

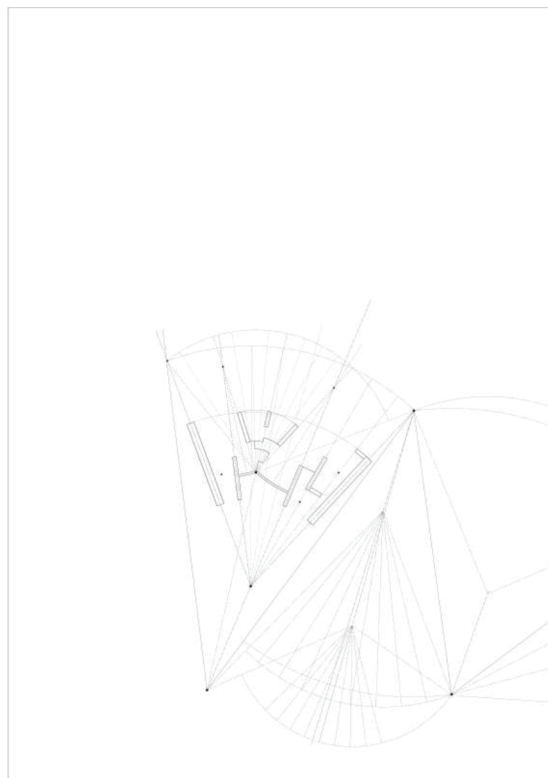
Degree Project in Architecture

Second Cycle 30.0 hp

Aggregate City

an urban machine that triggers intuitive experience of
view from a non-single perspective

SHUDI SUN



Ambi-Formalism

Aggregate City

an urban machine that trigger
intuitive experience of view from a non-single perspective

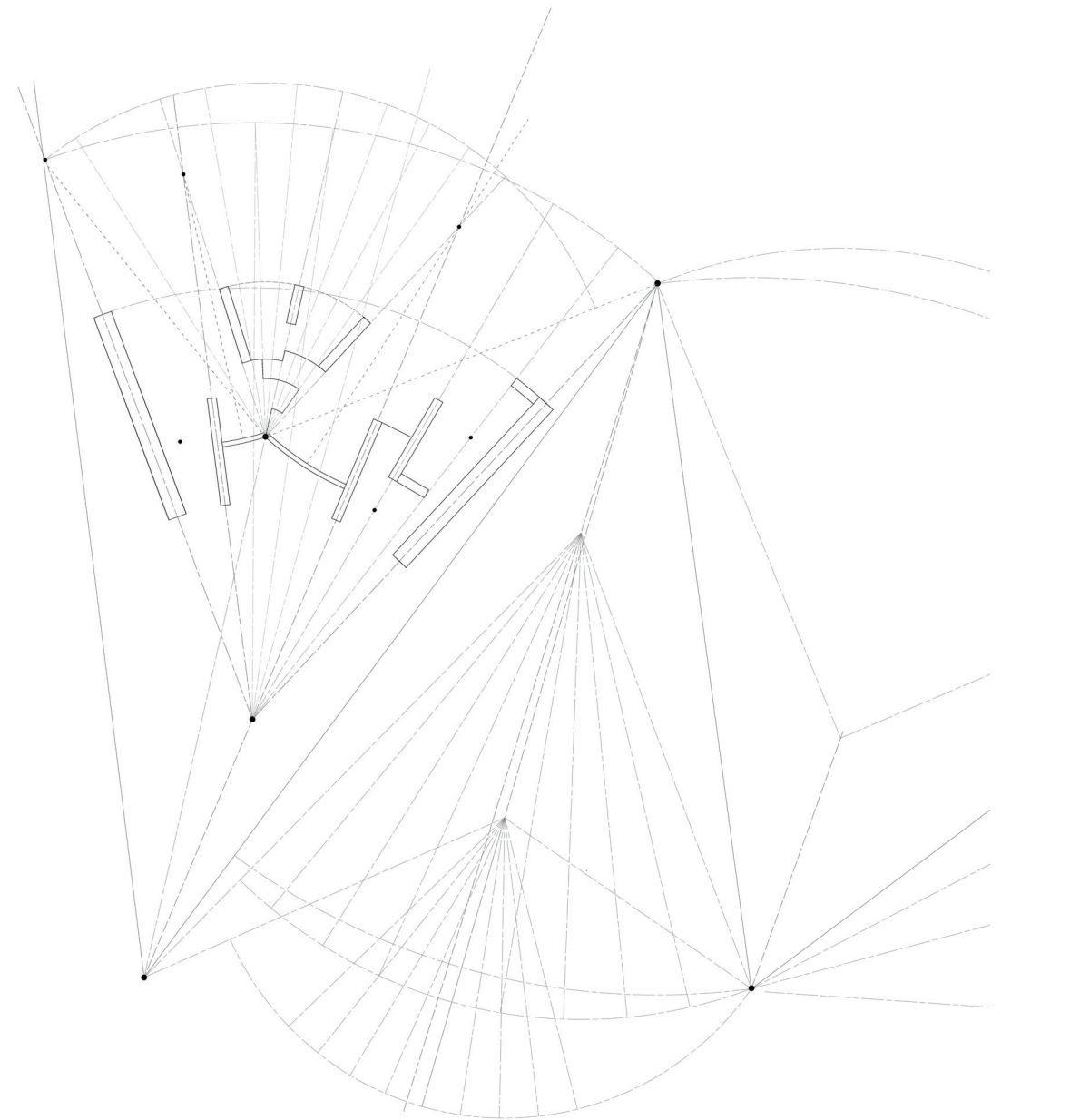


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The Origin of the Concept

1.1 The literary generalization of ambi-formalism

Dream of the Red Chamber (the middle of the 18th century), Cao Xueqin

"Truth becomes fiction when the fiction's true, Real becomes not-real where the unreal's real."

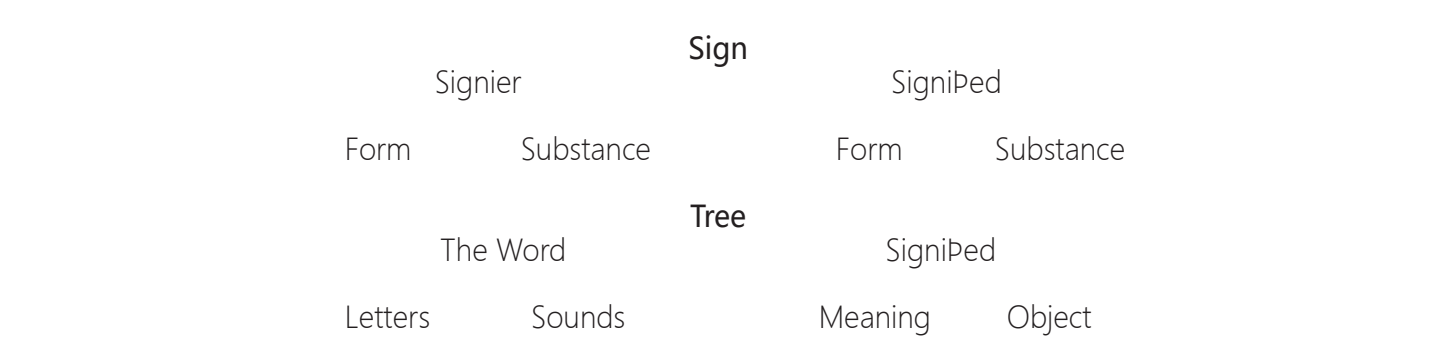
Invisible Cities (1972), Italo Calvino

The interludes between the two characters (short dialogues between Kublai and Polo) are no less poetically constructed than the cities and form a framing device that plays with the natural complexity of language and stories. In one key exchange in the middle of the book, Kublai prods Polo to tell him of the one city he has never mentioned directly—his hometown. Polo's response: *"Every time I describe a city, I am saying something about Venice."* Which in my understanding means **Metaphors of form can create (montage) memories.** In the novel, the reader finds themselves playing a game with the author, wherein they must find the patterns hidden in the book- The cities are divided into eleven thematic groups of five each: **In a rigorous mathematical structure.**

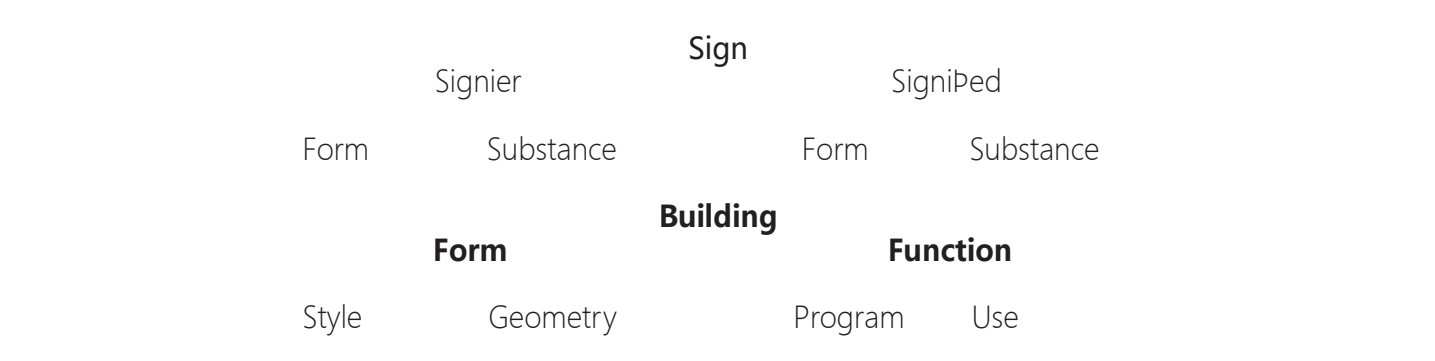
Powers of Horror: An Essay on Abjection (1982), Julia Kristeva

"On close inspection, all literature is probably a version of the apocalypse that seems to me rooted, no matter what its sociohistorical conditions might be, on the **fragile border** (borderline cases) where identities (**subject/object**, etc.) do not exist or only barely so—double, fuzzy, heterogeneous, animal, metamorphosed, altered, abject."

Semiotics-Linguistic



Architecture Semiotics



Dichotomy?

Program Vs. Use
Abstract vs. Concrete
Theory vs. Practice
Aesthetic vs. Substantive
Public Vs. Private

the same space cannot have two different contents ?

Ambi-Formalism

Recreating a reading method of fact
The binary opposition is false, is just a consequence,
depending on where are you looking from !

Two independent points, points of view, perspectives, diagrams(plan and prople),or methods.
Theses two points are interlinked,
shifting perspective in its own system, from one point to another !

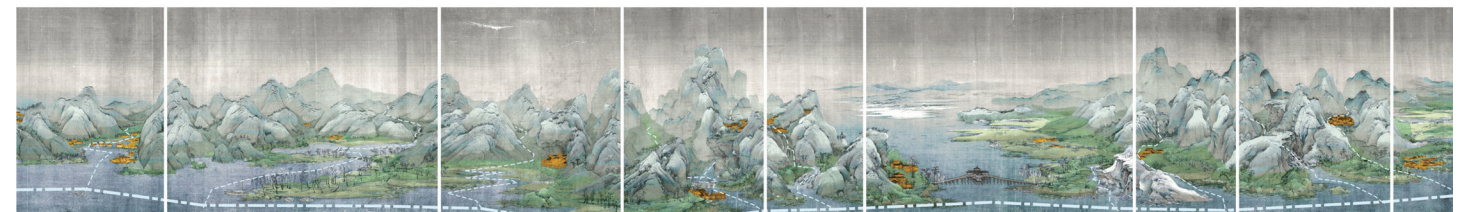
1. Swallow dichotomous opposites.
2. Restore the body as the measure of all things; know where you're looking from!!!
3. If it doesn't tell you how to make it, Don't!

Ambi-formalism is formulation

1.2 Urban discourse of ambi-formalism



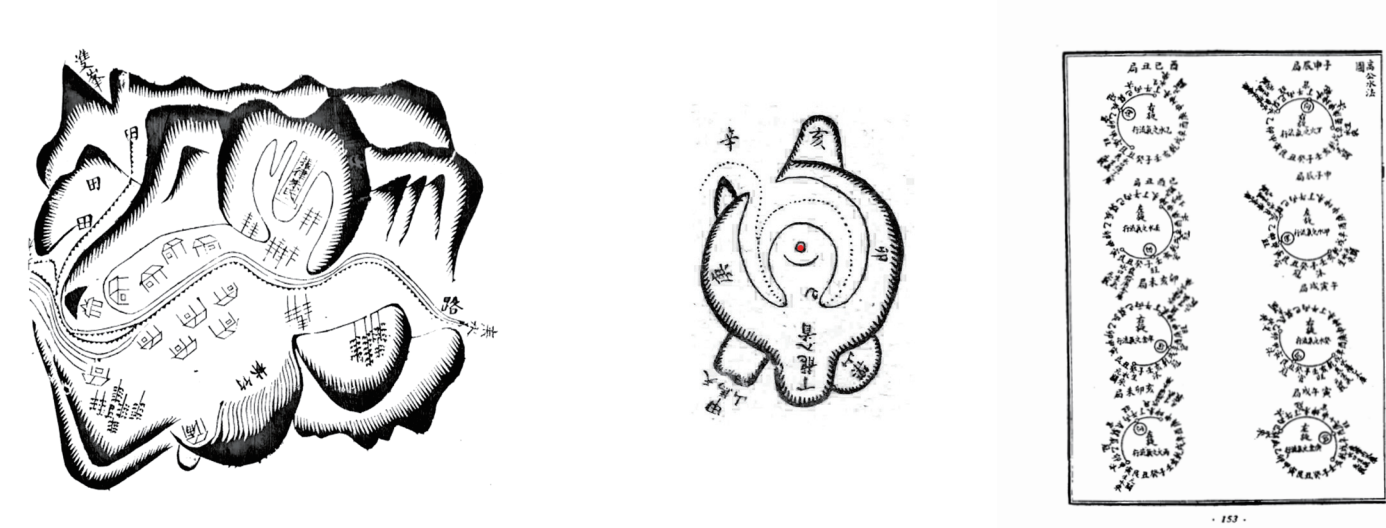
Homogeneous urban space makes people get lost in it, unable to position themselves



City can also unfold slowly like a Chinese scroll, telling a continuous intuitive experience

1.3 Chinese Feng Shui Map

Fengshui map is a geomantic person **standing somewhere to describe the environment he is in**. He describes what he sees thus i t i s **an intuitive schema** rather than a plan. The feeling of being inside is presented because of the **limitation** of what you see (scope of vision). In ancient China, this azimuth corresponds to **the twelve hours** and has the knowledge of astronomy.

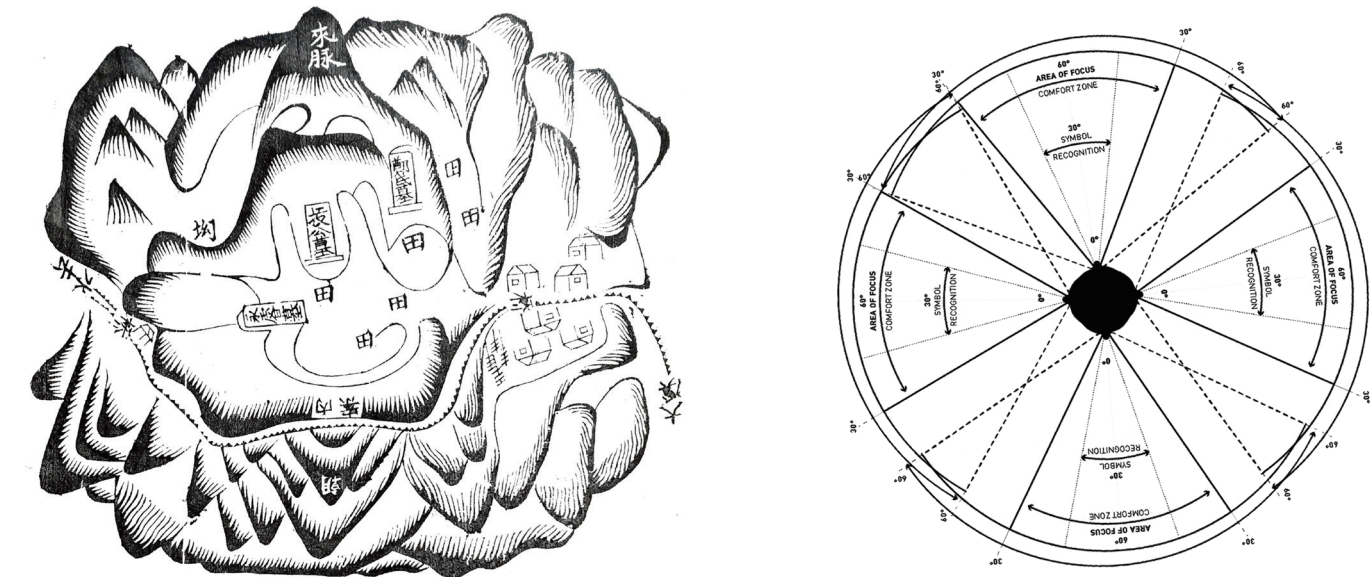


"No.13 ". 阴宅图册 (The House Atlas)
It depicts the general environment in which the master's tomb is located, its orientation relationship with mountains and rivers(road), It also presents the layout of villages and farmland with a perspective.

Collected by Gu Jue from villages in Zhejiang, China

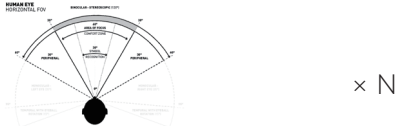
Center - direction - hour
A type surrounded by mountains, Depicts the position of the mountain, the gap in the relationship, the Bowing air, and the time of orientation

Break down the time of day into **groups of three hours**, 360-degree divided to each hour.



