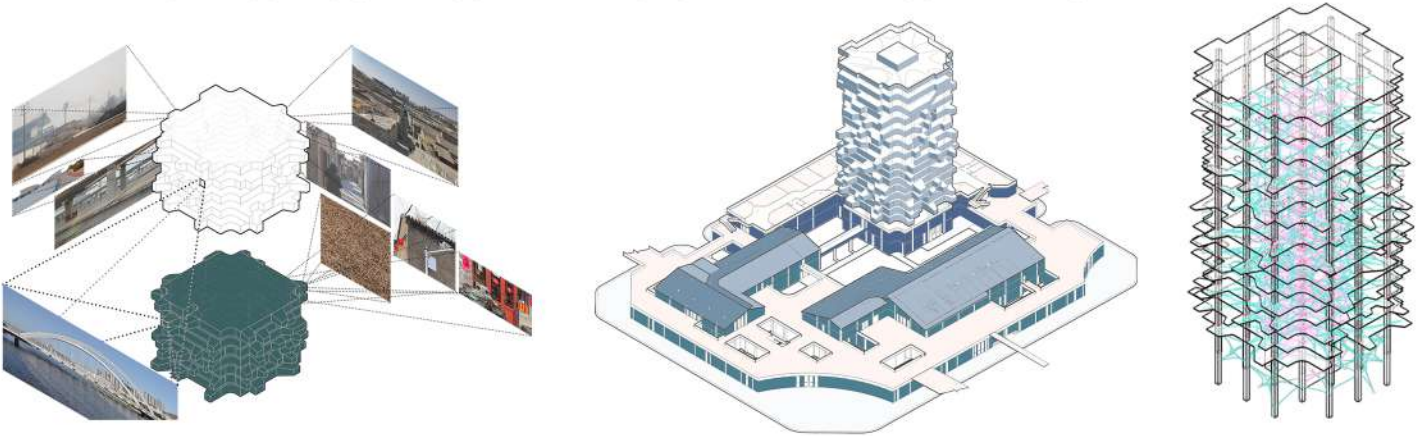
Influenced by high population mobility, there is a clear expectation for short-term rental demand in the housing pattern.

The cultural dissemination capability of Zhang City does not match its cultural heritage. Creating local products and industrial opportunities to attract outsiders can stimulate consumption and even encourage settlement.

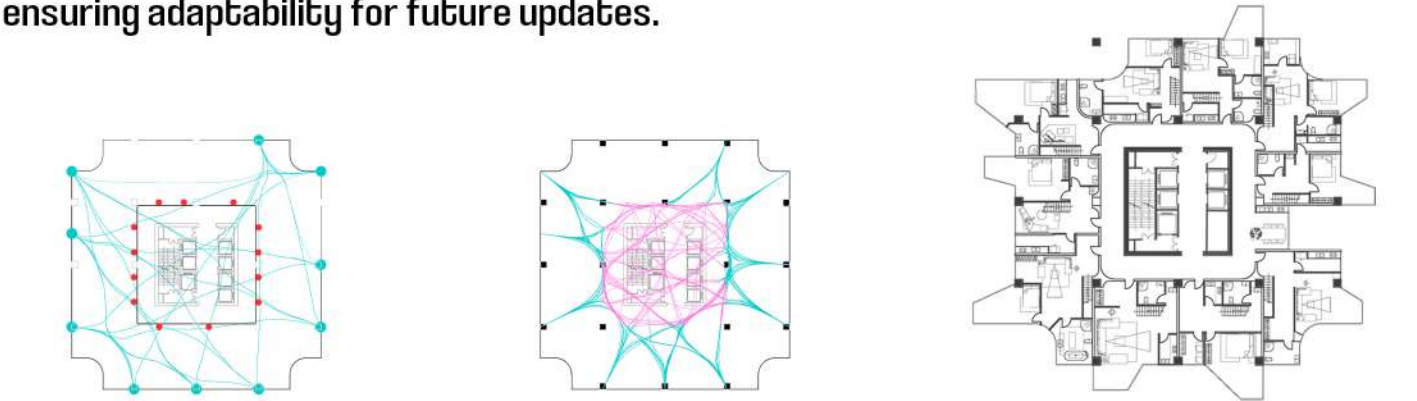


Plan a mixed-use model based on citizen inclination assessment indicators. Plan the layout of building functions based on the net difference between expectations and current conditions. Implement vertical segregation between public and private through floor height, and introduce transitional public service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

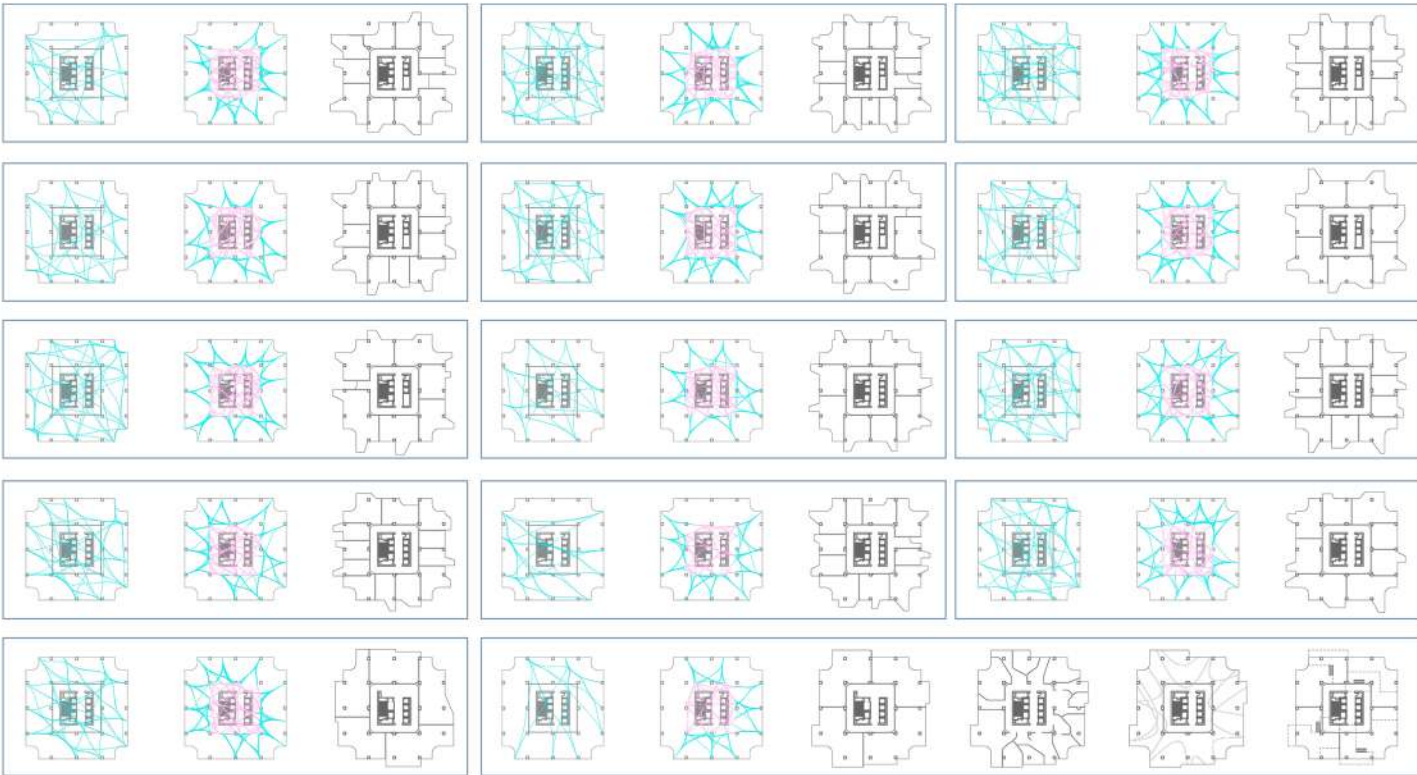
4.2.2 TWO-PASS WOOL ALGORITHM TO GENERATE FLOOR PLANS



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.

