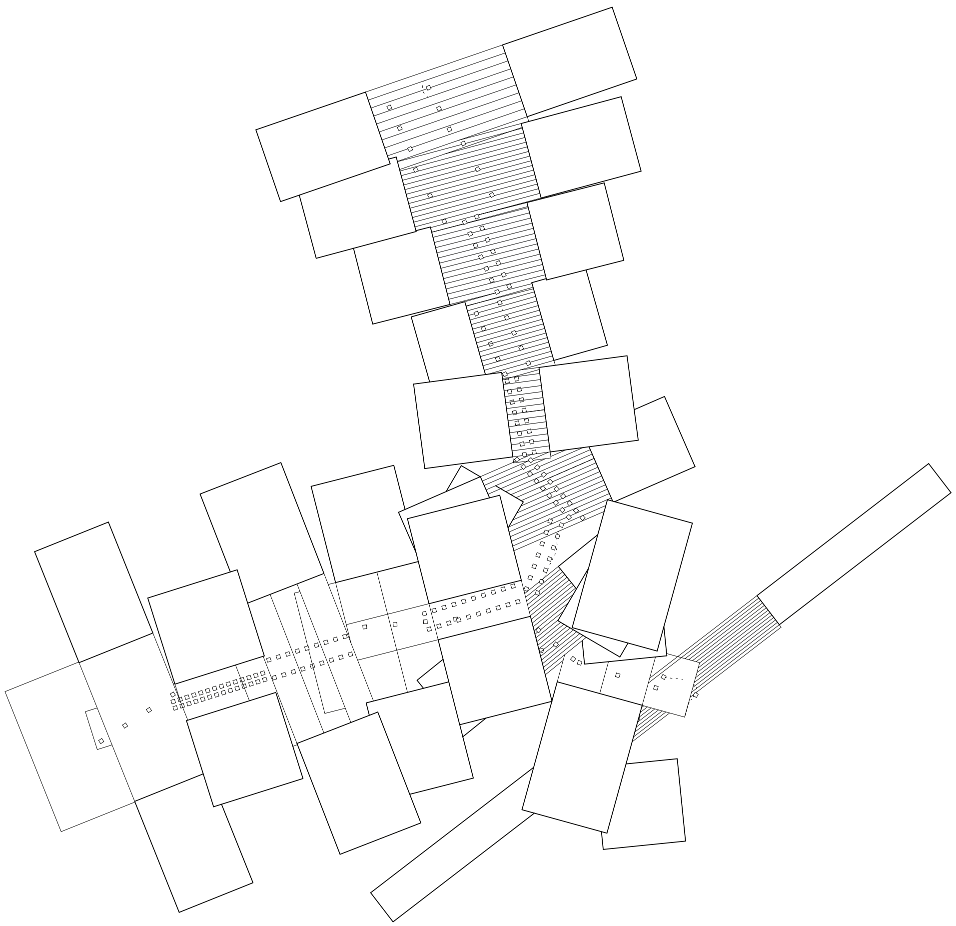
Interior Bestiary

Studio Professor
Lluís Ortega

Participant
Jorge Serra



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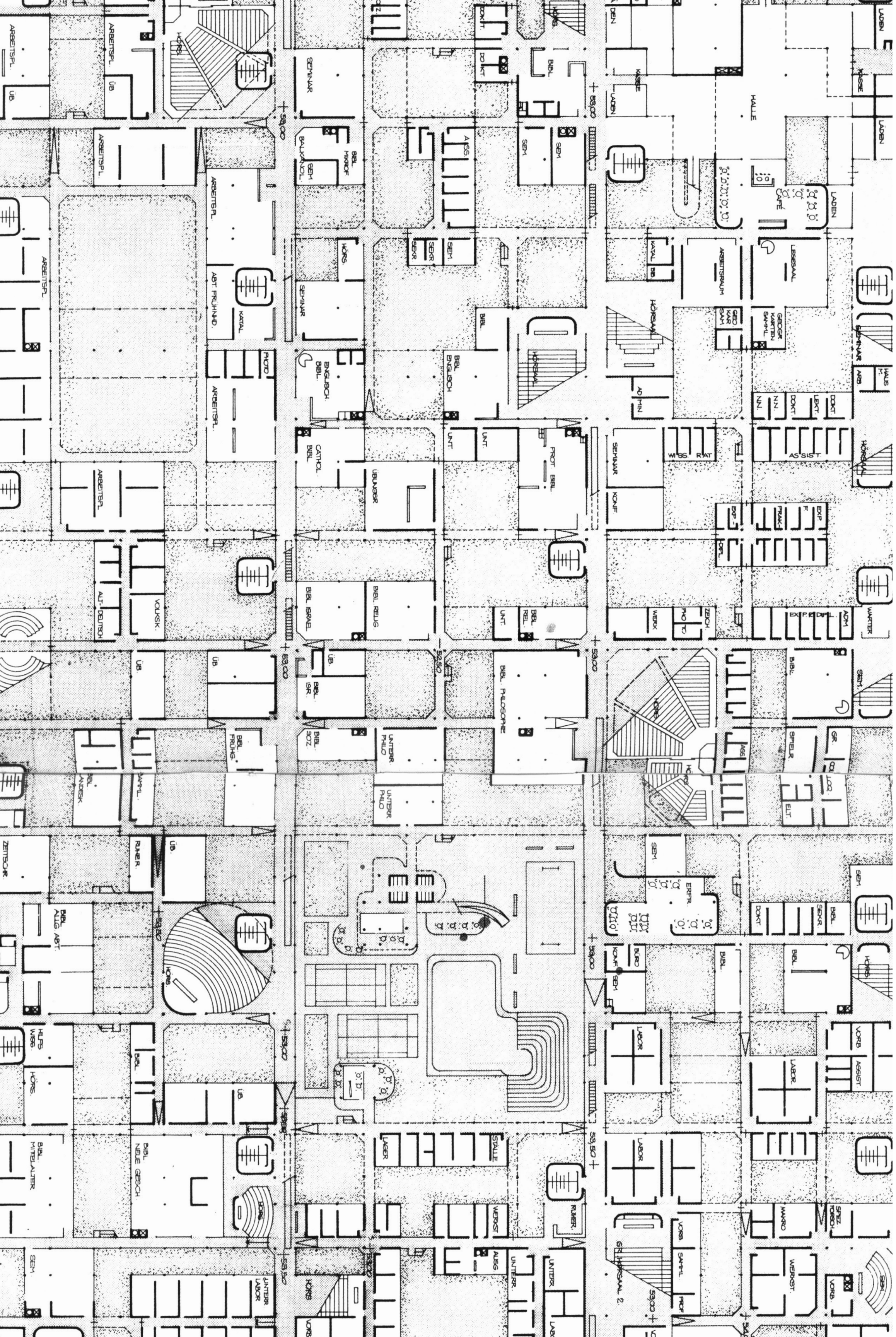
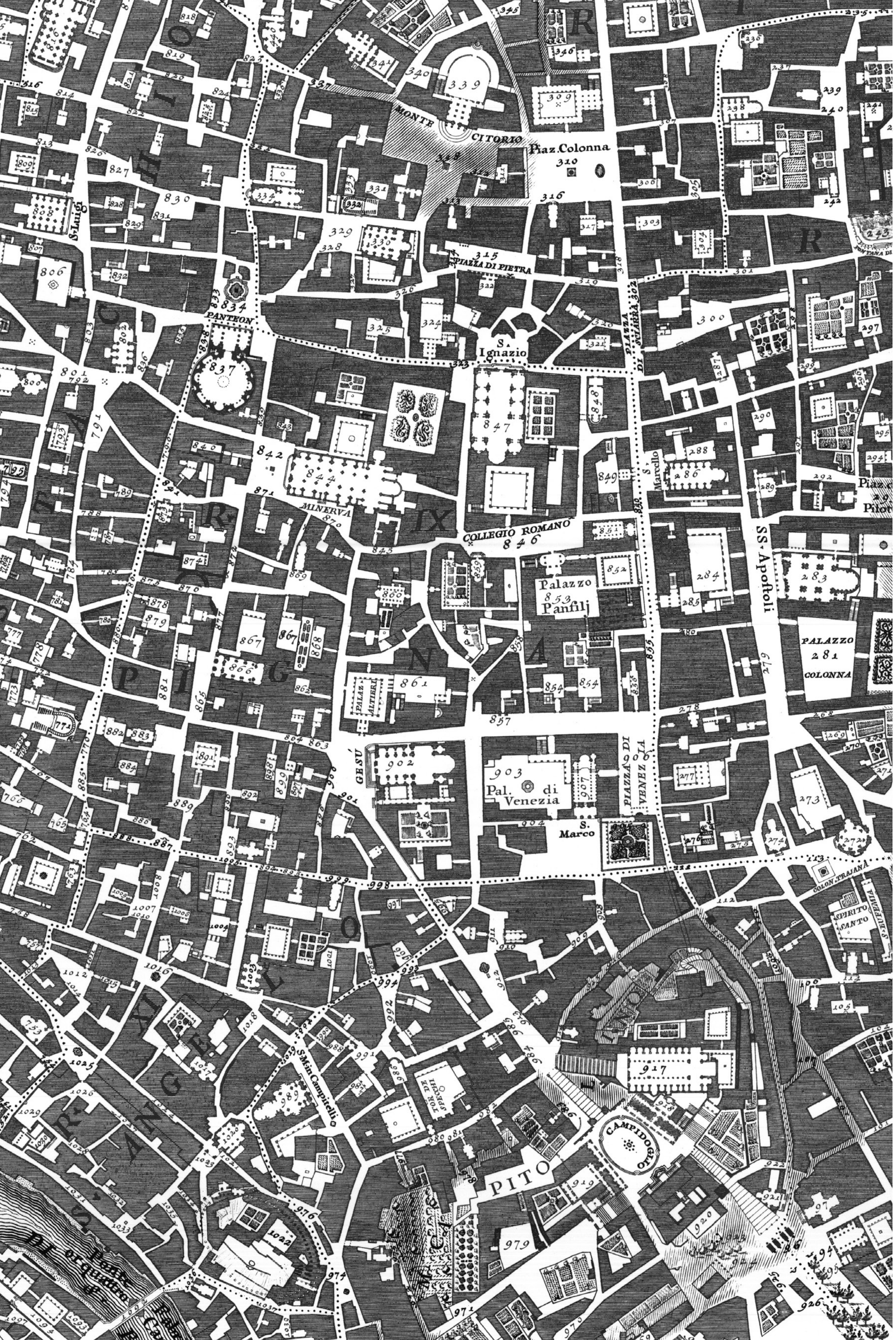
Arcadian Urbanism
by Column Proliferation



The relationship between massing and circulation has been an important territory of experiment, and more specifically where the resulting *in-between space* offers a very interesting take on spatial occupation.

***Arcadian Urbanism* is a proliferation protocol that creates the densest possible occupation of a space with specific in-between typological qualities.**



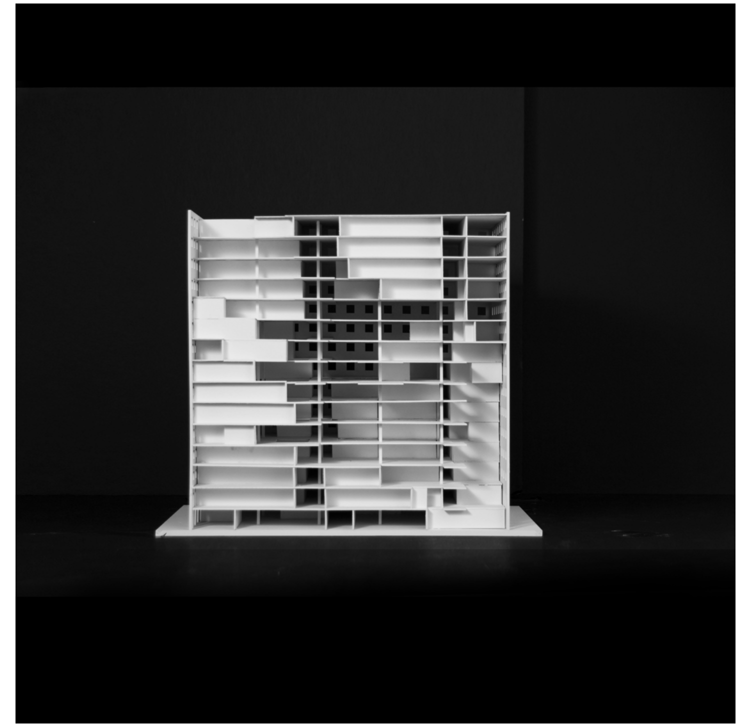
Protocol
Massing and circulation relationship

The relationship between massing and circulation has been an important territory of experiment, and more specifically where the resulting in-between space offers a very interesting take on spatial occupation.
Arcadian Urbanism is a proliferation protocol that creates the densest possible occupation of a space with specific in-between typological qualities.

In the medieval city this was a non-issue, circulation and massing operating exactly in the same domain, one being the exact negative of the other; and the same could be said about Koolhaas' Manhattanism. Modernism brought a new paradigm to this condition, with the separation and hyper-specialization of its systems.
Massing and circulation became two different systems, with only minimal correlation - and more specifically, the lack of diversity and density, in-between space therefore being non-existent.
This is explicit in the famous side-by-side comparison made by C. Rowe and F. Koetter in 1978 between the Nolli Plan and Corbusier's plan for Saint Dié.
This comparison is almost massing exclusive, as is the new condition the two theoreticians explore – the collage – little thought is given to the relationship between massing and subsequent circulation patterns. Even recent urbanism ideas such as French architect C. Portzamparc's "Age 3" remain fundamentally massing exclusive. Mat-architecture tried to resolve this problem by overlaying the different systems and creating and extremely rich and diverse condition, and this is most apparent in the proposal for the Berlin Free University by architects Candilis, Josic & Woods. The different systems – massing and circulation – were still almost unrelated to one another, although now they created a rich in-between condition. A condition that was almost completely lost once the project was actually built, and the two systems were integrated, resulting in an almost banal regular patio system throughout the building.

I believe variation and diversity in the massing and circulation patterns is the catalyst for the creation of a successful – and operating – in-between condition.
This research is an attempt at re-exploring the relationship between circulation and massing in architecture and urbanism, and exploring a situation where the two are fundamentally intrinsic without sacrificing the quality of the in-between space created, offering perhaps for the first time a designed in-between.

The research follows a historical and cultural approach, with the study of several case studies throughout architectural discourse to better understand how in-between spaces have operated through time. The approach for the case studies was defined on type and program. If an in-between space is defined as being a circulation system that also allows for the creation of programming and occupation, this has to be very specifically defined.

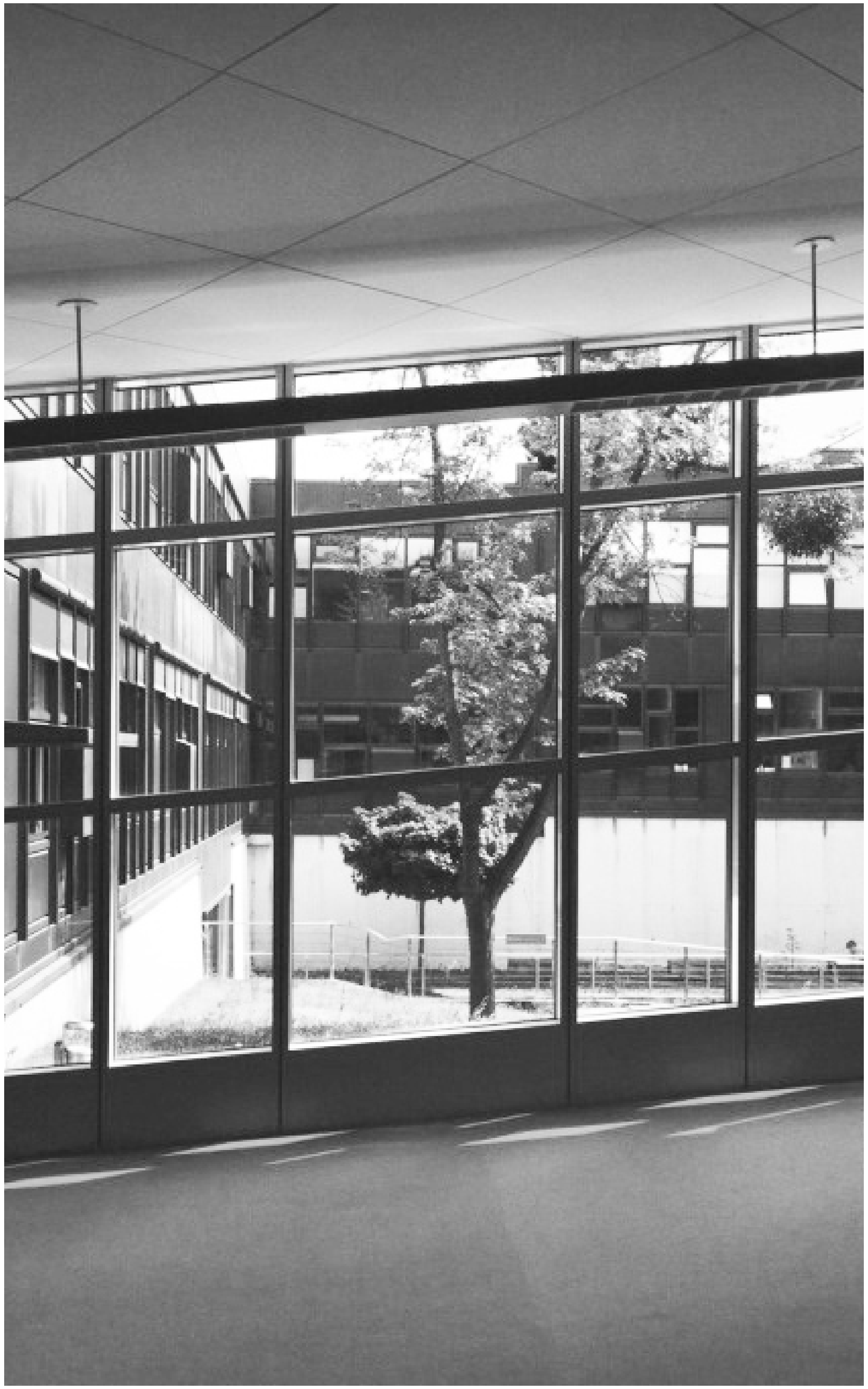


Research
Contemporary and Historical Case Studies

Parallel to the development of the arcadian protocol, a series of exemplar case studies were thoroughly studied in order to better understand different established systems.

These different case studies vary both in scope and architectural performances. The first ones focus on the direct relationship between massing and circulation. The goal was here to understand different discernible patterns related to those two qualities. Attributes such as repetition, porosity, directionality and connection were carefully studied and injected into the prototypical condition.

After this general approach, the research was focused on more clearly defined typologies and how they operate. Base in-between typologies were determined such as the plaza, the arcade, the gallery and the walkway. All of these were used as references for creation when the prototype was applied. Basic geometries were analysed and relational qualities extracted - such as ratios, heights, widths, openness and slopes.



