

**MICRO-INSTITUTION:
DESIGN AND CRAFT IN EDUCATION FOR SOCIO-ECONOMIC CHANGE
for Urban China Migrant Workers' Children**

by
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Bachelor of Arts in Architectural Studies
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MASTER OF ARCHITECTURE
AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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ABSTRACT

The socioeconomic condition of the urban migrant worker remains one of the most substantial manifestations of inequality in China. The ever-growing wealth and human rights disparity between urban citizens and rural farmers has multigenerational implications: endangering the migrant workers and disenfranchising the next generation, thereby engendering cyclical poverty. In contrast, the role of architecture has been limited to merely the hegemonic mechanism for sculpting the landscapes and cityscapes, limiting the role of architecture to engage in this politico-economic discourse, validly. This thesis is an example of the potential influence of architecture to transcend its reputation as mere device of the wealthy, instead seizing an opportunity to improve the livelihoods of the poor.

The Micro-Institution, a unique building typology that integrates the program related to diverse economic classes: migrant students' education and the elites' study of design and the arts. The democratic intermingling of both economic classes is celebrated on an elevated platform- this artifact serves as the catalyst, delivering an environment apt for socioeconomic exchange. More significantly, the pursuit of beauty and meaning both in the level of architecture and curriculum will be the driving force to directing the role of architecture. Through visiting Compassion Migrant Children (CMC), a reputable non-governmental organization, and the Waldorf Schools during field research in Fuzhou, China, I realized that architecture could be the mechanism to synthesize the arts and economic classes, thereby pragmatically engaging in this discourse of socioeconomic injustice.

The major components/players of this Micro-Institution will be migrant children, artist residents, and the public. The main program elements will be public galleries, a migrant children's arts school, artists' studios, and public space for social interaction. This "Micro-institution" will potentially serve as a starter core to further facilitate future affordable housing complex, and also as a rare physical artifact to showcase the dignity and identity of this underprivileged group.

This thesis speculates that the role of architecture is greatly limited when thought of strictly as an artifact for tangible usage, and will therefore begin by attempting to use a building prototype to instigate and facilitate social changes at large.

Thesis Supervisor: Yung Ho Chang
Title: Professor of Architecture



YU GAO

With a migrant worker and his daughter in Fuzhou, July 2011

DEDICATION

I dedicate this thesis to my dear Chinese migrant workers and their families.

My deepest gratitude for your contribution to our country.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my Lord, Jesus Christ, whom I committed my life to at the age of 22. It is wonderful to know that God is with me and loves me unconditionally. I am convinced that I would have fallen way short of what has become my thesis had it not been for the guidance and wisdom from God. (Proverbs 3: 5-6)

Thanks: To my mom and dad, Zheng Fang and Gao Chen, for your sacrificial love and support. Thank you for tolerating and taking care of me.

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To my supportive fellow architecture students. Special thanks to Joan Chen, Zhang Jie, Ulises Reyes.

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Last but not least, to my boyfriend, James In, for your prayer and tangible help. Thanks for listening to me mumble about academic things that are not really all that important in the eternal scheme of things. You have been there for me always. Thanks for putting up with me through this rocky time.

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**“Things are not revolutionized by making revolutions. The real revolution lies in the solution of existing problems.”
Le Corbusier**

INTRODUCTION

1 Background and Context: Migrant Workers' Children

2 Architecture for Social Transformation

3 Architecture or Revolution

4 Art and Craft Education

5 Chinese Social Space



INTRODUCTION

Migrant Workers' Children



Underprivileged Migrant Children

As the major contributors to China's urbanization and economic boom, the estimated 120,000,000 migrant workers in urban China are the largest underprivileged group in the nation. It is a dangerous potential cause for social and political unrest. The inferior rural status of these migrant workers leads to the discrimination in education for their children, and social, geographical and cultural marginalization. With the extremely low-quality standard of education, these migrant children grow up in the shadow of their parents' generation; living without dignity or the hope of a promising future. Many migrant youths face no choice but to enter the job market prematurely and educationally ill-equipped, perpetuating a cycle of intergenerational poverty.

With the cost of the 2008 Beijing Olympics exceeding US\$44 billion and the 2010 Shanghai Expo requiring AU&48billion, the Chinese government has successfully demonstrated their economic growth, paradoxically they are yet to implement any policies or projects to help these children, who are in dire need.

Economy

Three decades of an open door policy has triggered economic progress and the consequent urban development of unprecedented speed and proportion. China's rapid economic growth over the past thirty years has lifted millions out of indigence, and introduced many to wealth- in western sense of pure purchasing power.

Emerging from near obscurity, China is today the seventh largest trading nation and the sixth largest economy in the world. News of 10, 11, 12% annual economic growth has penetrated every corner of the world and has contributed to an image of an advanced and still advancing economy.

These figures, however, certainly do not tell the whole story of China's economic condition. The division between the development of the coastal cities and the hinterland, between the registered citizens and the rural population, is severe and still widening. This split between the advanced, globalized part of the Chinese economy and the vast labor force of self-employed farmers is very difficult to reconcile in a modern society.



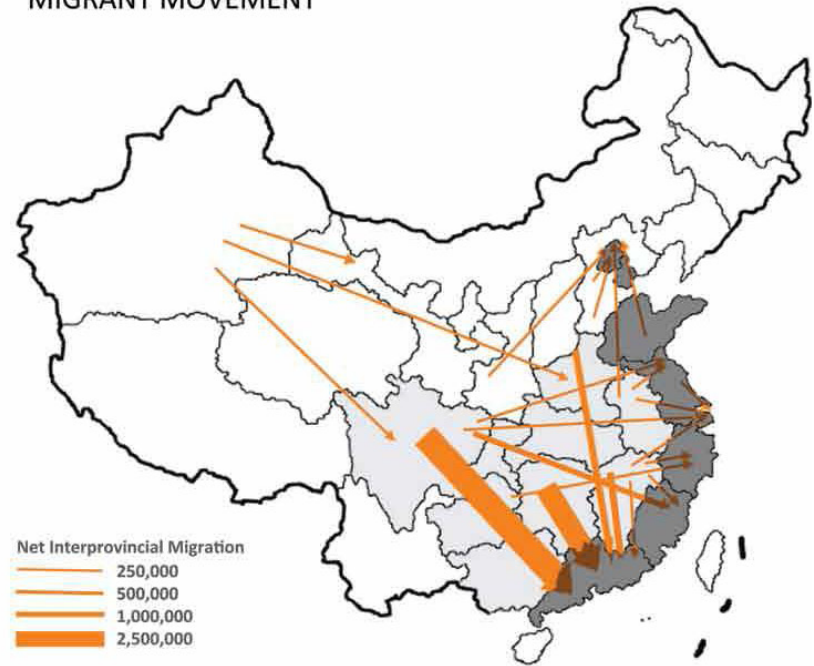
MIGRANT WORKERS
120,000,000

+

MIGRANT CHILDREN
22,000,000



MIGRANT MOVEMENT



Urbanization and Modernization

Ceaseless building ventures have taken hold of China. Shanghai reveals a new metropolitan core, Beijing was wrapped in scaffolding only to emerge a new capital at 2008 Olympic Games, and China's main river deltas are zealously exerting a mixture of suburban high-rises and factories. Starting at the coastal regions, urbanity is sweeping across the country beyond the boomtowns and heading for the countryside at an alarming rate.

An appropriate strategy of urbanization that is able to accommodate the large numbers of migrants is currently absent due to age-old regulations blocking migration from the countryside that still have significant effect. Ultimately a policy that is based on blocking movement towards the cities will widen the gap between the developed regions and the rest of China. It counteracts the implementation of an integrated urban network, which China should strive for. To plan and construct the number of new cities necessary to serve 1.3 billion new urbanites will require nothing less than a visionary strategy at a national scale.

Planning the Spontaneous

The image of China with modern cities and their concomitant modern problems might not seem to put forth any real dilemma to the casual observer. However, China is in dire need of a staggering number of new homes, built in new towns and cities, and both the government and the local entrepreneurs are eager and able to oblige. Possibly – from a European perspective – the fruit of their labor might prove too monotonous or not modern enough. At this moment in China's development, however, it should not be dictated by the West's directives on style or even sustainability. The town/city centers may turn into common, anonymous business districts, derelict of identity, and the residential areas may be segregated low-density suburbs, but every industrialized country in the world today is facing these problems.

The difference is that China can beat the projected demographics. Simply providing the quantity of city space is, as argued, not the real concern. Modern China is experiencing a shift in the desires and requirements of its citizens (notably in cities such as Beijing). Today, China can

anticipate this urban mind-set to evolve and spill over to the new cities. Without glorifying the Chinese condition, I believe China is able to reproduce the unique and dynamic qualities of its currently modernizing metropolises.

One thing it can certainly do is accommodate the one billion new urbanites with housing and modern amenities. This belief is rooted in the knowledge that China has a fervent market and a solid political backbone. The unwavering enthusiasm with which developers and local politicians are constructing China's countryside provides the solid stamina needed and the potential for architectural renewal.

The Chinese citizen will not be content with the prevailing monotony of urban form or with a type of mitigated modernity. So what can the government do? The objective of four hundred new cities as formulated by the former Minister of Civil Affairs will not be built on a clean slate. Any urban intervention will take place within the chaotic grid of 40 existing metropolises, 700 existing cities and over 12000 Chinese towns and villages. Recreating the density and matured quality of long-standing urban environments can be achieved only within these existing cities.



Monuments

VS



Social Transformation

? Can architecture be a catalyst to envision alternative solutions and alleviate the real world social problem?

? Is there a new building typology that can help to improve the migrant workers' children future in urban China?

ARCHITECTURAL CONTEXT

– Architecture as the agent to stimulate social transformation

– Architecture = Revolution in the information age for developing countries

The question lies in the core of this architectural discourse, “Can architecture be revolutionary and provide social change?” Instead of creating architecture for the two percent of the entire building industry, architecture should be able to extend its scope, and the architects’ role should be expanded to embrace and consider the wide spectrum in the social problems.

ARCHITECTURE OR REVOLUTION

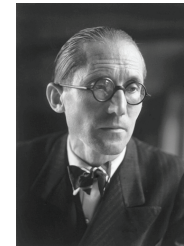
Architecture as the Agent of Change



Industrial Revolution



Robert Owen



Le Corbusier

Industrial Revolution

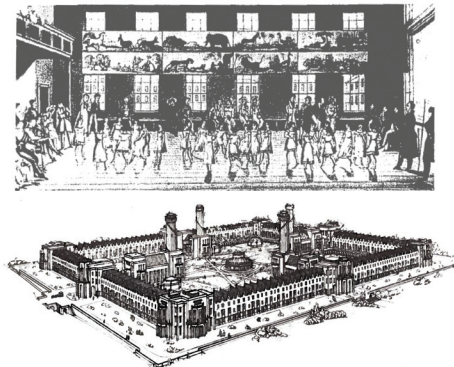
1815–
Industralization
Mass Production
Standardization
Rural to Urban Migration



Utopian Socialists

Mid 19C–

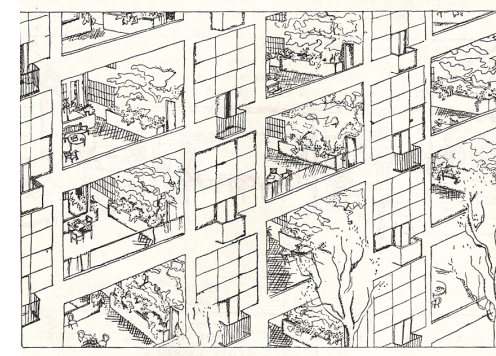
Socialist Community
First Model Community
“New Harmony”



Utopian Modernist

Early 20C–
Industralization of Urban Space
Architecture as a tool for social change

“Architecture or Revolution.
Revolution can be avoided.”

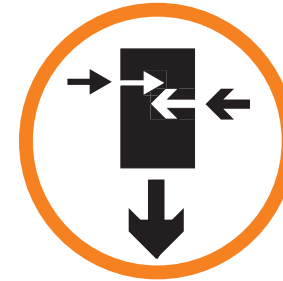


“FREEHOLD MAISONNETTES”: THE HANGING GARDENS
Each garden is completely shut off from its neighbour.

Spatial Design and Social Transformation



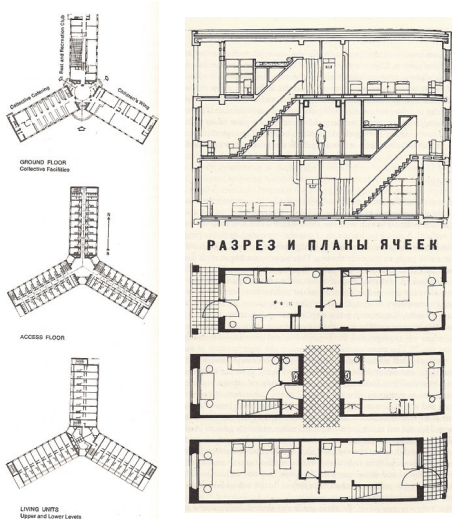
Alexander Bogdanov



Digital Revolution

Constructivist architecture
1920s–1930s

“Social Condensers”
(A new, collectivized environment
suited to the ideals of socialism)



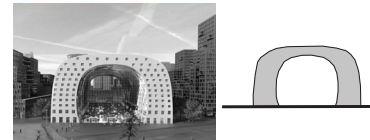
Information Age

1950–
Digitalization
Mass Customization



Hybridization Reactor

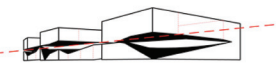
MVRDV
Apartments + Public Market



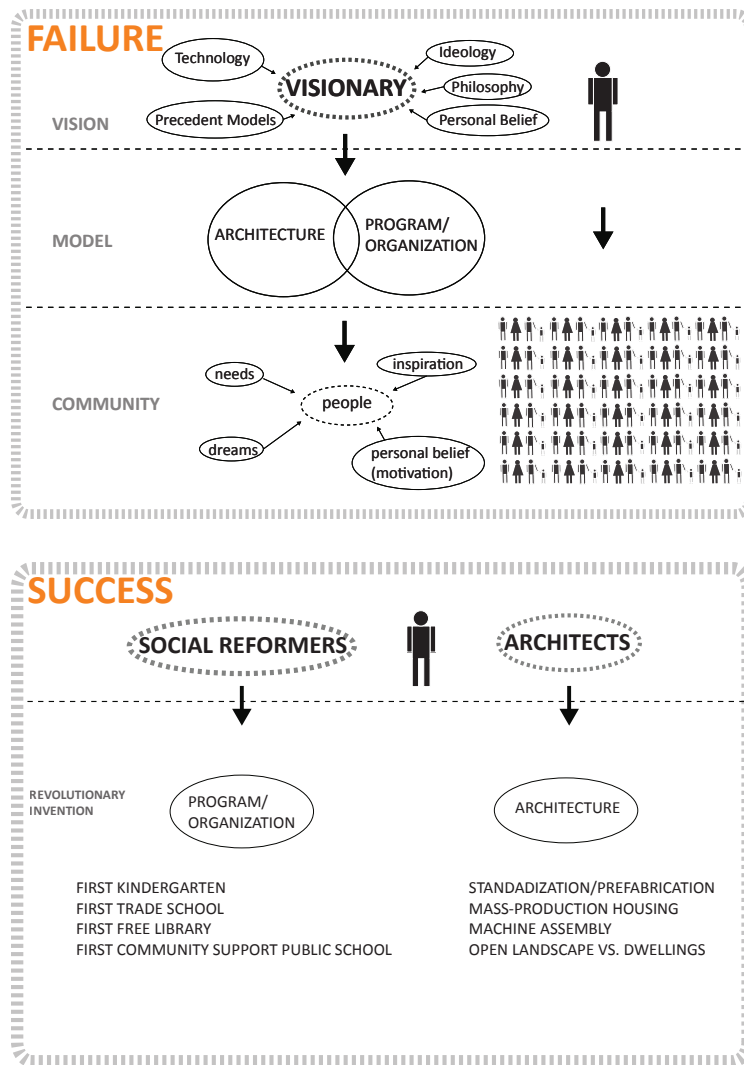
BLOCK 11X, DUBAI
Apartments + Town Halls



APARTMENTS
TOWN HOUSES



FAILURE AND SUCCESS OF THE REVOLUTIONARY SPACE IN MACHINE AGE



Utopian Socialists – Education as the Core of Revolutionary Spaces

Robert Owen and Charles Fourier

Owen came to believe education was the most important influence over social conditions. As a result, he established a factory school, known as the Institute for the Formation of Character, funded entirely out of company profits. His belief that education was the foundation for social improvement was reflected in the central location of the school in Owen's design. Owen-style education aimed to produce subjects who identified their own interests and happiness with the interests and happiness of society as a whole.

Ongoing participation in education was clearly one of the major unifying elements of everyday life in the Owenite community. In this manner, education at once contributed to the dissemination of Owenite principles of cooperation, while simultaneously fostering a greater sense of community through participation.

Owen's attempts to build model communities based upon cooperation ultimately proved disappointing. However, in bringing together collective labor, communal living, and universal education within a purpose built architectural space, he provided an innovative model for the achievement of social transformation.

Indeed, despite the derision with which his ideas were treated by Marx and Engels, it was so-called utopian socialists like Owen who first proposed that social revolution ought to be preceded by a revolution in the organization of social space. Owen theorized that space could serve a much greater goal – namely, that it could contribute to the production of a new type of person, a new breed of enlightened, principled, and collectively minded subjects. Although its origins are seldom acknowledged, the conception that space is central to revolutionary transformation was taken up again almost a century later by the radical theoreticians, architects, and urban planners of the Soviet Union.

Utopian Modernists – Le Corbusier

Throughout the twenties, Le Corbusier, like many of his German contemporaries, regarded Taylorism and serial production as fundamental components of social renewal. While the aesthetic suggestions of mechanistic repetition and standardization echoed many of his own formal principles, the promise of industrial efficiency and greater productivity allowed him to conceive of architecture as a social tool.

In contrast to the Beaux-Arts practitioners who rarely considered in the prewar period the issue of housing or new materials, Le Corbusier argued for an expansion of the very conception of the architect's role to embrace the consideration of social problems.

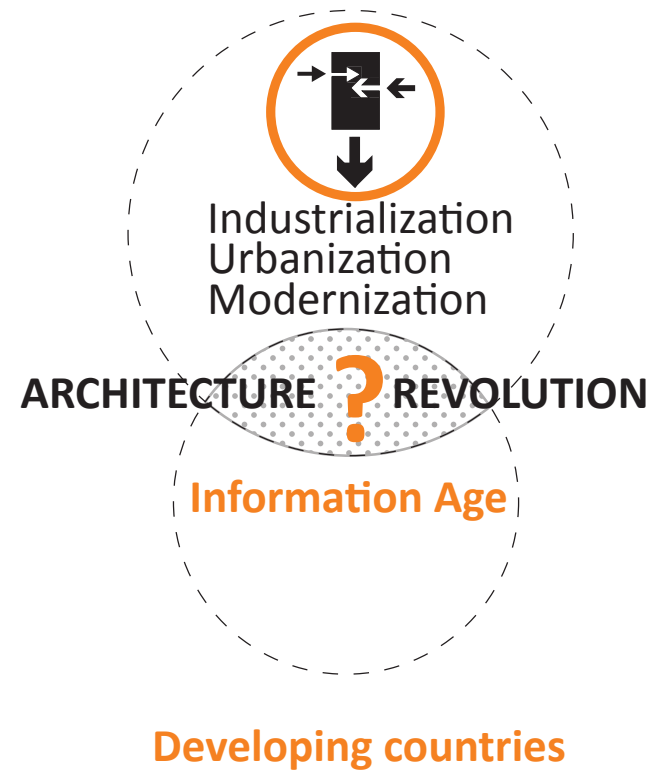
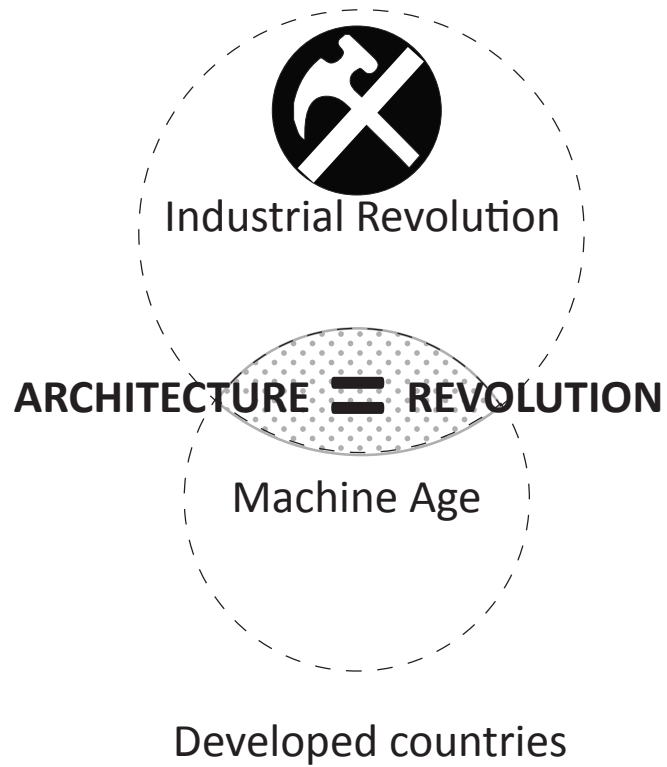
Soviet Architecture – Constructivist Architecture – Social Condenser

In response to the urgent demand on housing, in 1928 a conference of OSA proposed the design and construction of an entirely new form of collective living unit, which they called the "social condenser." "Social Condensers" were designed to foster the emergence of a collectivized proletarian subject. It would be the vehicle to create a new collectivized environment suited to the ideals of socialism.

In contrast to the previous segregated spatial function, "Social Condensers" unified the functions of the factory, worker's club and communal house in one spatial form. Through this conjunction, it was hoped that social condensers would produce both material and cultural wealth.

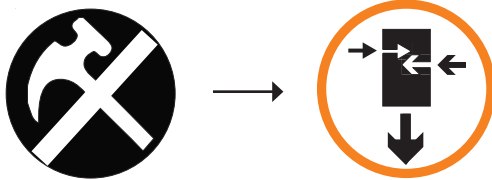
ARCHITECTURE AS THE AGENT OF CHANGE

HYBRIDIZATION REACTOR



ARCHITECTURE ? REVOLUTION

What is the relationship between architecture and revolution in developing countries in the information age?



INDUSTRIAL REVOLUTION

Architecture = Revolution

There has been a consistent effort for modernists to try to create revolution through architecture. The entire process happened mainly in developed countries such as Europe.

INFORMATION AGE

Architecture ? Revolution

The ever-growing technological advancement has led to industrialization, urbanization, and modernization on a global scale.

The question that we should ask ourselves should be “what is the role of architecture in terms of instigating revolutionary changes in developing countries?”

organic urban phenomenon in promoting creativity, have become a current paradigm for the living and working pattern of artists' communities

High-end, Commercial
798, Beijing



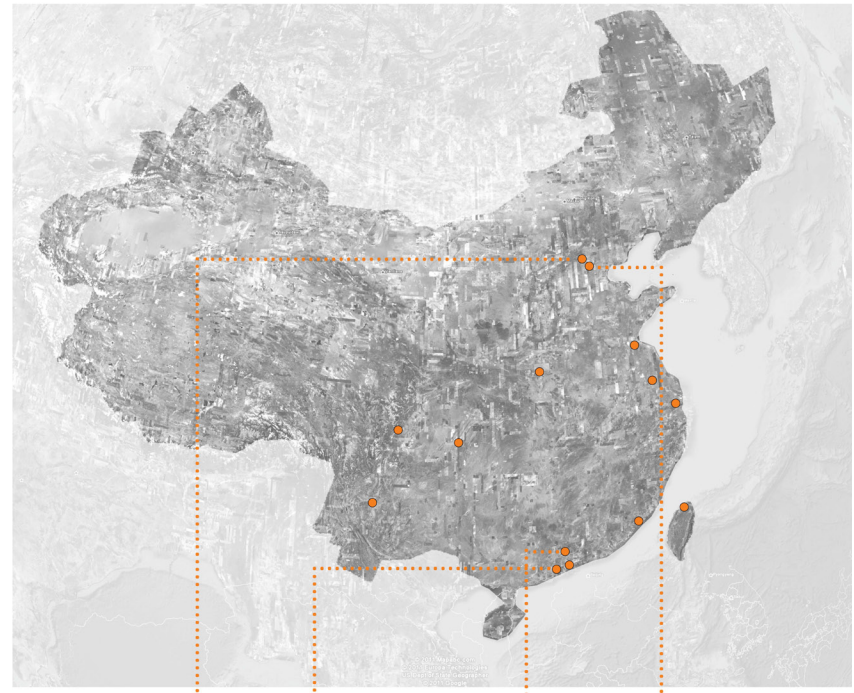
Low-end, Commercial
DaFan, ShenZhen



Artistic
Song Zhuang, Beijing



Artistic
Xiao Zhou GuangZhou





Art, traditionally an inspirational creative process for cultivating persons of culture and knowledge has been forgotten from the scene of the ever-pursuing-money mentality, especially for the underprivileged socioeconomic class. It has become a luxury entertainment for rich. The tremendous impact that art education can bring to these neglected migrant children could provide them alternative life paths and potentially fundamentally change these migrant children's future and improve the general society.

PROJECT PROPOSAL

This project proposes the hybridization of craft (artistic training centre and workshops) with education (art gallery/cultural centre) space and housings, ultimately creating a network of these hybrid building prototypes throughout urban China to catalyze social and political change for these migrant children.

