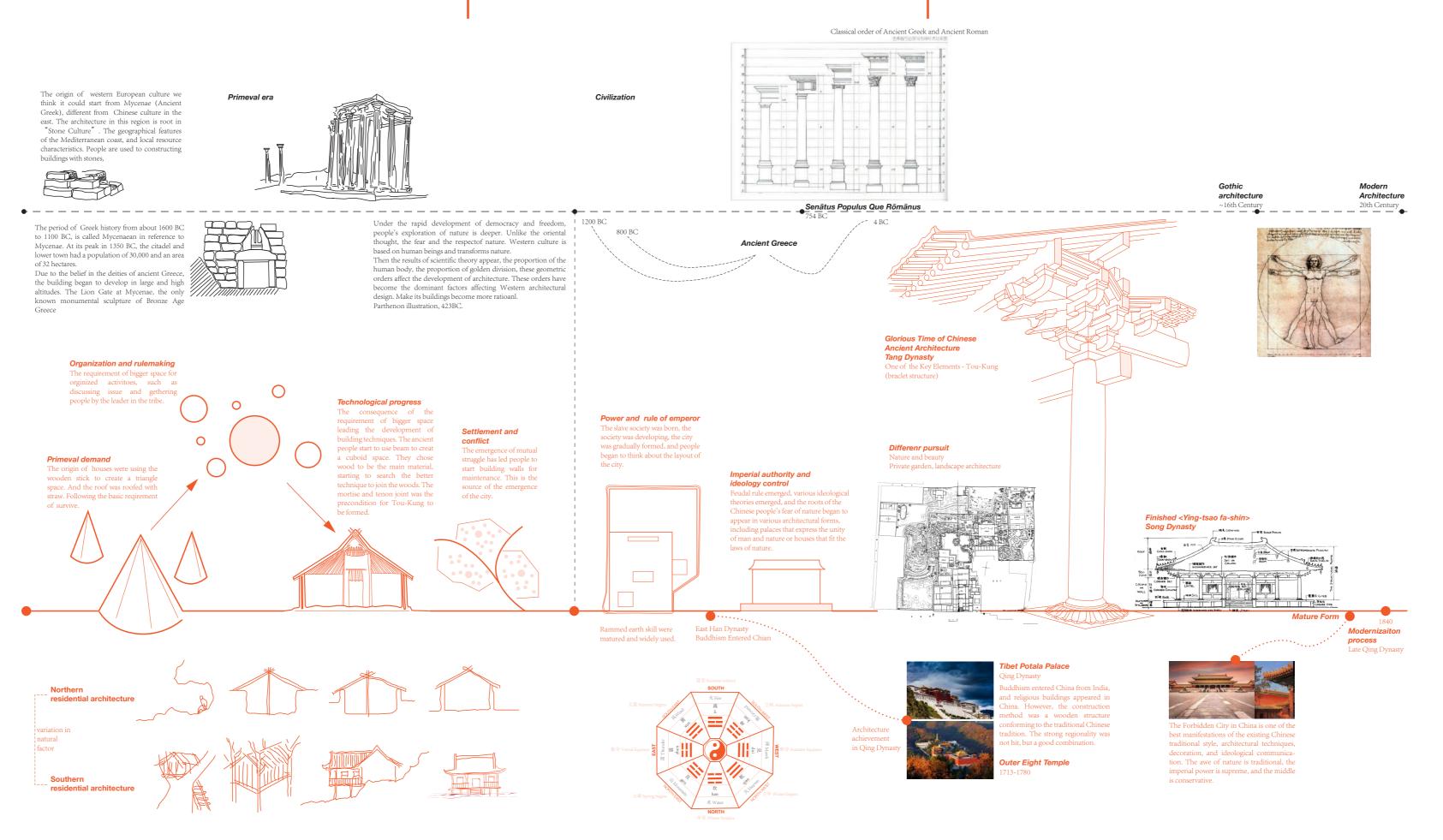
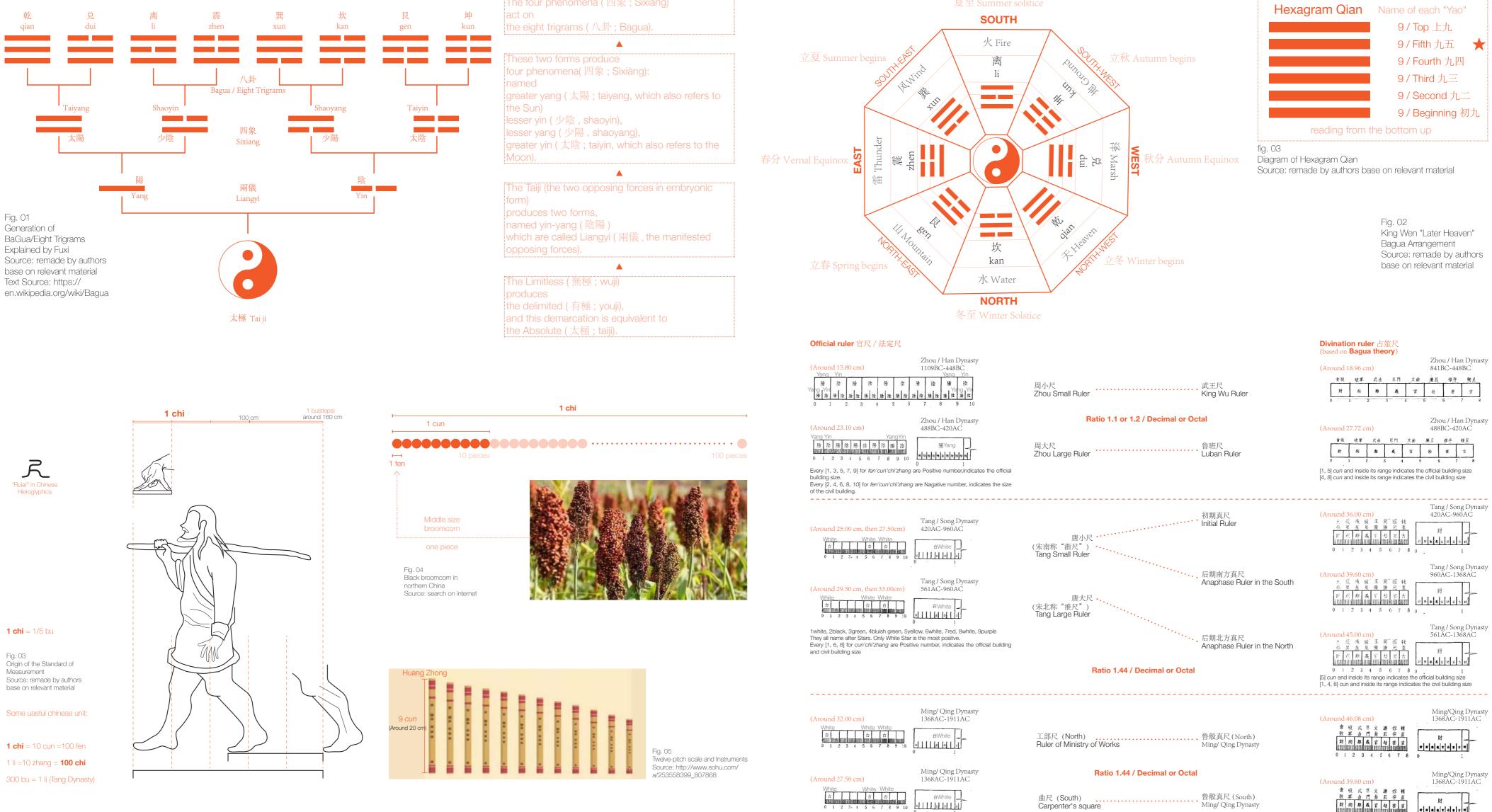
1. Chinese Ideology and Utility System

表・壹

Chinese Vernacular Manifestation in Parametric Language



The four phenomena (四象; Sixiàng)

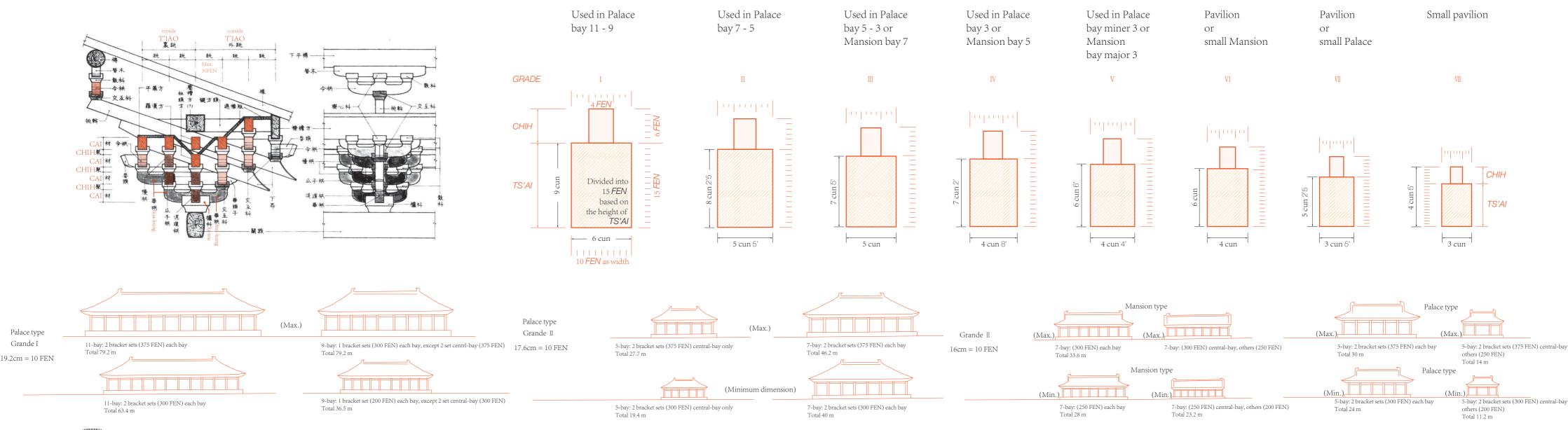


Every [1, 6, 8] for fen'cun'chi'zhang are Positive number, indicates the size of official, civil and temple building. Every [2, 9] for fen'cun'chi'zhang are miner Positive number, indicates the size of the civil building.

[5] cun and inside its range indicates the size of official building. [4] cun and inside its range indicates the size of temple building [1, 8] cun and inside its range indicates the civil building size

**

300 bu = 1 li (Tang Dynasty)



POLITECNICO DI MILANO Scuola di

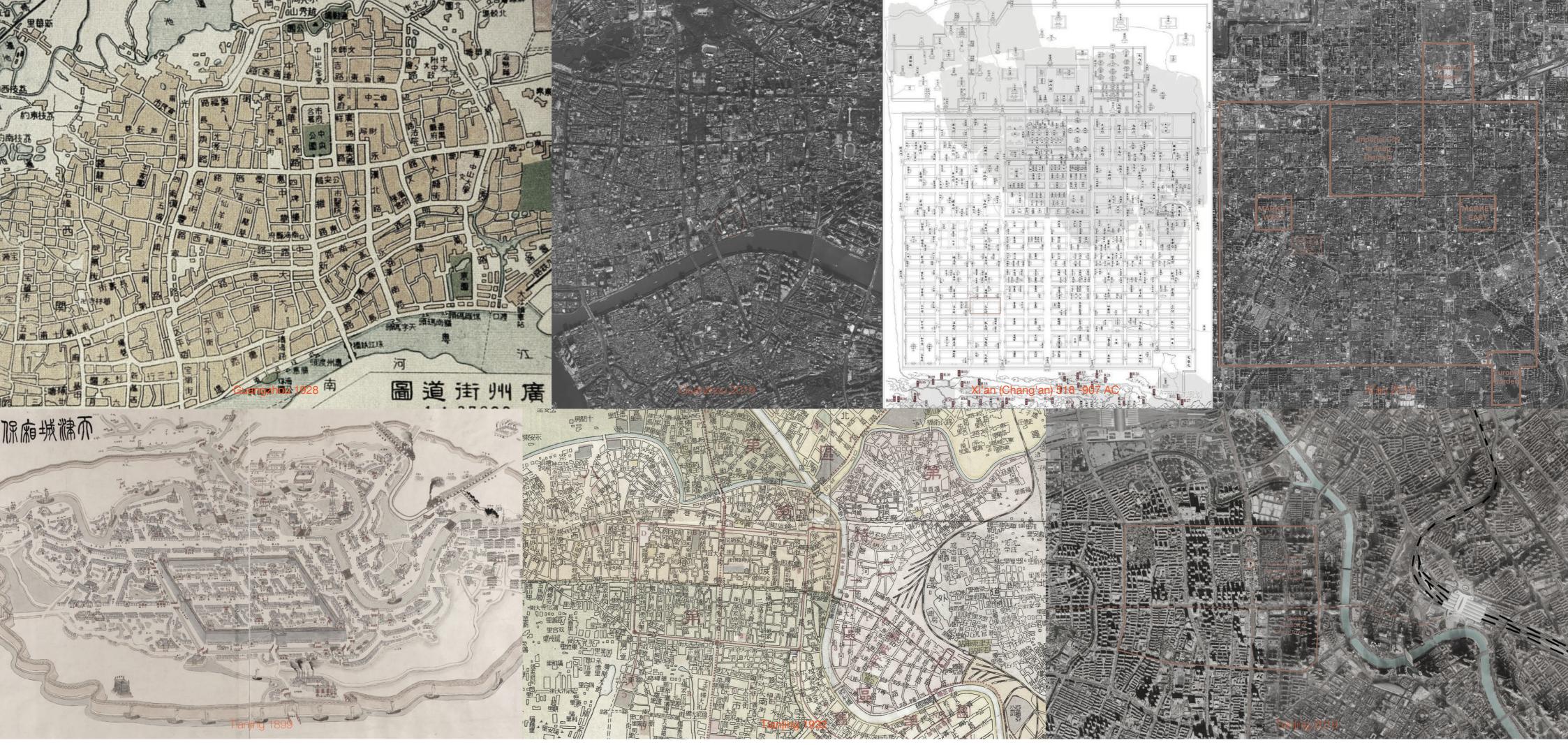
Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella





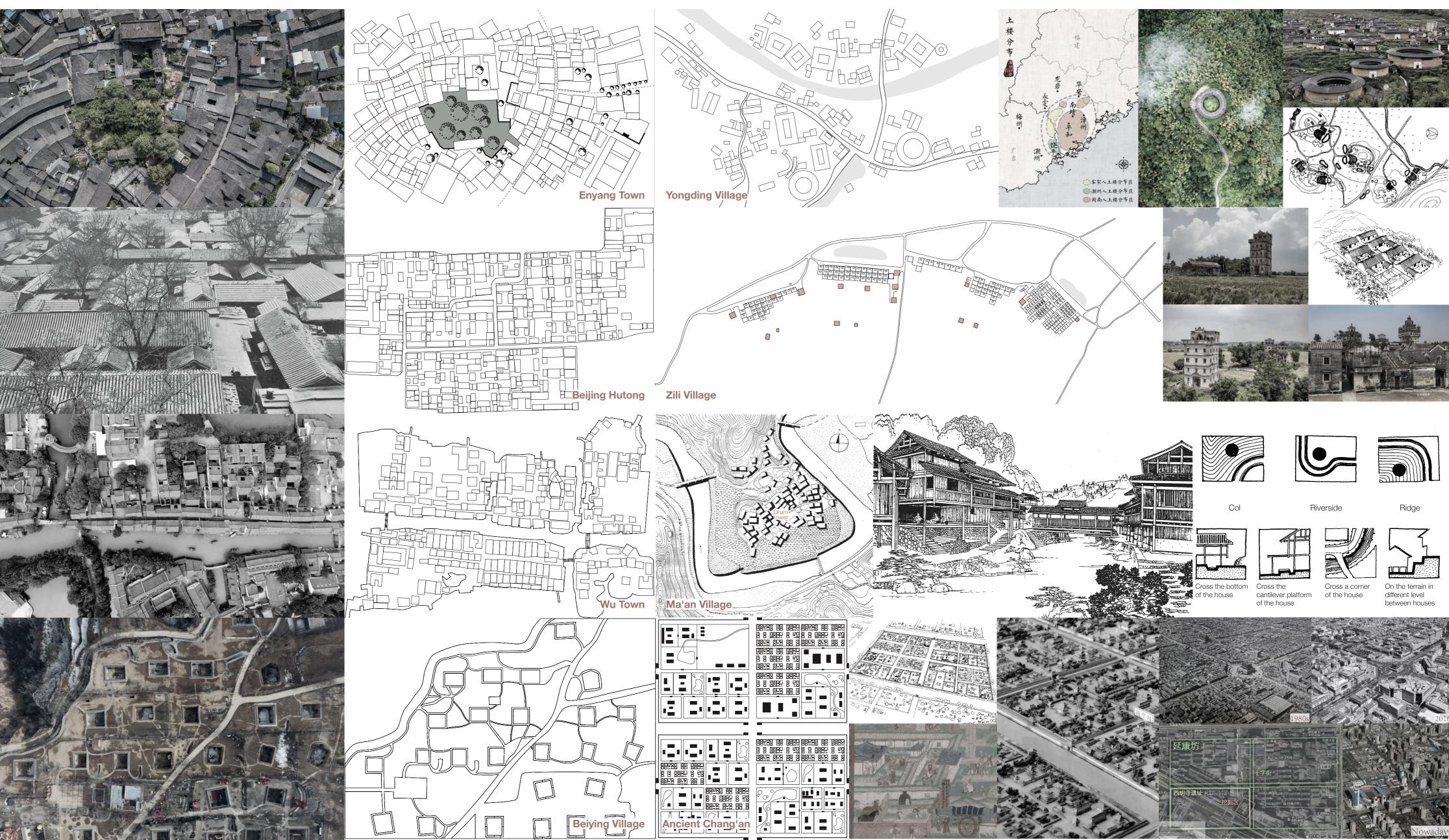




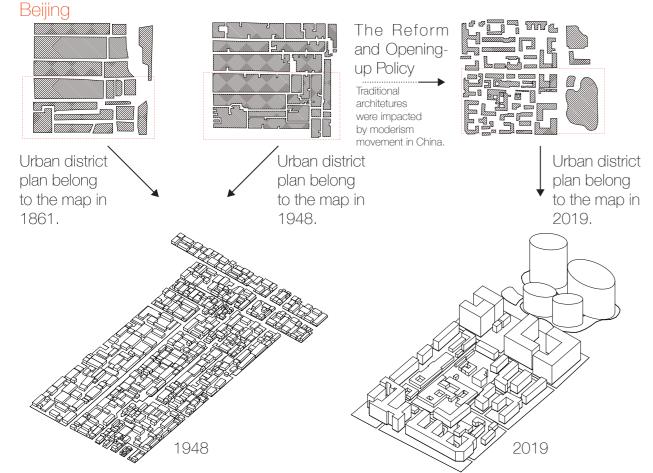


POLITECNICO DI MILANO Scuola di

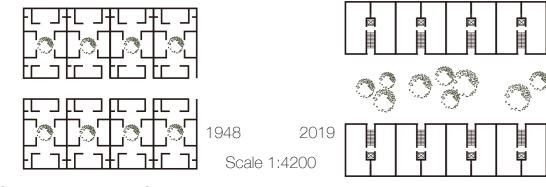
Architettura Urbanistica Ingegneria delle Costruzioni 086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella



3. Development of Open Space



Modeling of Chaoyang Hutong District Axonomteric in 1948 and 2019 Hypothesis according to archieve materials.



Simulated drawing of Chaoyang Hutong urban fabrication in 1948 and 2019, architectural forms influenced the urban fabrication.

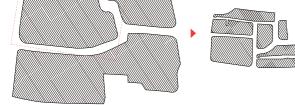


Guangzhou

	 			
			ín.	1
Section of human	Ď		į	
)t life et de	in	Modorn	1 -
apartment	-		e 1:2400	





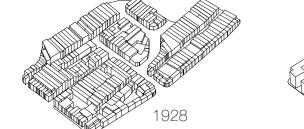




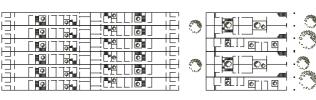
2019

Urban District Plan Volumn of the architectures Belong to the Map in the District, Hypothesis in 1928. according to archive materials.





Modeling of Zhujiang Residetial District Axonomteric in 1928 and 2019 Hypothesis according to archieve materials.



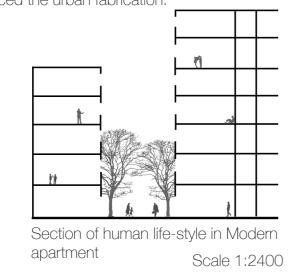
II ⊠ Scale 1:4200

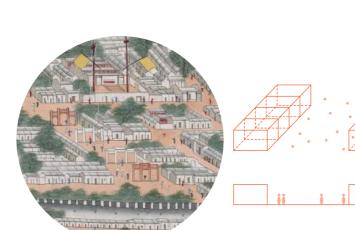
Plan of a combination of Bamboo-houses Contacting with urban Fabrication

Section of human life-style in Bamboo House

Scale 1:2400

Simulated Drawing of modern residencial area with Urban Fabrication in 2019, Architectural forms influenced the urban fabrication.







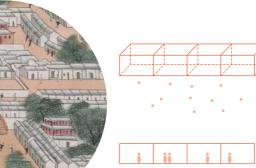
האירות המשמחה ל להידידים היותי ביו היותי היותי האירים ביו לאירים ביו היותים ביו היותים ביו היותים ביו היותים ב

TALLARD DATE DATE .

City streets are one of the main places of activity for people, and shops along the street can be shops or ordinary houses.

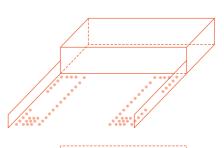


Open space



The open space near house is a typical area for activities of citizens.

Square

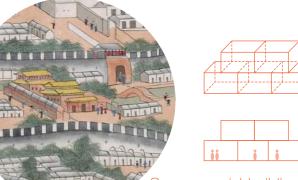


i ii i

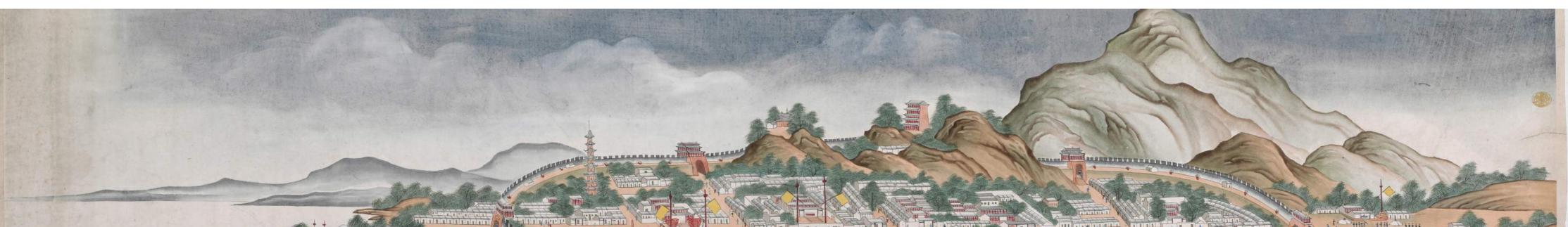
This square belongs to the Imperial Palace area and is used for official political activities. The participants are all official and emperor.

i ii i

Special building



Some special buildings can have open space for people to gather because of the needs of the activities. Some are used only by special people. For example, the building is built by officials to celebrate the birthday of the emperor. The civilians can participate in the stage or temple.



an numm

11111

autor





Streets along the street are street-side shops, which are public places where people can freely move.



POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzio

IIC YEAR - 2018/2019 JDENT - Sijian Jiang / Jingyi Guo

LED

14 111

THE REAL PROPERTY.