Berlin Free University. Candilis, Josic & Woods. 1963

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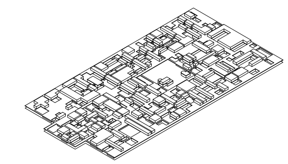

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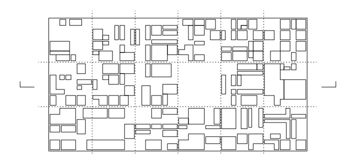

the free university of berlin uses a differentiated grid system for the circulation and for the massing.
the differentiated system allows for an almost autonomous placement of mass within the grid and the creation of a variety of different spaces and in-between conditions.
this system was abandoned once the building was built for a much more rigid integrated system.

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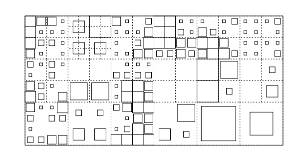

modeled condition

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Holocaust Memorial. Peter Eisenman. 2004

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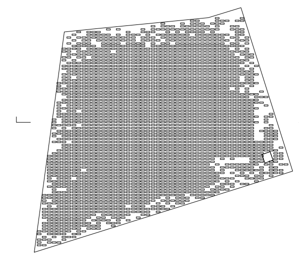

the holocaust memorial uses mass to create a threshold and differentiation of spaces
without the use of a particular circulation system or pattern.
gradient threshold 12.96%

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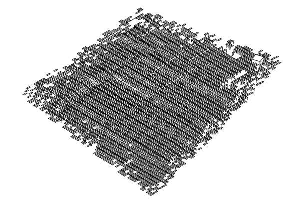

axonometric view

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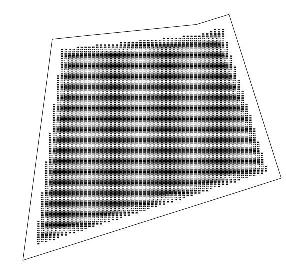

modeled condition
gradient threshold 12.39%

Vals Therms. Peter Zumthor. 1996

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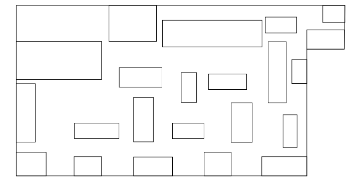

floor plan
long side 60m
porosity 39.99%

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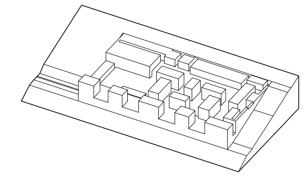

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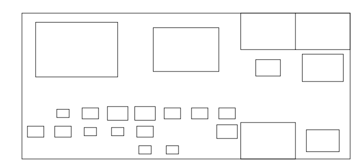

modeled condition
porosity 38,00%

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Saitama Prefectural University. Riken Yamamoto. 1999

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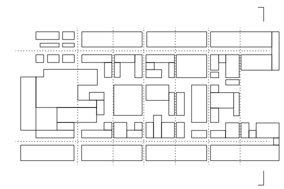

the saitama prefectural university uses a similar system to the one that was opted for in the built project of the university un berlin.
an integrated grid system for both the circulation and massing is much more rigid and regular - the quality of the in-between spaces created is lesser than that of a differentiated system.

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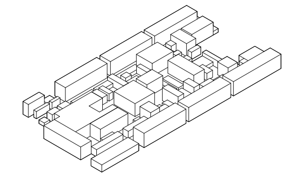

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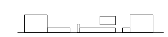

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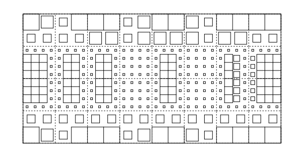

modeled condition

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Matteotti Village. Giancarlo De Carlo. 1970

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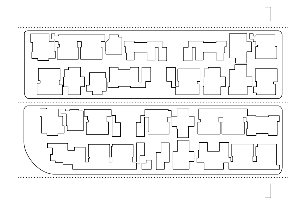

the linear typology of the matteotti village relies on an agglomeration of stripes to create an in-between space which in this case consists of different levels of privacy, from public to semi-private and finally completely private.
strong directionality allowing for a better integrated circulation

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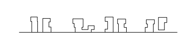

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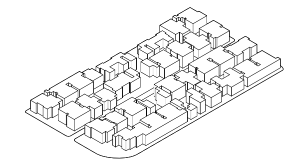

axonometric view

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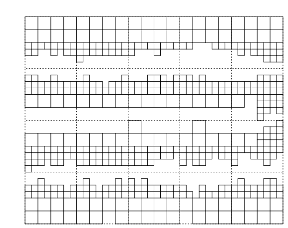

modeled condition
inversion of the existing system to allow for an additive system instead of subtractive

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Rolex Learning Center. SANAA. 2010

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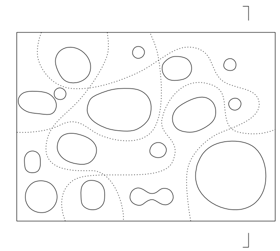

in the learning center, the architects use height level to differentiate the space throughout.
porosity in this case is created in the shifting of space rather than the creation of it, and in turn the quality of the in-between space varies in function of the height of the adjacencies within the spatial domain.

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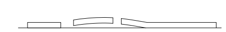

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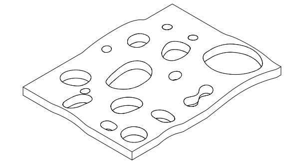

axonometric view

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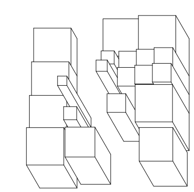

modeled condition
height creates and affects porosity (or propagation in the newer model)

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Via Roma. Ascanio Vittozzi. Late 16th Century

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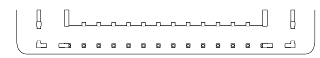

floor plan
long side 64m
threshold 12.5%

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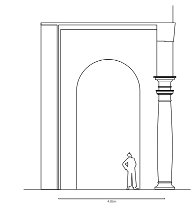

section
height to width ratio 1.58

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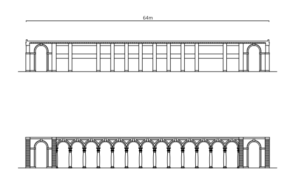

section and elevation
height to length ratio 8.37
arcade openness 33.15%

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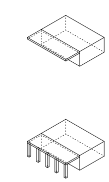

modeled condition
creation of structural redundancy to reduce openness
adaptation of proportion and height to width ratio

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Galleries Royales. Jean-Pierre Cluysenaer. 1836

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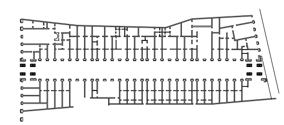

floor plan
long side 97.1m
void to built ratio 23.45%
width relationship to programming 85.21%
threshold 6.18% of total length

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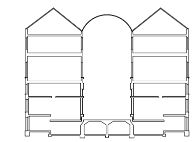

section
height to width ratio 2.11

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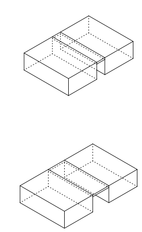

modeled condition
adaptation of height and width ratio

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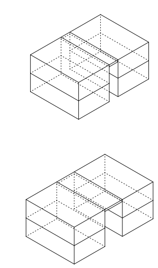

modeled condition
adaptation of height and width ratio

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Piazza Della Signoria. 13th Century

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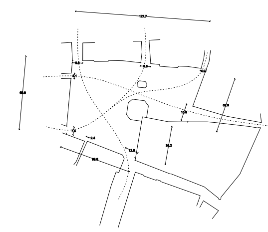

floor plan
the main space of the plaza is left open for circulation and activities
the plaza is also fairly enclosed with very few direct (median) crossings in the actual area defined by the fountain there is only one opening with a height to width ratio of 8.07, keeping the appearance of a closed space intact

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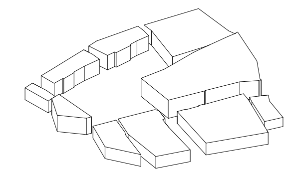

axonometric view

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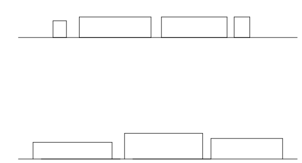

section
narrowest height to width ratio 3.25
widest height to width ratio 1.3

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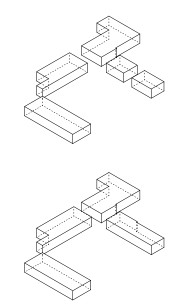

modeled condition
the model creates ideal conditions for the formation of a plaza type, by arranging the surroundings to offer a more enclosed space

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Piazza Di Spagna. Francesco De Sanctis. 1717

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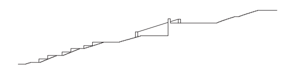

section
general ratio 4.65
height difference 13.95m
step ratio to length 2.46

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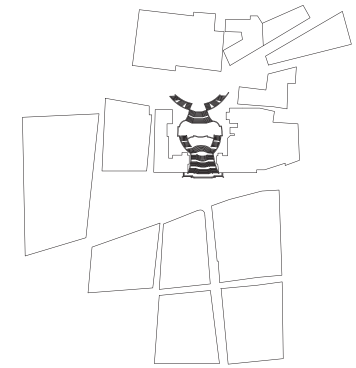
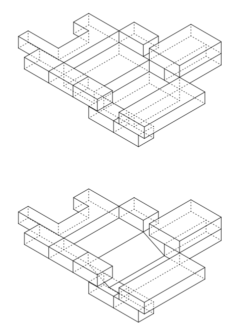


plan
relation to two existing plazas
position related to existing view in axis

Interior Bestiary
IIT College of Architecture
Professor: Lluis Ortega
Collaboration with Universidad Torcuato di Tella
Student: Jorge Serra
Constructed In-Between
by Integrated Grid Frameworks
2015



modeled condition
when two plazas are adjacent, the appropriate length is determined for a step condition

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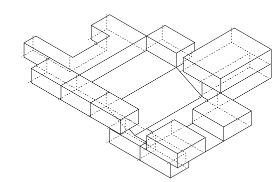


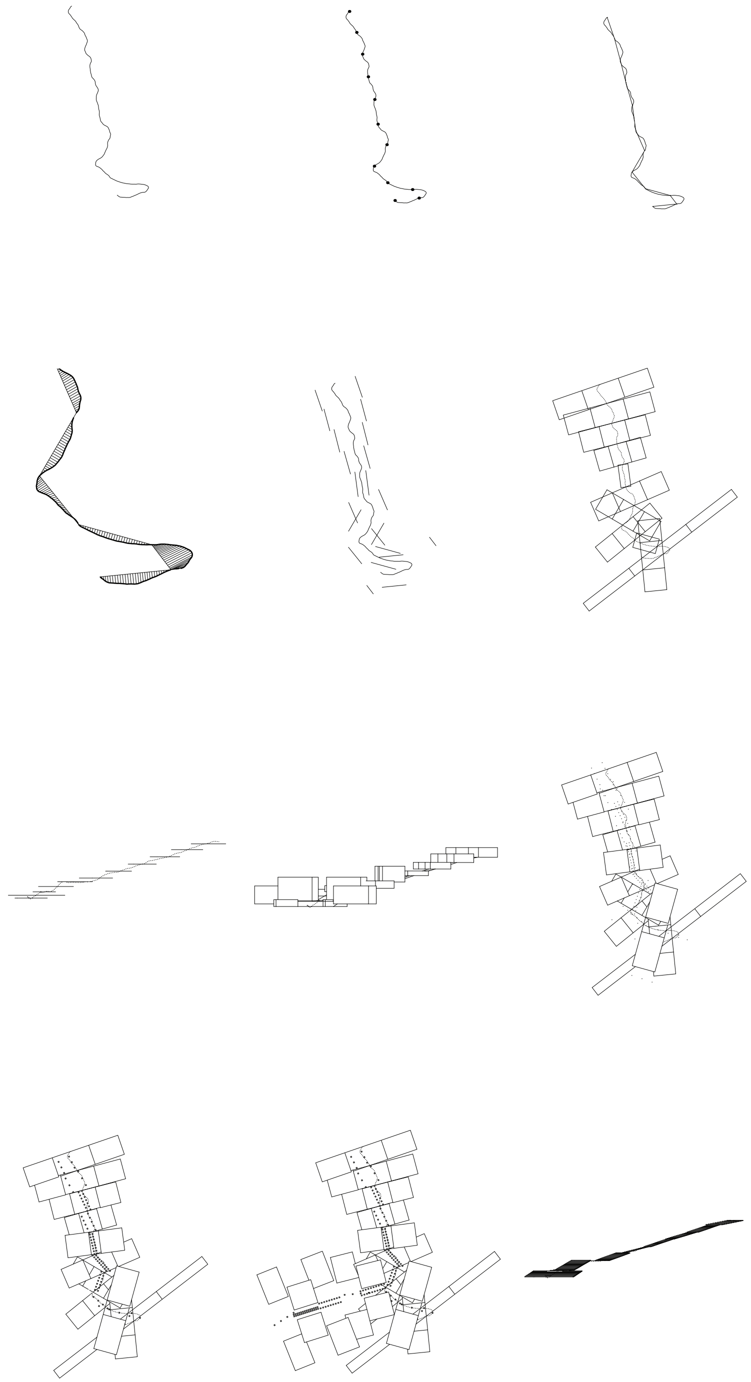
modeled condition
and opening is created when possible to give the right context for the plaza

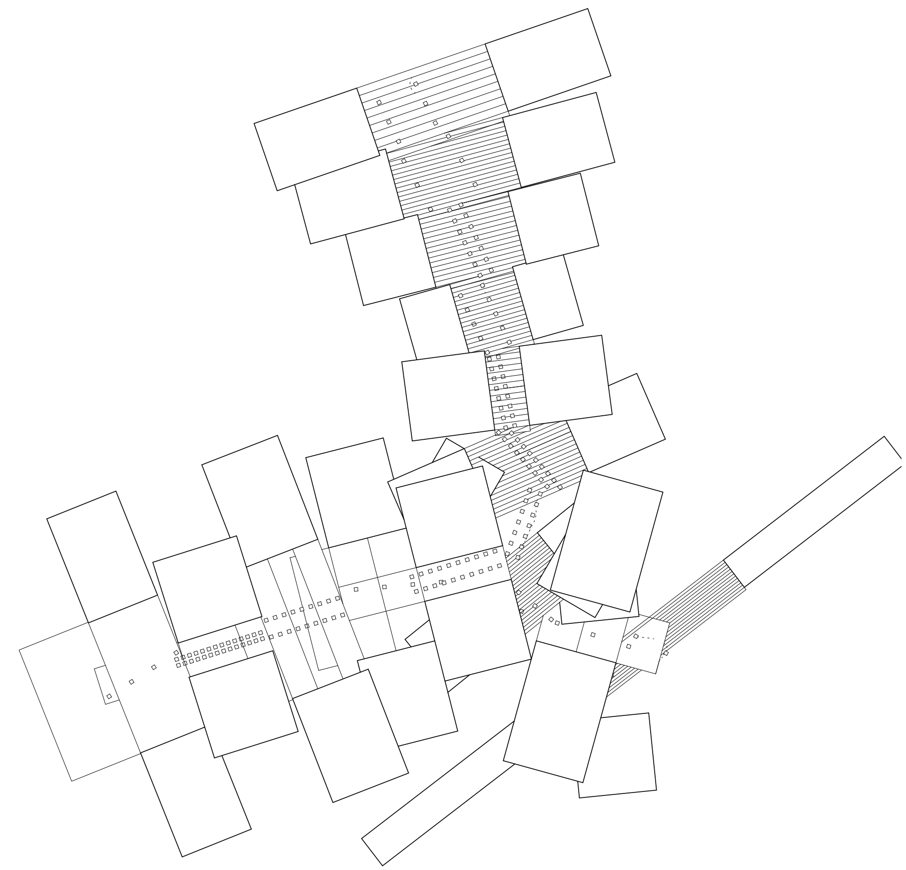
Generic Non-Differentiated Merchandise Mart Building, Chicago

These specific conditions were identified and recreated in the primitive model. The arcade – as a system – is versatile enough as an archetype to define several typologies ranging from the plaza to the corridor. As a system, it includes several relational logics that were fundamental to the development of the primitive. Its relationship to programming and circulation are fairly straightforward, and further analysis includes directionality and openness to the outside. The primitive is organized following two integrated grid frameworks. The first one determines porosity, while the other one creates circulation patterns. These two frameworks operate on basic adjustable data elements such as porosity, subdivisions and density.

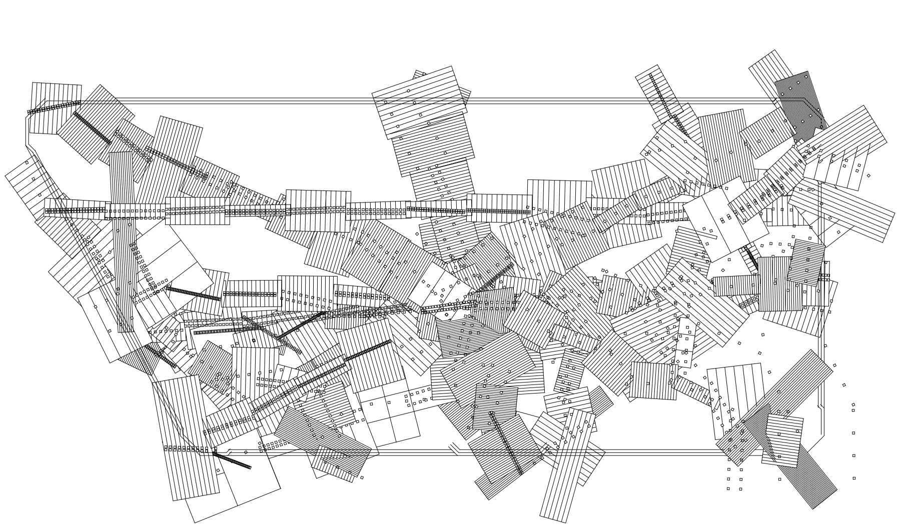
The application follows a feedback logic that allows the prototype to evolve and proliferate in different ways.
Before any contextual application, the prototype used basic porosity to determine optimal circulation and massing for an ideal in-between condition. This operation is still fairly generic and didn't focus on any specific typology regarding the architectural space but rather an optimized set of parameters to be followed.
When the prototype was applied to the first case study – merchandise mart – its typological qualities were refined in order to provide a more characterized space. The system not only creates at this point massing and circulation, but also a structurally redundant system of columns that bridges the two and responds to similar parameters. By doing so, the columns now define and differentiate another level of "in-betweeneness" within the circulation patterns.

This first attempt at colonizing an existing space remains extremely speculative and generic. The space occupied is so vast, and with so little to work with – spatially, that the prototype multiplies, grows and occupies the space in a chaotic and uncontrolled way.

