Portfolio of works at GSAPP by Yining He

MSAAD, 2020, Columbia University
yining.h@columbia.edu

§1
Studio Design Projects

06 MUSEUM WITH ONLY GALLERIES
Summer 2019, Adv Arch Design Studio
Critic Mimi Hoang and Eric Bunge

22 MINING THE CITY
Fall 2019, Adv Studio V
Critic Andrés Jaque

42 RECURRING MELODY
Spring 2020, Adv Studio VI
Critic Steven Holl and Dimitra Tsachrelia

§2
Other Works

68 INTERIM URBANISM
2019 Seoul Biennale of Architecture and Urbanism
Employer N H D M

74 ULTRAREAL ORIENTAL
Fall 2019, Graphic Elective
Critic Phillip Crupi, Joseph Brennan

Instead of being passive consumers of trendy ideas or knowledge. Architecture can perform based on cultivating alternative ways of being in the world as guardian of its context. I see potential for an architecture that could reflects, criticizes and proposes an exit from the prevailing spatial models.
In this portfolio, each project is an alternative existence to its 'hype' counterpart.

A museum with only galleries

§1 The wrapping layer, 06

Design as a method of research and political manifesto

§1 Mining the city, 22

Architecture with langauge from music

§1 Recurring melody, 42

An open campus alternative to highly privatized educational enclaves

§2 Interim urbanism, 68

An alternative narrative through image rendering

§2 Ultrareal oriental. 74

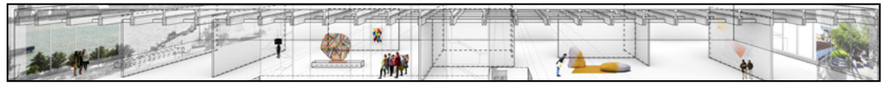
01. THE WRAPPING LAYER

A hypothetical art museum wrapping the front of house with back of house, treating both as gallery space. A museum with only galleries.

SUMMER 2019 ADV ARCH DESIGN STUDIO CRIT: MIMI HOANG, ERIC BUNGE PARTNER: YANXI FU

Precedent Study Drawing
∧ Whitney Museum
∨ Sir John Soane's Museum

Gallery as big as a block - Whitney Museum of American Art



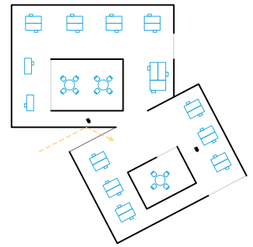
Gallery as small as a recess - Sir John Soane's Museum

In the world of museums, as more portions of non-gallery space are becoming galleries, we envision a museum with only galleries, an architectural device that downplay such binary program distinction, an alternative type of museum.

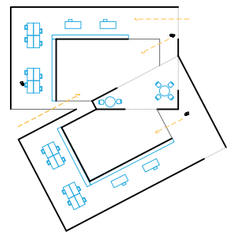
From two precedents, the poché with diverse scales in Sir John Soane's Museum and the transparency of workspace in the Whitney Museum suggest more and more flexibility of galleries / museums. Therefore, We proposed a prototype with the back of house wrapping the front of house. By paring such units, we can create rooms with different scales and connections between the two type of space.

As a response to the brief - museum with only galleries, we designed a hypothetical art museum composed of units hosting both art and its armature, space with a wide range of scales to flexibly exhibiting the back of house as part of the exhibition, providing an alternative experience for artists, museum goers and curators.

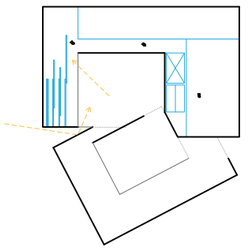
Prototype: foam space enclosing void space can generate space with different shapes and scales, providing alternative program combination.



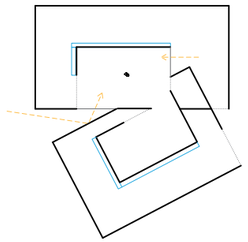
office as gallery



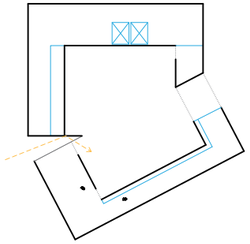
library as gallery



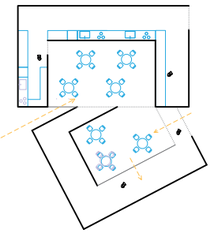
storage as gallery



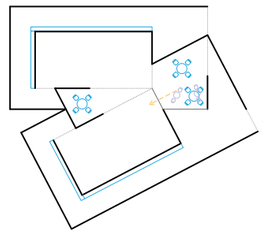
gallery with gallery



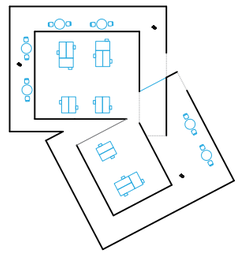
reception as gallery



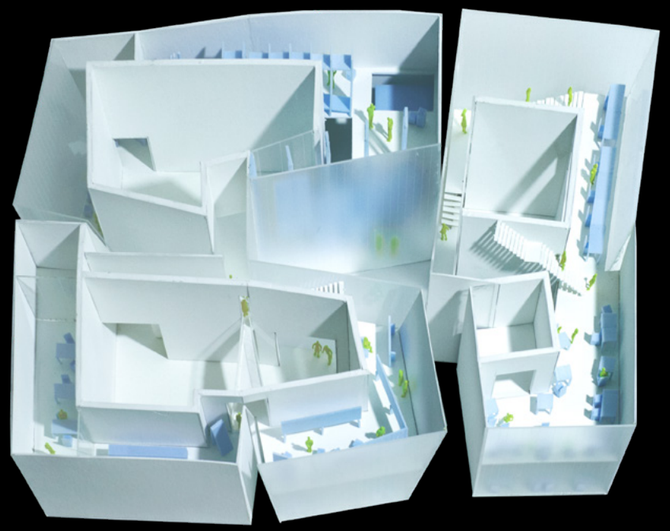
lounge as gallery

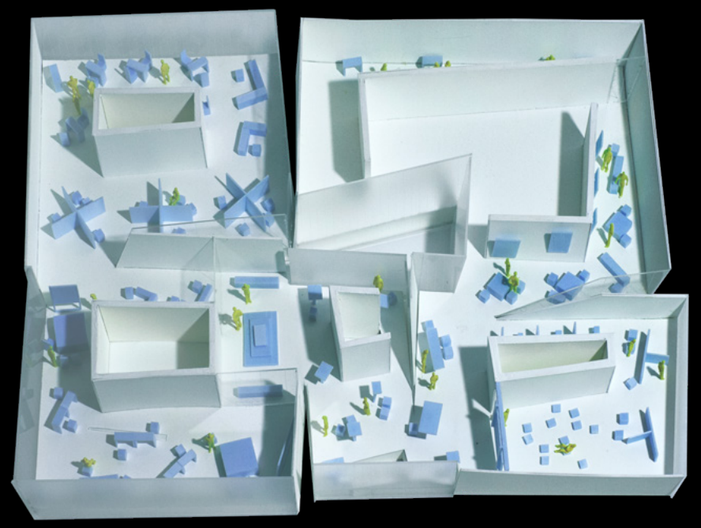


reception as gallery

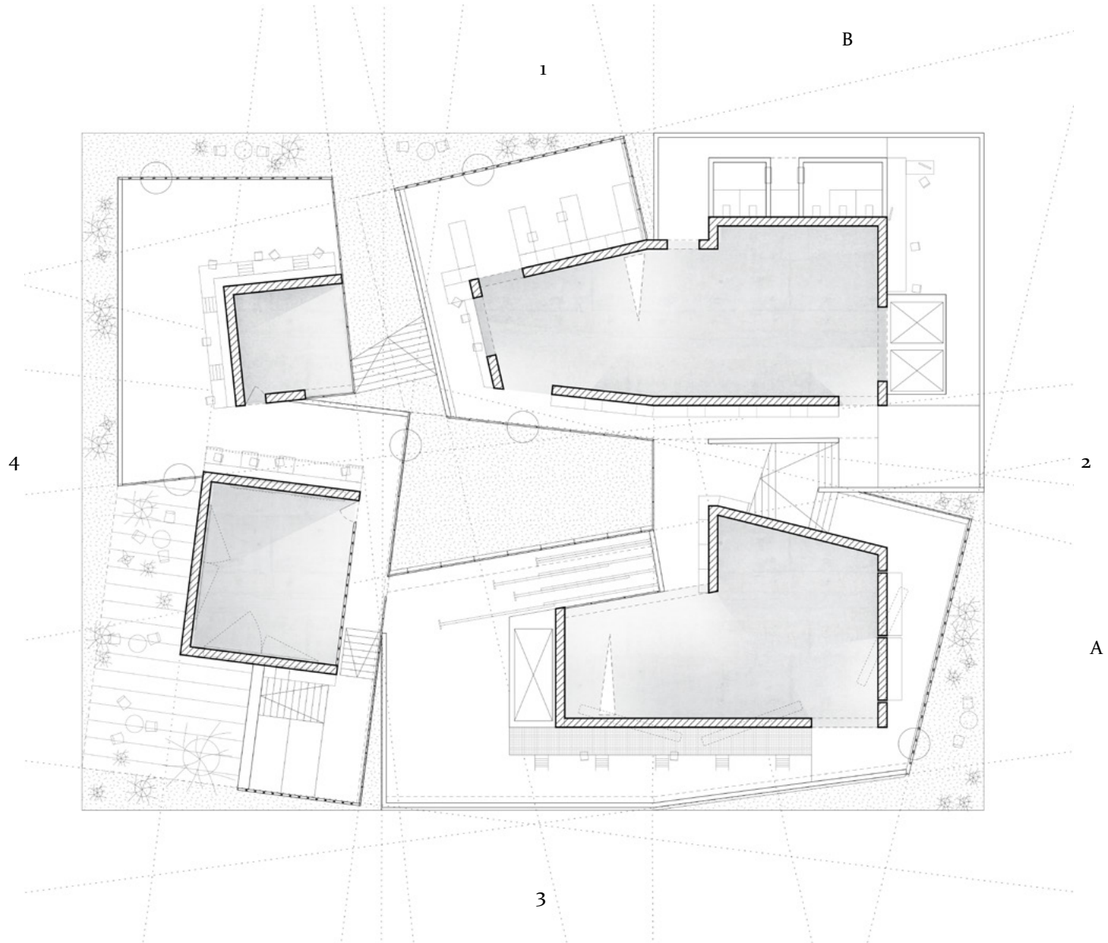


lab as gallery





0 10m

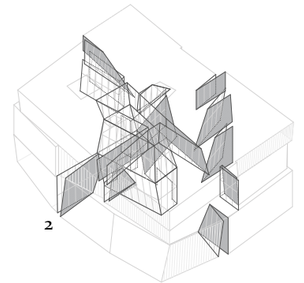


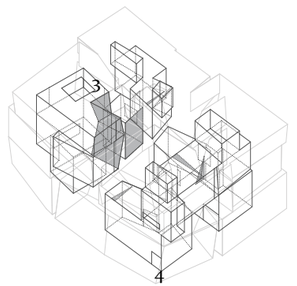
1st floor plan

The wrapping layer acts as the armature for art. The spatial quality of the wrapping layer is complex, contextual, and raw, which is on the contrary to the neatness of the wrapped layer. Art exists not only in a de-contextualized white box, but in a contextual world of how it is processed, preserved and stored.