Artists Villages, an organic urban phenomenon in promoting creativity, has become a current paradigm for artists' communities living and working patterns. Through further research in this existing condition, my thesis could potentially create a paradigm shift in creating socially productive artistic educational catalysts in urban China.



THE PURPOSE OF THE ALTERNATIVE EDUCATIONAL APPROACHES

– Waldorf Education:

The interdisciplinary combination of in-depth main subject studies and wide ranges of arts and practical skills classes contribute to the development of a well-balanced individual, providing young people the basis on which to develop into free, morally responsible and integrated individuals.

– Montessori Education:

A pedagogical model based on human development, through encouraging psychological self-construction by means of interaction with their environments and providing children the liberty to choose and act freely through a prepared environment.

THE RESULTANT EDUCATIONAL CURRICULUM APPROACH

Subjects

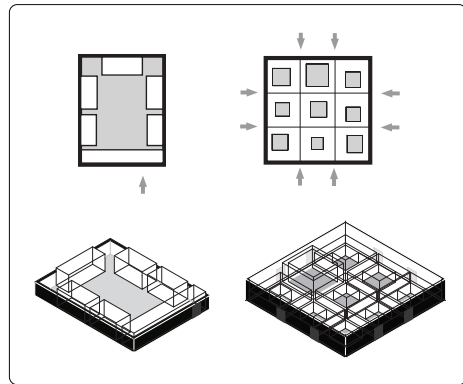
- Main subjects: Literature, Mathematics, Language, Science (Physics, Chemistry, Biology)
- Arts: Drawing, Sculpture, Craft, Dance, Theatre, etc.
- Practical Skills: Fabrication, woodwork, metalwork, Fabric works, etc.

Teachers

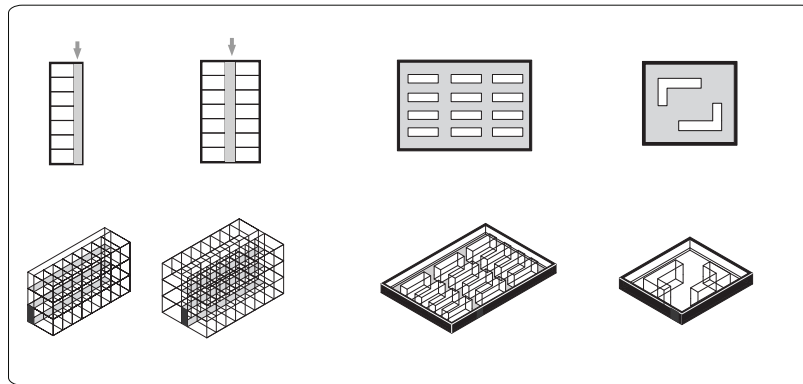
- Regular teachers: main subjects,
- Artists: Arts
- Local Crafts people: practical skills

Program

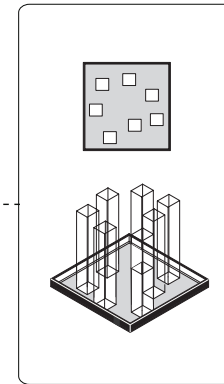
- Regular Classrooms: main subjects
- Large (in plan and section) Flexible Classrooms: arts
- Large Specified Classrooms with service zones: practical skills
- Communal spaces: outdoor and indoor, large and intimate
- Working+ Living units for artists and local crafts people
- Offices for regular teachers
- Gallery



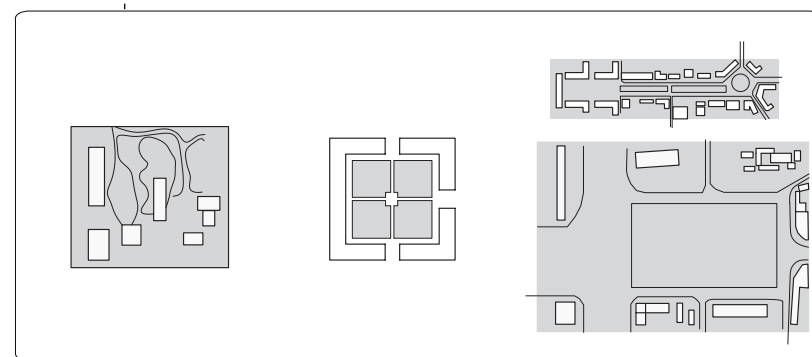
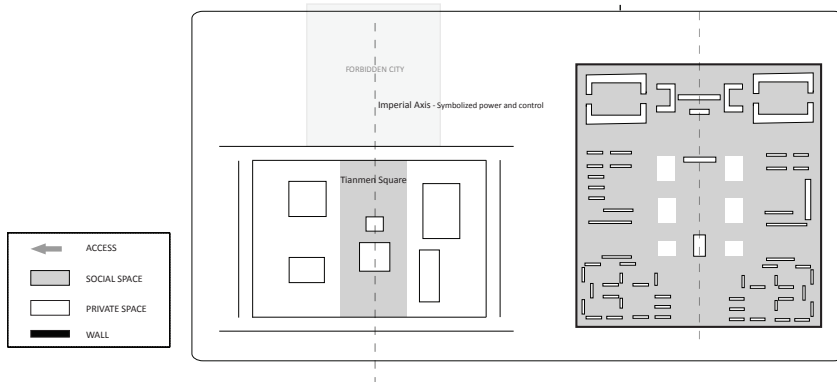
CONFUCIAN-FEUDAL SOCIETY
since 1500BC



COMMUNIST SOCIETY
since 1949



CAPITALISM + CONSUMERISM+ GLOBALIZATION
since 1978



CHINESE SPATIAL HERITAGE- “DanWei” since 1949

Standardization of Spatial Forms

Centralization and standardization of the design processes were favored because they allowed for the coordinated and efficient deployment of technical resources. A prominent example of standardization during the period was in the design of the institutions of higher education. Working with the various central and local design offices, the Ministry of Education coordinated designs for a large number of new universities and colleges.

The importance of standardization was perhaps most pronounced in the area of urban housing. Naturally there were many different types of factory and institution structures, and each required a

certain degree of specialization of design. However, the housing that was to be built alongside the factory or institution did not require specialization and could conform to universal /national standards. Economy and standardization in housing design was also an area on which the Soviet Union had placed great emphasis and for which the Soviet experts could provide detailed blueprints. The basic principles that formed the Chinese strategy for urban housing was adopted from the Soviet Union’s method which centered on economy, simplicity, and the industrialization of the construction process.

From the Soviet experience in design and construction, Chinese construction authorities adapted and developed two basic forms of housing suited to mass production: the first was a simple dormitory style consisting of individual rooms opening off long corridors with shared

toilet, washing, and cooking facilities; the second was apartment style, two or more rooms forming an independent residence, that were designed in units, or “danyuan,” consisting of a set of apartments sharing an entrance and stairwell. These units could be reproduced side-by side as many times as required for any given housing development. The dormitory form was ideal for institutions such as schools, colleges, and the military, as well as for any enterprise that employed large numbers of unmarried workers.

This “Danwei”-type buildings proliferated the entire country, producing an extremely banal and generic urban landscape. However, an opportunity can be found through using these existing Chinese spatial forms and hybridizing their originally segregated function, ultimately creating a new building typology.

CASE STUDIES

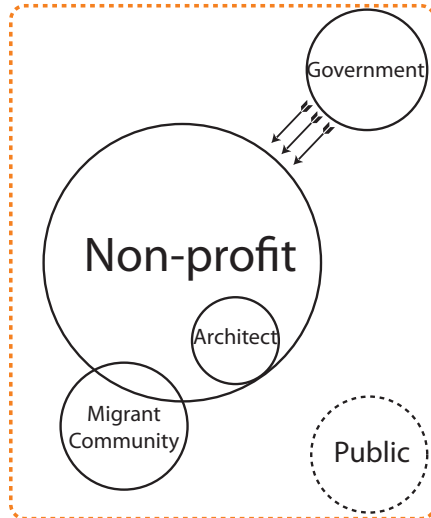
- 1. CMC Community Centre**
- 2. Waldorf School**
- 3. Project Row Houses**
- 4. Metro Cable**
- 5. España Library**
- 6. Inner-City Arts**

CMC - COMPASSION FOR MIGRANT CHILDREN

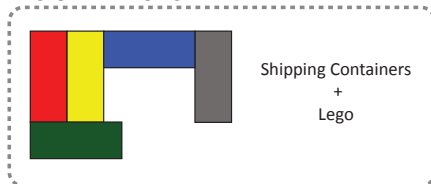
NGO-Initiated Community Centres

Heiqiao Community Cubes Centre

ORGANIZATION STRUCTURE



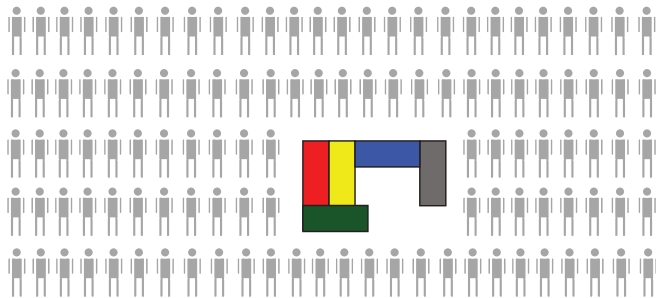
DESIGN APPROACH



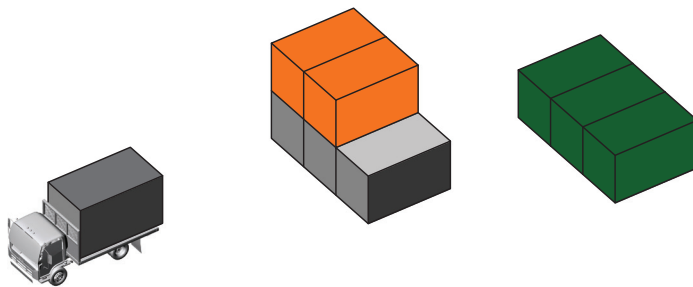
CMC establishes community centers in the heart of migrant neighborhoods. Through and around these centers, they offer programs for migrant children and their families. They currently operate two community centers in Beijing serving over 550 children and their families. Including this, they impact over 1000 children weekly through programs in the centers and the schools.



Success



– Community-based



– Mobile Structure
– Simple Construction
Easy to be packaged and reassembled

Failure

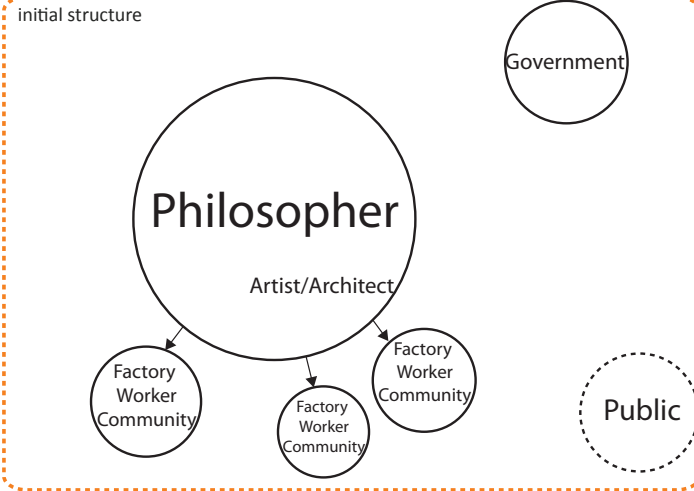


– A Sense of Temporariness
– Less-Structured Curriculum
and Insufficient Staff
– Illegal Status

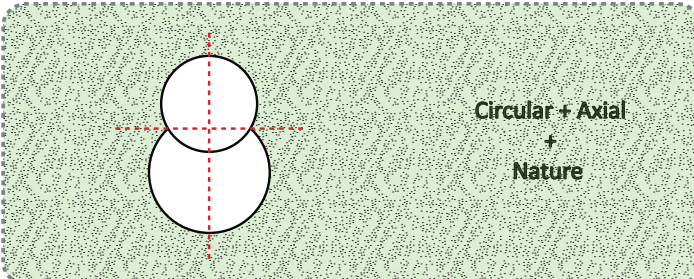
WALDORF SCHOOL

Artistic Wholistic Education System

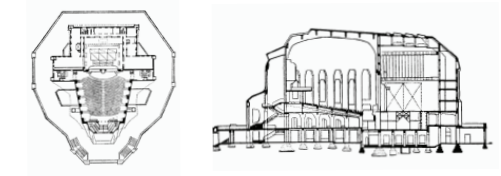
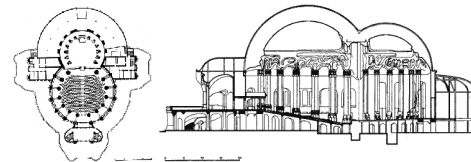
ORGANIZATION STRUCTURE



DESIGN APPROACH



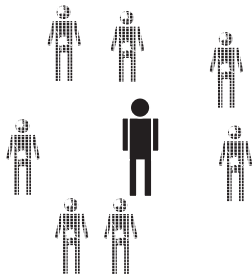
Waldorf education (also known as Steiner or Steiner-Waldorf education) is a humanistic approach to pedagogy based upon the educational philosophy of the Austrian philosopher **Rudolf Steiner**, the founder of anthroposophy. Learning is interdisciplinary, integrating practical, **artistic**, and conceptual elements. The approach emphasizes the role of the **imagination** in learning, developing thinking that includes a **creative** as well as an analytic component. Humanistic view is expressed in the architecture, through combining **circular and axial** buildings to create a sense of **rest and movement** simultaneously.



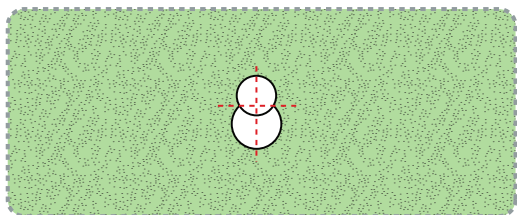
Success



– Formalistic Approach, a 20th-century expressionist architecture
the synthesis of diverse artistic media and sensory effects

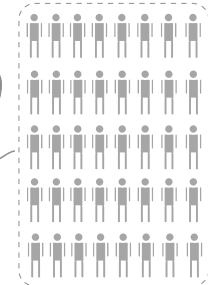
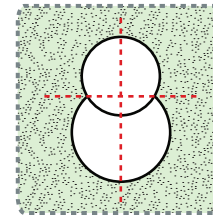


– Numerous visual artists contributed to the building



– Situated in Natural Landscape

Failure



– Physically Detached from Communities

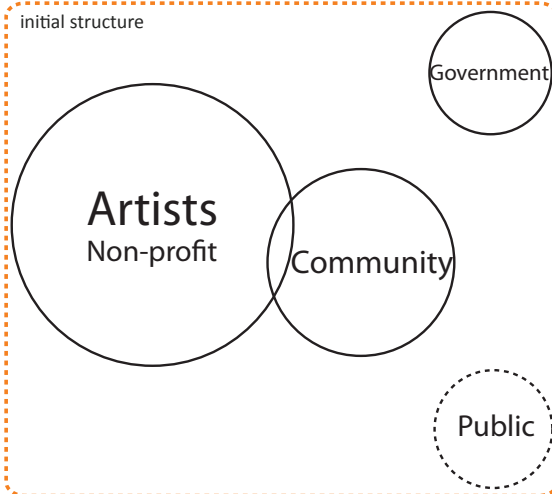


– Top-down Approach,
Visionaries & artists indulge in artistic expression,
not too much community input in design process

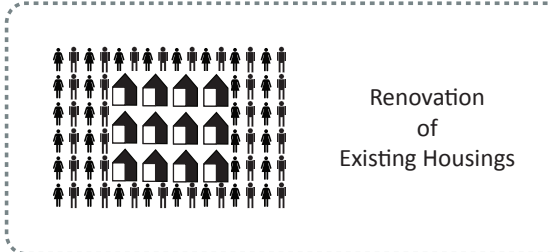
PROJECT ROW HOUSES

Artist-Initiated Neighborhood-based Nonprofit Art School/Artists Colony

ORGANIZATION STRUCTURE



DESIGN APPROACH



PRH is founded on the principle that art-and the community it creates-can be the foundation for revitalizing depressed inner-city neighborhoods. This principle was in part based on the philosophy of German artist Joseph Beuys (1921 – 1986) who coined the phrase “social sculpture,” which transformed the idea of sculpture as an art form into a social activity. Thus, the mission of Project Row Houses is to create community through the celebration of art, African American history and culture.

PRH’s campus has grown from the original block and a half to six blocks, and from 22 houses to 40 properties; including twelve artist exhibition and/or residency spaces, seven houses for young mothers, artist residencies, office spaces, a community gallery, a park, low-income residential and commercial spaces.

Success

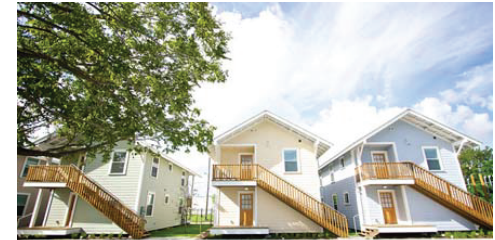


– Community-based Providing Affordable Housings

Failure



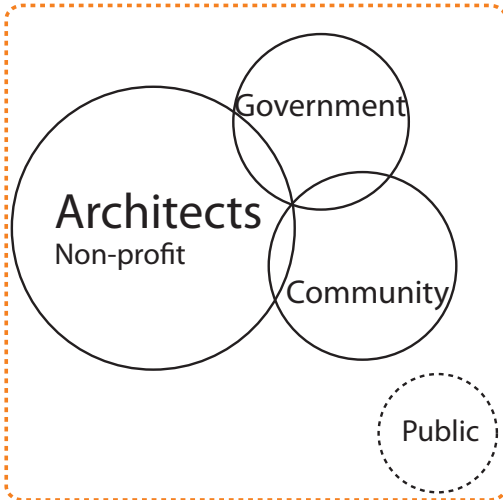
– Small Scale, Difficult to meet larger quantity of needs



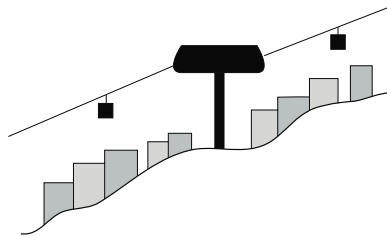
METRO CABLE

Infrastructure Instigated Social Change

ORGANIZATION STRUCTURE

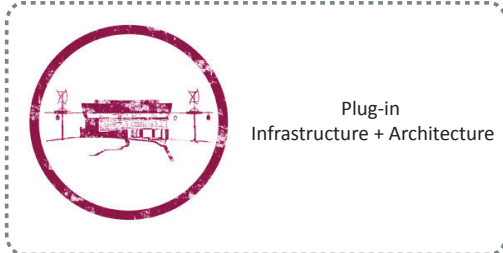


Success

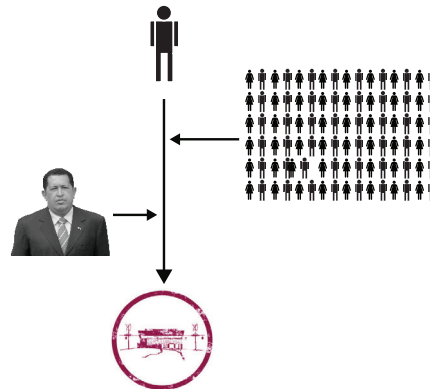


- Plug-in Infrastructure
- Minimal Intrusion instigate Large Social Change

DESIGN APPROACH



- ADD INFRASTRUCTURE linking the slums to the public transportation
- CAPTURE UNUSED SPACE against top-down road planning strategically using the unused space
- TRANSFORMATION



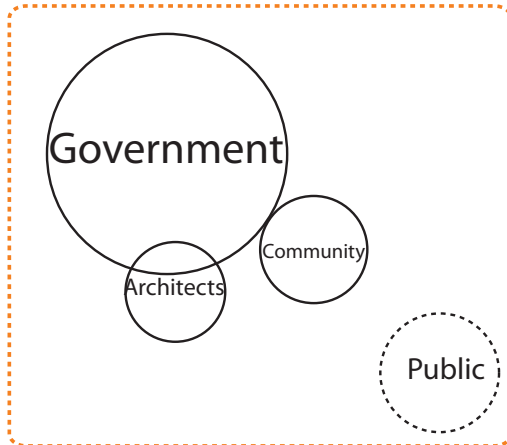
- Community Involvement
- Support from the President



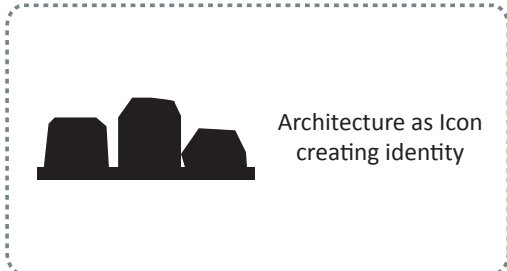
ESPAÑA LIBRARY

NGO-Initiated Community Centres

ORGANIZATION STRUCTURE

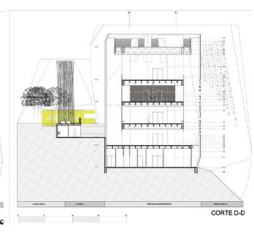
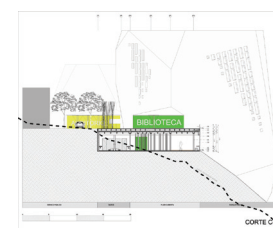
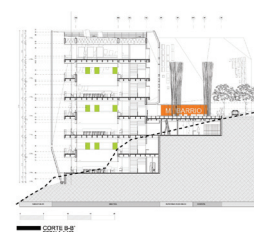
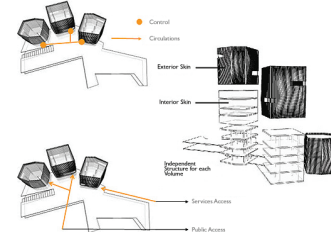
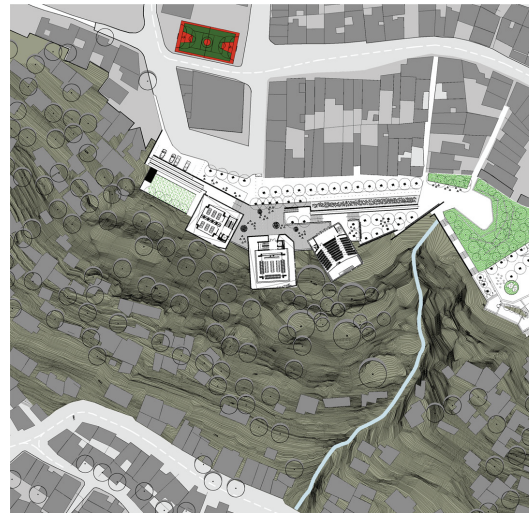
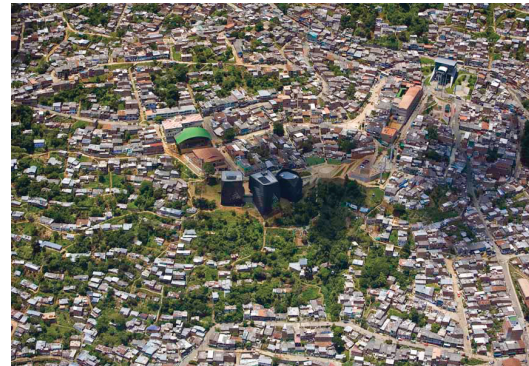


DESIGN APPROACH



The Project is located on one of the hillsides that have been affected by the violence since the 80's because of the drug traffic network that operates in the city of Medellin. It is part of the **government's social master plan program** to give equal economic and social opportunities to the population.

The program asked for a building with library, training room, administration room and auditorium on a unique volume. The proposal was to fragment the program in three groups: **The library, the rooms, and the auditorium**; then join them with a bottom platform that allows flexibility and autonomy, improving the people's participation considering each volume operates independently.



– Architecture as Icon



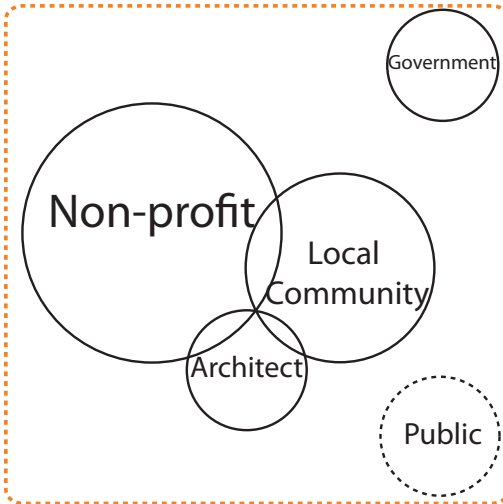
– Architecture as Landscape



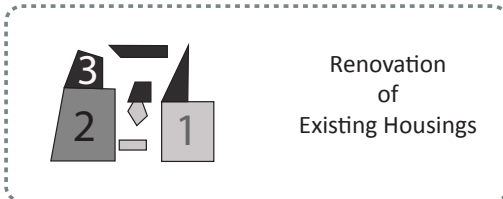
INNER-CITY ARTS

NGO-Initiated Community Centres

ORGANIZATION STRUCTURE

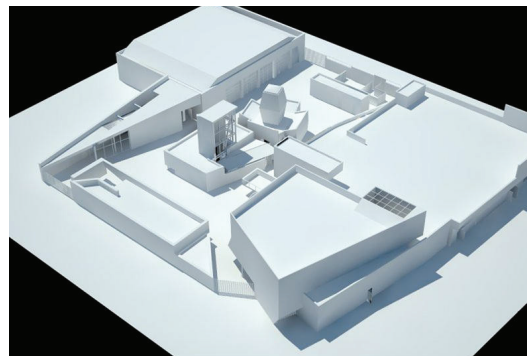
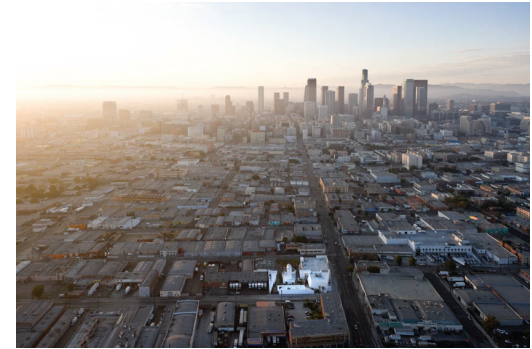


DESIGN APPROACH



Inner-City Arts, located in an impoverished Los Angeles neighborhood, offers a creative refuge for at-risk children who may not otherwise have access to the arts. The product of a partnership between founders Bob Bates and Irwin Jaeger, public school administrators, and the local community, the organization provides free art classes taught by professional artists to about ten thousand children annually. It was created partly to offset the effects of Proposition 13, an amendment to the state constitution in 1978 that resulted in severe tax caps and virtually eliminated arts education from many California public schools.