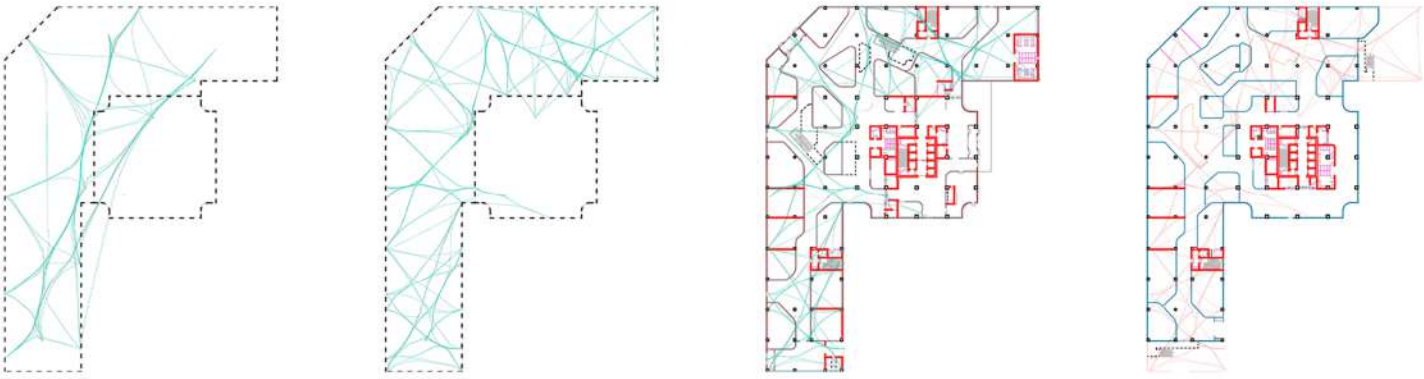


- 1) Obtaining **core intersections** through **first-pass wool algorithm**.
- 2) Determining **dominant motion paths** through **second-pass wool algorithm**.
- 3) Employing conditional operation logic to generate planes and guide path generation.



Floor Plans

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



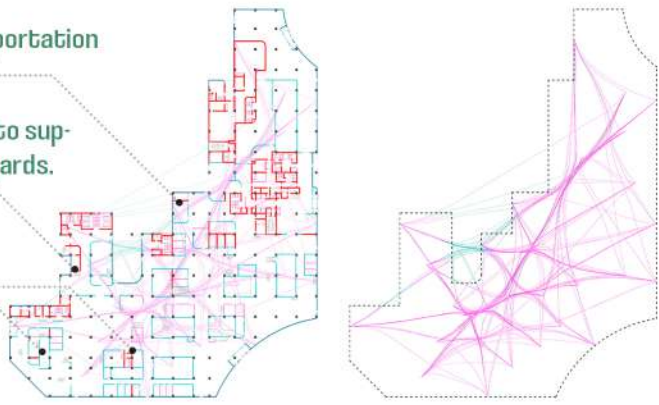
Wool Deduction Process for Internal Commercial Section on Floors 1-2

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

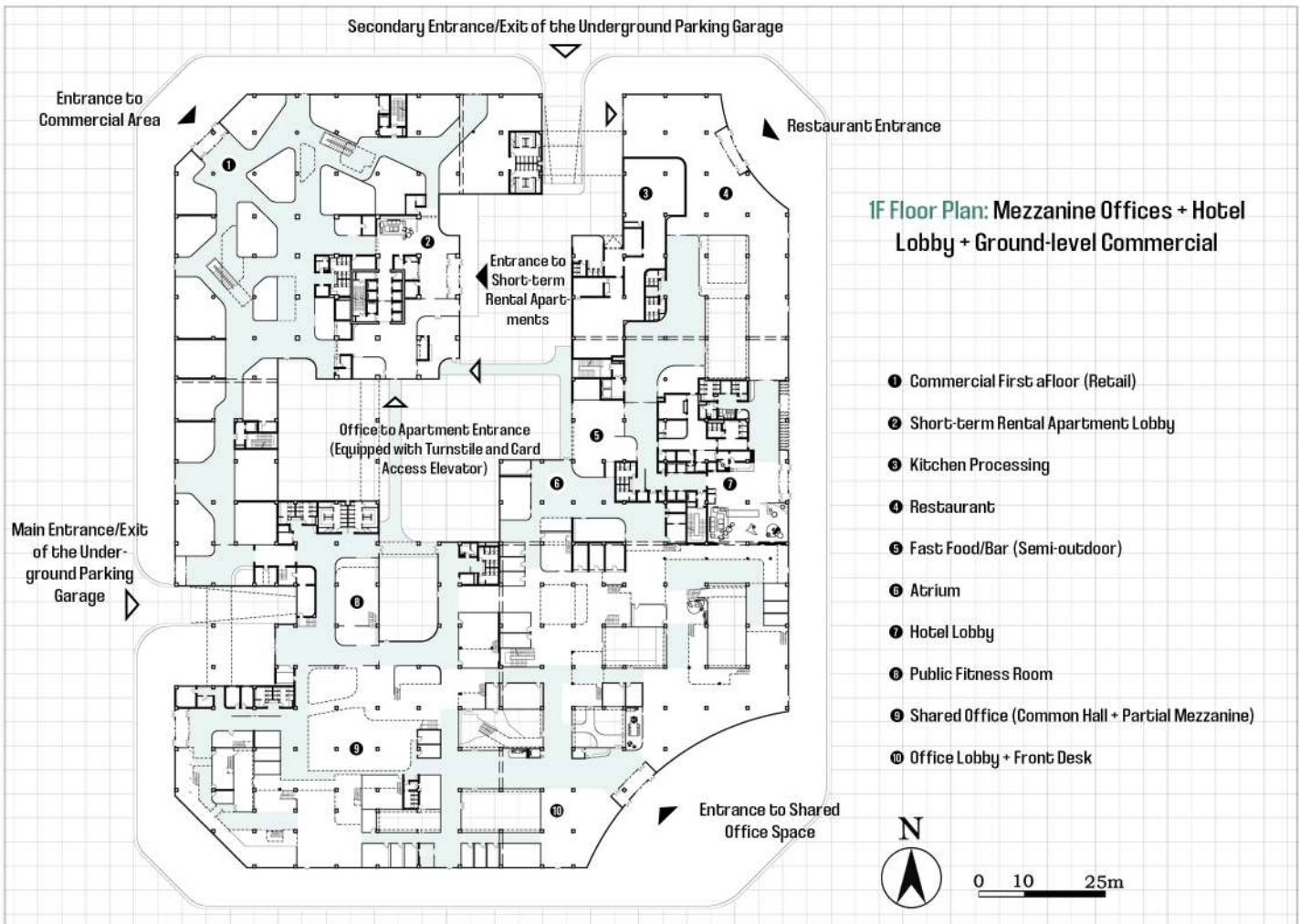
Break through boundaries with partial wool lines, indicating the need to supplement flow branches; establish inner corridors to form inner courtyards.

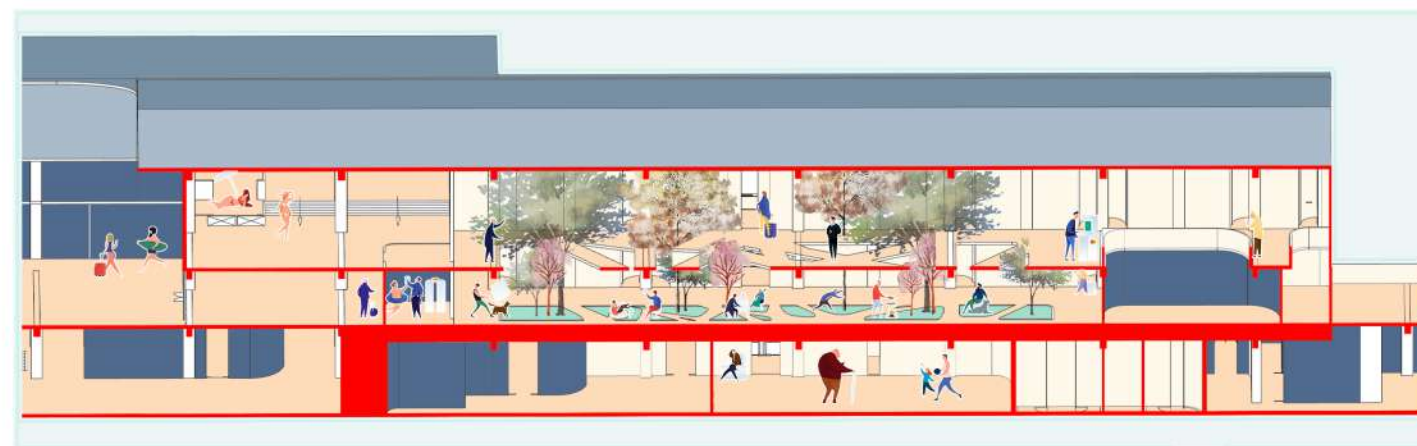
Establish shared office spaces in the core area.