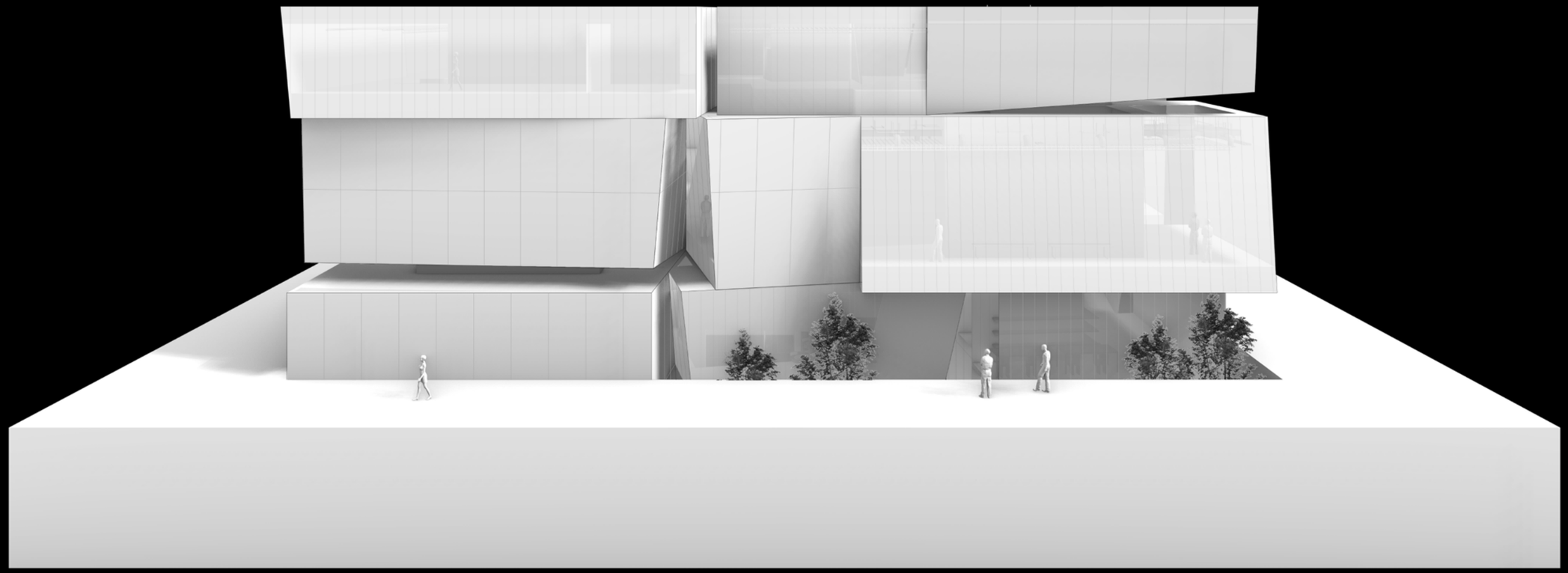
The operation of paring introduces a third spatial type – the crack. The crack brings light to the wrapped layer in a moderated way, both on plan and on section. The crack brings a sense of position to human bodies, It also creates a gallery type that is interactive with the city: visitor positioning themselves in the city and pedestrians spectating the museum from the street.

1

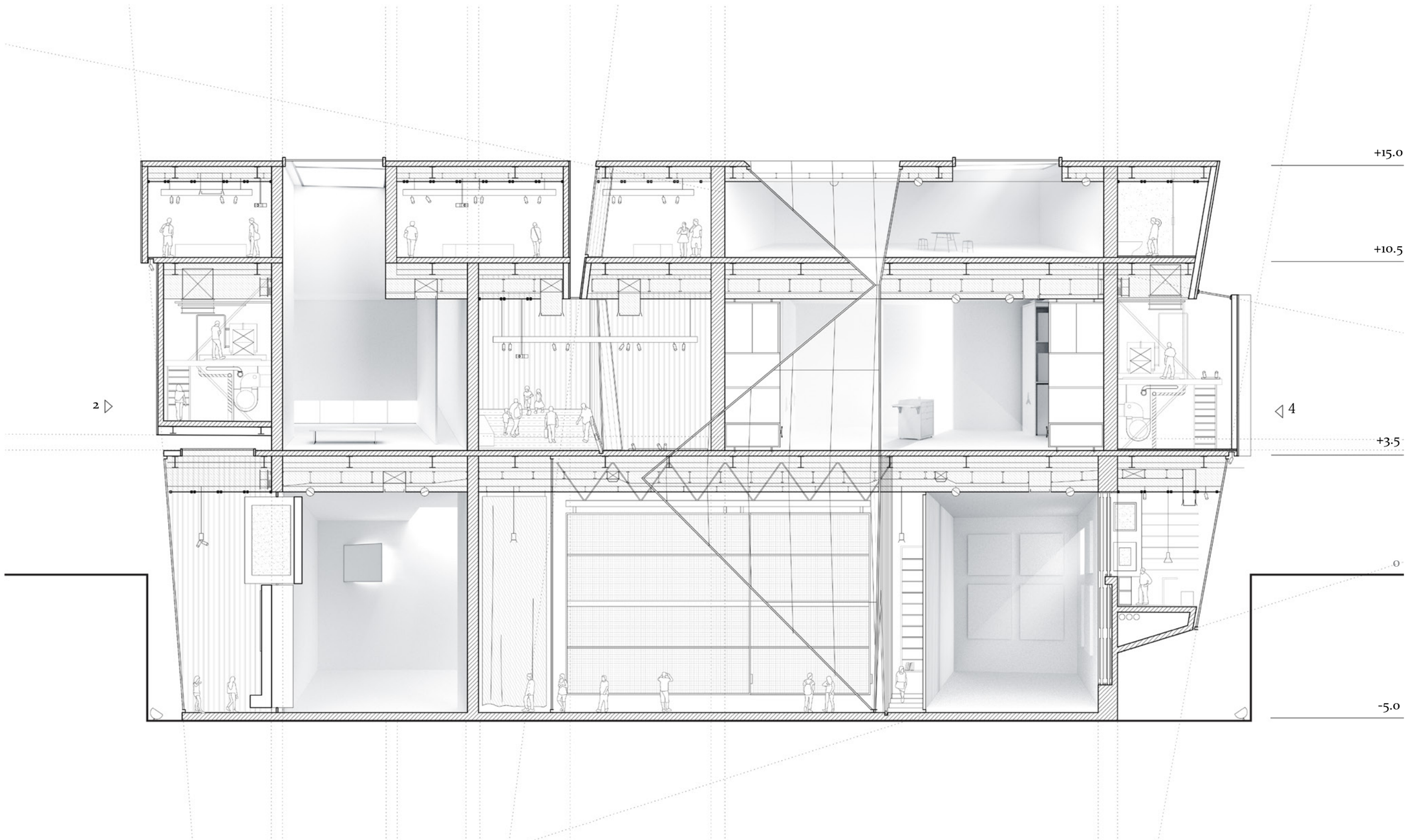

2



1: First floor combo axon
2: The crack
3: Crack surface
4. Wrapped volume



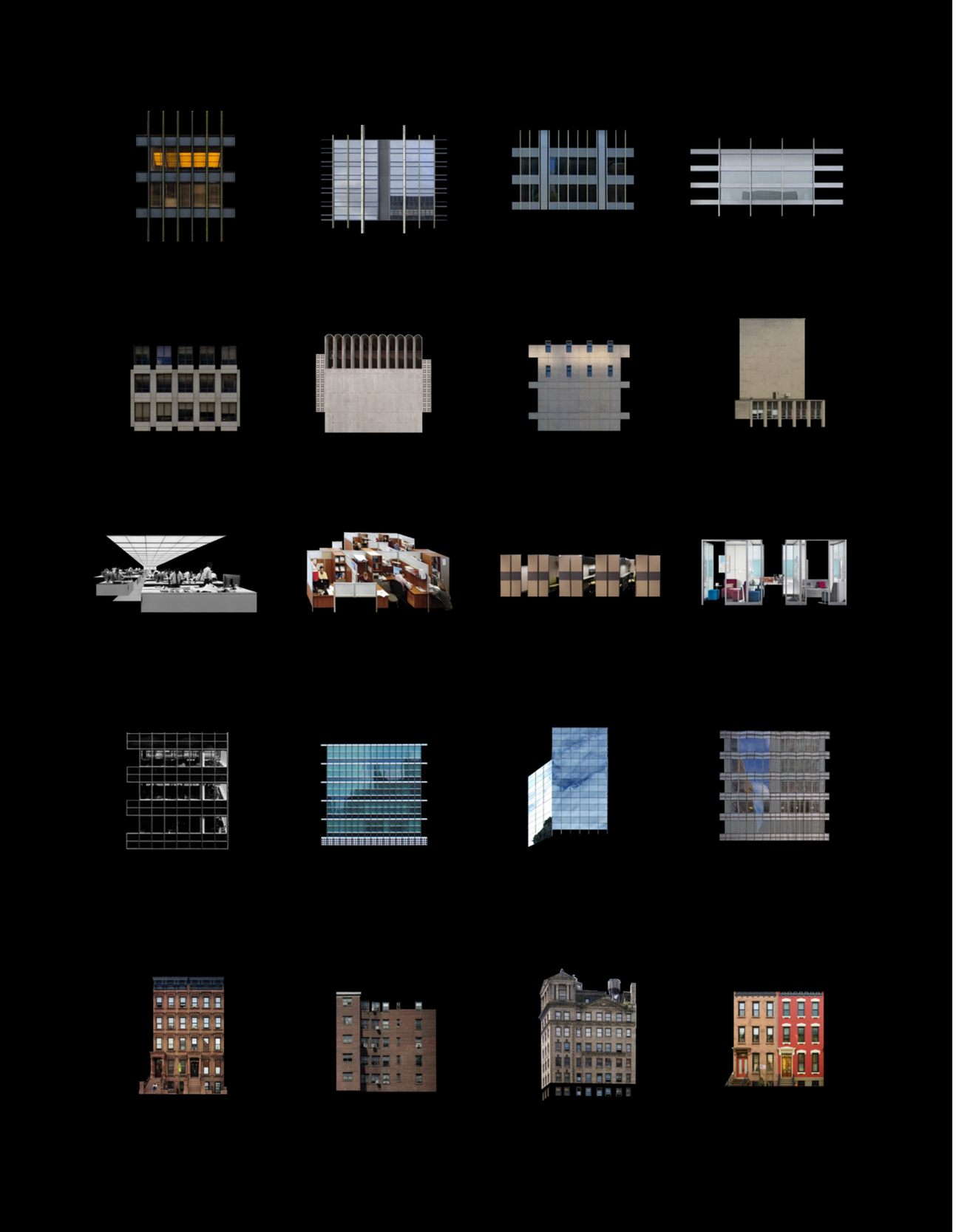
0 5m



Section A

0 5m

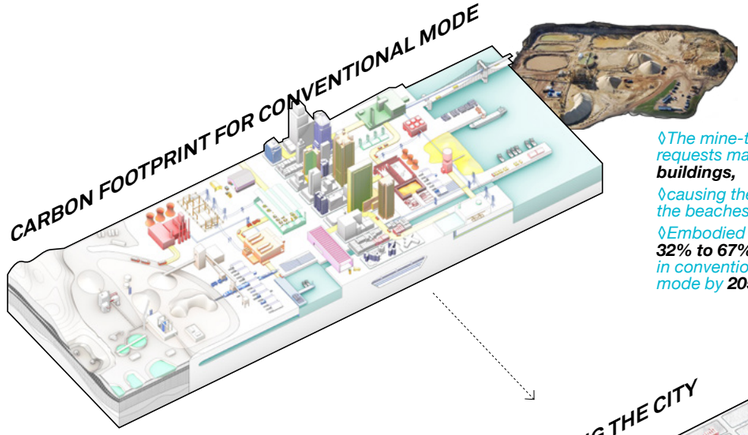
Section B



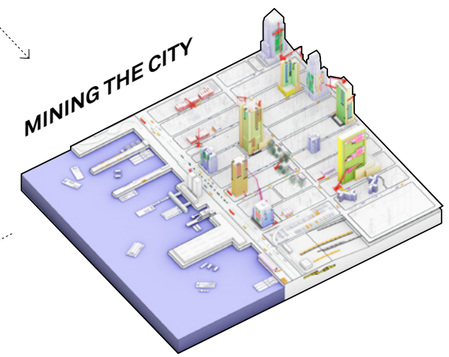
02.MINNING THE CITY

A non-extractive strategy to relocate New York's material excess to radically decarbonize its environmental impact and improve building envelope performance.