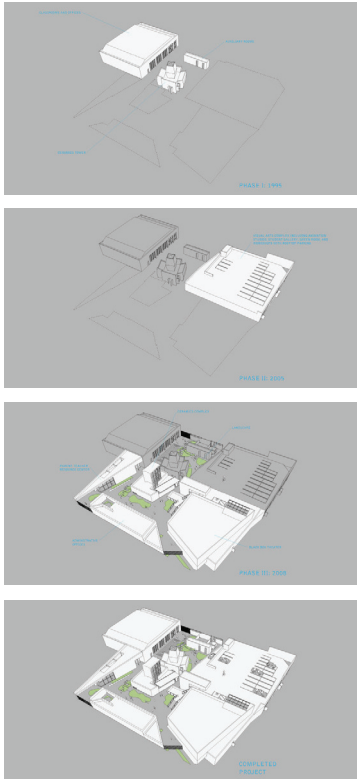
Maltzan, through his decade-and-a-half involvement with the project, demonstrates the potential of **architecture to inspire creativity** and realize promise in the context of an almost utopian micro-city.



Success



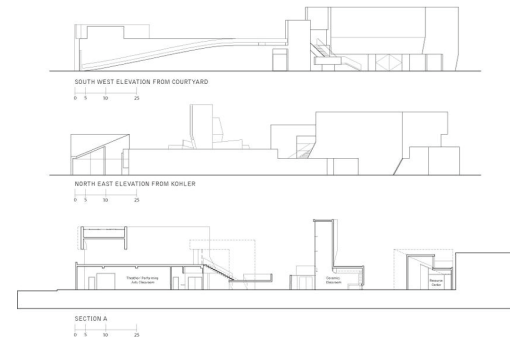
– Incremental Development
Three Phases



– Flexible yet Compact,
– Enclosure along the perimeter, open to the centre
– Courtyard: Central Gathering + Circulation



– Respecting the scale of the neighbourhood



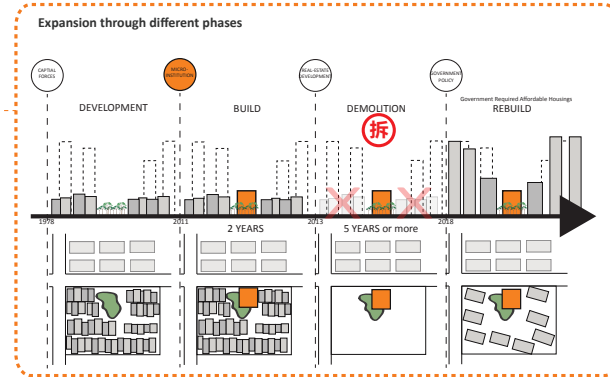
DESIGN PRINCIPLES

1. Principles
2. Operational + Economical Model
3. Program
4. Design Methodology
5. Starter Core
6. Flexibility
7. Chinese Social Space
8. Accessibility + Mobility
9. Icon
10. Deployable Building Prototype

PRINCIPLES -- Towards a New Micro-Institution

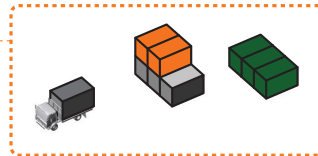
Growth

- A SEED with the potential to grow from temporary to permanent
- A beginning for a larger future development



Mobility

- Flexibility to be packaged and reassembled
- Easy Assembly
- Low Budget



Identity

Culturally Spatial Qualities

- Nature at the foreground + Building as the background
- Incremental Add-ons
- Verticality: Low-rise, High Density Urbanism
- Sense of Discovery
- Clashing of Urban Development and Existing Fabric



Play

- A Framework for Constructing Creative Space
 - Attunement Play, Body Play Movement, Object Play,
 - Social Play, Imaginative and Pretend Play, Storytelling-Narrative Play



Elegance

- Architecture as a Synthesis of the Arts, a Vessel for Creativity
- Raising underprivileged groups' self-esteem and a sense of dignity

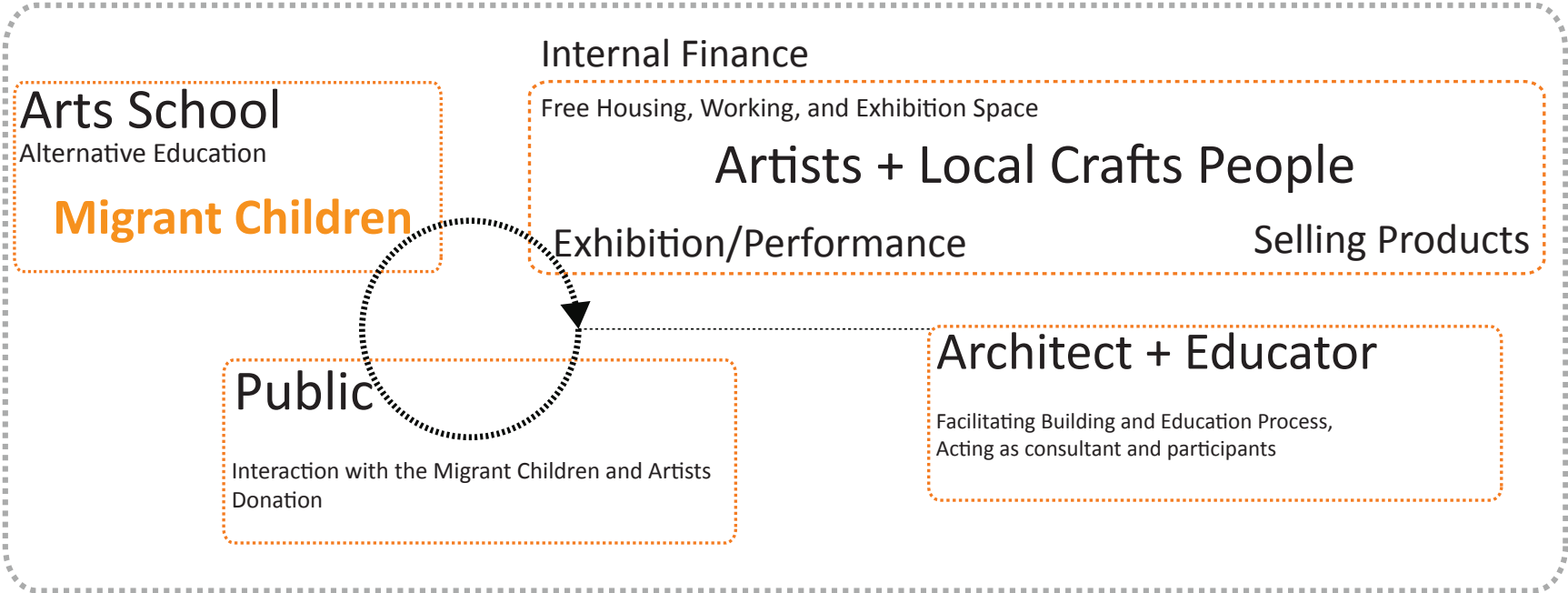


OPERATIONAL + ECONOMICAL MODEL

BUILDING PROCESS

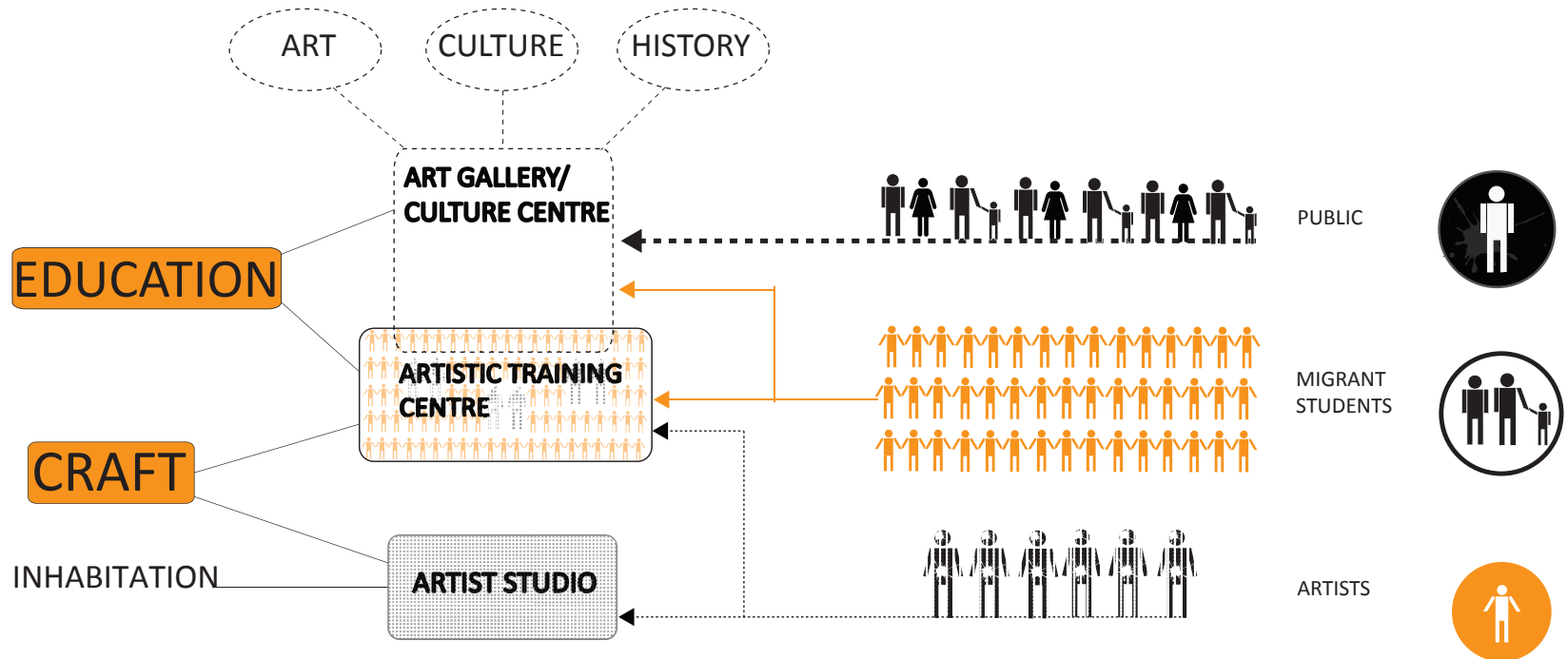


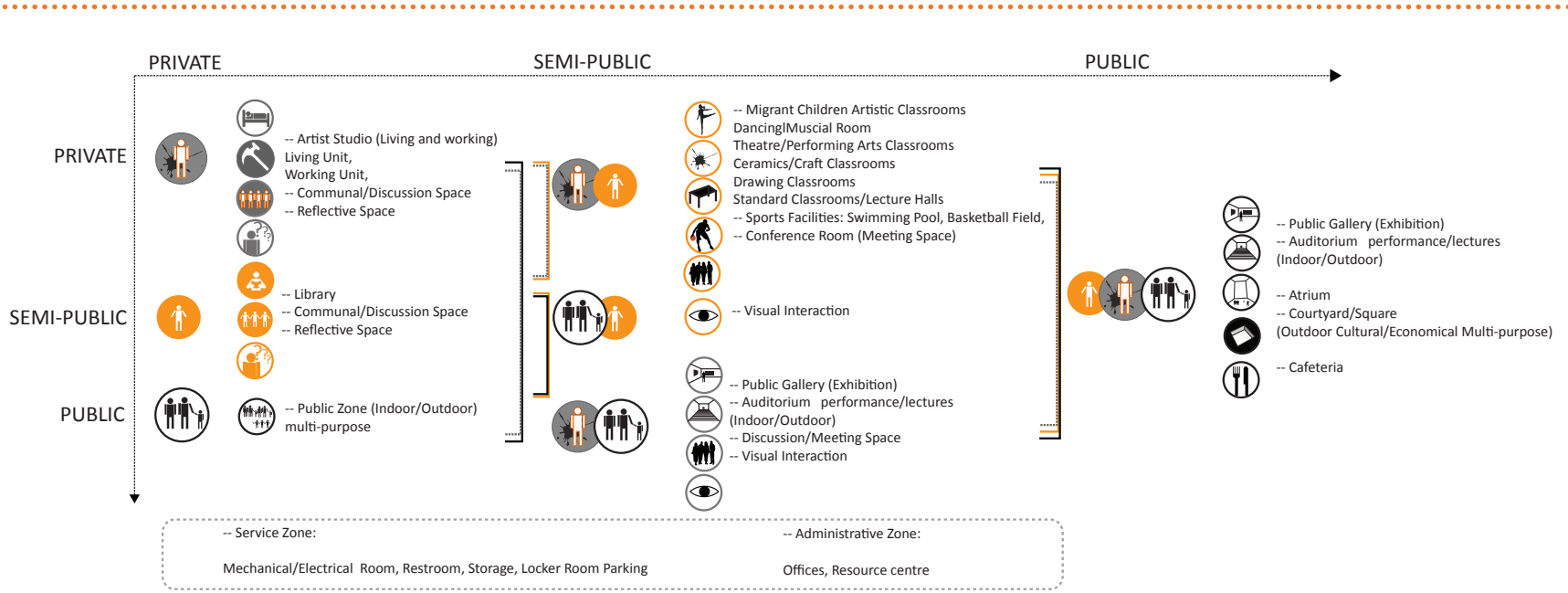
OPERATIONAL PROCESS



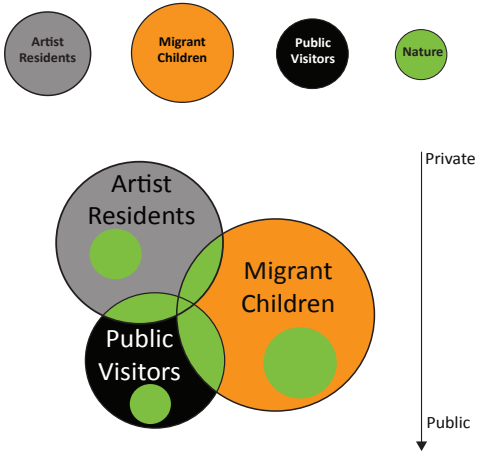
PROGRAM

MICRO-INSTITUTION





RELATIONSHIP
 Creating Encountering Opportunities between different Groups



DESIGN METHODOLOGY

Accommodating Artists Residents, Migrant Children Classrooms, Public Gallery, and Multipurpose space as Culture Centre/Landscape

Parameter	Constant	Variable	Rules
<p>Distance</p>	<p>= 12</p>	<p>Nartists</p>	<p>$D_1 H_1 = C_1$ $D_2 H_2 = C_1$</p>
<p>Population (Migrant children)</p> <p>N</p>	<p>Outdoor Communal Space Gross Floor Area = 0.3</p>	<p>Nstudents</p>	<p>Outdoor Communal Space for each group</p>
<p>Traffic Flow Intensity</p> <p>T</p>			<p>Visual Connection</p>
<p>Neighboring Community Type</p>			<p>Separation</p>
<p>Land Usage</p>			<p>-- Level of Need from the Migrant Community -- Level of Interests from the Public</p>

PARAMETER

- 1) Distance to Open Greenery Space
- 2) Distance to Public Street/Transportation Hub
- 3) Population: Number of the Adjacent Migrant Children
- 4) Surrounding Traffic Intensity
- 5) Neighboring Building Height
- 6) Neighboring Building Usage
- 7) Neighboring Community: According to Income Level and Household Registration Type
- 8) Capital Forces: (Land Value) whether there is a potential for real-estate development?
- 9) Government Policy: Whether there is any government policy relate to that? (Affordable housing for low-income people: A mandatory requirement for cities to build several generic low-quality high-rise without sufficient public facilities)
- 10) Previous Land usage: Vacant Site/Rundown Buildings/Average Level Architecturally Insignificant Buildings
- 11) Cultural/Historical Value of the site

CONSTANT (RATIOS)

- 1) Students/Artists Ratio = 12 (Small Class encourages more deeper and intimate learning.)
- 2) Outdoor Communal Space/Floor area = 0.3 (Space for Interaction/Inspiration/Contemplation)

VARIABLE

- 1) Number of Artists
- 2) Number Students
- 3) Number of Public Visitors
- 4) Level of Need from the Migrant Community
- 5) Level of Interests from the Public

ATTRACTOR

Clear Gradation of Privacy Level

- 1) Public/Private/Semi-public Section will be located around the outdoor communal space
- 2) The closer they are in terms of the privacy level, the more visual interaction they will have between them.

REPULSION

- 1) Opposite Privacy level sections will be further away from each other in plan and section.
- 2) Less visual connection will be between those sections
- 3) The closer the high-rise buildings are, the more drastically different Building Scale and Volume will be compared to the context.
- 4) The closer the Low-rise low quality buildings are, the taller the buildings will be. (Micro-Institution acts as a beacon of light for the migrant community to define their identity.)