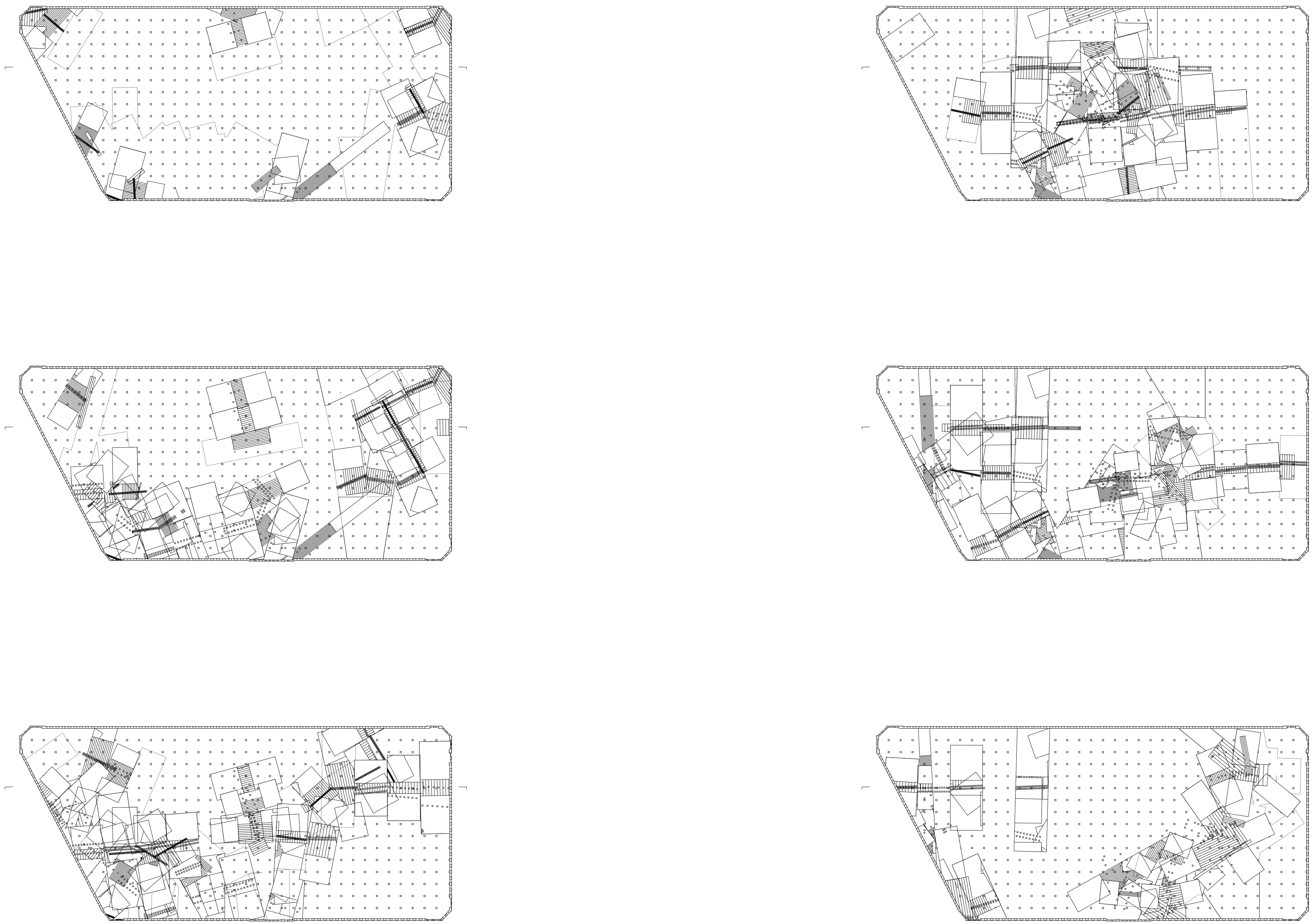




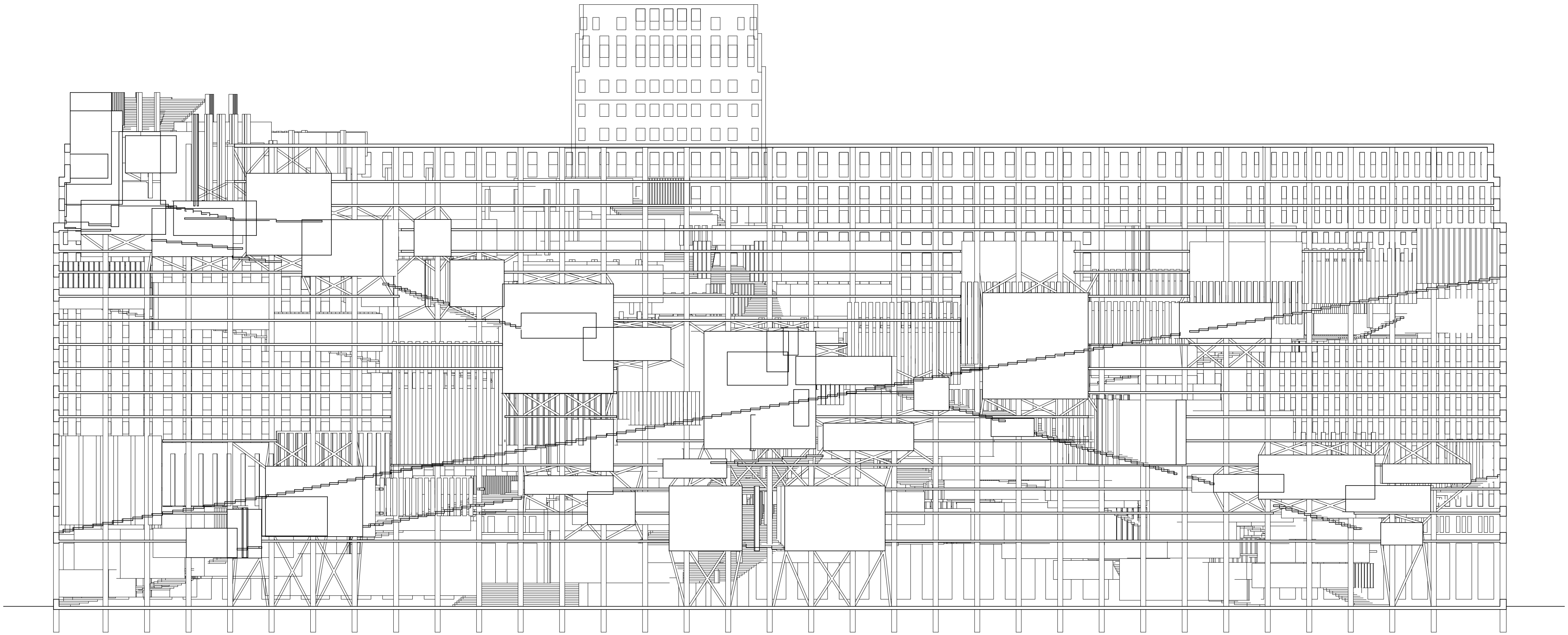
Proliferation diagrams in the generic non-differentiated space.



Application to Merchandise Mart, Chicago.



Merchandise Mart Plans.



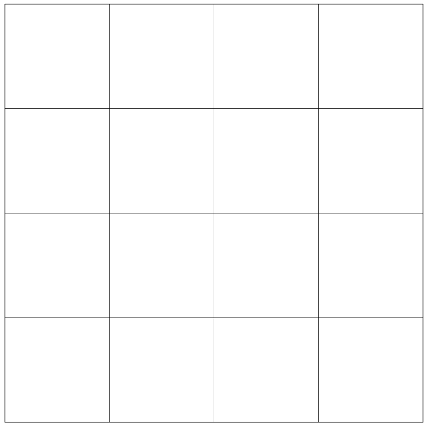
Merchandise Mart Section.

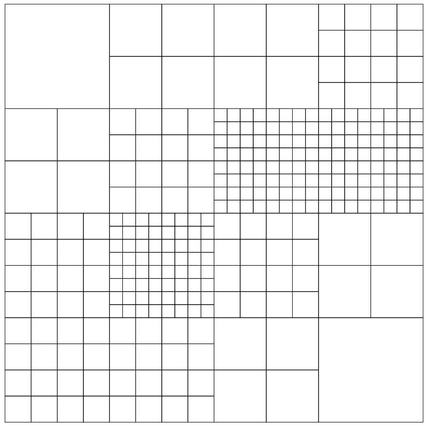
Generic Differentiated Proliferation in the Domino System

The primitive is an attempt at an explicitly designed in-between space, based on a coherent and integrated framework as opposed to a layered logic, where separate elements are superimposed to each other. By following the same descriptive parameters that create a range of typologies following the same logic, the in-between condition is performing here under a consistent – and hopefully logical – approach. The question of the possible ranges is still an open one, as the balance can be very delicate to achieve. On one hand we have the traditional room and corridor system – a typology this model is openly fighting – and on the other hand we also have the much adopted solution of the fully open, undifferentiated space that acts as a single room. The two extremes are easy to adopt, the in-between condition much less so.

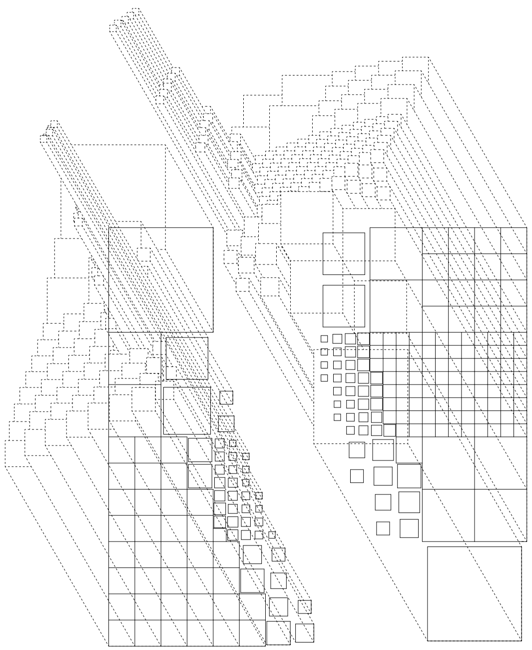
The raw information on how these two systems relate, determines – following the four different relationships - how the arcading elements operate. The system acts from the two predetermined systems - rooms and circulation - to create a third overlapping one; the in-between space.
When in a space, a variety of different connections to circulation branches occur and there is little directionality, a plaza typology is created. Whereas if the system is strongly directional and has several connections to different programmatic elements, a gallery is more appropriate, for example.

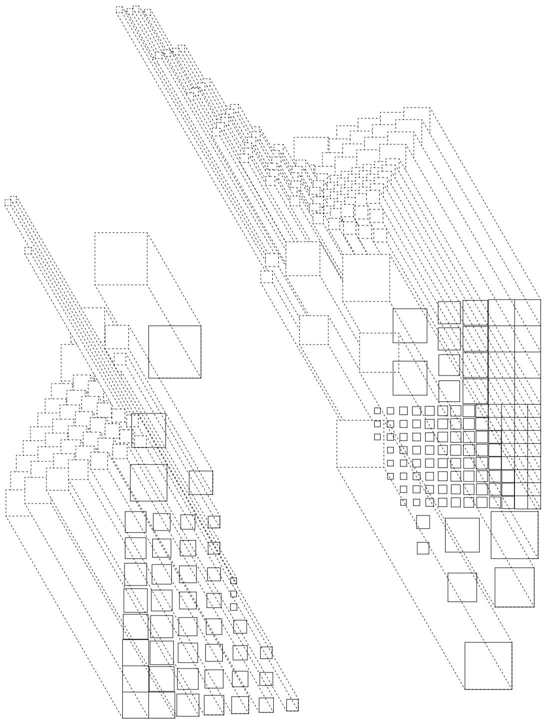
This system also allows for a more comprehensive spatial occupation of the space and especially its vertical qualities as it defines new conditions of inside and outside, bringing into the prototype different needs for light and porosity. The system is more defined and sustainable as a whole.

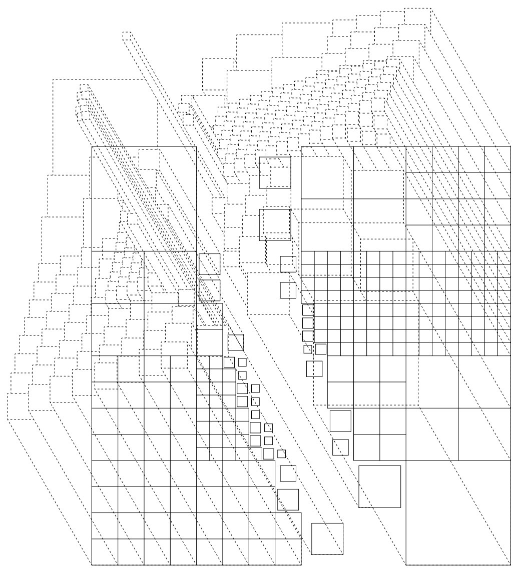


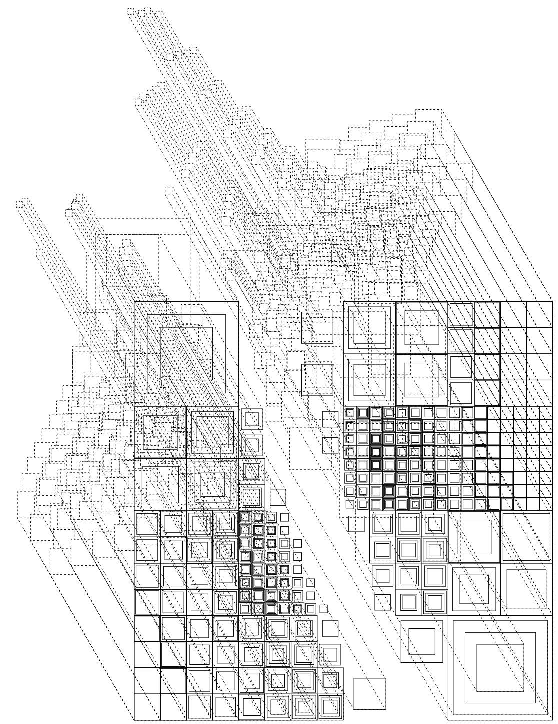


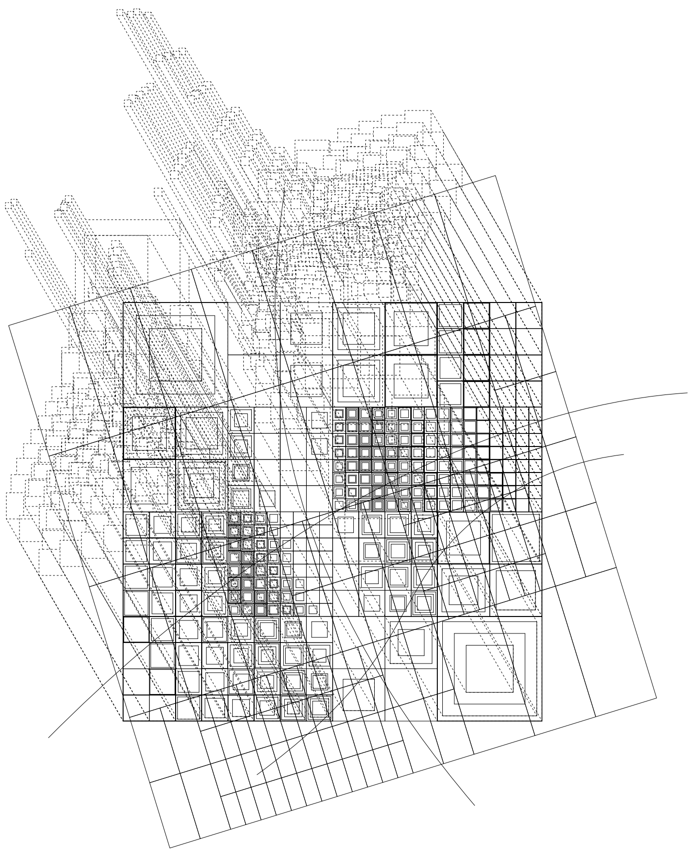
Protocol diagrams in the generic, differentiated space.