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.



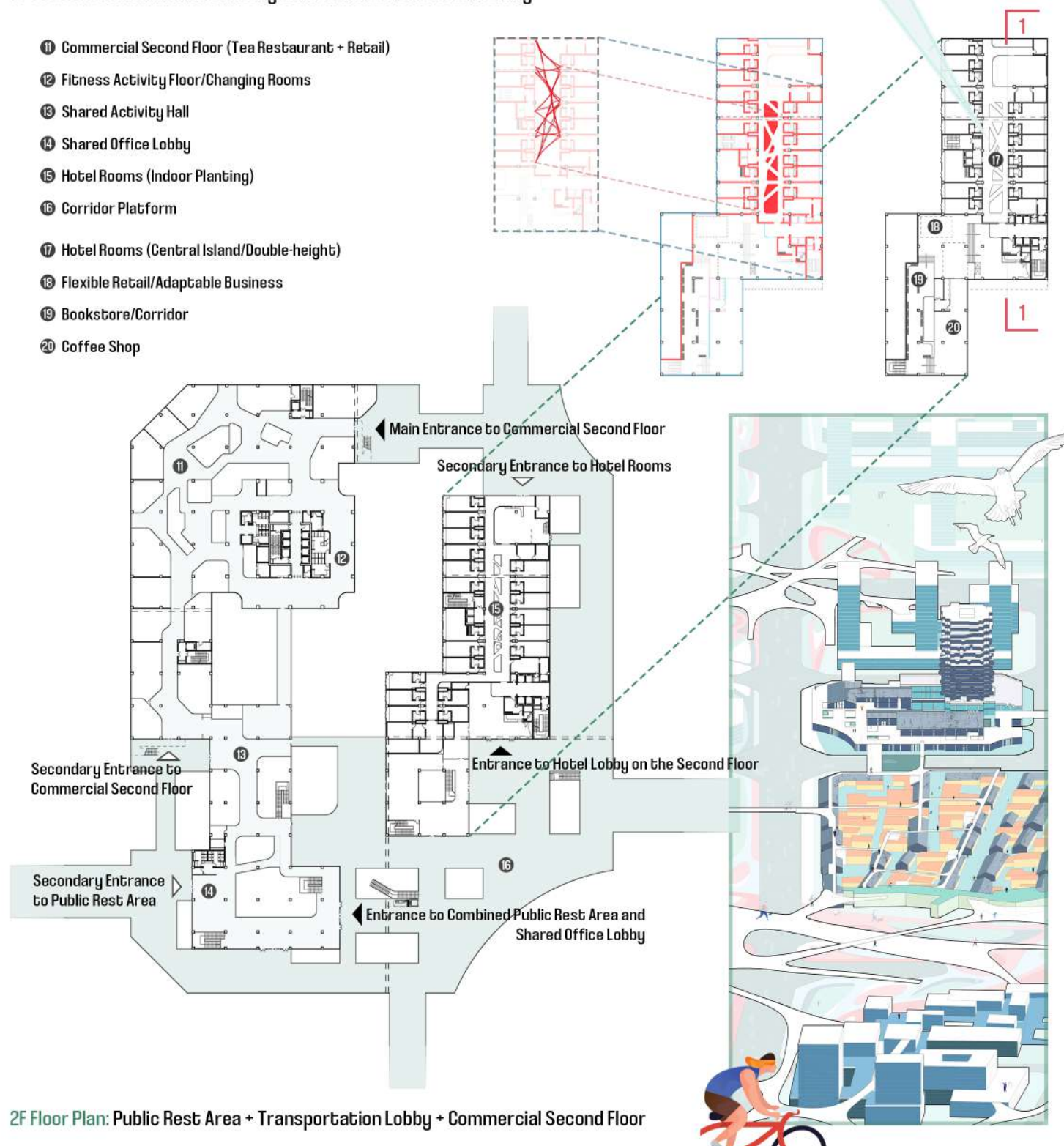
Wool Deduction for 1F Shared Office Area and Generation of Floor Plan





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

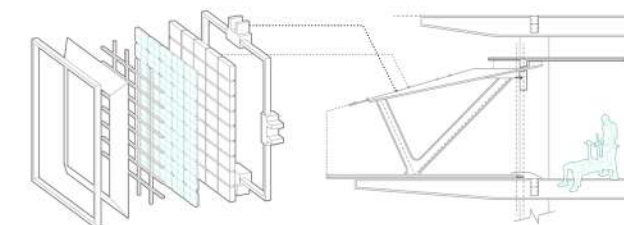
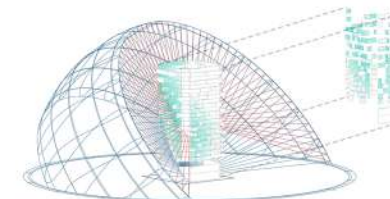
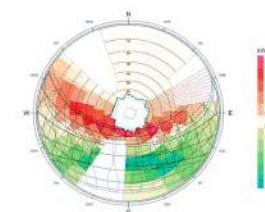


2F Floor Plan: Public Rest Area + Transportation Lobby + Commercial Second Floor

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.

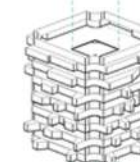
Develop an along-window structure independent of the main structure, allowing for future installation and removal while maintaining structural integrity.

4.3.2 CEILING HEIGHT ALLOCATION + STRUCTURAL TYPE SELECTION

Rooftop Shared Terrace



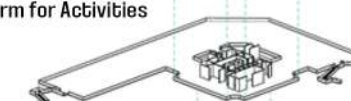
Floors 12-19: Loft with 5.1m Ceiling Height



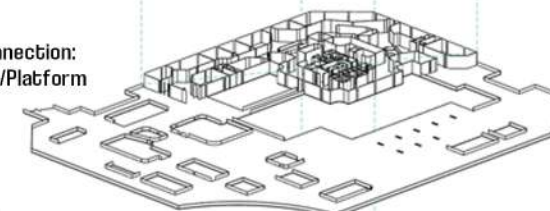
Floors 4-11: Apartments with 3.3m Ceiling Height



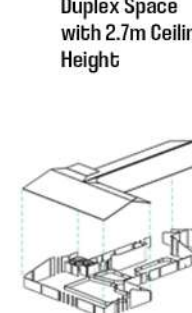
Height-Isolated Sky Platform for Activities



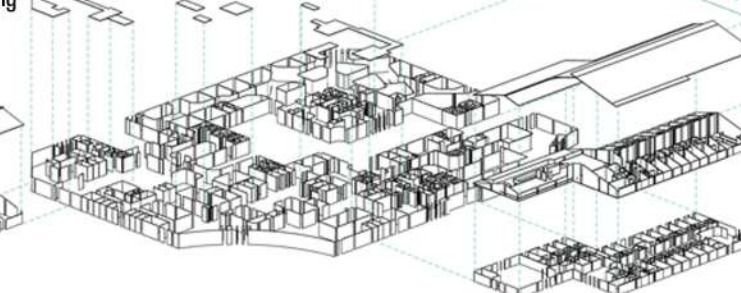
Structural Connection: Urban Skywalk/Platform



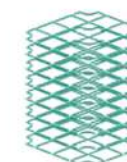
Shared Office: Duplex Space with 2.7m Ceiling Height