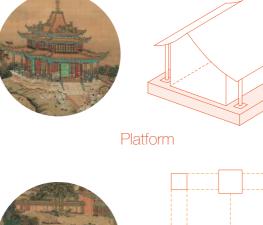
4. Chinese Traditional Palace and Garden and Tower

表・肆

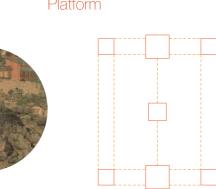
Chinese Vernacular Manifestation in Parametric Language



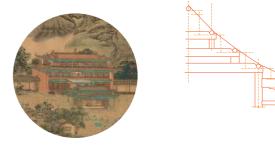
The conceptual drawing of the first great palace, EPang-Palace (not finished) in the recorded history (Qin Dynasty) Painter: Yuan Jiang, Qing Dynasty



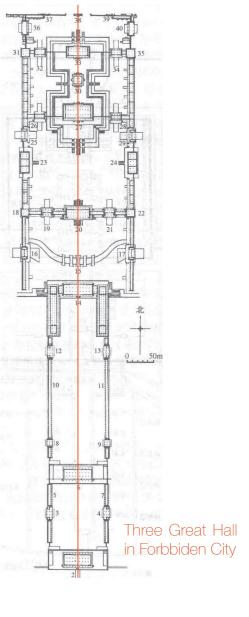




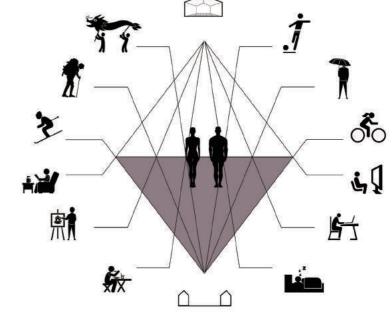
Layout of palace and corridor connection



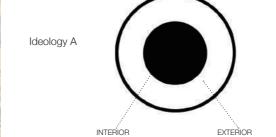
Timber structure and its constructural techniques







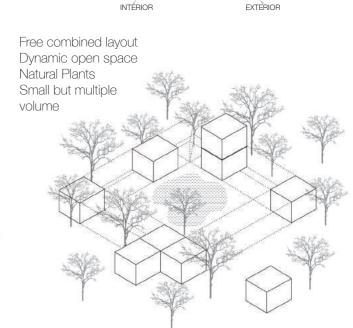
The Classfied Diagram of Human Activities Based on Exterior and Interior

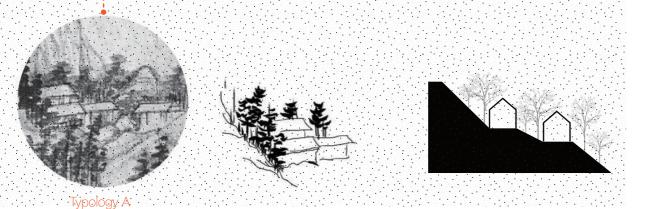






Centralized layout Geometrical open space Manicured plants Massive volume

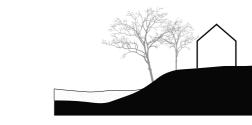


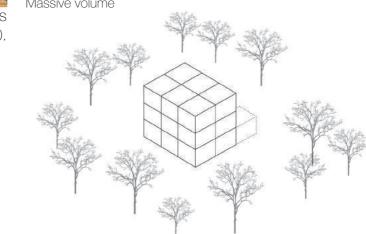


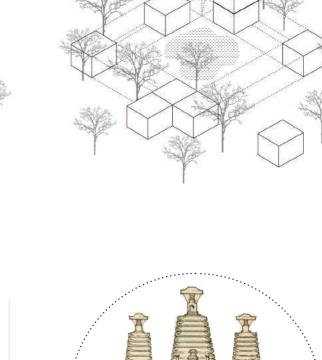


Typology B

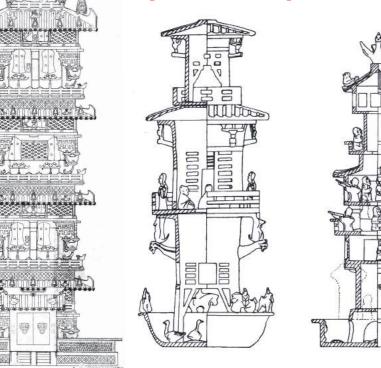


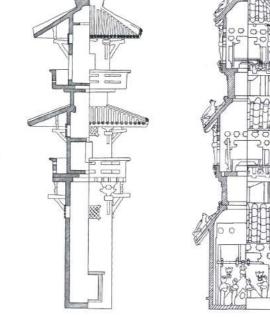




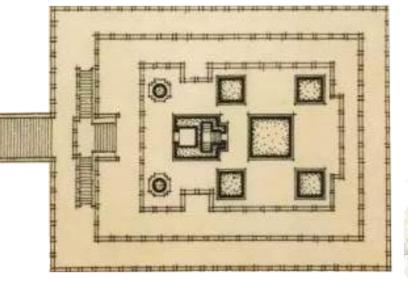


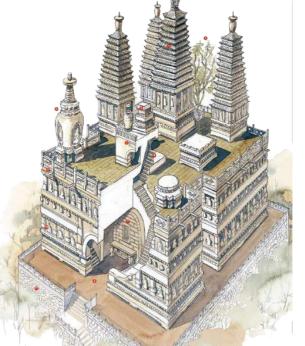
Pottery tower unearthed in Hebei region Han Dynasty origin of LouGe and Pagodas

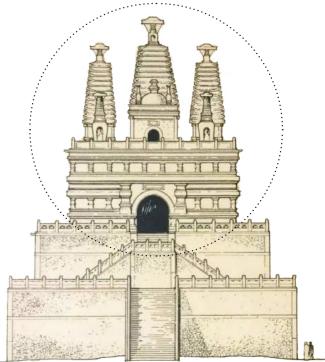




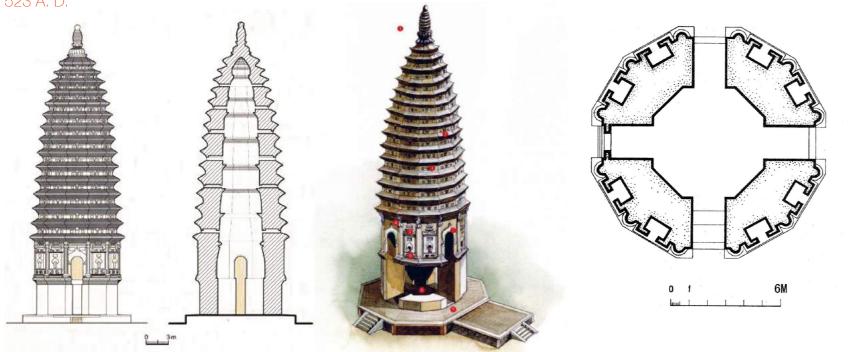
CHIN-KANG-PAO-TSO T'A 1748 A. D.

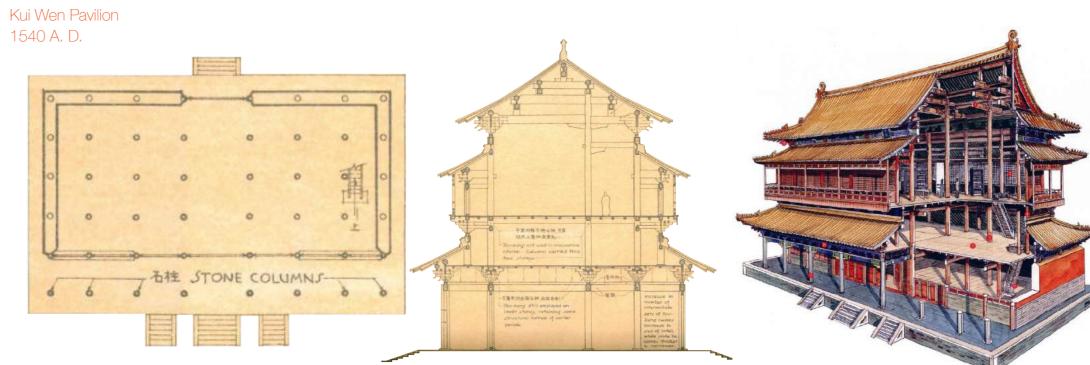


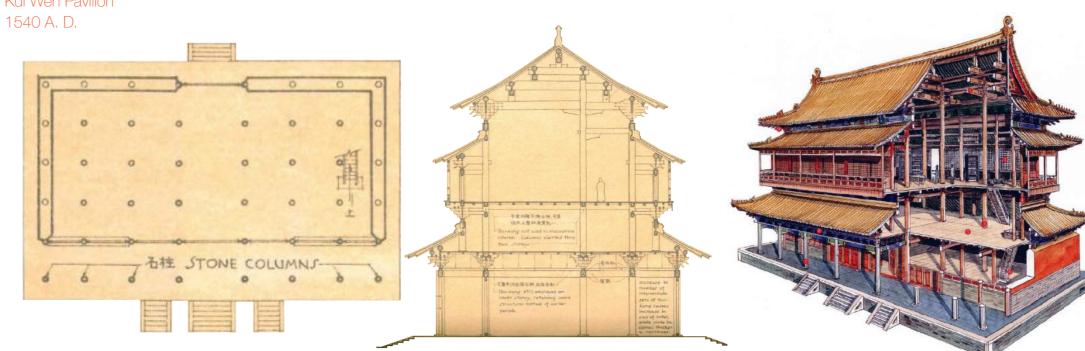




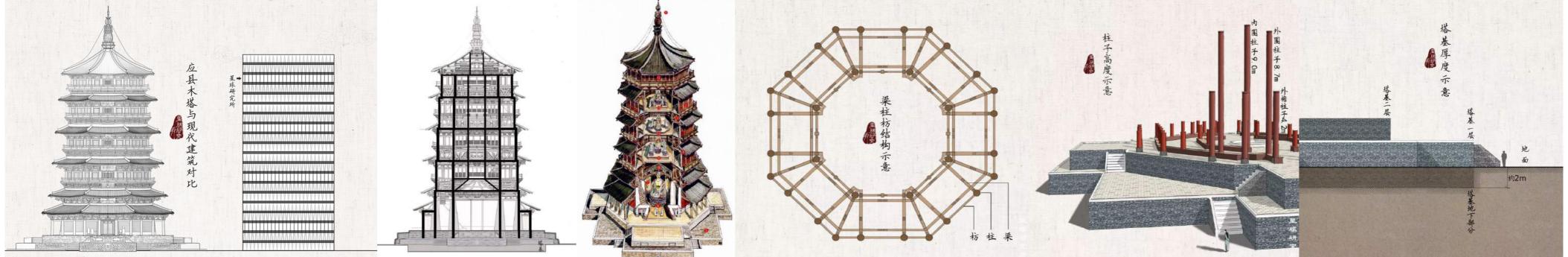
The Sung-Yueh Brick Ssu Pagoda 523 A. D.







Ying Hsien Wooden Pagoda 1056 A. D.





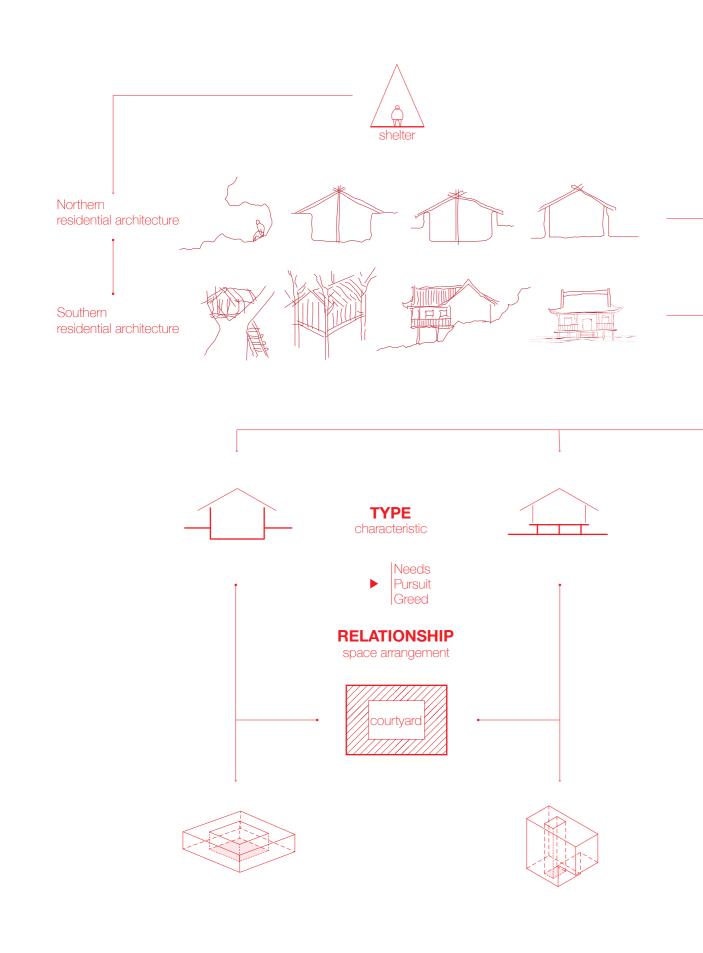
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

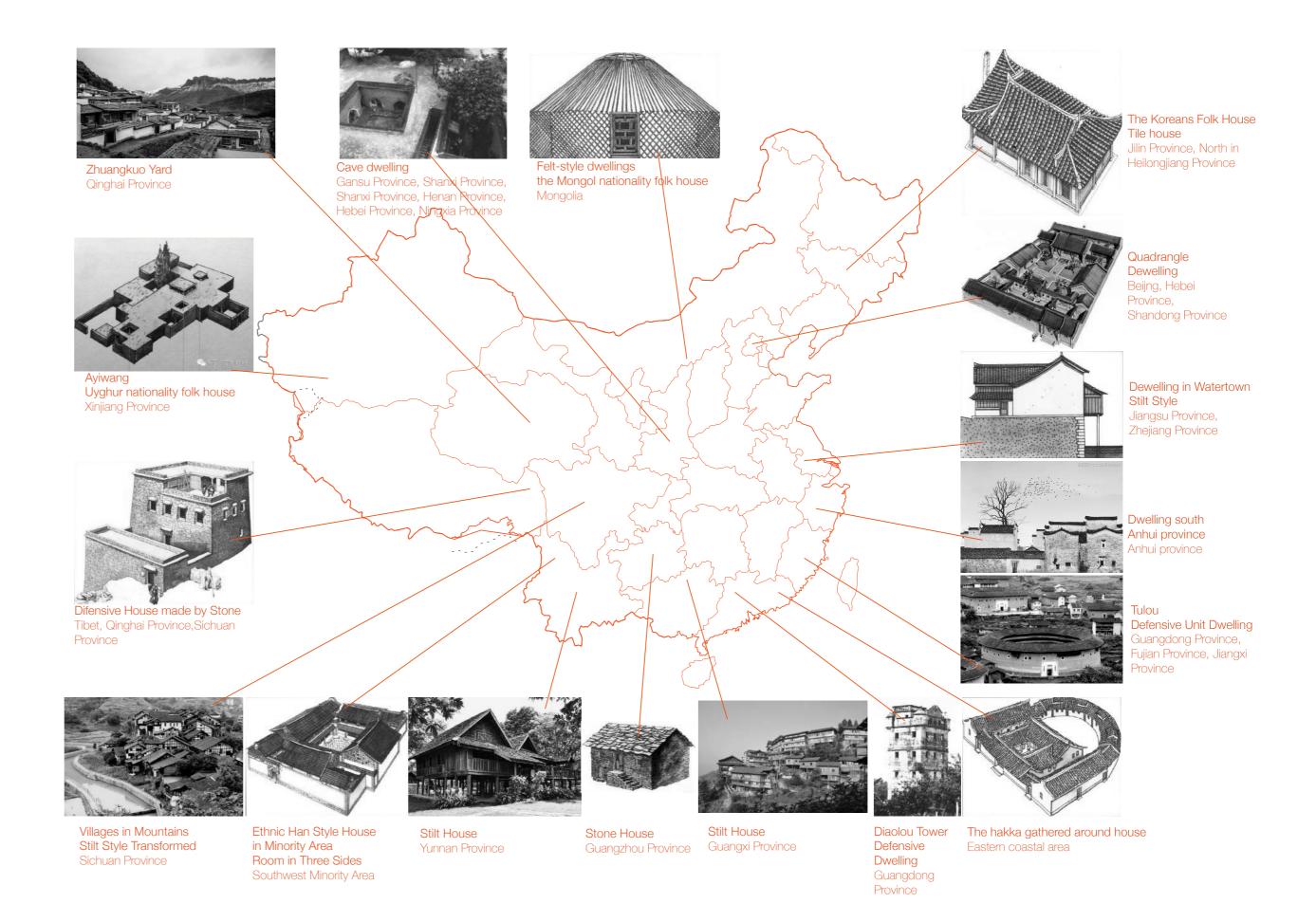
086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

5. Chinese Traditional Dwelling

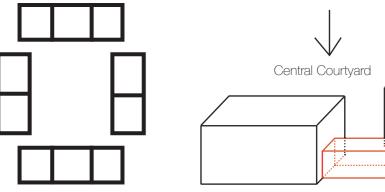
惹・伍

Chinese Vernacular Manifestation in Parametric Language





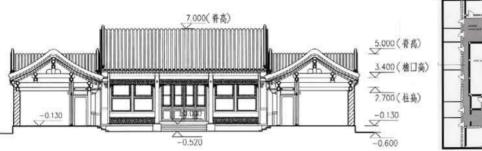
Quadrangle Dwelling

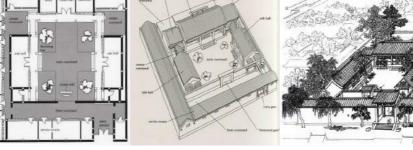


Generic Layout of Quadrangle Dwelling



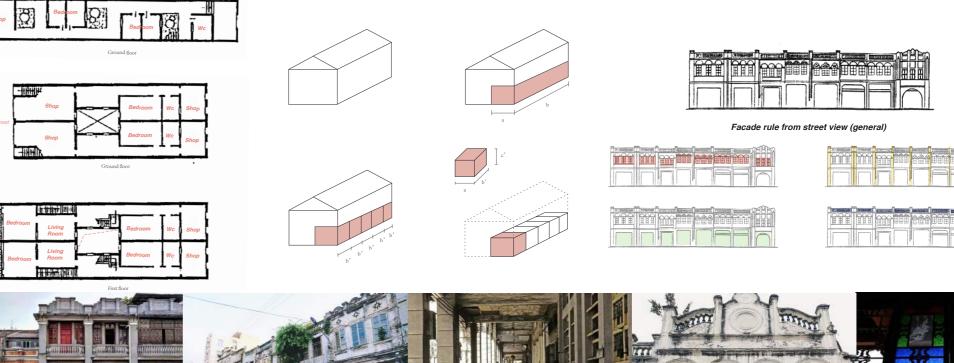
Bird View of Beijign Quadrangle

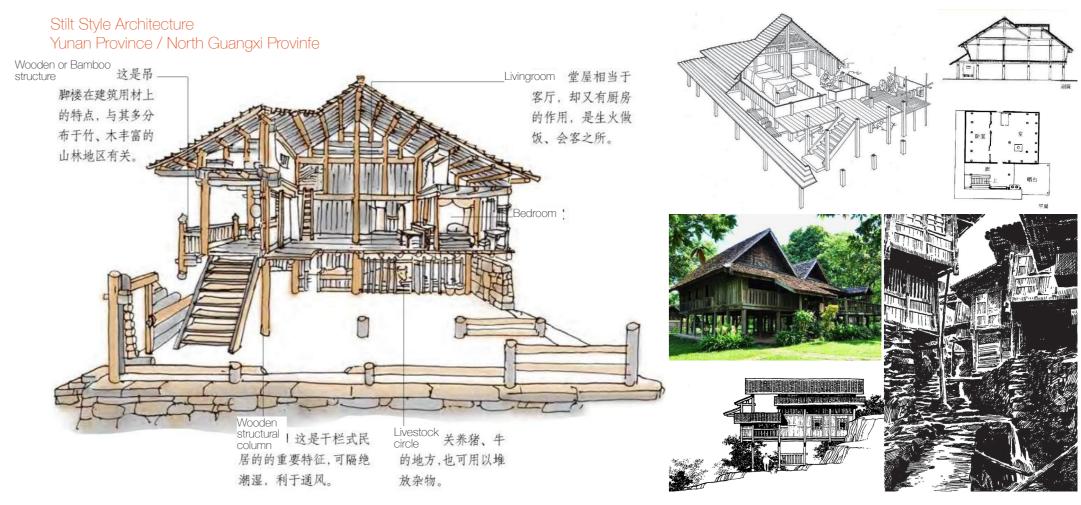




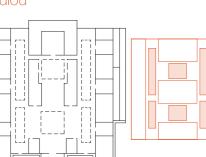
Hakka (Yongding, Nanjing)

Bamboo House









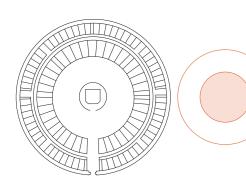
The spaced are distributed depending on the hierachy and status of people.

Dafu Di Gaobei Qing Dynasty Emperor Daoguang 8th

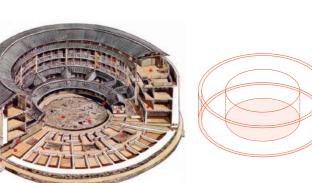
(1828 AC)

It kept the character of quedrangle dwelling which is the style from central

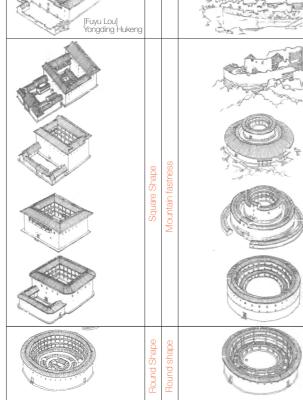
plains.



People are fair in this spaces, and the space is tend to be equal division.



The matural form of the Eryi Lou courtyard of Tulou will be Qing Dynasty the round shape. Emperor Qianlong 35th (1770 AC)







普通的独立式窑

半依靠黄土坡的独立式窑洞

几口窑





世春宏3

奠集剧步

記永余

Diaolou Watchtower Family Fang's Light House



Yaodong Sunken type na is a cave dwelling below

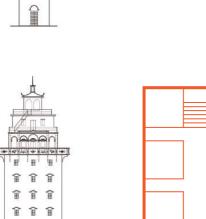


Communal Tower Tianlu Building in Yongan village



Residential Tower Mingshi Building in Zili village





<u>i</u>

۳ ۲ ۲

ê 🛱 î

自自自

會會會

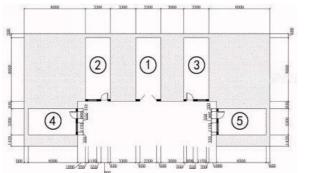
自自自

Typical Characteristic of watchtower Diaolou



the ground. It is a courtyard that is excavated underground on a relatively flat and open loess, and then several cave dwellings are drilled across the walls of the courtyard. Basically, each The sinking courtyard is a family, independent.

Fumin folks (Zhangzhou)







* 8



It can be said that the independent cave dwellings are the form of overburden buildings in ordinary bungalow houses. According to the same construction techniques and materials, the layout of the independent cave dwellings

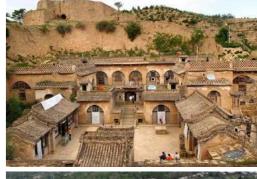
or the arrangement of the courtyards is not limited by the 678 3 B cliff potential.