STARTER CORE

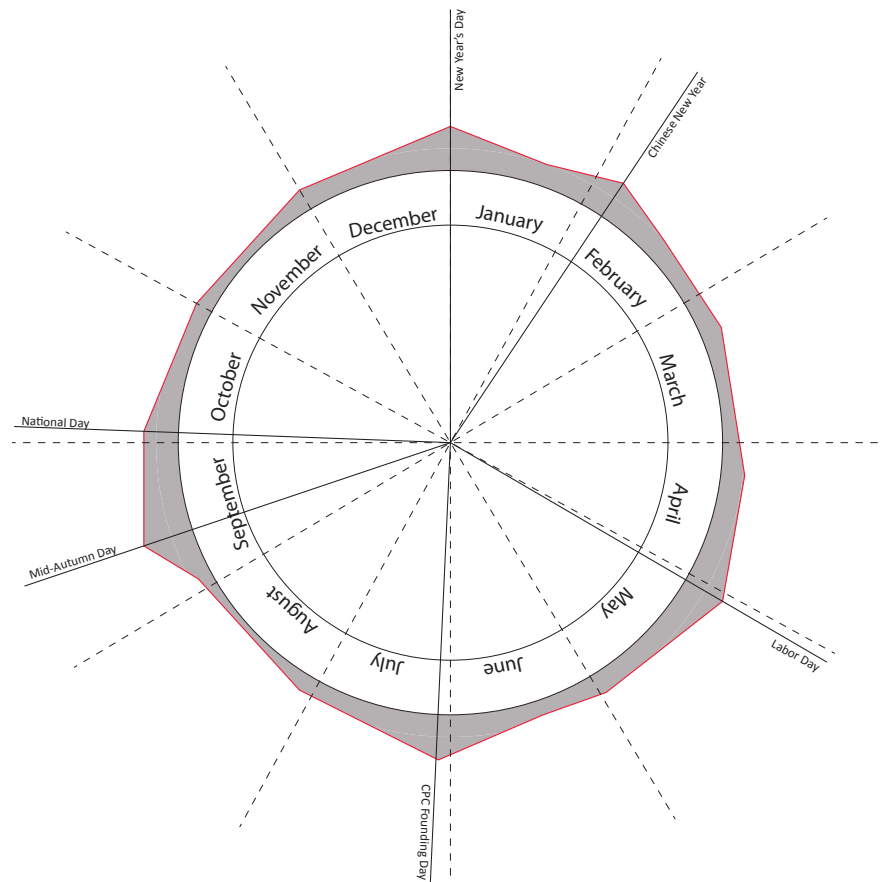
Expansion Through Different Phases

A Potential Process to Transform the Temporary Structure to Permanent Complex



FLEXIBILITY: MULTI-USEAGE

Different Time and Seasons



Daily Entertainment



Social Dancing



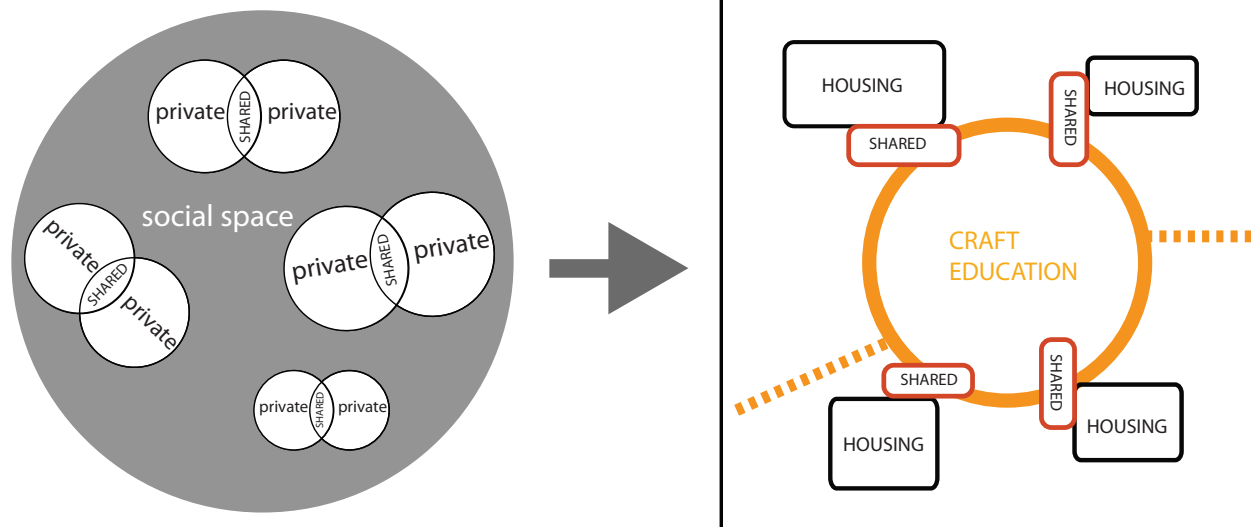
Singing



Street Market



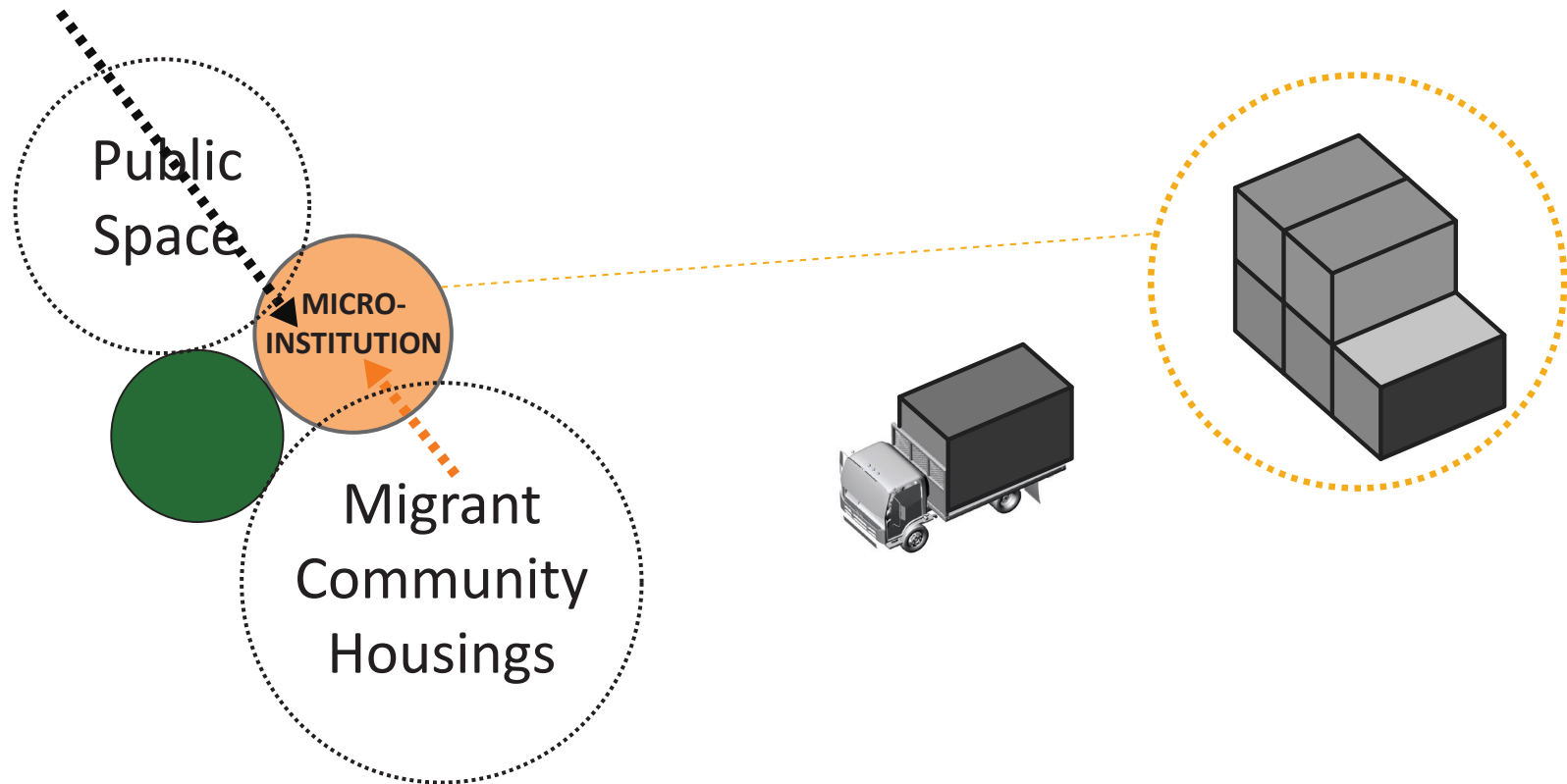
CHINESE SOCIAL SPACE



ACCESSIBILITY
MOBILITY

Located at the Intersection of Public Space and Migrant Communities

In Response to the Illegal Status and the Danger of Being Demolished Anytime



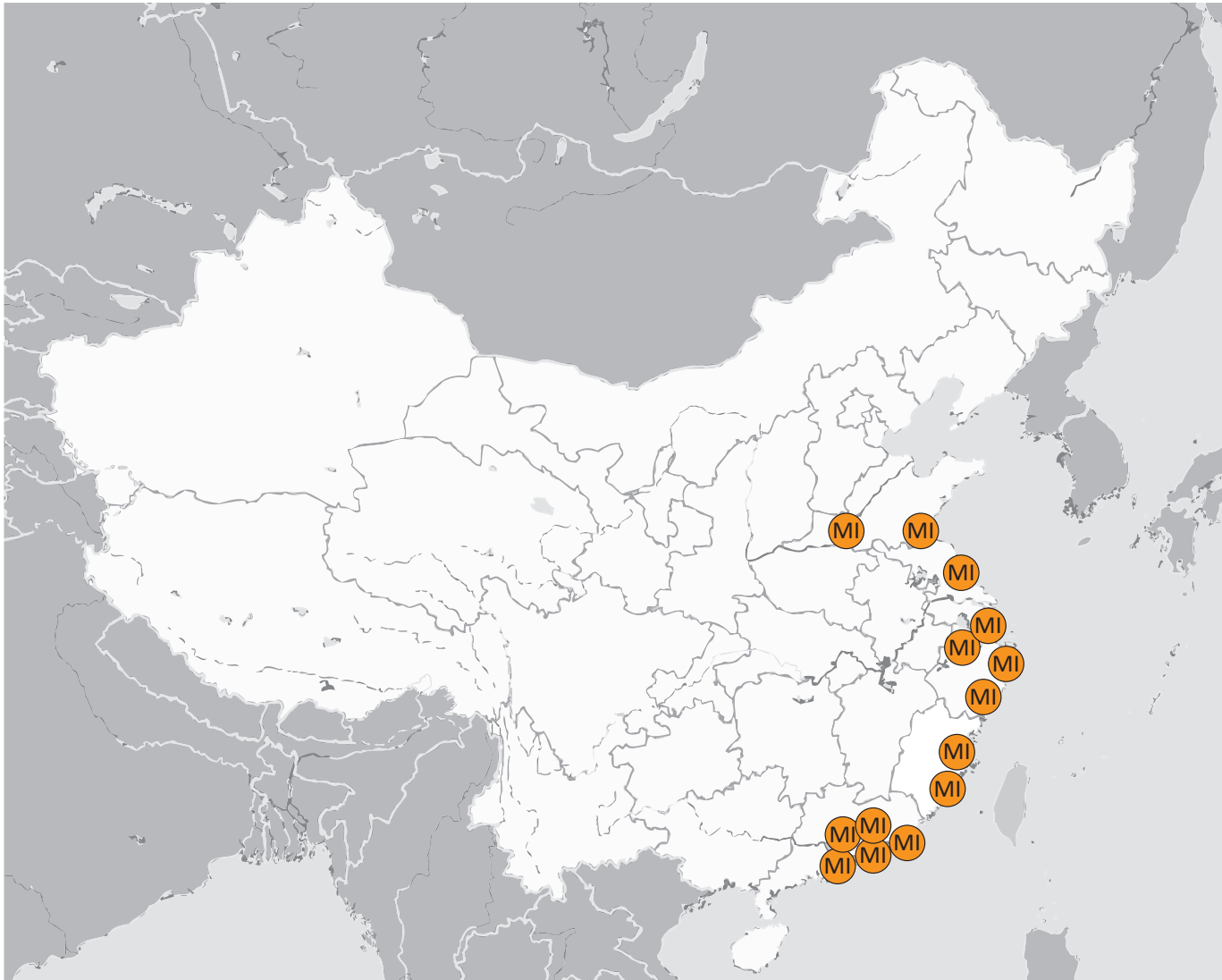
ARCHITECTURE AS A ICON

Re-establishing Identity and the Sense of Ownership for the Migrant Communities



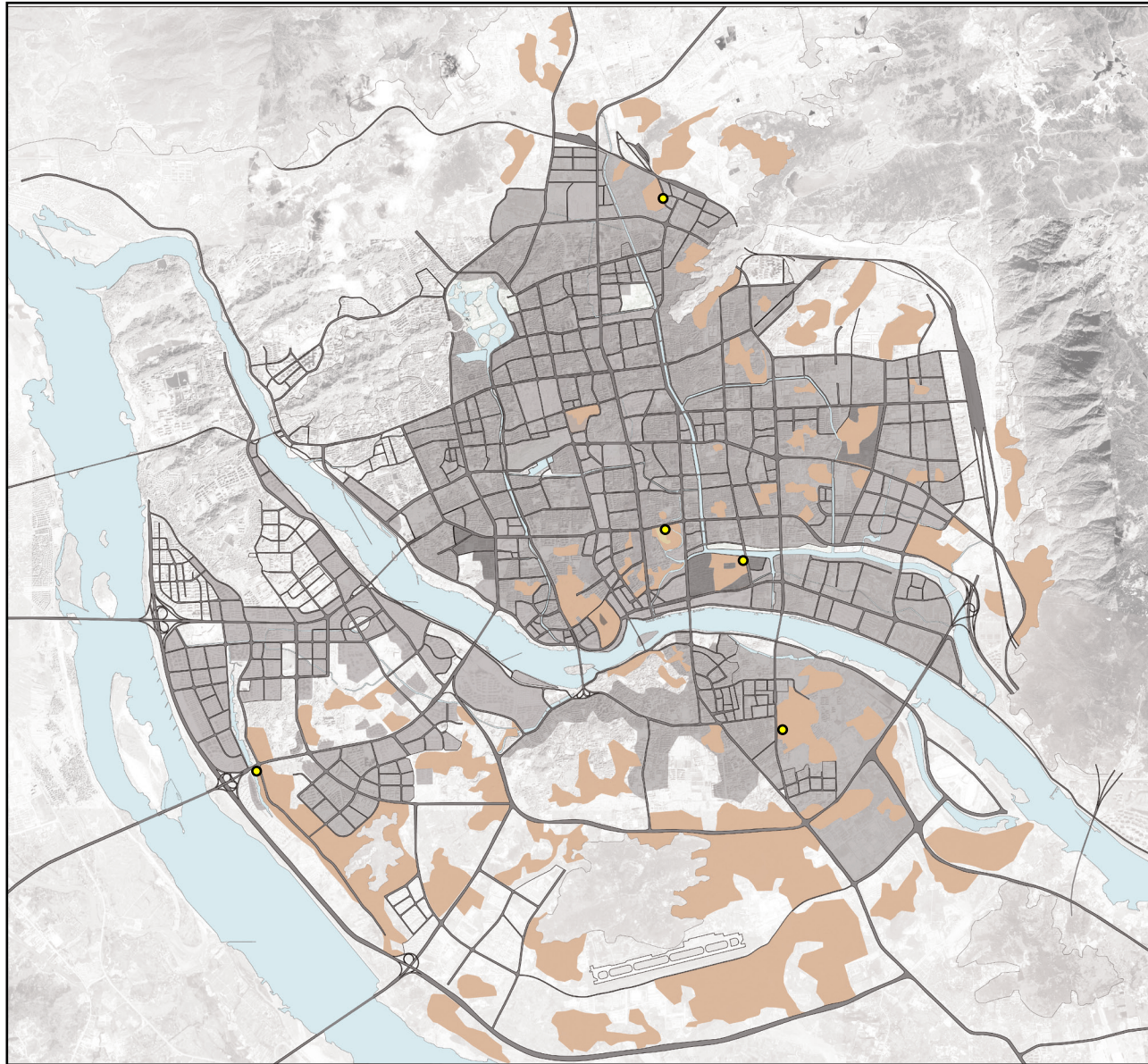
DEPLOYABLE BUILDING PROTOTYPE

Strategically Inserted into "Found Site"



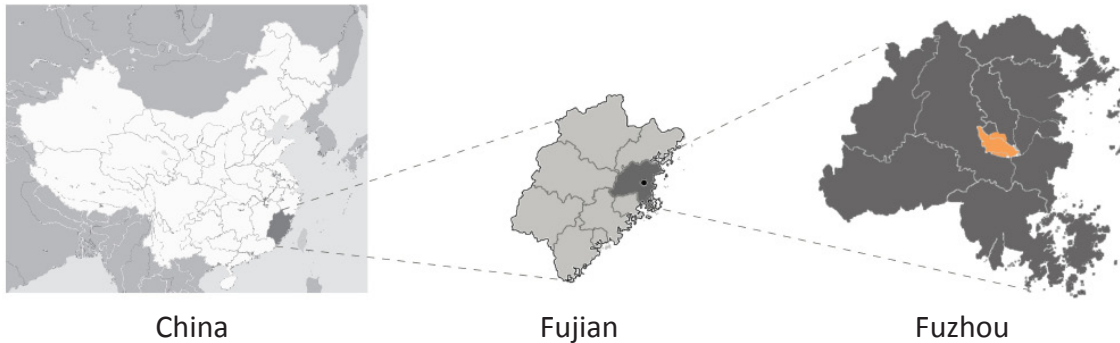
DEPLOYABLE BUILDING PROTOTYPE

Strategically Inserted into "Found Site"



DEPLOYABLE BUILDING PROTOTYPE

Strategically Inserted into “Found Site”



FUZHOU

As the capital city of Fujian province in China, Fuzhou is one of the many “typical” medium-sized coastal cities that have attracted an influx of migrant workers. It is an ideal city to be chosen as the test ground for the proposed new building prototype.

Within this test ground, this prototype can be propagated throughout the cities at the intersection of the migrant worker’s community (living area) and the public realm.

SITE 1 -- Final Test Site

GuanMing Port Park



SITE ANALYSIS

SITE 1. GuanMing Port Park

SITE 2. South Park

SITE 3. Train Terminal

SITE 4. Golden Mountain Park

SITE 5. High Lake Neighbourhood

Culture Identities: Spatial Qualities

SITE 2

South Park



SITE 3

Train Terminal



SITE 4

Golden Mountain Park



SITE 5

High Lake Neighbourhood



ICONS



ARCHITECTURE AS ICON

Architecture is a tangible symbol of the values it represents. As a wholistic embodiment of the culture, climate and construction, architecture carries the identity of its time, place, and people.

As a physical object with great visibility from a distance, buildings are perceived as an iconic expression of the collective image. On a larger scale, icons represent neighbourhood, city, region, and even the country.



Therefore, one of the goals of this project is to use physical artifact-architecture, as a symbol and physical manifestation of the underprivileged group. It serves the purpose of elevating their voice and establishing their presence in a city where they are shrouded in social inequality.

NATURE + ARCHITECTURE

Nature at the Foreground + Building as Background



NATURE + ARCHITECTURE

“It is my feeling that living things and non-living things are dichotomous....But I feel that if all living plants and creatures were to disappear, the sun would still shine and the rain still fall. We need Nature, But Nature does not need us.”

- Louis Kahn

The integration of nature with architecture has always been an important element in Chinese architecture. Nature has been considered as a means to create a retreat environment, bring tranquility and peace into busy cities.

VERTICALITY: LOW-RISE, HIGH DENSITY URBANISM

Urban Villages



URBAN VILLAGES

Since China's economic reform in the late 1970s, the country's urban landscape has changed dramatically. One of the most prominent developments has been the formation of "urban villages" in many growing coastal cities, created by the encroachment of rapid city development on rural villages located near the urban outskirts. The residential land ownership of these urban villages is mostly preserved by the law. Therefore, the villagers can, themselves, construct additional homes beyond their own housing needs, in response to the overwhelming need for affordable housing to accommodate migrant workers from rural areas.

Aesthetically, these urban villages are generally considered to be "scars of the city." Due to their characteristically overcrowded nature and abundance of social problems they are considered analogous to slums. Politically, they are seen as a ticking time-bomb of social unrest and mayhem. On one hand, cities need these areas with extremely cheap housing to accommodate those migrant workers. On the other hand, the implemented or proposed redevelopment of these urban villages often leads to unaffordable housing prices for the underpaid migrant workers in residence, due to their low-income and rural household registration status.

SENSE OF DISCOVERY



SENSE OF DISCOVERY

The streets in urban villages – where the majority of the migrant workers reside – have a distinctively organic form. There is no boulevard type of straightforward streets. When people walk on these streets, the view ahead of the streets will always be blocked by some buildings, and the streets further split into other streets, encouraging people to discover further. The variation of spaces creates a sense of discovery.



PROPOSAL

1. Components
2. Mobility: Kit-of-Parts
3. Assembly
4. Basic Unit
5. Aggregation: an Open System
6. Formal Strategy

COMPONENTS

Light-Weight Steel C Channel



Main Structure

Light-Weight Steel C Channel

As the ideal light-weight material for self-help construction, light-weight steel C channel can be easily cut into different size and combined into H columns or I beams.

The variable types of steel C channels can be easily assembled, dismentled, and re-assembled.

The steel can also be easily transported in piles in shipping container with the capacity of allowing different length + size.

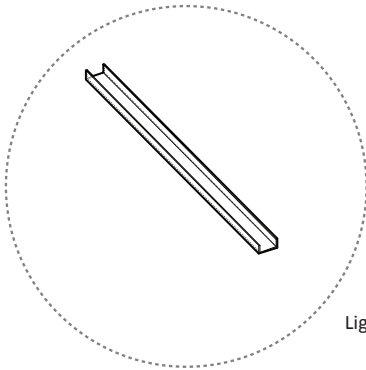


Hsieh Ying-Chun and Atelier-3

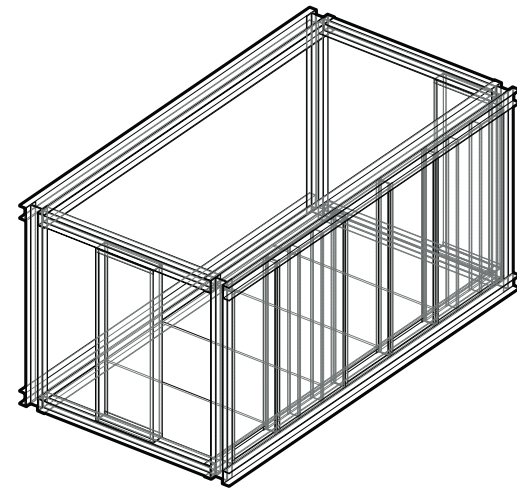
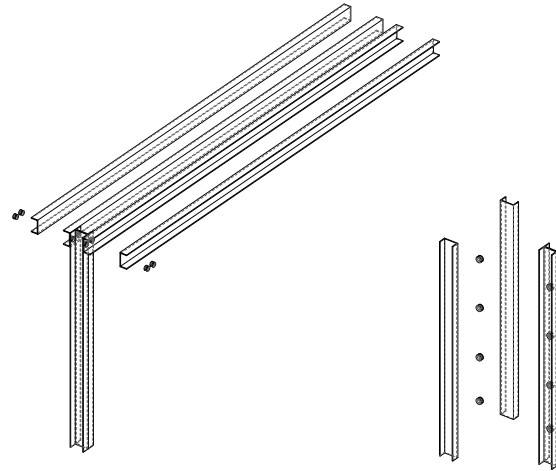
The great example from Atelier-3's work in SiChuan earthquake area for the self-help housings for the farmers.

This building material is proved to be

- 1) low-cost,
- 2) sustainable,
- 3) simple construction method.



Light Weight Steel C Channel





Main Structure

Laminated Wood Beams

In order to create a developable surface or even a double curvature surface, it has been a standard practice to use laminated timber beams. These beams possess the great benefit of getting shaped into whatever desired curve with very consistent texture and size.

The engineered wood helps to lower the cost and therefore has the flexibility to be bended into any curvature.

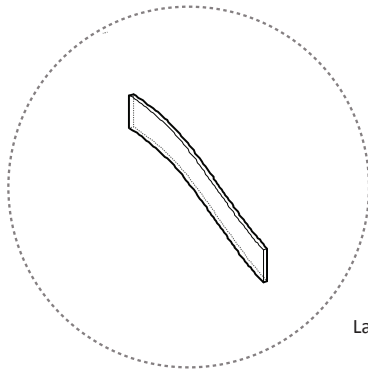
Waffle Structure

A great example from Jurgen Mayer Architects' work is Metropol Parasol Project in Seville.

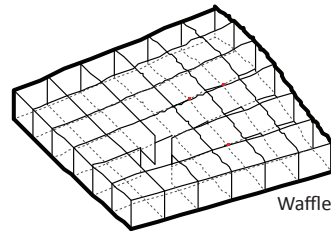
This construction method for three-dimensional surface has proven to be

- 1) flexible in creating different surfaces
- 2) straightforward construction process
- 3) aesthetically pleasing

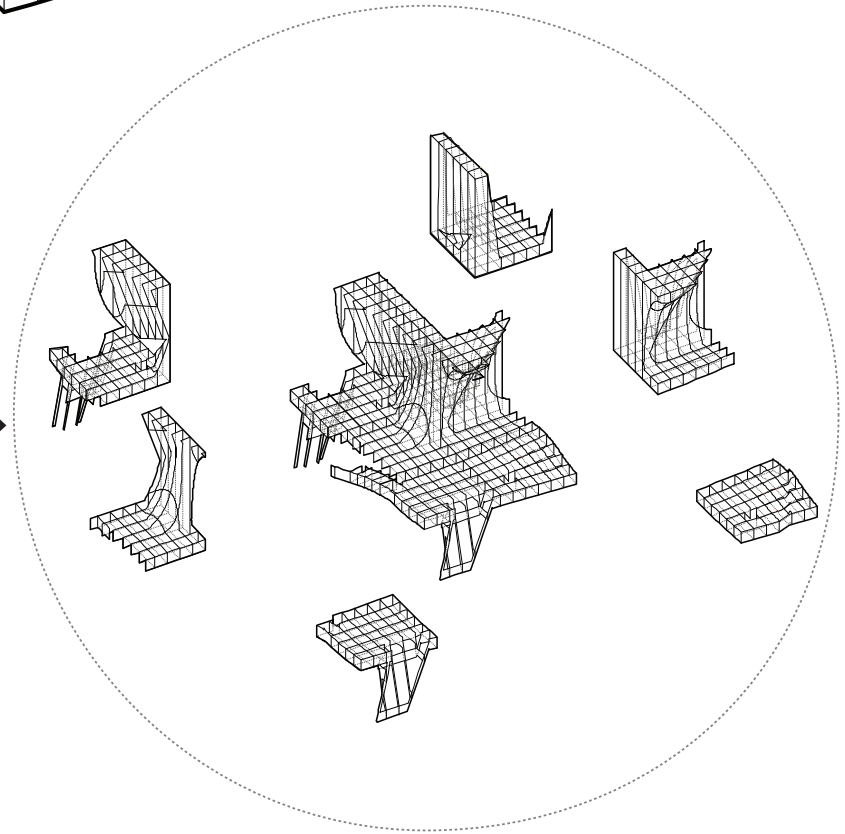




Laminated Wood Beam



Waffle Structure



COMPONENTS

Attachment Features



Attachment

“Cones of Fun”

The cones can have multiple functions and designed with standardized dimensions that can be applied to different places for diverse usages.

- 1) Skylight: Studios
- 2) Window: Studios
- 3) Lightwell + Waffle Structure:
New Ground + Classrooms
- 4) Programmatic Extension: Classrooms
- 5) Skylight + “Cones of Funs”:
Classrooms + New Ground



Structural Panels + Finishings

The structural panels consist of infill panels with various finishing.

The finishings include

- 1) Timber shades : Studio
- 2) Metal Mesh: Public Galleries
- 3) Timber Deck: Studio
- 4) Pressure Treated Pine: New Ground

Attachment

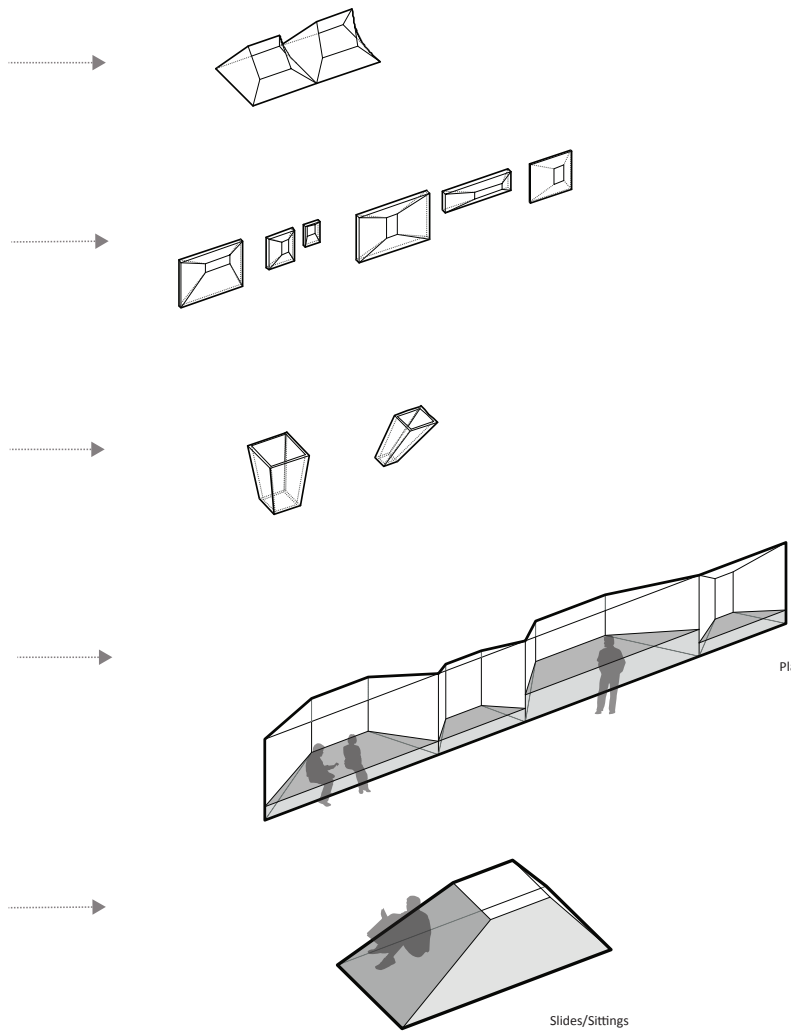
Skylight - studio

Window - studio

Light well + Waffle Structure
-- new ground + classroom

Programmatic Extension
-- classroom

Skylight + "Cone of Fun"
-- classroom + New Ground



Structural Panels

Infill Panel
with variate finishing

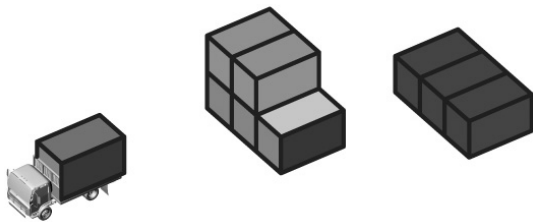
Finishings

Timber Shades

Mesh

Timber Deck

Pressure Treated Pine

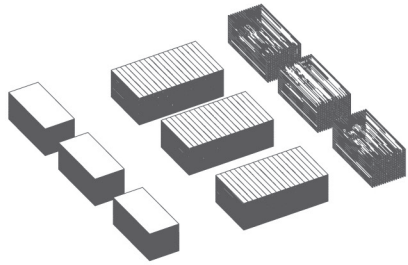


Mobility

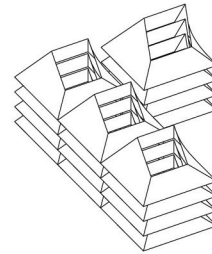
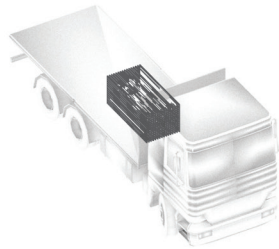
Kit-of-Parts

The entire structure can be dismantled into different pieces and be able to transported to other locations through trucks or shipping containers.