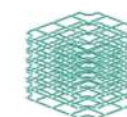
Shared Office Second Floor: Rest Area + Transportation Lobby



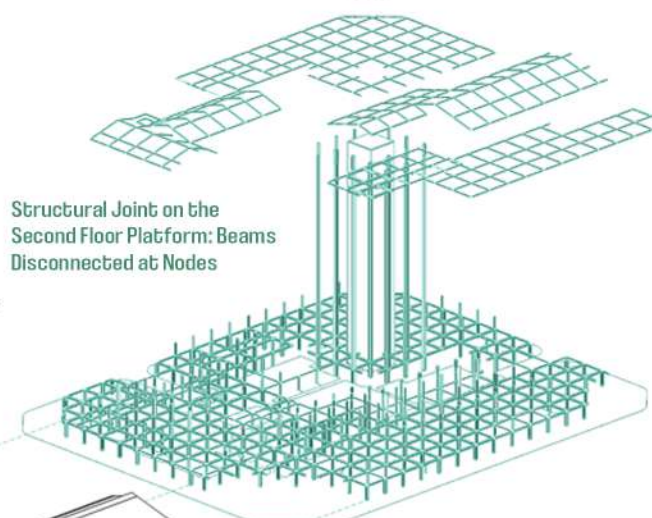
Apartment Main Structure: Frame Tube + Beams



Sloped Roof Rafters

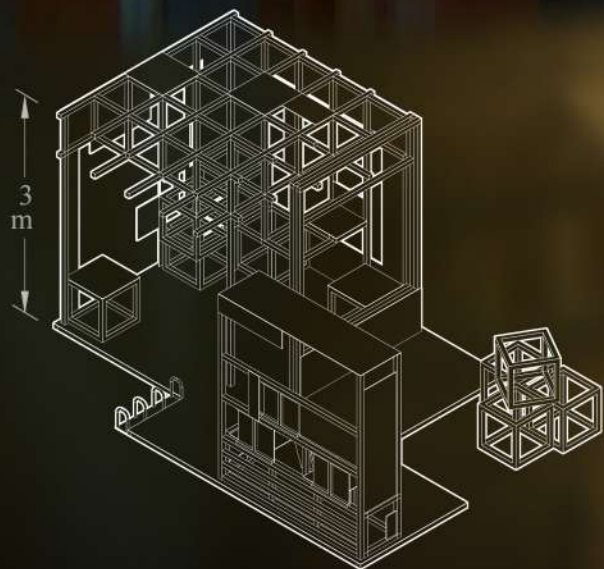


Structural Joint on the Second Floor Platform: Beams Disconnected at Nodes



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

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

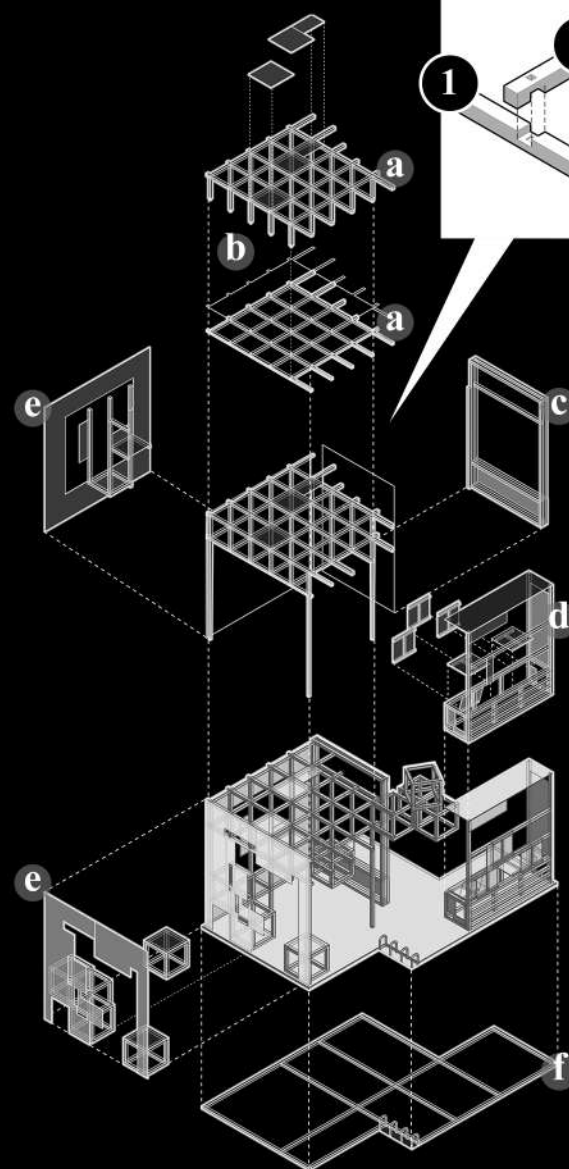
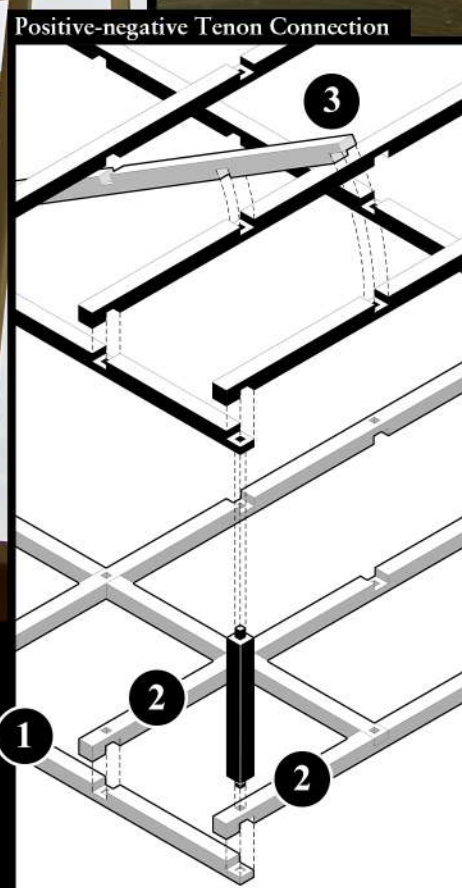
Connection Method: Mortise and Tenon Interlocking

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



a. Mortise and Tenon Grid

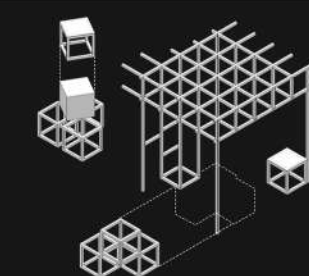
b. Vertical Column + Wooden Dowels

c. Soft Partition + Sightline Frame

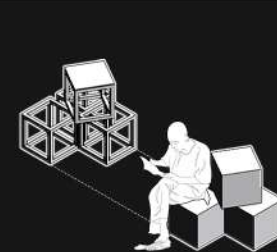
d. Slideable Seats

e. Detachable Panels

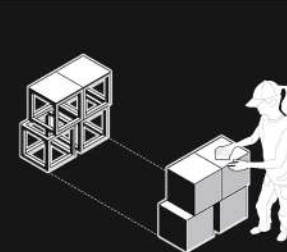
f. Support Beams + Bike Lock Clasp



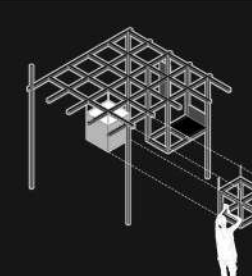
Modular Timber Framework – Adaptable for Interaction