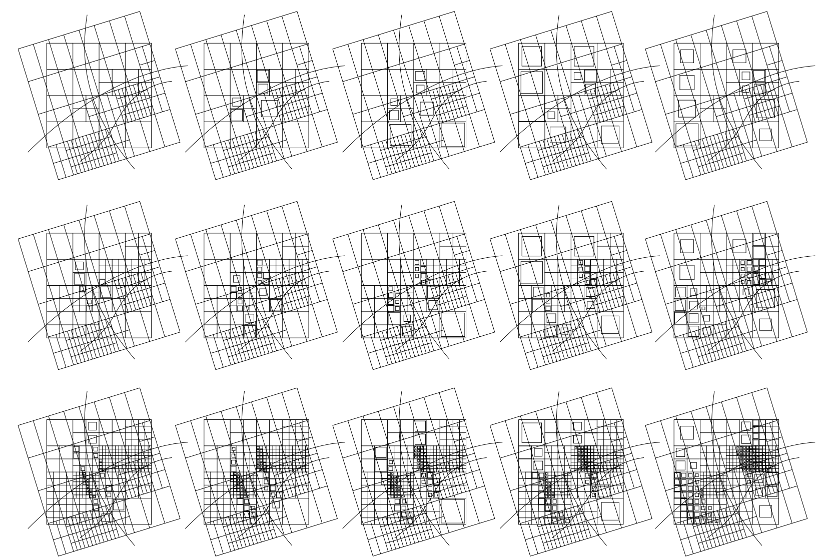


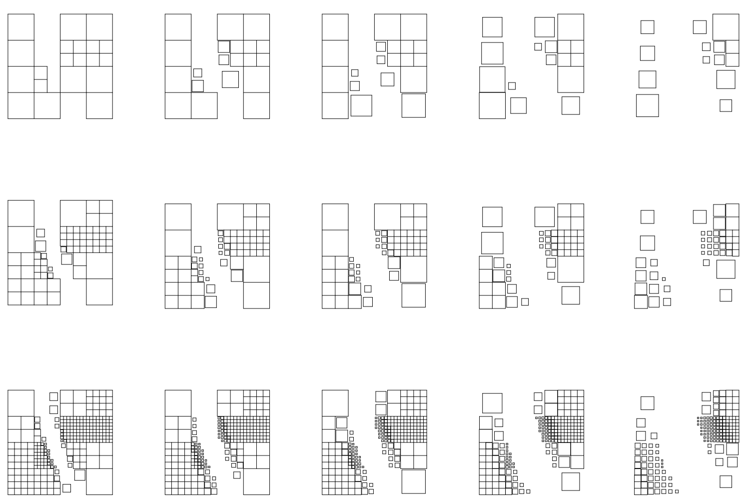


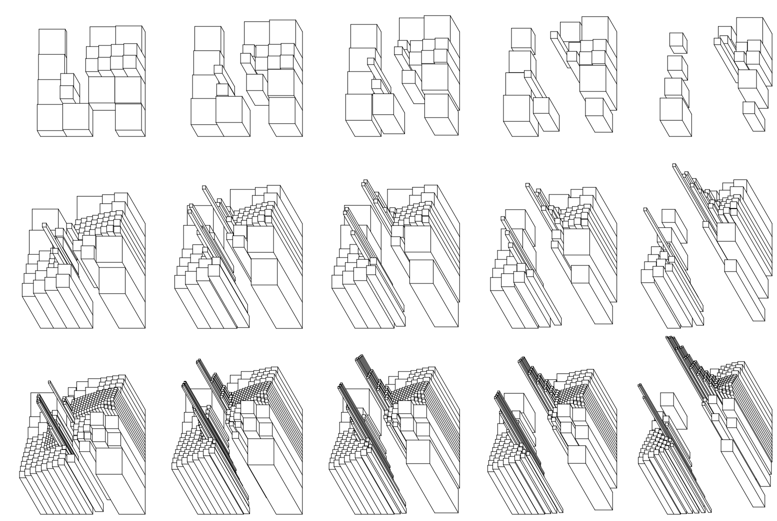


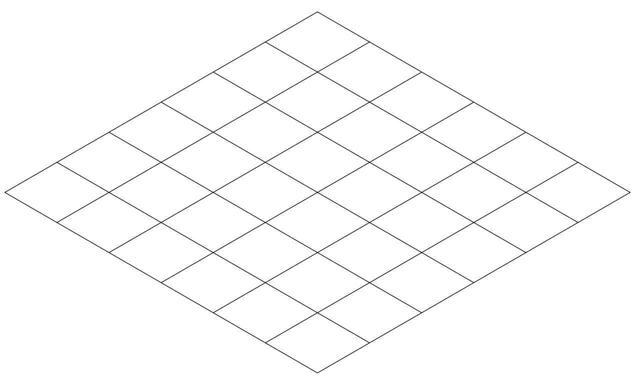


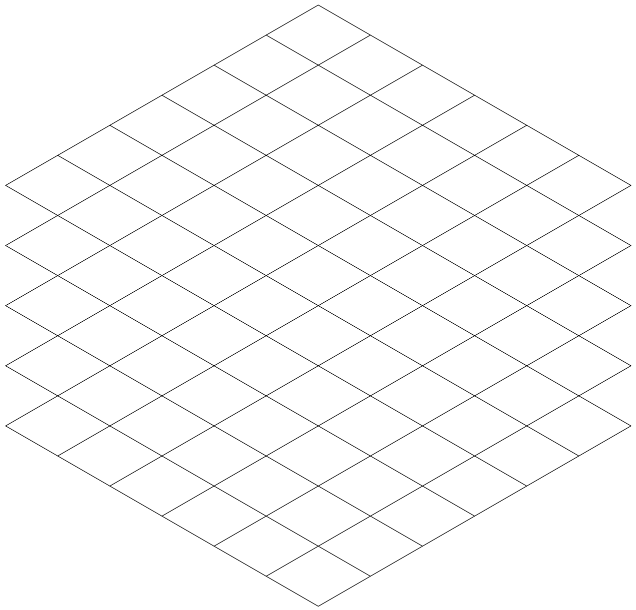


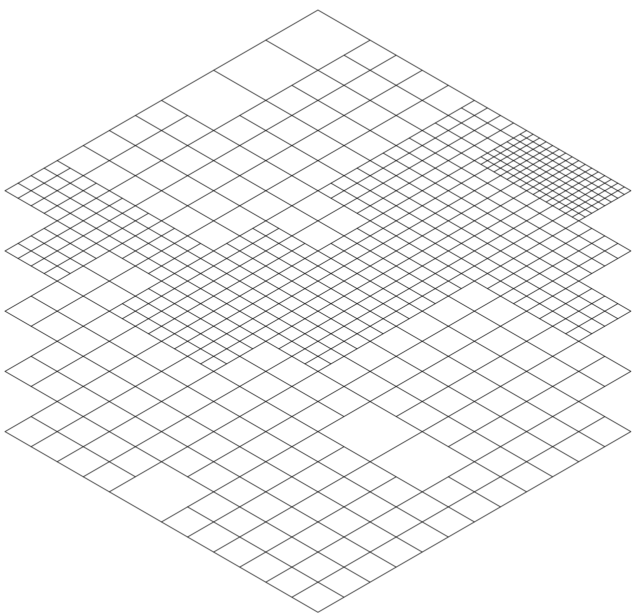


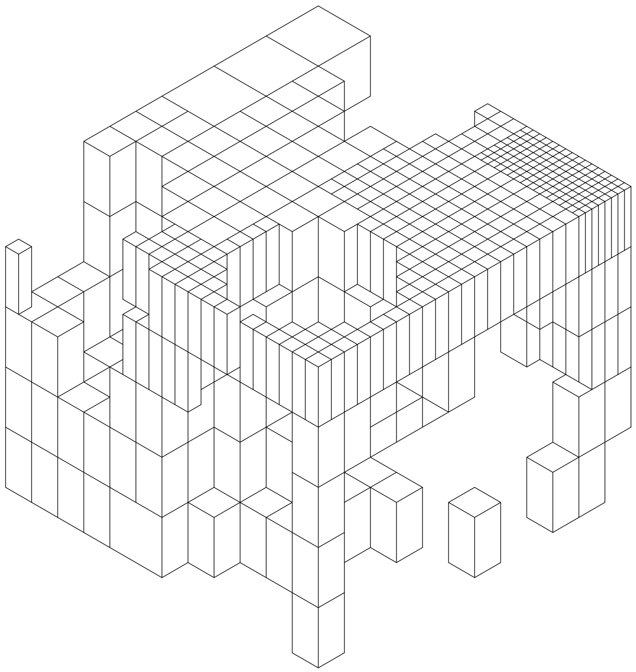


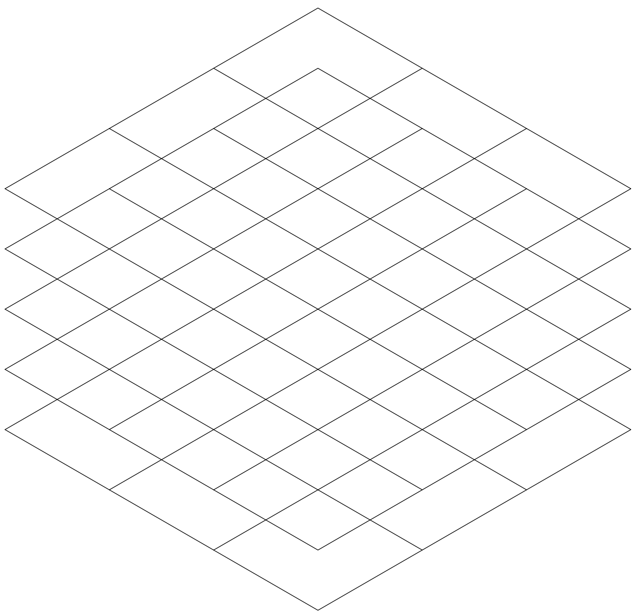


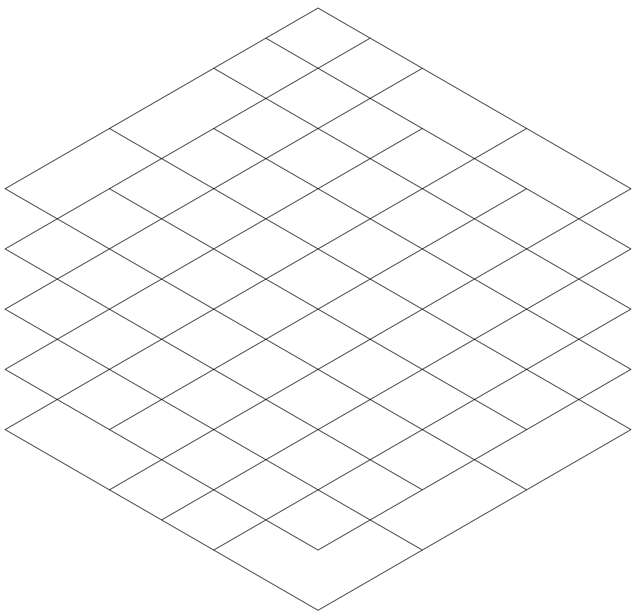


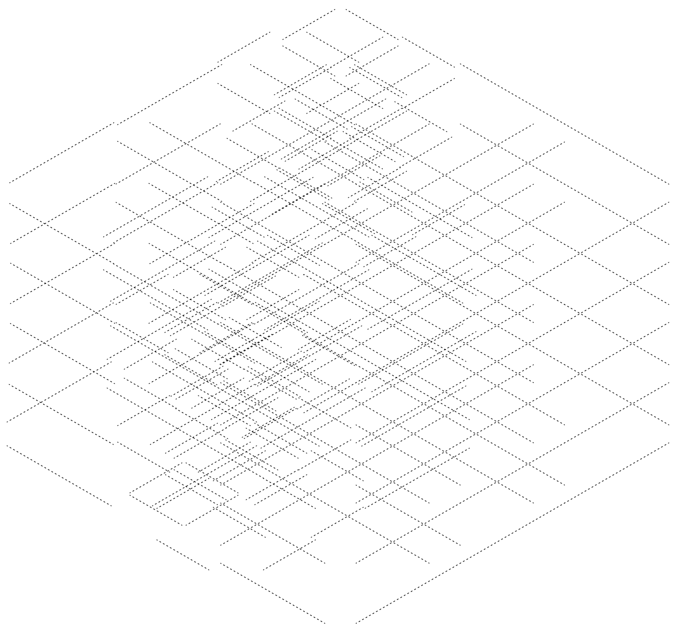


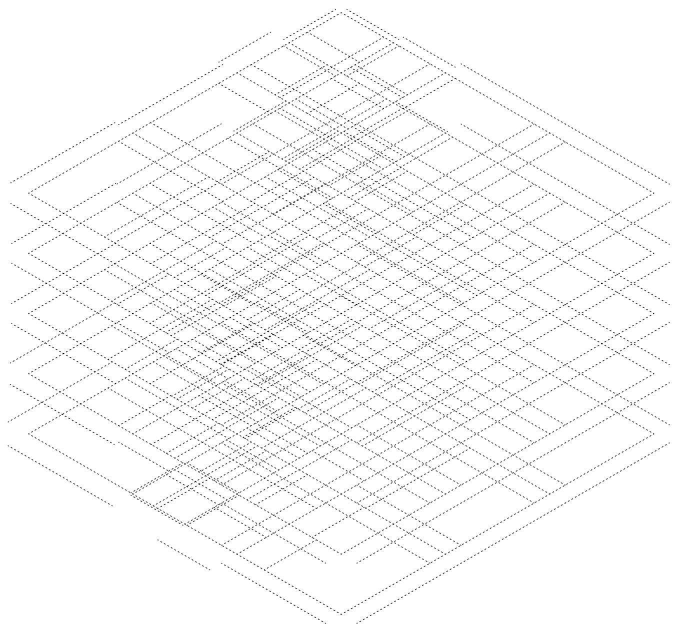


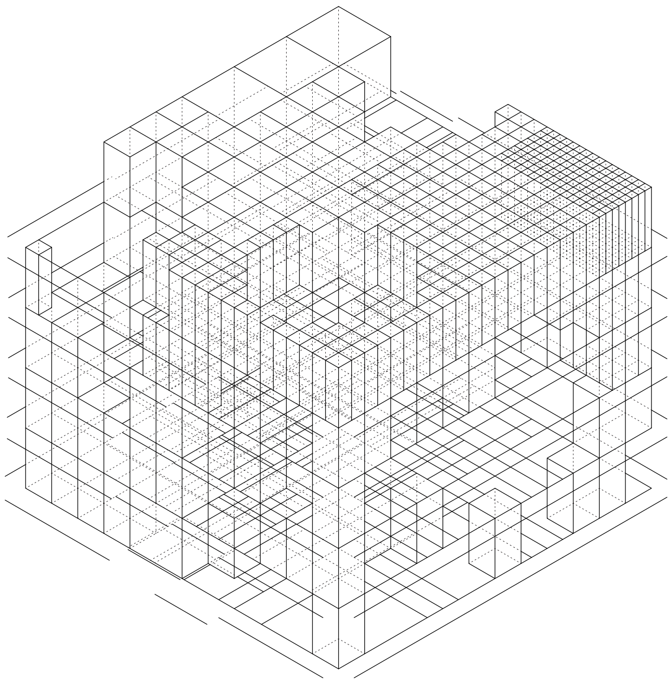


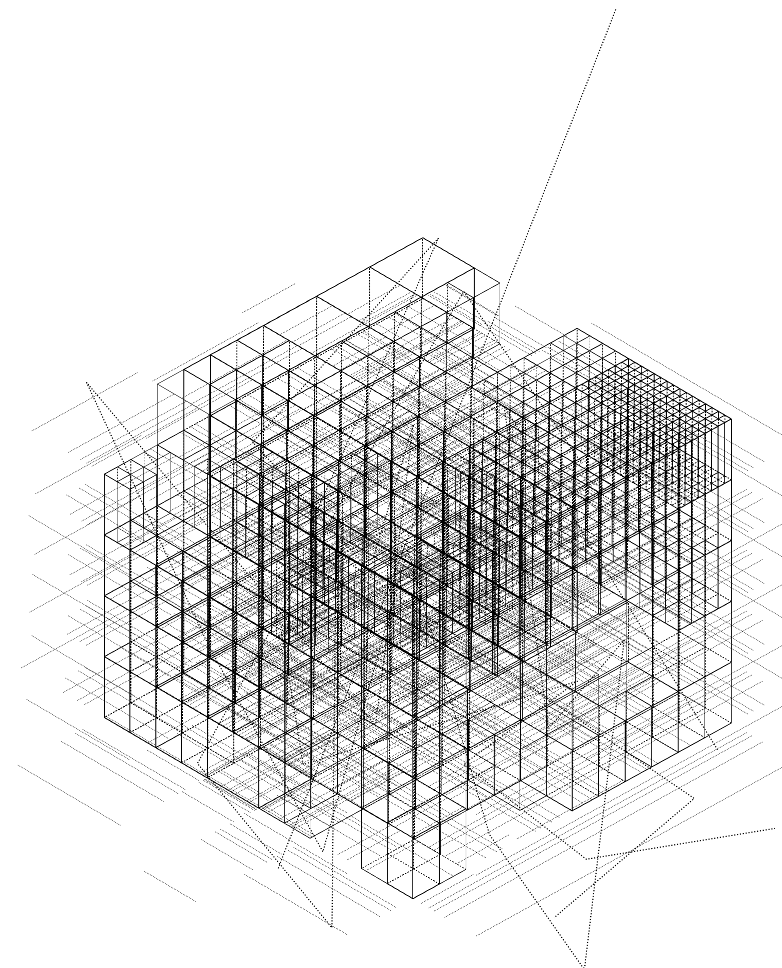


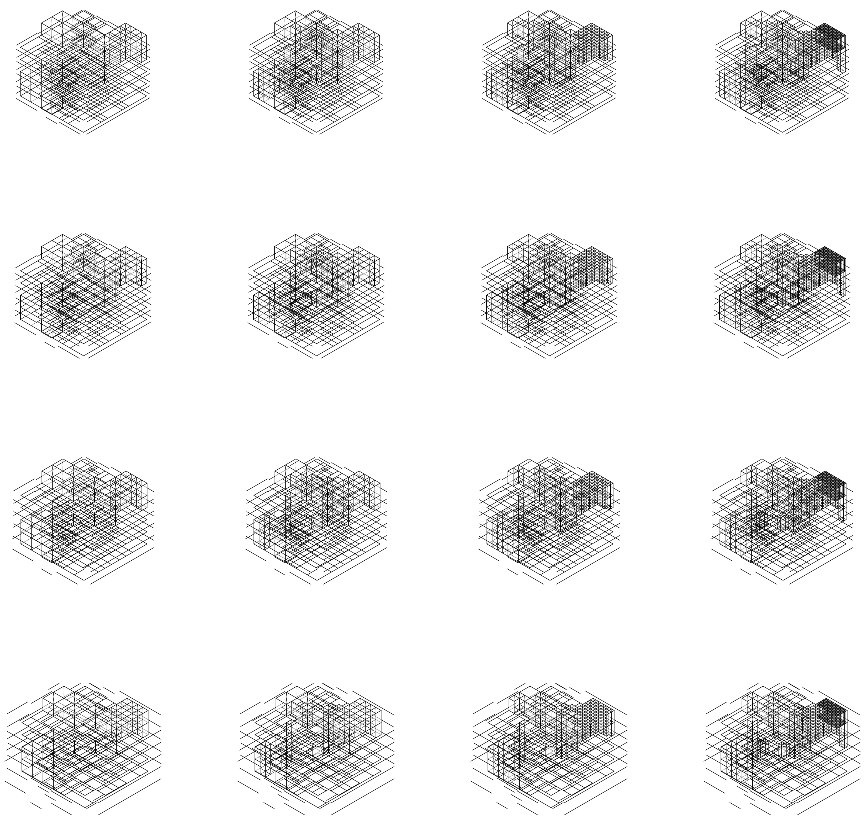


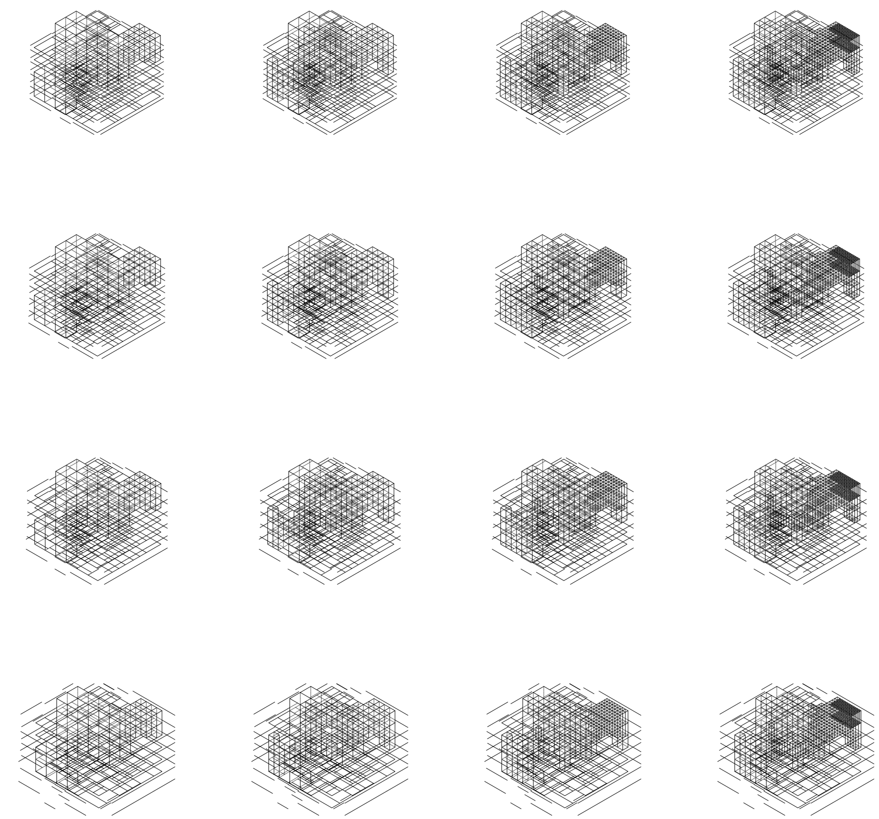




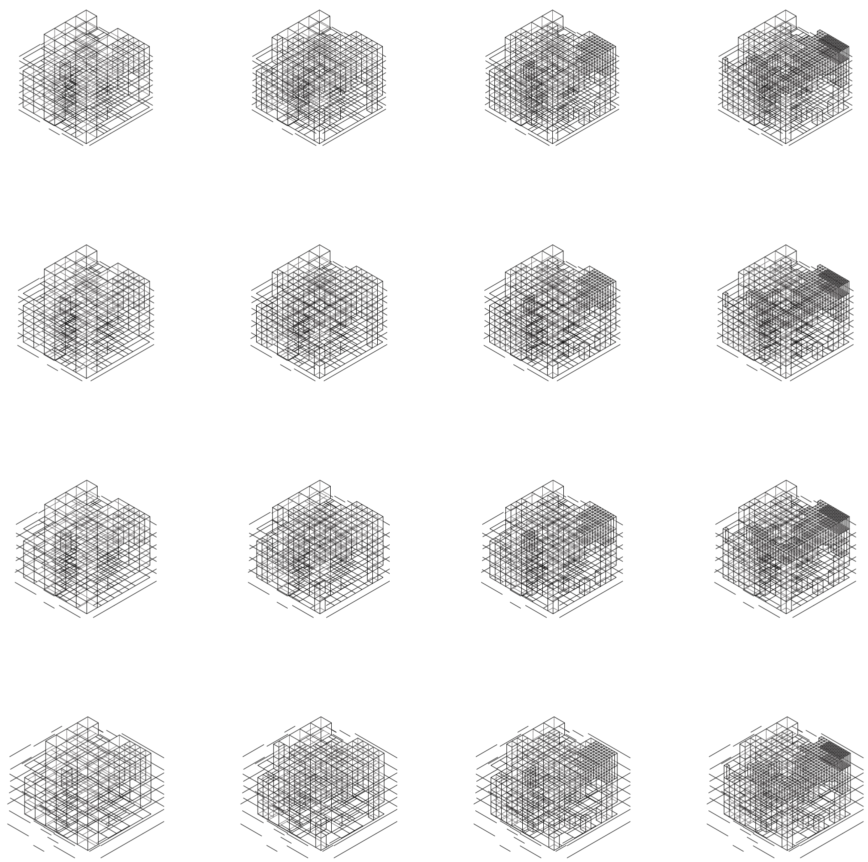


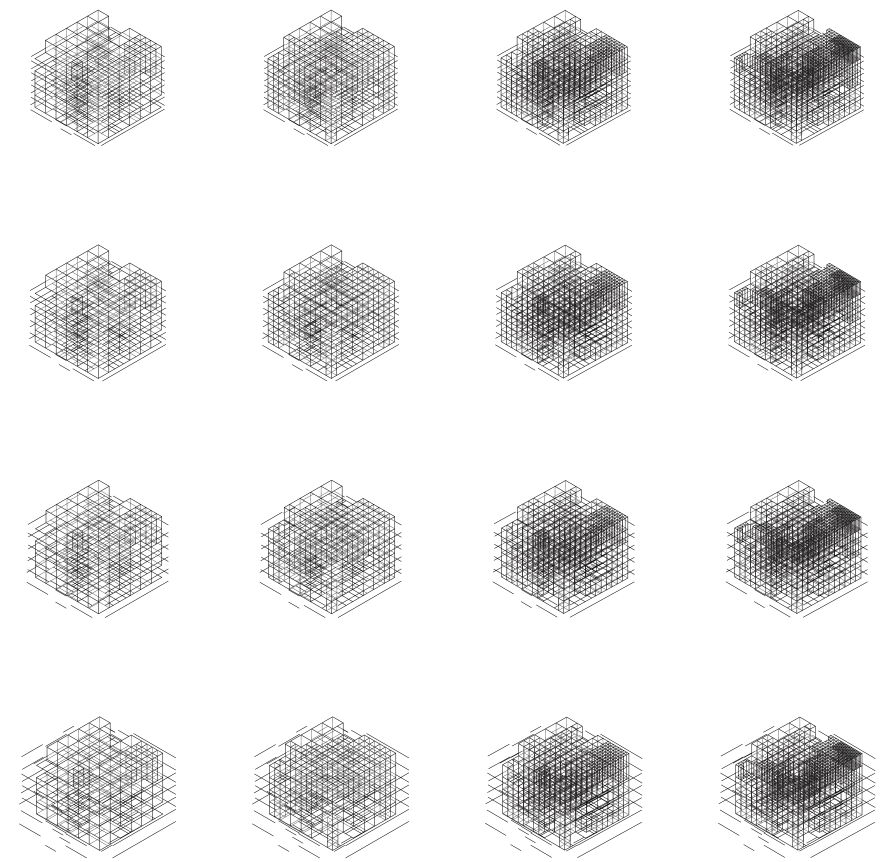




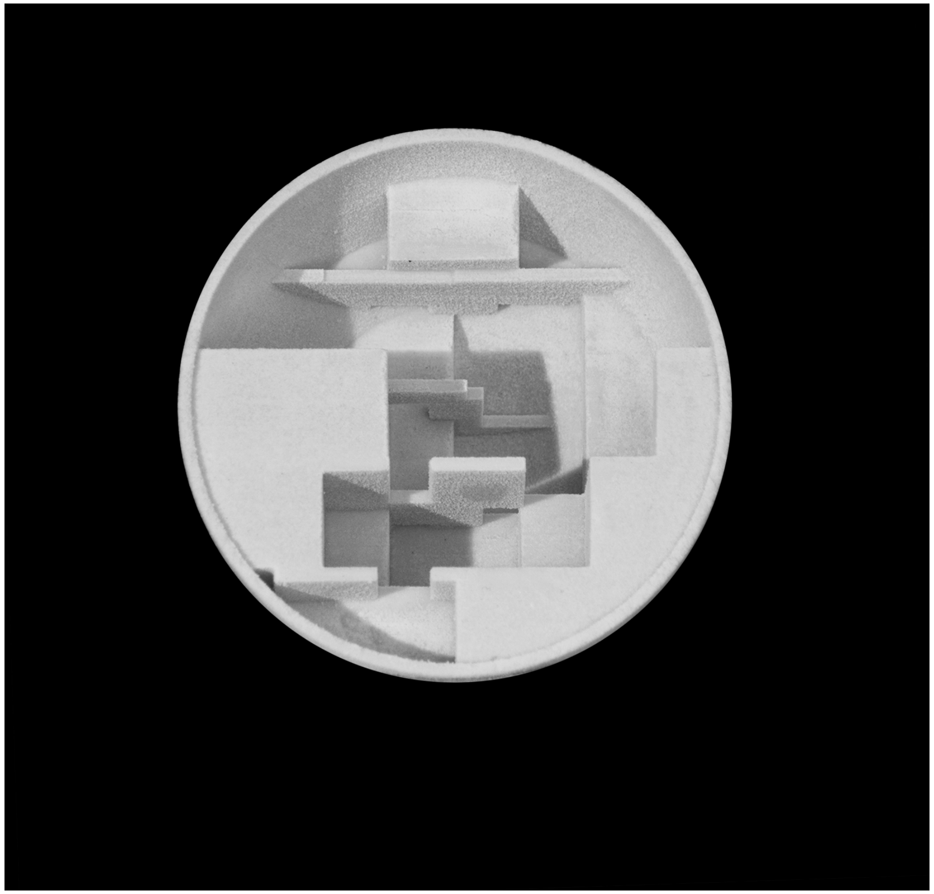


Ranges of the proliferation.

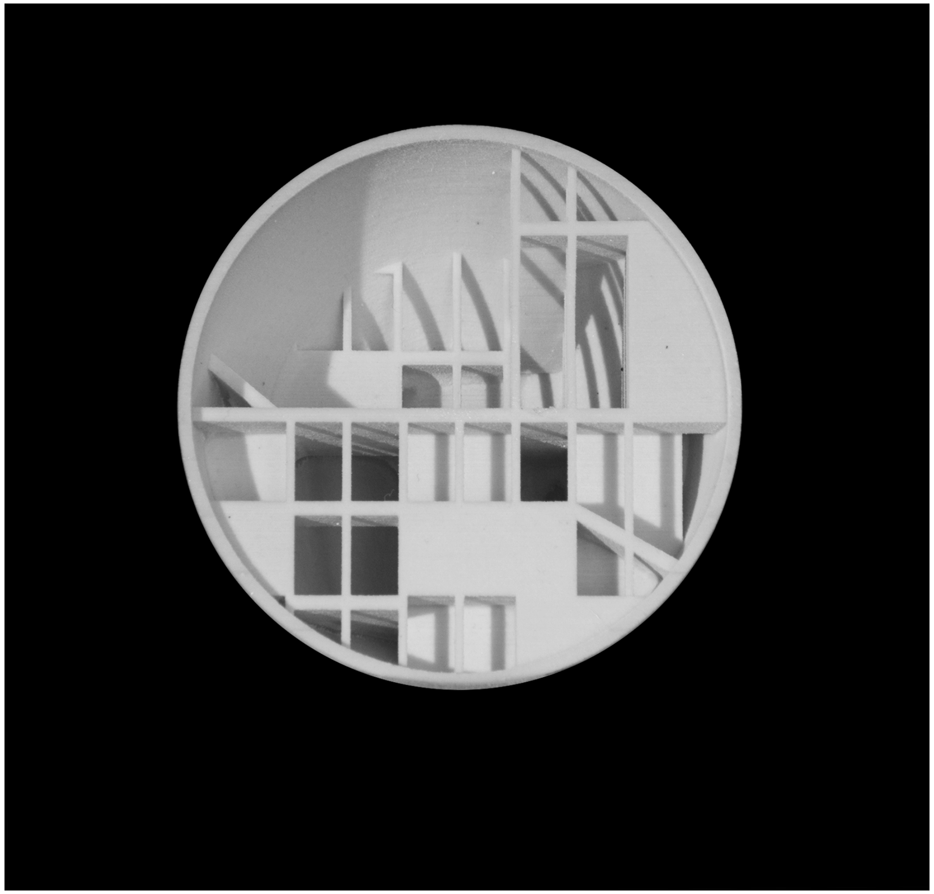