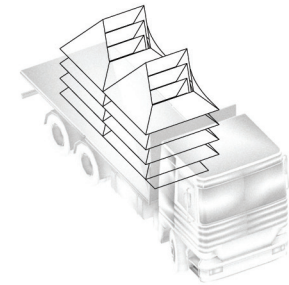
- 1) Lightweight Steel C Channels
- 2) Laminated Wood Waffle Structure
- 3) Attachments: Cones
- 4) Finishings

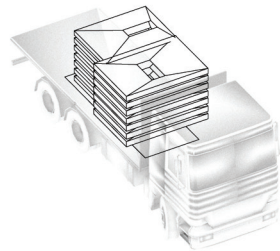
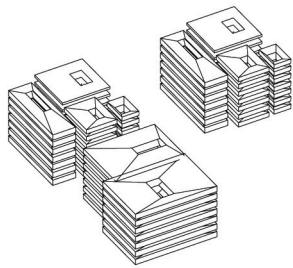


Transport of Finishing Materials

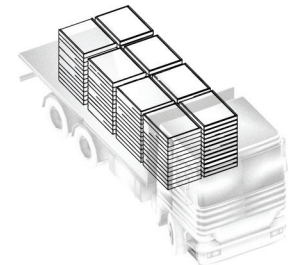
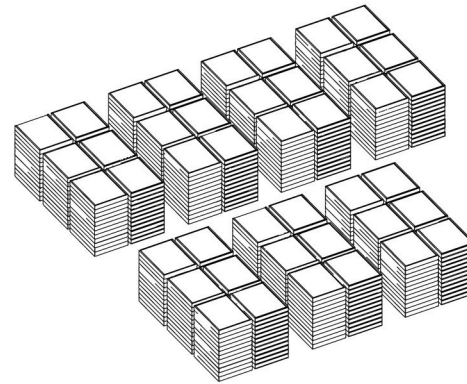


Skylights

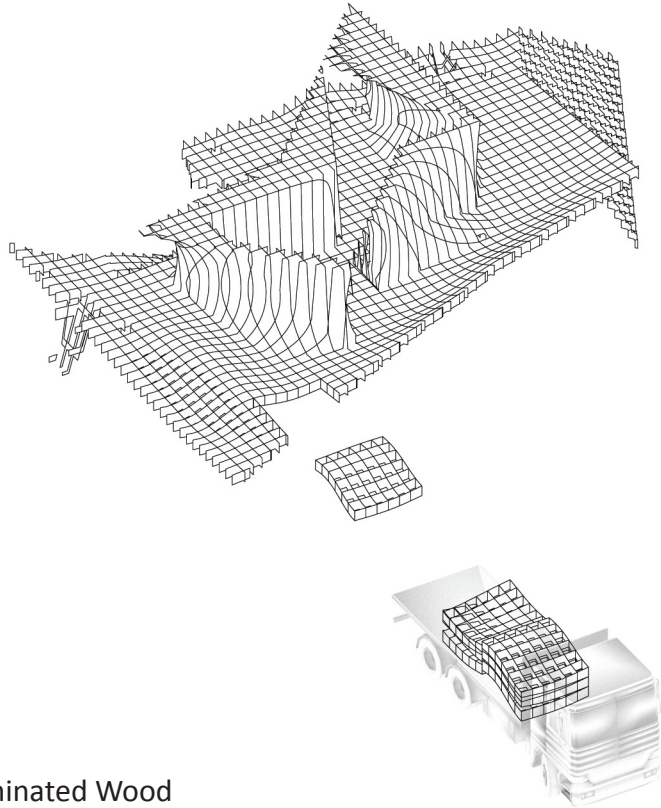




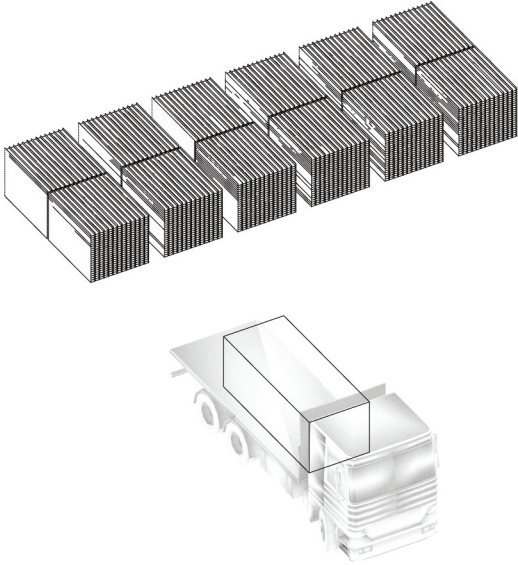
Windows



Infill Panels



Laminated Wood



Steel C Channels

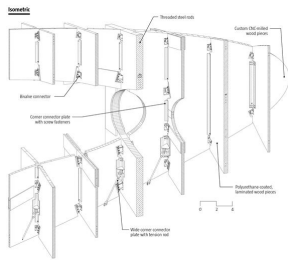
ASSEMBLY PROCESS



Assembly: Main Structure

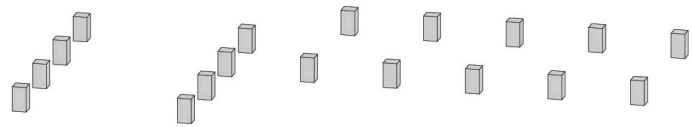
Self-Help Construction with Light-Weight Steel C Channels

Post-and-Beam Structure

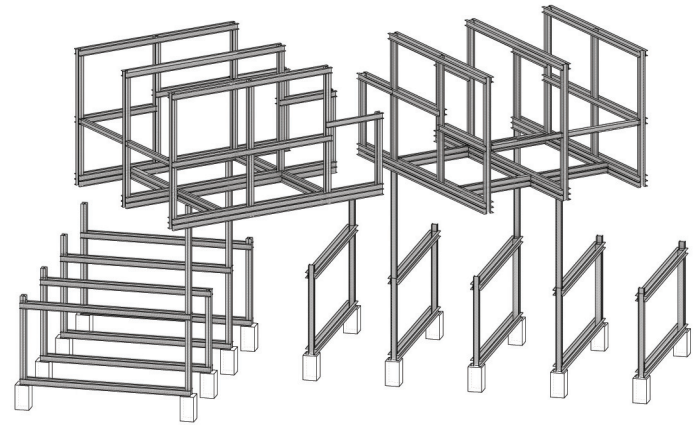


Professional-Assisted Construction with Timber Waffle Structure

Custom Prefab Structure

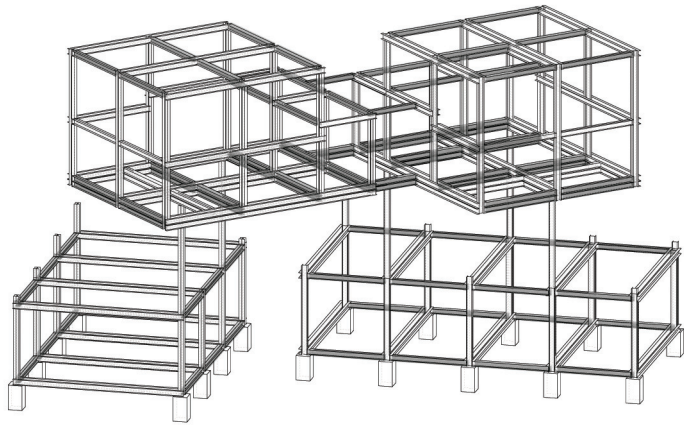


Foundations

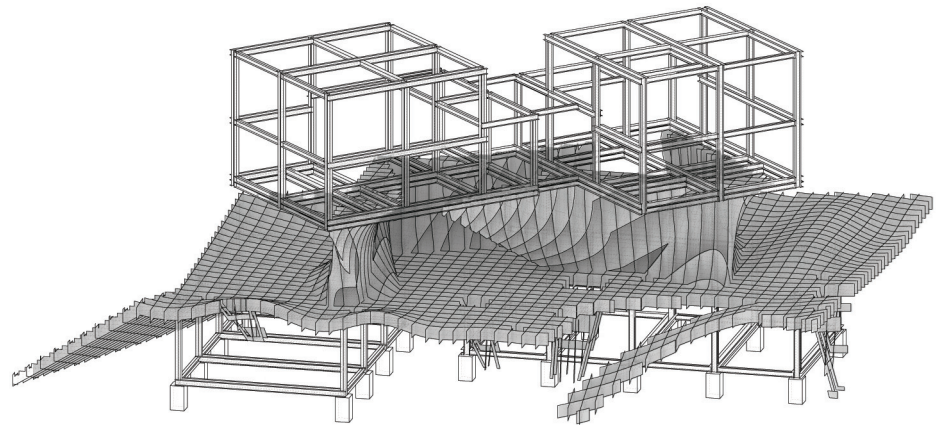


Main Structural Frames

ASSEMBLY PROCESS

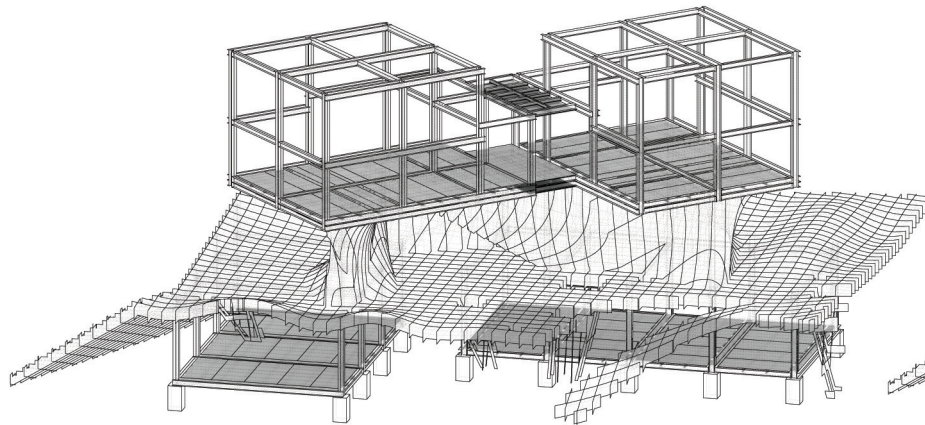


Secondary Structural Frames

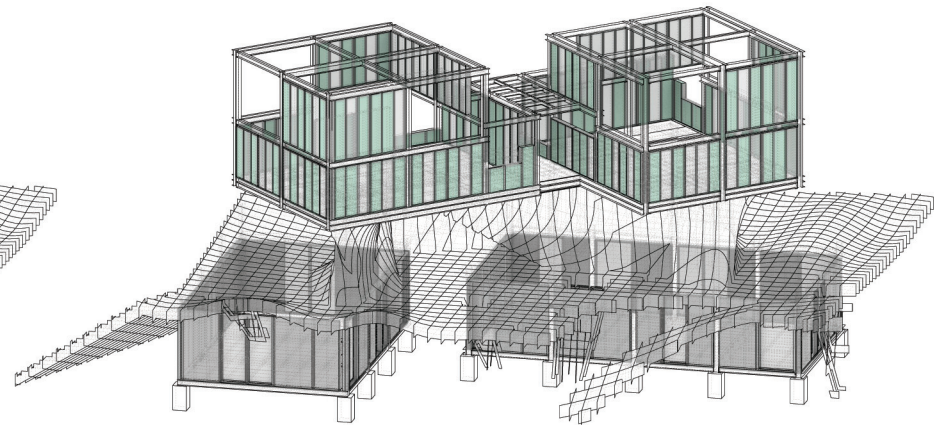


Timber Waffle Structure

ASSEMBLY PROCESS

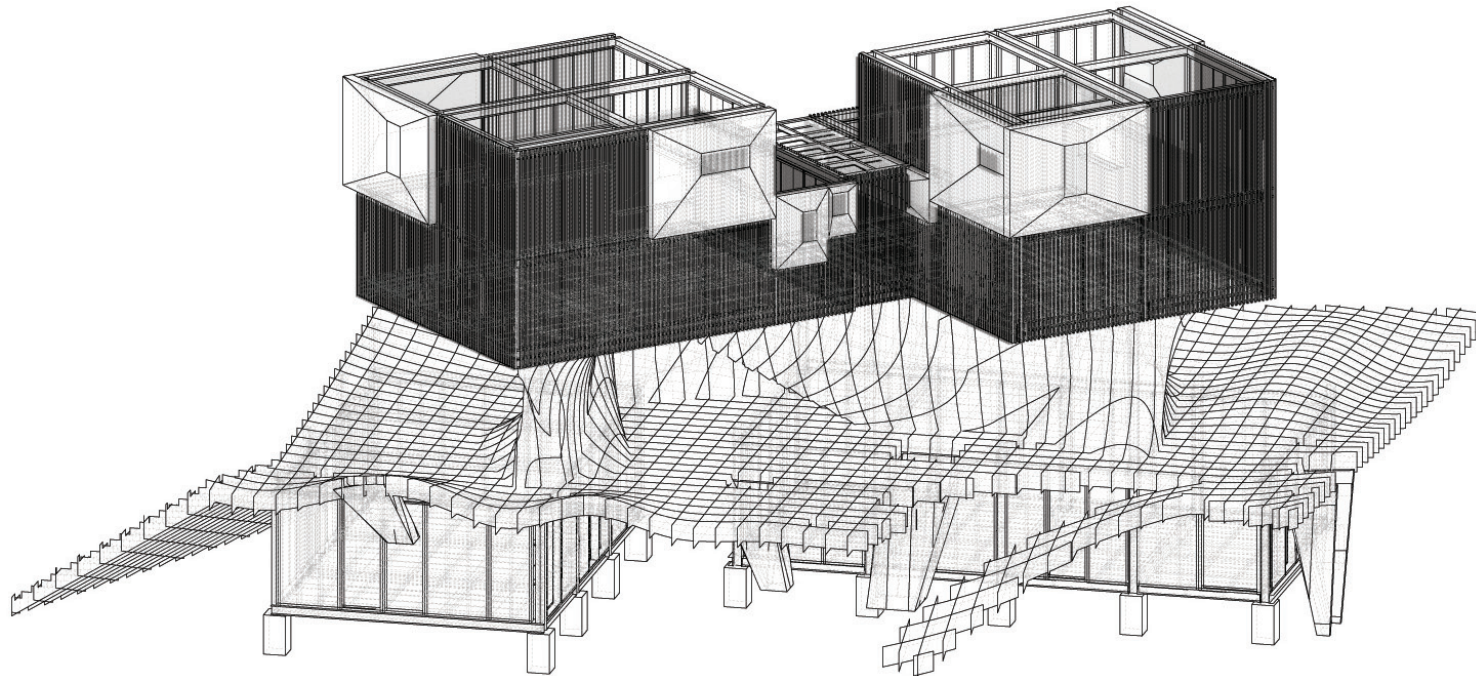


Floors



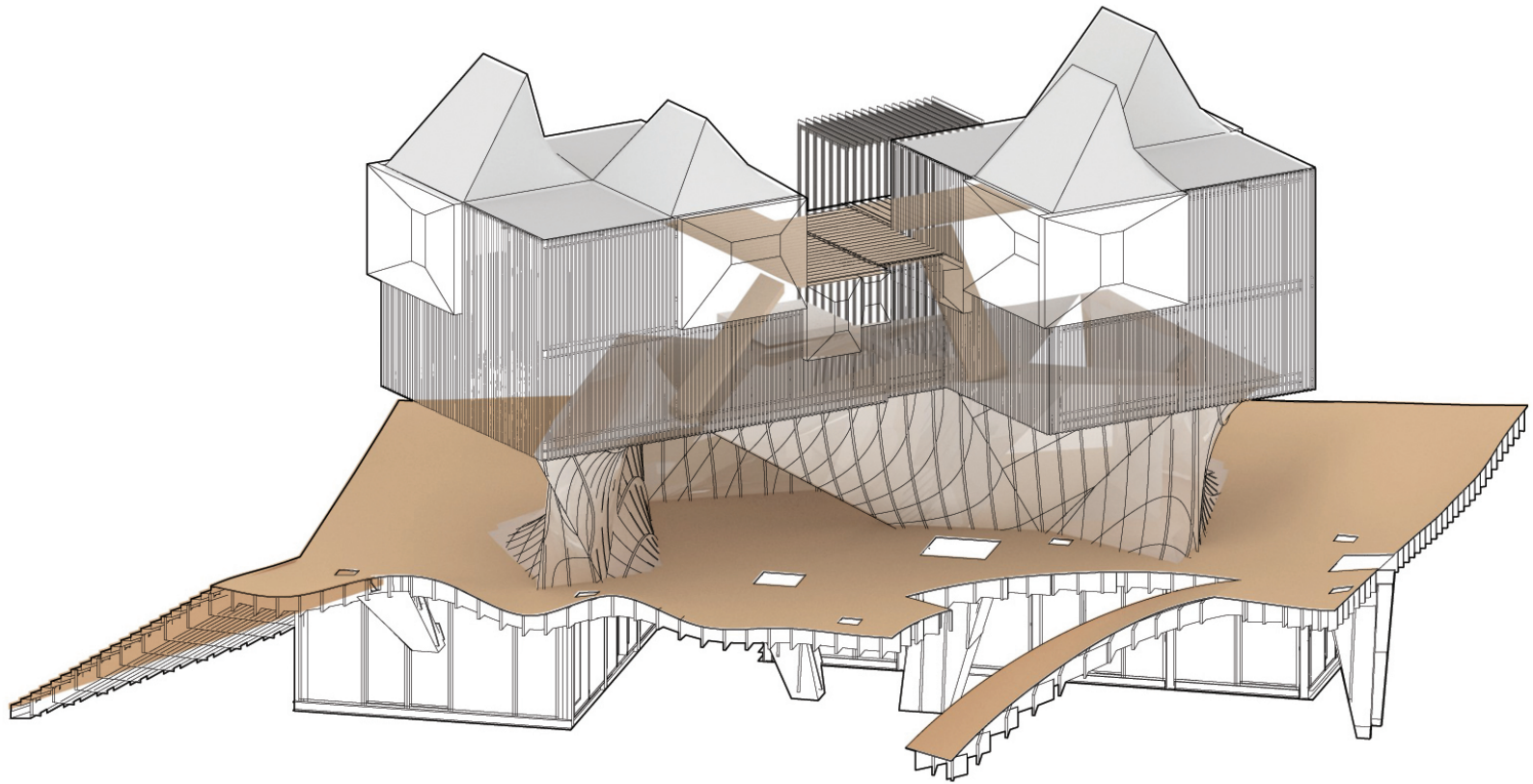
Infill Panels

ASSEMBLY PROCESS



Attachments

ASSEMBLY PROCESS



Finishings

BASIC UNIT

Absolute Minimum for Micro Institution

BASIC UNIT

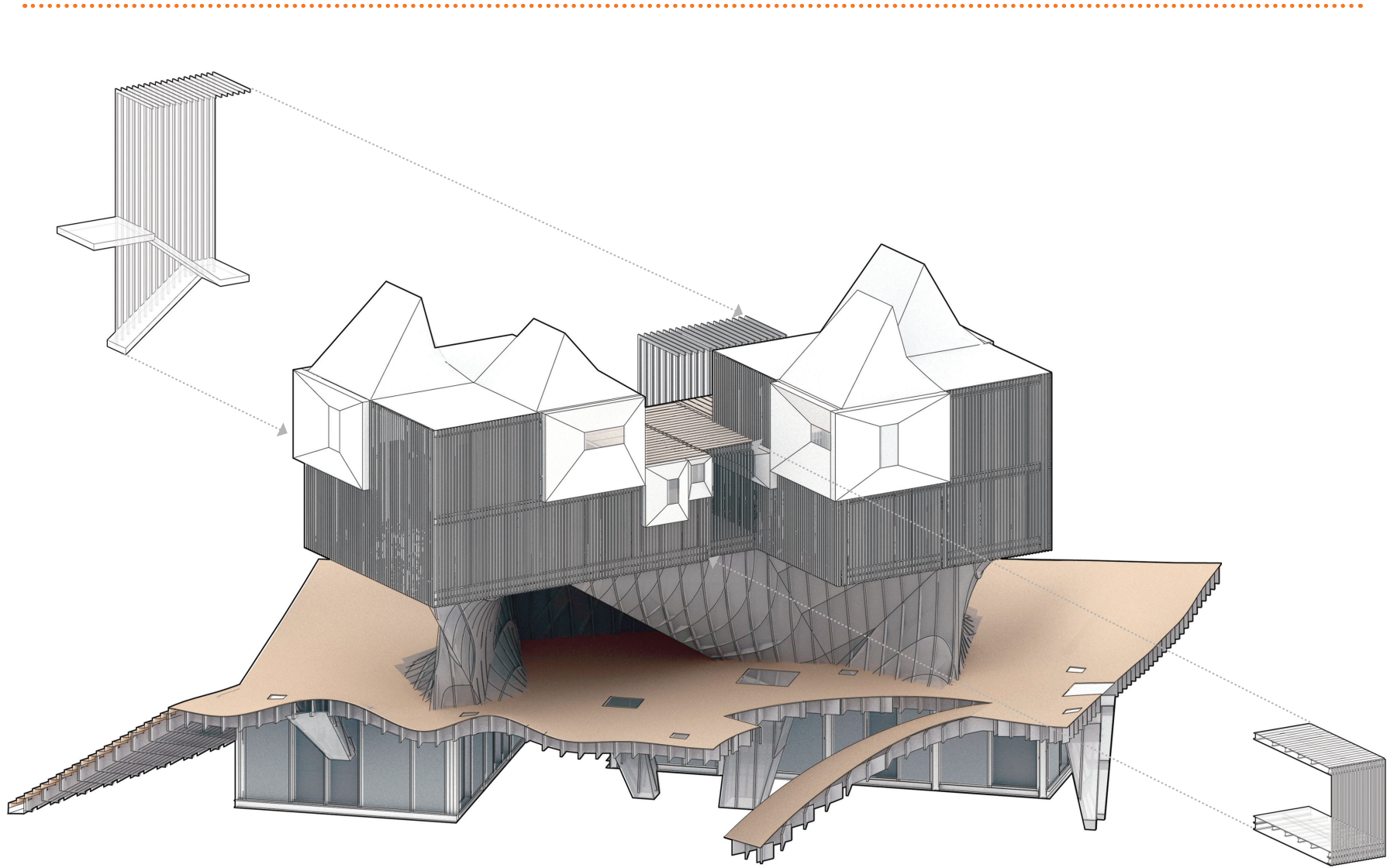


Two Studios
+
One Public Gallery/ New Ground
+
Three Classrooms

ABSOLUTE MINIMUM UNIT

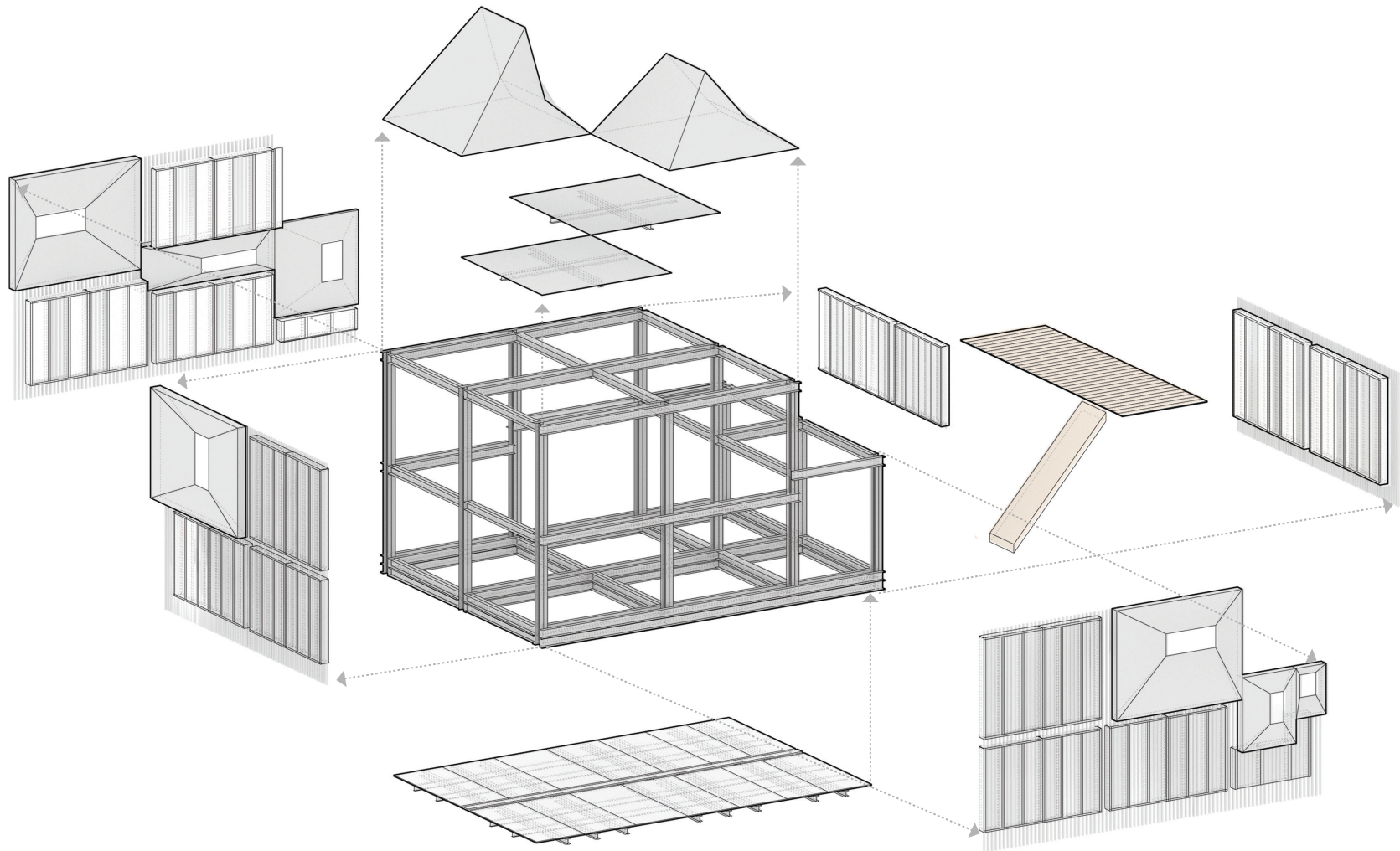
Due to the impressive financial and political reasons, this proposal for micro-institution is a multi-phased design endeavor. It will start from the absolute minimum unit and later aggregate more units over time, eventually, growing into the larger complex.