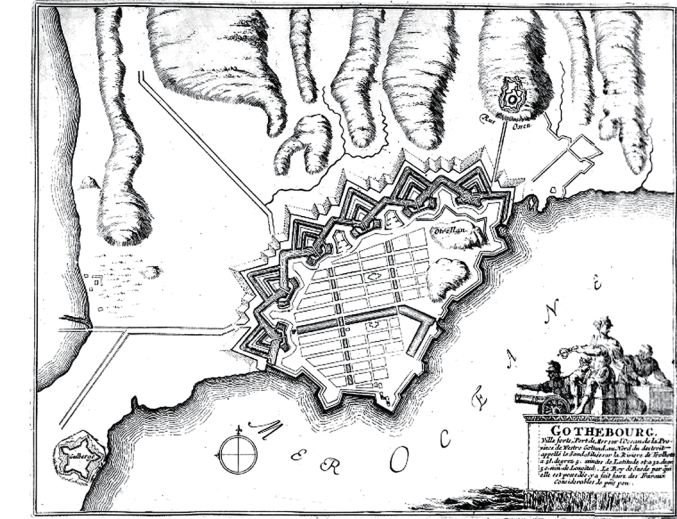
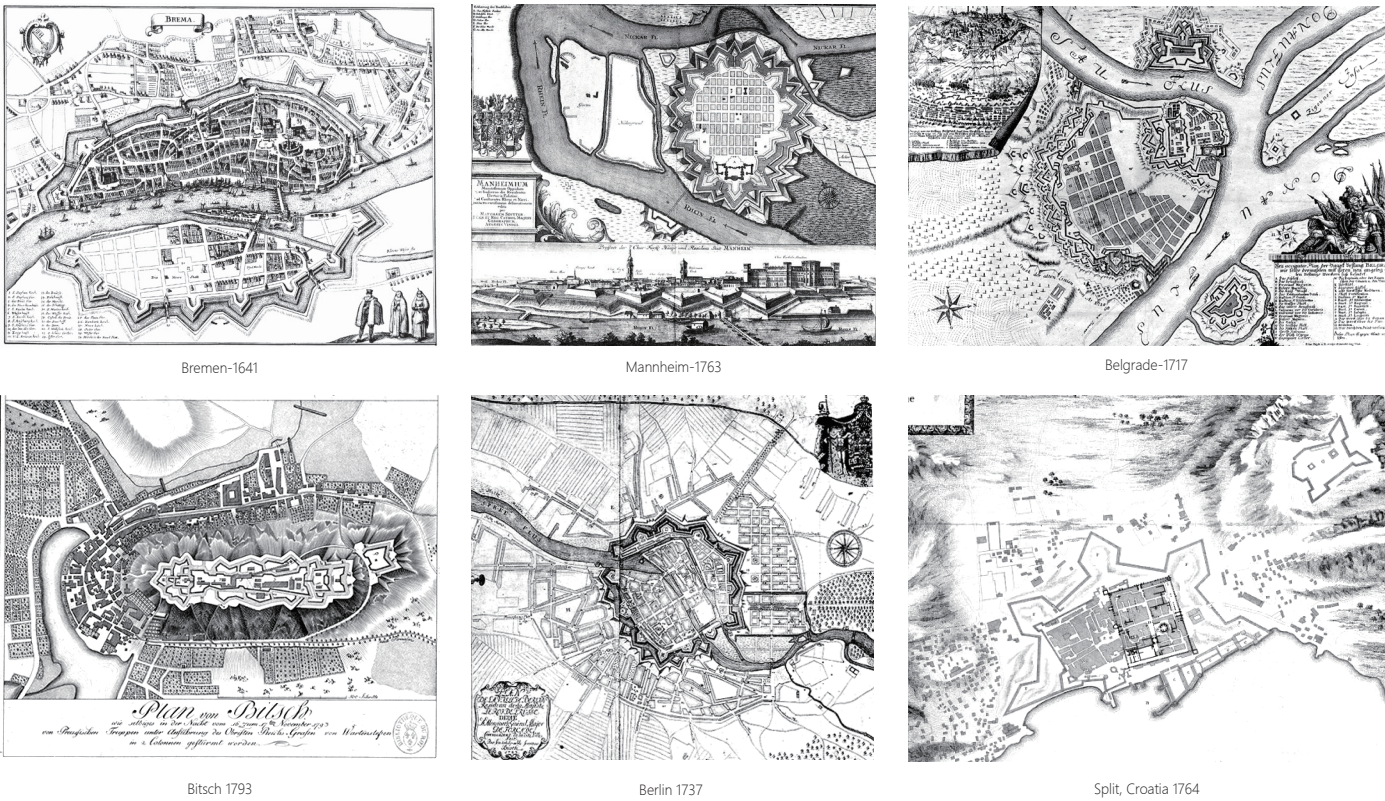
"No.17 ". 阴宅图册 (The House Atlas)

Multiple perspectives at a fixed point



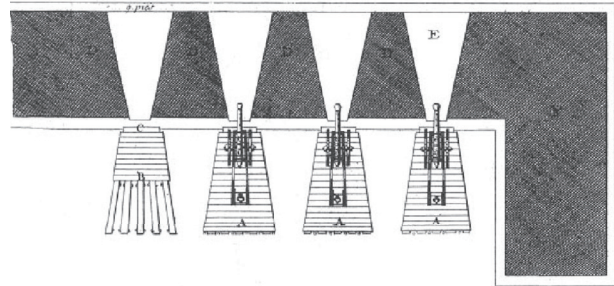
1.4 European Fortification Map

Defensive walls were an accepted **part of 18th-century European urban life**. Cities and strategic towns were invariably fortified and capable of withstanding siege artillery. The strategic concerns were often related to vital transportation routes—primarily **lakes and rivers**. The topography within which the fortification was placed is an important consideration in the design process. Ground higher than the fortified site offered a significant advantage to an attacker or besieger.

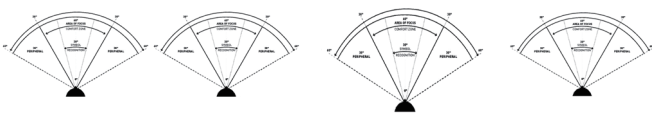


Lithography of Gothenburg, 1705 (south is up)

Scattered Viewpoints from Different Positions



Angle limitation for cannon projection



1.5 The Origins of Cities and Natural Boundaries



The Fengshui Diagram presents the unfavorable moutains Shike Xu, Di Li Tian Ji Hui Yuan, 1580

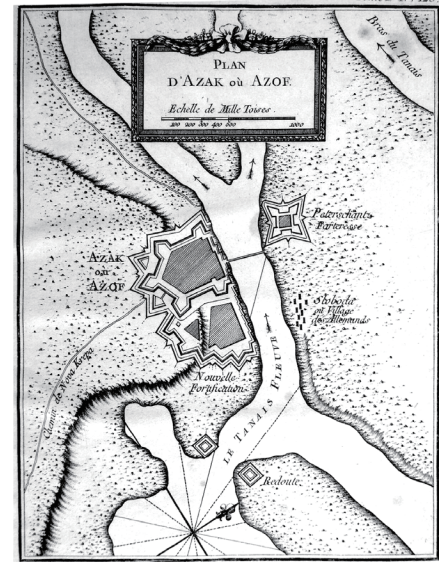


The Fengshui Diagram demonstrates the unfavorable types of water Jiusheng Ye, Di Li Da Cheng 1688

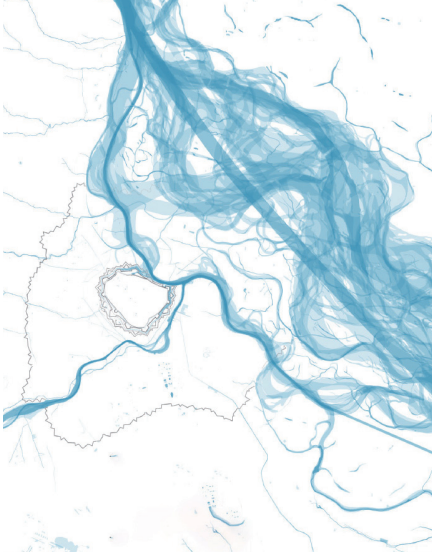


Old map of Hangzhou City, the tributary of Qiantang River and the origin of the old city

In feng shui diagrams, mountains and rivers are the most basic elements for judging a place. As a kind of natural boundary, they have advantages and disadvantages. The river as a barrier, but also a moat.



Azov Crimean Peninsula Don River city plan fortifications 1760 Bellin map



Vienna and its Danube landscape, with its dynamic river arms, few oxbow lakes and alluvial zones, reached a width of several kilometres.



The fortified city of Vienna and the river branch of the Danube

In defensive war maps of European cities, natural topography serves as the boundaries of a city's territory and is the rule by which surveyors draw defensive war maps. Both the Roman Vindobona and the medieval city were built on the banks of former large river arms, which might have been even the main arms during the respective time periods. Actually, Vienna was once located on the Danube. From the 13th century onwards, the main arm of the river shifted further and further to the north-east away from the centre. Countless water engineering projects followed.

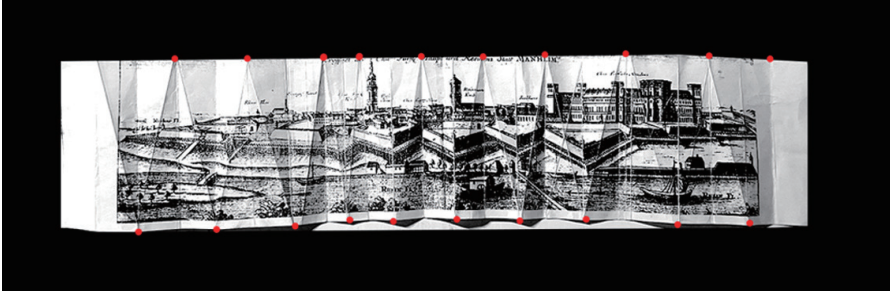
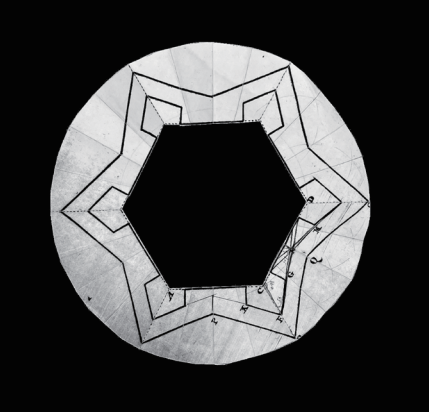
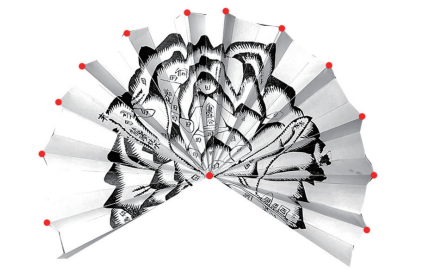
Unit Decomposition - Sight and Projection

2.1 Analysis and documentation of Folding Paper

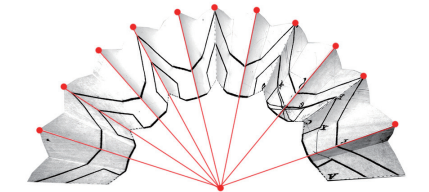


From one projected point to several points
From point to line
From inoperable to operable

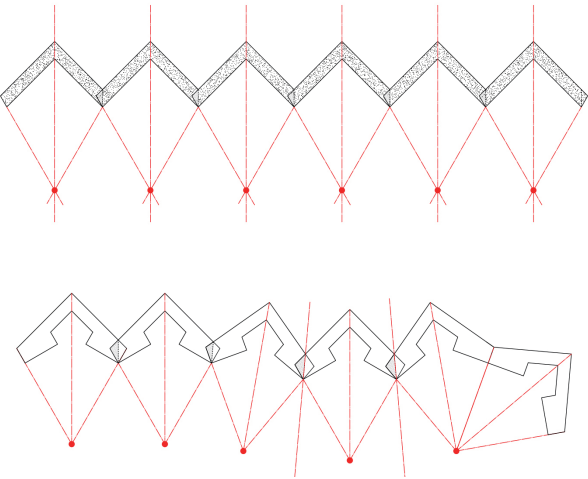
The Fengshui map is the senses inwards, A point is a whole world, the fortress of the defense map is outwards, the purpose is unlimited (while the controller is inwards). From one projected point to several projected points, the form shifts, and so does the reading of it. Inside and outside also transformed within their own system. A point is a complete world. Decomposition is to open it up, a transformation, which can accept other worlds. As a process, it contains a synthetic character which is in itself a manifestation of form.