FALL 2019 ADV STUDIO V CRIT: ANDRES JAQUE PARTNER: XINNING HUA

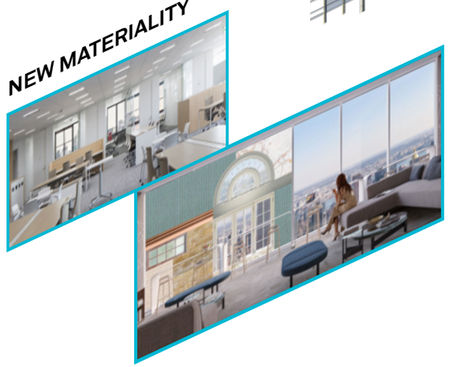


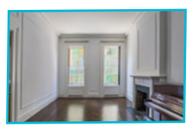
◊The mine-to-landfill mode keeps requests material **from nature to buildings,**
◊causing the shrinkage of **75 to 90%** of the beaches.
◊Embodied energy would rise from **32% to 67%** if we upgrade our building in conventional mine-to-landfill mode by **2050**.



◊According to **80x50** by Bill de Blasio
◊**33** paths to retrofit **8** types of NewYork City's buildings
◊**1/3** include envelope ugrade
◊contributing **17%** of the **2030 target**

◊New York City is imbued with available materials:
◊**26** billion tons of excessive **steel** on Skyscrapers in the 60s;
◊**93** million tons of excessive **stone** on post modern buildings;
◊**7800** tons of excessive **glass** on modern glass towers.





◊With reused materials, we are proposing new aesthetics for the **view**,
◊new aesthetics for the **frame**,
◊new aesthetics for the **light**,
◊new aesthetics for the **city**,

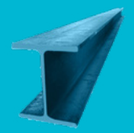
What if the materials we need is already in our city?

Under the Paris Agreement, a series of documents in different fields and scales are set in place in order to mitigate global warming. Among those documents. We look closely to the building sector as the start of our discourse. The Green New Deal resolves to upgrade all existing buildings to achieve maximum energy efficiency, which corresponds with Bill de Blasio's *80x50 plan*. A plan by the New York City Mayor's Office of Sustainability. In New York City, Around 14,000 buildings need to improve energy performance in order to achieve the 2050 target. 17% of that improvement comes from envelope upgrade.

Upgrading with traditional construction method contains massive embodied energy which comes from mining, transportation, bulk manufacturing, storage and constructing. In the meantime, replaced materials would go through transfer stations, multiple waste processing facilities, and more than half of them ends up in landfills. According to research, embodied energy would rise from 32% to 67% if we upgrade our building with conventional mode. Even Buildings using recycled materials has an 80-year carbon debt to be paid

So instead of mining the nature, what if the materials we need is already in our city? There is an abundance of materials that could be stripped to update our buildings in New York City. Decorative steel of skyscrapers in the 60s, stone panels on post modern buildings, partition walls in post-war commercial buildings and glass on glass towers could all be stripped as building materials.

SUPPLY



Steel Excess

Glass Excess

Stone Excess

Brick Excess

Partition Excess

1.One Worldwide Plaza (1986-1989)
Height: 237.14 m (778.0 ft)
Type: Postmodernism Commercial offices
Floor area: 1,706,187 sq ft 50f
Location: 825 8th Avenue

2.Crowne Plaza Hotel (1990)
Height: 480 feet, 46f
Type:Commercial, Hotel
Floor area:204,700 sq ft
Location:1601 broadway

3.One Penn Plaza (1970-1972)
Height: 229 m 57f
Type:Commercial Office
Floor area:2,586,525 sq ft (240,296.0 m2)
Location:250 West 34th Street

4. 5 Times Square (1970-1972)
Height: 175.3 m / 575 ft, 40f
Type: office
Floor area: 95,000 m² / 1,022,571 ft²
Location:250 West 34th Street

5. Americas Tower (1992)
Height: 692 feet (211 m) 50f
Type:Commercial Office
Floor area:933,905 sq ft (86,771.0 m2)
Location:1177 Avenue of the Ameri

6:550 West 43 Street (2000)
Type:Residential 22f
Location:550 West 43 Street

7. Penn South (1956)
Type:Residential 22f
Location:between 8th and Ninth Avenues and West 23rd and 29th Streets

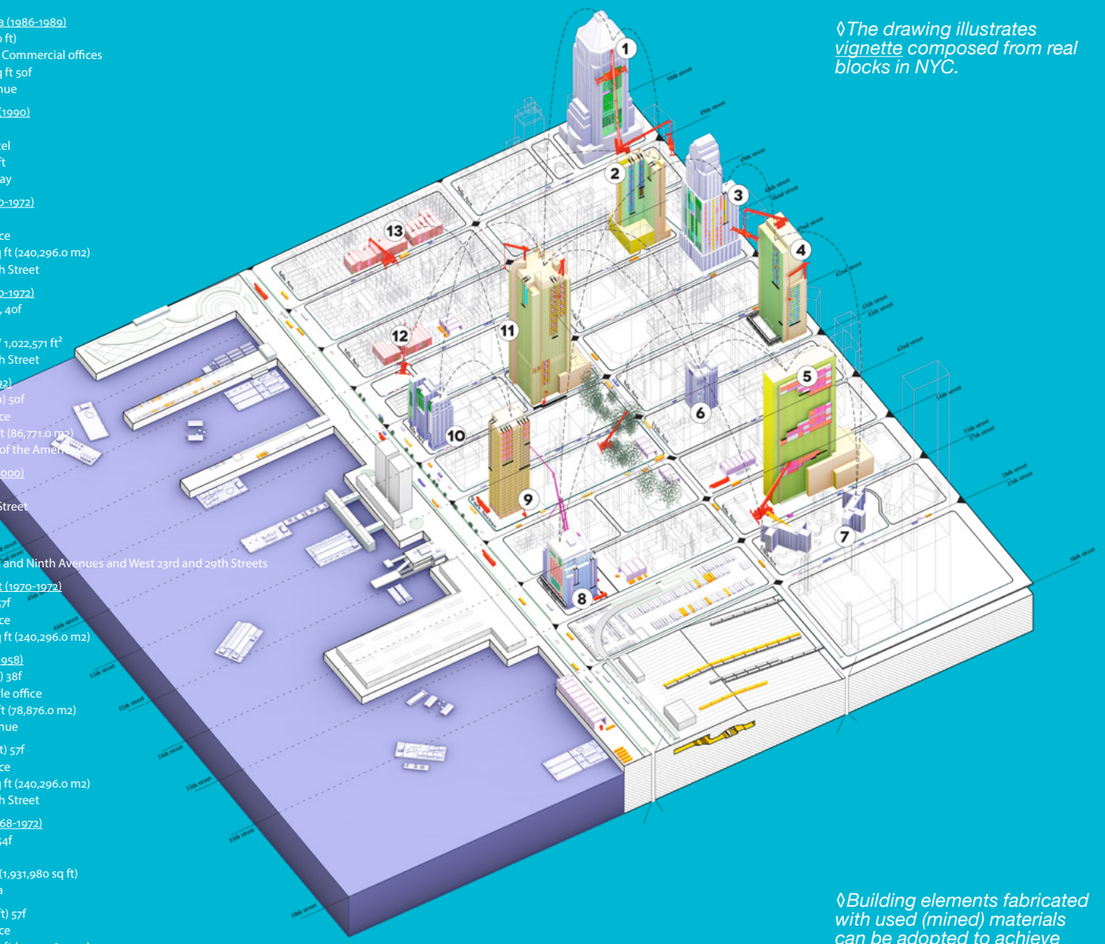
8. 250 West 34th Street (1970-1972)
Height: 229 m (751 ft) 57f
Type:Commercial Office
Floor area:2,586,525 sq ft (240,296.0 m2)

9. Seagram Building (1958)
Height: 515 feet (157 m) 38f
Type:International Style office
Floor area:849,014 sq ft (78,876.0 m2)
Location:375 Park Avenue

10.Height: 229 m (751 ft) 57f
Type:Commercial Office
Floor area:2,586,525 sq ft (240,296.0 m2)
Location:250 West 34th Street

11. One Astor Plaza (1968-1972)
Height: 227 m (745 ft) 54f
Type:Office
Floor area:179,487 m2 (1,931,980 sq ft)
Location:1515 Broadwa

12. Height: 229 m (751 ft) 57f
Type:Commercial Office
Floor area:2,586,525 sq ft (240,296.0 m2)
Location:250 West 34th Street y

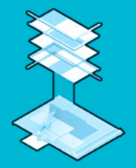


◊*The drawing illustrates vignette composed from real blocks in NYC.*

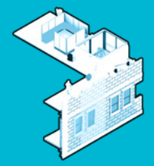
◊*Building elements fabricated with used (mined) materials can be adopted to achieve building retrofit targets.*

NEED

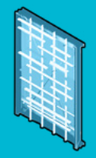
Insulation improvement



Well Insulated Glass



Wall Insulation



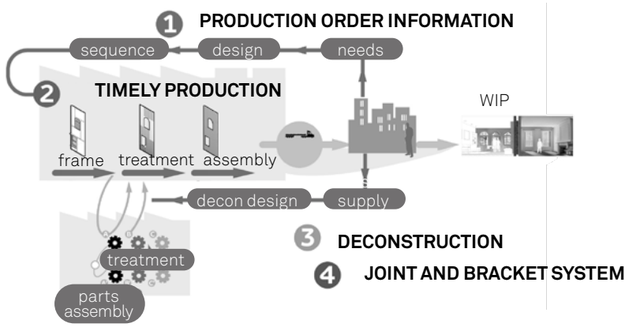
Brise Soleil

Facade Reclad

A just-in time system for the city

To treat our city as a production system, different building types provide different material supplies, and at the same time require materials to retrofit. The supply and the need exist right next to each other or even overlaps in some buildings. Therefore, we can create a ***just-in time*** material mobilization system that transforms excessive and inefficient materials from existing buildings to high-performance sustainable materials in real time, The material exchange and upgrade could happen within the city instead of the whole globe, reducing its carbon footprint. Multiple retrofit projects would happen simultaneously. Materials would be dismantled, transported, fabricated and remounted as a common scene in our future city.

In a moment like this when so many people make efforts intervening on reconfiguring building environment. We try to invent the next exchange platform of material transformation due to the necessary replacement of materials for reducing carbon emissions.