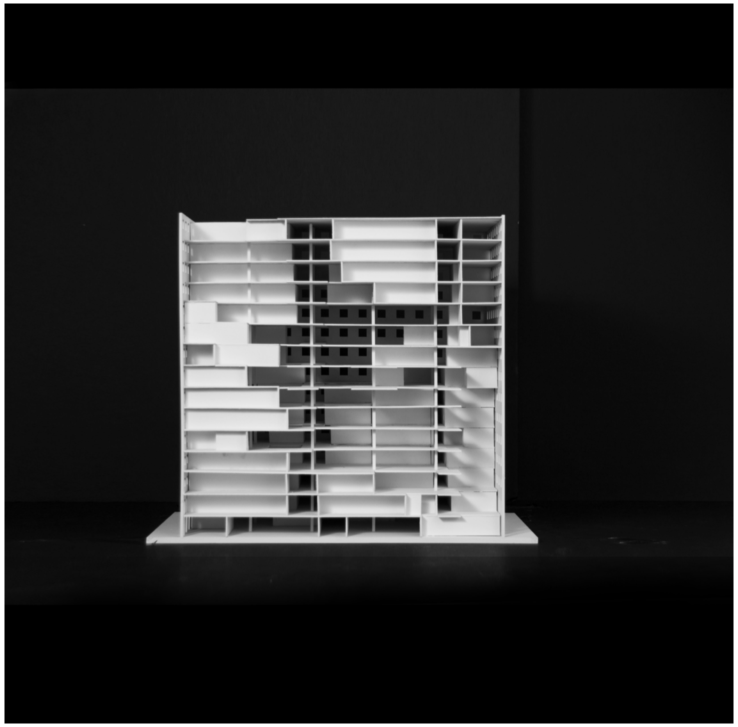
Ranges of the proliferation.

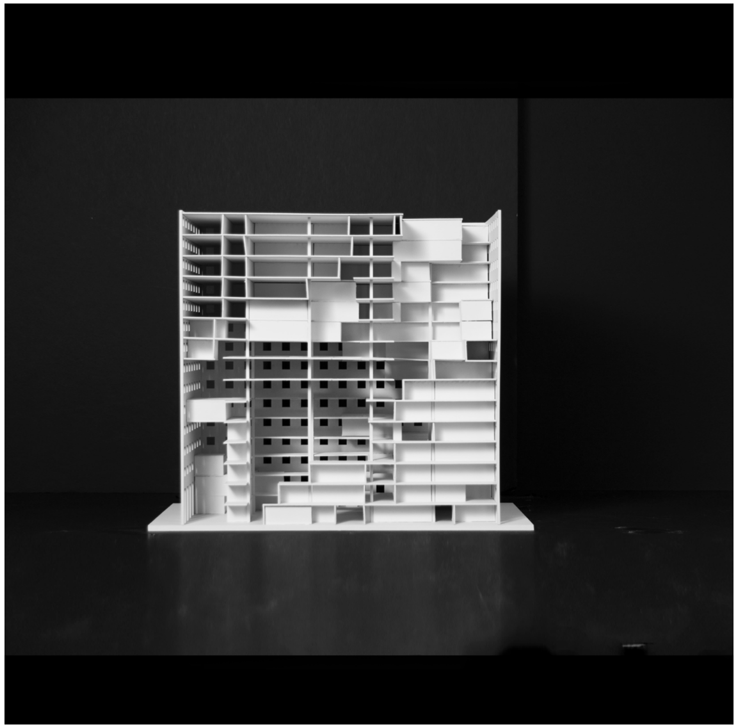


First iteration in the generic space.



Second iteration in the generic space.





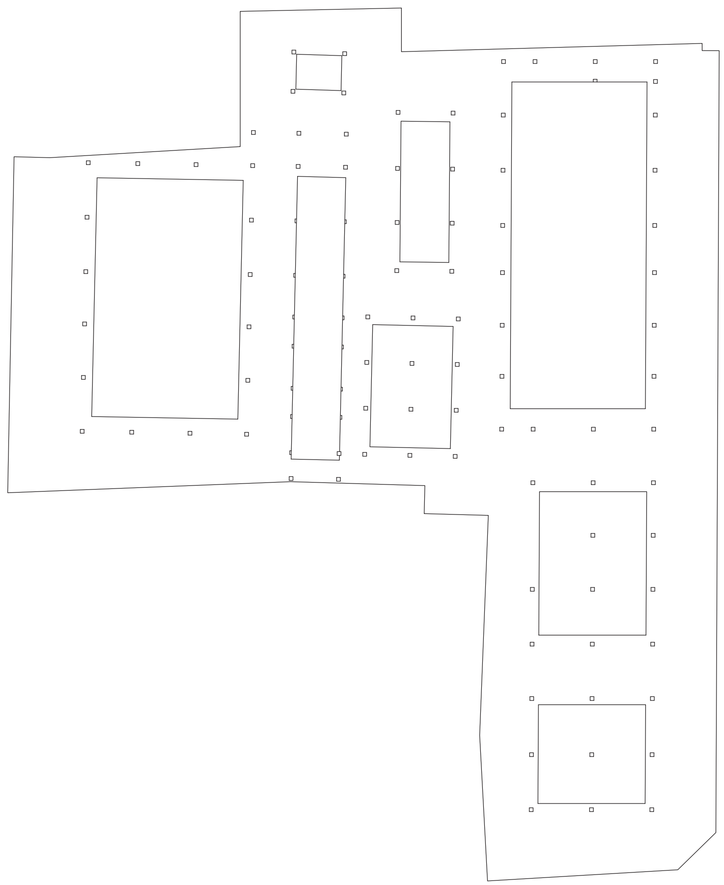
Final model in the generic space.

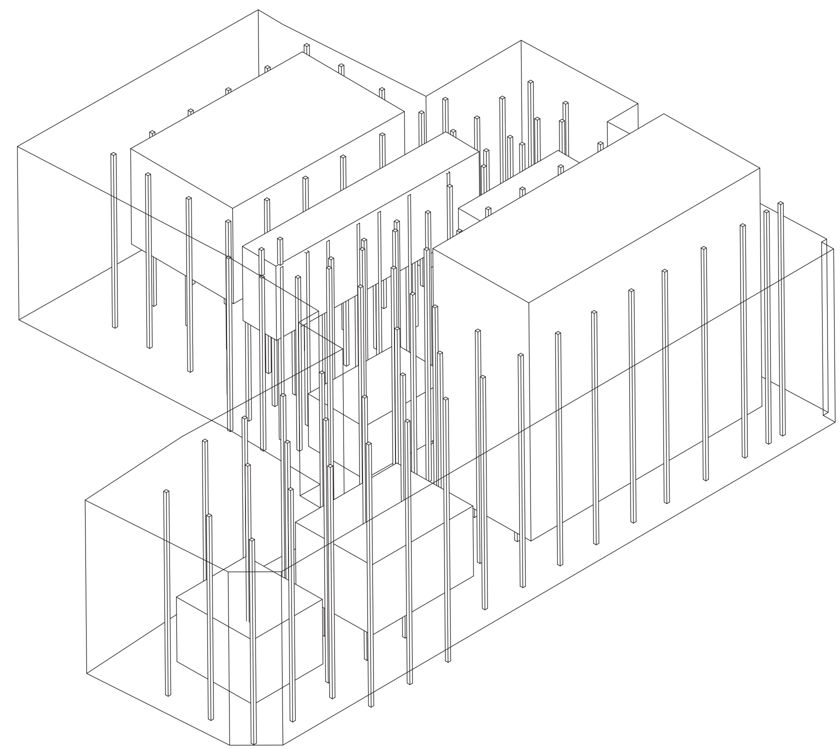
Specific Differentiated
Harrods Building, Buenos Aires

At this point, the research becomes more specific. From the general condition of the in-between space – and its several states through history – to a first generic application, the prototype now proliferates for the second time in an existing building.

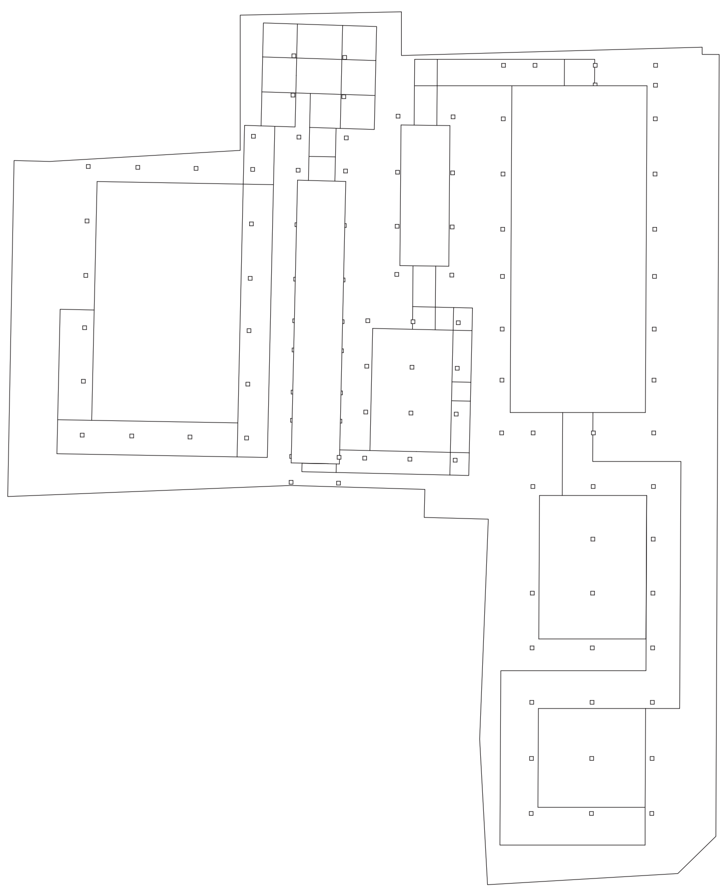
For this iteration, the application was reversed. The Harrods building being much smaller, and with a more qualitative context to it, the prototype couldn't afford to proliferate without limits.