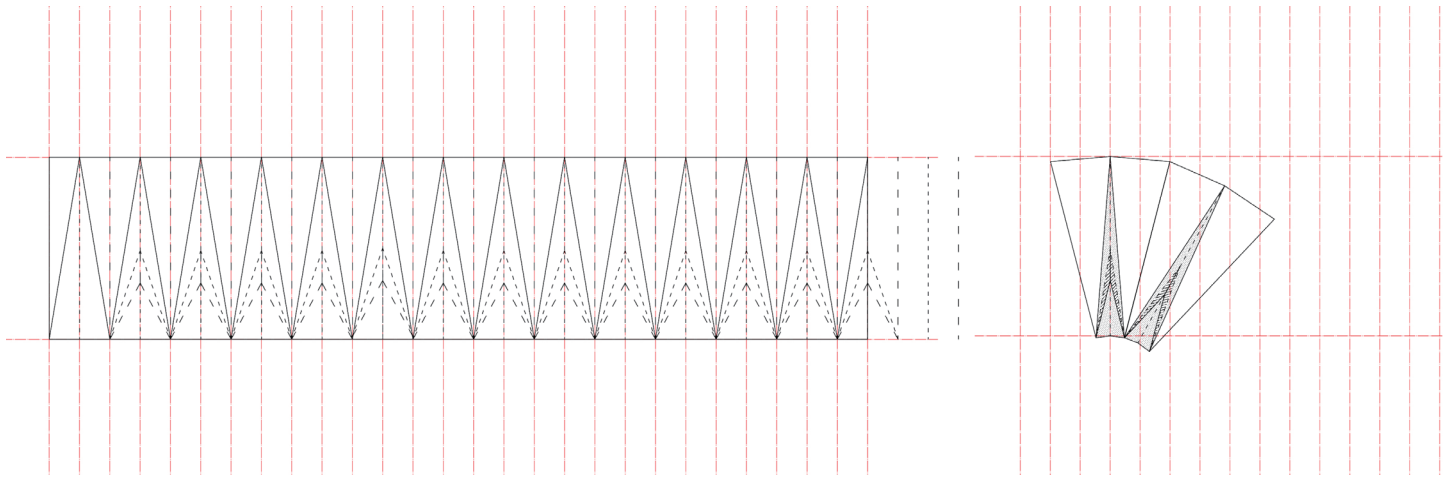
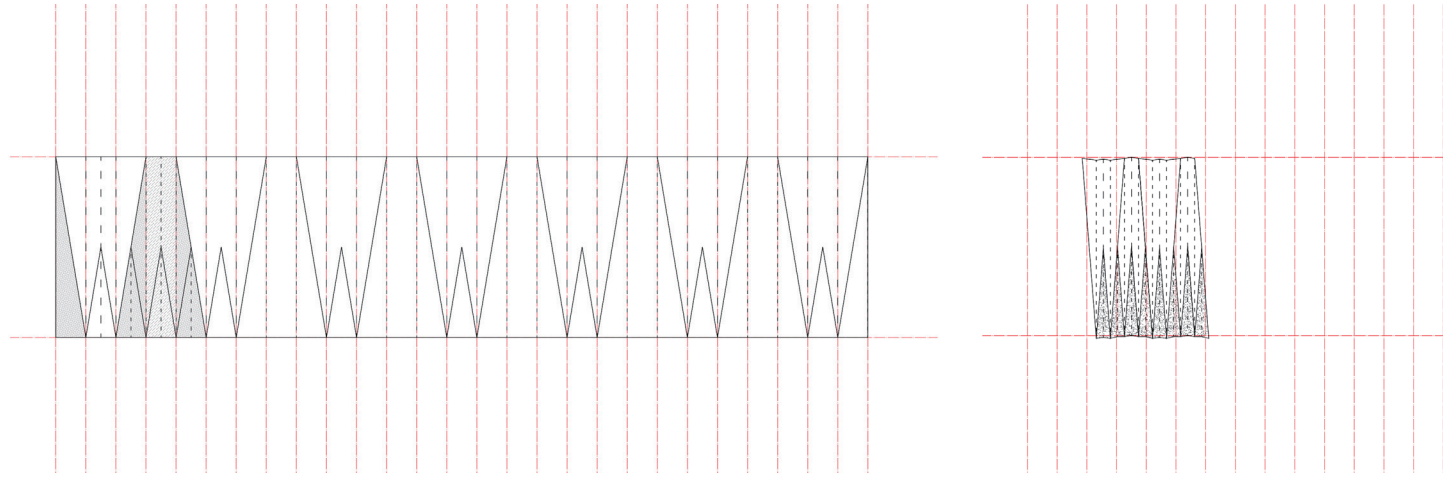
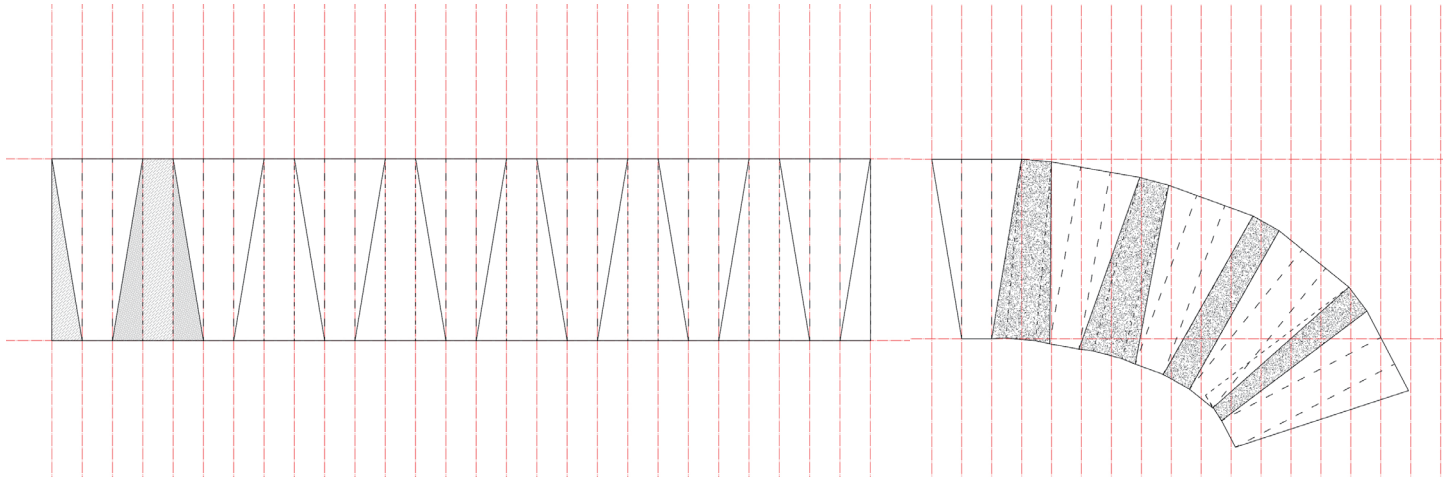
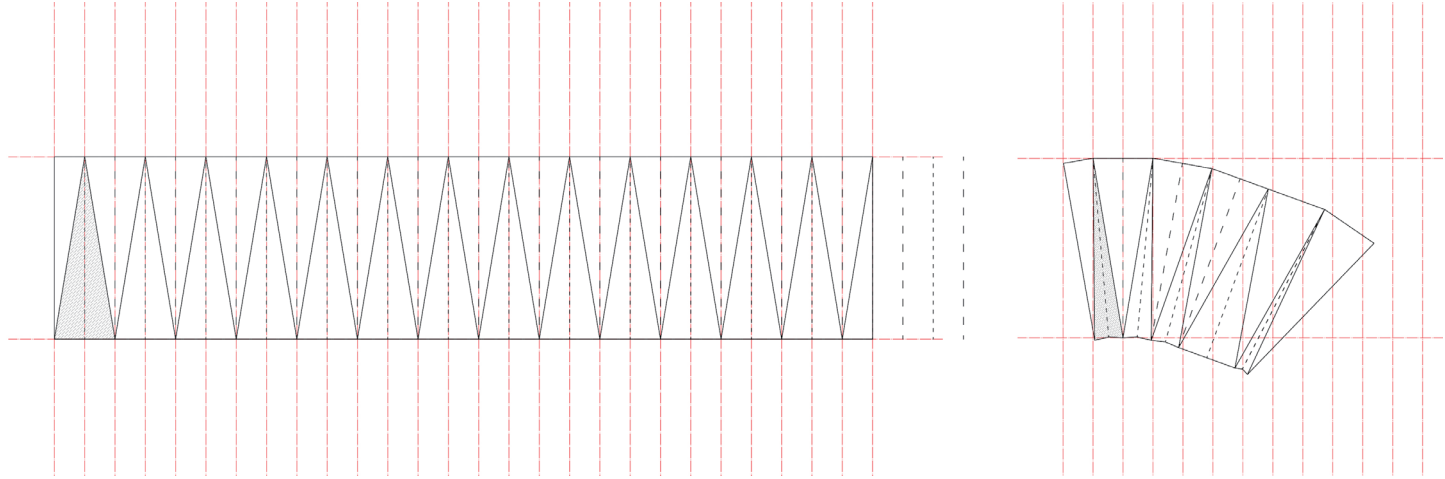
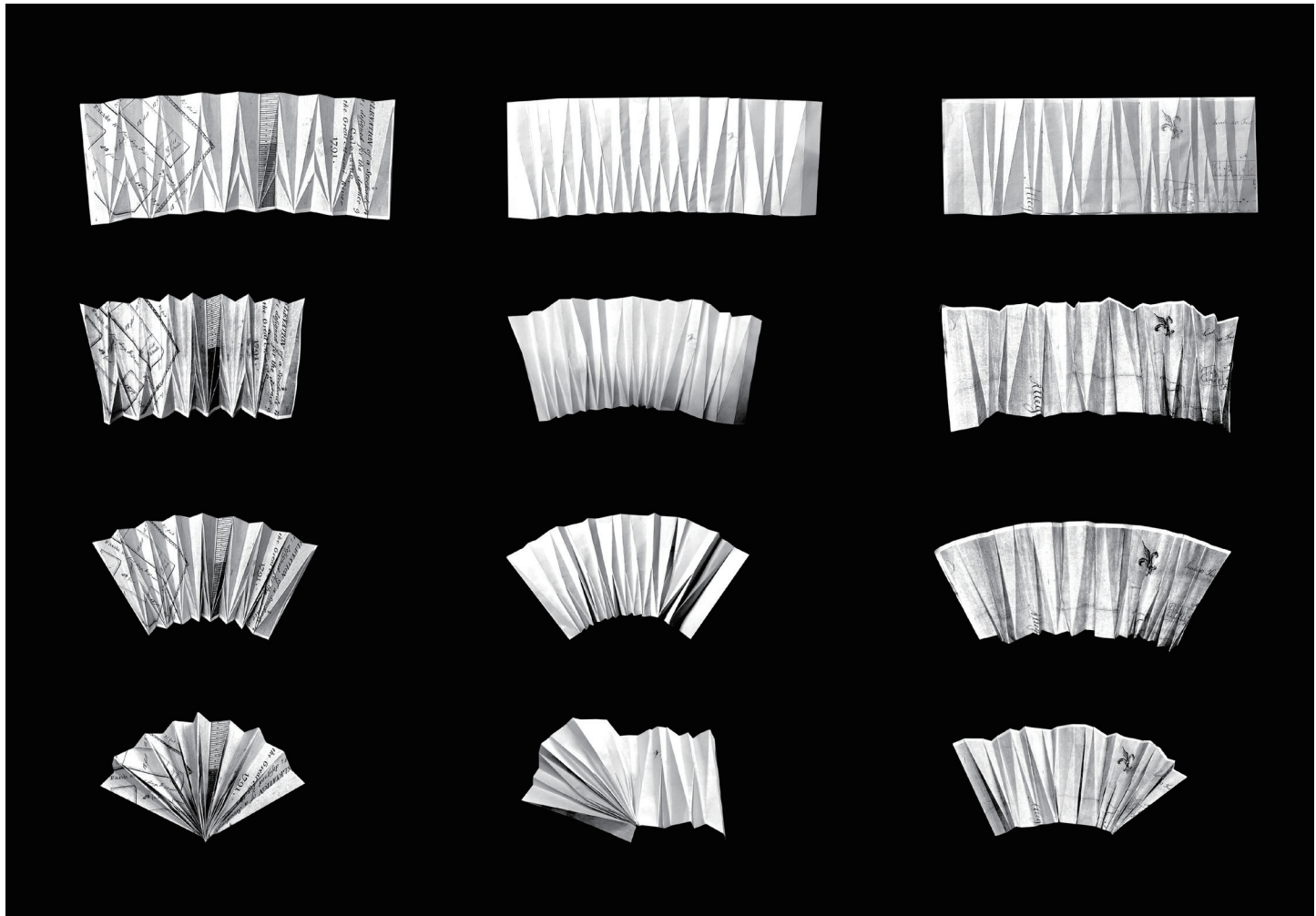
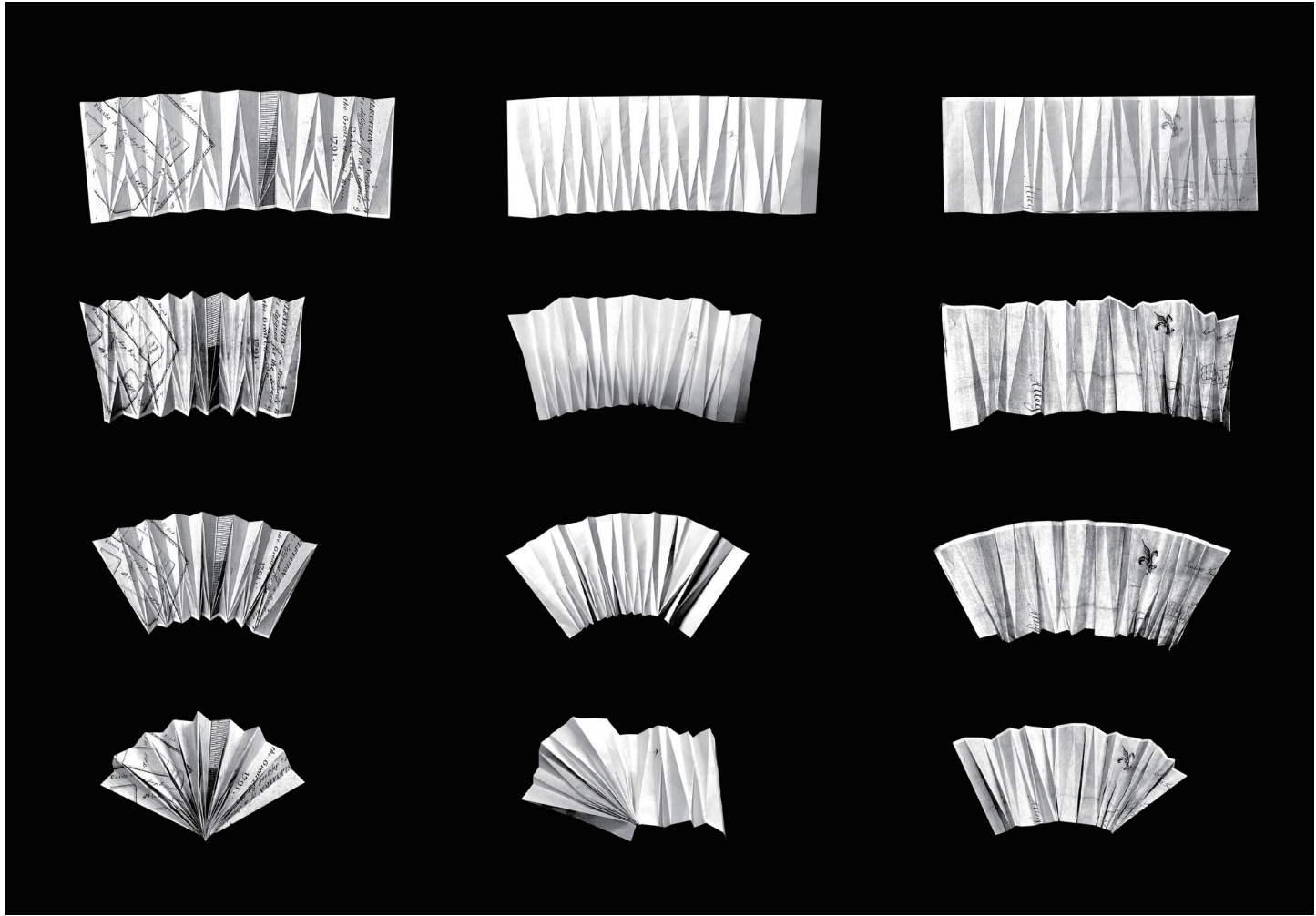
the "ground plan resembled a star which was made up of a series of geometrically interrelated planes, the idea being to cover all the projecting parts of the fortifications by an effective cross pre" (Christopher Duffy, Fire and Stone)

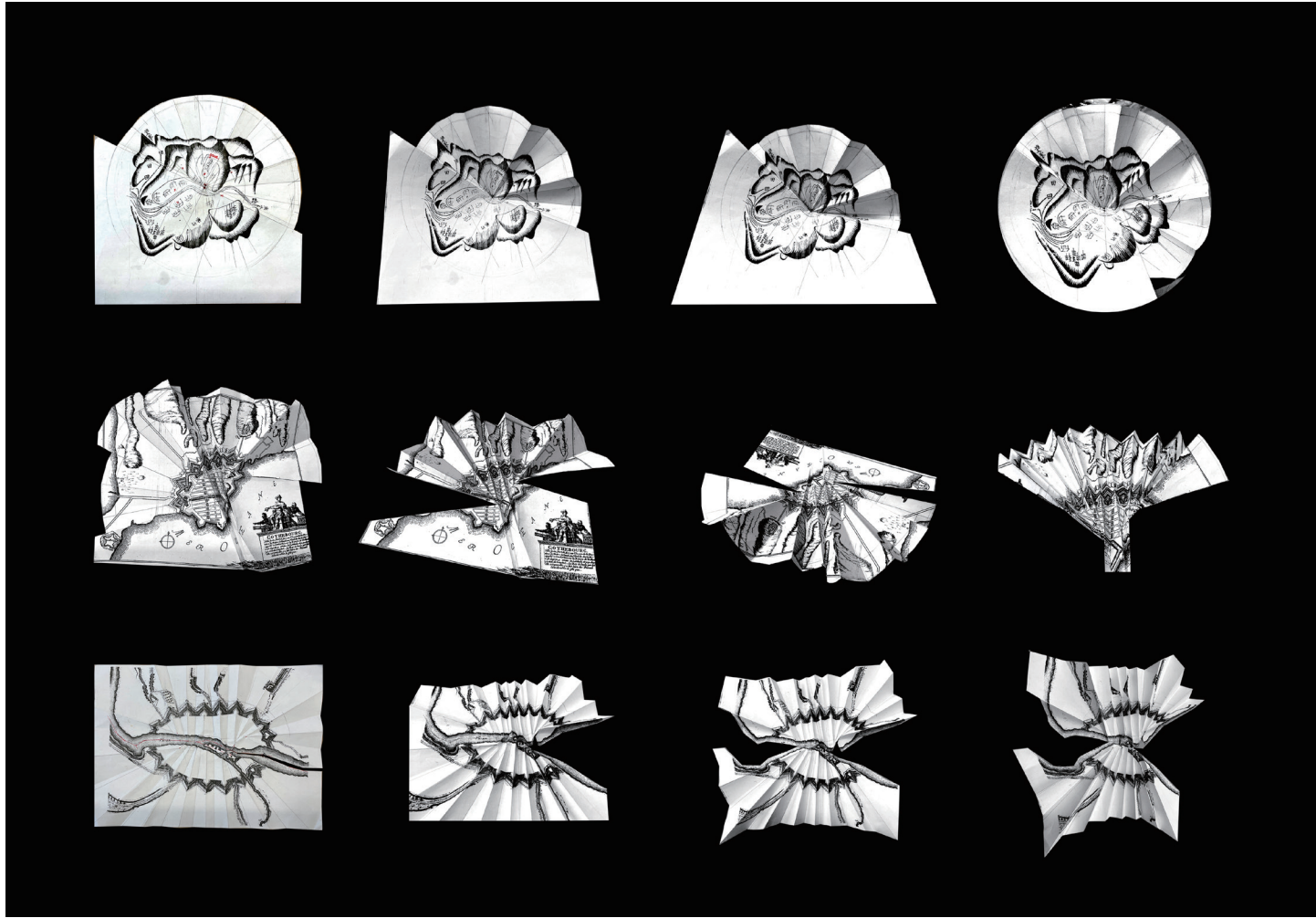


Each angle is a unit, also a schema



Decomposes its shape into units, thereby being able to accept what is not its shape!



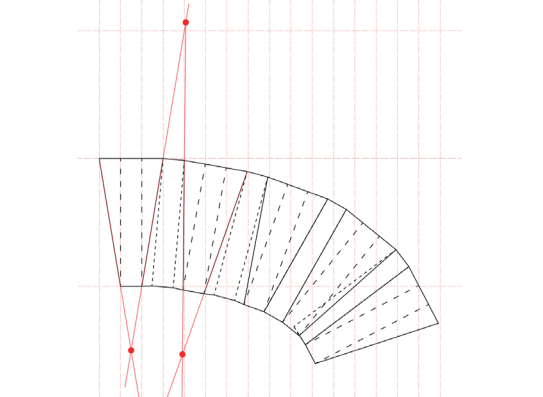
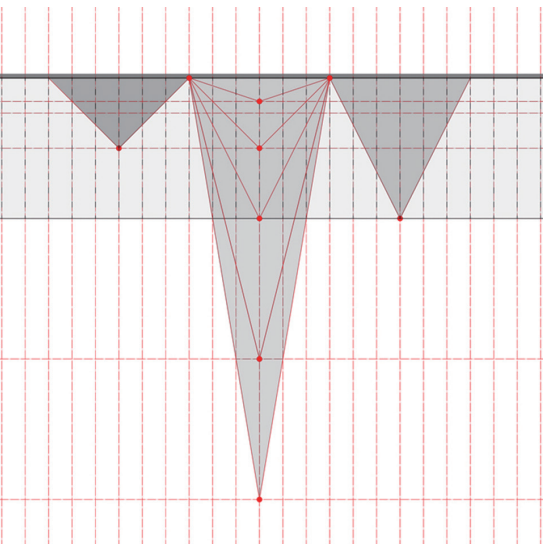
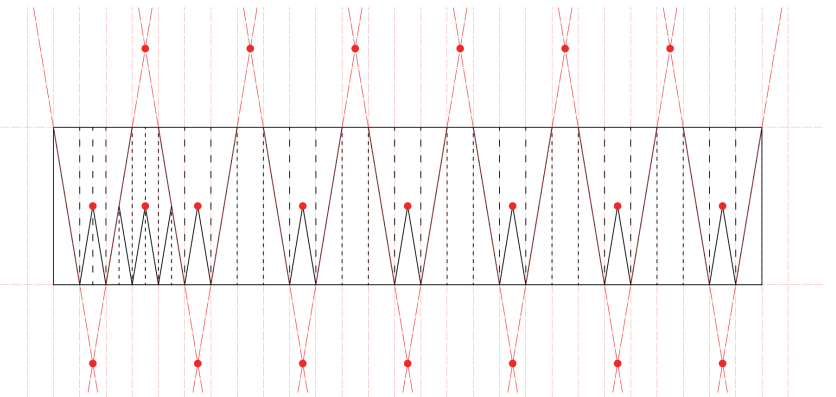
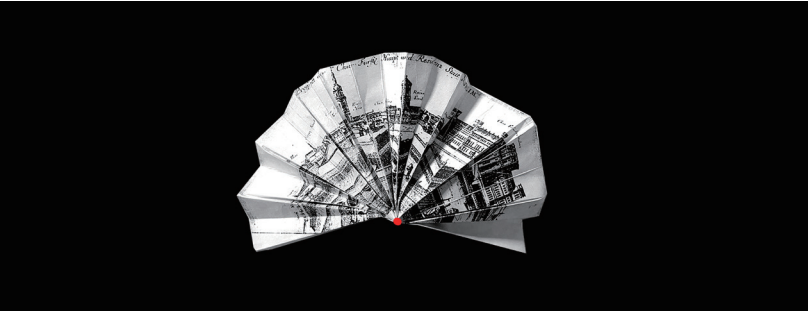
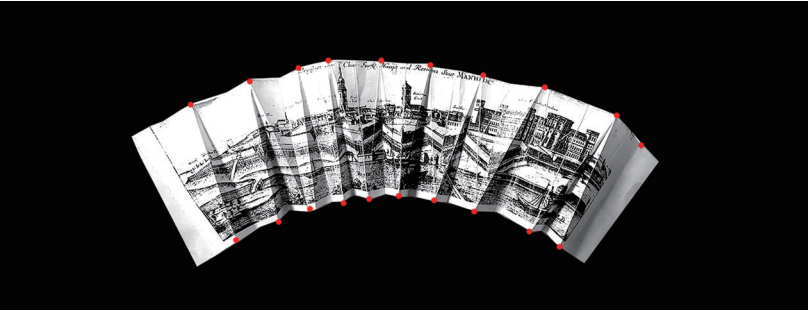
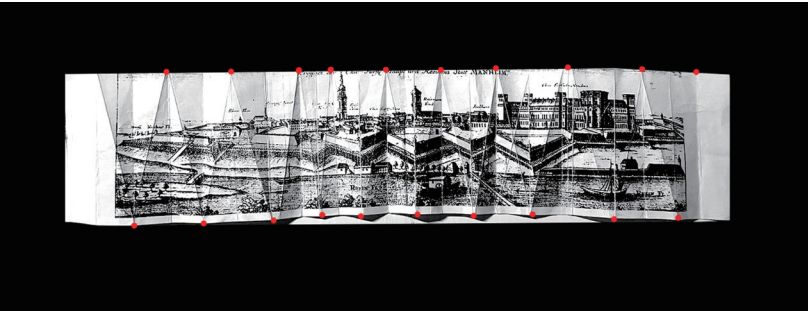


Floding Paper Archives

Fengshui maps and defense maps both use a common language using **Visual (Perspective) Framed schemas** to generate continuous or complete panoramas **in Units**. Try to decompose the map (plan) to realize the conversion of the two readings. Origami provides an understanding of **how the units are connected**, and the core from the plan to the three-dimensional is the beginning to **hide the area**. There are generally **multiple moving points** in different sites, and the original **boundary** is often natural river or mountain, also the boundary of the city.