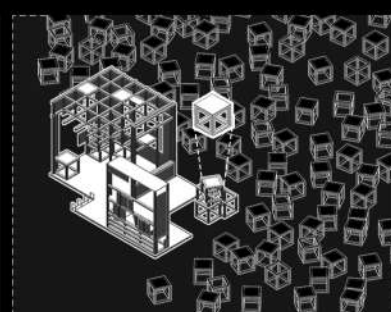
Reclining Scale



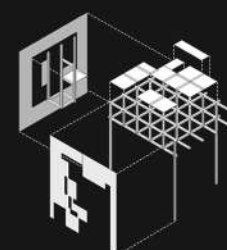
Desktop Scale



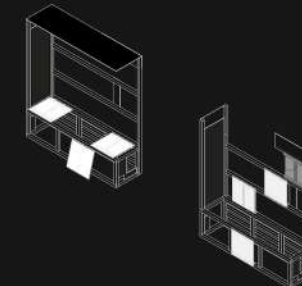
Hanging Scale



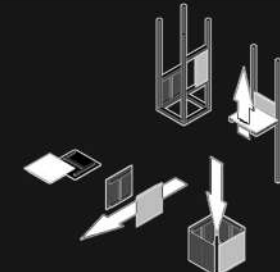
Symbolic Significance



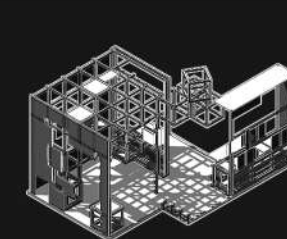
Detachable Panels – Adaptable for Interaction



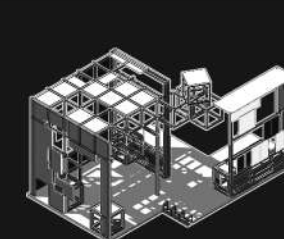
Vertical = Horizontal Orientation



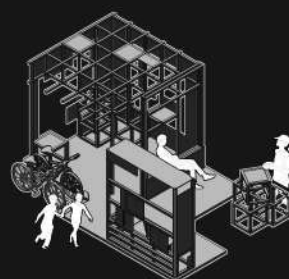
Penetration, Enclosure, and Support



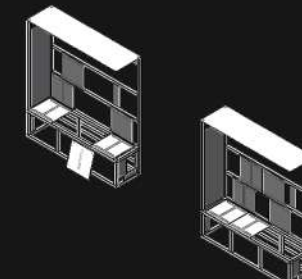
Direct Light/Shadow Relationships



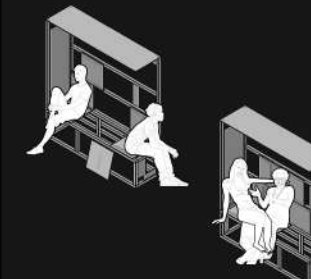
Sheltering/Enclosing Barriers



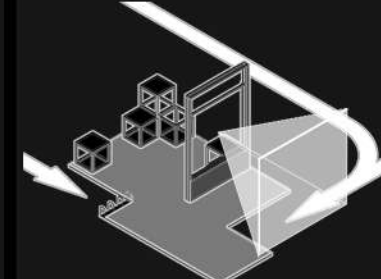
Overall - Fosters Interaction



Seats Converging



Strangers Familiarizing



Internal Corner and Protective Sightline



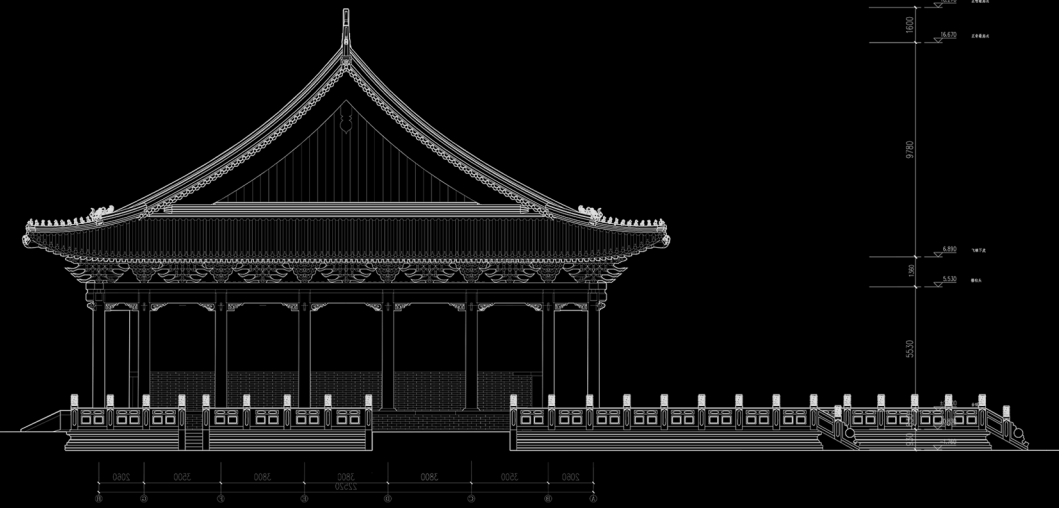
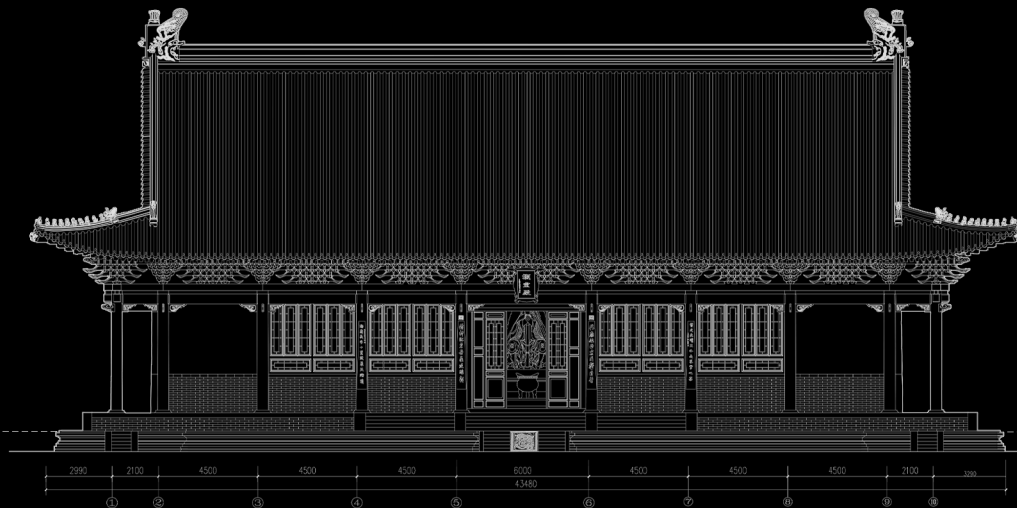
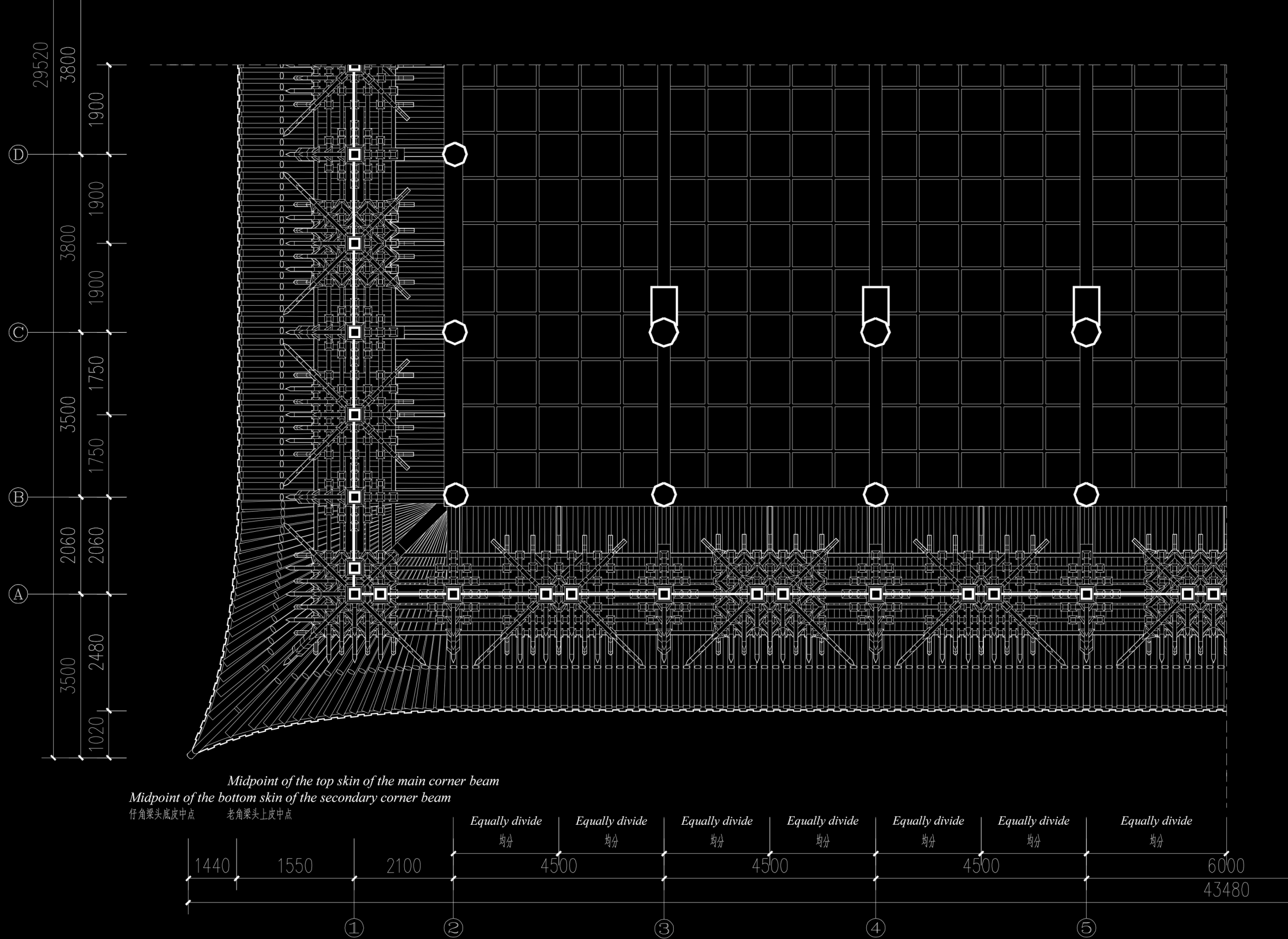
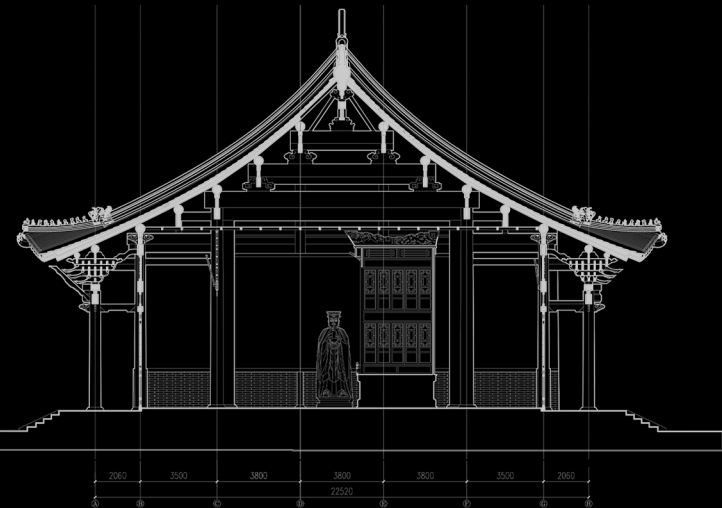
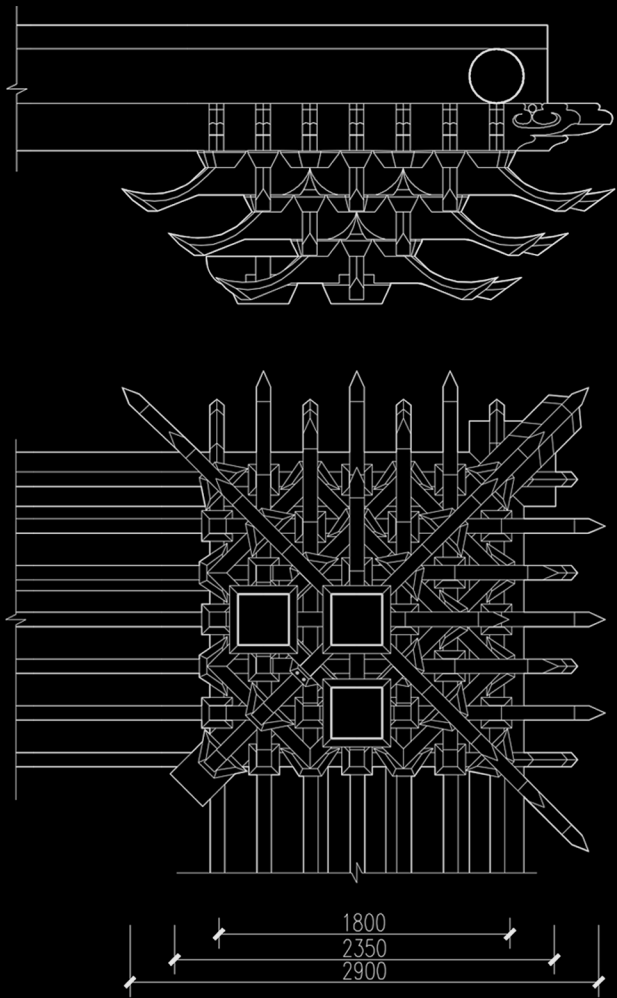
Attracts Different Ages