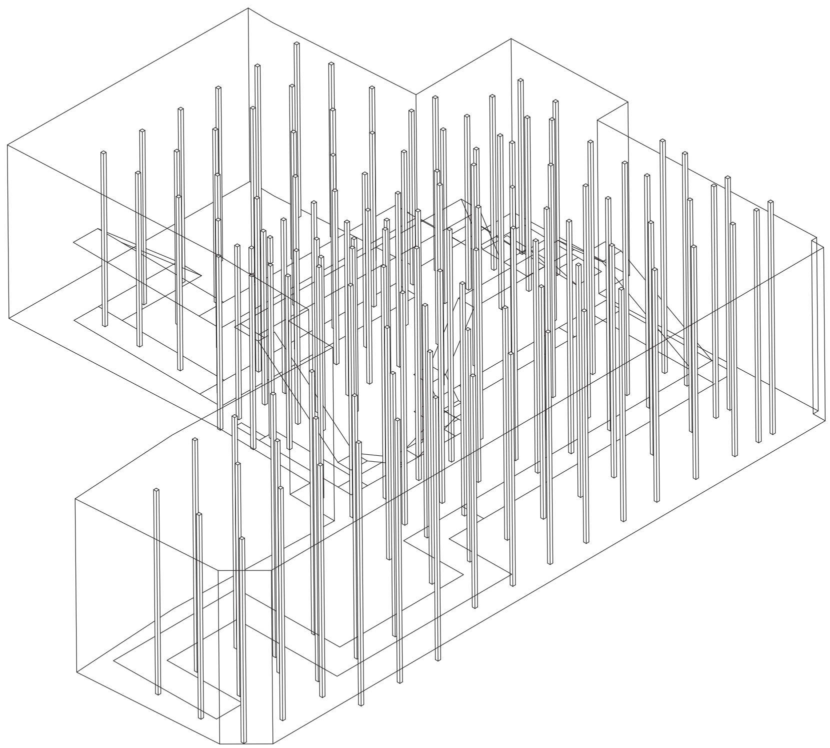
Whereas in Merchandise Mart it all started from generated pathways to occupy the building, this next application took the reverse approach. The spatial field was first differentiated and a basic volumetry defined. Only then was the pathway weaved into the building and the rest of the prototype generated.
From the existing columns grid, eight different patterns emerged in the building.
These became the starting point in generating a working volumetric scheme - by becoming open spaces.
Following proportional constraints, they became either interior plazas of galleries; the circulation being then weaved between them. From this the prototype took over, creating colonnades and programming, working with heights, adjacencies, porosity, light, widths, speed of movement, to create the ultimate in-between condition in the Harrods building.



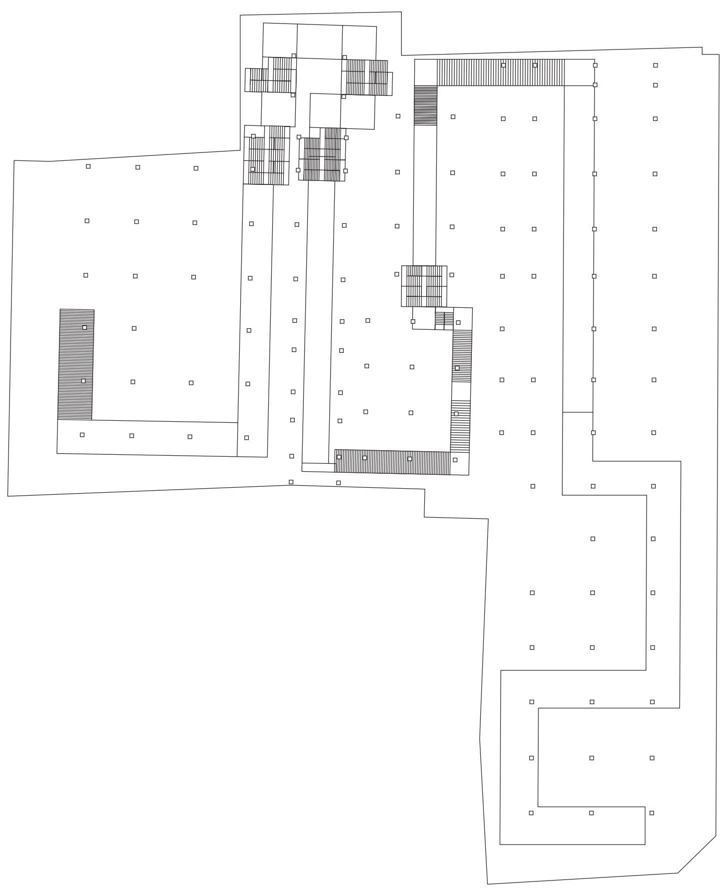


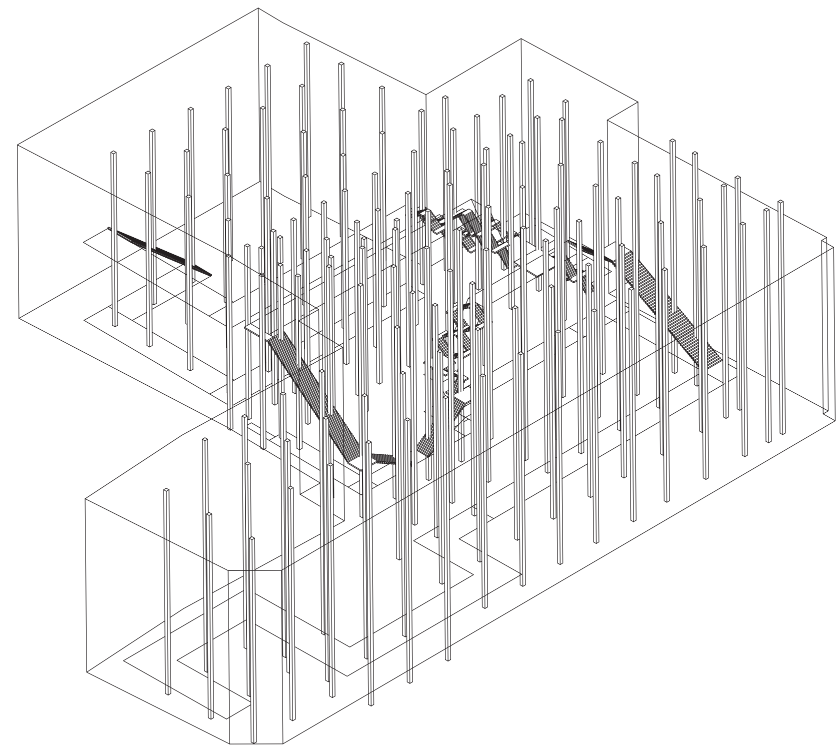
Protocol diagrams in the specific, differentiated space. Creation of open spaces within the grid.



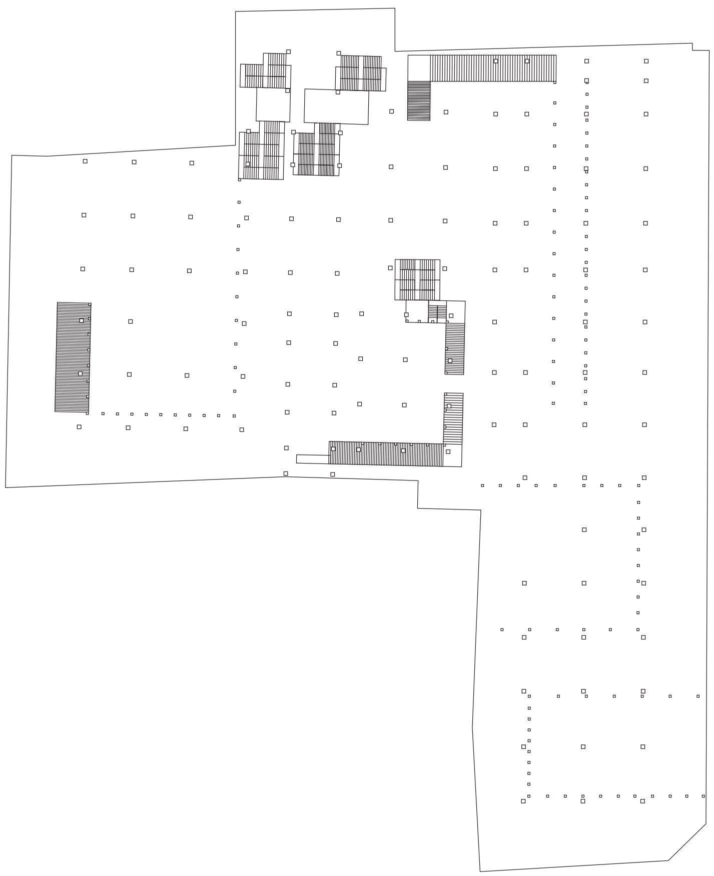


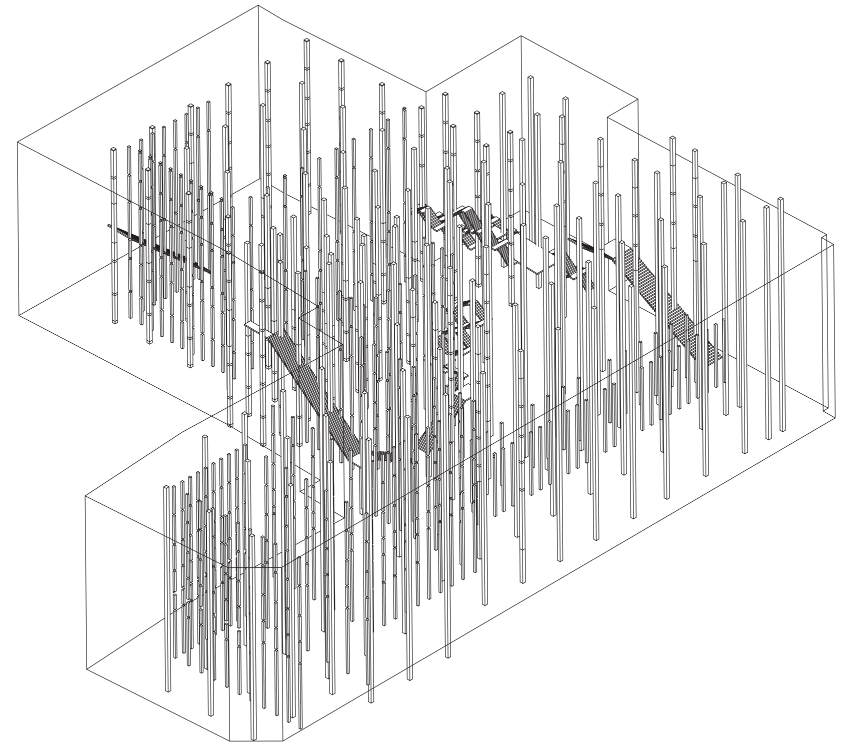
Weaving of the pathway in-between the open spaces.



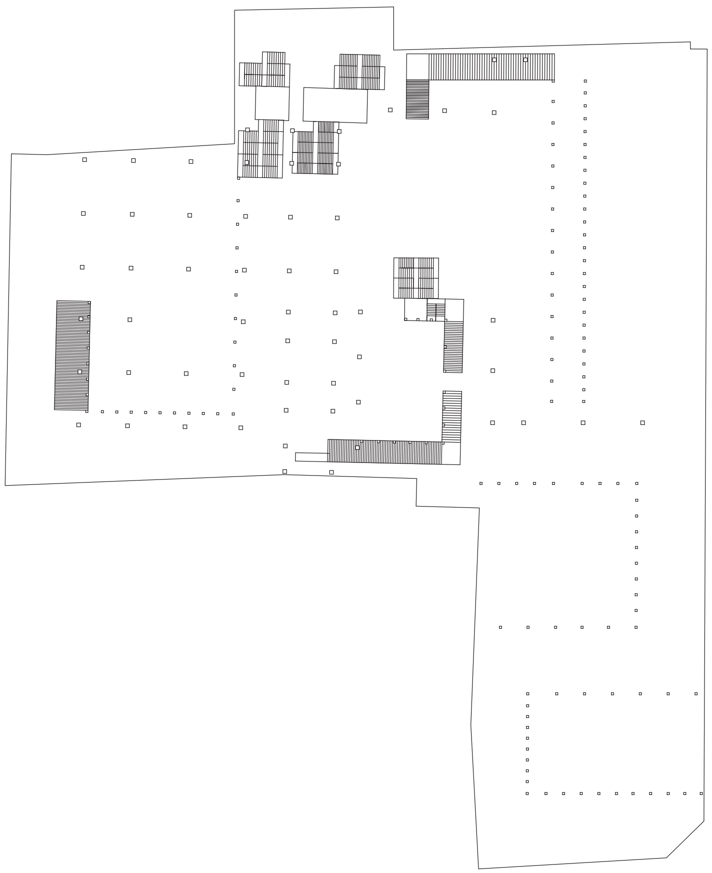


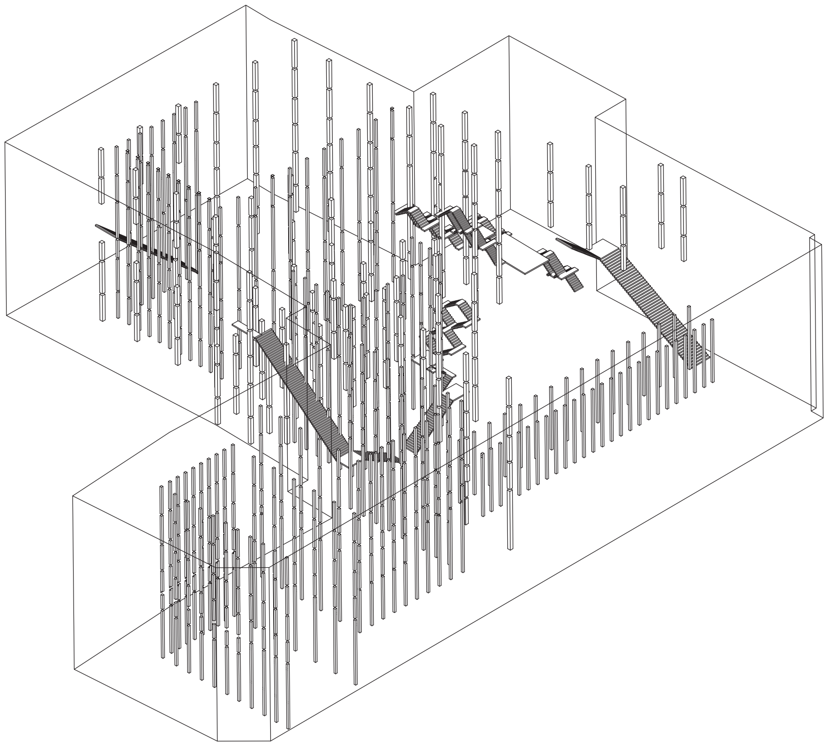
Creation of stepping conditions to compensate for the height differences.



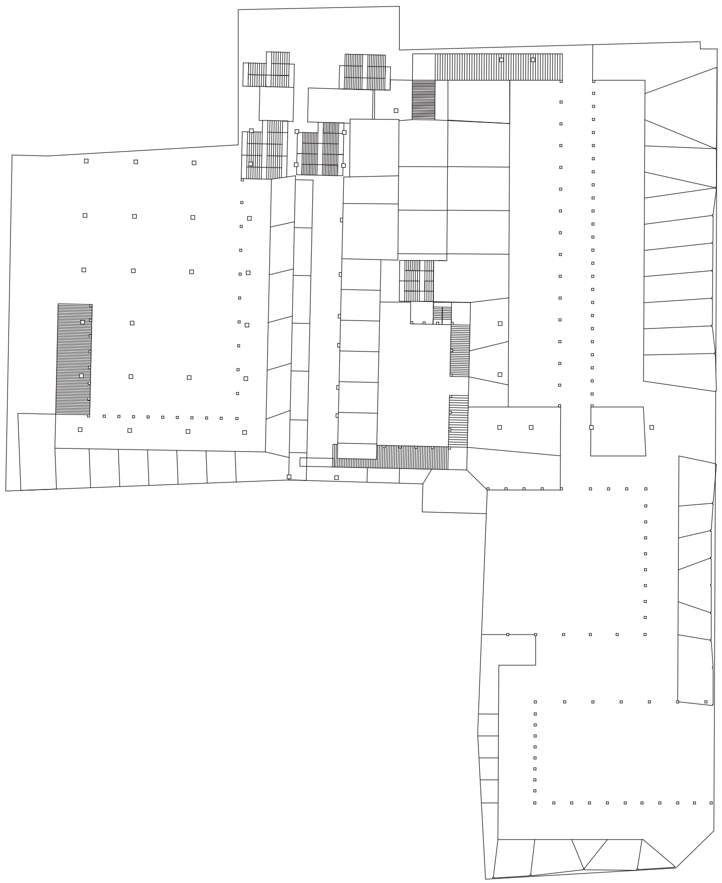


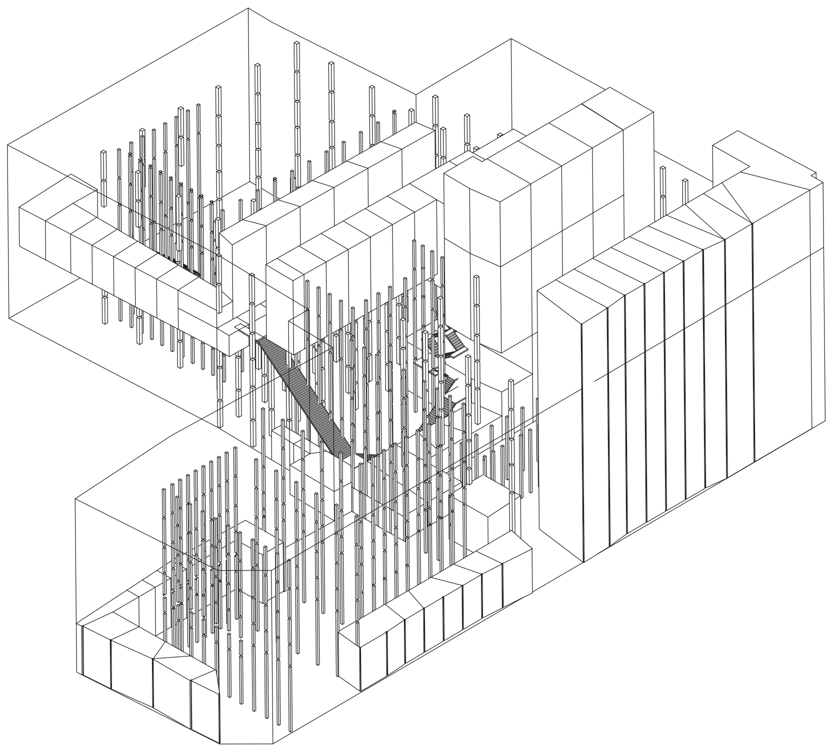
Column redundancy creates specificity in the grid framework.