Decomposes its shape into units, those down-to-earth things that are only available in a speciPc sitcan appear in other forms in other places. This **operability** can be used to generate new schemata. From point to line, from closed to long roll, from inoperable to operable, thus this **skeleton can accept other forms, sites, functions**. Its logic, then, exists prior to a form, but also comes to constitute the form in a new way. Which allow for transformations of themselves which are "prearranged but still unforeseeable."

2.2 Decomposition rules for visual units



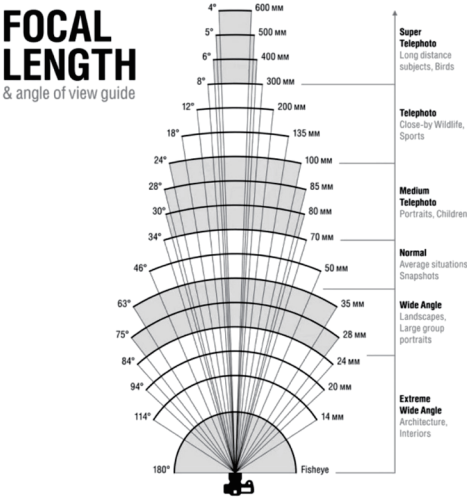
Focal Length

The angle of unit is constant
What changes is distance (inside,on,outside)
between the point and the boundary
The closer you get
the more an arc is read as a straight line
The relative disatance relationship between
points and boundaries (Frames) is to control
the radian and the direction of bending

2.2 Decomposition rules for visual units

Fractal

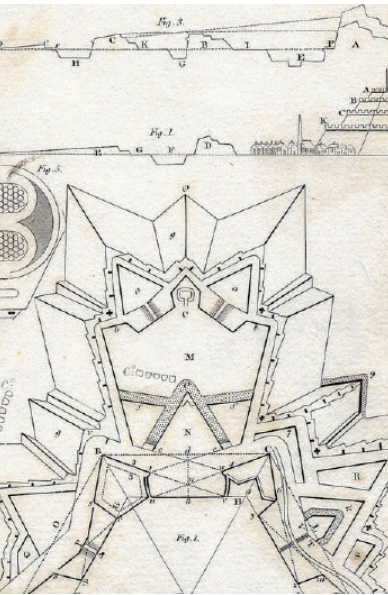
Vision recognize different content at different angles, the segmentation rules have different scales. Which means that the unit module can **be subdivided**. Divide the Feng Shui map at different angles. The **scale** of the Prst level is divided according to the natural boundary.



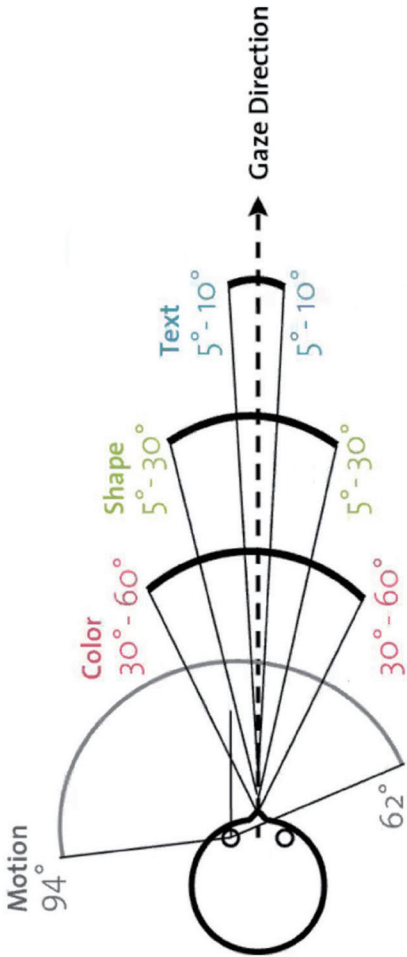
Camera Angle



Yamagata



Fort's projection angle



30° Each Bod
60° Infrastructure (road/farmland)
120° Natural boundary (water,moutain,valley)

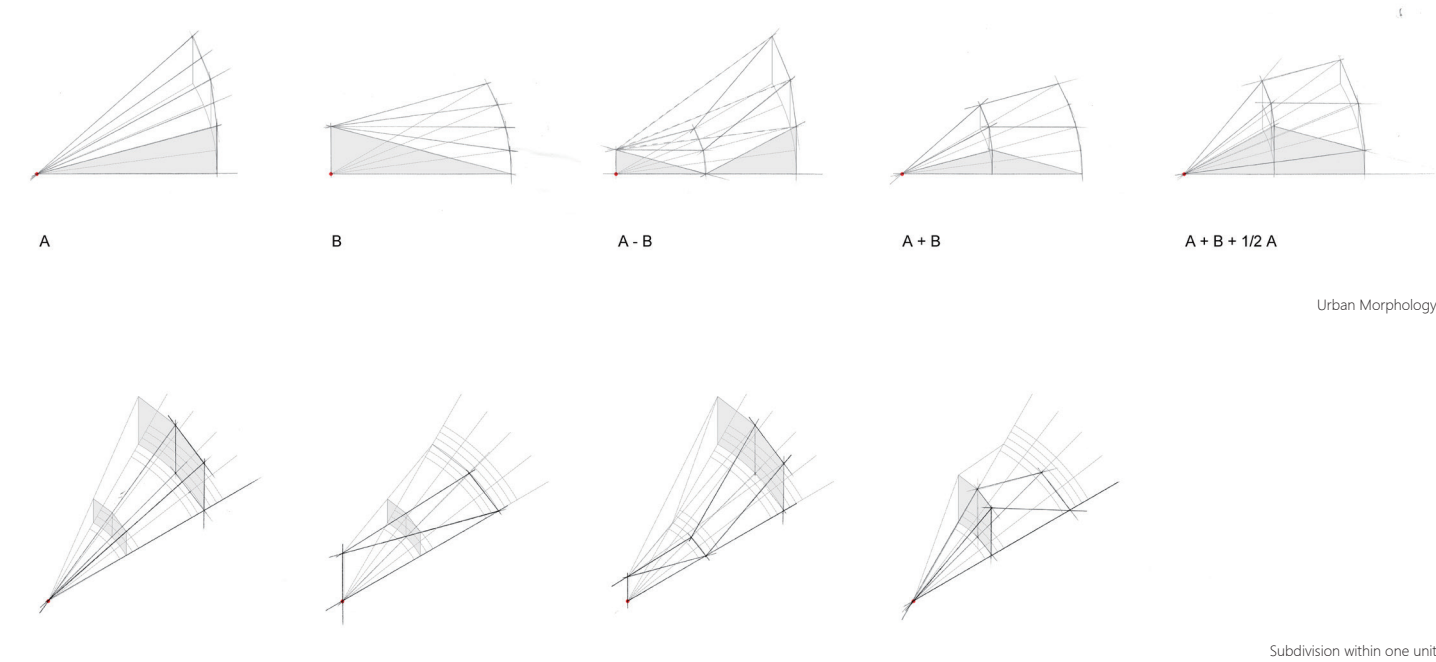
Urban Aggregation Morphology Experiment

3.1 Urban unit modules

Procedure : Point - Line - Area (aggregation of units in plan) - Volume (height, aggregation of units in section)

Unit Aggregation - to establish a new visual layer of the city

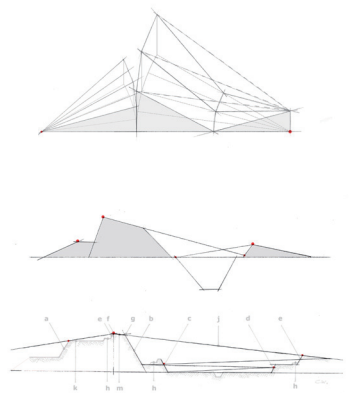
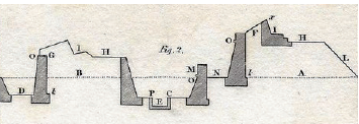
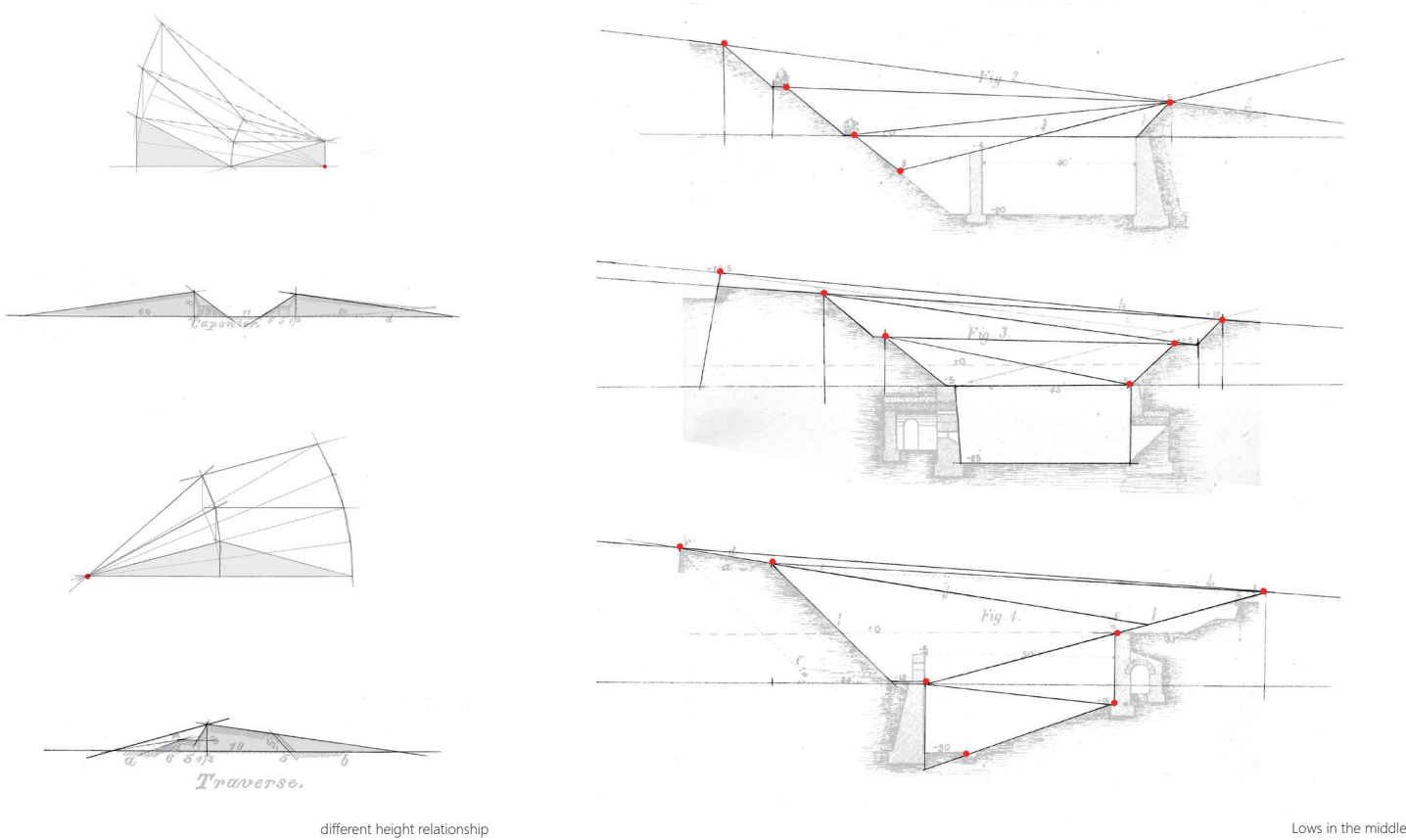
District block typology



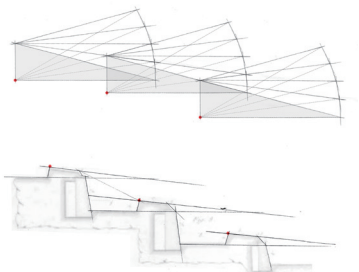
3.2 Aggregation of visual prople

Using the ground trenches section of fortifications as a metaphor for the city prople

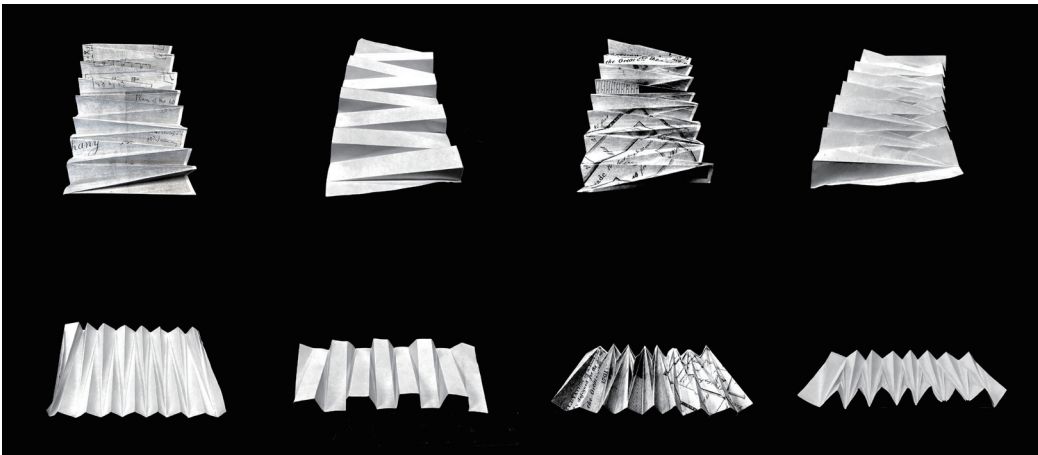
Superposition of visual triangle in vertical direction



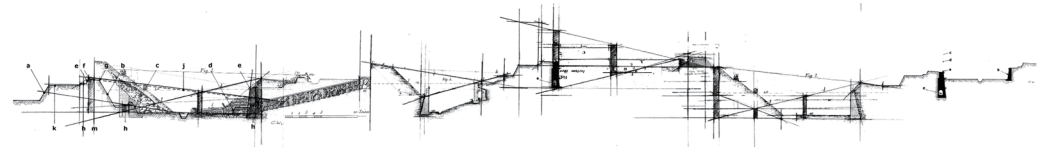
Combination of high and low



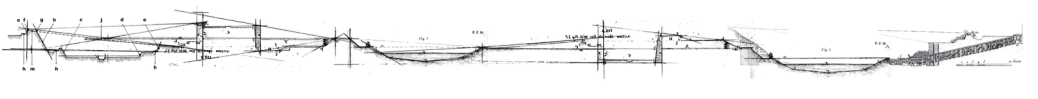
Terraced visual triangle overlay



Sectional shot of an origami model

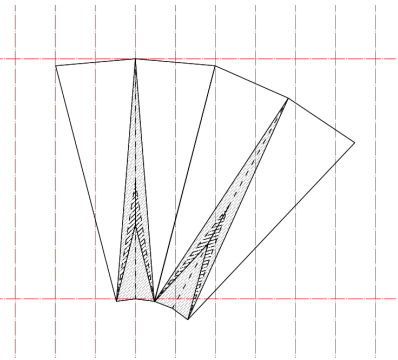
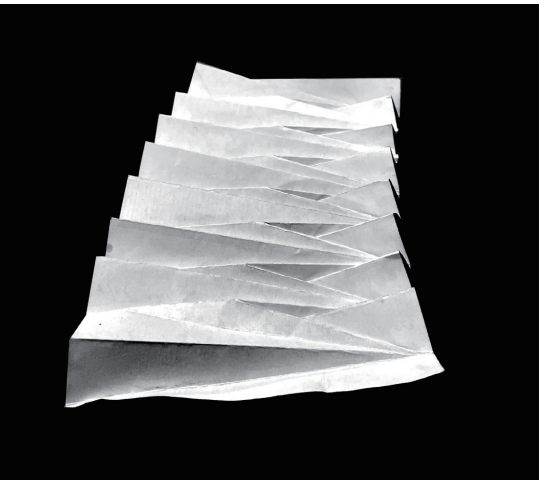


Imaginary collage of city sections

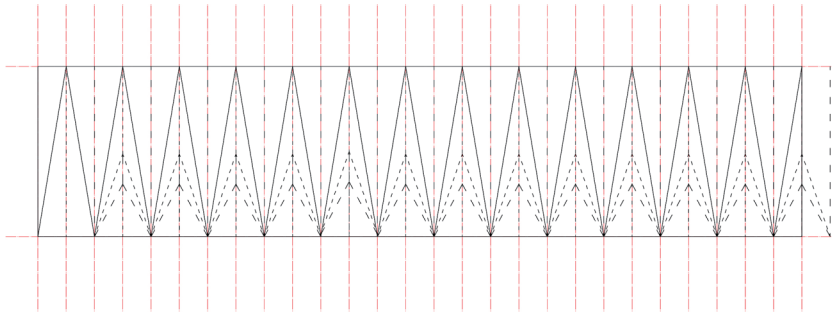
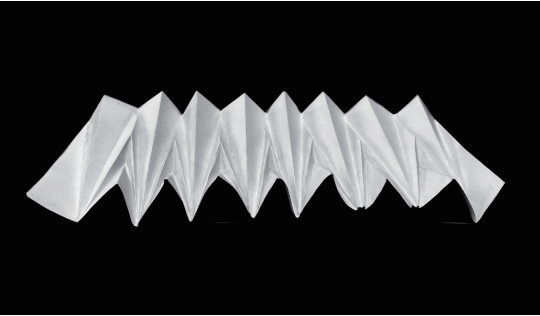


Imaginary collage of city sections

Berg or Burg - Both come from an old word meaning 'high place'. Berg means mountain; the English equivalent lives on only in the old meaning of 'large grave mound'. The variant burg had the meaning of a high place that is defensible. **Tel** - An ancient mound built up out of successive layers or strata of occupation. Tels are man-made hills, which were fortified and equipped with water supply, gates, high walls, and other protection measures. Most of the major Biblical sites were built as a fortified city, and their remains can be found in the ruins of the Tels.