Cliff-style caves are caves that rely on natural cliffs or slopes. The excavation is carried out in parallel on the façade of the natural cliff slope. According to the height and slope of the slope, one layer, two layers or more layers of cave dwellings can be dug. After the cave dwelling is completed, the front side is an open space in front of the cliff slope, which is convenient for people to go out and usually











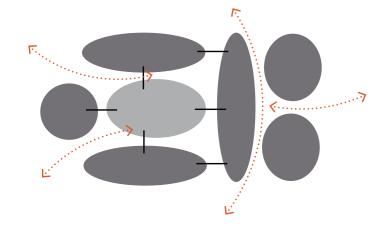
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

6. Abstraction of Urban Scale

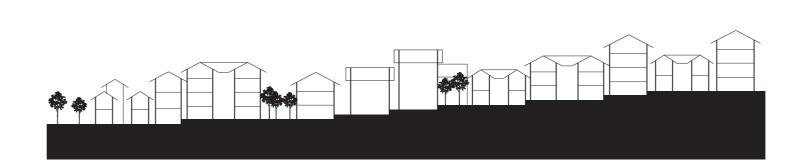
表・陆

Chinese Vernacular Manifestation in Parametric Language



Topology Diagram of En Yang Town

Nolimap of En Yang Town



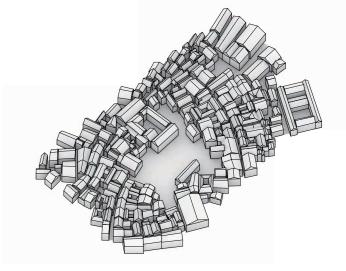
Urban Section of En Yang Town



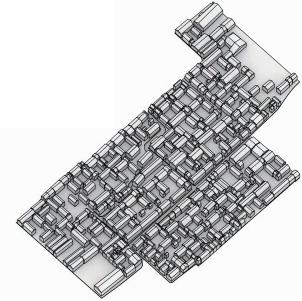


Urban Section of Beijng

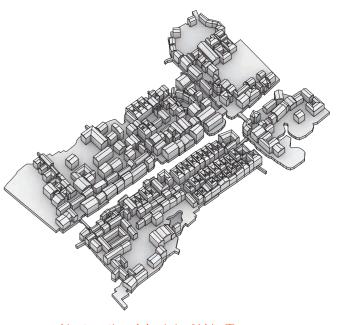




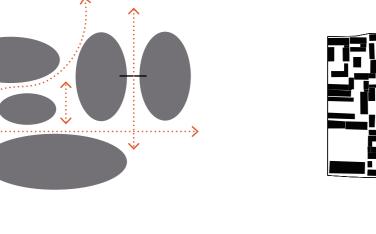
Abstraction Model of En Yang Town



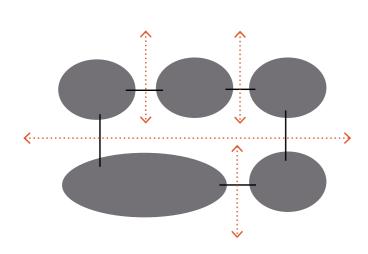
Abstraction Model of Beijing



Abstraction Model of Wu Town



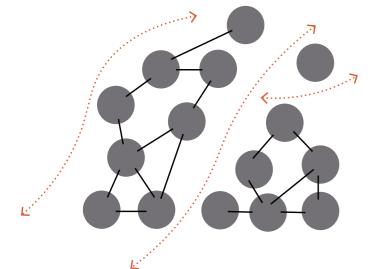
Topology Diagram of Beijing



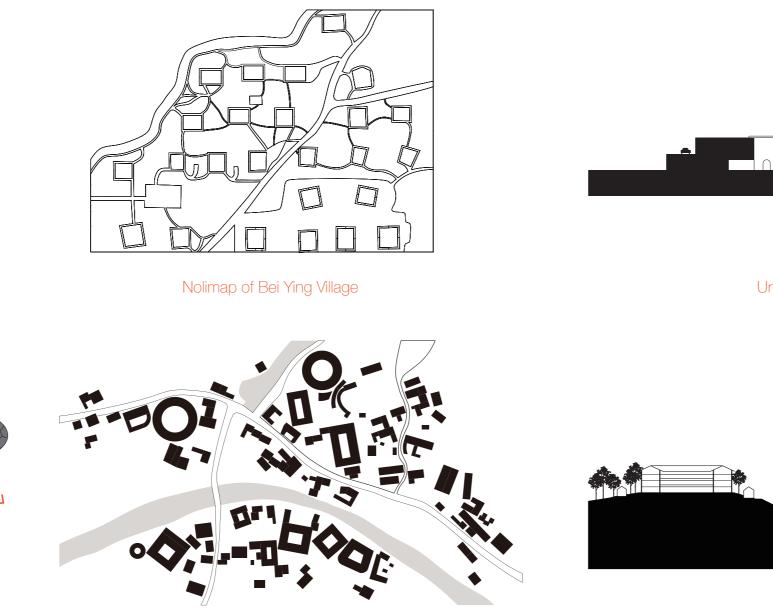
Topology Diagram of Wu Town



Nolimap of Beijing

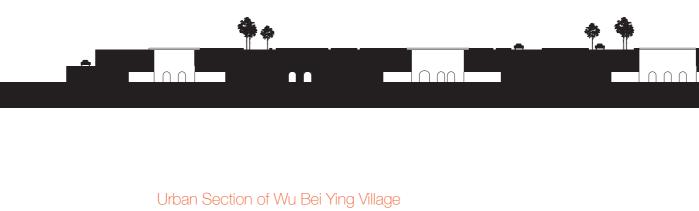


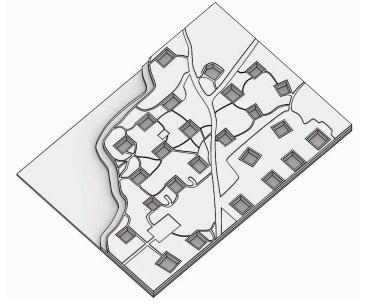
Topology Diagram of Bei Ying Village



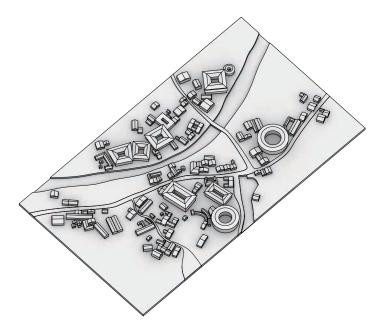
رور الک ک

Urban Section of Wu Town

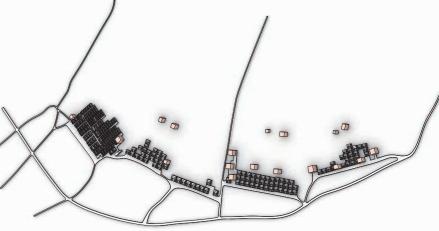




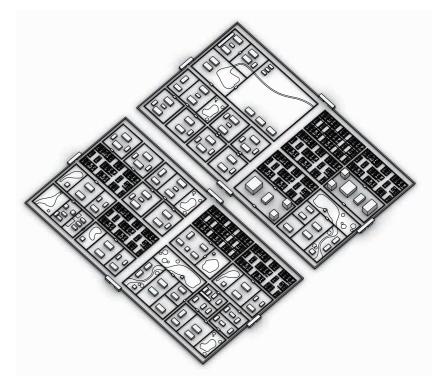
Abstraction Model of Bei Ying Village



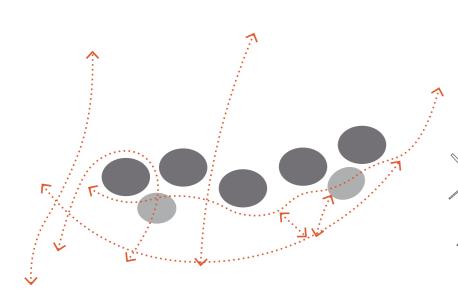
Abstraction Model of Yongding Tulou Village



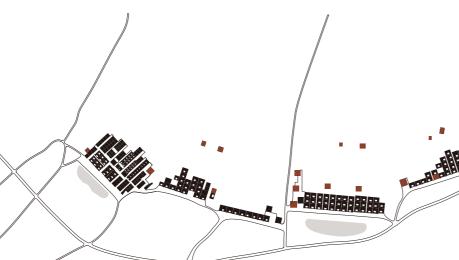
Abstraction Model of Kaiping Zili Village



Nolimap of Yongding Tulou Village



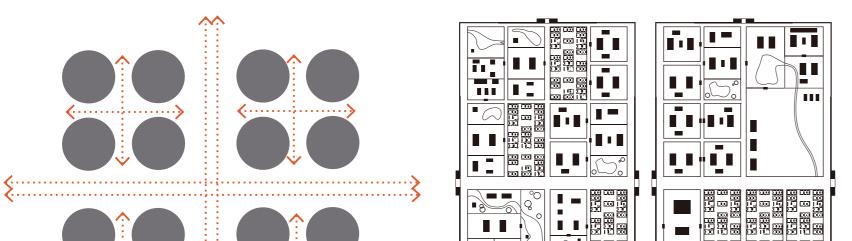
Topology Diagram of Yongding Tulou Village



Topology Diagram of Zili Village

 \sim

Nolimap of Kaiping Zili Village



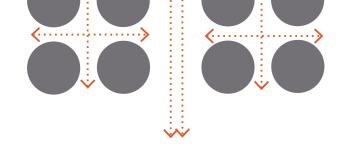




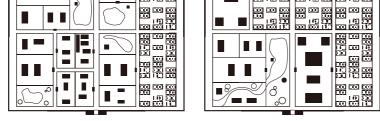


Urban Section of Wu Yongding Tulou Village

Urban Section of Kaiping Zili Village



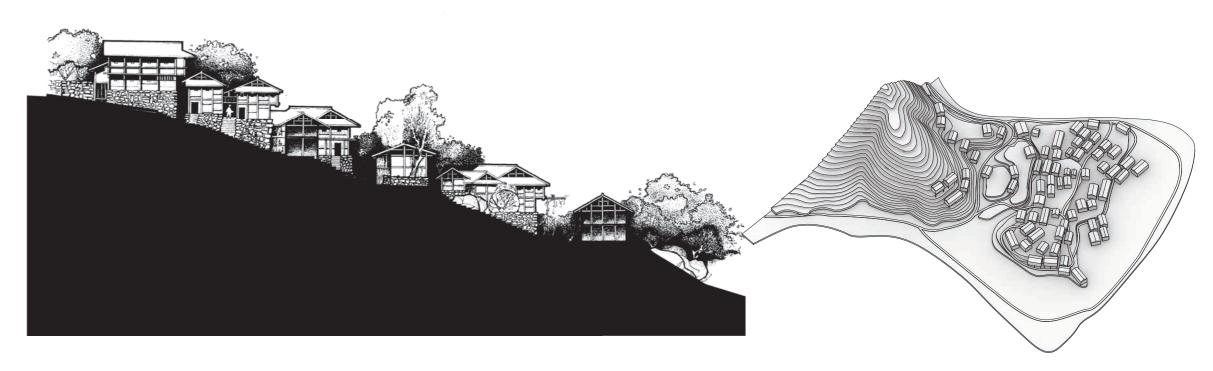
Topology Diagram of Chang'an



Nolimap of Chang'an

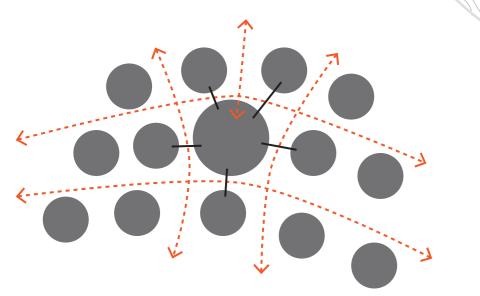


Abstraction Model of Chang'an



Urban Section of Ma'an Village

Abstraction Model of Ma'an Village





Nolimap of Ma'an Village

Topology Diagram of Ma'an Village



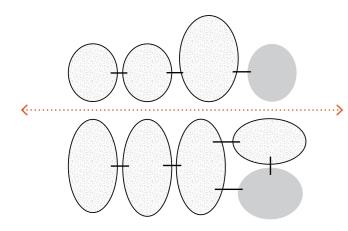
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

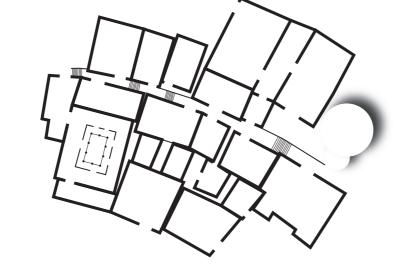
086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

7. Abstraction of Street Scale

表・茶

Chinese Vernacular Manifestation in Parametric Language

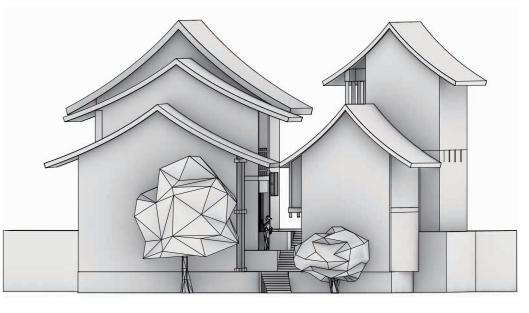




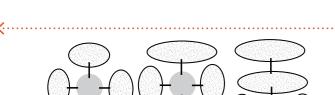
Street Plan of En Yang Town



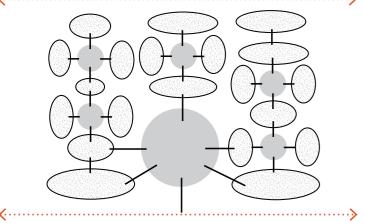
Street Section of En Yang Town



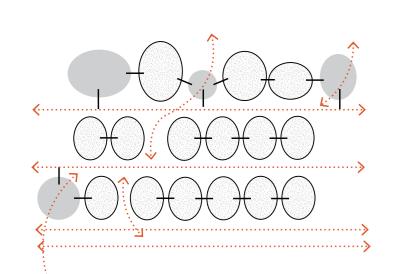
Simulated Model in Street Scale of En Yang Town



Topology Diagram of En Yang in Street Scale

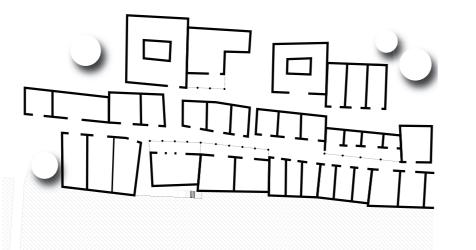


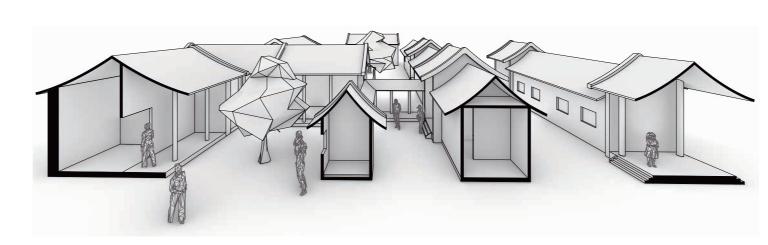






Street Plan of En Beijing Hutong





Street Section of Beijing Hutong





Simulated Model in Street Scale of Beijing Hutong



Topology Diagram of Wu Town in Street Scale

 \checkmark

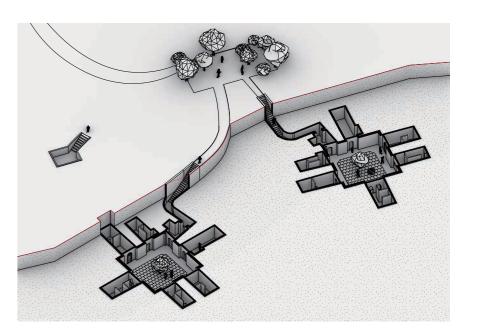
Street Plan of Wu Town

Street Perspective View of Wu Town

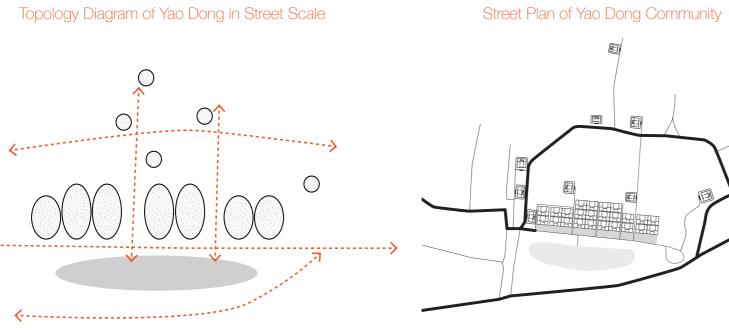
Street Perspective Section of Yao Dong Community

L

Simulated Model in Street Scale of Wu Town



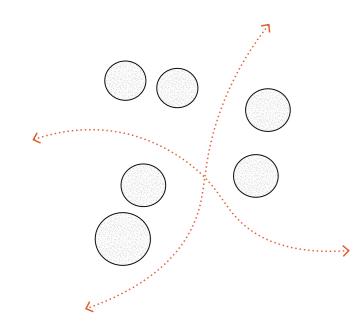
Simulated Model in Street Scale of Yao Dong Community



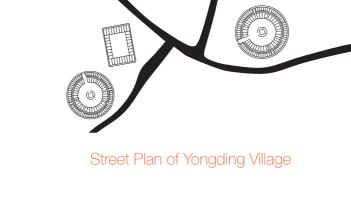
Topology Diagram of Majianglong Village in Street Scale

~---

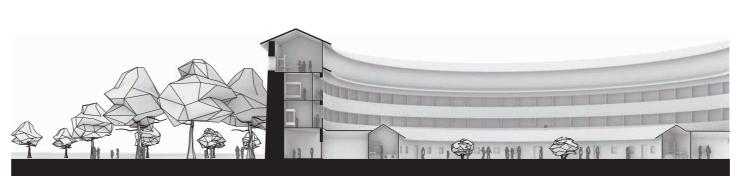
Street Plan of Majianglong Village



Topology Diagram of Yongding Village in Street Scale

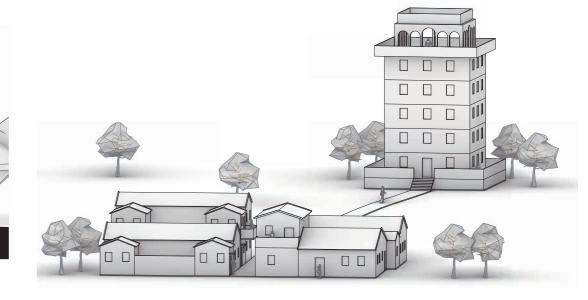




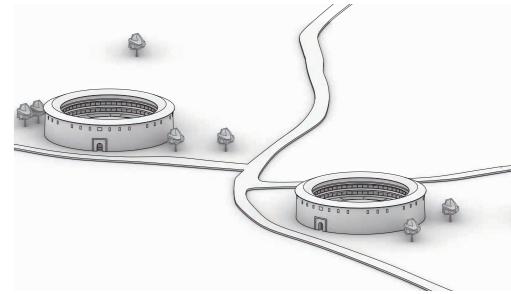


Street Section of Majianglong Village

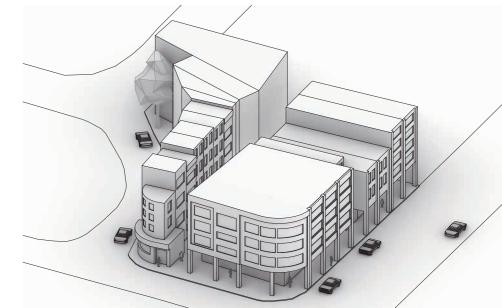
Section of Tulou in Yongding Village



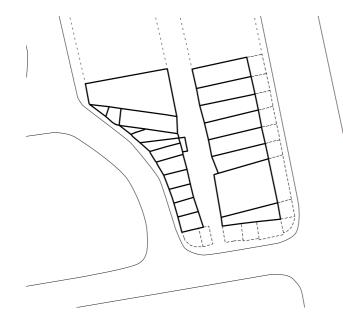
Simulated Model in Street Scale of Guangzhou



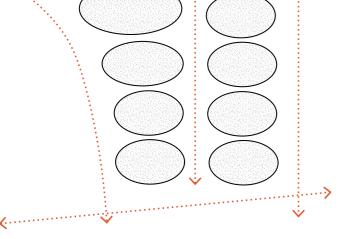
Simulated Model in Street Scale of Yongding Village

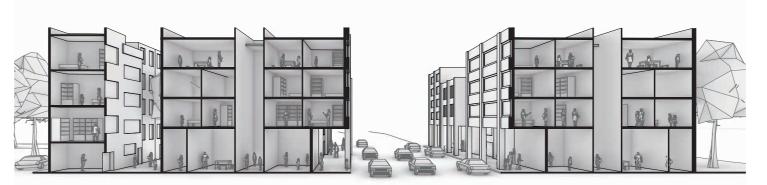






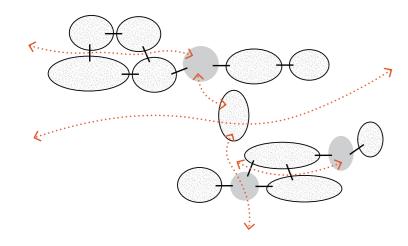
Street Plan of Guangzhou





Street Section of Guangzhou

Simulated Model in Street Scale of Guangzhou

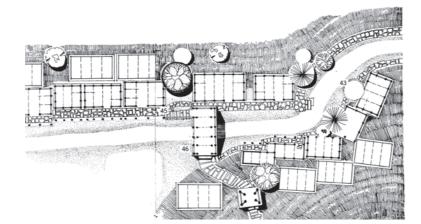


Topology Diagram of Guangzhou in Street Scale

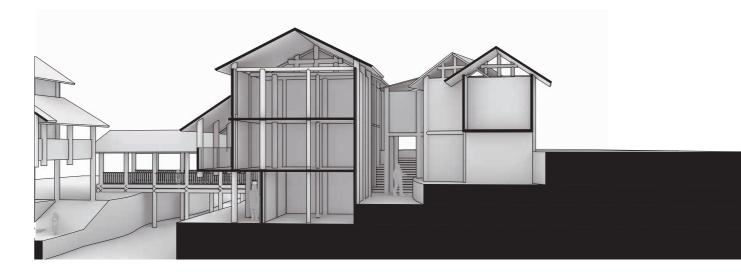
Topology Diagram of North Guangxi in Street Scale



POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

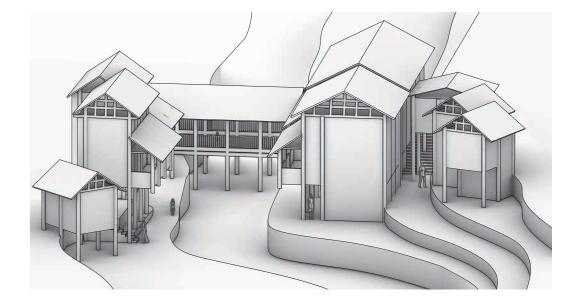


Street Plan of North Guangxi



Street Section of North Guangxi

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

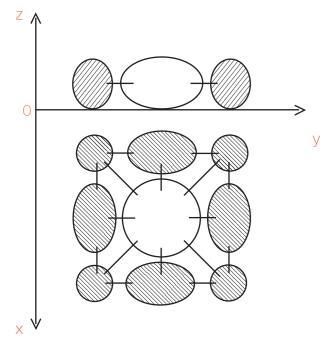


Simulated Model in Street Scale of North Guangxi

8. Abstraction of Architcture Scale in Vernacular Dwellings

表・捌

Chinese Vernacular Manifestation in Parametric Language

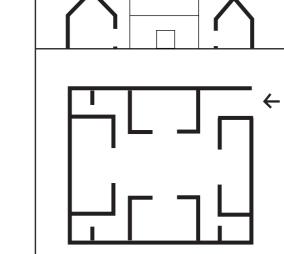


Topological Analysis of Beijing Quadrangle Dwelling

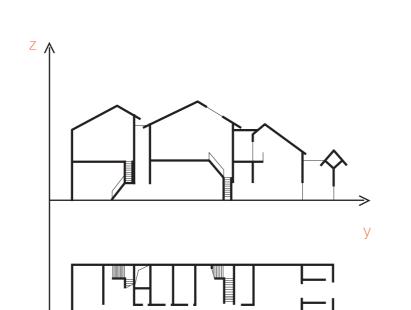


Interior space

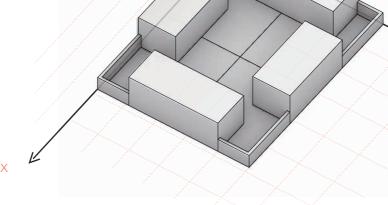
O Exterior space



Typological Analysis of Beijing Quadrangle Dwelling

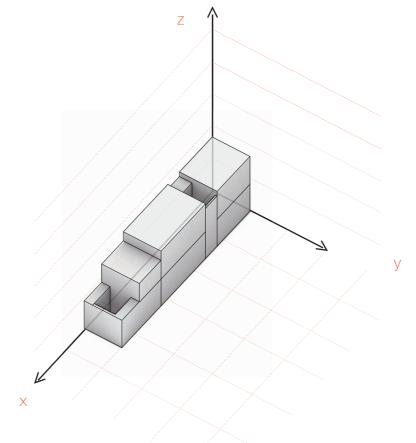


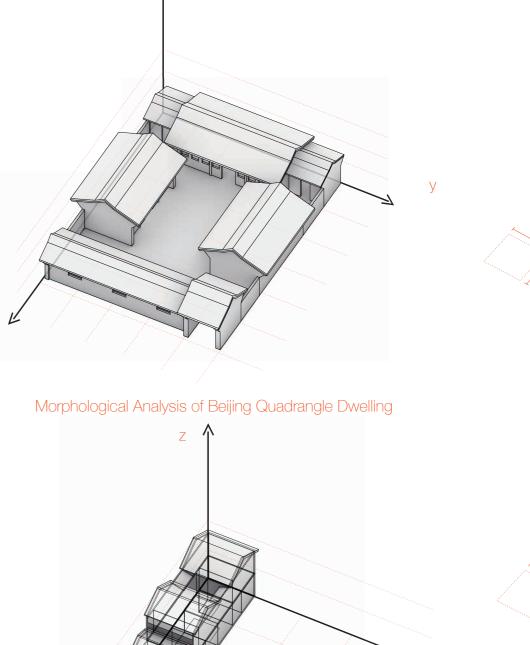
✓
Typological Analysis of The Bamboo House