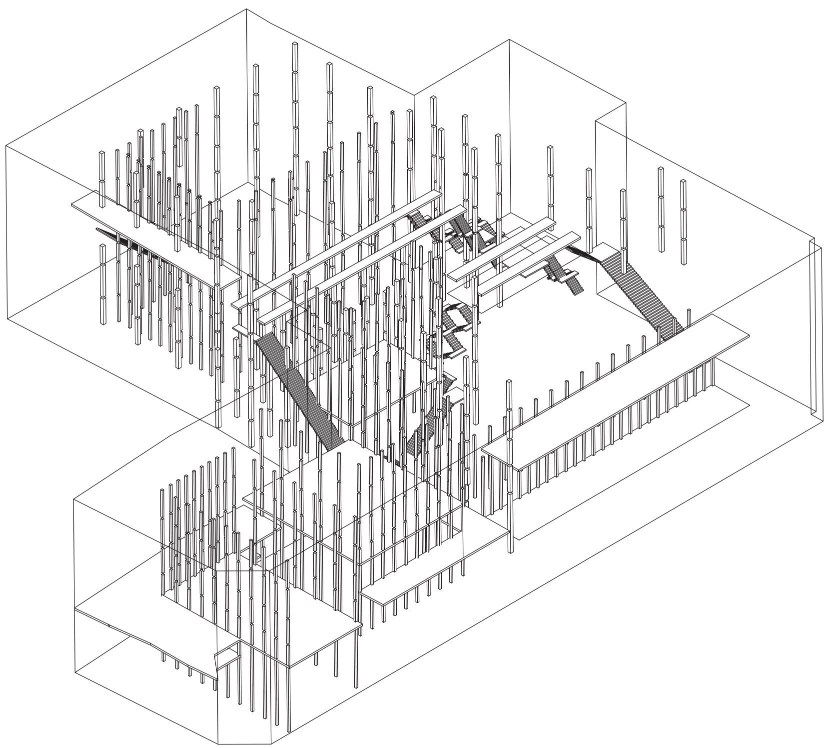


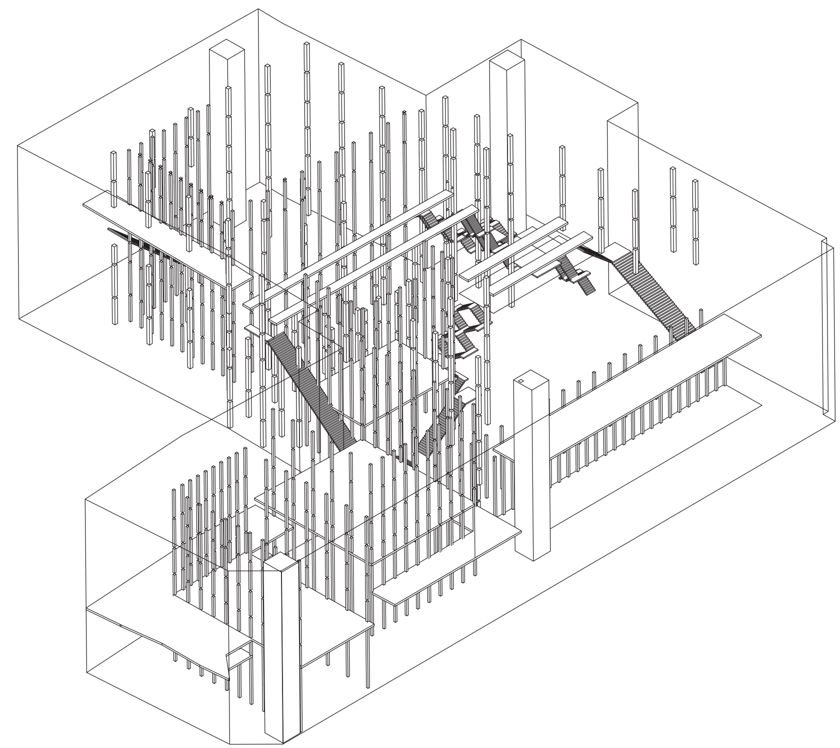
When the typological quality of a space is compromised, the columns are removed.



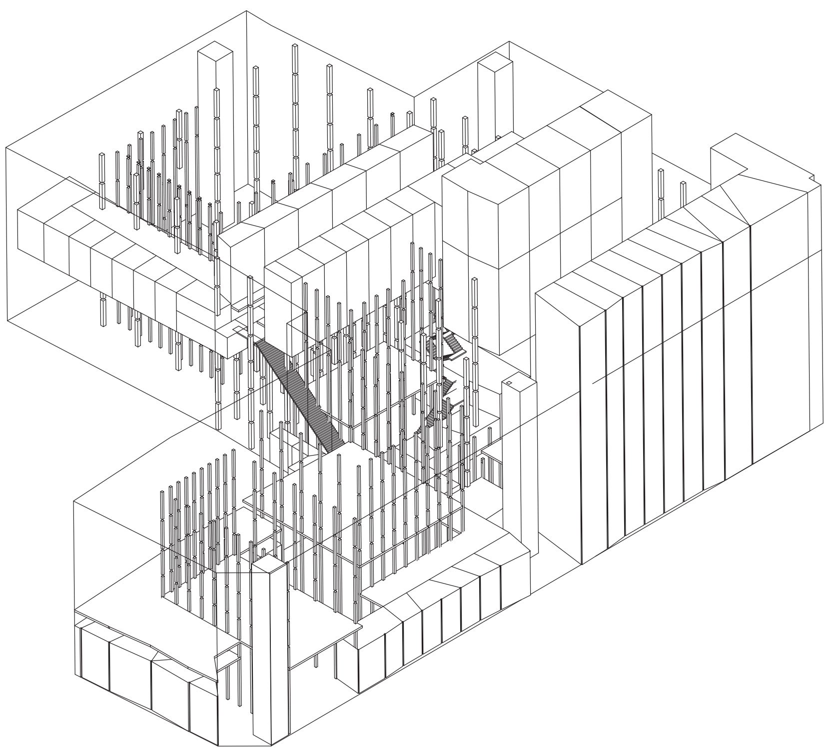


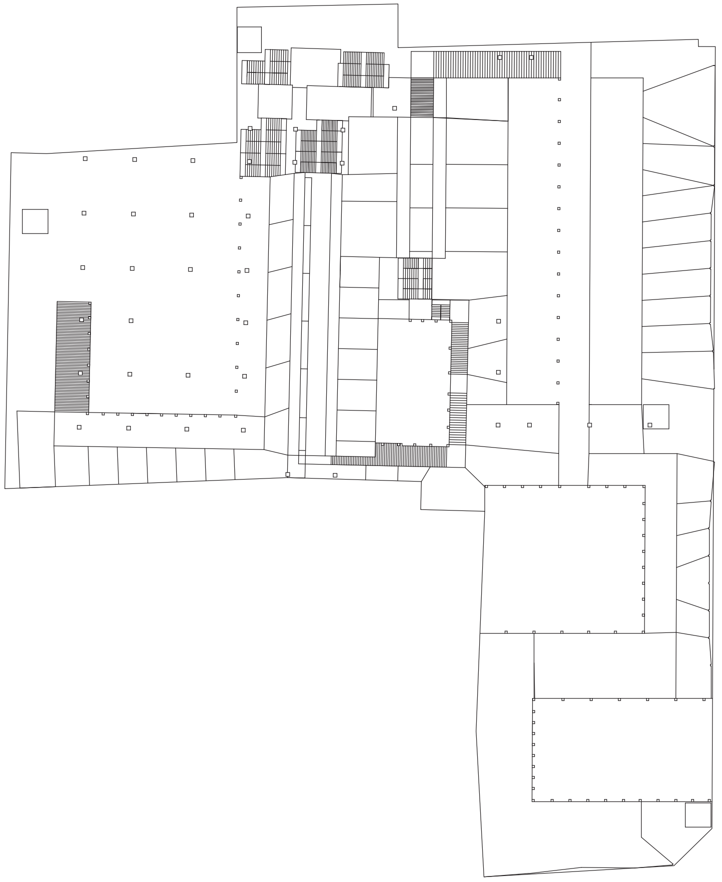
Massing completes the relational logic of the protocol.



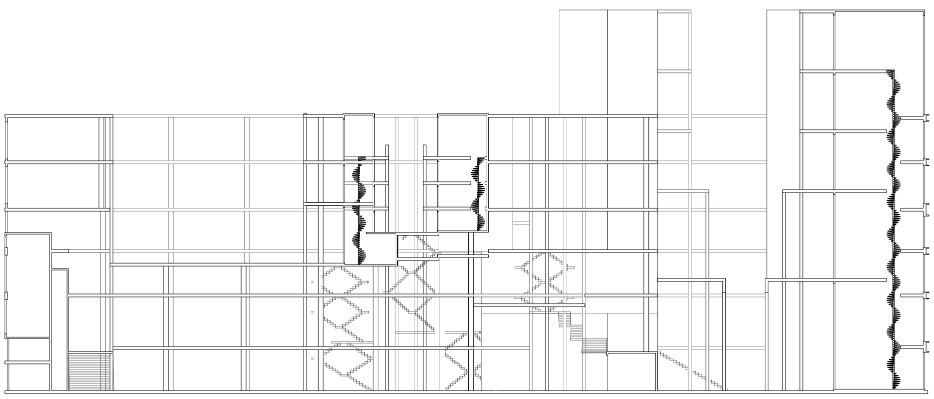


Vertical qualities are applied to the existing floor plates.

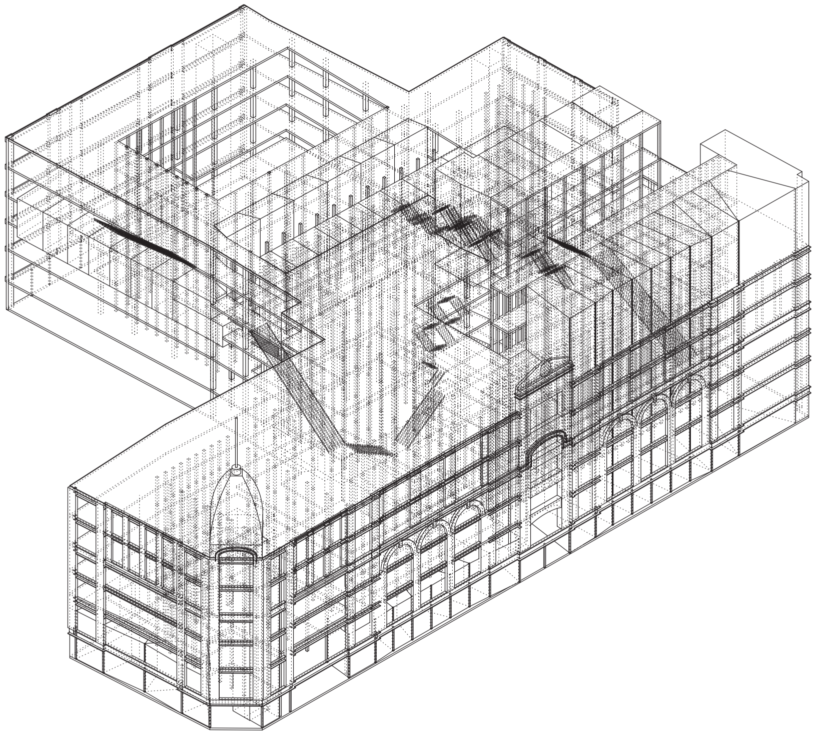




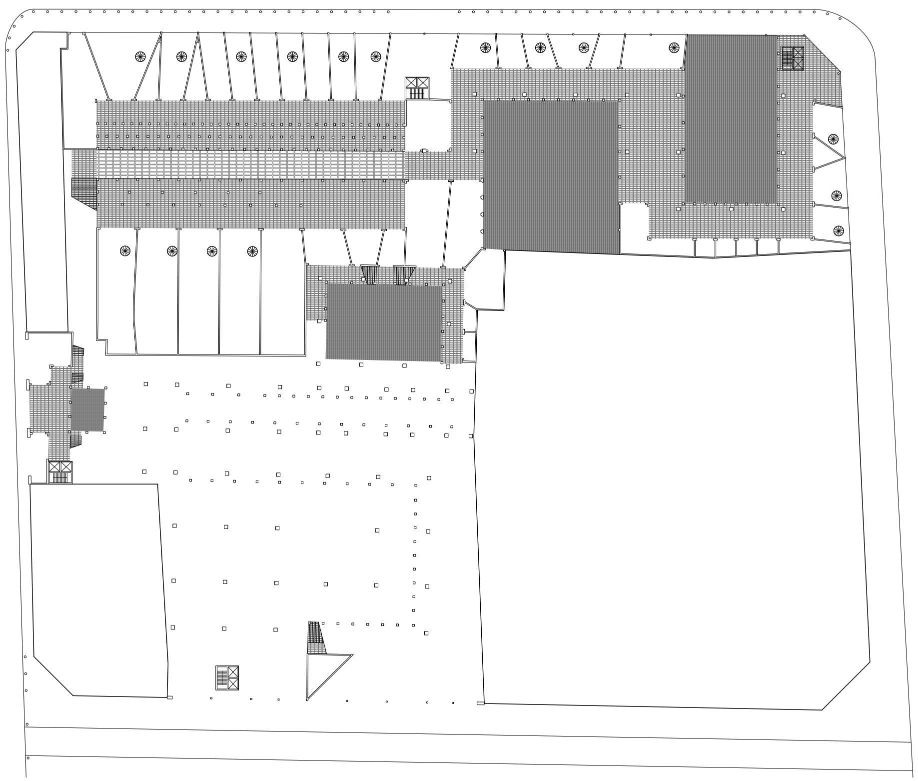
The complete system.

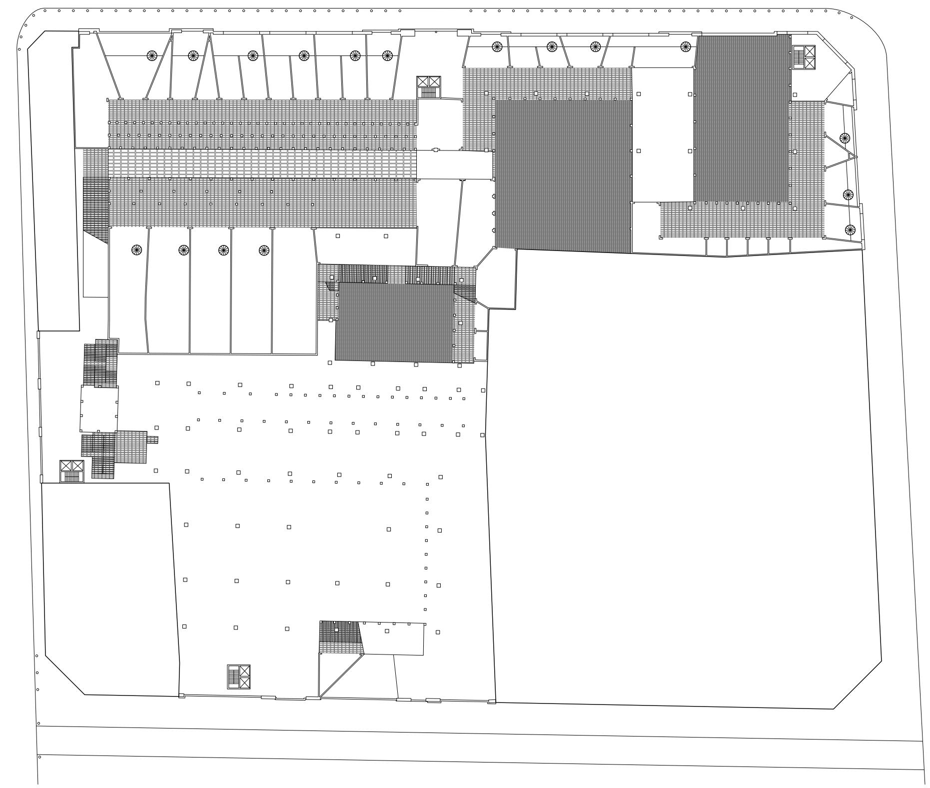


Harrods Building section.

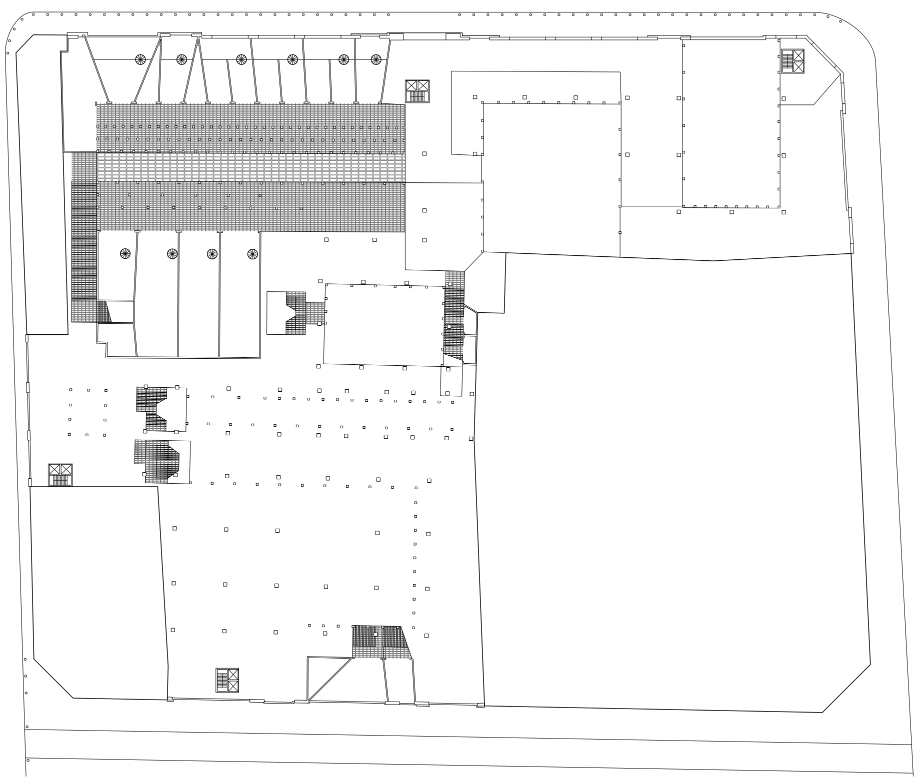


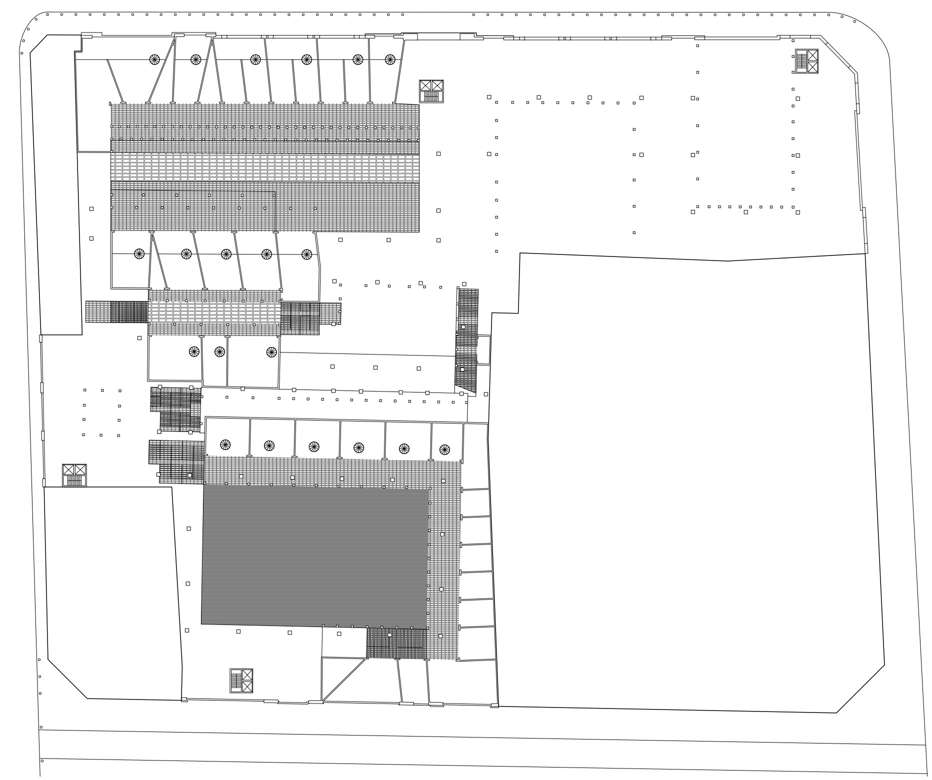
Harrods Building isometric.