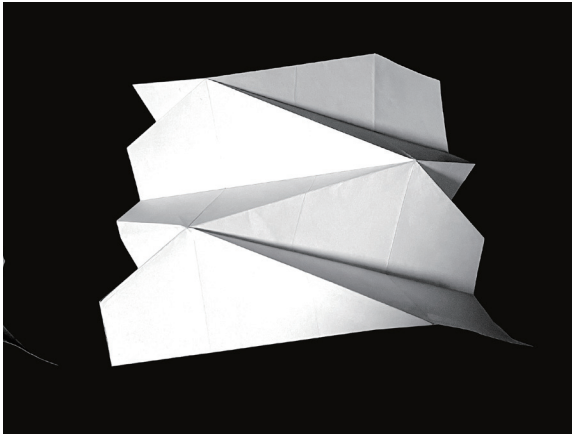


When straight lines become curved, folded areas on the plan are hidden in the section

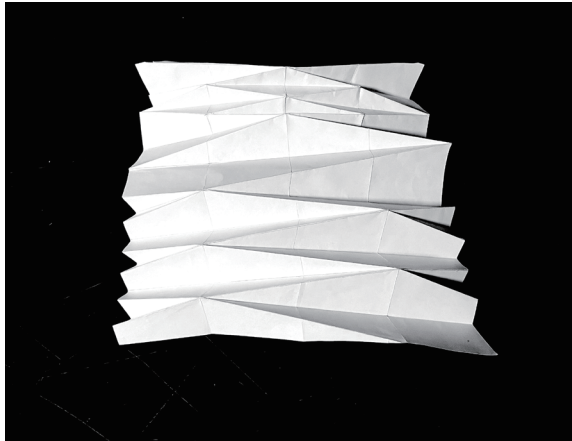


Unit rhythm is determined by the angle and focal length

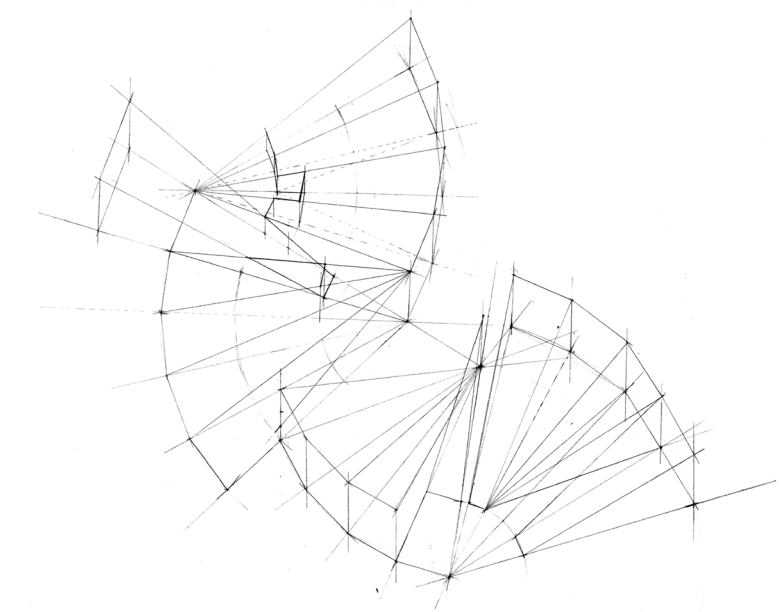
3.3 Preliminary urban aggregation morphology



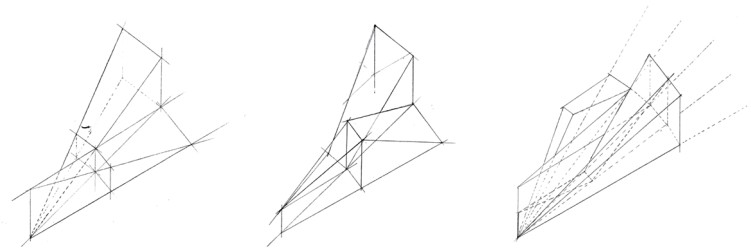
Unit -60°



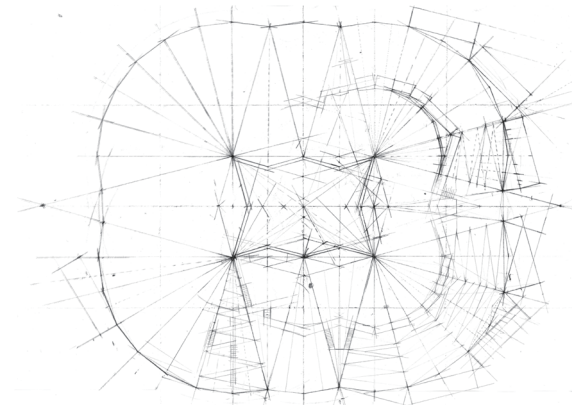
Unit Subdivided to 30° mixed Morphology



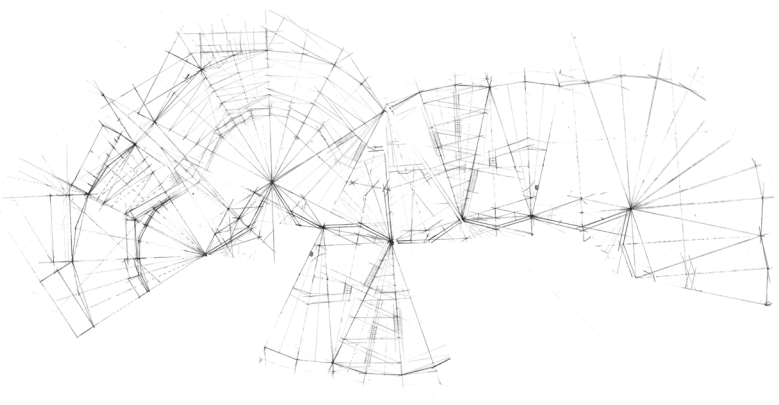
Procedural Aggregation



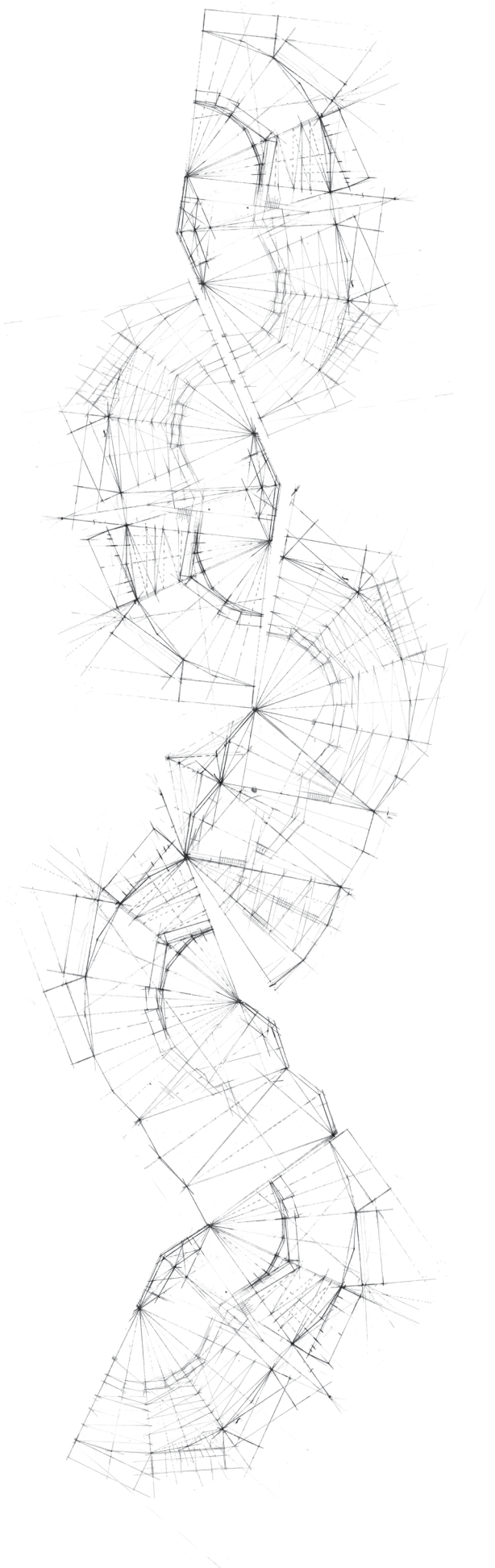
Different combinations of 1/2 units and 1/4 units



A inward city with a fixed viewpoint



Unit disassembly with Scattered perspective



3.4 Create urban grid

City Aggregation Machine- Project for Housing

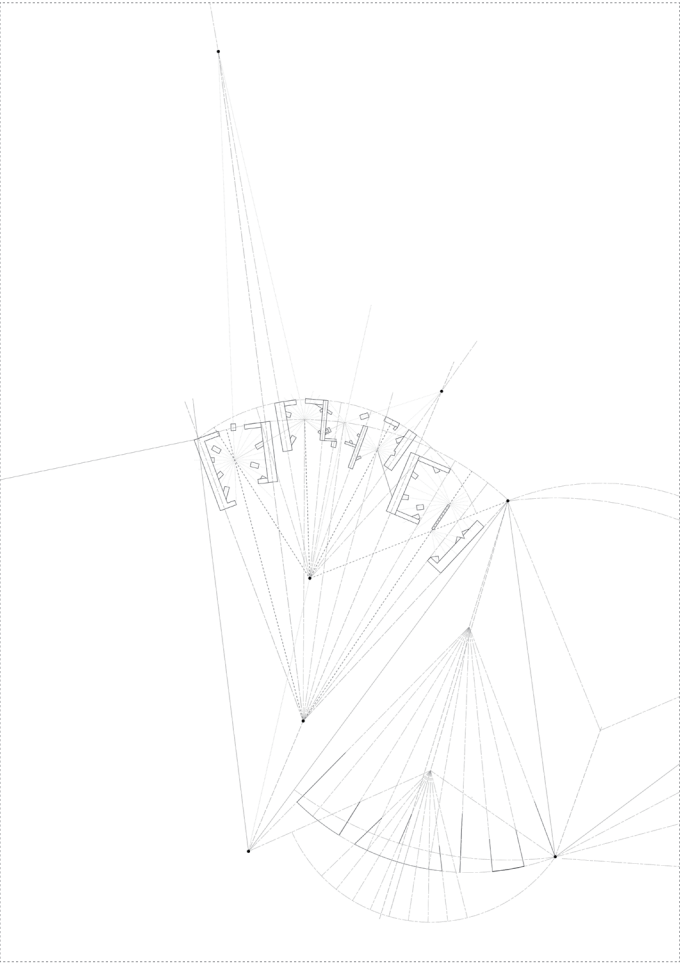
As an autonomous urban structure that can accommodate multiple reading views, in turn , which can trigger people's intuitive schema in it. so as to position ourselves.

Residential district is the object designed to operate the system and skeleton of urban aggregation which **mix of private and public volumes can accommodate a series of events**, it also in itself constitutes an event.

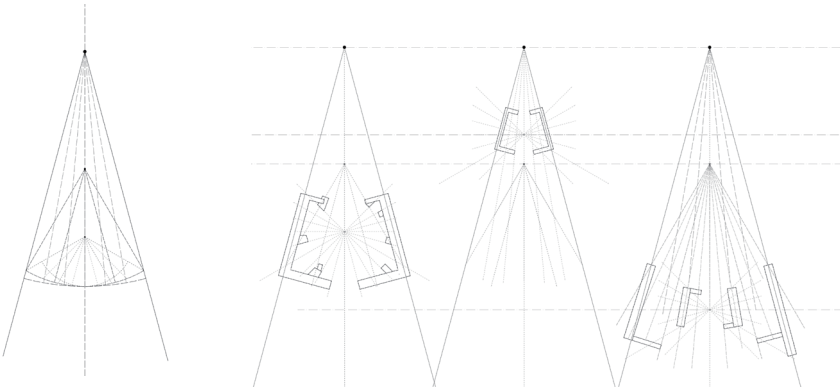
Grid Rules

- a. **Controll the angle** (Buctuating within a range)of each block unit.
- b. The volume of **collective housing** points to the visual point of the city.
- c.The slightly smaller building volume with **shared public function** points to different second-level visual point (outside the community boundary)
- d.**Transport or service infrastructure, such as stairs** in the residential volume (providing a moving body and a moving vision) point to courtyard in the community.
- e. **The transition space** between each units provide **changes in perspective direction** through some kinds of infrastructure like Large corridors, Byovers, parks.

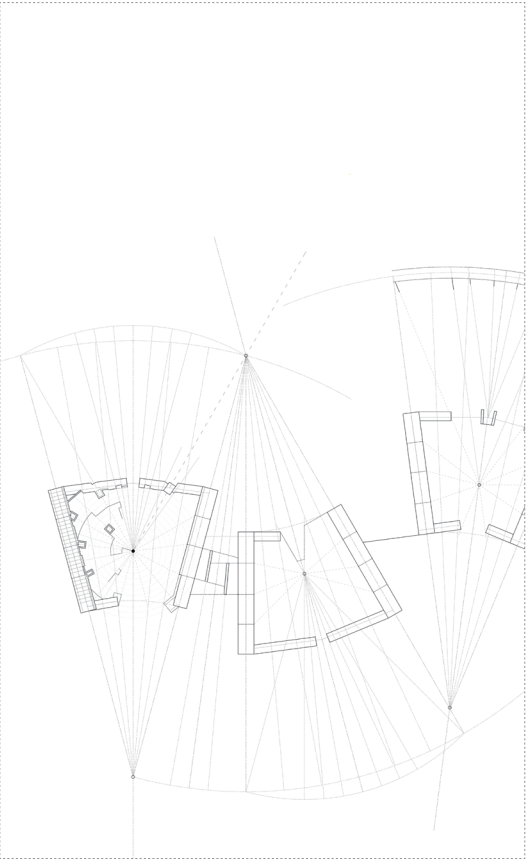
In turn. This visual clue is the schematic route(events) into a dwelling, to identify each neighborhood.



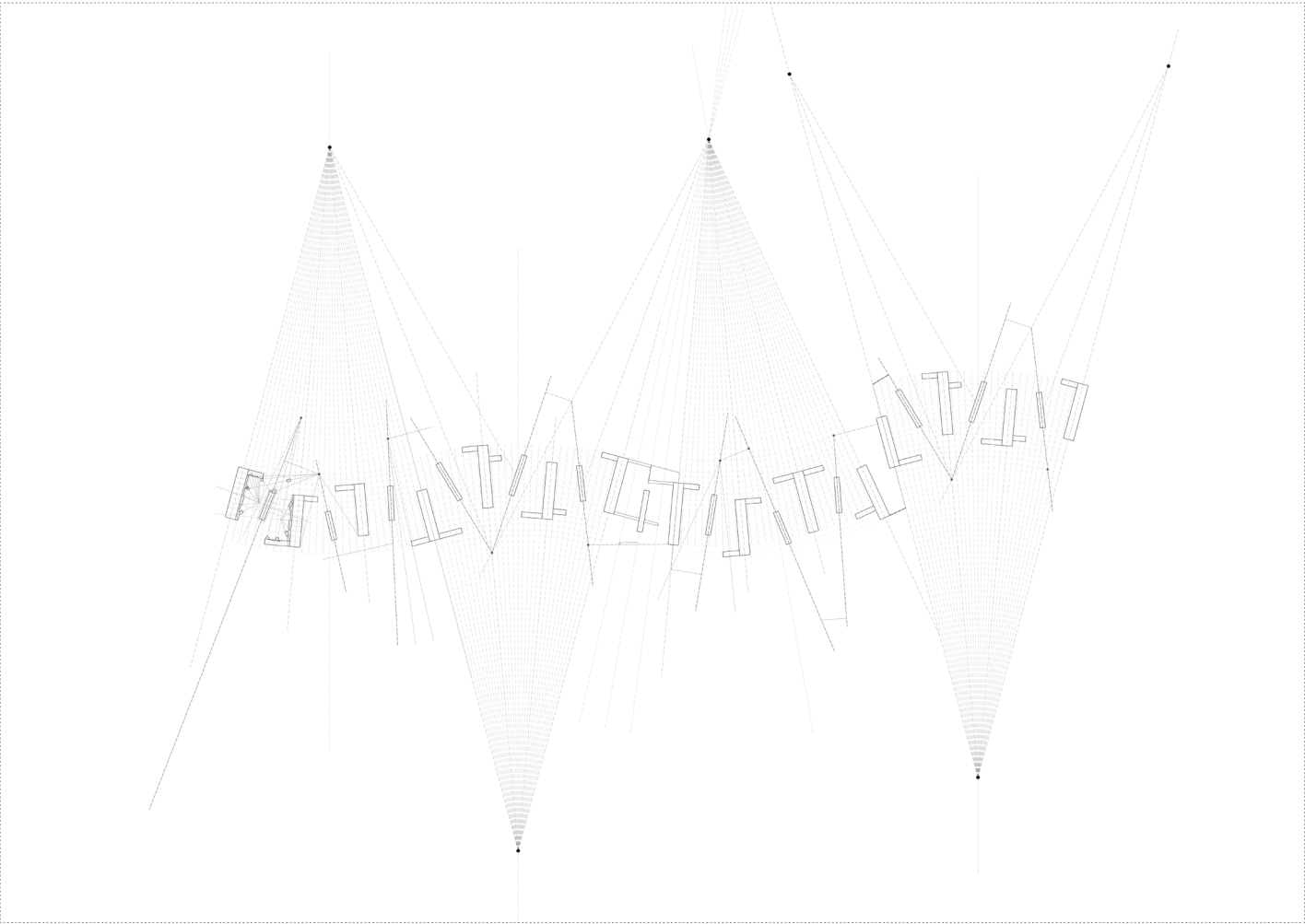
Relative scale, aggregated communities



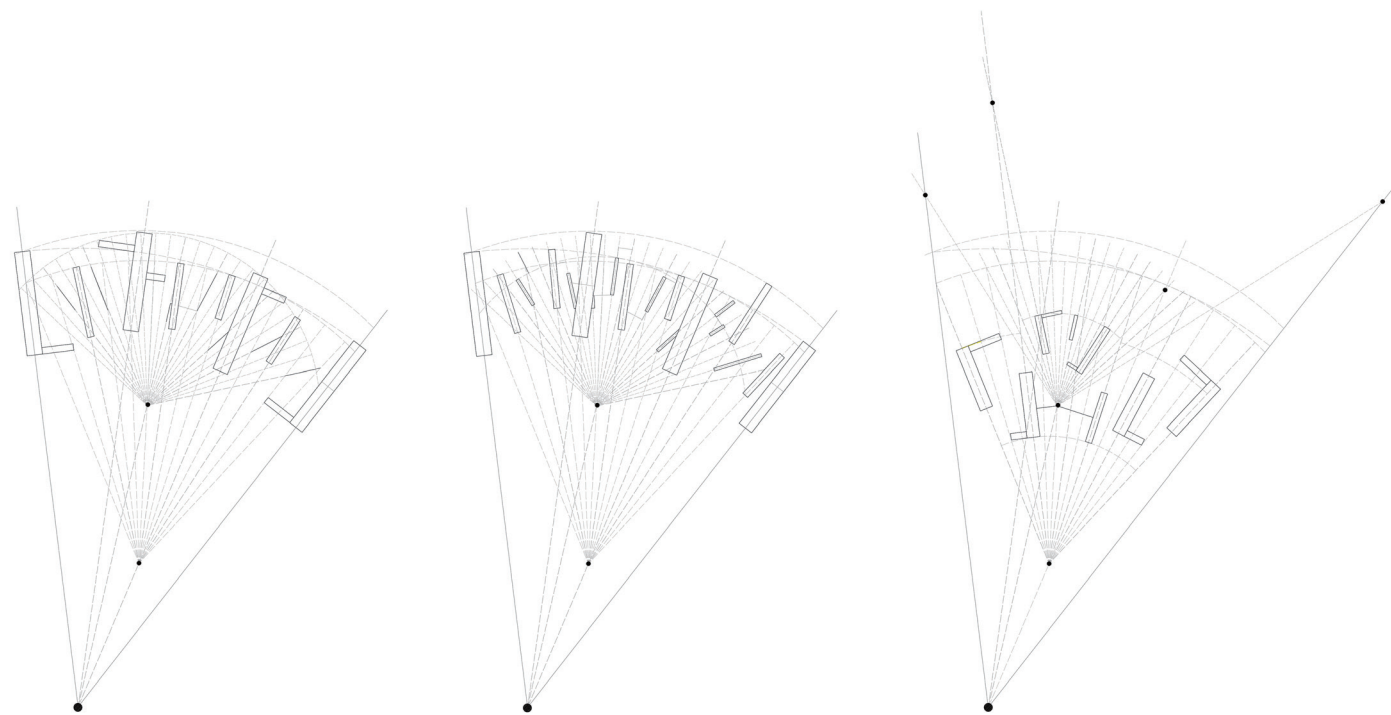
different scales of building volume, or how the building volume is organized



the scale of a residential community



1:250 Aggregated community mass morphology



Mass organization with different scale visual point

3.5 Urban experiments

The **Process** of Drawing= Decomposition
= Aggregation
If it doesn't tell you how to make it, Don't!