Townhouse Thermal Map

surface protection
scaffold

Glass Replace
Fabricated IGU Window

1-4 FAMILY HOME;
MULTY FAMILY PRE-WAR
BUILDING PERCENTAGE
41.5%
GHG EMISSION
30%
TARGET FULFILLMENT
6.08-9.12%

Glass Replace
IGU Window

security curtain
cable for mateiral
extension ladder

Glass Replace
Double Layer

metal joint
existing window
overlap window

Sunlight Motion in Different Season

COMMERCIAL VERY
LARGE
BUILDING PERCENTAGE
5.9%
GHG EMISSION
11.7%
TARGET FULFILLMENT
6.86-5.27%

fabricated panel
bracket system

Reduce Radiation
Add Brise Soleil

scaffold

Vertical Shading

Wall Insulation Diagram

Façade Extension
Shading Units

COMMERCIAL
PRE-WAR
BUILDING PERCENTAGE
6.1%
GHG EMISSION
12.2%
TARGET FULFILLMENT
2.17-2.78%

metal joint
mobile frame
frame rail

replacing wall unit
insulation unit

dry wall cart
buck hoist
construction barrier

Seagram Facade Detail

Improve Window-to-Wall Ratio
Remove Decorative Steel

Mies I-Beam

Glass Replace
IGU Window

New View

sliding rail
curtain wall window
drywall cart
scaffolding

Single Pane Window

scaffold

1-4 FAMILY HOME;
MULTY FAMILY PRE-WAR
BUILDING PERCENTAGE
41.5%
GHG EMISSION
30%
TARGET FULFILLMENT
6.08-9.12%

HOK Precast Building System

On-Site Fabrication
Insulation Wall

Reduce Radiation
& Improve Ventilation

COMMERCIAL VERY
LARGE
BUILDING PERCENTAGE
5.9%
GHG EMISSION
11.7%
TARGET FULFILLMENT
4.86-5.27%

Brise Soleil

brise soleil panels
flexible frame system

safety fence
scaffold platform

Reduce Radiation
Add Brise Soleil

fabricated IGU
double window

Townhouse Reclad

Window AC

On-Site Fabrication
IGU Window

robot arms
assemble surface
cherry picker

south facade shade
west facade shade

COMMERCIAL
PRE-WAR
BUILDING PERCENTAGE
6.1%
GHG EMISSION
12.2%
TARGET FULFILLMENT
2.17-2.78%

Wall Insulation

Façade Recalading
Improve Insulation

window improve
wall reclading
wall insulation

cherry picker
forklift

Fabricated Double Pane Window

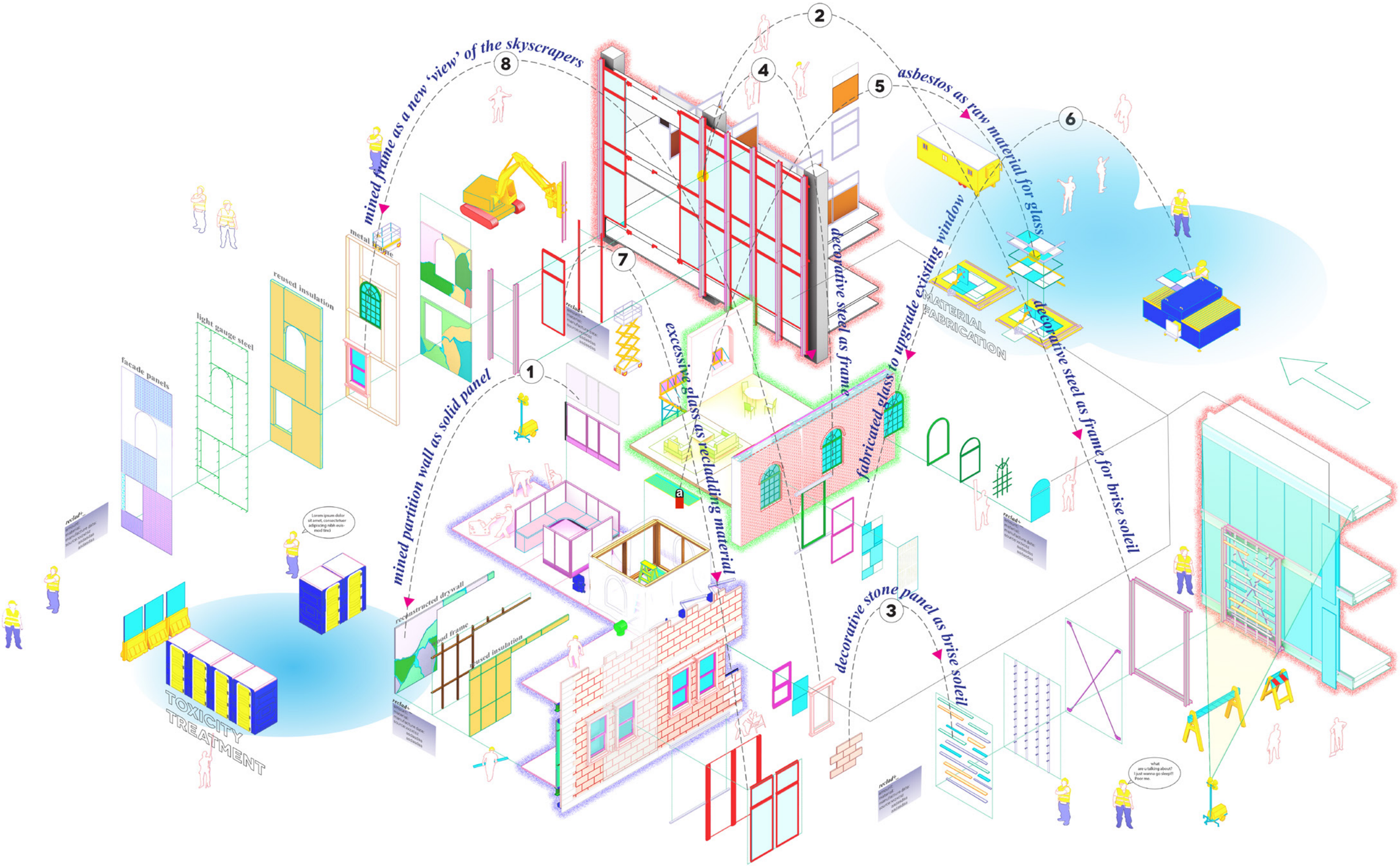
1-4 FAMILY HOME;
MULTY FAMILY PRE-WAR
BUILDING PERCENTAGE
41.5%
GHG EMISSION
30%
TARGET FULFILLMENT
6.08-9.12%

Glass Replace
Double Layer

On-Site Fabrication
IGU Window

Glass Replace
Fabricated IGU Window

Building target statistics by *ONE BUILDING*


mined frame as a new 'view' of the skyscrapers
asbestos as raw material for glass
decorative steel as frame
excessive glass as recladding material
mined partition wall as solid panel
fabricated glass to upgrade existing window
decorative steel as frame for brise soleil
decorative stone panel as brise soleil
1
2
3
4
5
6
7
8
a
metal frame
reused insulation
light gauge steel
facade panels
reconstructed drywall
wood frame
reused insulation
MATERIAL FABRICATION
TOXICITY TREATMENT
Lorem ipsum dolor sit amet, consectetuer adipiscing nibh euismod tincl
what are u talking about? I just wanna go sleep!!! Poor me.

Materials would be dismantled, transported, fabricated and remounted as a common scene in our future city. A new aesthetic is introduced to our city with existing building languages.

Photo by Miguel de Guzman, Courtesy of Columbia GSAPP.

Pre-war commercial building retrofit

Glass tower retrofit

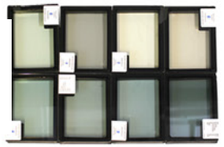
Townhouse retrofit

01_Used Stained Glass
60 in. H x 30 in. W x 1 in. D, with stained patterns, used for window glass.

02_Used Tiles
various dimensions around 12 in. x 24 in, used for brise-soleil panels.

03_Used Steel Angle
1/2 in. x 72 in. with 1/8 in thick, used for brise-soleil frames

04_Used Steel Angle
4 in x 4 in x 6ft, ASTM A36 Steel, Hot Rolled, used for brise-soleil frames.



05_IGU
1” (5” x 7”) Insulating units with black spacers and black silicone, used for window glass.

06_ Used Glass
Clear Ribbed Glass Luxfer Tile, 4 in. square x 0.125 in. D, used for window glass.

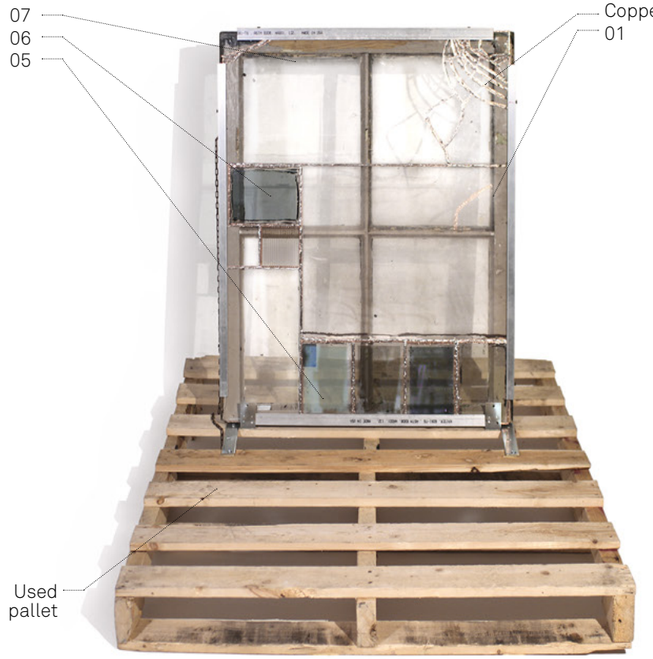
07_Used Window
55 inx 30 inx 1 in, two panel wood window, used for window frame and glass.

08_Used Window
53.25 in. H x 35 in. W x 1.3 in. D, four panel wood window, used for window frame and glass.

Mock-Ups Fabricated with Used Materials

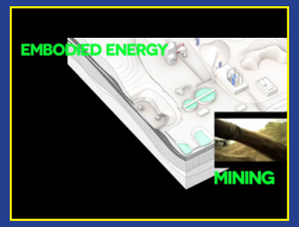
i. Brise-Soleil

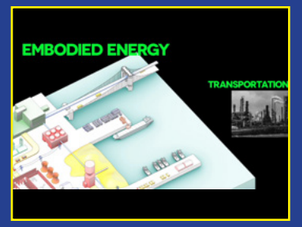
A brise-soleil unit fabricated with used stone panel and steel, introducing new tectonics of joints and brackets.

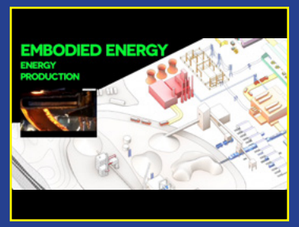


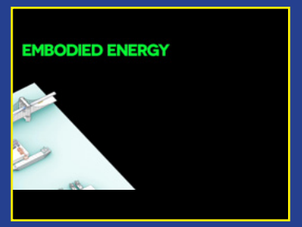
ii. Window

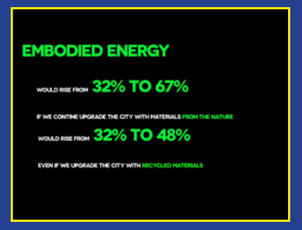
A window composed with insulated glass units and used materials, introducing new asthetics on viewframe and transparency.



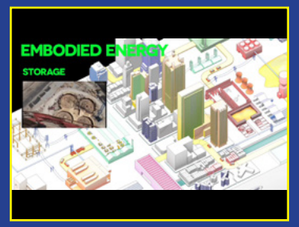


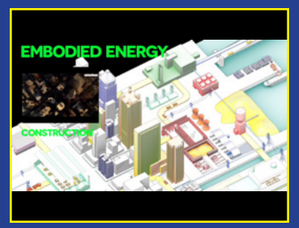






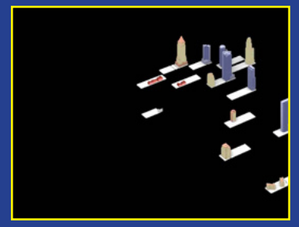
To upgrade the city. It's not about making one nice building with cutting edge technology. It's about the whole process and its embodied energy, which comes from mining, transportation, bulk manufacturing, storage and constructing. In the meantime, dismantled materials would go through transfer stations, multiple waste processing facilities, and some of them end up in landfills.

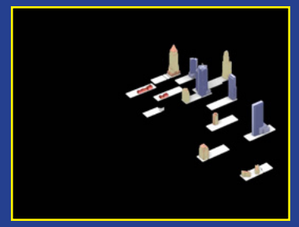


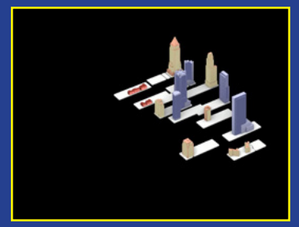


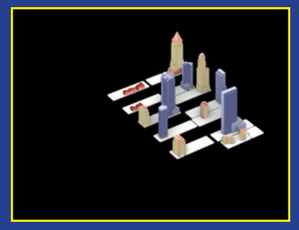
All of the above contributes to the embodied energy of building materials. According to a research, embodied energy would rise from 32% to 67% if we upgrade our building in conventional mode by 2050. Even Buildings using recycled materials have a 80 year carbon debt to be paid. But we don't have that much time left. The conventional mode keeps requests material from nature to buildings, causing the shrinkage of up to 90% of the beaches.

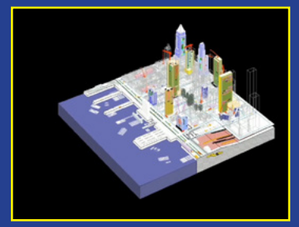
In 2100, the only place you can find a beach might be in a history book. So instead of mining the nature, what if the materials we need is already in our city?