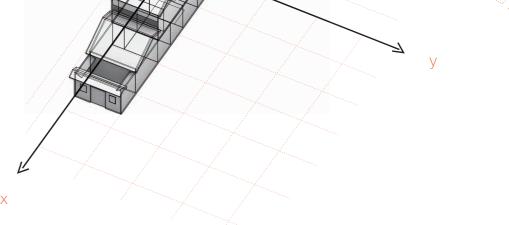


Z A

Geometrical Simplification of Beijing Quadrangle Dwelling





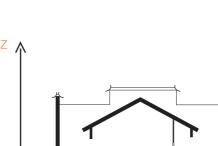


Morphological Analysis of The Bamboo House

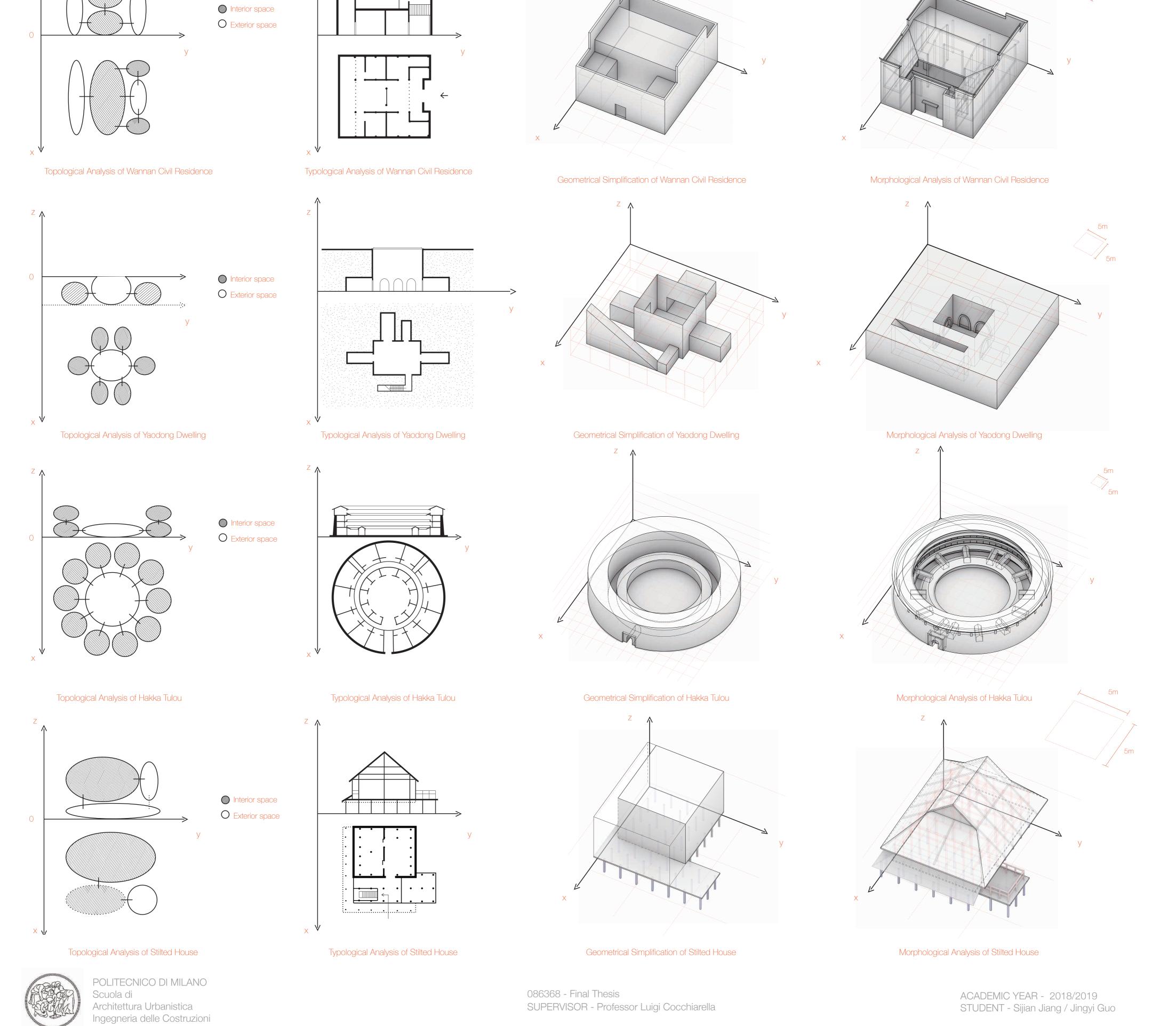


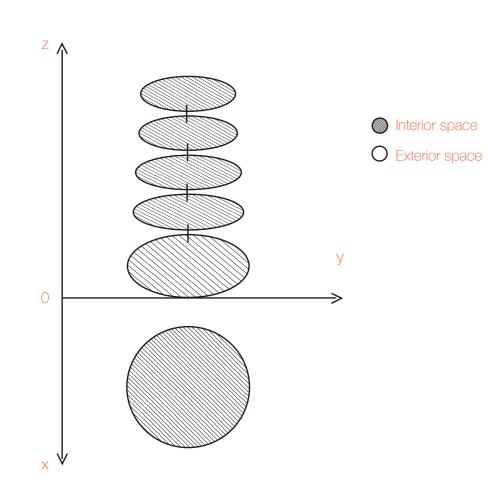
Topological Analysis of The Bamboo House

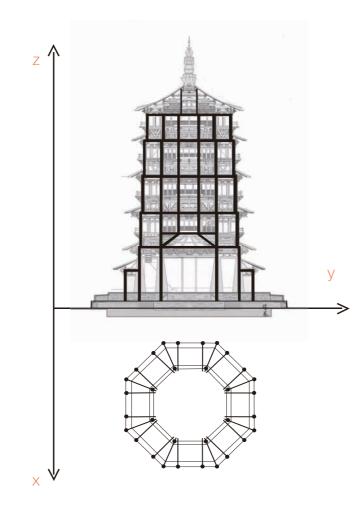
ΖΛ



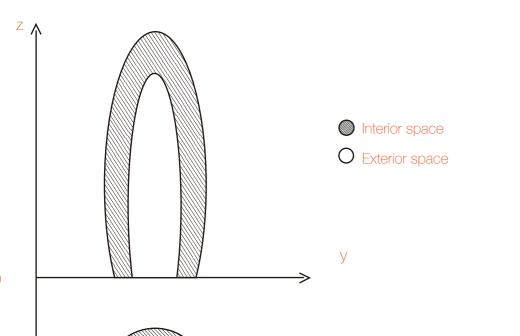
Geometrical Simplification of The Bamboo House



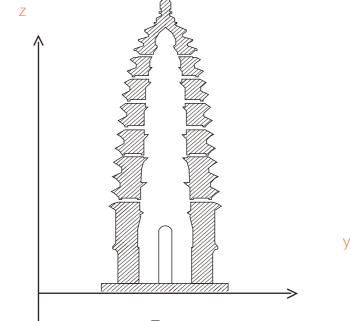


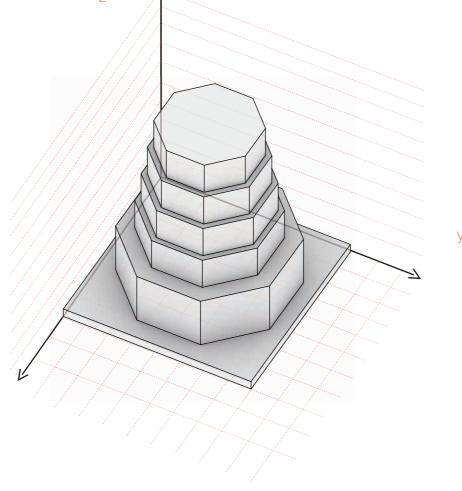


Topological Analysis of Ying Hsien Wooden Pagoda

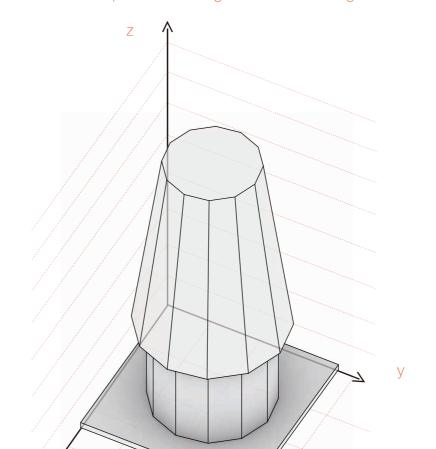


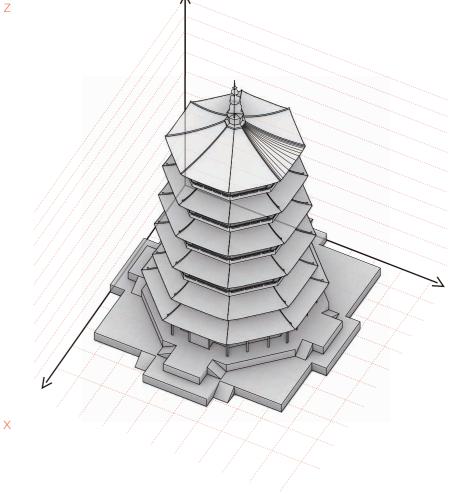
Typological Analysis of Ying Hsien Wooden Pagoda



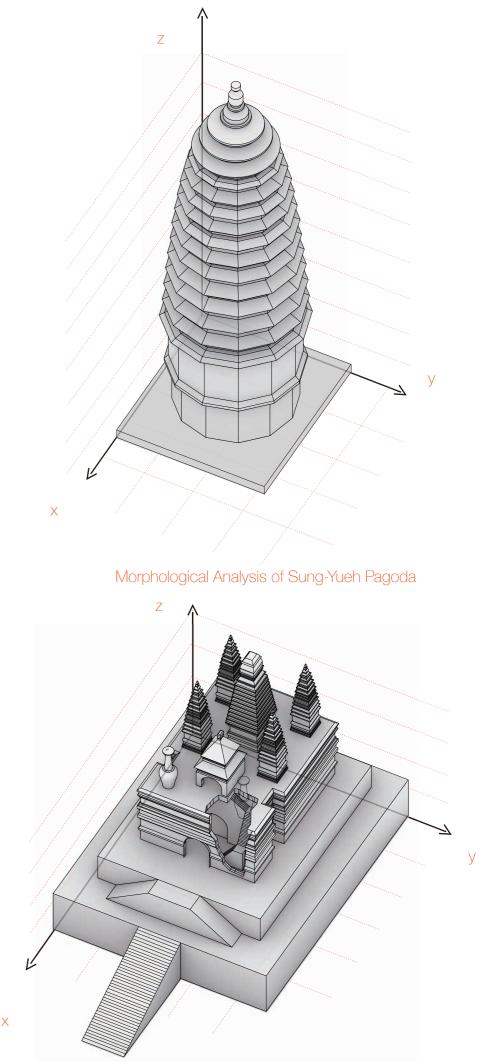


Geometrical Simplification of Ying Hsien Wooden Pagoda





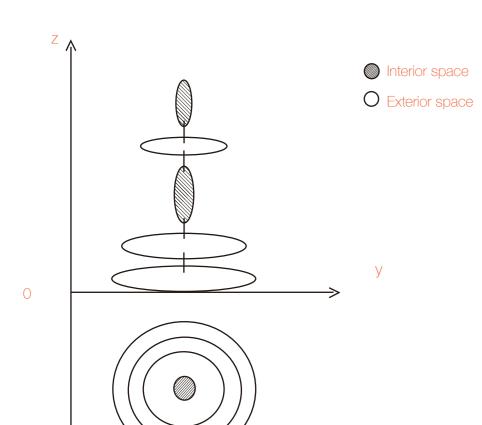
Morphological Analysis of Ying Hsien Wooden Pagoda

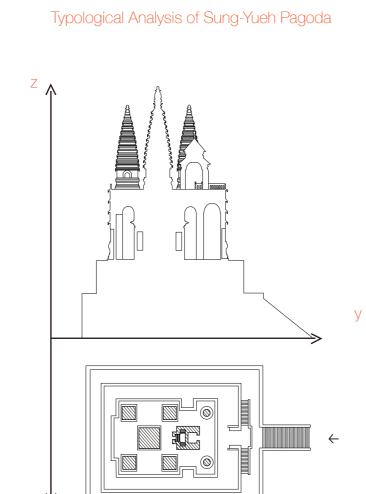


0



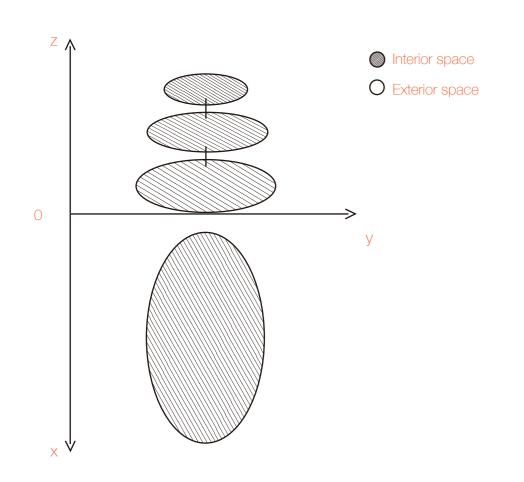
Topological Analysis of Sung-Yueh Pagoda

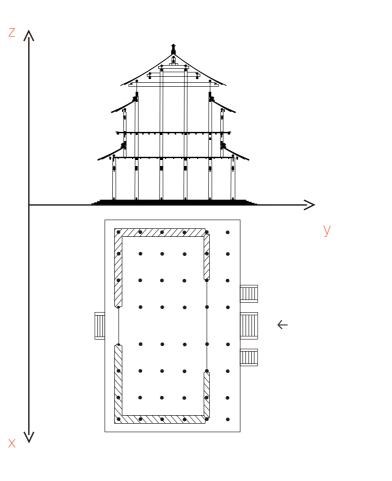


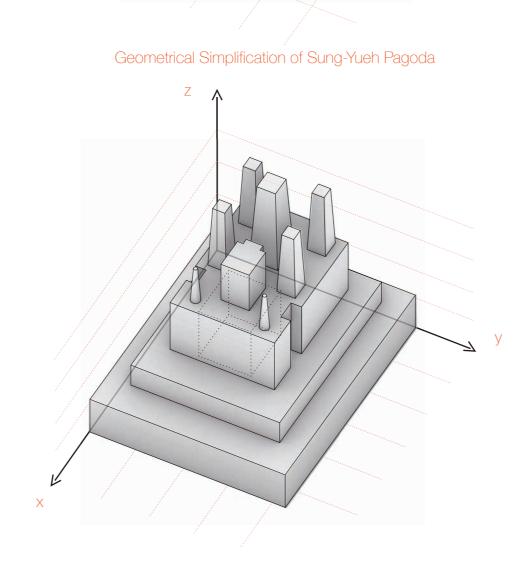


Typological Analysis of CHIN-KANG-PAO-TSO T'A

Topological Analysis of CHIN-KANG-PAO-TSO T'A

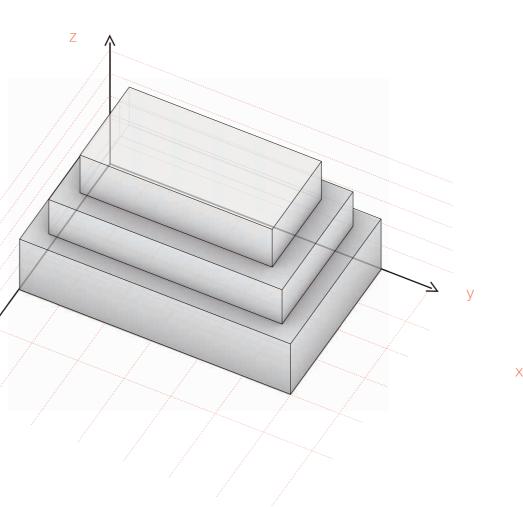


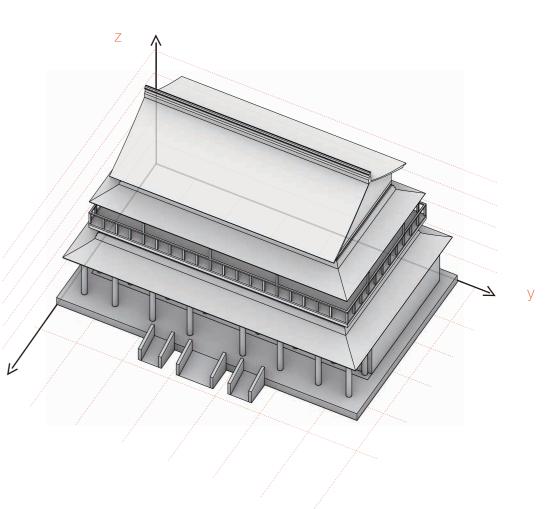




Geometrical Simplification of CHIN-KANG-PAO-TSO T'A

Morphological Analysis of CHIN-KANG-PAO-TSO T'A

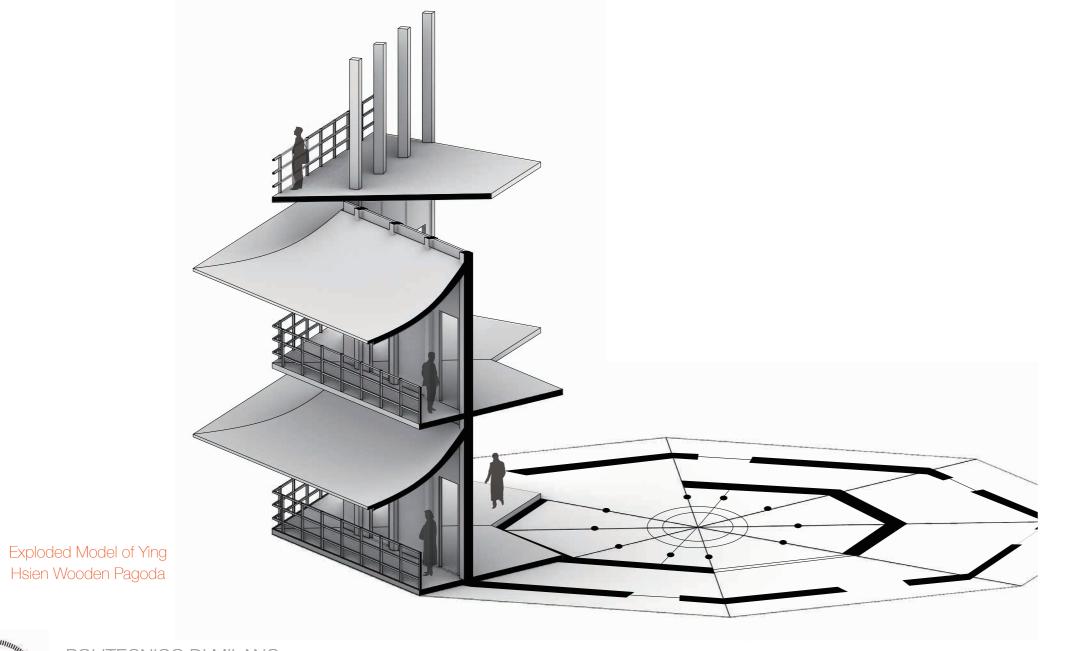


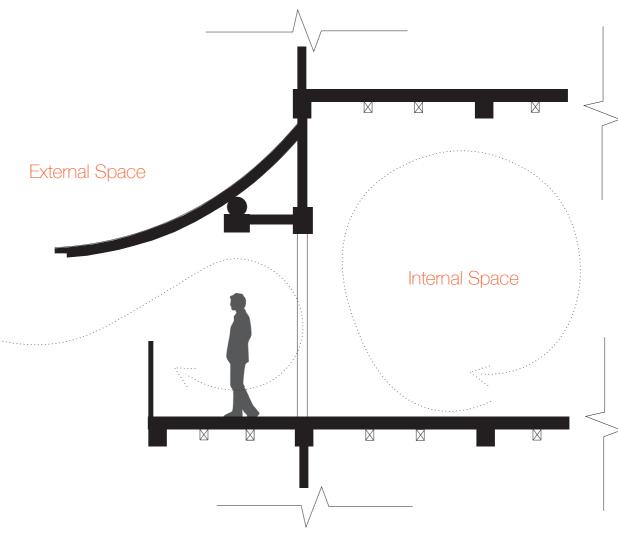


Topological Analysis of Library Building, Temple of Confucius

Typological Analysis of Library Building, Temple of Confucius

Morphological Analysis of Library Building, Temple of Confucius





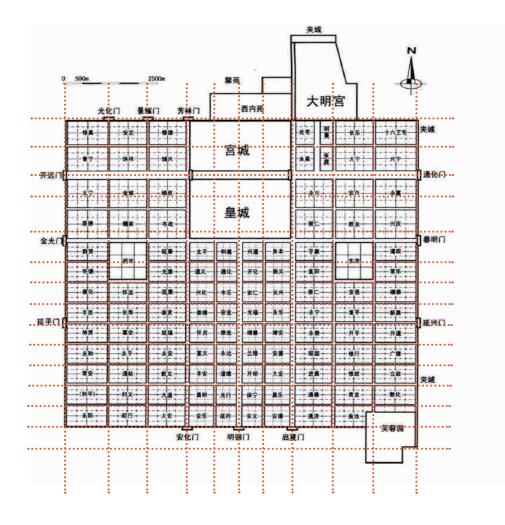
Analytical Section of Cloister in Ying Hsien Wooden Pagoda



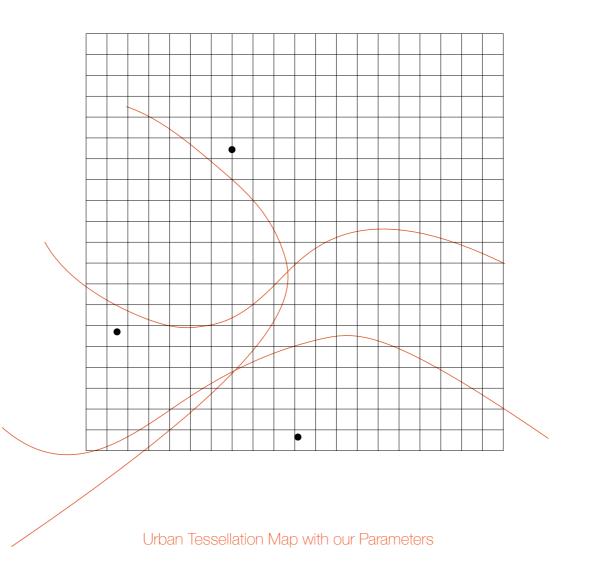
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