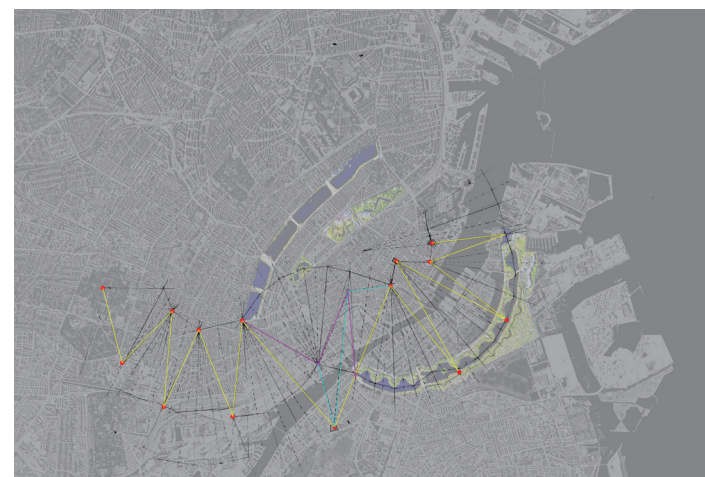
Fixed point: High/ low
High: Natural mountains ; Monuments, forts, elevated etc;
Low: River, valley; Squares, parks, roads-etc

The line of view: 60° - main frame line,
25° ~30° subdivision line of sight

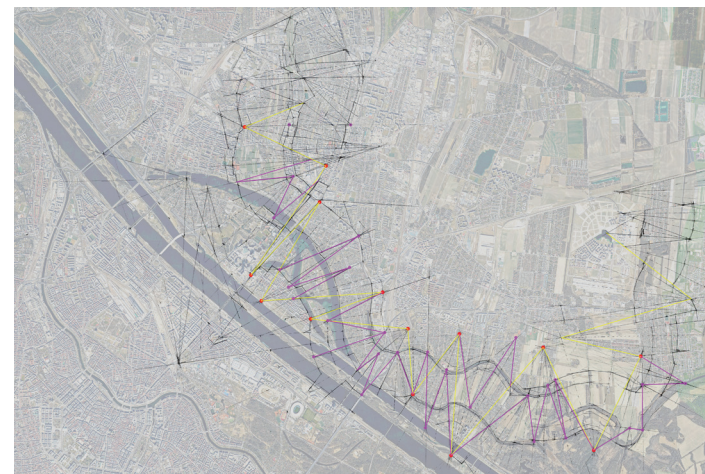
The line of boundary: the natural/infrastructure boundary of site

Secondary points: There are small visual centers or viewing points, but these points are all under the "annotation" of the urban block unit framed by the main point, and they are equal to each other.

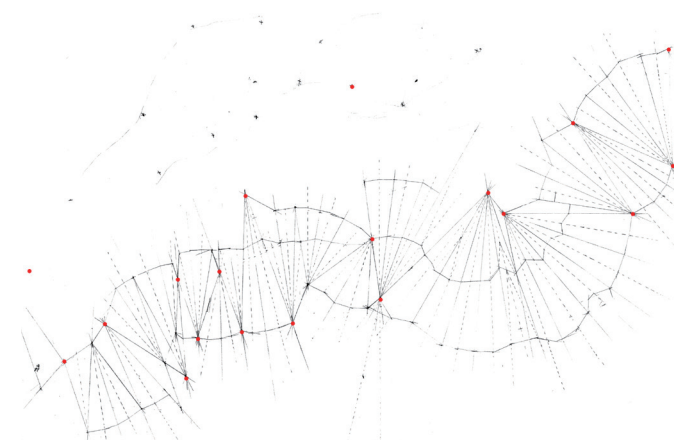
Segmented Line of view: Deciding on Smaller Schemas with more personally Situations. Surroundings that are more relevant to the body.



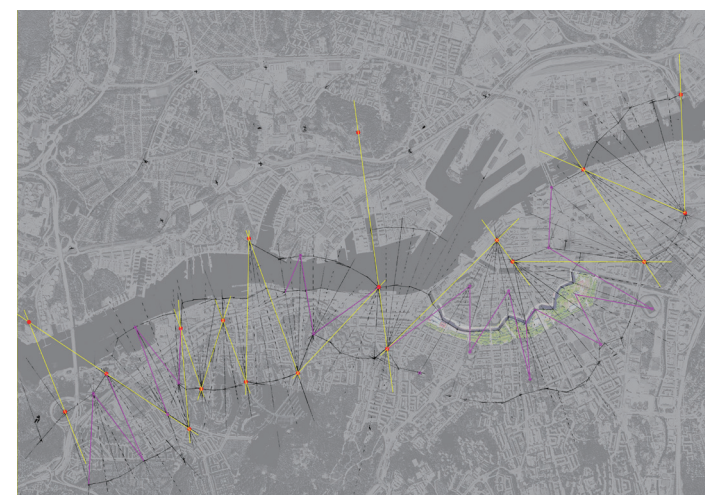
Copenhagen



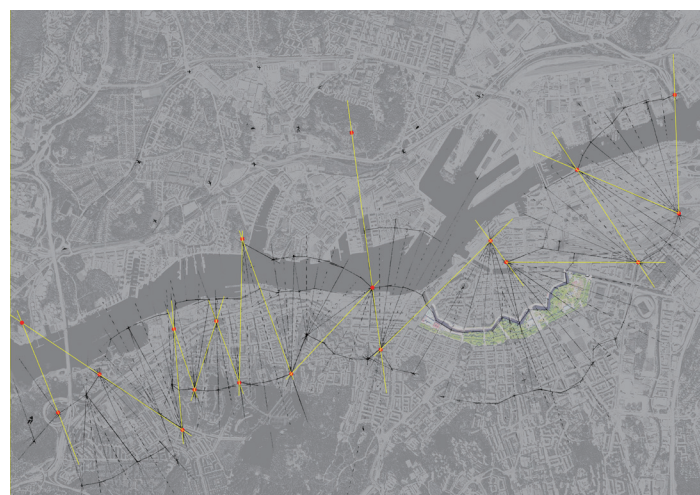
Wien



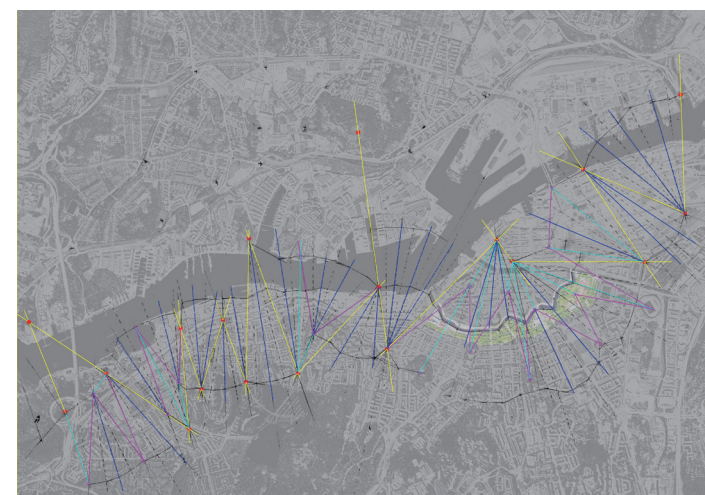
Gothenburg 1



3



2



4

What will happen when the grid meets the specific territory of the city ?



Site Map, Wien

Residential Community Projects

4.1 Vienna's fortification walls and river border

Site : Vienna

Describe important viewpoints, collective public space inside and outside the (double) fortification walls in the old map. (in red). The "Ringstrasse"-period, the splendid boulevard with its many stately public buildings, which was built in lieu of the fortifications at the time.

Analyze high points in urban status: historic buildings, or hillsides, As the visual planning point of the largest level.(in red, site map)

- 1.Heiligenstadt St. James's Church,Catholic church
- 2.Pfarrkirche hl. Josef, Catholic church
- 3.Katholische Kirche St. Johann Kapistran (St. Johannes de Capestrano),Catholic church
- 4.Donaufeld Parish Church
- 5.Brigittakirche, Katholische Kirche St. Brigitta

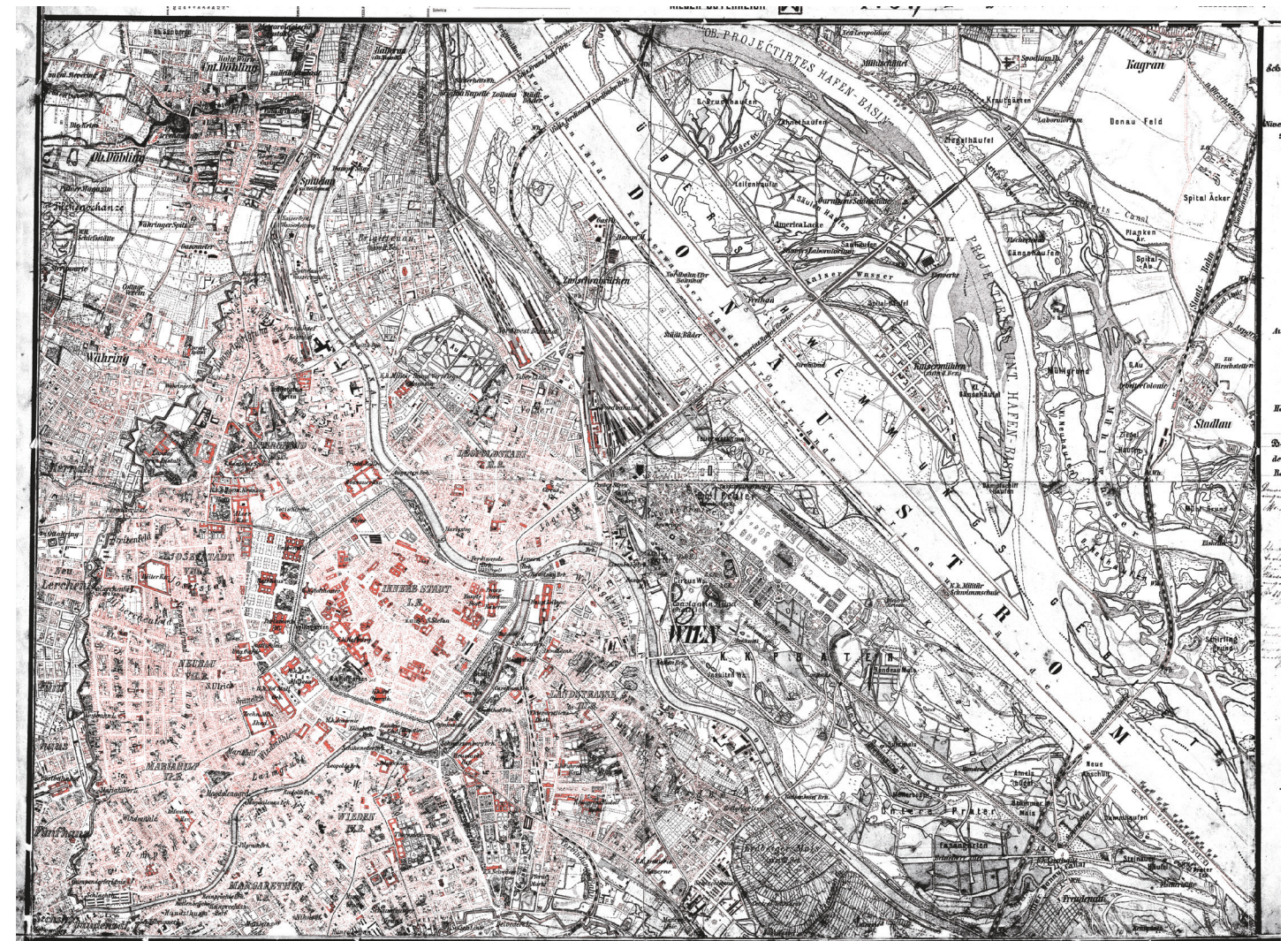
Residential Project:

a Karl Marx-Hof, b Wohnpark Neue Donau

Borrowing the scale of collective housing precedent, then apply the new urban aggregation grid.



Wien's fortification wall collage



Wien City Map, Project of the Ringstrasse,about 1860



4.2 Site grid and urban plan

The **river** acts as a large boundary with a width of **250 meters**, which serves as the north-south boundary of the residential block. The east-west boundary is framed by infrastructure such as roads and elevated roads.

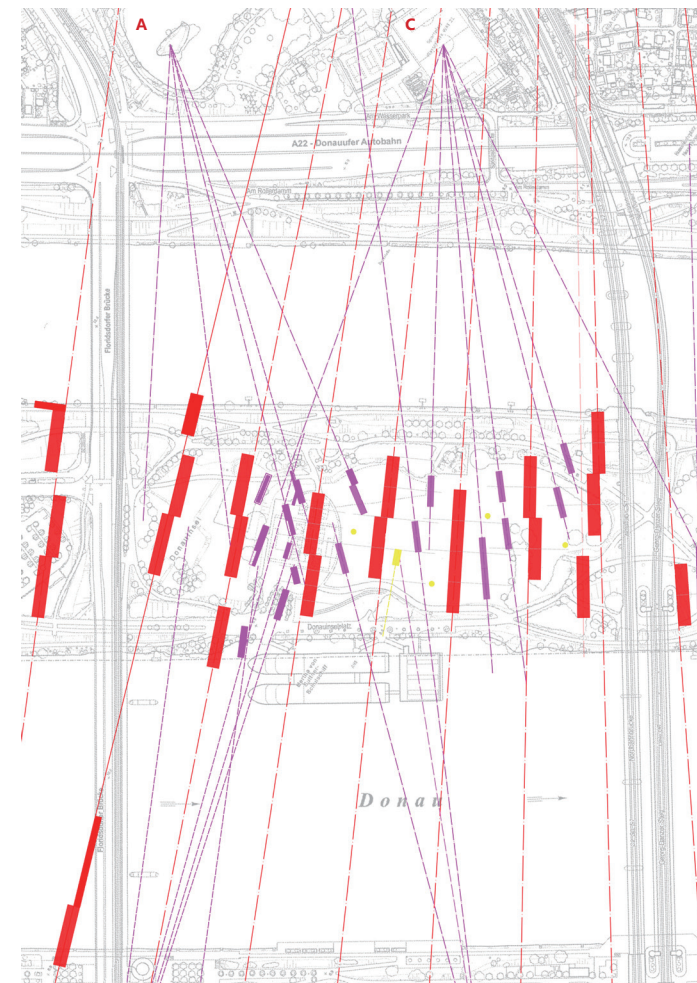
Subdivision **angle** within first vision point: **3~4°**

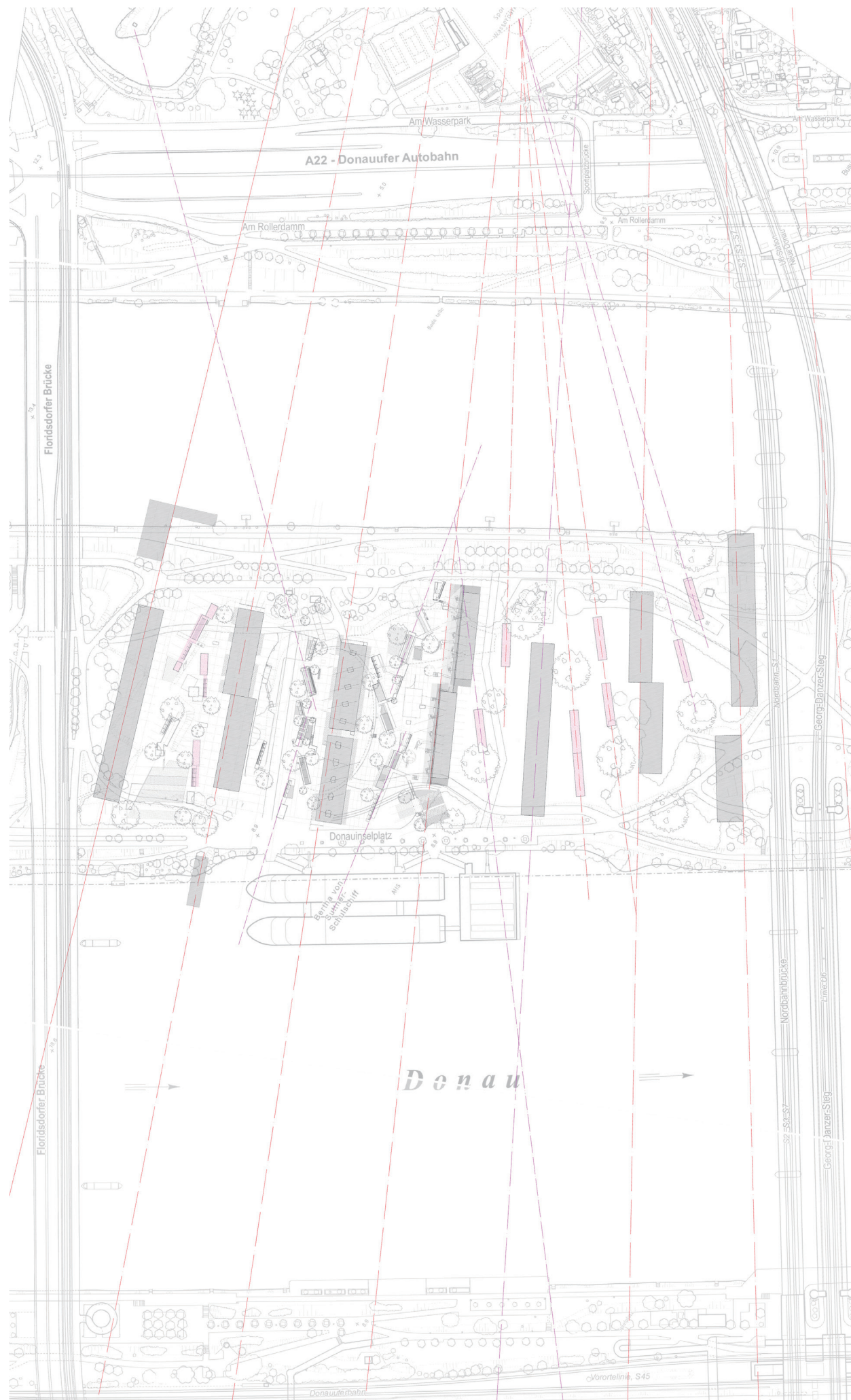
The **gap space** between two residential volumes is about **60-70 meters**.