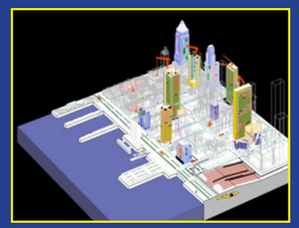


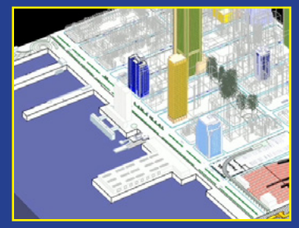


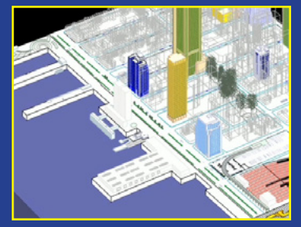


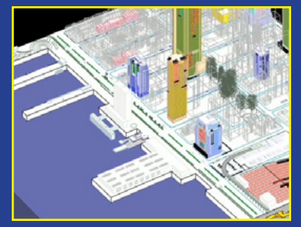


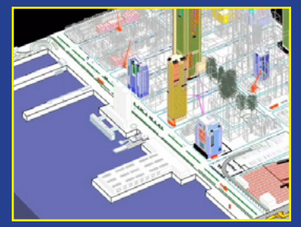


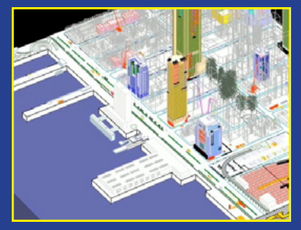


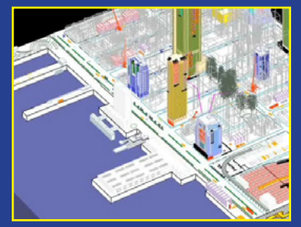


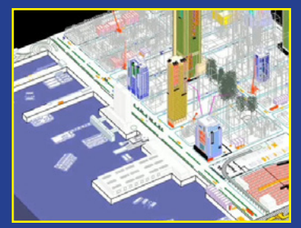


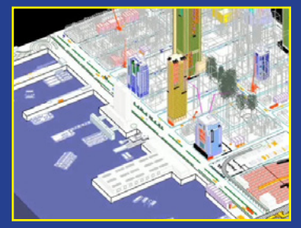


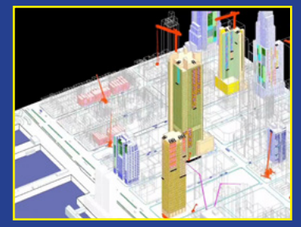


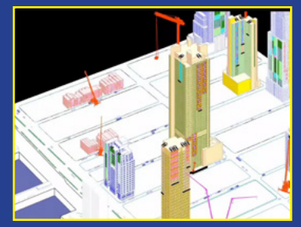


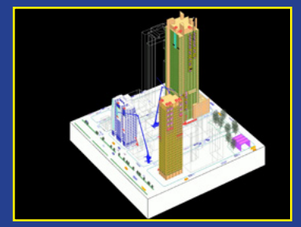


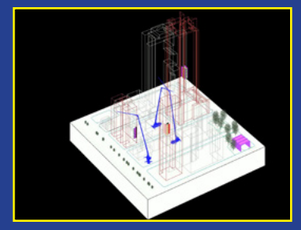


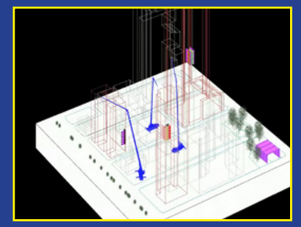


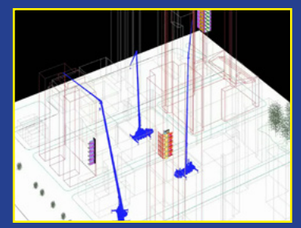


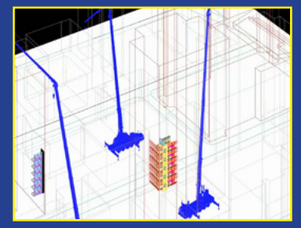










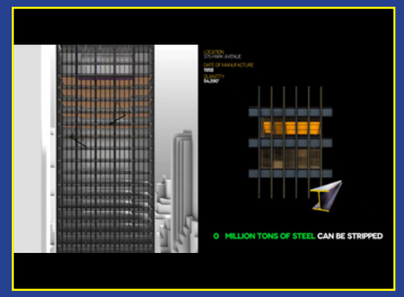


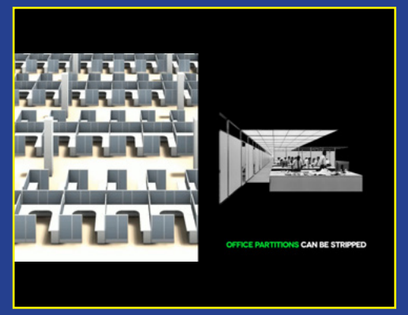
As you can imagined. Materials in our city would be mitigated through such new materiality. A materiality based on mobility and energy efficiency.

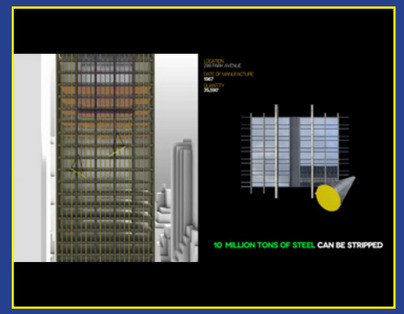
Avenues, train rails and ferry lines would be mobilized for material transportation.

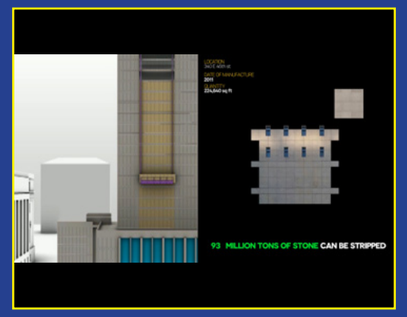
Certain empty slots, vacant buildings would be appropriated temporarily for material fabrication.

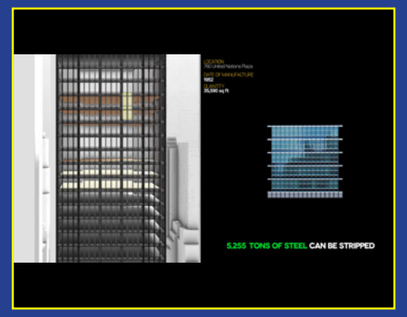
As materials are being transformed from one building to other buildings, scaffold system, protection (from noise and toxicity) system, deconstruction system, settlement system would be implemented for the security of tenants, citizens and workers.

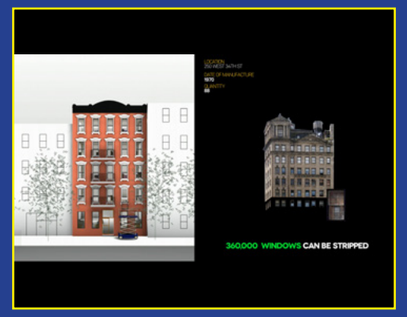












Buildings in the 60s use steel as decorative facade elements. They are beautiful as decorations but they can also be excessive when there are too many of them. These steel can be stripped down and reconfigured into other elements while the facade remains intact with much less materials;

Neo-classical buildings use massive amount of stones for aesthetic purposes. However, with the problem we are facing, these materials can be seen excessive. We can strip down some of the stone materials for other purposes while providing these building with better lighting.

Partition walls in post and pre-war commercial buildings were really popular and they are still in use today. These materials can be stripped down while we introduce a more open working environment;

The modern glass towers contains massive amount of glass. Do we really need that much of glass for our towers? Why don't we replace some of the glass with solid panels so that we can improve the window-to-wall ratio while maintaining the needed light for interior. Those replaced glass can then be reconfigured as raw materials.

According to 80*50, all NYC's single pane window need to be replaced to meet the requirement. And that means a massive amount of windows will be stripped down. And through digital fabrication, special treatment, These glass have the potential to be used elsewhere.

When we look into New York City, there is an abundance of materials that could be available to upgrade our buildings.

To treat our city as a production system. Different buildings provide different material supplies. at the same time. They require materials to retrofit. The supply and the need exist right next to each other or even overlaps in some buildings. The upgrade doesn't need to cover the carbon footprint of the whole globe. Instead, it could happen within 2 miles.

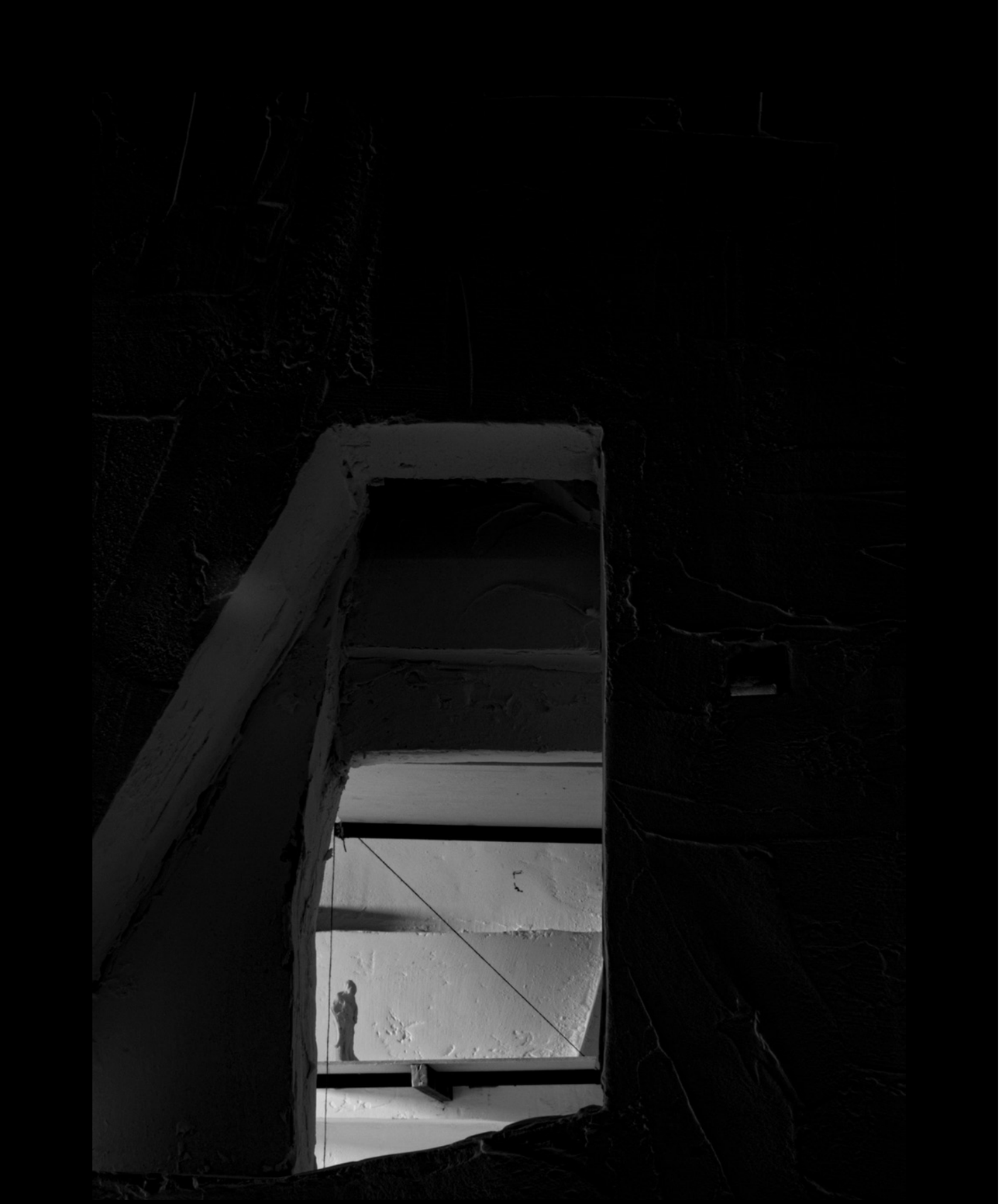
Therefore we can create a market for reused materials. Eventually the cost of carbon fines will come down to the tenants. A market as such will act as an incentive for building upgrade.

The technological approach is still driving us apart from the reality that we live in. The scale of climate change is so large that no one can fully comprehend.

The gap is so huge between climate change as a symbol and climate change as a reality.