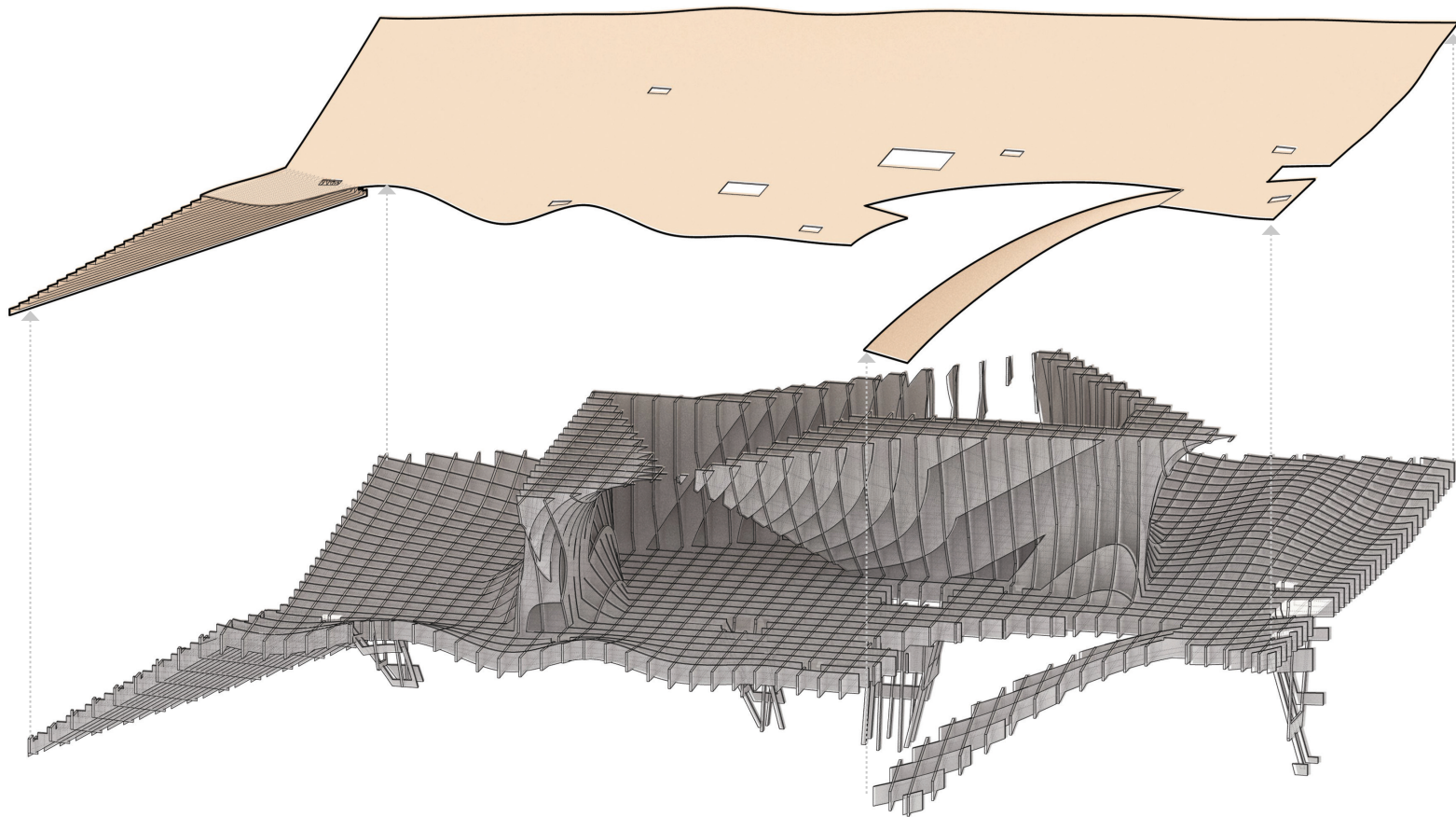
This basic unit consists of two studios on top sharing a common space, one public gallery, new ground and three classrooms surrounded by streets and courtyards.



BASIC UNIT

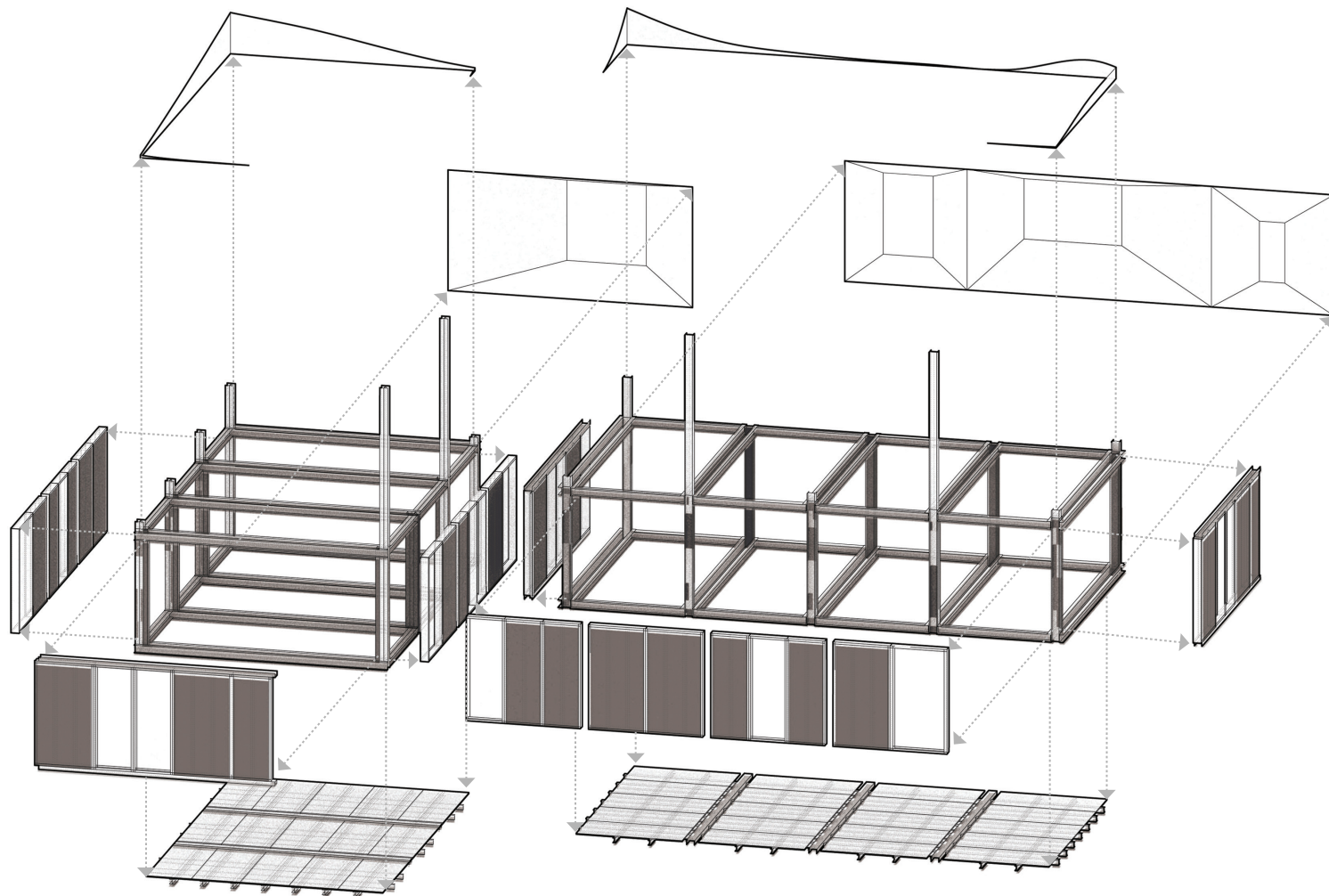
Studio





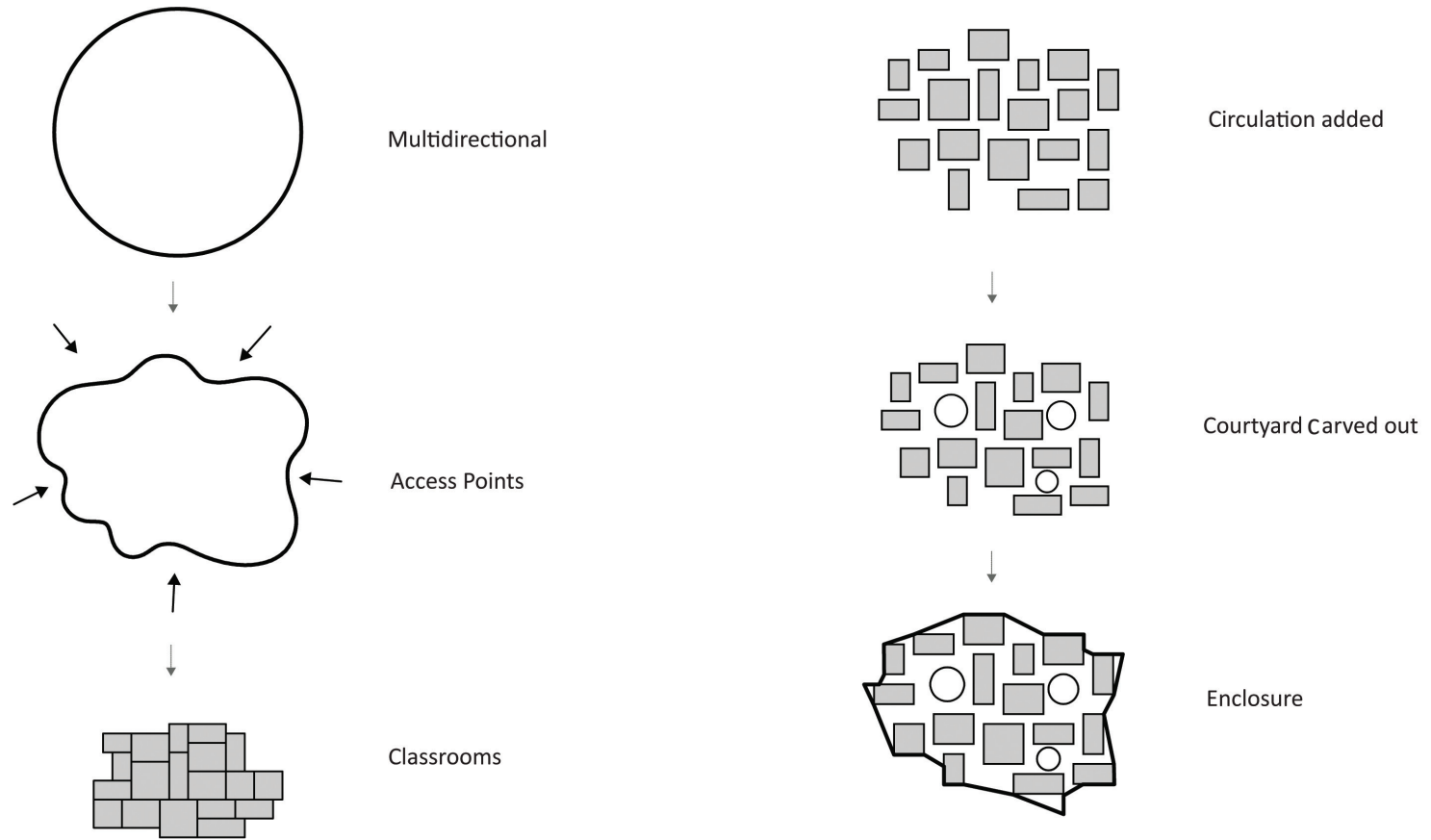
BASIC UNIT

Classroom

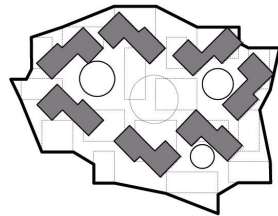


AGGREGATION

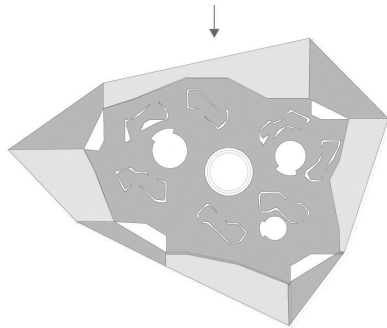
Rules



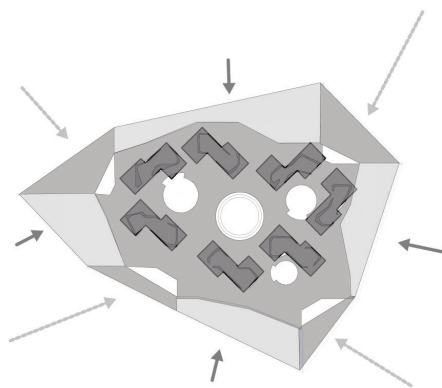
AGGREGATION



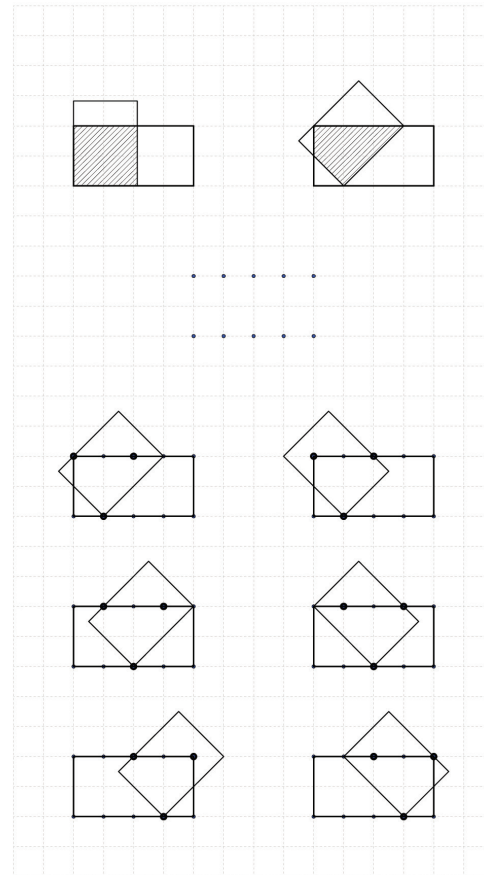
Studios



New Ground + Public Access



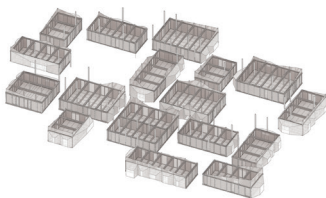
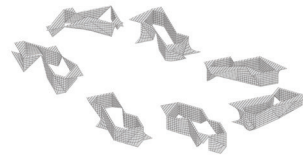
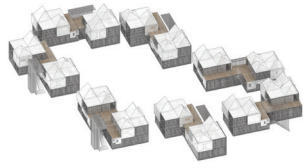
New Ground + Public Access



ROTATION between studios and classrooms

In plan, there is a 45-degree rotation between the studios and the classrooms, and the form of the public gallery on new ground is the result of this rotation. This rotation encourages multi-directional views, and reduces the shadows cast on the new ground.

AGGREGATION

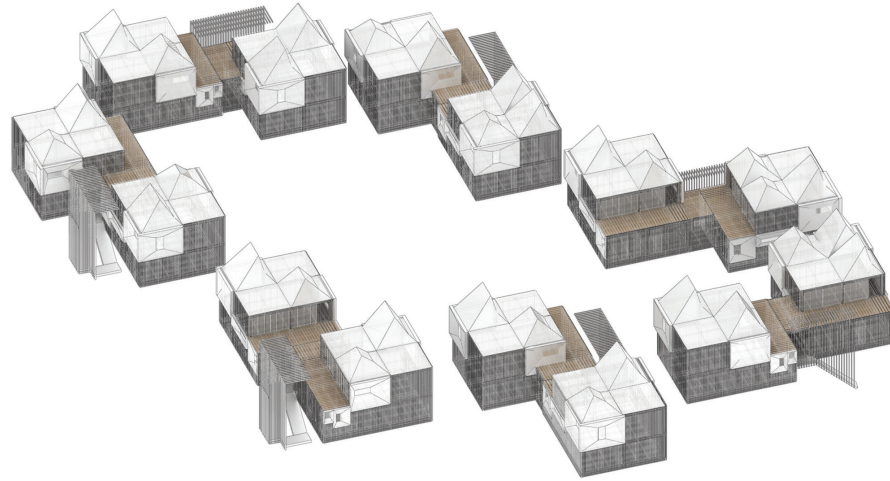


AGGREGATION

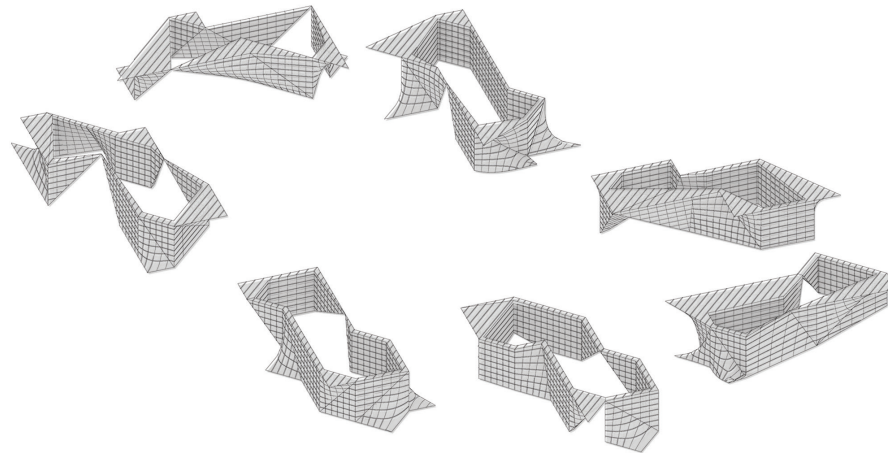
The basic unit can be further aggregated into a larger complex, demonstrating a stronger presence in the Chinese urban condition.

The rules for aggregation:

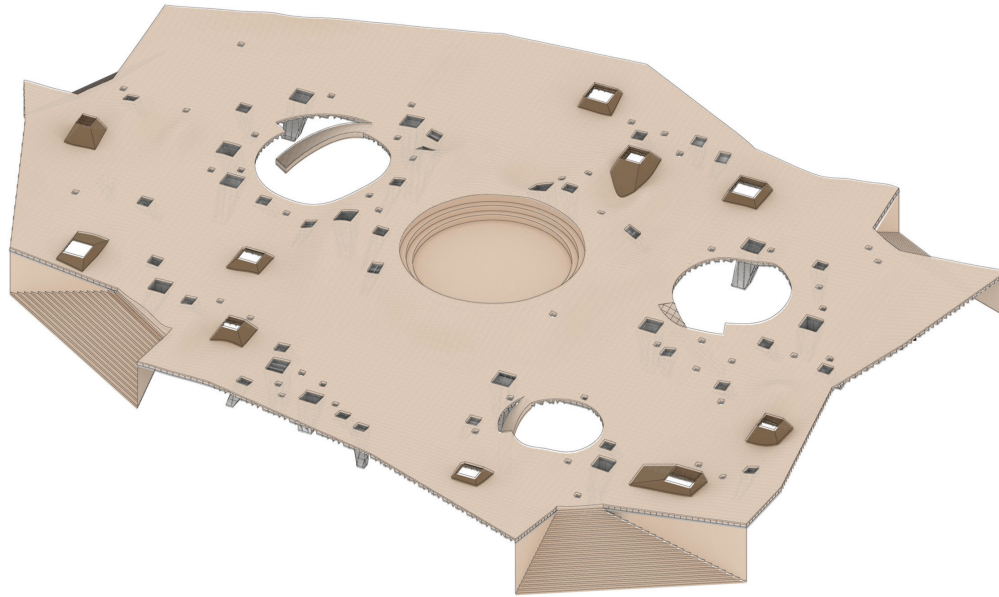
- 1) All the studios at the upper floor are forming a large courtyards.
- 2) All the Classrooms at the ground floor are forming multiple courtyards of various sizes.
- 3) Gallery/New Ground is the result of the in-between condition between studios and classrooms, forming a continuous experience with nodes of enclosed space for galleries.