The length of one housing building is **65m**, a group is **130 meters**.

The **Housing volume** points to the *first-level urban visual point*, the volume of the **shared space**, and the **collective public service** buildings point to the low point of the *second-level urban public space*.

- A. Reiherinsel im Wasser Park
- B. PA Friedrich-Engels-Platz Playground
- C. Athletic field, Wiener ASVÖ Team; Sports club, Tennis Club Vienna 2013
- D. Handelskain, Train station
- E. Islamic Centre of Vienna





Urban Community Plan

4.3 Description of shared space in Community and housing

Function Classification of Shared Space in Community

Buildings points to secondary viewpoint on the both(N,S) sides in the city,
The **turning point** corresponds to the entrance of each housing building.

Service Function

- a. 5 meters wide: Laundry room, Reading room, Gardening room, Tea house, Garbage room, public toilet ,indoor gym+locker, day care, etc.
- b. 2.5 meters wide: Single airport, Pavilion, Corridor, Stairs, Bus stop.
- c. High points: Observation stages, Towers, Elevators.

Open space between service spaces and housing:

Community entrance, Courtyard, Outdoor theater, Plantation or Gardening place ,playgrounds, Sports pelds, Yoga grass , outdoor pool etc

Conceptual Plan of Housing Type

Operating elements for positioning in Housing type:

These directional semi-public spaces point to shared service buildings and open spaces between them, which are also areas where residents can add and manage spontaneously.

A

Inner Courtyard: Shared by two households or exclusive to one household

Entrance with balcony/deep window, private garden

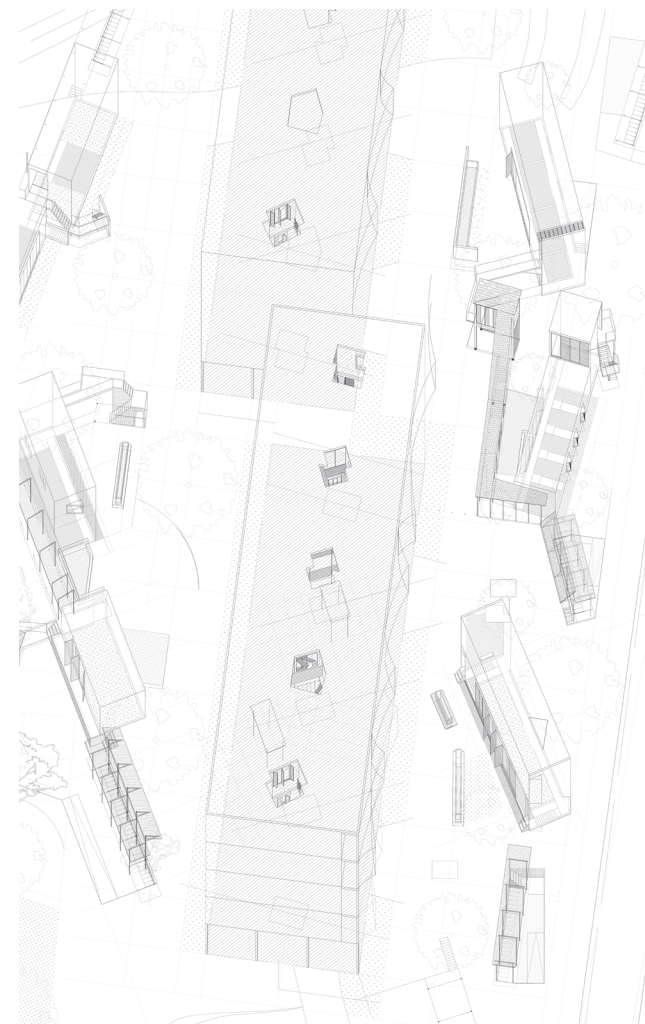
B

External stair system

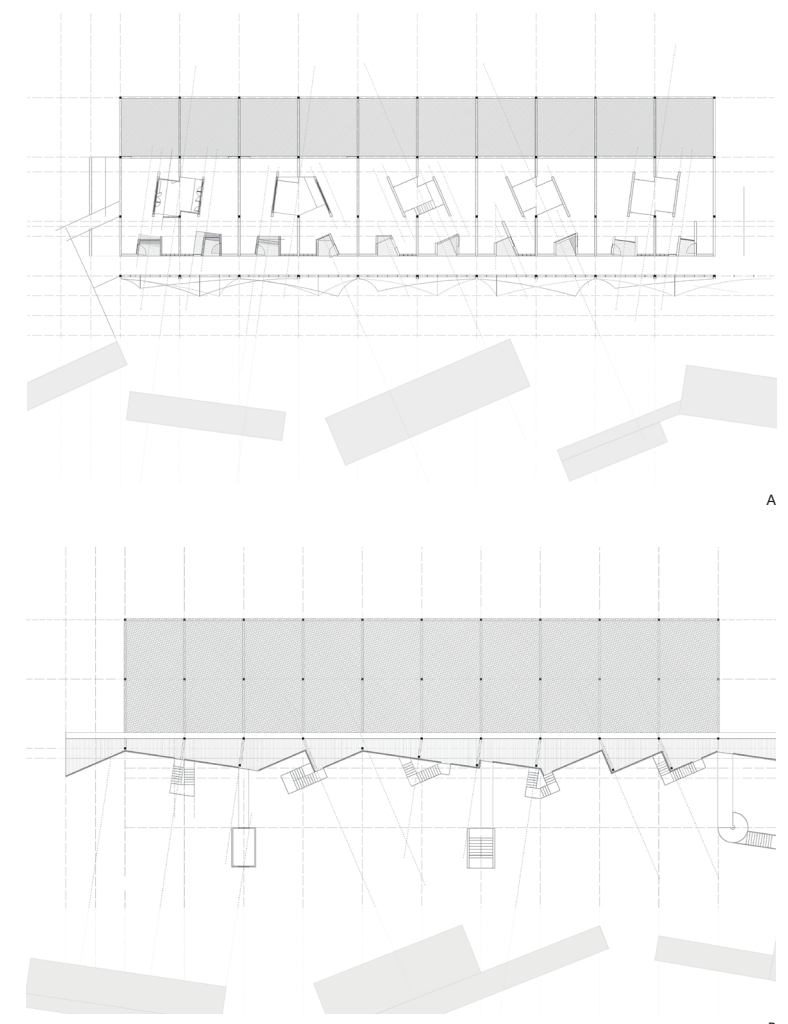
Fire stairs, elevators or spiral staircases for whole dwellings, Loft type,the **light stairs and entrance space** of every two households



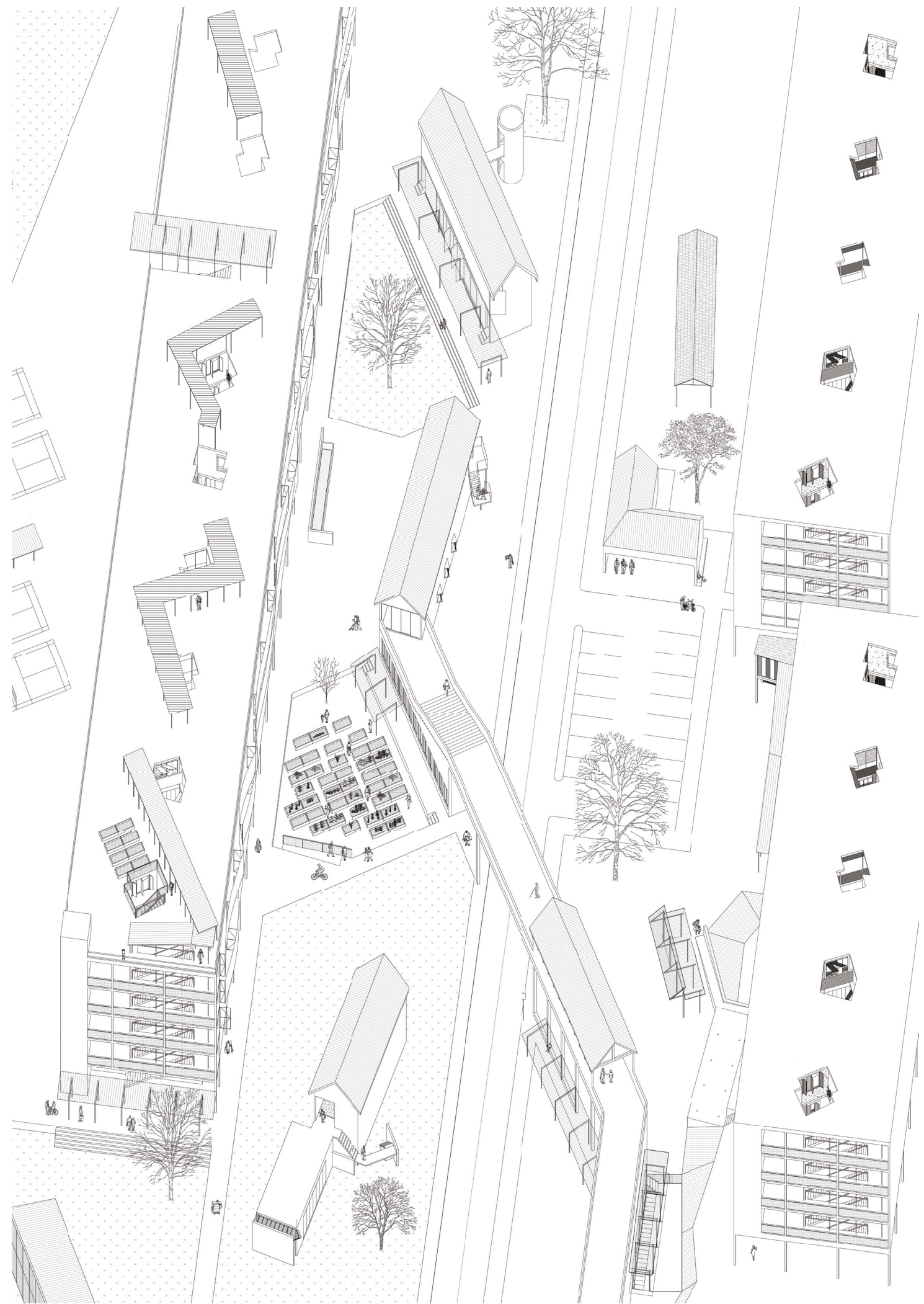
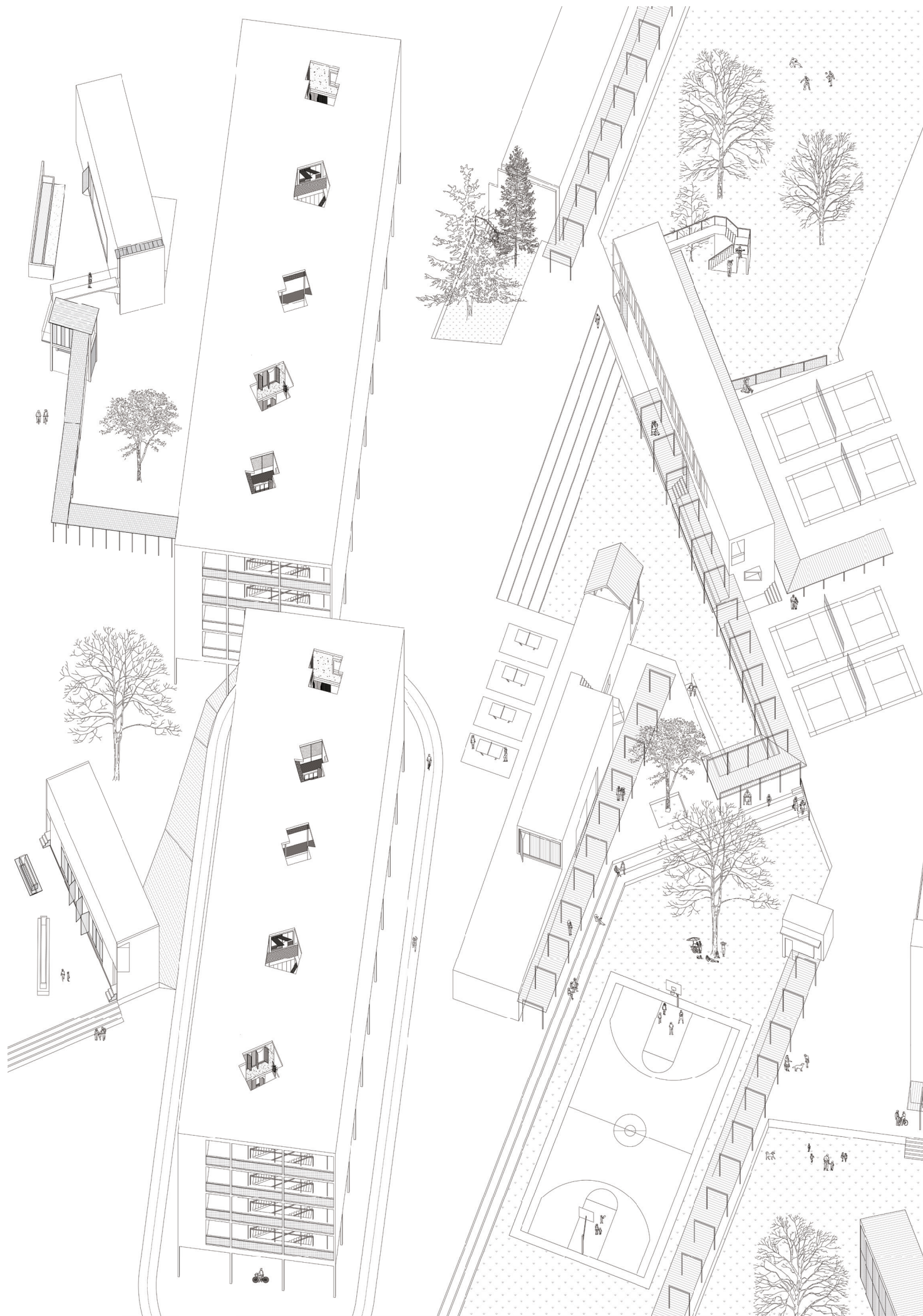
spatial schema of between space