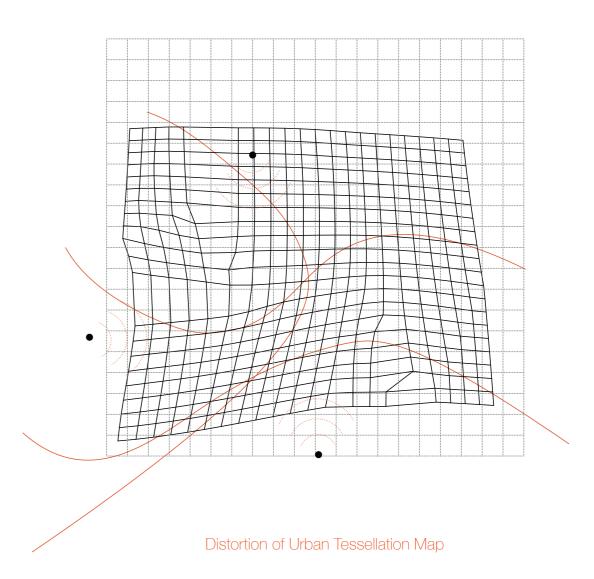
086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

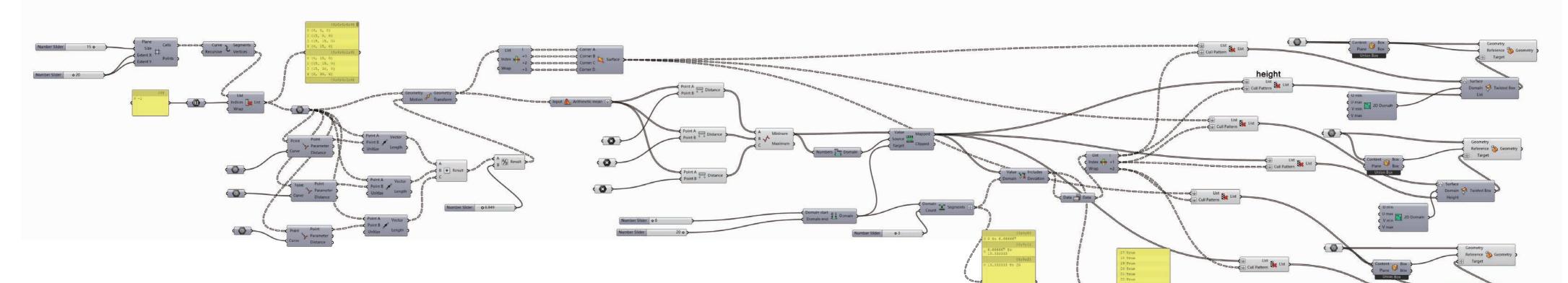
表・拾

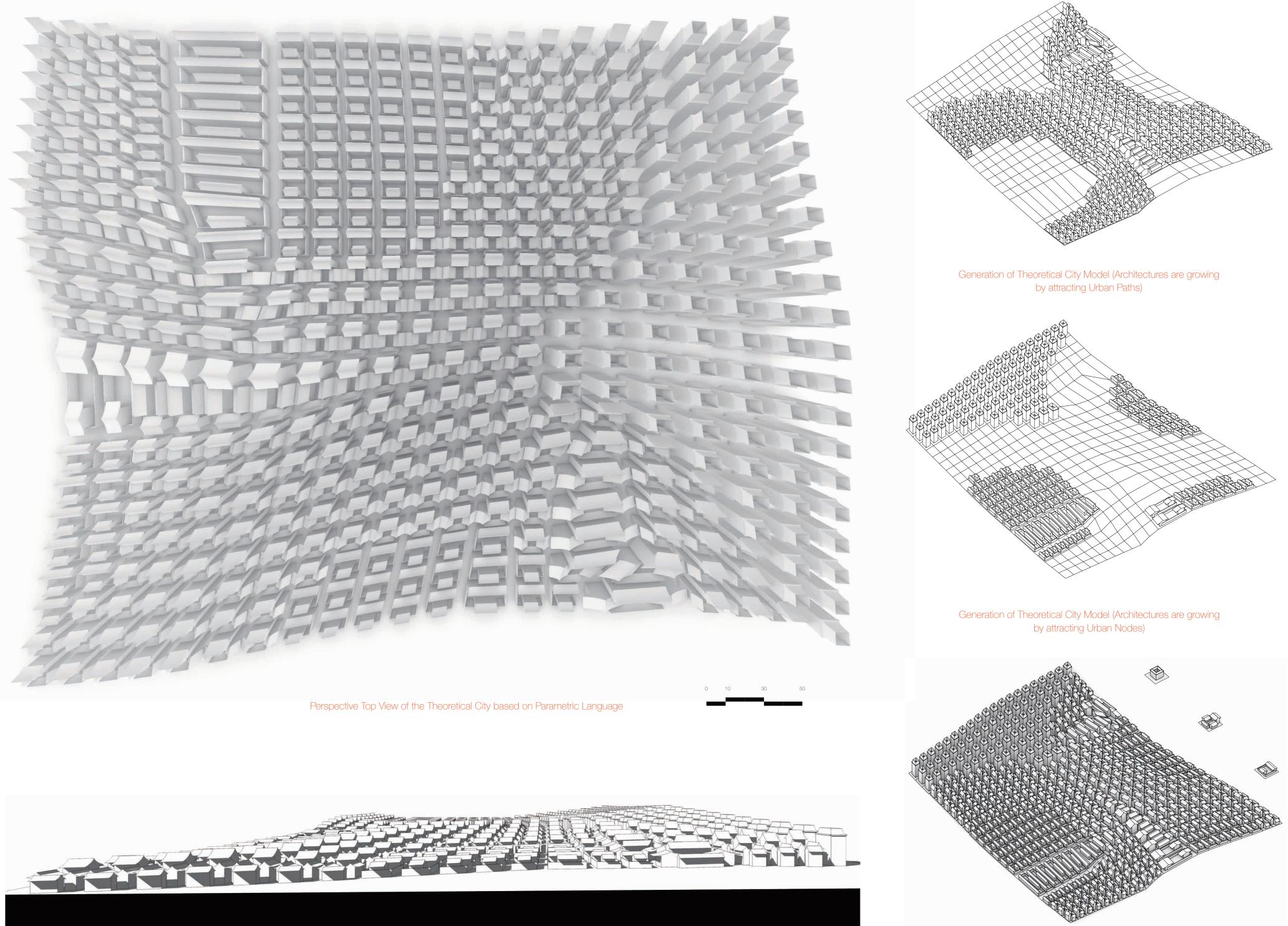


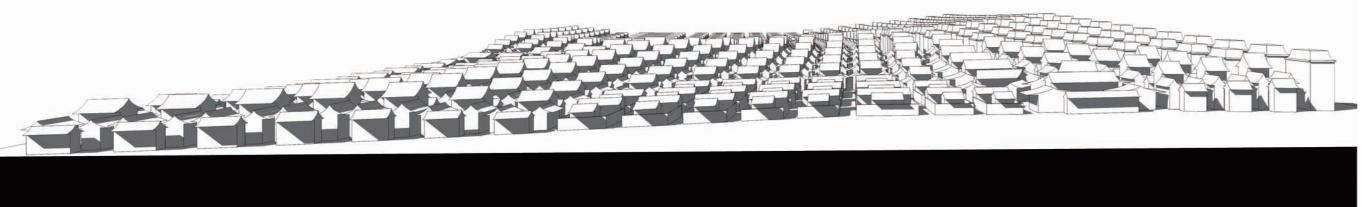
Grid Overlaying on Urban Materplan of Chang'an City











Bird View of a Simulated Model of the Theoretical City



POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

Axonometric View of Theoretical City Model

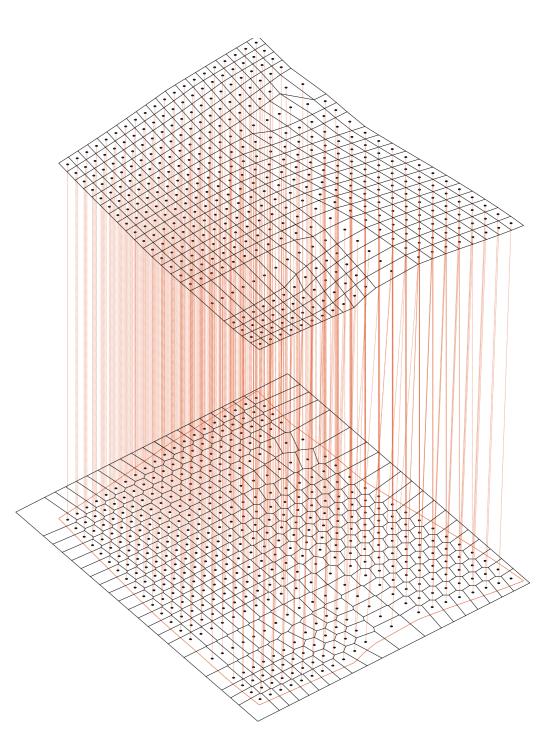
11. Parametric Transcription in Urban Scale

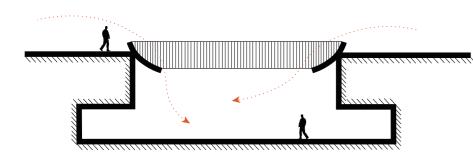
表・拾壹

Chinese Vernacular Manifestation in Parametric Language

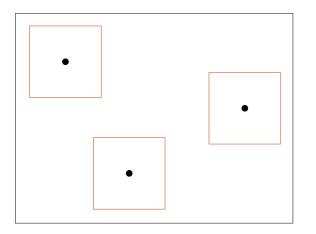


Photography about a Bird View of Beiying Village, Henan

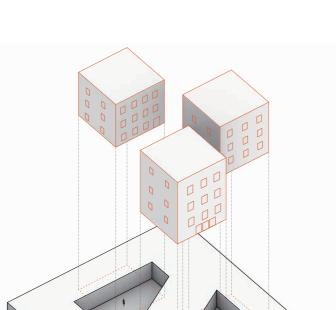


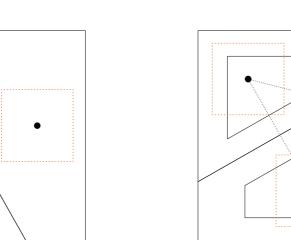


Section of Traditional Chinese Dwelling, YaoDong, Sunken Courtyard.



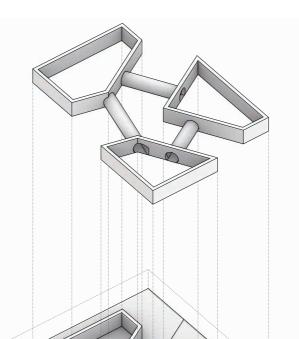
Colored outline presents the plan boundary of buildings, points are centroid of these boundaries.

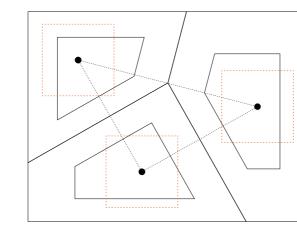




Based on these centroid of boundaries, we use Voronoi Tessellation to partition this area, the location of points generates Vomoni diagram.

•

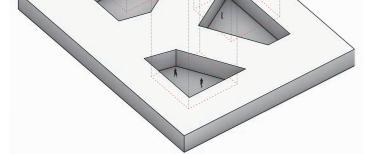




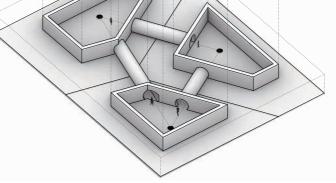
Section of our proposal to develop underground

system inspired by Sunken Courtyard.

The straightline distance between two points is the shortest distance.

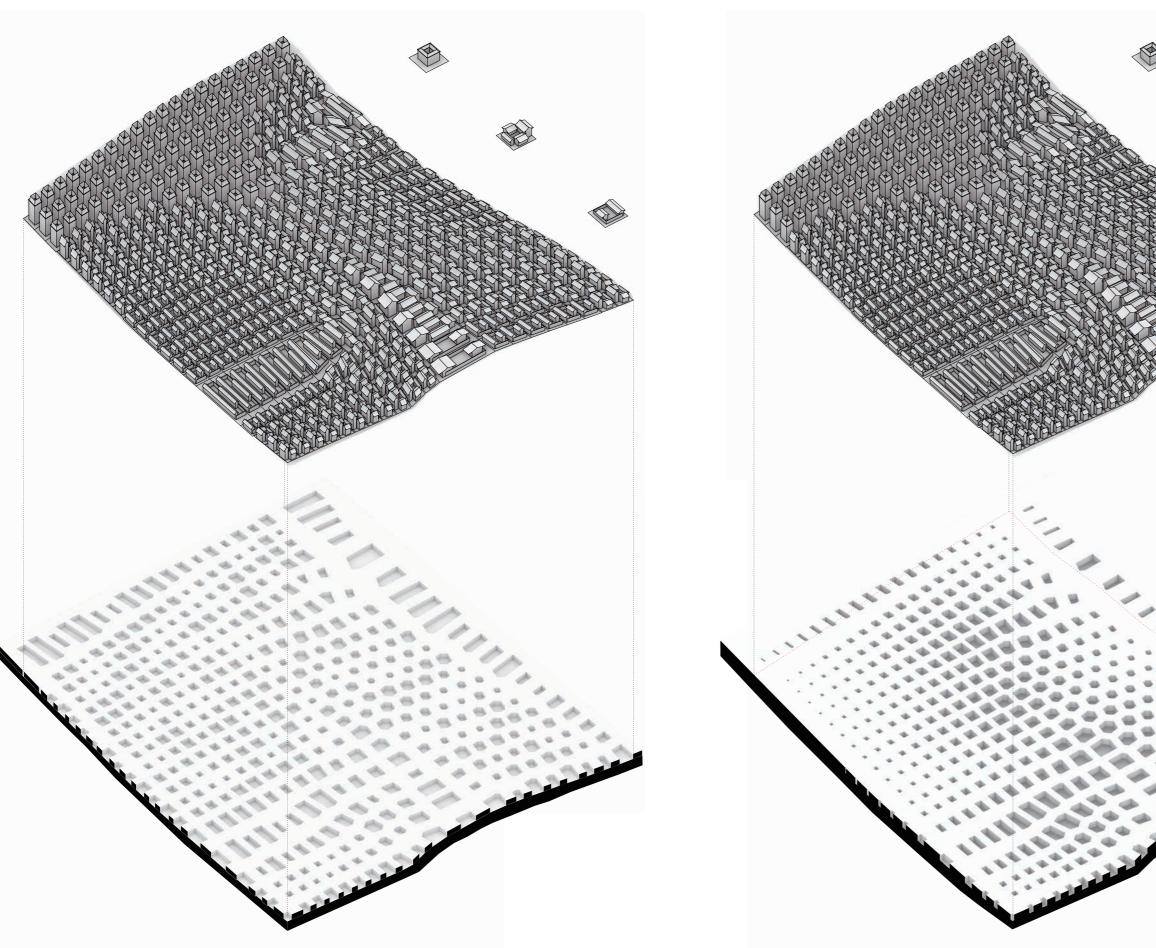


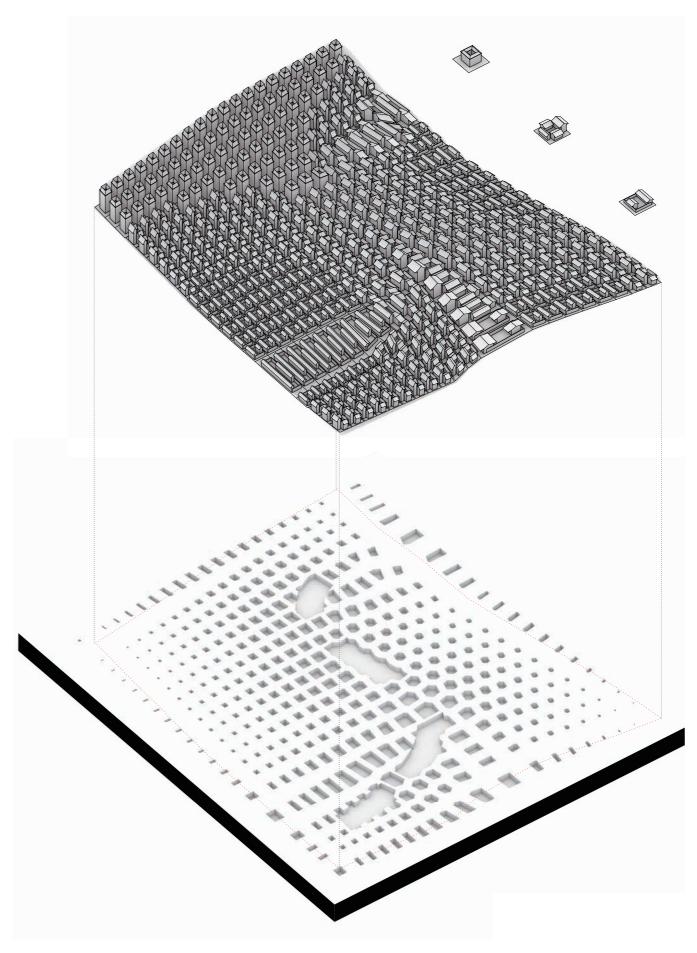
By offseting the outline of Voronoi patterns, we obtain the area of our Sunken Courtyard.



The nature of straight-line distance drives us to design underground channels between different Sunken Courtyard.

This grid map is generated in previous phase. Gids are distorted by impacting points and curves. The points are centroids of these grids.

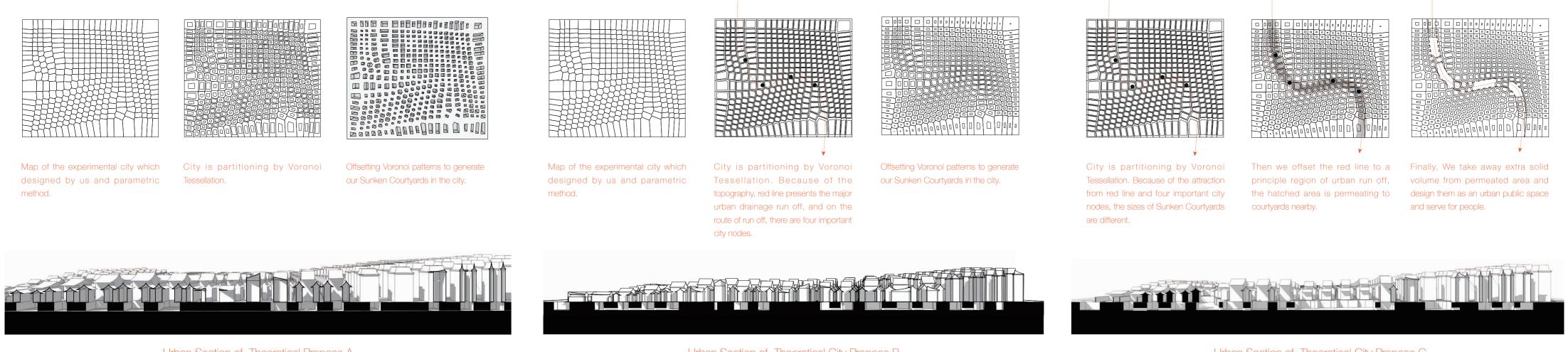




Propose A: Axonometric view of urban generation and underground system. The massive excavations will generate as undergournd urban park.

Propose B: Axonometric view of urban generation and underground system. The massive excavations will generate as undergournd urban park.

Propose C: Axonometric view of urban generation and underground system. The massive excavations will generate as undergournd urban park.



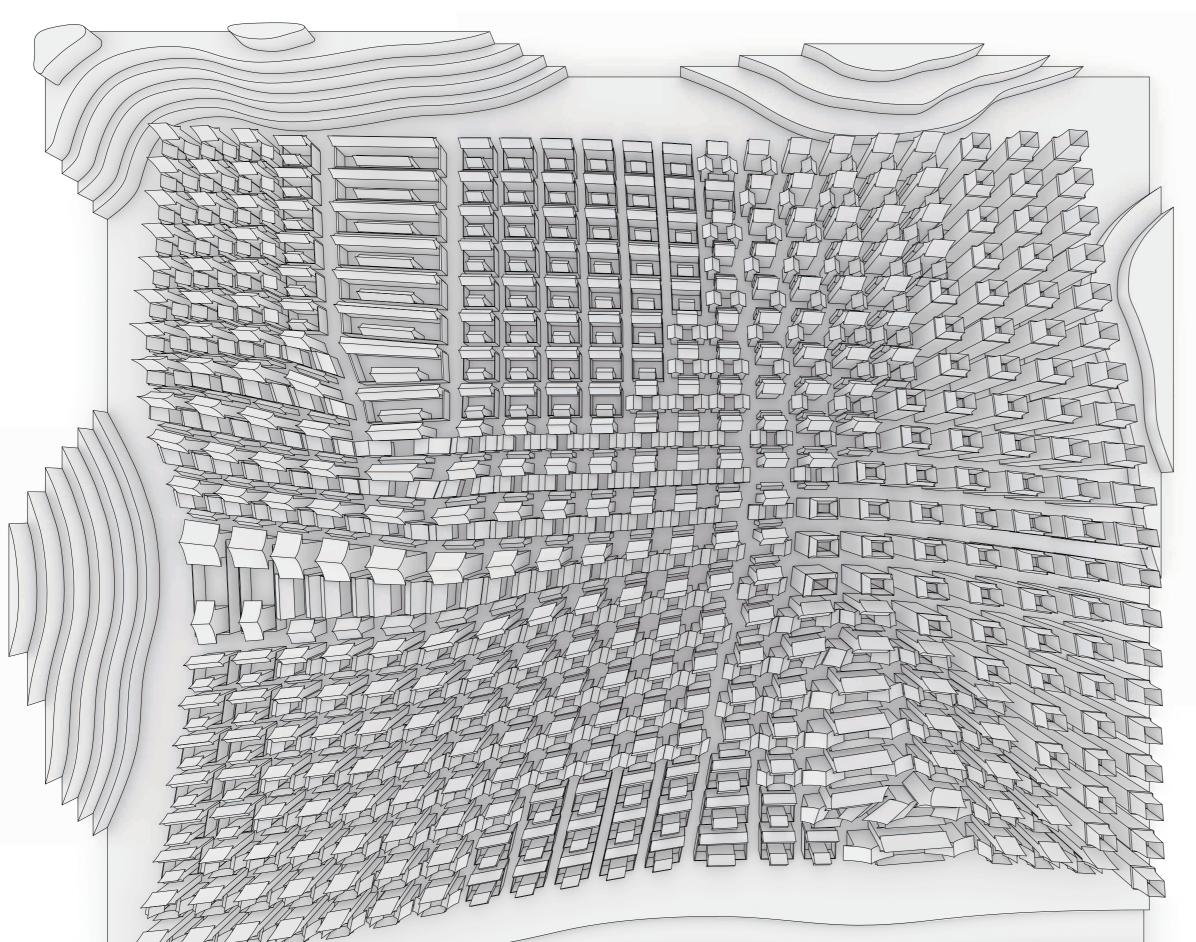
Urban Section of Theoretical Propose A

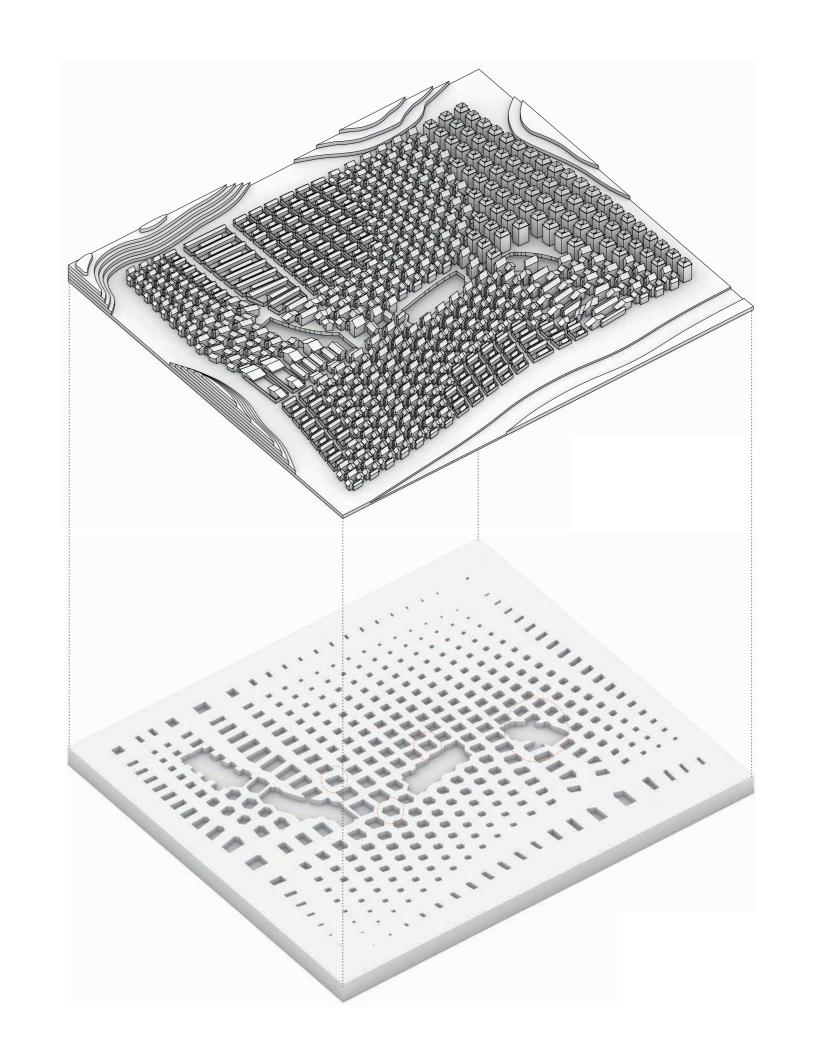


POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni Urban Section of Theoretical City Propose B