We designers can make the gap smaller by bringing the idea closer to people. Changing people's aesthetic from the addiction to clearness to awareness for climate issues. If mining the city is a common scene in our life and the idea become something we can see and touch. Then I think we are one step closer to tackle the crisis.

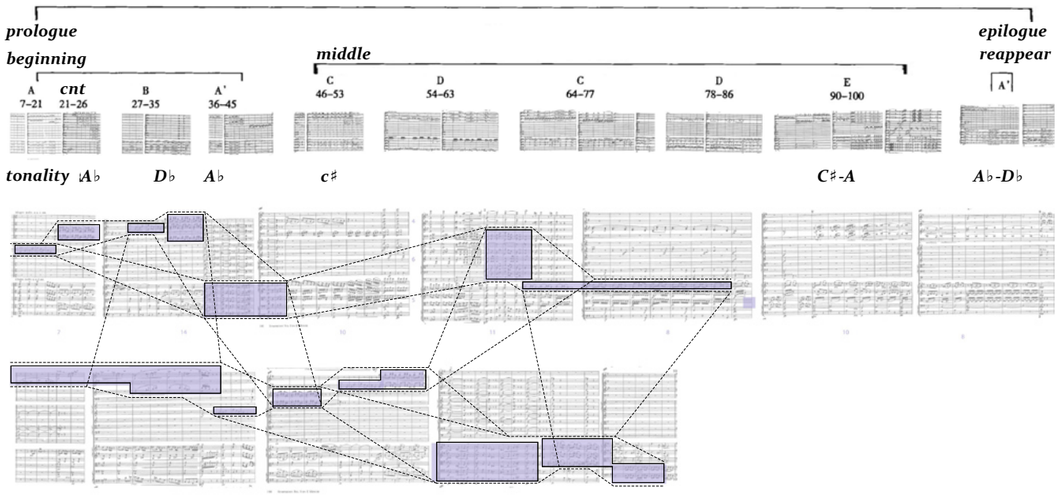
1: Project Video
https://vimeo.com/379396731
2: Digital Inventory for Material
https://vimeo.com/369685379
3: Just-in-Time Design Solution
https://vimeo.com/369689487



03.RECURRING MELODY

Based on a piece of music, an exploration for alternative language, materiality and urban presence for concert hall.

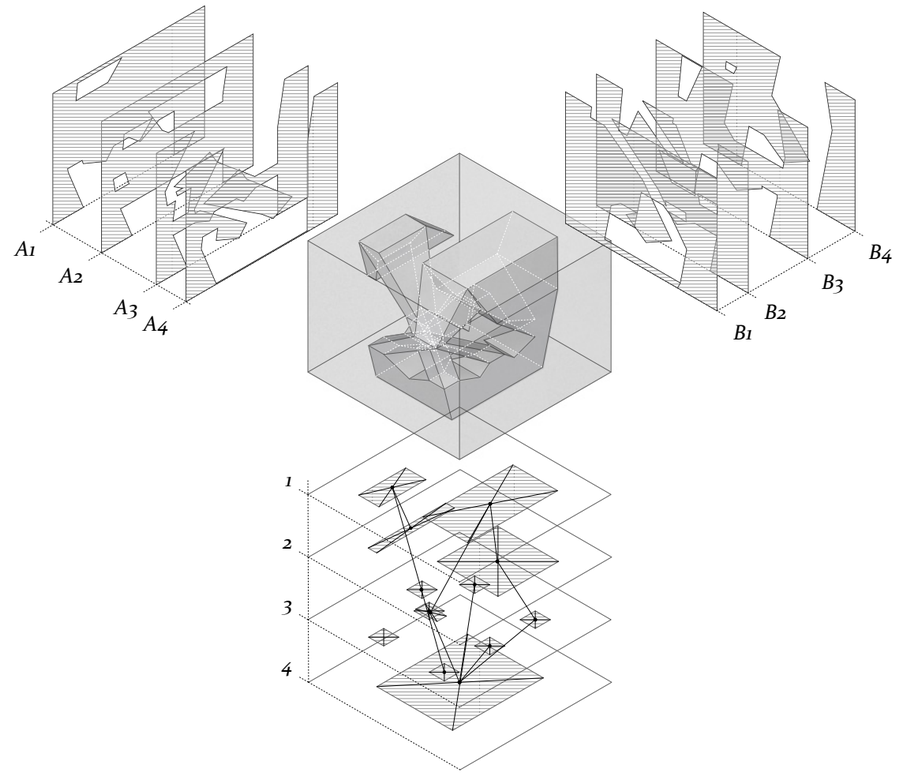
SPRING2020 ADV STUDIO VI CRIT: STEVEN HOLL & DIMITRA TSACHRELIA PARTNER: YUXIN HU



In the New World Symphony by Antonín Dvořák, a theme melody reappears in a classical Sonata format. The melody was based on black soul music, which constructs the overall nostalgic expression for the chapter . The melody was composed in different instrumentations and configurations throughout the whole score.

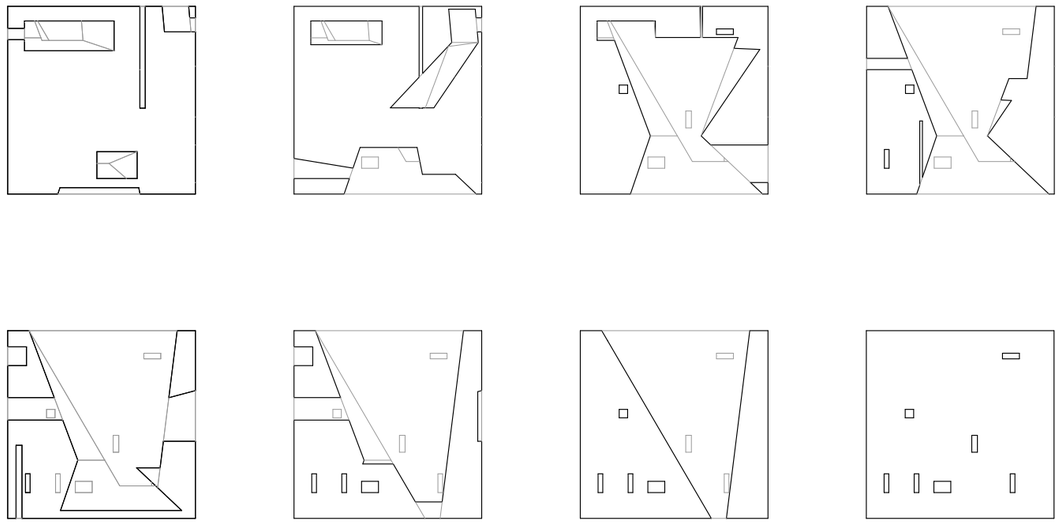
It is an irregular space carved from a classical framework. One melody is expressed with multiple fashions. In architectural language, what would a space with recurring melody be like?

When extruding rectangle patterns vertically and boolean extracting it from a cube, there is an irregular void in a nondescript volume. Through section from x and y axis. A series of new patterns are generated, showing the duality of irregularity and classical framework.

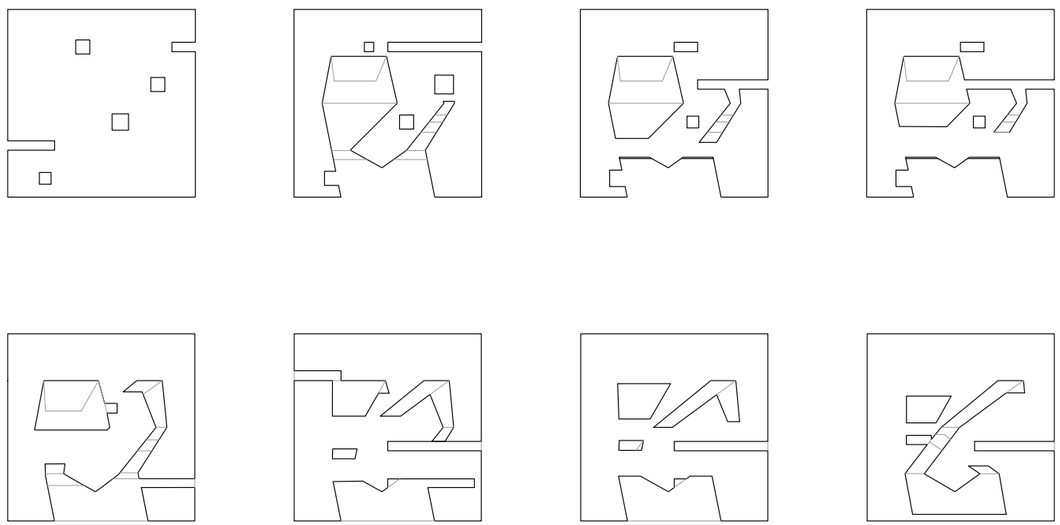


∧ *Spatial prototype of recurring melody*
< *Classical structure and theme melody*

(a)



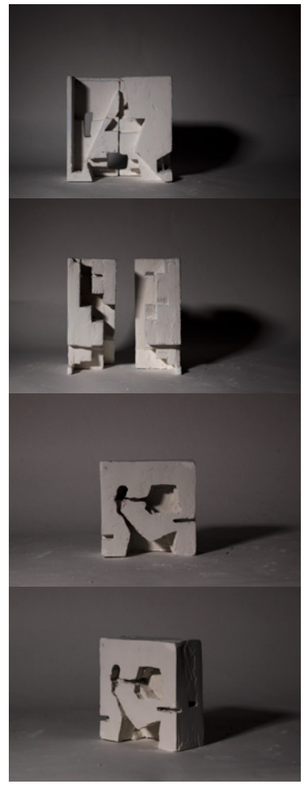
(b)

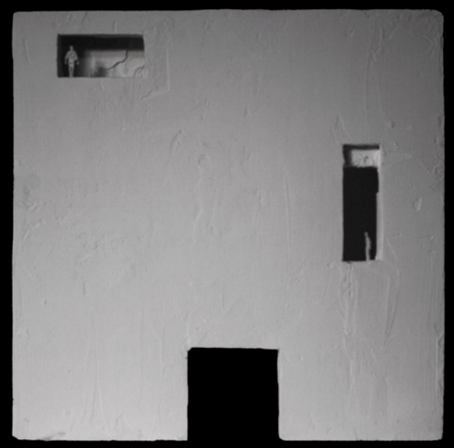


The section series change when operating the extrusion differently. Through the series, shapes interacts with each other in a nuanced way: separating, connecting, growing, diminishing, evolving. Each section is unique in its configuration and expression, yet there is a continuum when seen as part of the series.

From digital to physical model, layers of each section are made into thick materials, the smoothness of the volume transforms into a different materialized language: crude, opaque, terraced. From music to architecture, the recurring melody becomes a way of form-finding. The results are thick ‘acoustic’ blocks with vastly different expressions.

< Section series
> ∧ Study model of result (a)
> ∨ Study model of result (b)



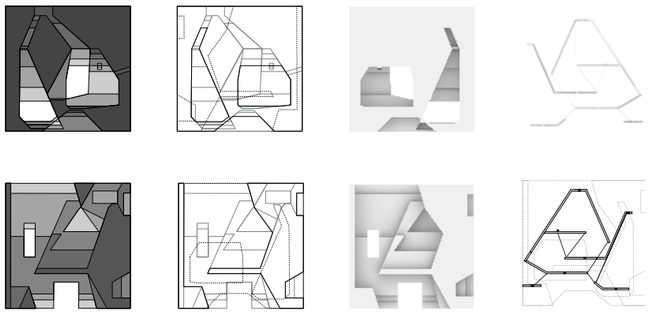


The blocks are thick walls
with a public appearance.
A kind of frontality with
language from music.