PROJECT DEFINE

Project Name: Main Hall of Xiyue Temple Complex:
Hao Ling Hall

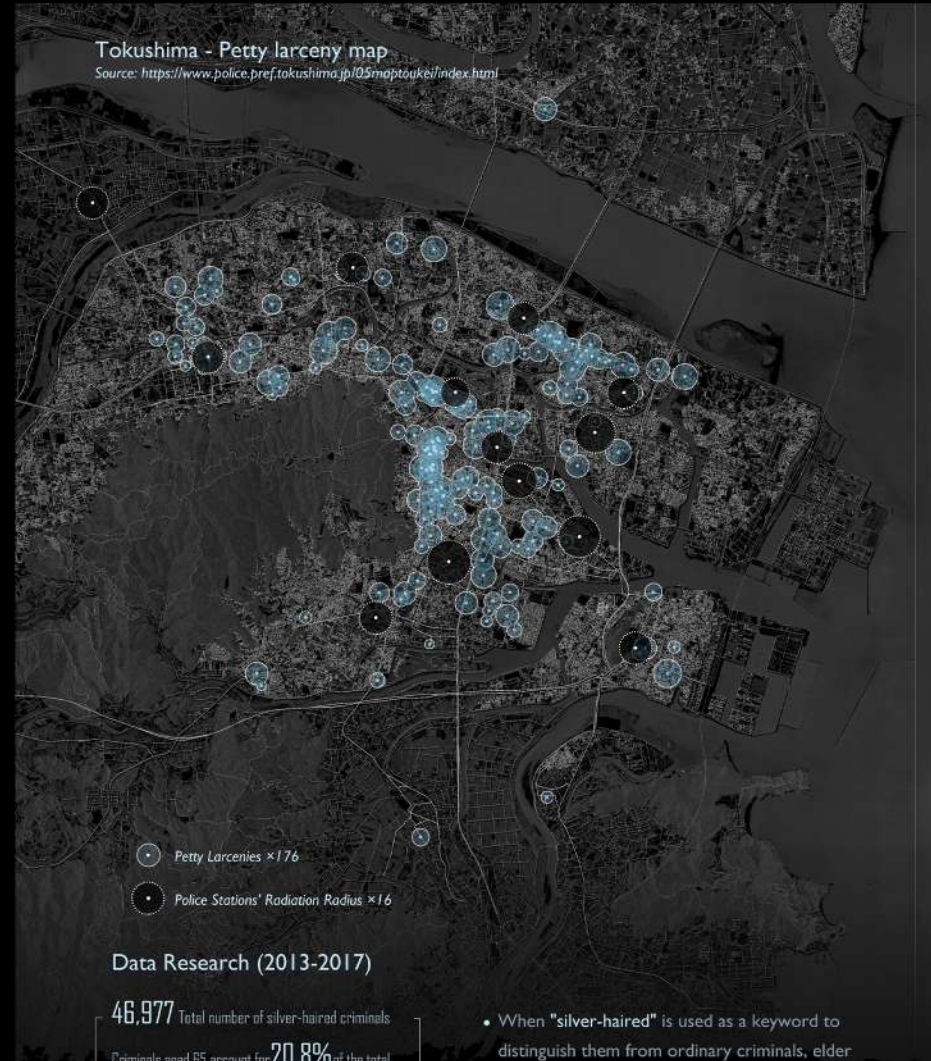
Architectural Type: Ancient Architectural Measurement
Location: Shaanxi, China