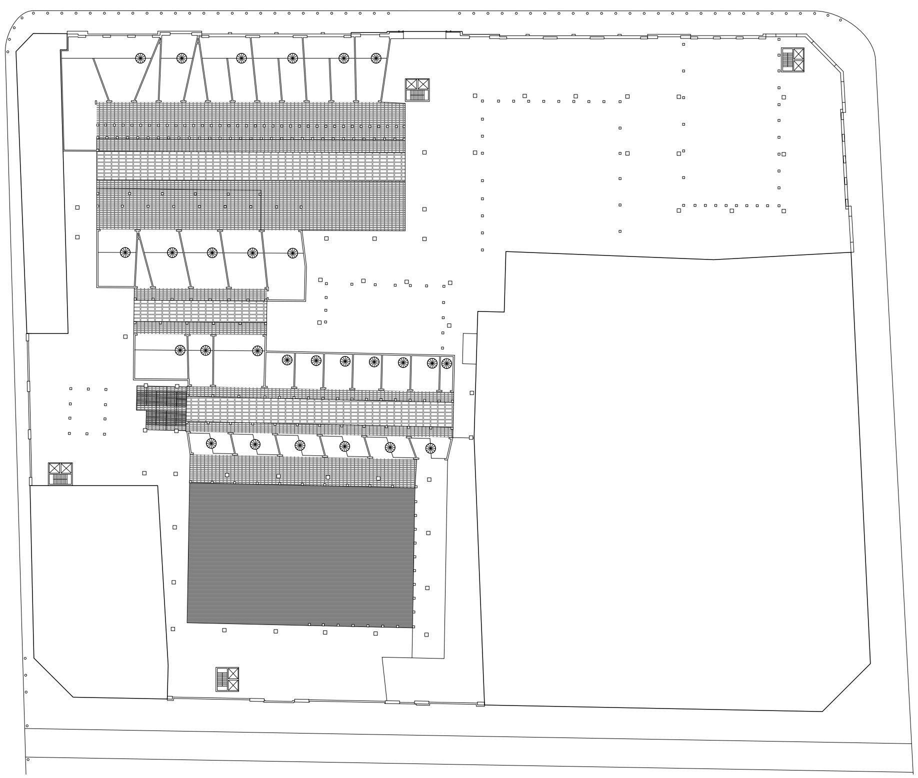


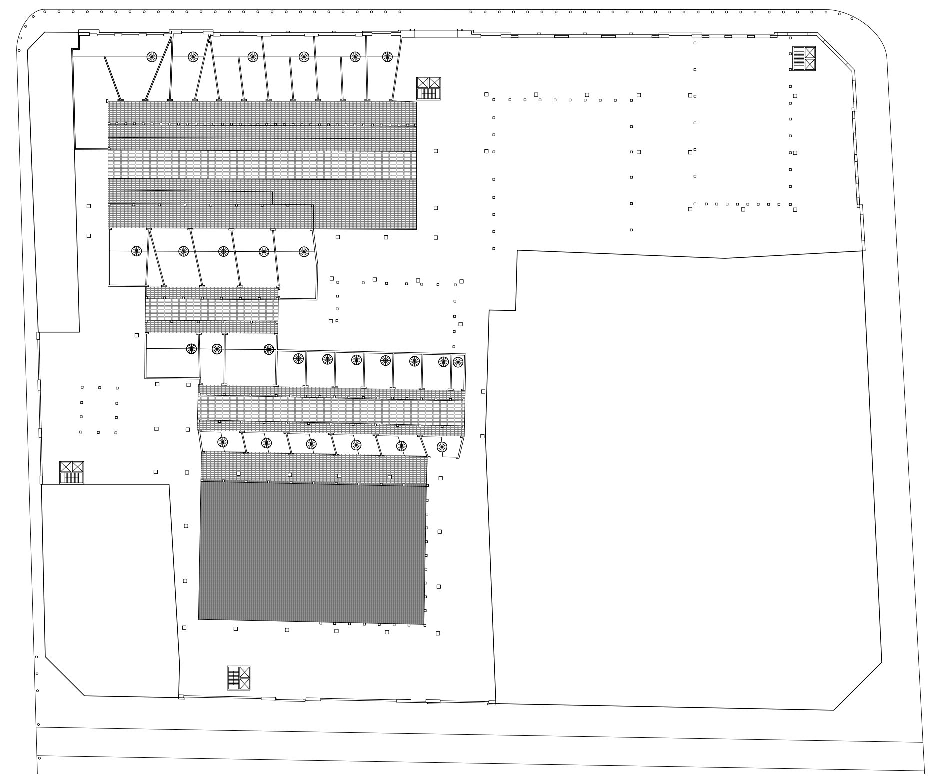


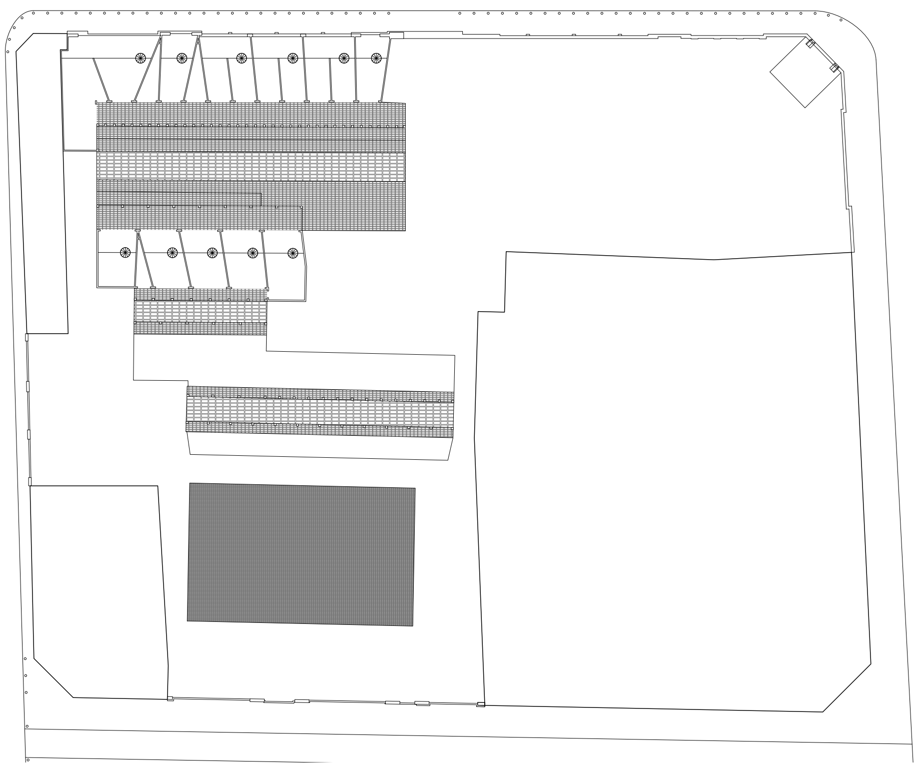
Harrods Building floor plans.

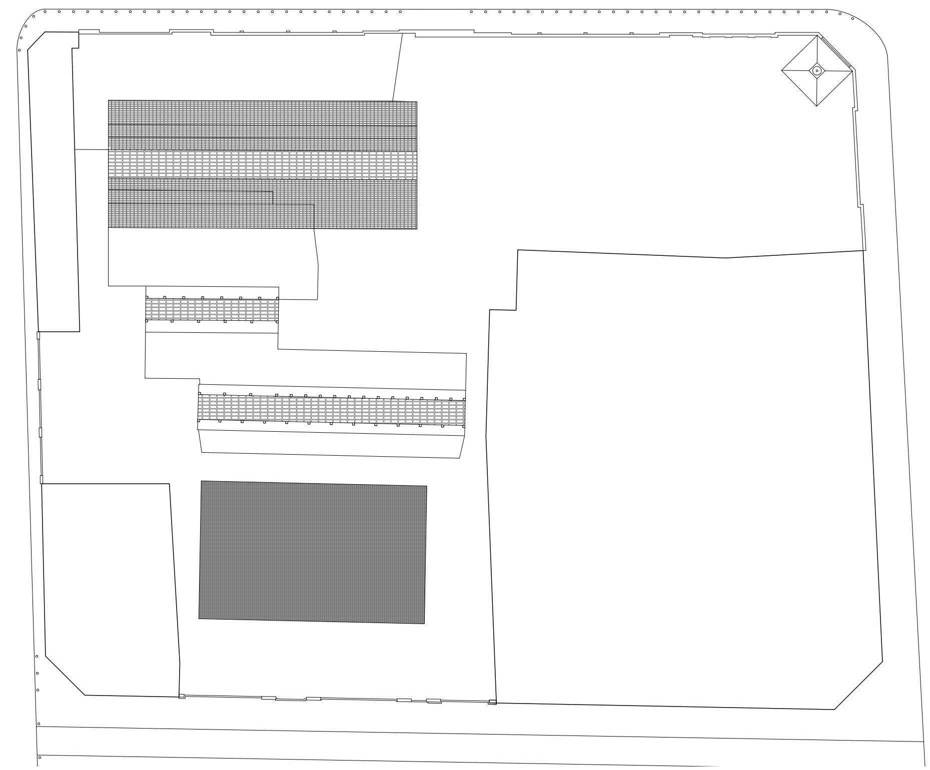




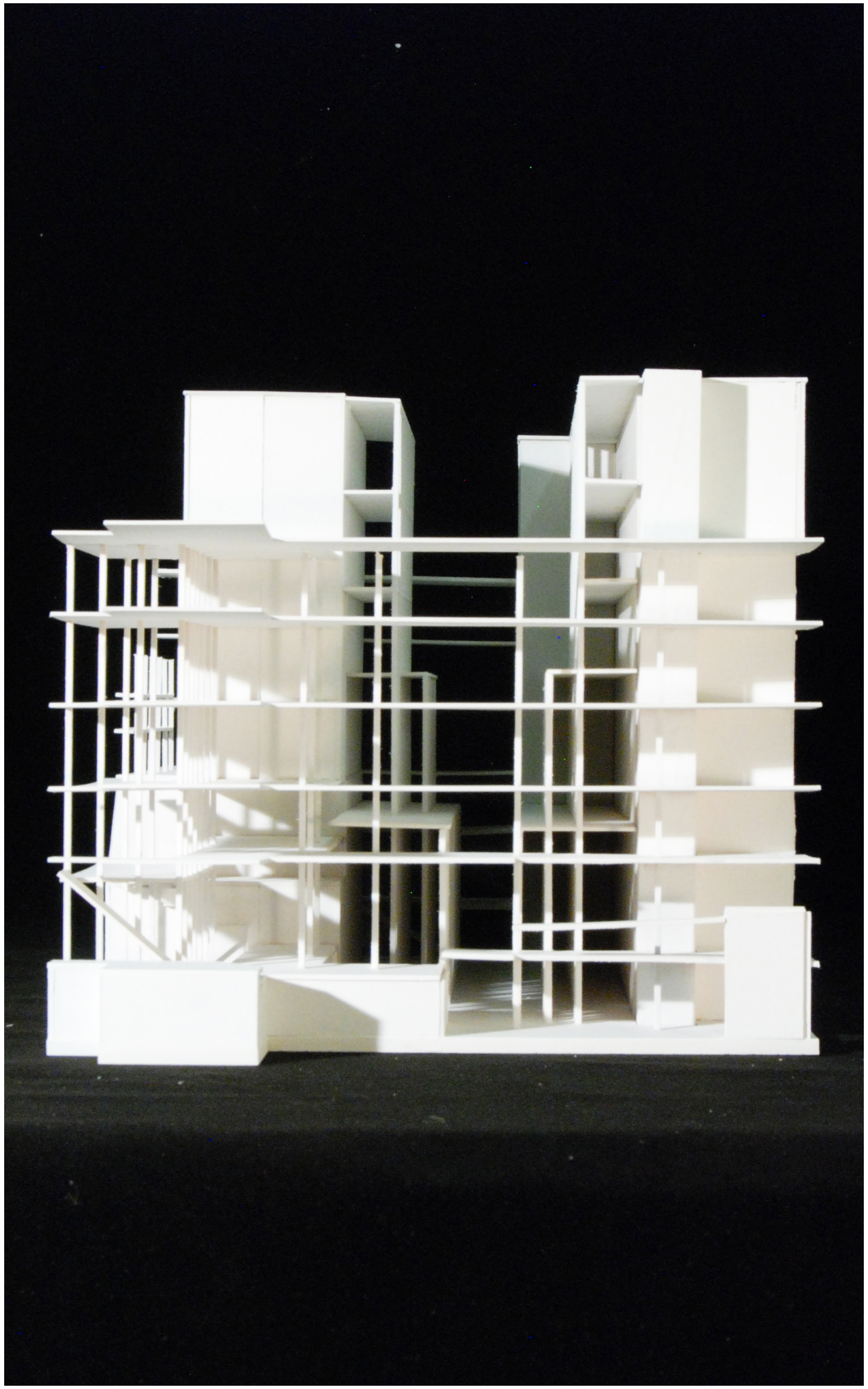




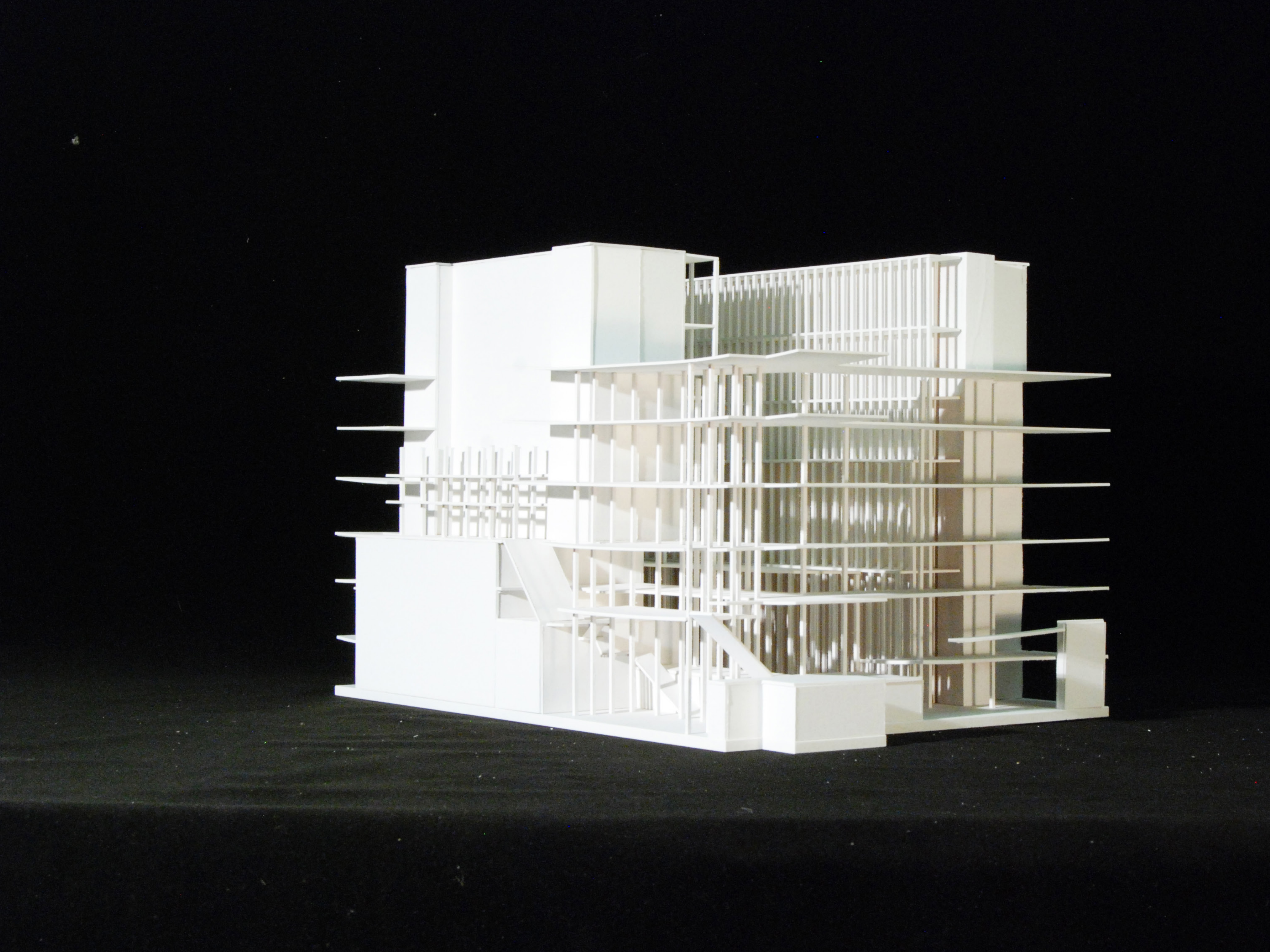




Model. The different condition of typology and vertical circulation are clearly shown.



Architectural qualities create structural redundancies. Here the overlapping arcading system.



Illustrations