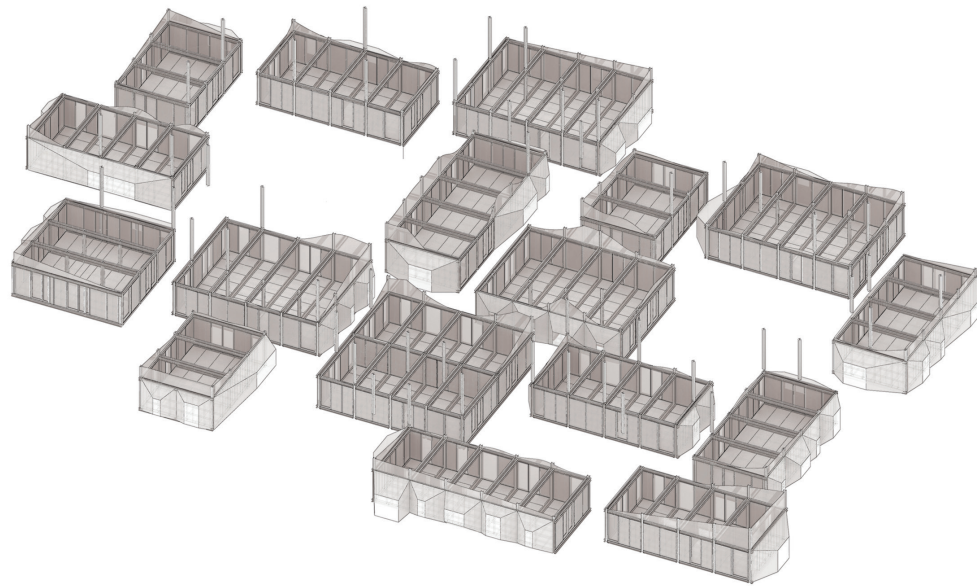
Studios



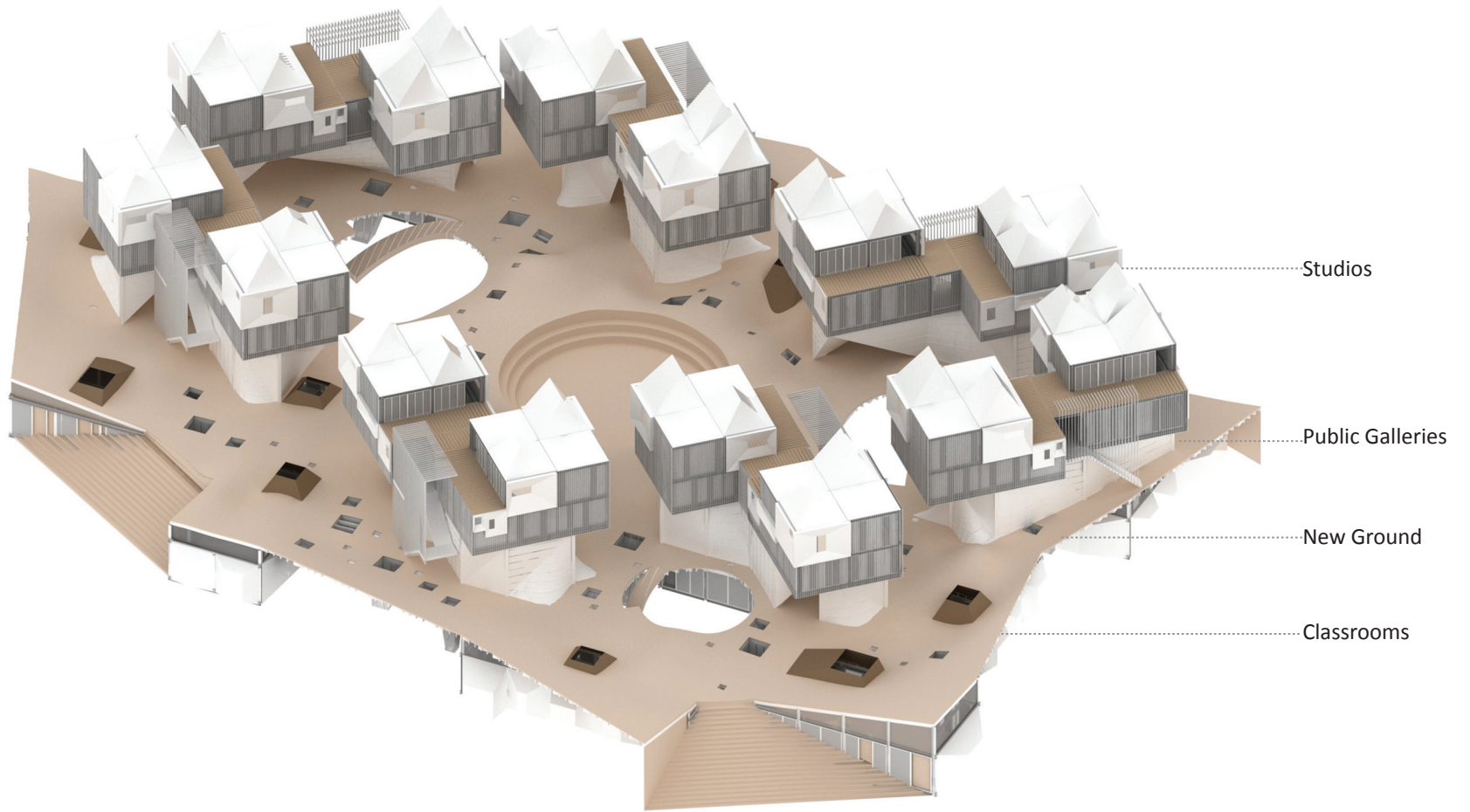
Public Galleries



New Ground:
Community Center



Classrooms



The Complete Micro-Institution

DRAWINGS + RENDERINGS

- 1. Plans**
- 2. Sections**
- 3. Renderings**
- 4. Model Photos**

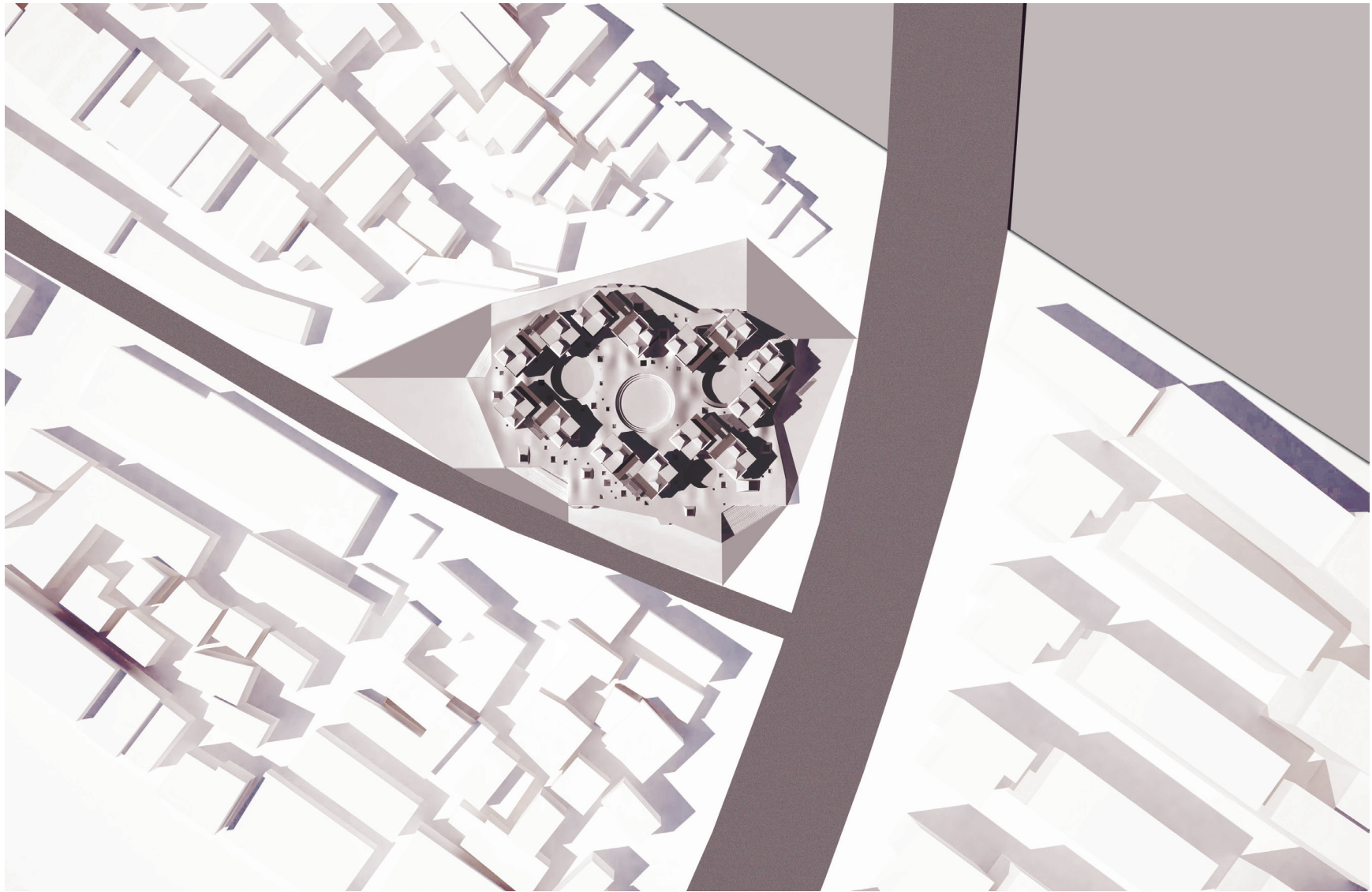
SITE PLAN

RELATIONSHIP WITH THE CONTEXT

1) Located at the intersection of low-rise high density migrant community area and high-rise commercial buildings, adjacent to two major vehicle roads and several semi-informal “urban village” streets.

2) Four Public Entrances to the New Ground are anchored at the four corners of the whole complex, easily welcoming people from all direction.

3) Extension of the entrances for the classrooms become a multi-purpose area. These plazas can be used for migrant children’s playgrounds, community gathering place, etc.



Site Plan

COURTYARDS

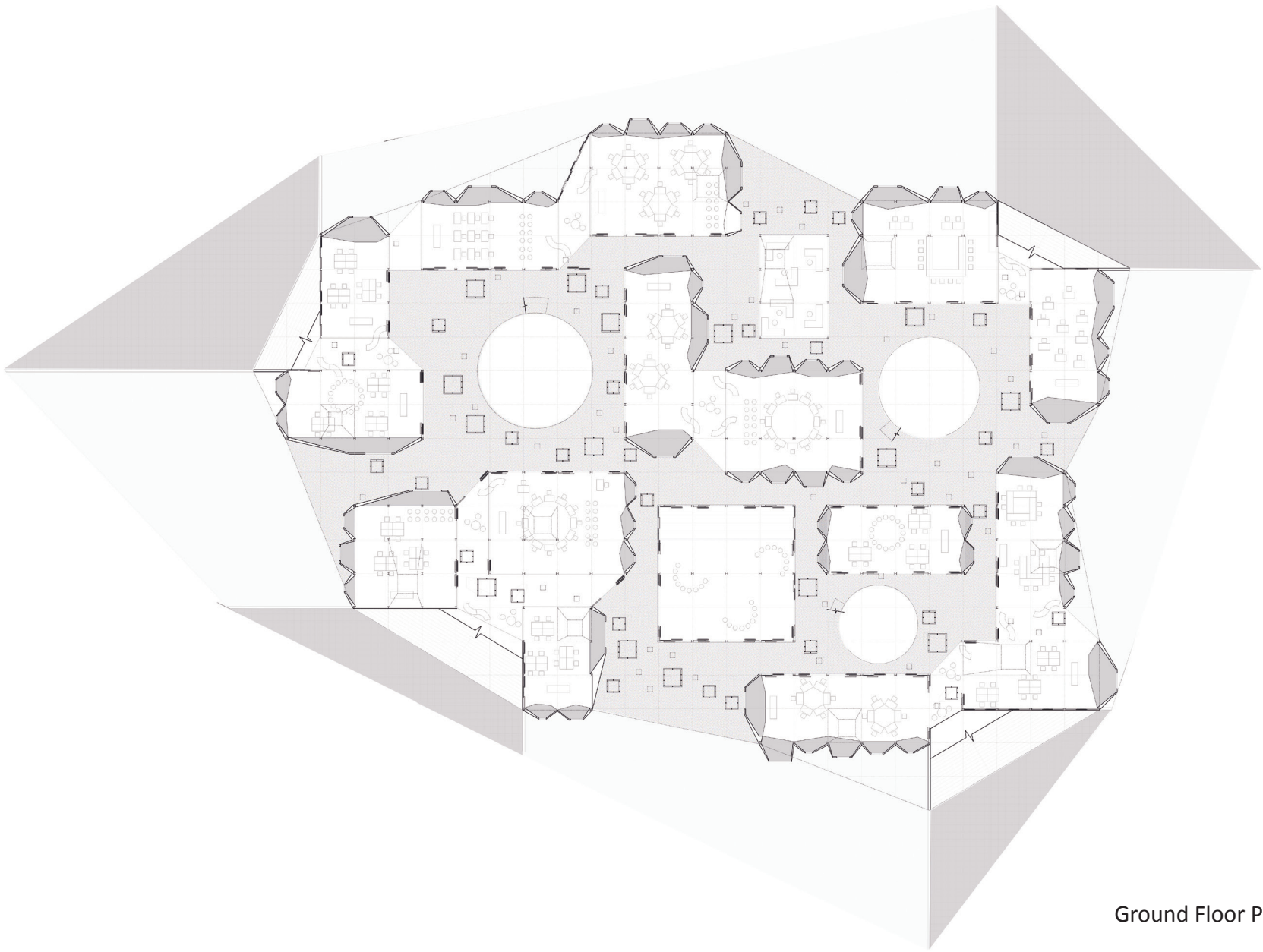
The various sizes and shapes of the classrooms are aggregated in the way that the different size of central points, courtyards, can thus be created. These three courtyards are the major exterior playgrounds on the ground floor.

STREETS

Each individual classroom never completely touches each other. The in-between space is thus created to become circulation space, or communal spaces between adjacent classrooms.

CONES

Cone shapes of space mediate between interior and exterior for the classrooms. They can function as sitting area, table space, doorway, and windows, creating a smaller scale of space that is more suitable to accommodate children.



Ground Floor Plan

GALLERY

The organic shapes are the galleries, which have multiple access points from the new ground and also outdoor exhibit extension space. These galleries cluster around the central plaza and three courtyards.

COMMUNITY CENTRE/ PLAYGROUND

Continuous Surface + Central Plaza

The public, migrant community and artists are united through this continuous surface. Interaction is encouraged through providing the freedom on the undulated continuous surface.

The central plaza serves as the end point of the whole experience from the public entrance to the new ground and eventually the plaza, reinforcing the sense of discovery.

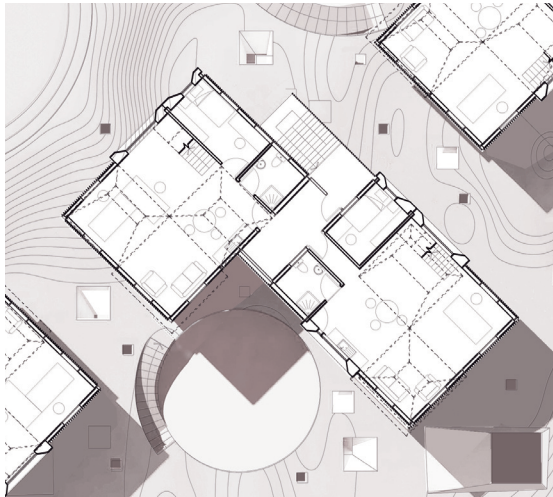
CONES OF FUN + PLAYGROUND

The cones have multiple functions and are designed with standardized dimension that can be applied to different places for different useages.

- 1) Skylight - Studios
- 2) Window - Studios
- 3) Lightwell + Waffle Structure:
New Ground + Classrooms
- 4) Programmatic Extension: Classrooms
- 5) Skylight + "Cones of Funs":
Classrooms + New Ground



First Floor Plan



AGGREGATION OF STUDIOS

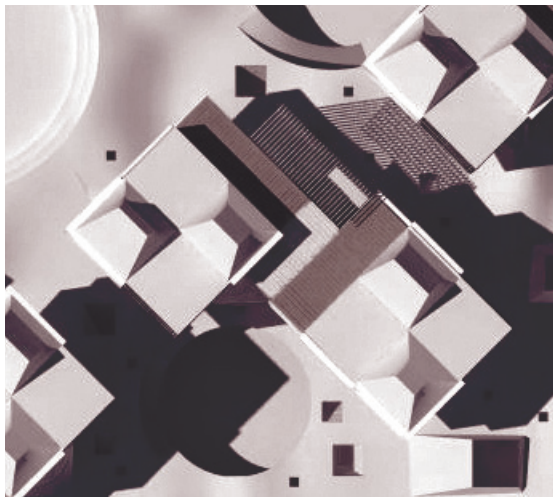
Perpendicularly oriented

Every two studio units are oriented perpendicular to each other, and staggered to create a shared entrance space.

FEATURES: CONES

Windows

Windows are positioned high so that no direct sunlight will come into the space, and more blank solid wall thus be created for artists' works.

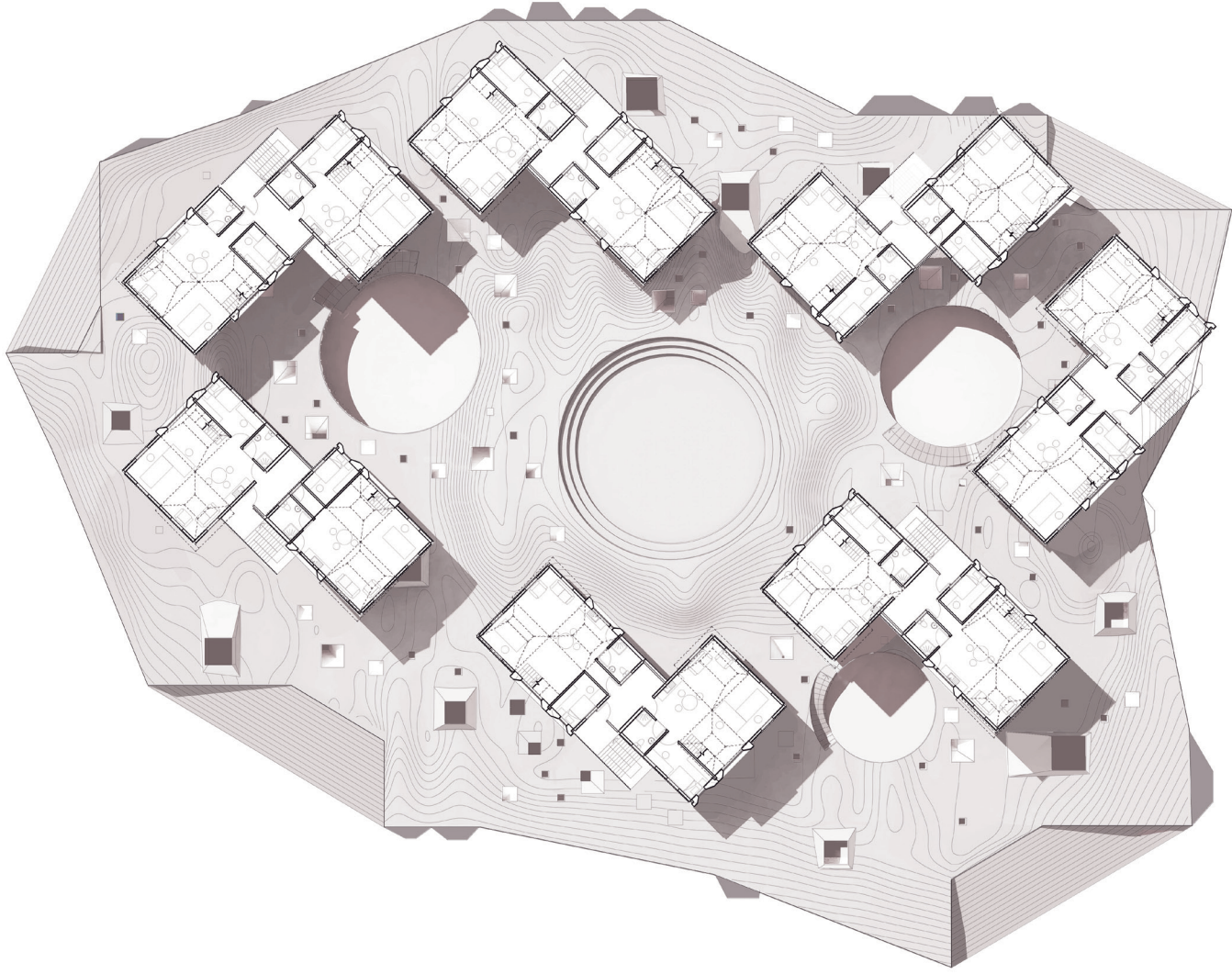


Communal Space

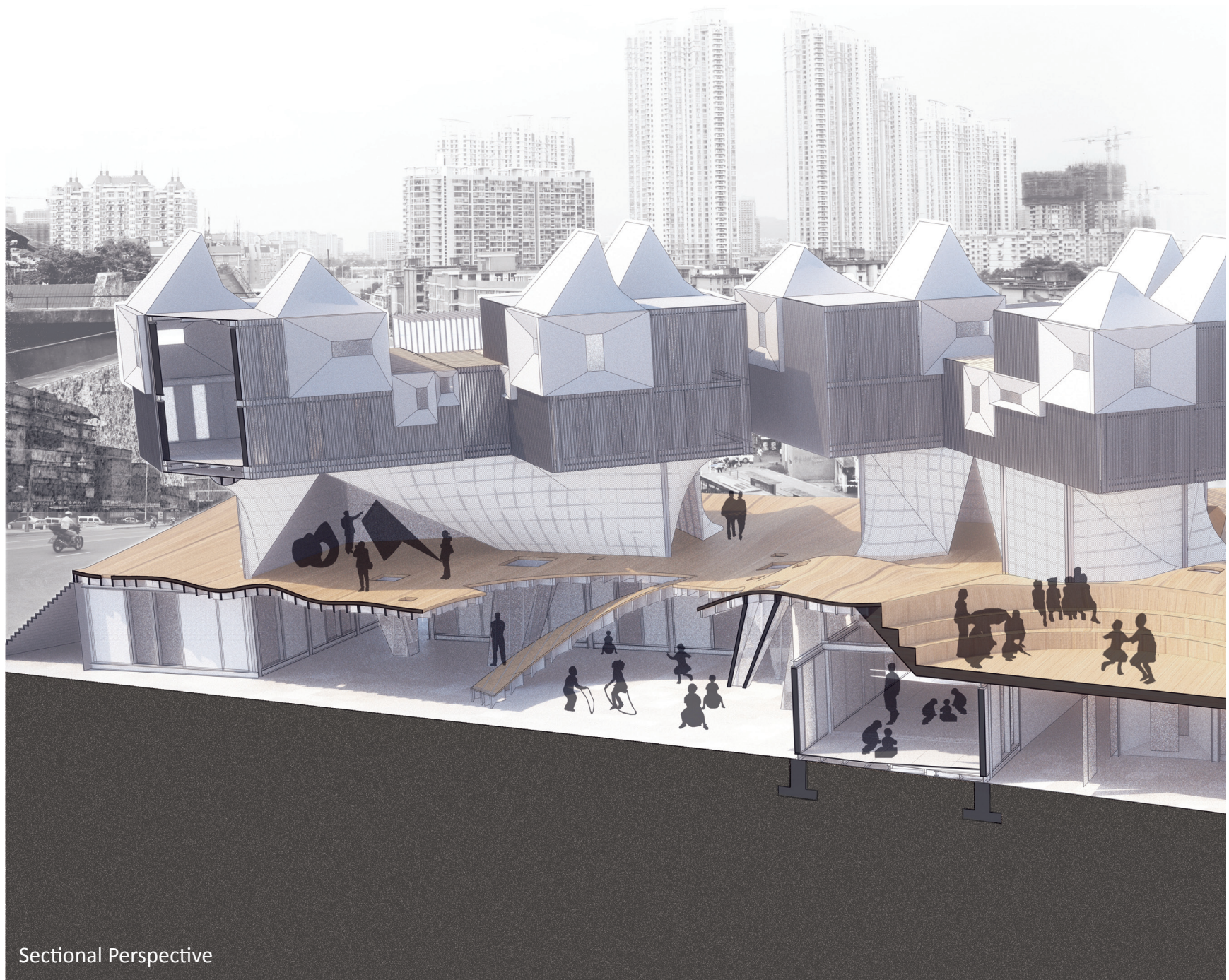
For the mezzanine level, the two balconies are connected to become a communal space. Artists can use this area as a place for discussion or leisure activities.

Skylights

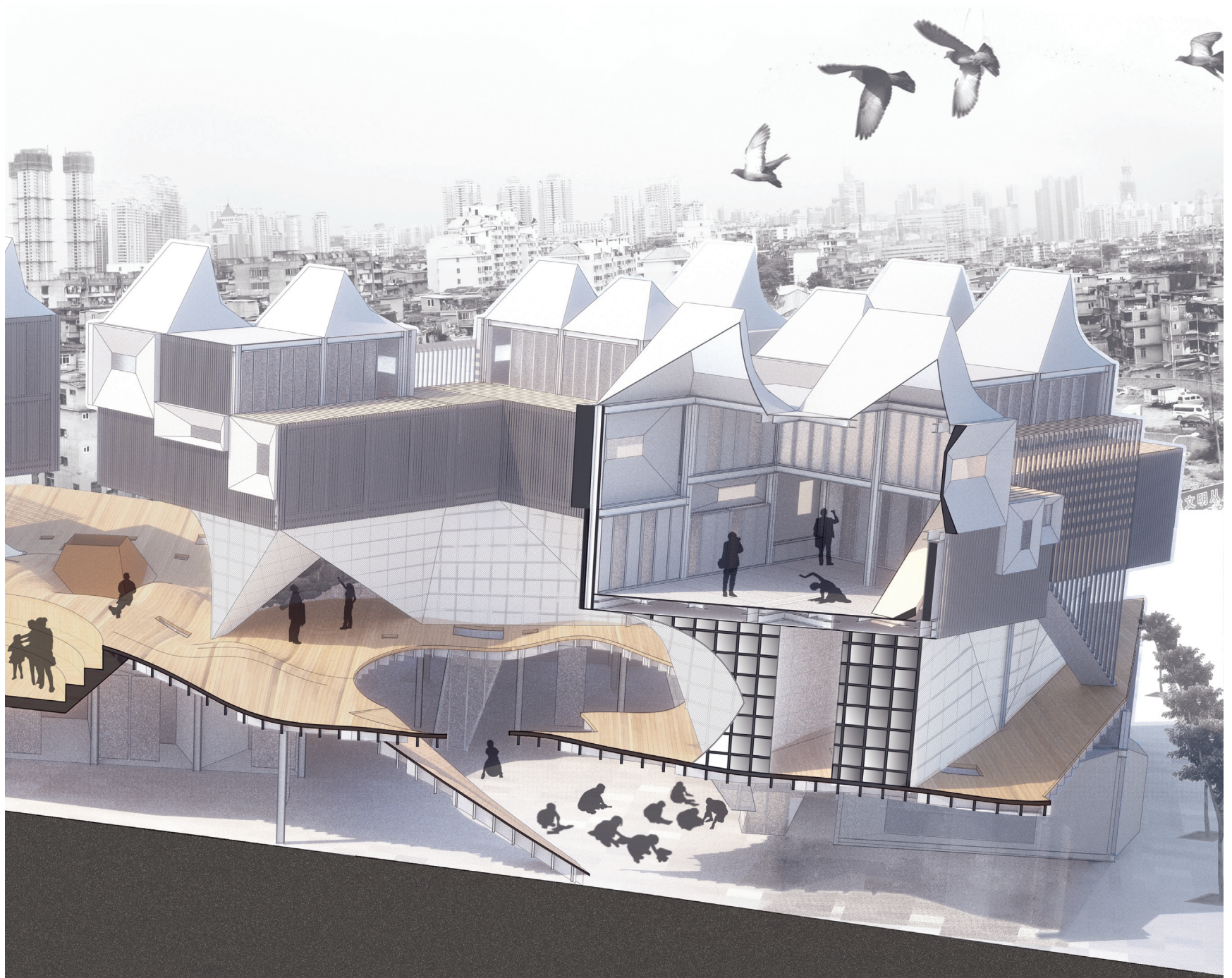
Skylights are all oriented towards general north to create diffuse interior natural light for artists' working space.