The In-between Space

< Isometric model view
> The in-between space

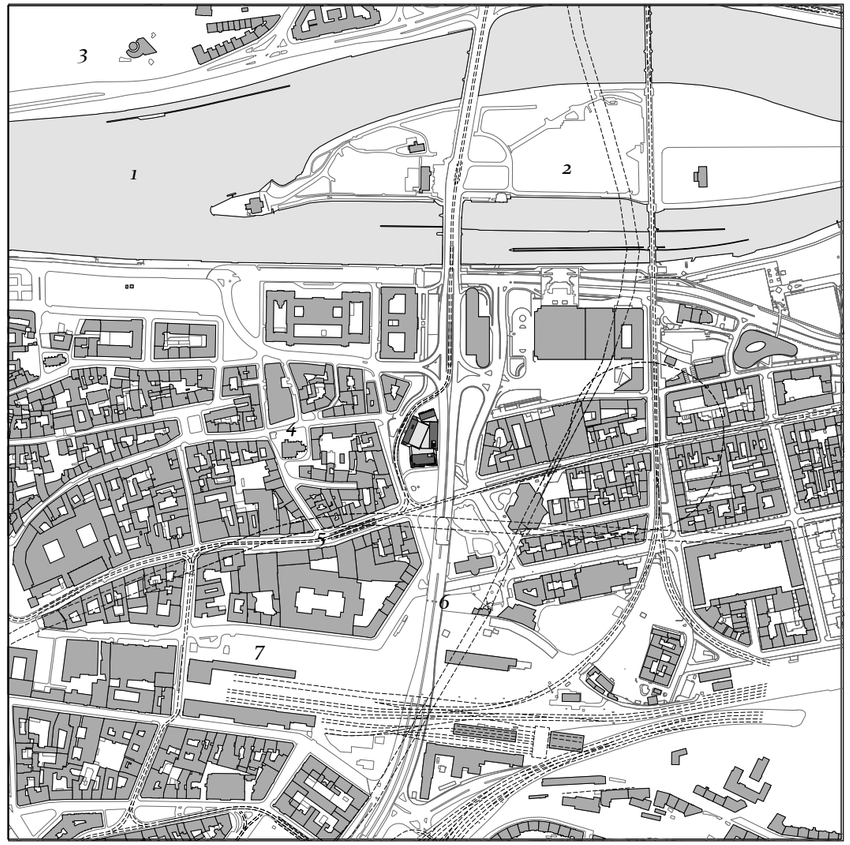
Blocks are independent elements translated from music into architecture. A piece of music is never fragmented. What would be the connecting elements when placing different blocks together?



Analysis diagram
1.porosity
2.shape
3.frontality
4.in-between elements

Through analysing, blocks differ in terms of porosity and spatial quality based on their section shapes. Juxtaposing two together, linear and planar elements are extracted from the shapes and connect the two blocks, creating an in-between space. Solid, planes and lines construct the whole space, the shape of each elements are interconnected. Together, blocks and the in-between space become the language for this project.

The site plan attempts to show that the four blocks enclose the site in a typical European courtyard context. Yet, from an aerial view, the building stood out with its original language.



1. Vltava, longest river in Czech Republic
2. Štvanice, island between Holešovice and Karlín
3.Letná Park, overviewing the Prague Old Town
4. Petrska, historical street
5. Na Poříčí, historical street
6.Wilsonoma, overpass
7. Praha Masarykovo Nádraží, terminal railway station

HOTEL MERKUR

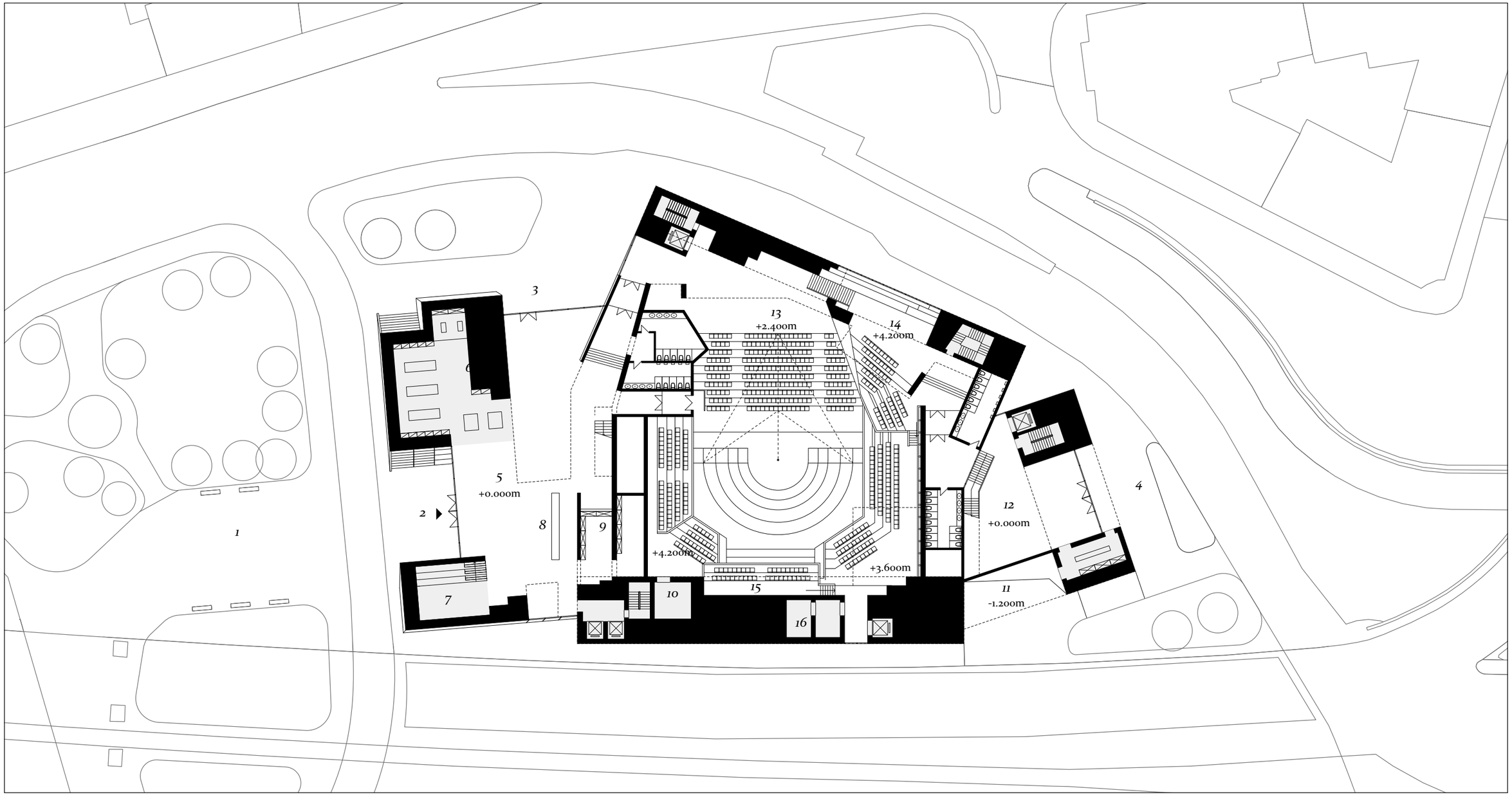
The language of the block has a public appearance in an urban scale. The voids suggest space of public gathering. The frontality of the building stems from the nature of music.

^ *Study model with scale figure*
< *View from historical street Petrska*

The voids also have a public appearance from interior of the building. A space connecting the auditorium to the city.

^ *Study model with scale figure*
> *Interior view inside the void*

Plan Ground Floor

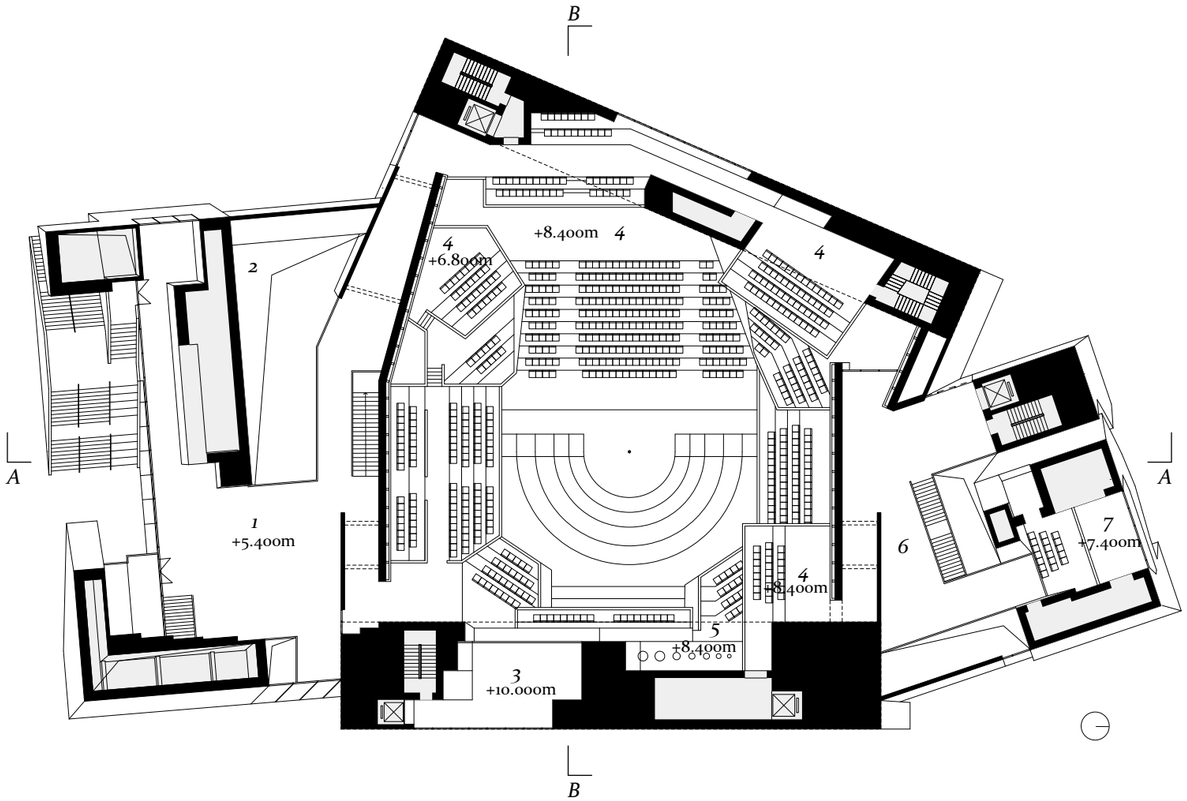


1. South park
2. Side entrance
3. Main entrance
4. Staff entrance

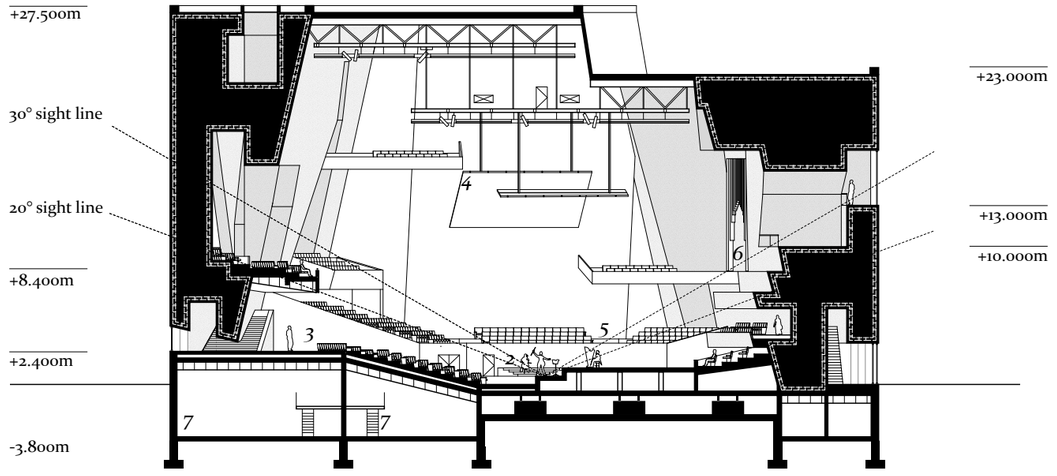
5. Main lobby
6. Gift shop
7. Cafe
8.Reception