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)



[In Progress / Unfinished]

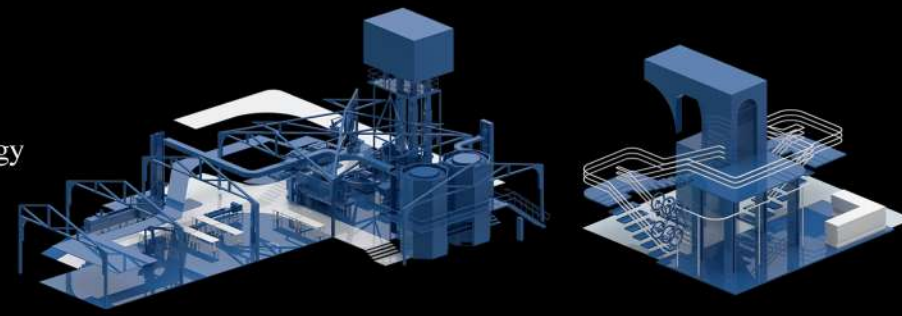
Project Name: Particlizing - Prisons for Low-living Silver-haired
Architectural Type: Urban Layout of Prison Clusters, Carceral Typology
Location: Tokushima, Japan
Role in the Process: Individual Work
Level of the Project: Oct 2022, Work Phase



Data Research (2013-2017)

46,977 Total number of silver-haired criminals
Criminals aged 65 account for 20.8% of the total
33,979 ≈ 72.3% Criminals arrested for theft
¥300 / 3,200,000 × 2 yrs
Price of stealing a convenience store sandwich / Expenditures consumed in prison
1/4 Will be back in prison within two years

- When "silver-haired" is used as a keyword to distinguish them from ordinary criminals, elder criminals in Japan are always associated with petty larceny and have a high recidivism rate.
- The reason for these characteristics is not only the aging of the population throughout Japan but also the **living conditions** and **social relationships** in which these silver-haired people live.



『下流老人 - 一億総老後崩壊の衝撃』(藤田 孝典, 2015年)
The Low-living Elderly (2015) - Takanori Fujita
NPO worker Takanori Fujita defines such a group in his book "The Low-living Elderly" as "senior citizens who are living and are likely to live a life equivalent to the benchmark of 'survival only'." According to Takanori Fujita, there are three specific indicators of low-living seniors: extremely low income, insufficient savings, and no one to rely on.



『下流 銀髪 犯罪者』Criminals
Low-living Silver-haired
Extremely low income
Insufficient savings
No one to rely on
Poor^① living condition
Particle-like^② social relationship

Tokushima - Ranking Statistics

Source: <https://stats-japan.com/ttdfk/tokushima>

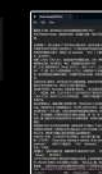
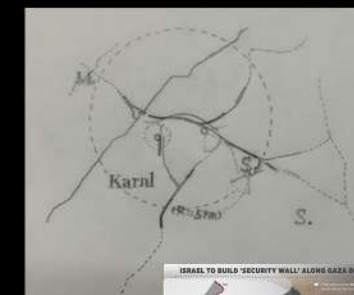
Statistic	Amount	Rank	Integration	Conclusion
Practicing Physicians	2425 doctors	#1/47	Good medical support. Medical tendencies are concentrated on chronic diseases and departments that require long-term care.	
Consumption Expenditure of Clothing & Footwear	197,786円	1		
Consumption Expenditure of Women's clothing	71,886円	1		
Hospital	94軒	2	Low income, unable to afford the high cost of medication and caregiving.	
Traffic-Related Death Rate - Bicyclist	10.0 persons	3		
Patients with Hypertension (aged 65 or above)	65,000 persons	4		More often than not, silver-haired crime is triggered by poverty and lack of food and shelter.
Clinic	763軒	4		
Beds for Long-Term Care	4654床	4	Low Engel coefficients tend to be associated with high incomes. When low income is accompanied by a low Engel coefficient, people tend to spend more on health care and education.	
Senior Citizens	238,000 persons	5		
Households Living on Welfare	10,491世帯	10		Social relationships collapse into particles, leaving the isolated elderly with no emotional support or care from others.
Number of people who went back to their hometown (25 years of age or more)	95,000 persons	41		
Number of Children	87,000 persons	42	Almost the least population + the largest number of elders, low attractiveness of the city and young generations are leaving forever.	
Concentration of Population	32.7%	42		
Population	789,000 persons	44		
Attractiveness	12.2ポイント	44		The population is highly discrete and interpersonal relationships are distant and isolated.
Engel's coefficient	25.30%	45		
Salary of Prefectural Governors	975,000円	45		
Participants in Dressmaking (25 years of age or more)	31,000 persons	46	As a producer of the world's blue dye, polygonum blue, the garment industry is thriving. But at the same time, the production population is small and the dye is exported for processing overseas and then consumed back locally.	
Consumption Expenditure of Medicines	21,991円	46		
Minimum Wage	796円/792円 Min	--		

Project Name: 9.11 U.S. Military Withdrawal from Afghanistan
= 15 Years After Israel's Withdrawal from Gaza Settlements
Architectural Type: Critical Architecture, Analogical Narration, Wall Typology
Location: Israel-Gaza Barrier
Role in the Process: Individual Work
Level of the Project: Sept 2021, After Graduation



United Nations Resolution 181
1946/2012

• Attraction
M.S. Mosque/Synagogue
+ Memorial
+ Cemetery
+ Education



"The task book for this project comes from Refaat Alareer, the author of the short story collection 'Gaza Writes Back,' and his article titled 'No, Sweetheart, They Can't See Us in the Dark,' published in the Tal al-Hawa community.

The original plan for the project was to undertake three thematic transformations at three major border checkpoints: 1) a museum of the present, 2) reflection and mutual gaze, and 3) scattered memorial clusters.

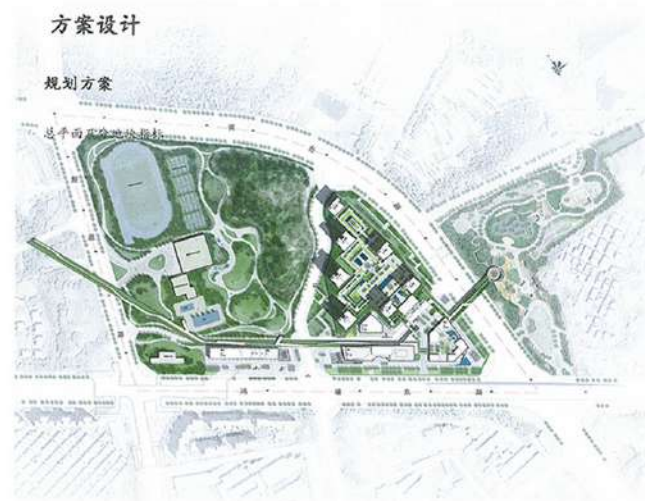
After abandoning this unfinished project for two years, when I searched again for Professor Refaat Alareer's name online, I came across a heartbreaking report from CNN — on December 7, Alareer was killed by a strike in Shajaiya, in northern Gaza."