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella Urban Section of Theoretical City Propose C

表・拾贰

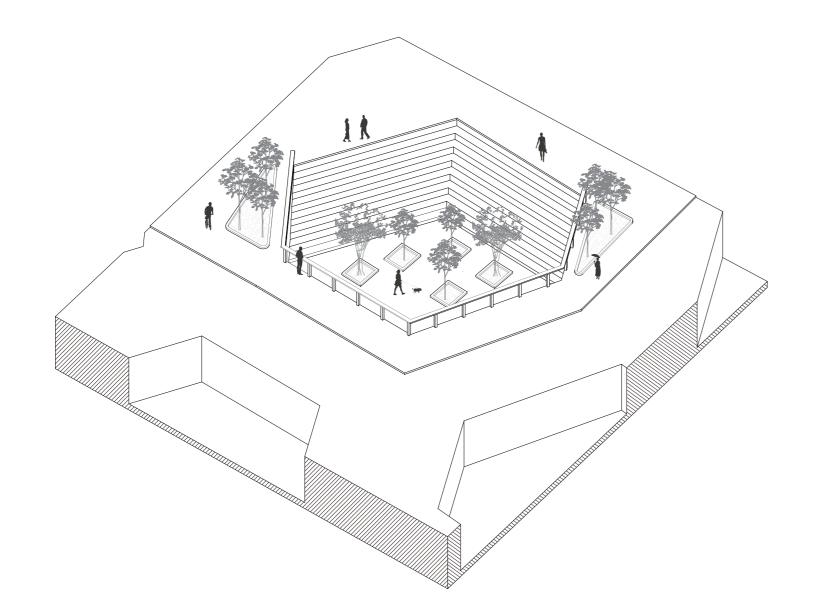






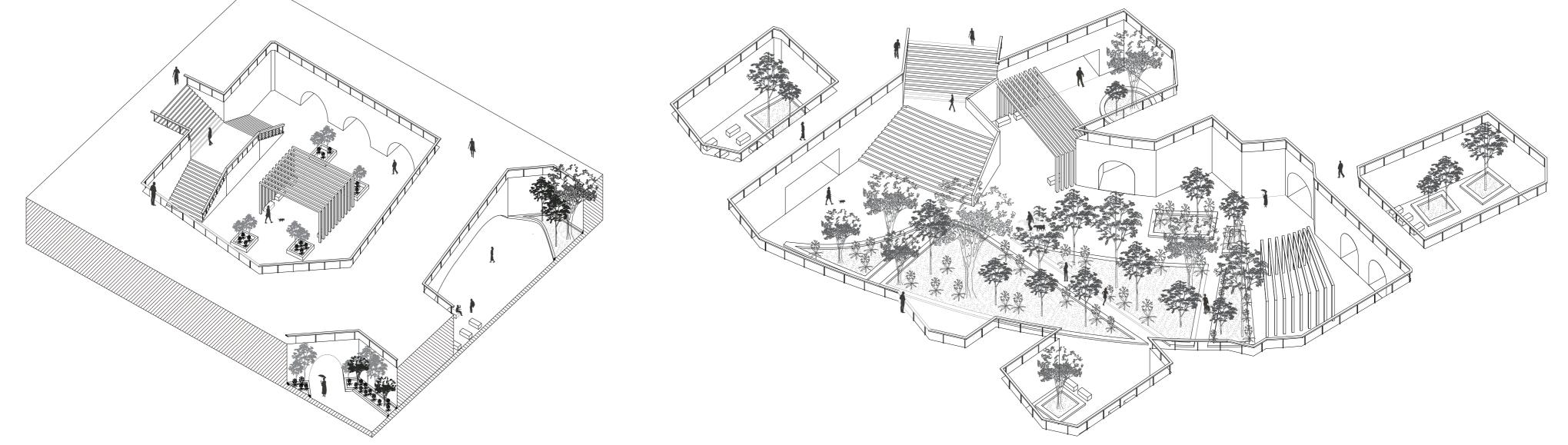
Perspective Top View of Our Theoretical City with Landscape

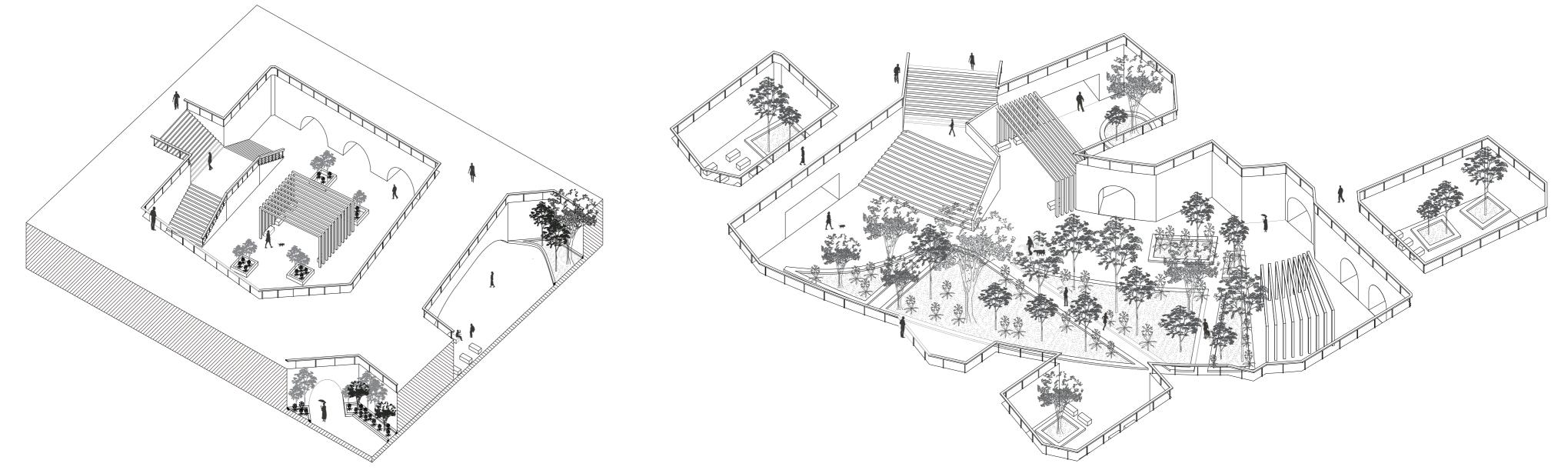
Axonometric view of urban generation landscape and underground system propose C.



Typology B of Sunken Courtyard: Urban Coutyard with Dwelling

Typology A of Sunken Courtyard: Urban Amphitheater





30

50

Typology C of Sunken Courtyard: Urban Growing Square

Typology D of Sunken Courtyard: Urban Theme Park



Ν

POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

13. Abstraction Architecture Scale

表・拾仁

Chinese Vernacular Manifestation in Parametric Language



patio.

Original state, single volume with a patio

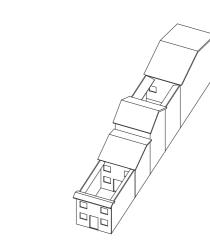
Double volume with a

Double storey single volume with a patio.

Double storey double volume with a patio.

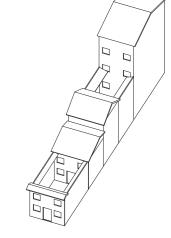
Group origin, larger the bottom volume.

Larger and double the storey of the bottom volume.

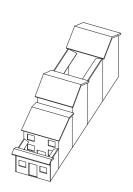


Larger the bottom

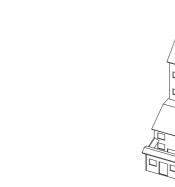
volume and front patio.



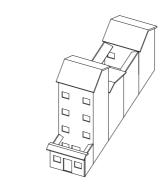
Larger and double the storey of the bottom volume and front patio.



Mature form, three volumes with two patios

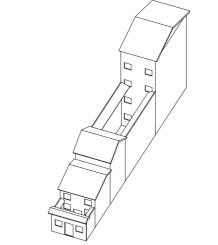


Double storey of the middle volume with two patios.

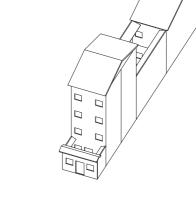


Double storey of the front volume with two patios.

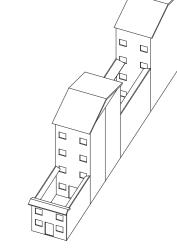
Group origin, Larger the bottom volume and the inner patio.



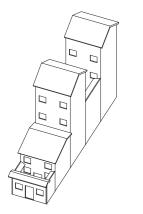
Double the storey of the bottom volume.



Larger and double the storey of the front two volumes.



Larger and double the storey of three volumes and larger the front patio.

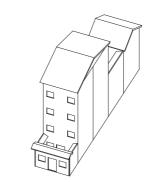


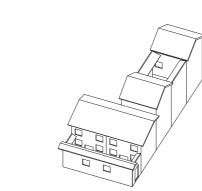
Double storey of the

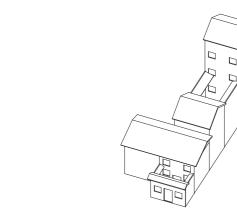
patios.

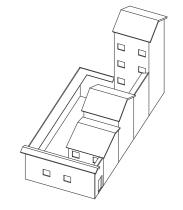
bottom volume with two

Double storey of the front









Double storey of the front

Double storey of the threes

Widen the front volume

Widen the bottom volume

Widen the front volume and

Double the storey of bottom

middle and bottom volumes with two patios

Double storey of the

and bottom volumes with two patios.

and middle volumes with two patios.

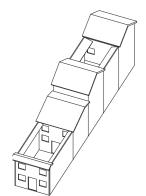
volume with two patios.

and patio.

with double height and the inner patio.

double the storey of bottom volume.

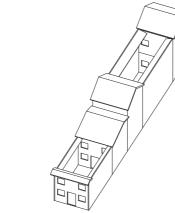
volume and enlarge the two patio.



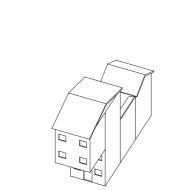


Larger the front patio with Larger the inner patio with original three volumes of original three volumes of mature form. mature form

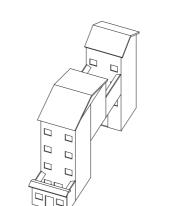
Eliminate the front patio with original three volumes of mature form.



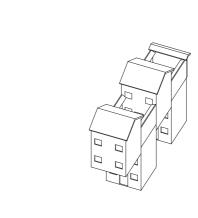
Larger two patios with original three volumes of mature form.



Change the shape of front two volume.



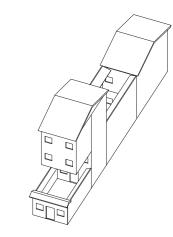
Change the shape of middle volume and pull up front and bottom volume.



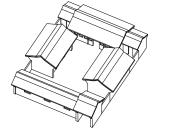
Change the shape of front

volume and define new

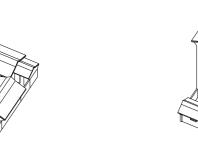
patio space.



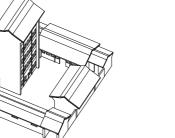
Change the shape of front volume, larger bottom volume, pull up middle volume, enlarge both patio.



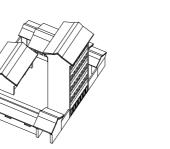
Prototype of traditional Beijing Quadrangle



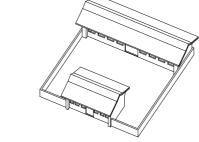
Incresed height of southern builing, keep other three builings with original volume.



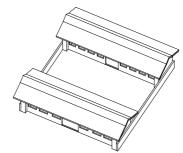
Incresed height of western builing, keep other three volume.



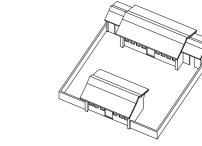
Incresed height of eastern builing, keep other three builings with original



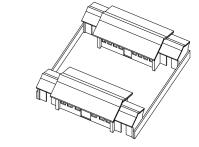
Prototype of classical Chinese courtyard dwelling.



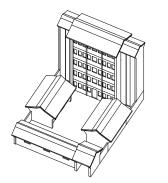
Decreased capacity of courtyard.



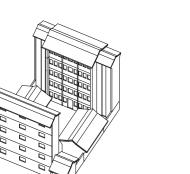
Increased capacity of courtyard and adding side rooms for principle building.



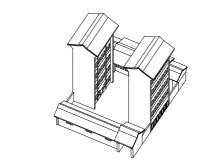
Decreased capacity of courtyard and adding side rooms for all buidings.



Incresed height of northern builing, keep other three builings with original volume.



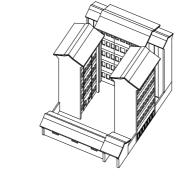
Incresed height of northern and southern builing, keep other two builings with original volume.



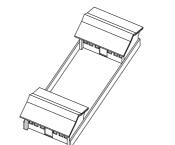
builings with original

volume.

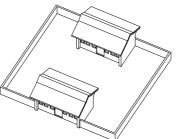
Incresed height of western and eastern builing, keep other two builings with original volume.



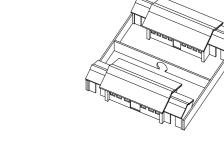
Incresed height of three builings, except the anterior building.



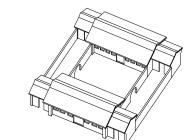
Decreased original courtyard to narrow courtyard.



Enlarge the size of original courtyard to a great capacity.



Divide original courtyard into southern and northern parts by a chinese wall.



Divide original courtyard into main courtyard and two adjoinging yards by twov chinese walls.

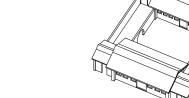






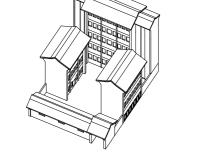




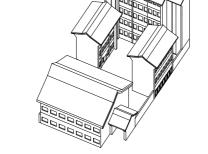




Incresed height of four sides building. Adding side rooms to the principle building.



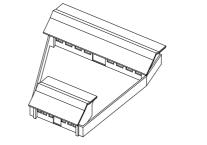
Incresed height of three sides building except the anterior one. Adding side rooms to the principle building.



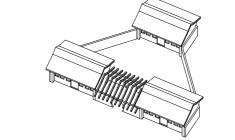
Incresed width of the anterior building and keep other three buildings with increased height.



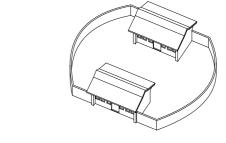
other three buildings with increased height.



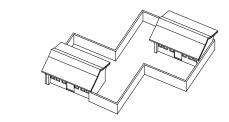
Redefine the boundary of original courtyard in shape A.



Redefine the boundary of original courtyard in shape B.

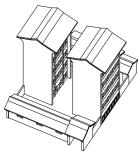


shape C.

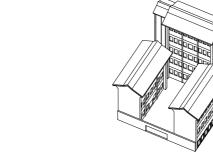


Redefine the boundary of original courtyard in

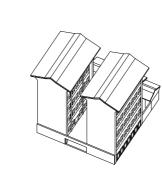
Redefine the boundary of original courtyard in shape D.



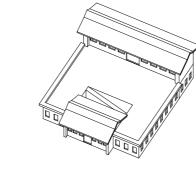
Incresed width of the western Incresed height of buildings except the and eastern buildings and keep other two buildings with anterior one and replace it origional height. to simple entrance wall.



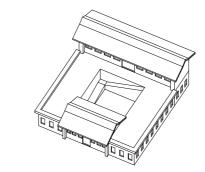
Incresed length of western and eastern buildings till the entrance wall.



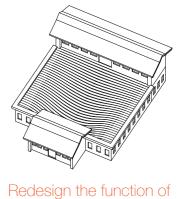
Incresed height of buildings except the anterior one and replace it to simple entrance wall.



Redesign the function of original courtyard, provide two levels for courtyard. Adding a Sunken Patio.



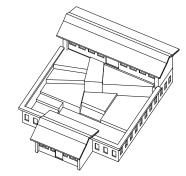
Redesign the function of original courtyard, provide two levels for courtyard. Increased Sunken Patio.



original courtyard, make it

as an bold organic natrual

slope.



Redesign the function of original courtyard, partitioning it into various substrates.

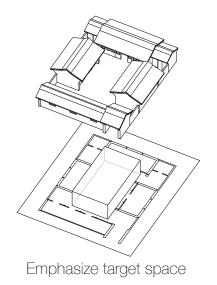


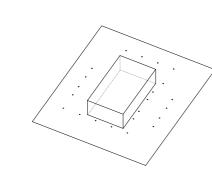
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

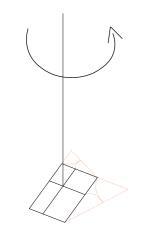
表・拾肆

Chinese Vernacular Manifestation in Parametric Language





Relationship between courtyard and surrounded house

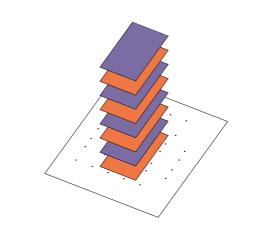


Rotate courtyard

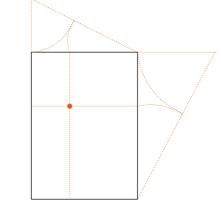


Evaluate the enclosed space

after malposed rotation

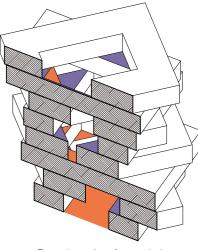


Lifted courtyard

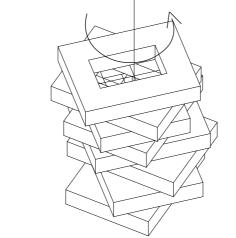


Define axis of rotation

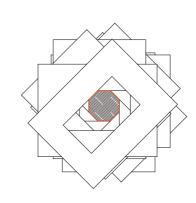




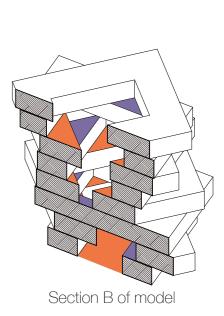
Section A of model

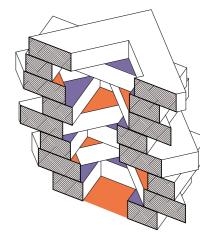


Model of rotation result



Top view of the Model

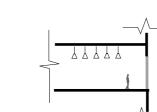


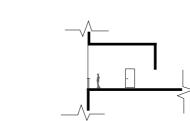




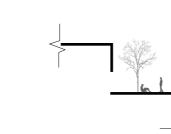


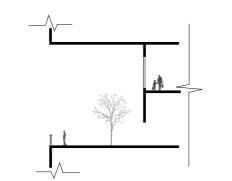
Section a-a'





Increased volume of prototype along Z axis





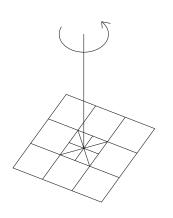


Section b-b'

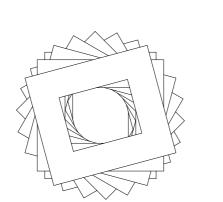
Section c-c'

Section d-d'

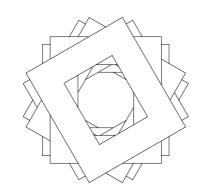
Section e-e'



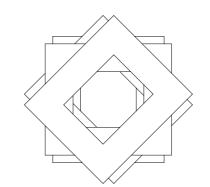
日 (centroid)



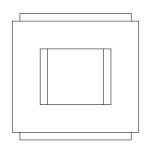
Plan View, objects are rotating along centroid axis, and each rotated step is 15°.



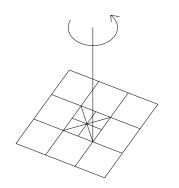
Plan View, objects are rotating along centroid axis, and each rotated step is 30°.



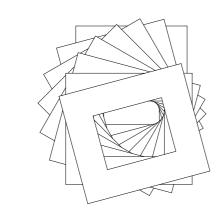
Plan View, objects are rotating along centroid axis, and each rotated step is 45°.



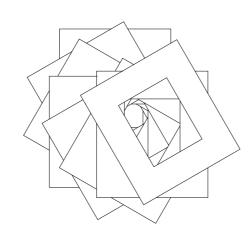
Plan View, objects are rotating along centroid axis, and each rotated step is 90°.



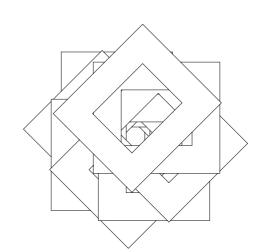




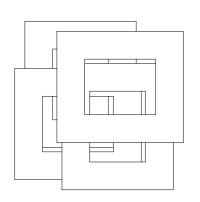
Plan View, objects are rotating along 乾 (qian) axis, and each rotated step is 15°.



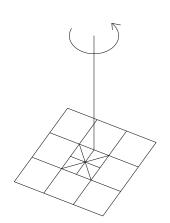
Plan View, objects are rotating along 乾 (qian) axis, and each rotated step is 30°.

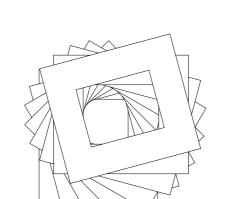


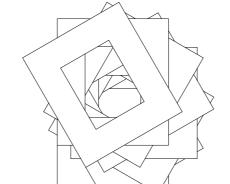
Plan View, objects are rotating along 乾 (qian) axis, and each rotated step is 45°.

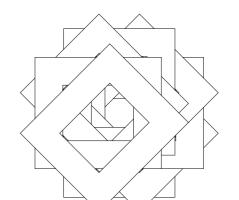


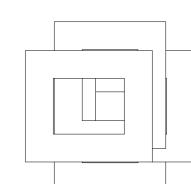
Plan View, objects are rotating along 乾 (qian) axis, and each rotated step is 90°.













Plan View, objects are rotating along

离 (li) axis, and each rotated step is 15°.



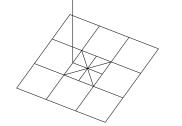
Plan View, objects are rotating along 离 (li) axis, and each rotated step is 30°.

 \sim

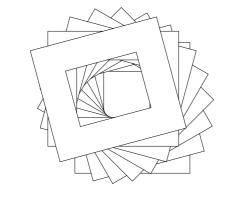
Plan View, objects are rotating along 离 (li) axis, and each rotated step is 45°.

Plan View, objects are rotating along 离 (li) axis, and each rotated step is 90°.