9. Cloak room
10.Storage
11. Loading
12. Music foyer

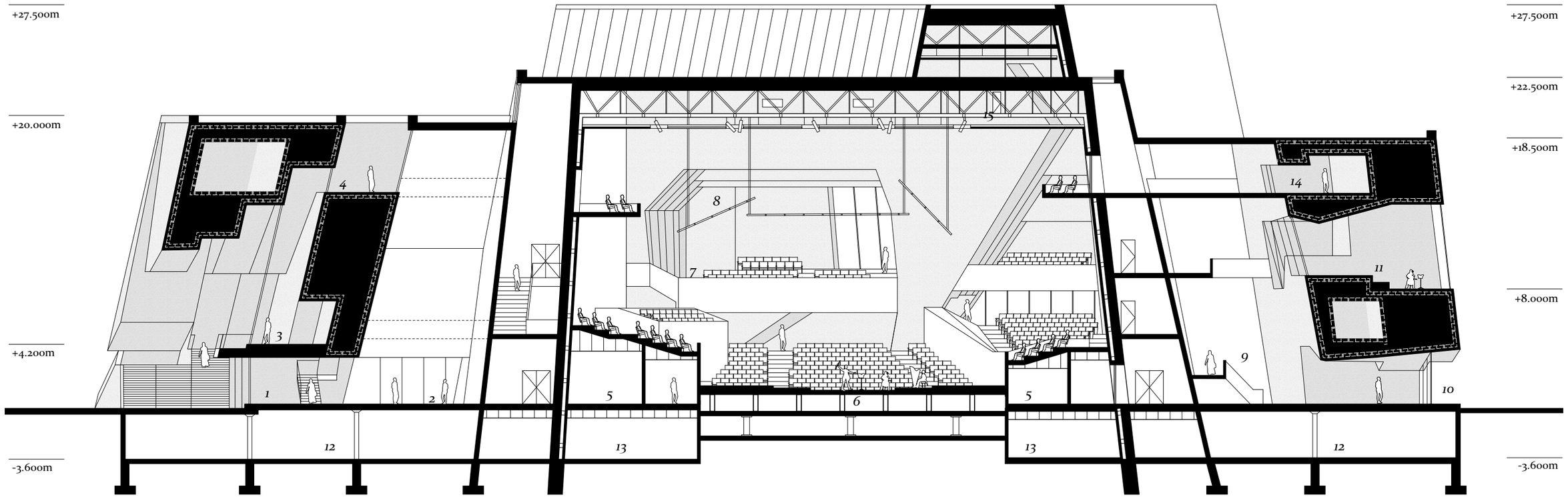
13. Main seating
14.Wing seating
15. Back seating
16. Office



Mezzanine plan
1.Main foyer
2. Cafe
3. Roof Garden
4. Balcony
5. Pipe organ BOH
6. Music foyer
9.Rehearsal Room



BB Section
1.Balcony
2. Stage
3. Main seating
4. Reflector/Projection panel
5.Wing seating
6. Pipe organ
7. Storage



AA Section
1. Main entrance
2. Main foyer
3. Cafe
4. Roof garden
5. Stage back of house
6. Stage
7. Balcony

8. Reflector
9. Music foryer
10. Staff entrance
11. Rehearsal room
12. Parking
13. Storage
14. Office
15. Rig

INTERIM URBANISM

The materials assembled for the 2019 Seoul Biennale of Architecture and Urbanism “Collective City”

SUMMER 2019 EMPLOYER: N H D M TEAM: XINNING HUA, LU XU INTERNSHIP

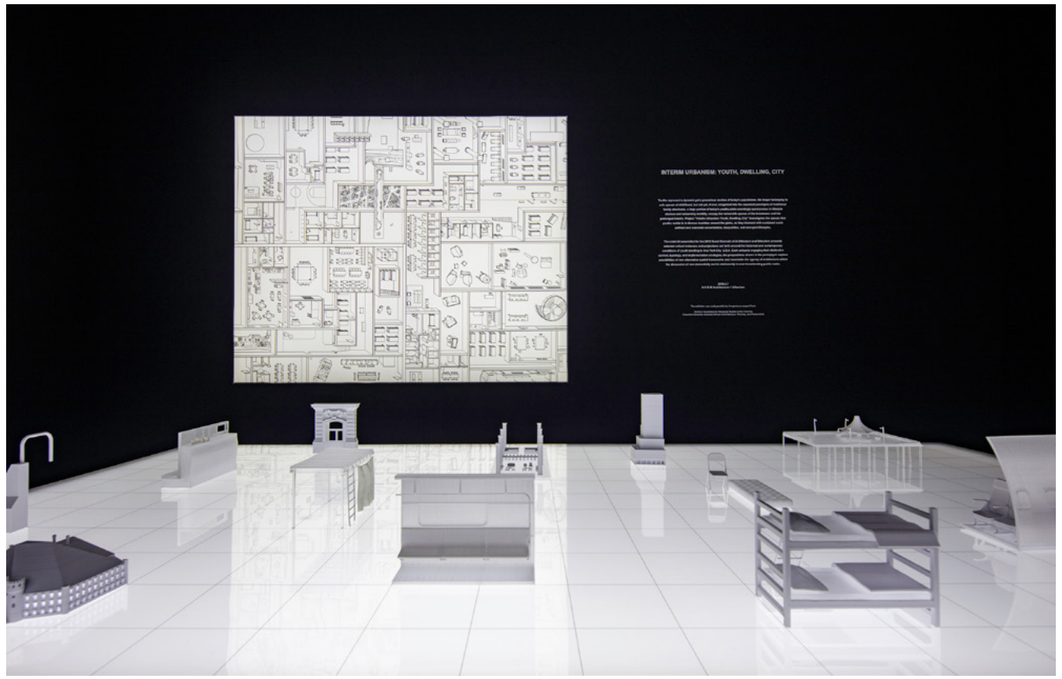
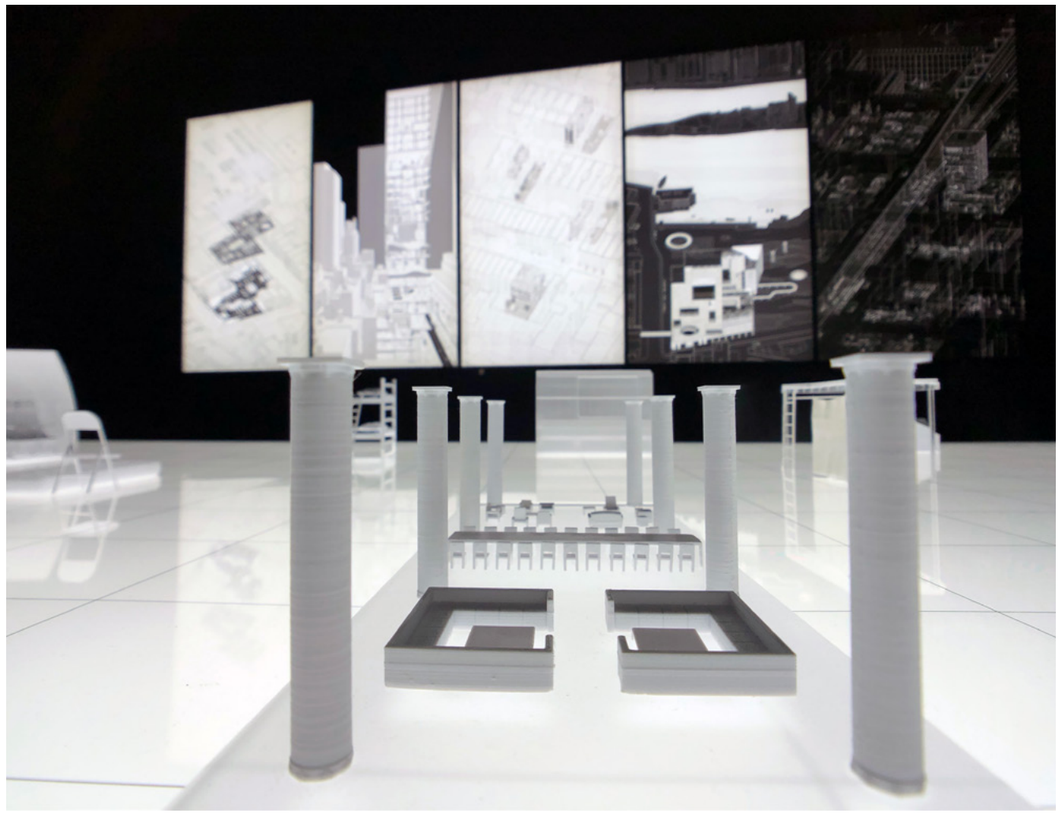


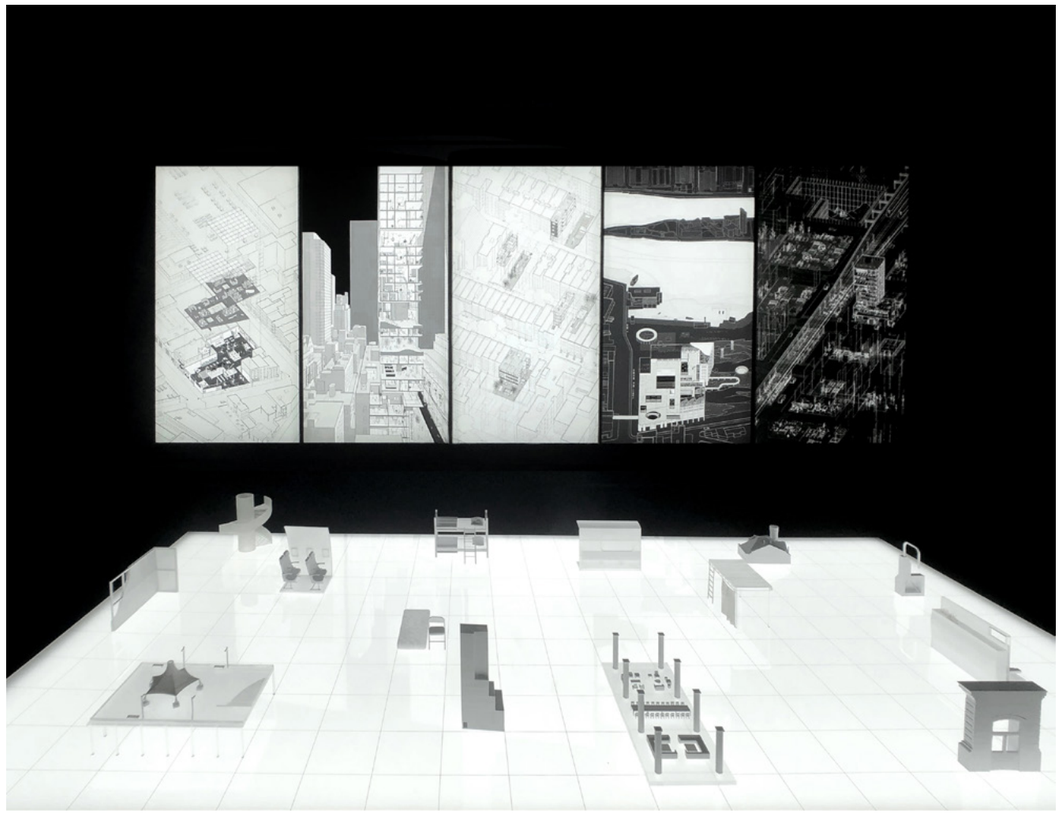
Photo © 2019 Hyo Sook Chin

The materials assembled for the 2019 Seoul Biennale of Architecture and Urbanism "Collective City" present selected critical instances and projections set forth around the historical and contemporary conditions of youth dwelling in New York City, U.S.A.

I mainly wored on one of the proposals - **HQY,** both drawing and design. Reconfiguring a 560,000 sqft Department of Education warehouse building in Queens where Amazon planned its now-canceled headquarter HQ2, **HQY** is a new youth complex that combines a large number of youth housing and work units with a new public higher education institution. Envisioned as an open campus alternative to highly privatized educational enclaves, the waterfront facility combined with the adjacent wetland integrates the legacy of art and industry of the area as well as new environmental and educational initiatives.



Copyright © 2019 N H D M Architects PLLC, All rights reserved.



Copyright © 2019 N H D M Architects PLLC, All rights reserved.

ULTRAREAL ORIENTAL

Focusing on developing narrative through rendering, the project explores alternative realities for ‘Chinese style’ architecture .

FALL2019 CRITIC: PHILLIP CRUPI, JOSEPH BRENNAN TEAM: XINNING HUA, LU XU, MENGZHE ZHANG GRAPHIC ELECTIVE