[Practical Project / Technical Drawings / Renderings]



Practical Project: Personal Commission
- Han Sheng Xiangshan Coastal Project

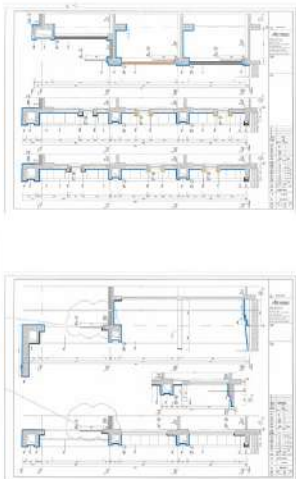


Practical Project: Vanke - Dongcheng Sports Center

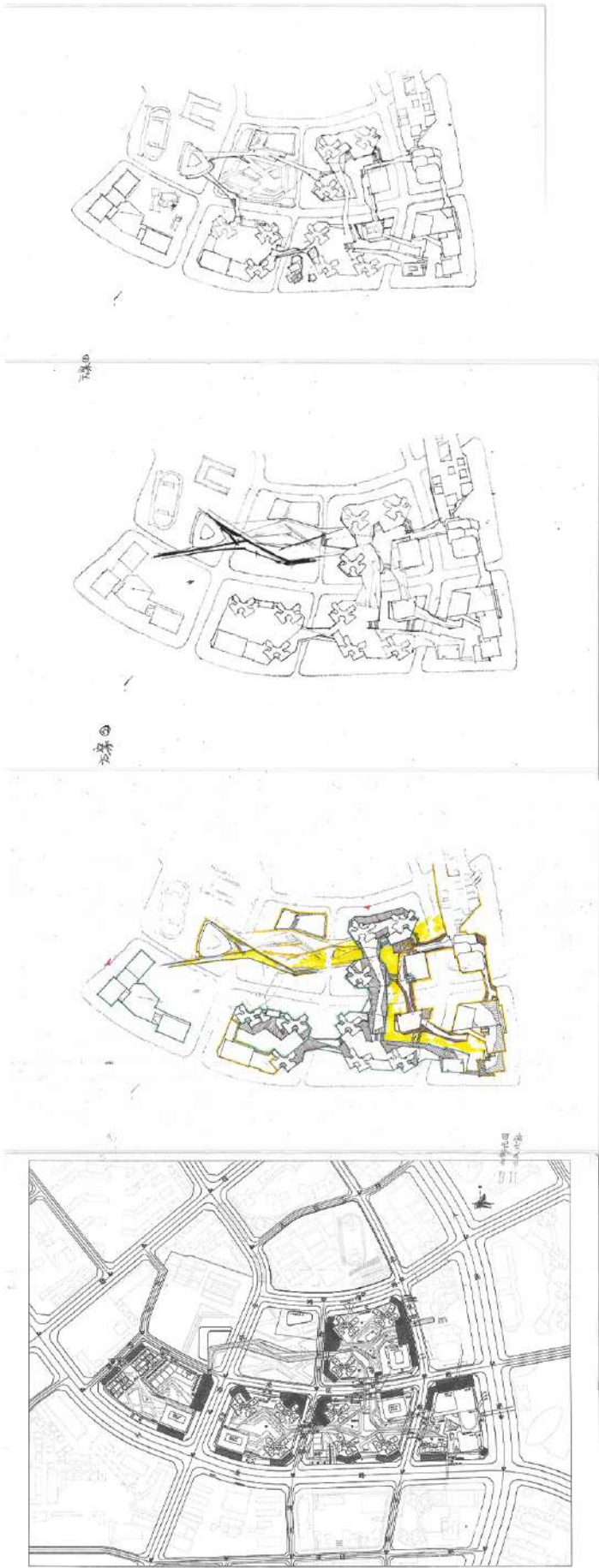
第14页/共66页

居住地块技术指标 (J-02-b, R2-C2+C3+C4)			
项目	数值	单位	备注
用地面积	49788.3	㎡	
总建筑面积	205413	㎡	
计容建筑面积	149363	㎡	
住宅	119491	㎡	不大于计容80%
商业及社区配套	29872	㎡	不大于计容20%
其中			
商业	10000	㎡	
社区配套	3600	㎡	
其他	12272	㎡	
社区配套	1600	㎡	
其他	2000	㎡	
公共配套设施	3200	㎡	不计容
地下建筑面积	52850	㎡	
容积率	3.00		3.0
建筑密度	32%		小于33.2%
绿化率	35%		大于34%
户数	597	户	
停车位	1510	辆	

商业地块技术指标 (J-01-d, C2)			
项目	数值	单位	备注
用地面积	6871.3	㎡	
总建筑面积	18802	㎡	
计容建筑面积	13742	㎡	
其中			
商业	9900	㎡	
其他	3842	㎡	
地下建筑面积	5060	㎡	
容积率	2.00		2.0
建筑密度	45%		小于50%
绿化率	23%		大于20%
停车位	230	辆	

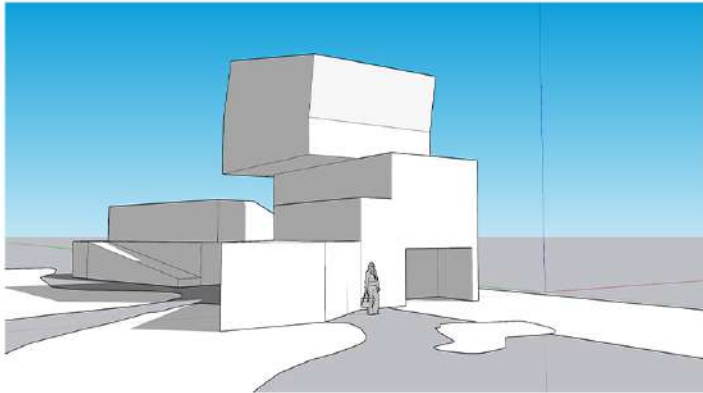


Practical Project: Huawei - Talent Housing Green Island Garden Kindergarten

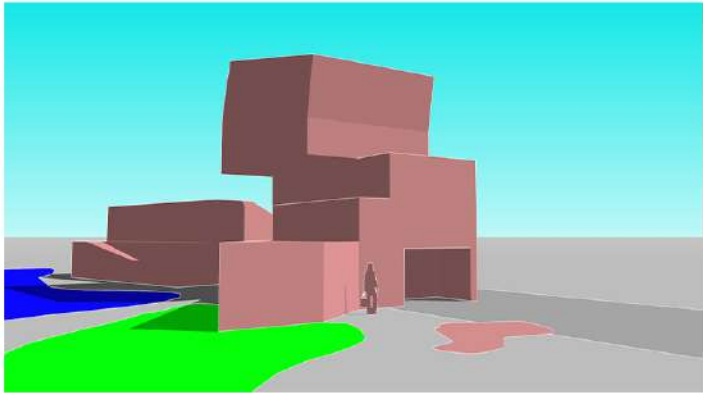


Practical Project: Zhongzhou - Longhua Commercial Center Urban Renewal

[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://zwj5uynwea3.feishu.cn/docx/JMfOdyG2xoNIREx4FPncLXtDnXb>



ComfyUI Workflow diagram showing the process of generating an architectural image. The workflow includes nodes for loading checkpoints, encoding prompts, conditioning, sampling, and saving the image. The positive prompt is: blue_building,architecture, bare_tree, building, city, cityscape, day, gradient, gradient_background, house, outdoors, scenery, sky, skyline, skyscraper, street, tree <lora:white_building:1>,best quality. The negative prompt is: text, watermarklowres, text, error, extra digit, fewer digits, cropped, worst quality, low quality, normal quality, jpeg artifacts, signature, watermark, username, blurry.

ComfyUI Workflow: Output for the project "Particlizing - Prisons for Low-living Silver-haired" (previous Page)

Reference/Credit:

YAN, Y., ZHANG, X., PENG, Z., & XU, L. (2020). THE GRAPH OF DESIRE OF SPACE—A NARRATIVE INTRODUCTION TO PSYCHOANALYTIC CARTOGRAPHIES. Landscape Architecture Frontiers, 1-20.

Lai, J. (2012). CITIZENS OF NOPLACE. Princeton Architectural Press.

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<https://vdoc.pub/documents/habitar-5jv52ose5d60>

ZHANG, Y. (2017). FROM METAPHYSICAL FANTASIES TO DEVOURING THE EARTH: THREE WAVES OF WESTERN GLOBALIZATION - INTERPRETATION OF PETER SLOTERDIJK'S "THE INTERIOR OF CAPITAL". Marxism and Reality, 100-107.

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.