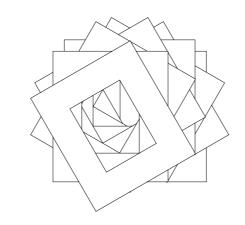




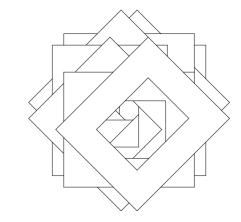




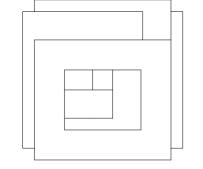
Plan View, objects are rotating along 震 (zhen) axis, and each rotated step is 15°.



Plan View, objects are rotating along 震 (zhen) axis, and each rotated step is 30°.



Plan View, objects are rotating along 震 (zhen) axis, and each rotated step is 45°.



Plan View, objects are rotating along 2 (zhen) axis, and each rotated step is 90°.



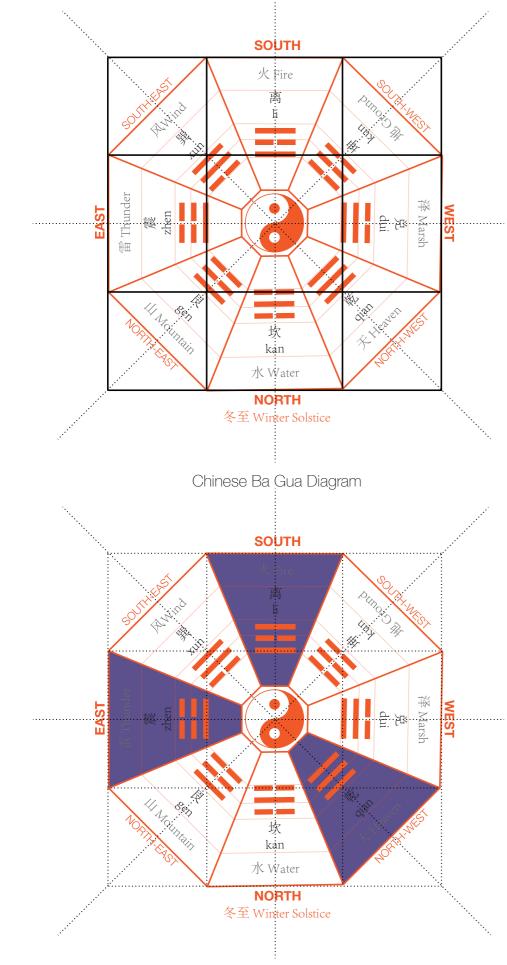
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

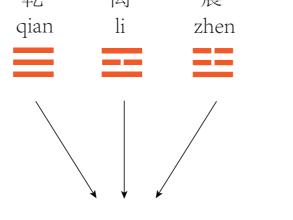
15. Parametric Experiment in Architecture Scale of Quadrangle Dwelling

表・拾伍

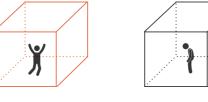
Chinese Vernacular Manifestation in Parametric Language



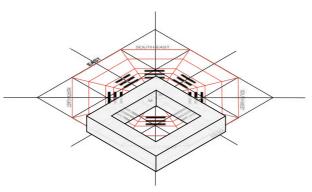




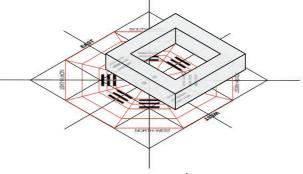
Yang (Positive)

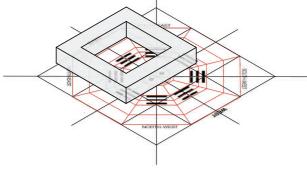


Yang Space Yin Space (Positive Space) (Negative Space)



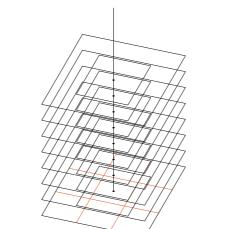
Enclosed around 乾 (qian) axis





Enclosed around 离 (li) axis

| Enclosed around 震 (zhen) axis

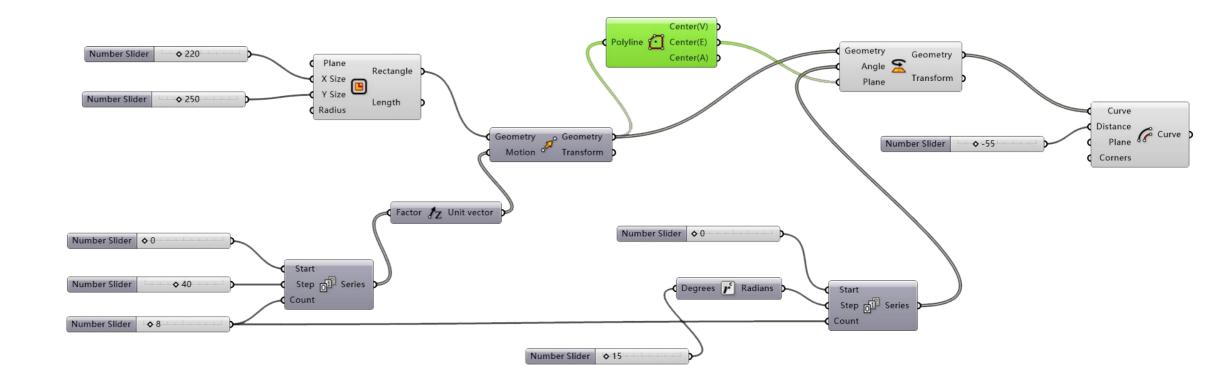


Every plan curve is moving along Z axis in series.



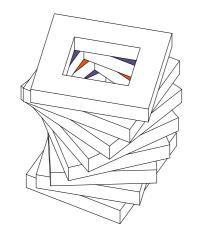
Every plan curve is rotating

Every plan curve is rotating around Centoried axis in series with 15 ° each step.

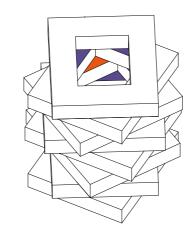


Selection of Rotation Axis

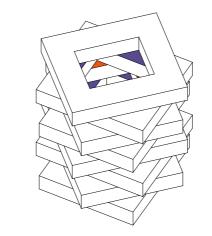
Interpretation of Yang and Yin Space



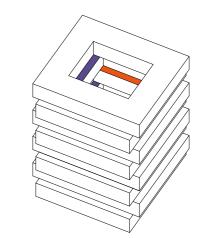
Axonometric View, objects are rotating along centroid axis, and each rotated step is 15°.



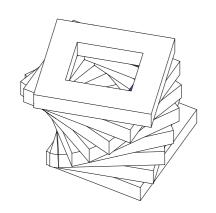
Axonometric View, objects are rotating along centroid axis, and each rotated step is 30°.



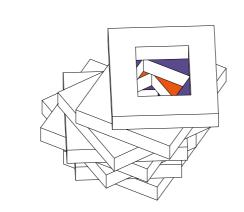
Axonometric View, objects are rotating along centroid axis, and each rotated step is 45°.



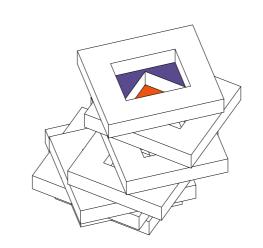
Axonometric View, objects are rotating along centroid axis, and each rotated step is 90°.



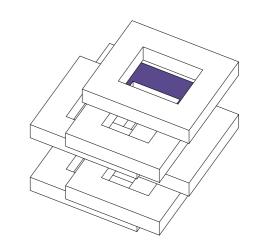
Axonometric View, objects are rotating along 乾 (qian) axis, and each rotated step is 15°.



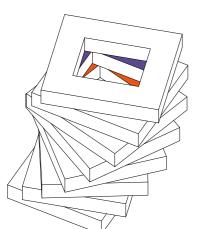
Axonometric View, objects are rotating along 乾 (qian) axis, and each rotated step is 30°.

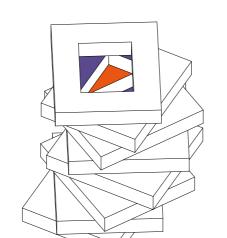


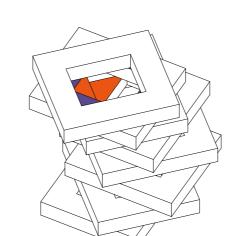
Axonometric View, objects are rotating along 乾 (qian) axis, and each rotated step is 45°.

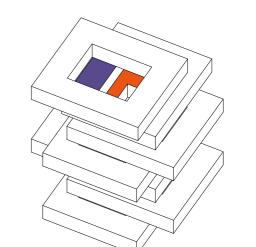


Axonometric View, objects are rotating along 乾 (qian) axis, and each rotated step is 90°.





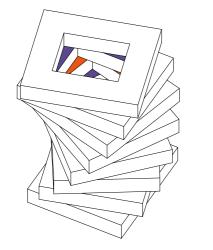




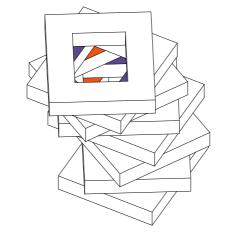
Axonometric View, objects are rotating along 离 (li) axis, and each rotated step is 15°.

Axonometric View, objects are rotating along 离 (li) axis, and each rotated step is 30°. Axonometric View, objects are rotating along 离 (li) axis, and each rotated step is 45°. Axonometric View, objects are rotating along 离 (li) axis, and each rotated step is 90°.

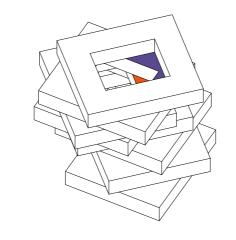
 \searrow



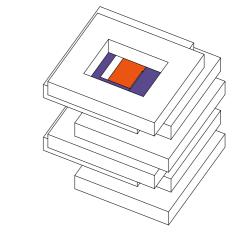
Axonometric View, objects are rotating along 震 (zhen) axis, and each rotated step is 15°.



Axonometric View, objects are rotating along 震 (zhen) axis, and each rotated step is 30°.



Axonometric View, objects are rotating along 震 (zhen) axis, and each rotated step is 45°.



Axonometric View, objects are rotating along 震 (zhen) axis, and each rotated step is 90°.



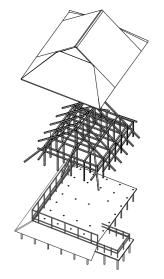
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

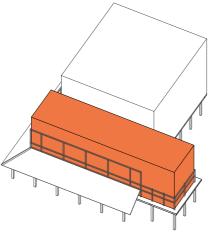
086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

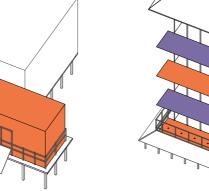
16. Parametric Experiment in Architecture Scale of Stilt House

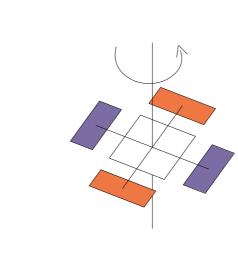
表・拾陆

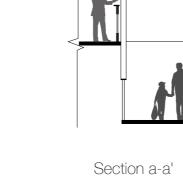
Chinese Vernacular Manifestation in Parametric Language

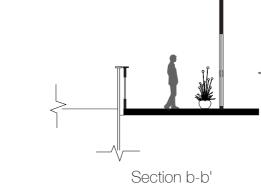


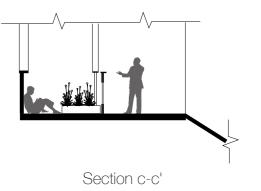










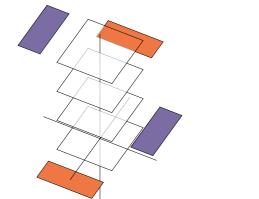


Exploded view of prototype

Emphasize target space

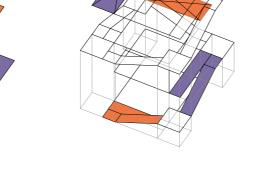
Lifting Terrace along facade

Rotate terraces around the plan

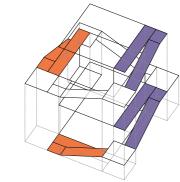




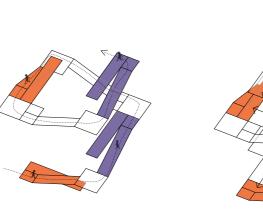
Design a ramp for terrace



Delete inadaptable terrace

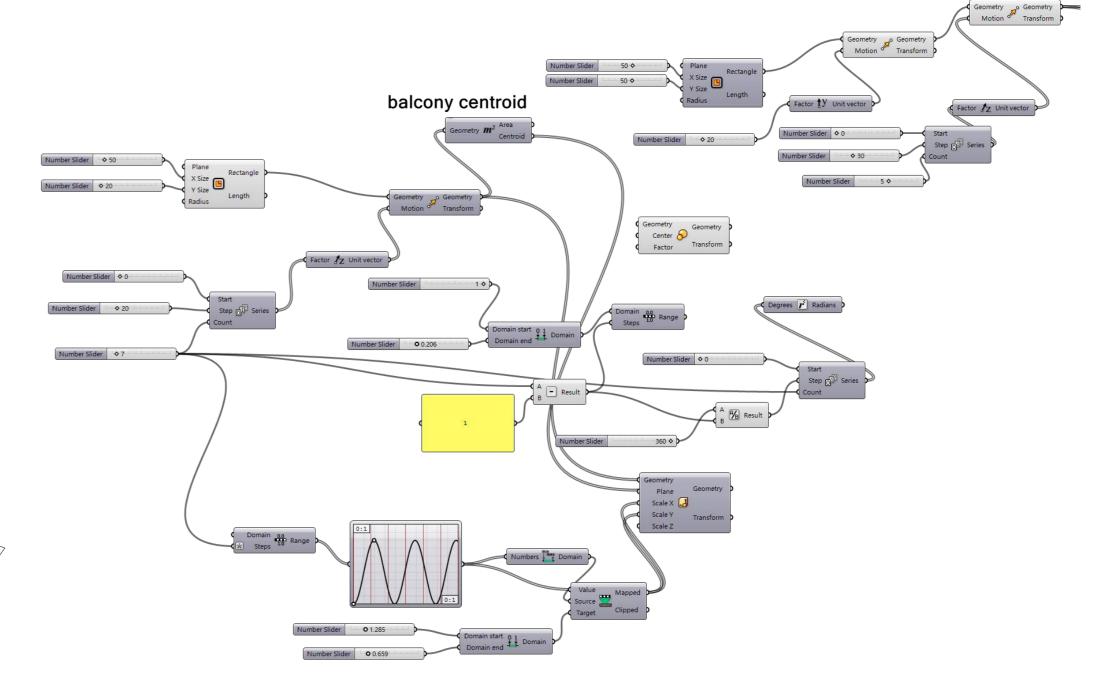


Rotating and elevating

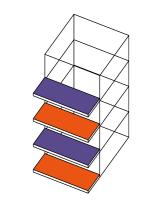


Circulation system

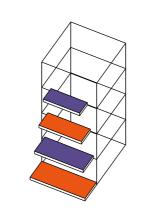
Accessibility from interior Anthropic Movement



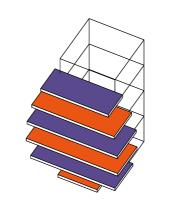
Model realized



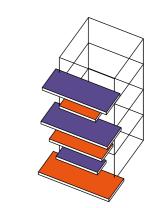
Axonometric View, terraces are moving along Z direction in sequence.



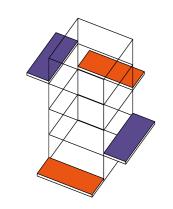
Axonometric View, terraces are moving along Z direction in sequence and their area are decreasing progressively.



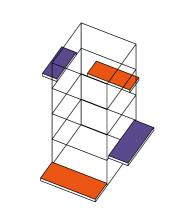
Axonometric View, terraces are moving along Z direction in sequence and Scaling with Sin Function.



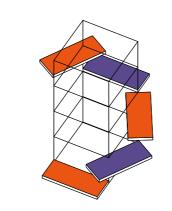
Axonometric View, terraces are moving along Z direction in sequence and Scaling with Sin Function.



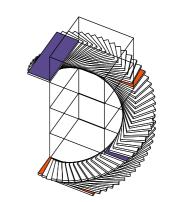
Axonometric View, terraces are rising with sprial tendency.



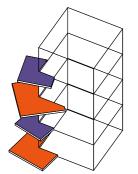
Axonometric View, terraces are rising with sprial tendency and their area are decreasing progressively.

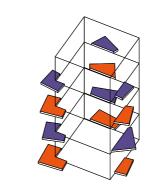


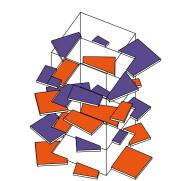
Axonometric View, terraces are rising with sprial tendency and increase quantitiy.



Axonometric View, terraces are rising with sprial tendency and increase quantitiy to their fullest.







Axonometric View, terraces shaped

Axonometric View, terraces shaped

Axonometric View, terraces shaped

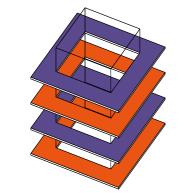
Axonometric View, terraces shaped,

and fragmented randomly.

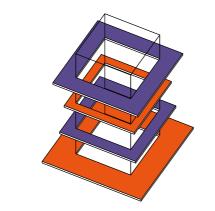
and fragmented randomly along two sides.

and fragmented randomly along three sides.

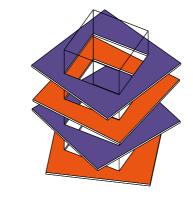
fragmented, rising spiral randomly.



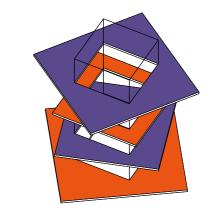
Axonometric View, surrounded terraces rising along Z direction.



Axonometric View, surrounded terraces rising along Z direction and scaling with Sin Function.



Axonometric View, surrounded terraces rising along Z direction and rotating.



Axonometric View, surrounded terraces rising along Z direction, rotating around centroid axis and scaling with Sin Function.



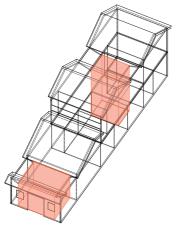
POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

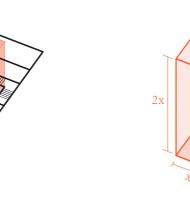
086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

17. Parametric Experiment in Architecture Scale of Bamboo House

表・拾茶

Chinese Vernacular Manifestation in Parametric Language





General dimension feeling

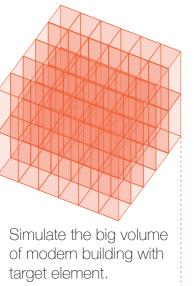
for human to experience

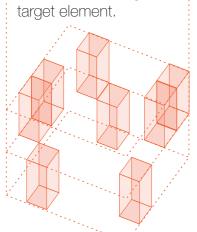
Original volume can be joint to be potential to form different space.

space of the patio.

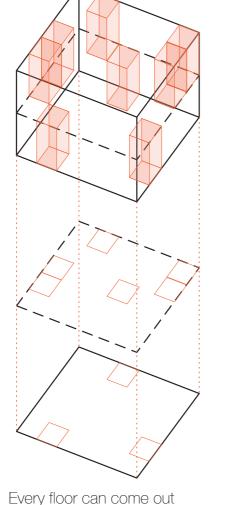
The patio inside the Bamboo house form a significant space of this architecture.

Abstract the characterized space from the original volume.



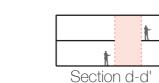


The abstracted space represent a void inside the solid volume.



In the contrary, the void and the solid can be switched.

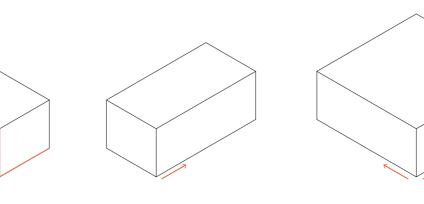
Section a-a'



The simply parametric to define the shape of the space you would like to extract.

you would like to extract.

By changing the "Count" and Seed can receive different point spreading.



According to the needs, the space can be different space, for which just need to simplly change the number of its length, width and height.

Second step is to randomly spread the points in the box, by Octree function

Octree can devide the original box according to the distribution of point cloude.

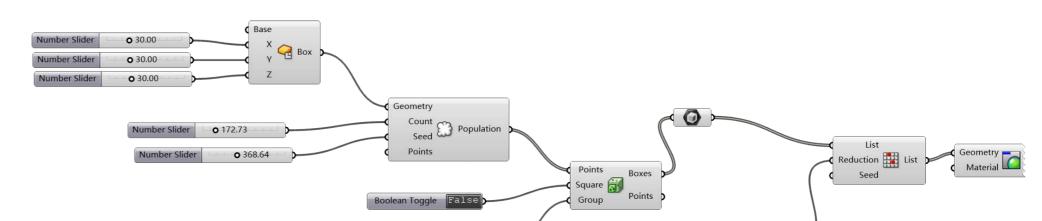
Under same condition only change the seed will get the diffrternt construction of boxes.

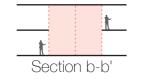
By increasing the "Group" and reducing the number of points, the box will have fewer segmetation.



lf.

Controlling the parameter of reduction in random battery, we can get many results. But it will be adjust by practical situation.







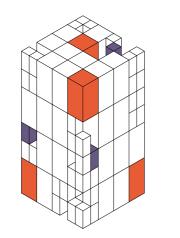
different void after randomly

take away the space.

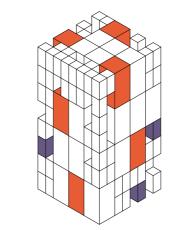
Sections shows it is suitable for different functions and activities.



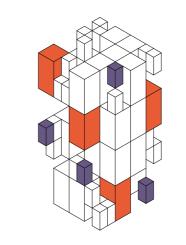




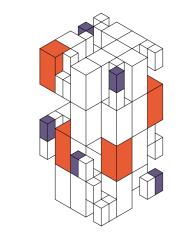
Axonometric View, length and width = x, height = 2x, point population count in 520, seed in 300, group in 12, reduction density 5.



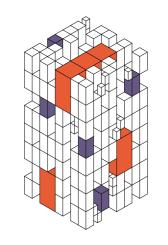
Axonometric View, length and width = x, height = 2x, point population count in 600, seed in 300, group in 12, reduction density 10.



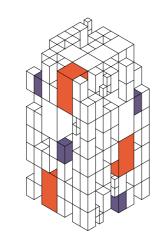
Axonometric View, length and width = x, height = 2x, point population count in 550, seed in 350, group in 10, reduction density 20.



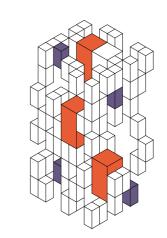
Axonometric View, length and width = x, height = 2x, point population count in 550, seed in 350, group in 10, reduction density 30.



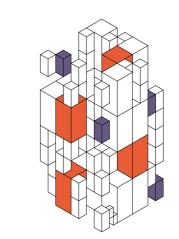
Axonometric View, length and width = x, height = 2x, point population count in 200, seed in 200, group in 3, reduction density 10.



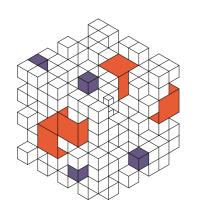
Axonometric View, length and width = x, height = 2x, point population count in 200, seed in 250, group in 3, reduction density 20.

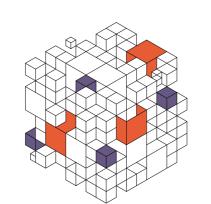


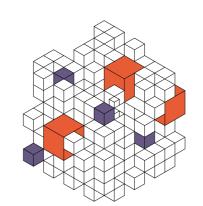
Axonometric View, length and width = x, height = 2x, point population count in 200, seed in 300, group in 3, reduction density 40.

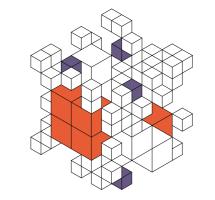


Axonometric View, length and width = x, height = 2x, point population count in 200, seed in 350, group in 3, reduction density 70.