Housing and Community



B

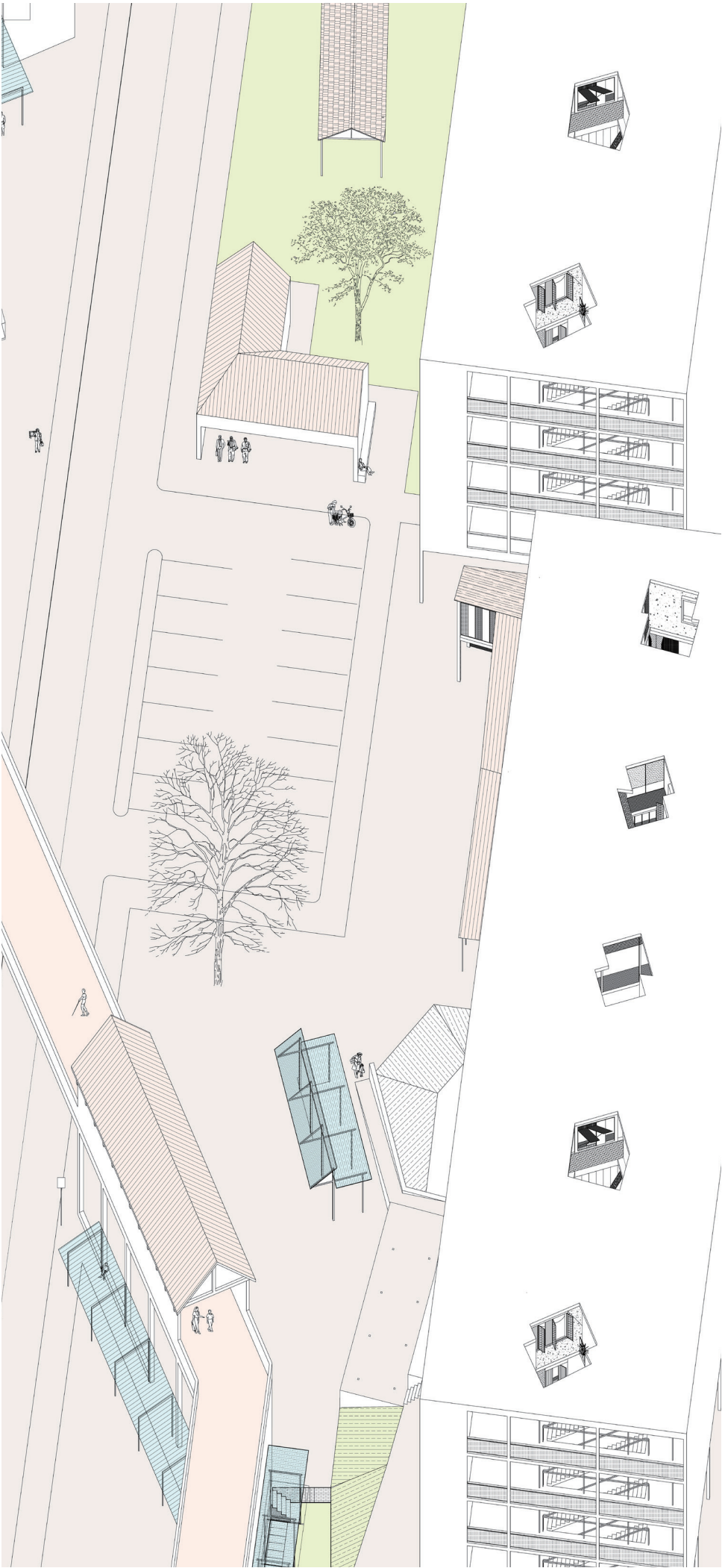




Laundry room

Community Garden

Daycare
Reading room

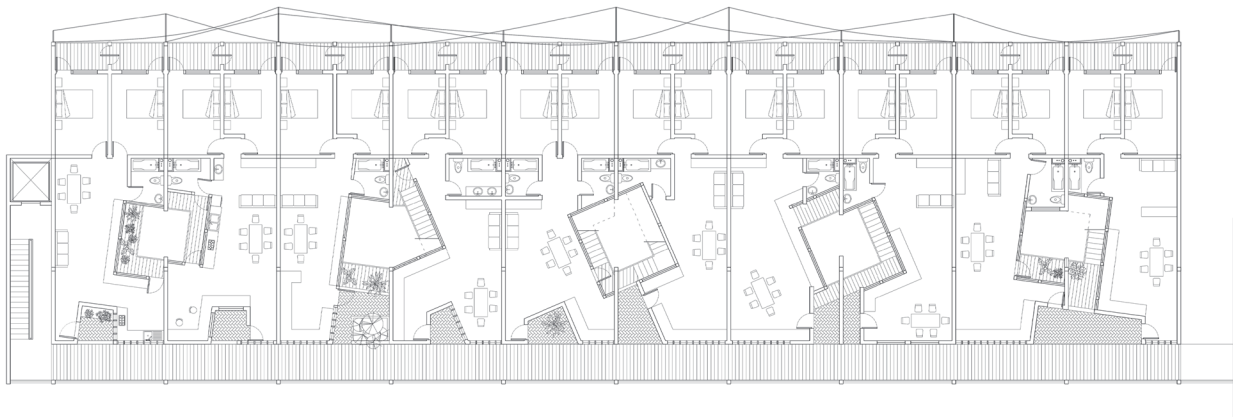


Pre lanes

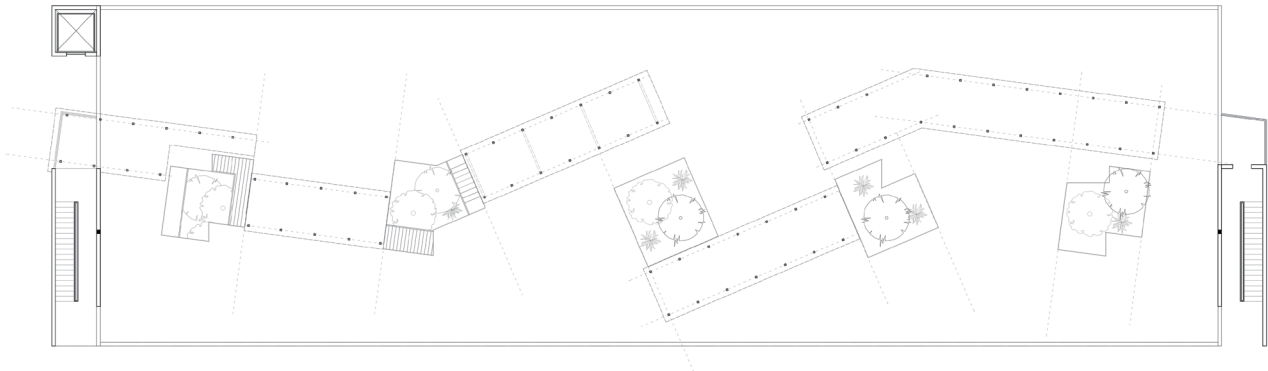
Pavilion

Bus stop

4.4 Design of housing project



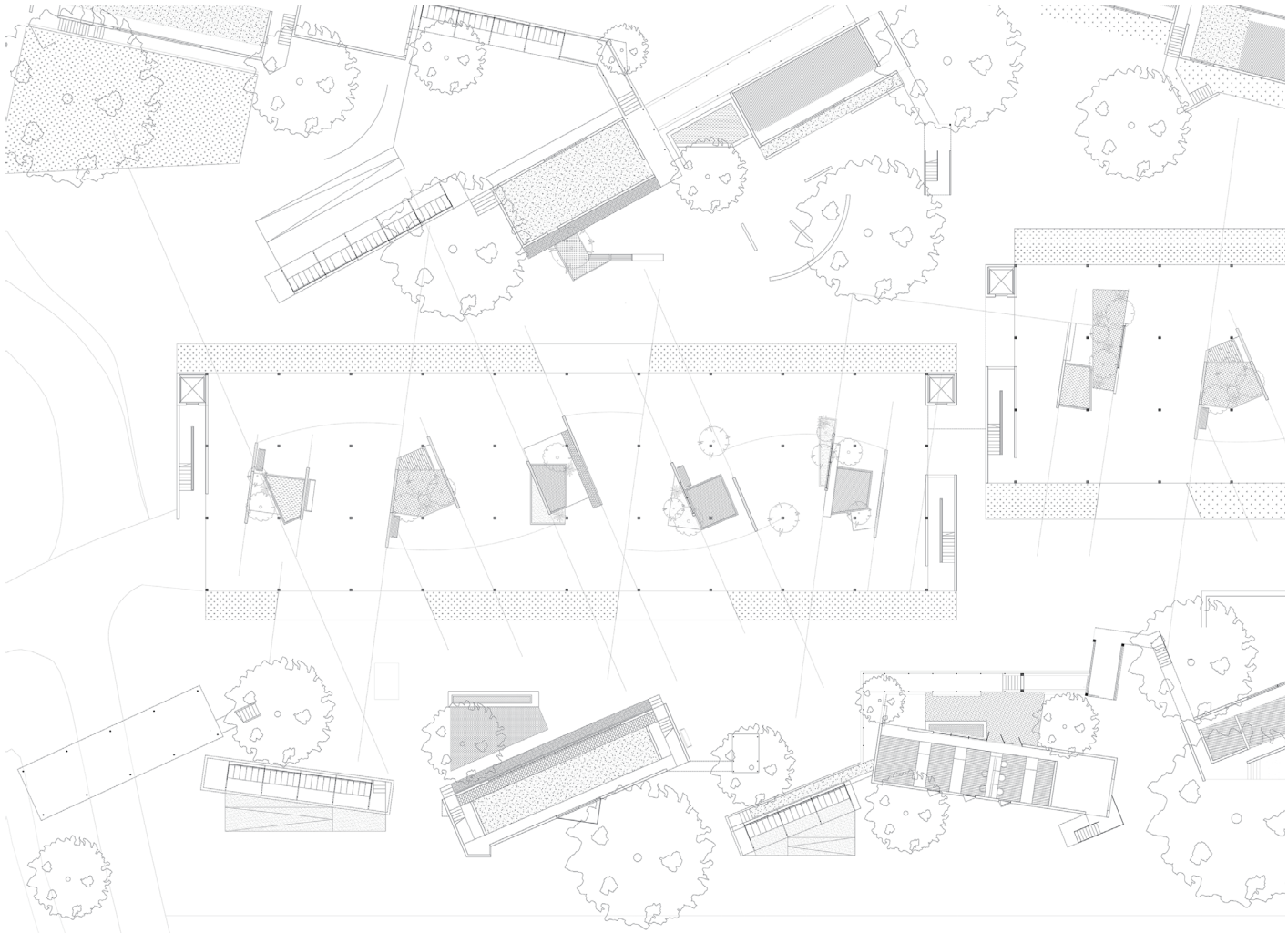
Floor Plan 1:300



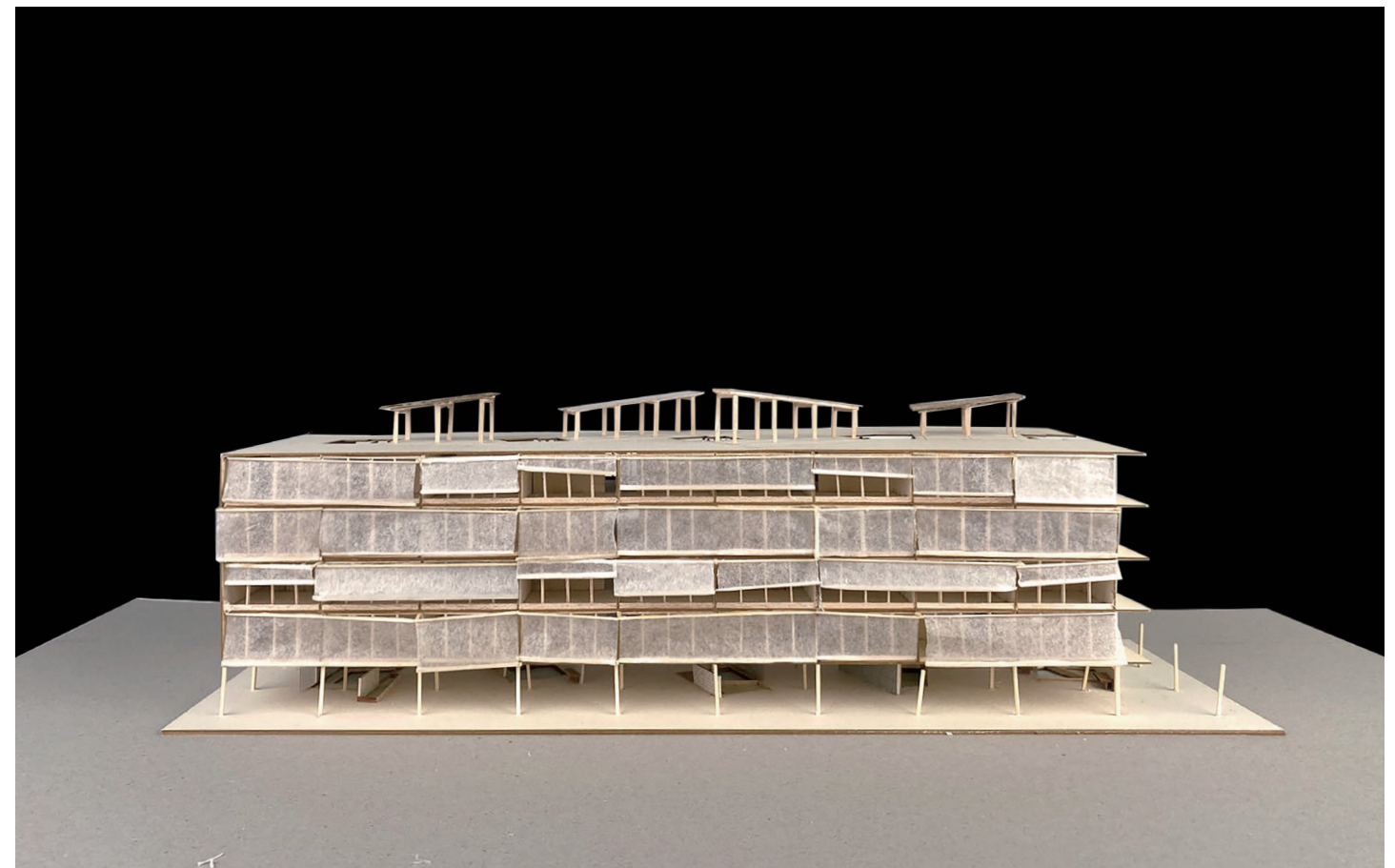
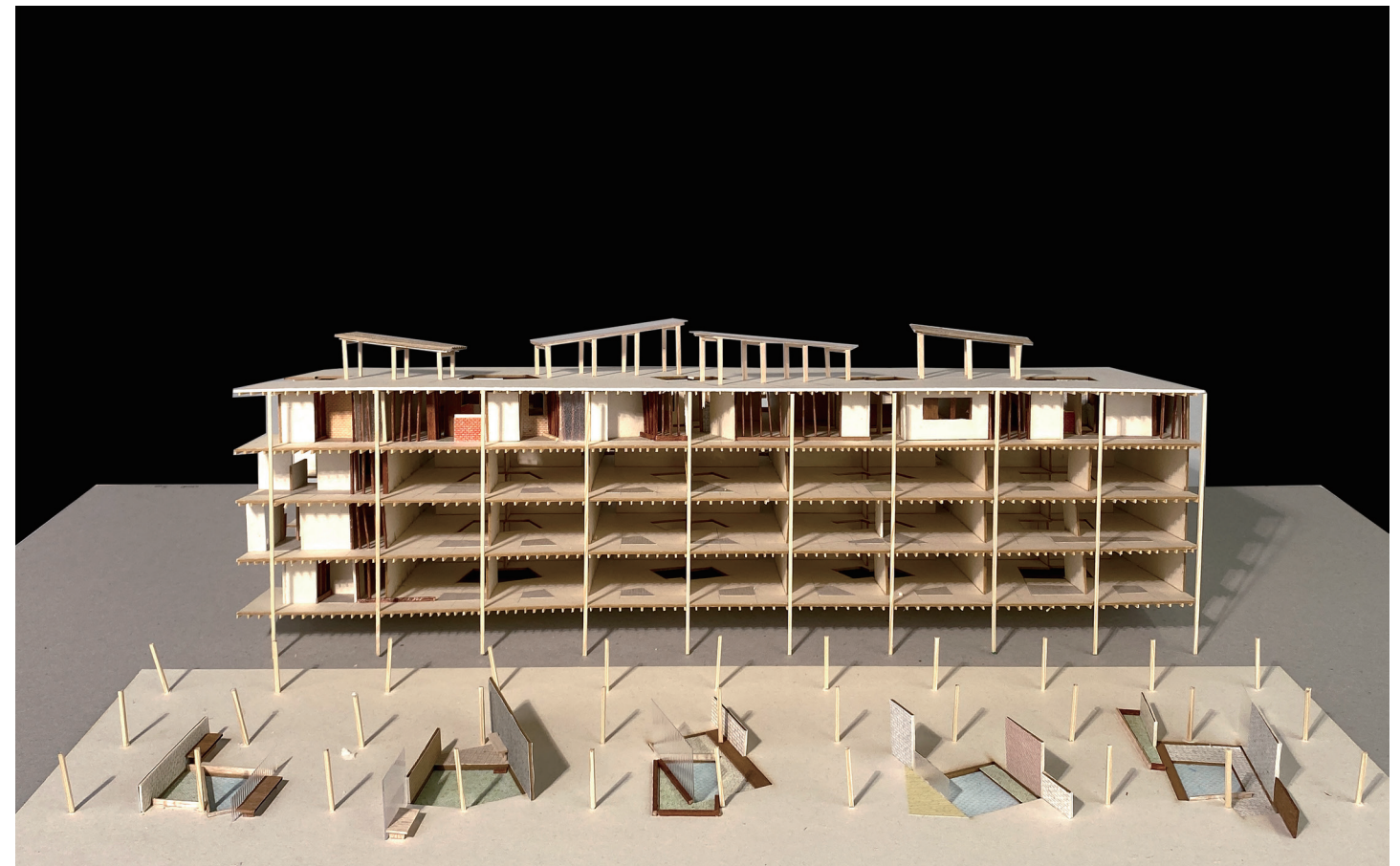
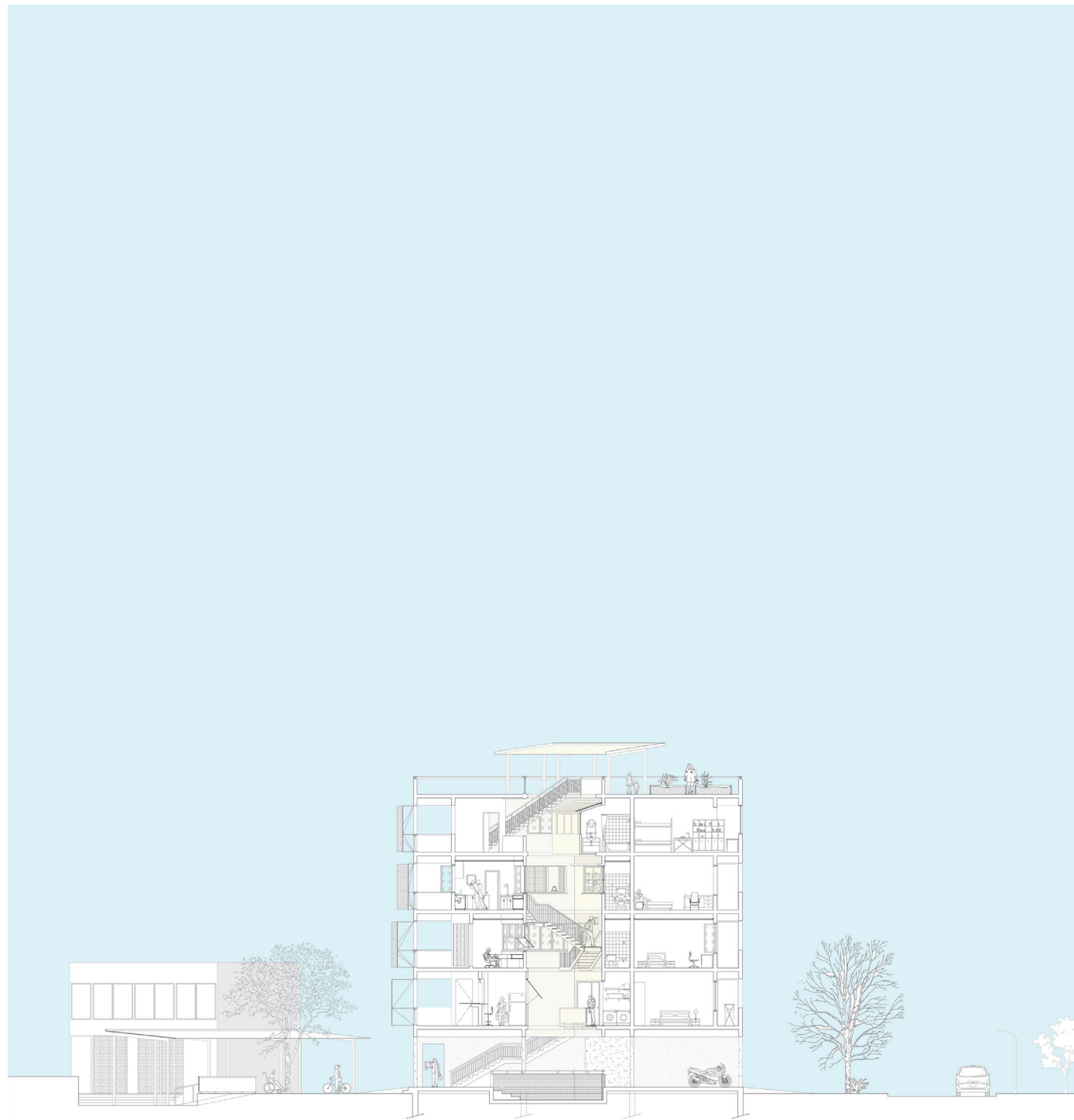
Roof Plan 1:300



Floor Model



Ground Plan 1:400



Ambi-formalism

Swallow dichotomous opposites.

Restore the body as the measure of all things; know where you're looking from!!!

If it doesn't tell you how to make it, Don't!

Ambi-formalism is formulation

Shudi Sun · KTH