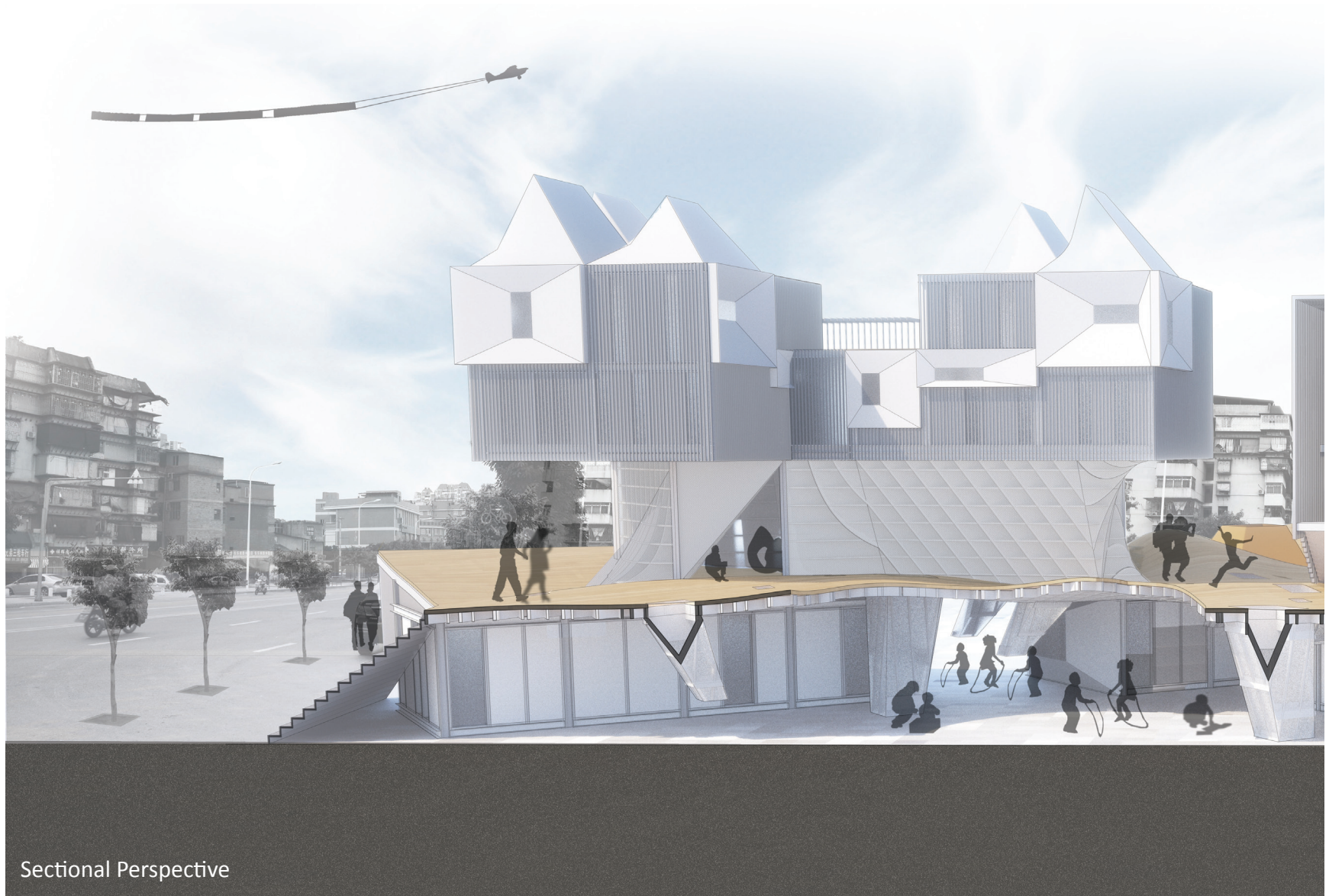


Second Floor Plan



Sectional Perspective





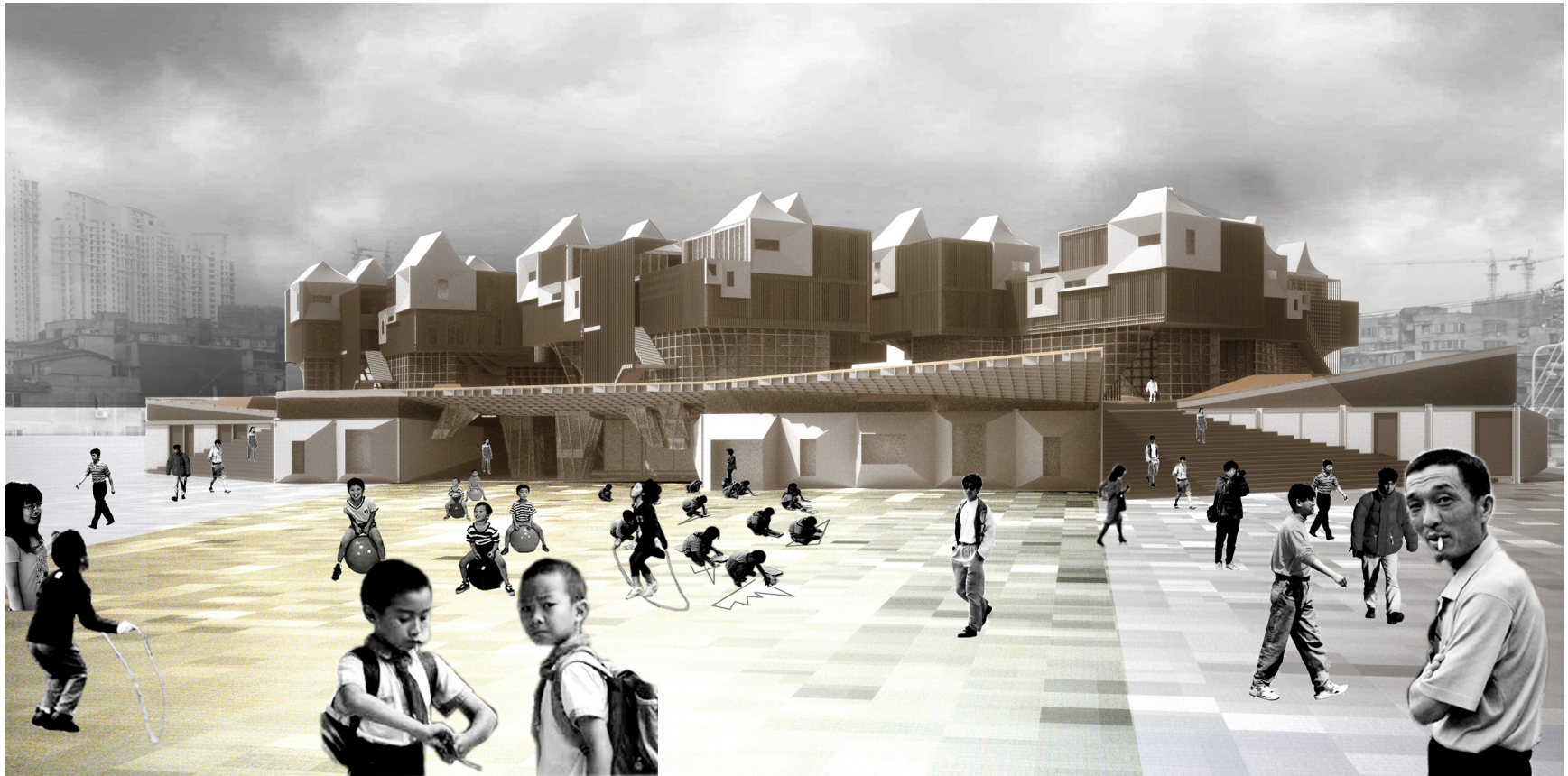
Sectional Perspective



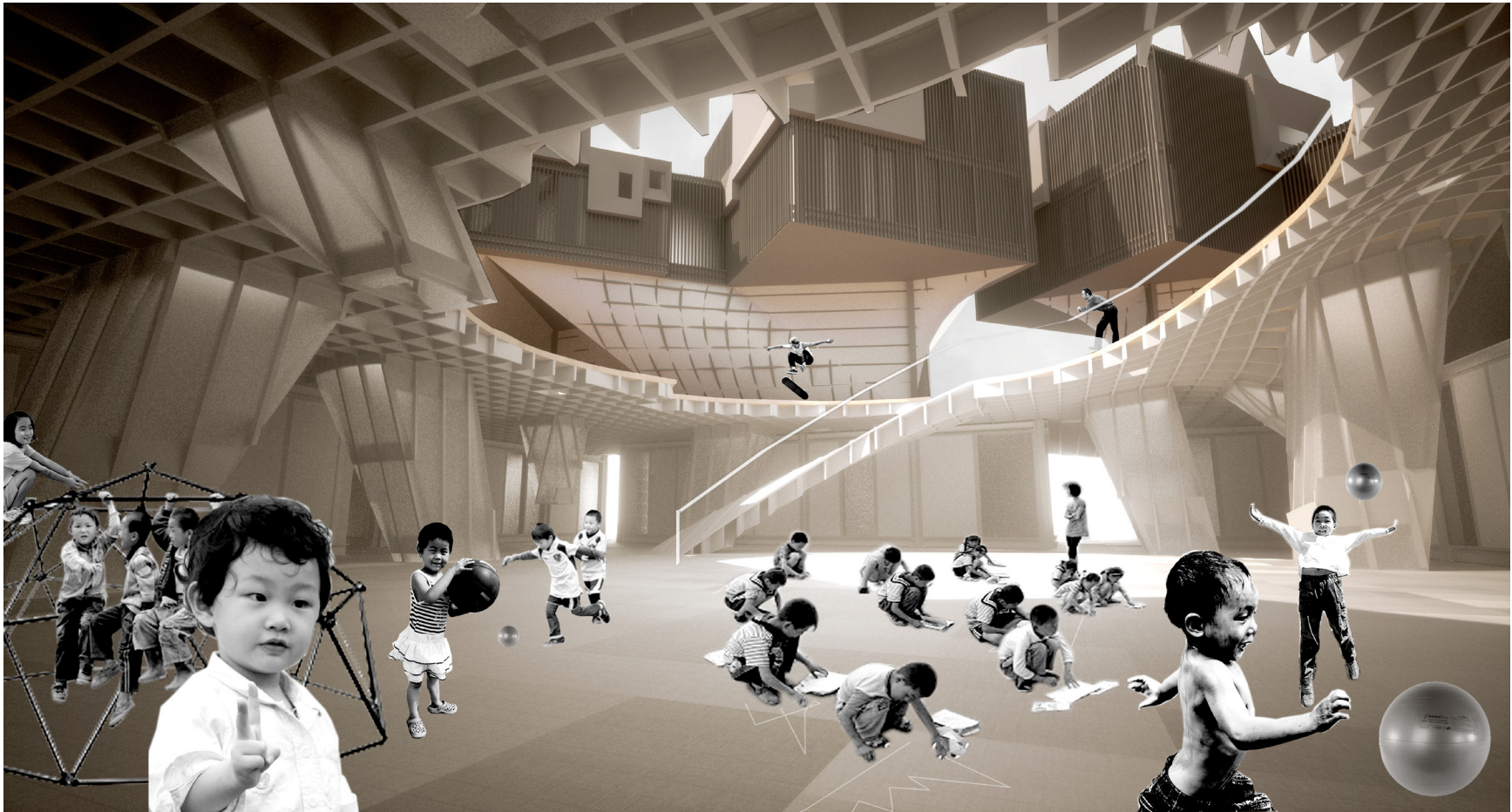
PUBLIC ENTRANCE TO THE NEW GROUND



ENTRANCES TO THE CLASSROOMS



COURTYARD EXPERIENCE WITH STUDENTS



STUDIOS HOVERING ABOVE THE NEW GROUND AND CLASSROOMS



NEW GROUND





CENTRAL SUNKEN PLAZZA

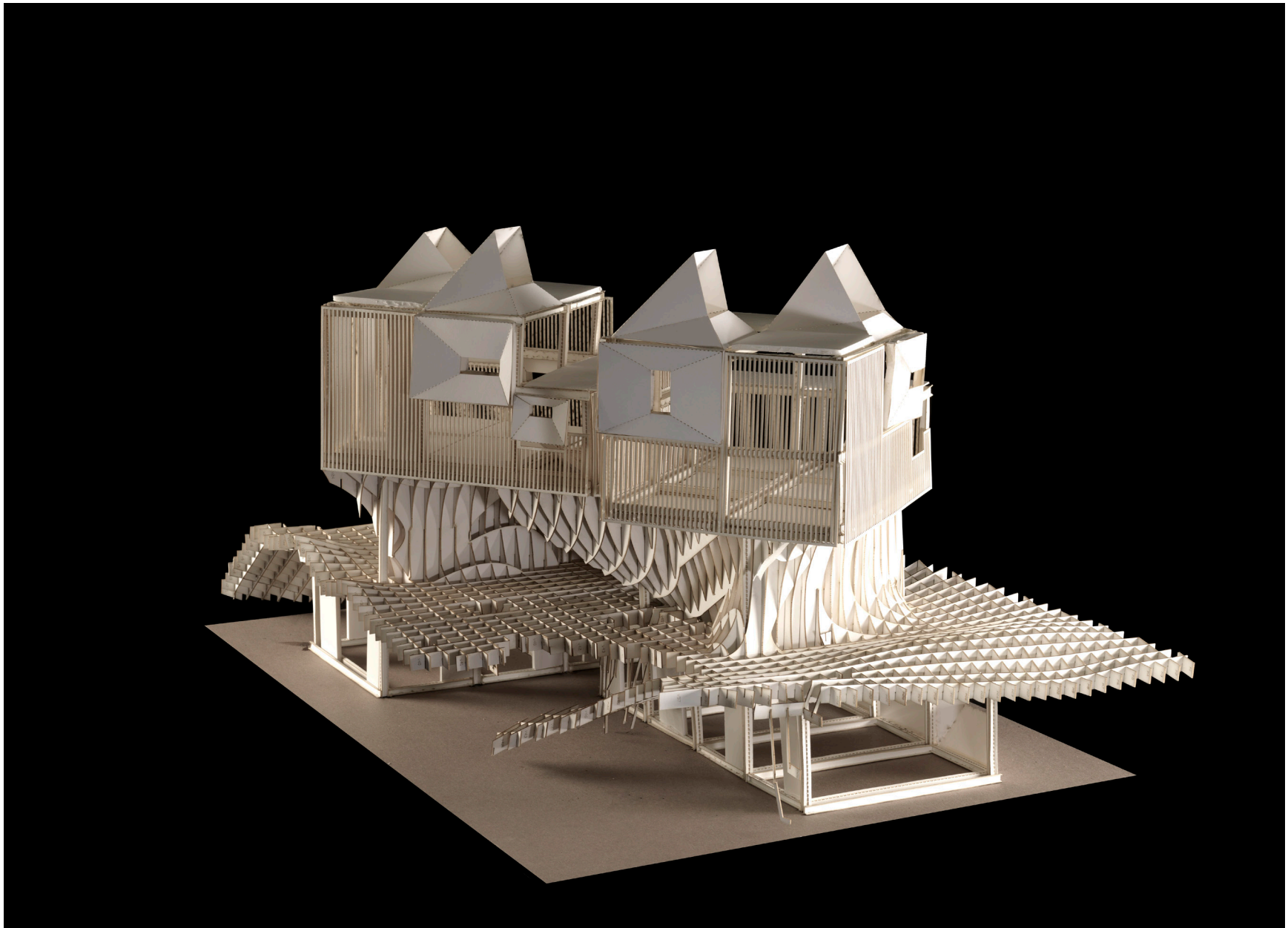
Mixing Place for the Public, Migrant Students, and the Artists

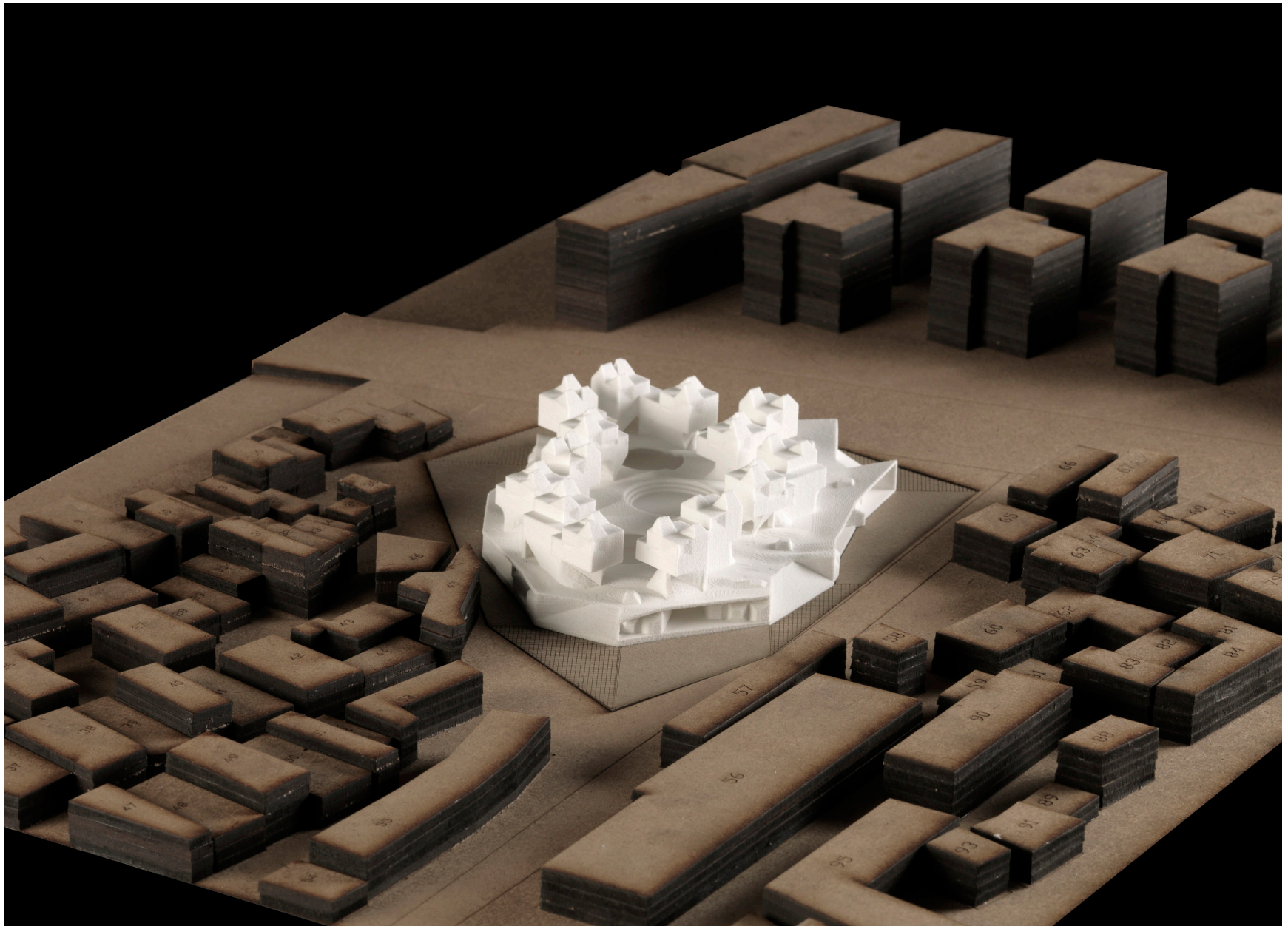


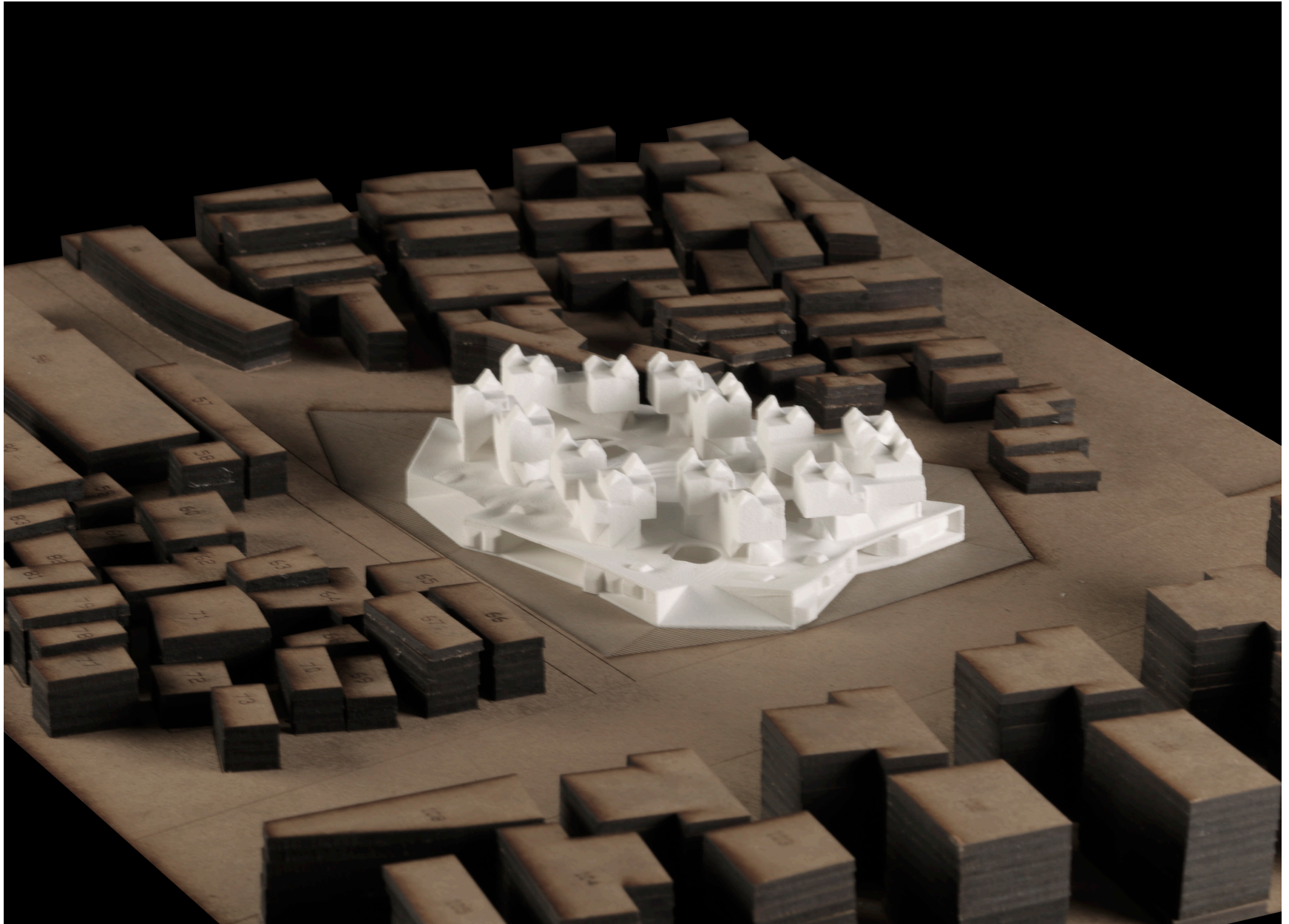












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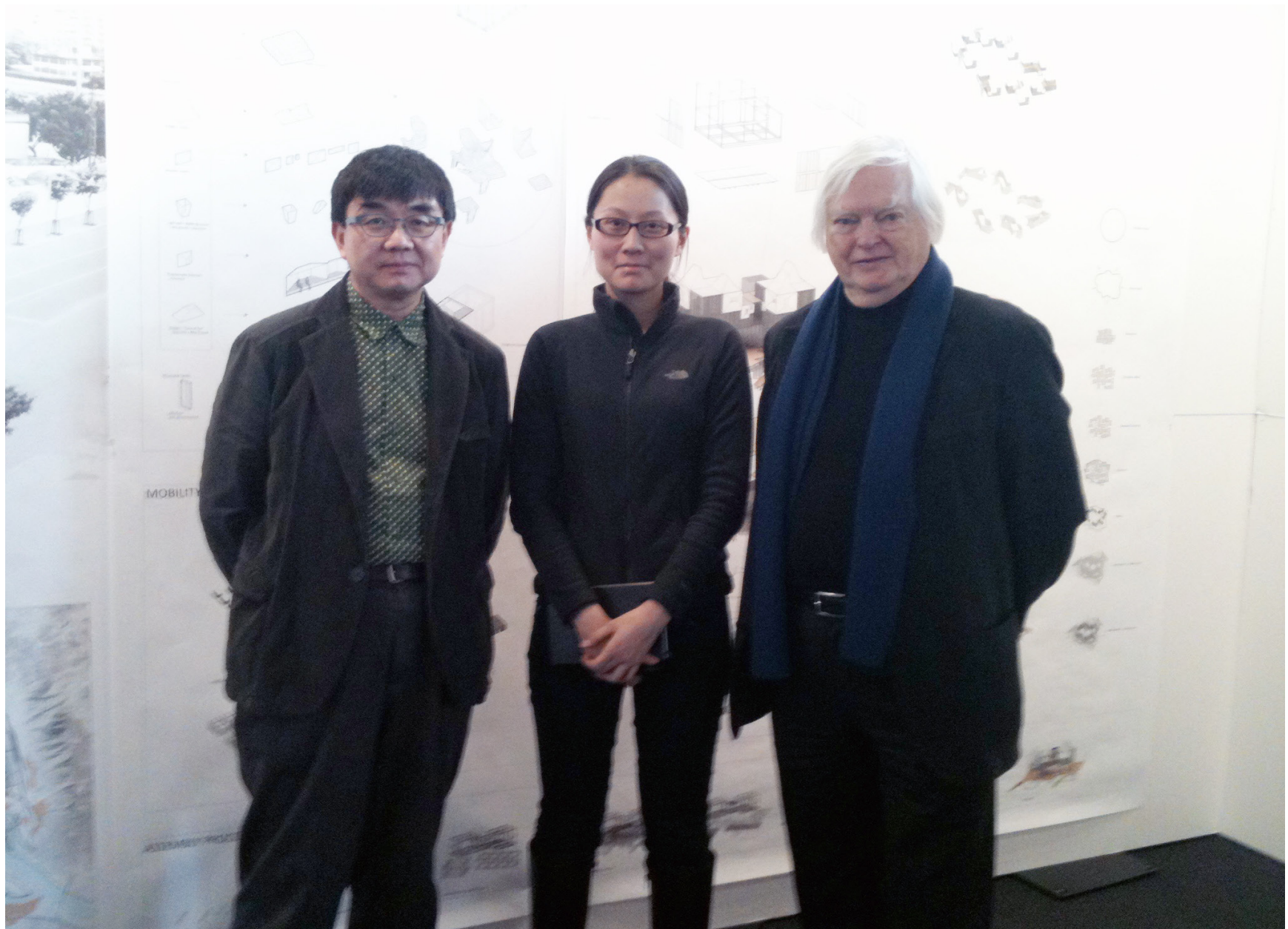
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BIOGRAPHICAL NOTE

YU GAO

Design and Computation SMArchS Candidate 2013

MArch Candidate 2012

Yu Gao is pursuing both degrees in SMArchs Computation and MArch. Her research and design interest lies in the translation of the quality of “beauty” in architecture into real architectural form to be utilized in “real world” (second and third-world) settings. Her life pursuit is to bridge the gap between architectural beauty (currently expensive and limited to rich people) and the real world problem (to serve tremendous social needs and be accessible to a much larger cross-section of the world). She believes architects can extend their role within the industry, and architecture can become a critical instrument to bring dignity back to forgotten people.

Yu Gao holds a bachelor of arts in architecture design from Hong Kong University, and worked as an architect for one year before she came to MIT. She’s from mainland China and possesses a true passion to serve the underprivileged.

.....For the Love of God