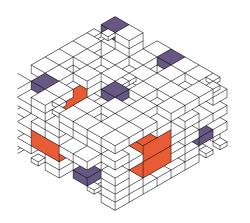




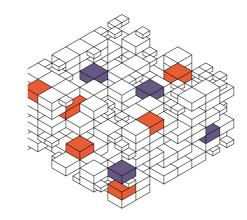
Axonometric View, length = width = height = x, point population count in 200, seed in 200, group in 3, reduction density 10. Axonometric View, length = width = height = x, point population count in 200, seed in 250, group in 3, reduction density 20.

Axonometric View, length = width = height = x, point population count in 200, seed in 300, group in 3, reduction density 40.

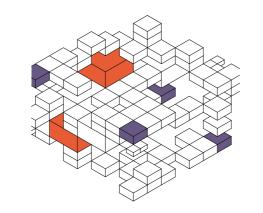
Axonometric View, length = width = height = x, point population count in 200, seed in 350, group in 3, reduction density 70.



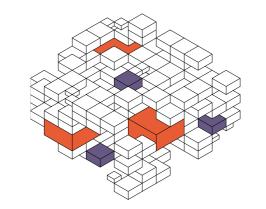
Axonometric View, length = width =2x, height = x, point population count in 200, seed in 200, group in 3, reduction density 10.



Axonometric View, length = width =2x, height = x, point population count in 200, seed in 250, group in 3, reduction density 20.



Axonometric View, length = width =2x, height = x, point population count in 200, seed in 300, group in 3, reduction density 40.



Axonometric View, length = width =2x, height = x, point population count in 200, seed in 350, group in 3, reduction density 70.

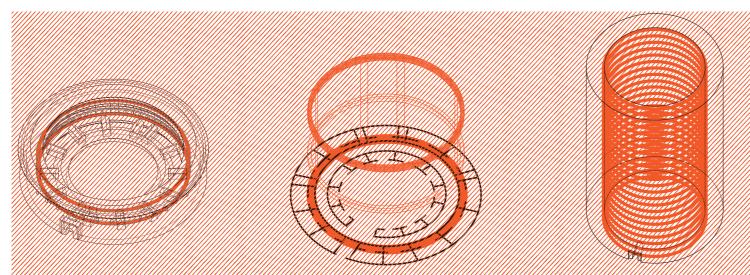


POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

表・拾捌

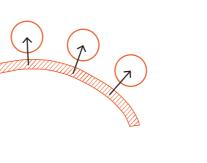
Chinese Vernacular Manifestation in Parametric Language



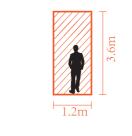
The corridor inside the Tulou have been considered as its representative element.

The corridor provides an occlusive circulation of each level.

The corridor provides an occlusive circulation of each level.



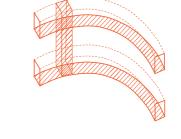
The corridor connected all the independent single space.



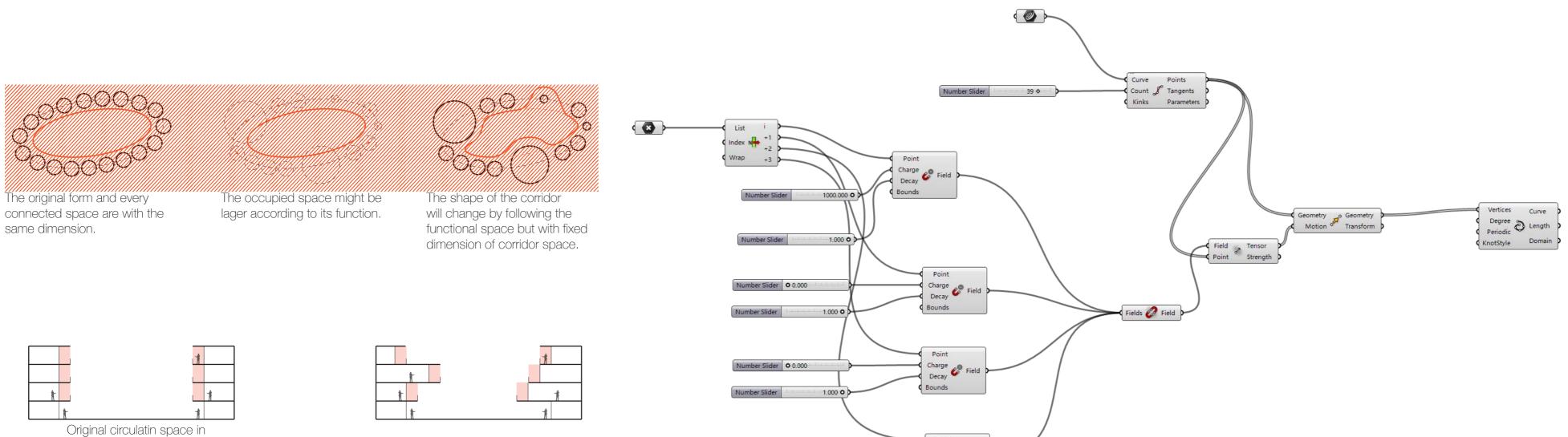
The original dimension for

the corridor will give us the

impression of narrow.



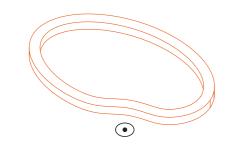
There are vertical connections with each other which could be a node of different functional space crossover.



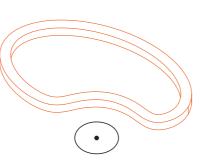
Number Slider 0 0.000

uniform shape

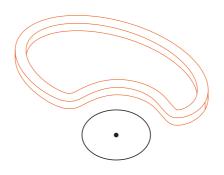




Axonometric View, corridor is deformated due to R1 = 100 intensity radiated space.



Axonometric View, corridor is deformated due to R1 = 250 intensity radiated space.

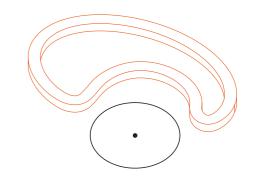


Point

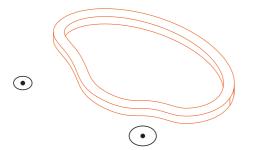
C Bounds

Charge Charge

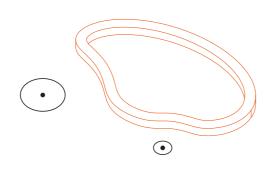
Axonometric View, corridor is deformated due to R1 = 500 intensity radiated space.



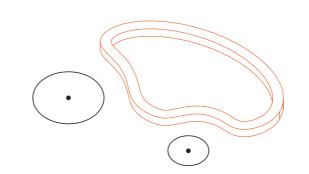
Axonometric View, corridor is deformated due to R = 1000 intensity radiated space.



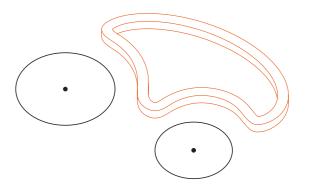
Axonometric View, corridor is deformated due to R1 = 100, R2 = 300 intensity radiated spaces.



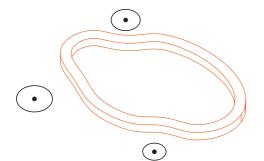
Axonometric View, corridor is deformated due to R1 = 100, R2 = 500 intensity radiated spaces.



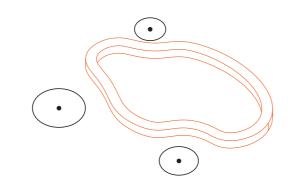
Axonometric View, corridor is deformated due to R1 = 250, R2 = 500 intensity radiated spaces.



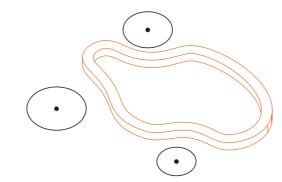
Axonometric View, corridor is deformated due to R1 = 500, R2 = 800 intensity radiated spaces.



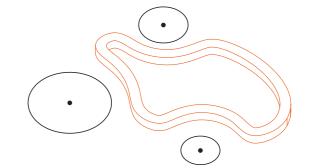
Axonometric View, corridor is deformated due to R = 100, R = 200, R = 150 intensity radiated



Axonometric View, corridor is deformated due to R1 = 200, R2 = 300, R3 = 150 intensity radiated

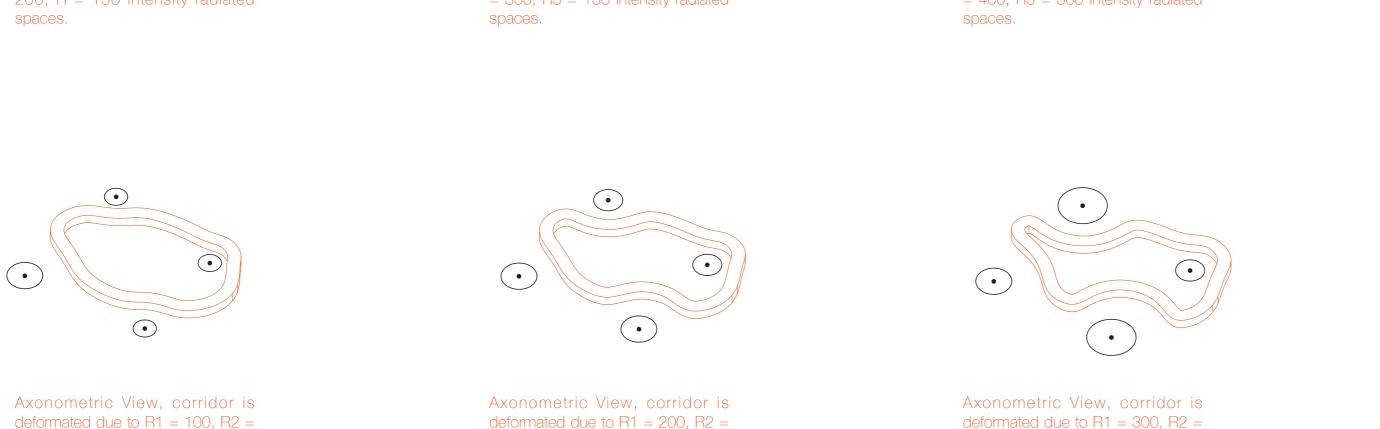


Axonometric View, corridor is deformated due to R1 = 200, R2 = 400, R3 = 300 intensity radiated



Axonometric View, corridor is deformated due to R1 = 200, R2 = 600, R3 = 400 intensity radiated

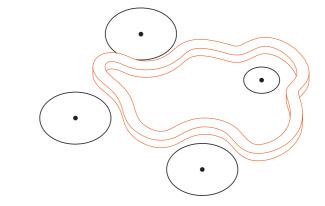
spaces.



deformated due to R1 = 100, R2 = 200, R3 = 100, R4 = 100 intensity radiated spaces.

Axonometric View, corridor is deformated due to R1 = 200, R2 = 200, R3 = 150, R4 = 150 intensity radiated spaces.

Axonometric View, corridor is deformated due to R1 = 300, R2 = 200, R3 = 300, R4 = 150 intensity radiated spaces.



Axonometric View, corridor is deformated due to R1 = 500, R2 = 500, R3 = 500, R4 = 200 intensity radiated spaces.

POLIT Scuola Archite Ingegr

POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

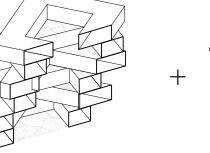
086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella

19. Intergrations of Experimental Samples

表・拾玖

Chinese Vernacular Manifestation in Parametric Language

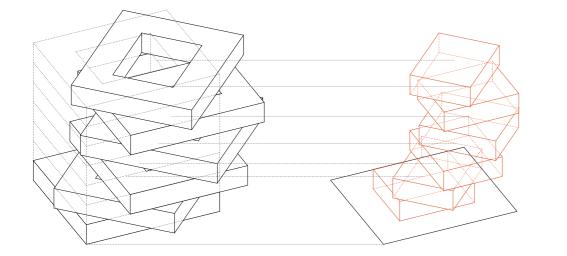




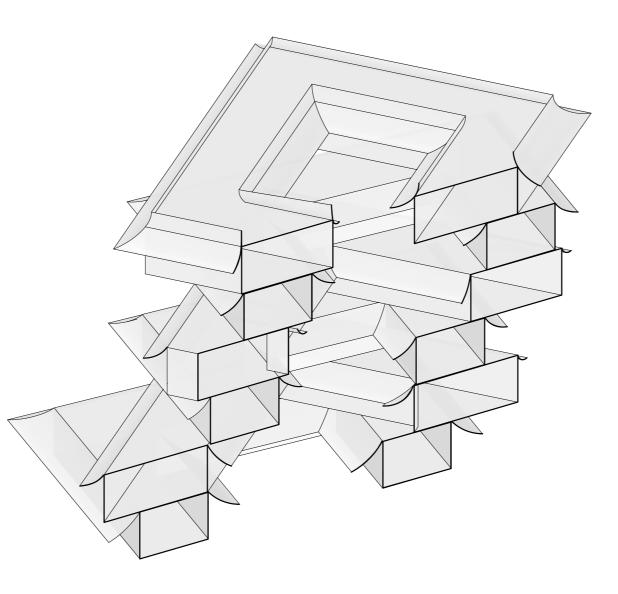




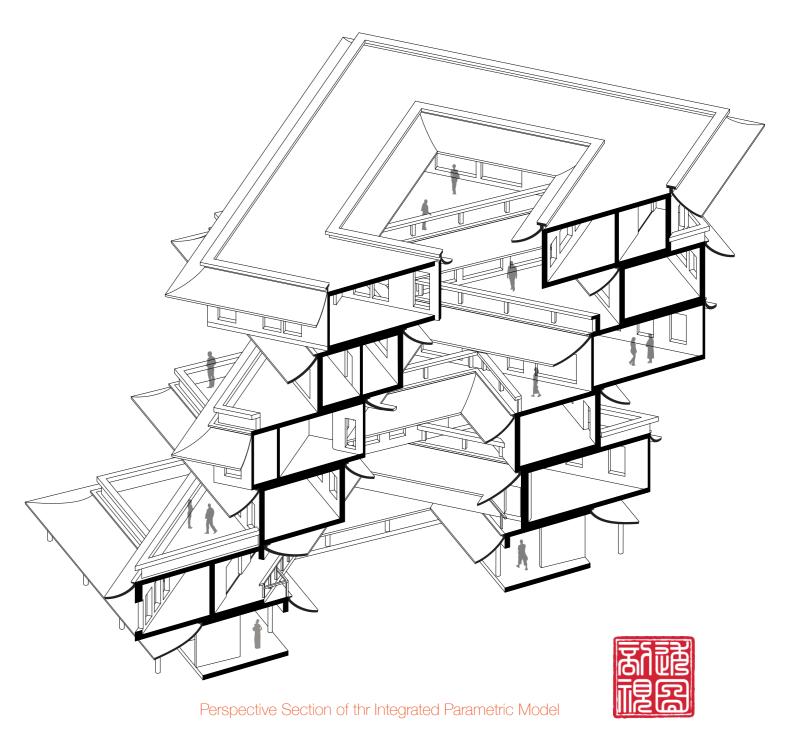
Integrated Parametric Model

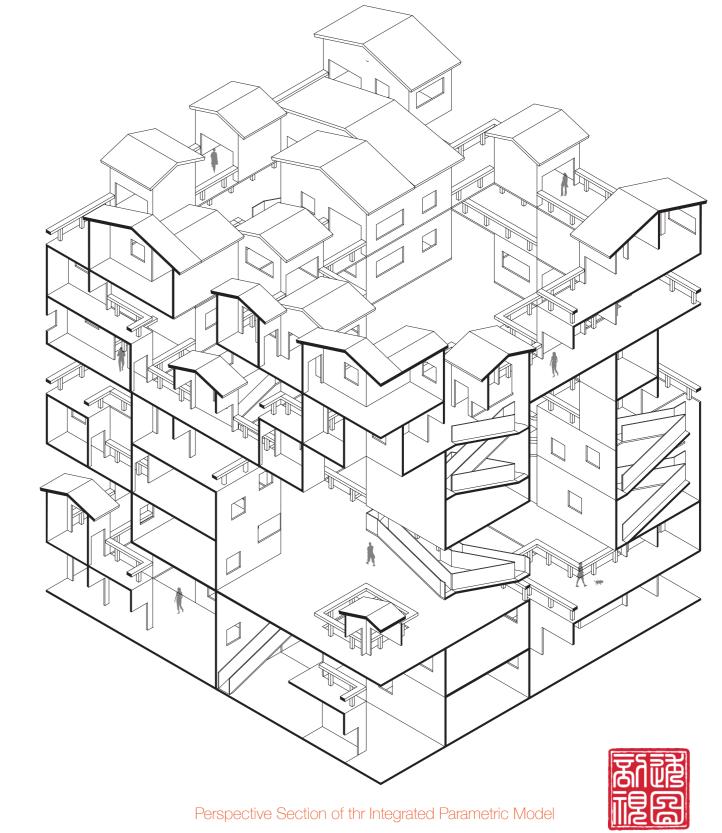


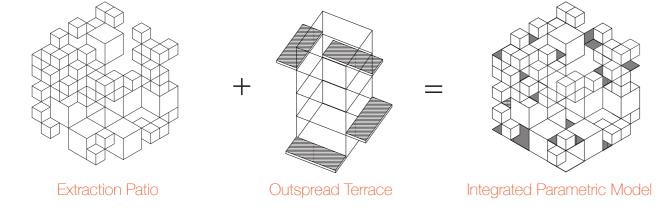
Combination experiment of one of the examples from the parametric result of Malposed Courtyard and Outspread Terrace

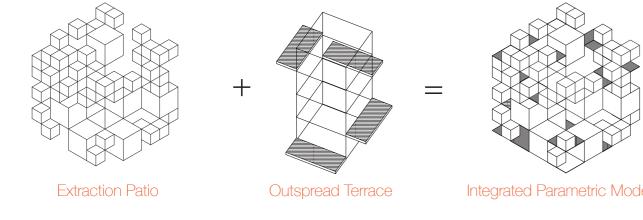


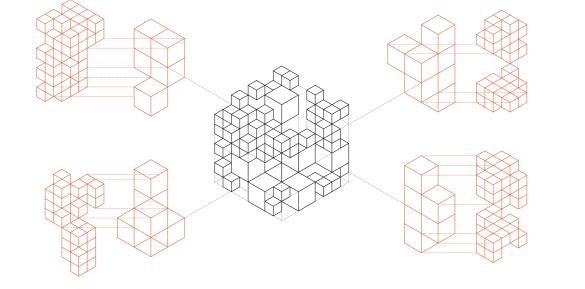
Perspective Section of Polysurface Model



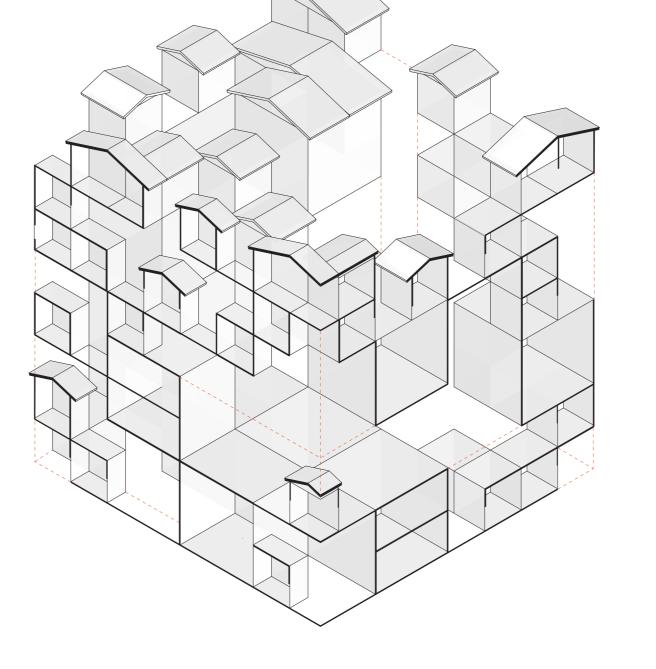




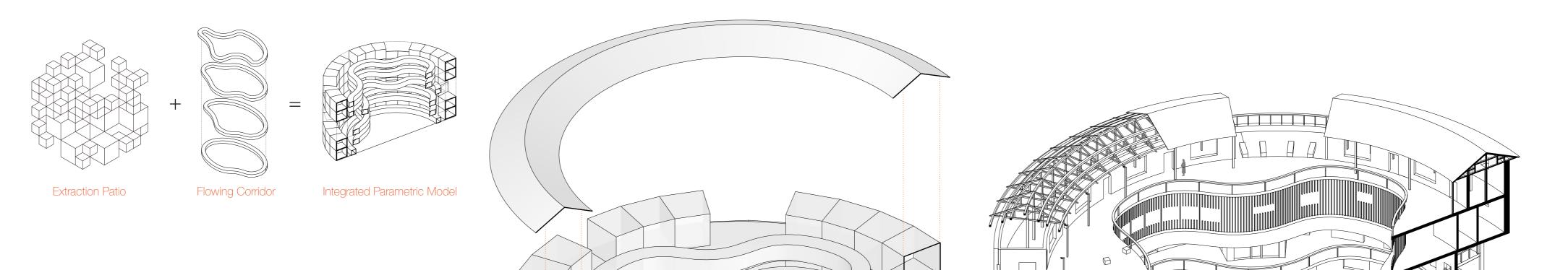


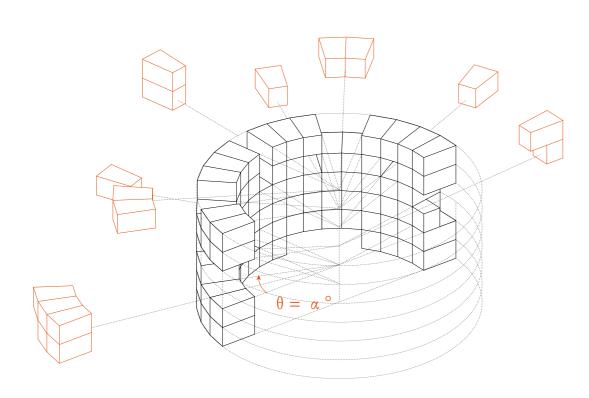


Combination experiment of one of the examples from the parametric result of Extraction Patio and Outspread Terrace

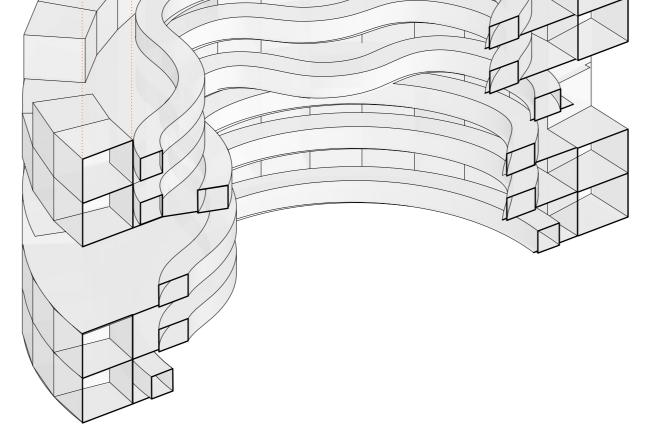


Perspective Section of Polysurface Model

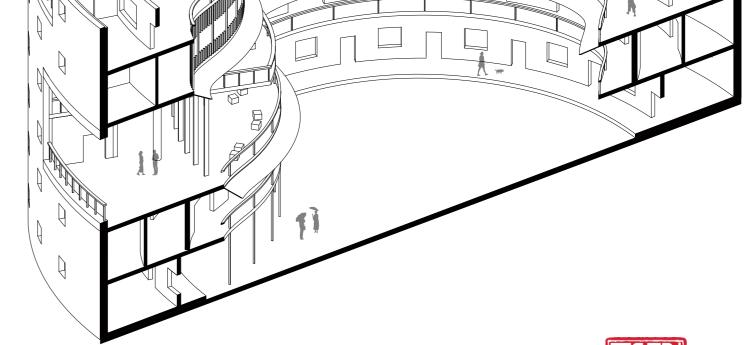




Combination experiment of one of the examples from the parametric result of Extraction Patio and Flowing Corridor







Perspective Section of thr Integrated Parametric Model





POLITECNICO DI MILANO Scuola di Architettura Urbanistica Ingegneria delle Costruzioni

086368 - Final Thesis SUPERVISOR - Professor Luigi Cocchiarella