

HETIAN GUAN

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**PORTFOLIO**

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2022-2023



The Metropolitan Museum of Art



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The Panama Canal

A Frog's Narrative

• History Study of the Frog Pendant •

Columbia University, Summer, 2022, Individual project  
Instructor: Cruz Garcia, Nathalie Frankowski

The frog pendant from the Venado Beach area is now collected and exhibited in the Michael C Rockefeller Wing section of the met. The history of the acquisition was parallel with the history of Panama Canal colonization. Through the process, it raises questions about the ethics and rights of the attaining process, arguing for repatriation and return.



When ownership of an antiquity is vested in a nation, one who removes the antiquity without permission is a thief, and the antiquities are stolen property. This enables both punishment of the looter and recovery of possession of the antiquity from either the looter or a subsequent purchaser. Vesting laws thus create ownership rights that are recognized even when such antiquities are removed from their country of discovery and are traded in foreign nations.



Origin Return



Canal Colonize



The Extraction



The Collection



The Invasion



The Prison



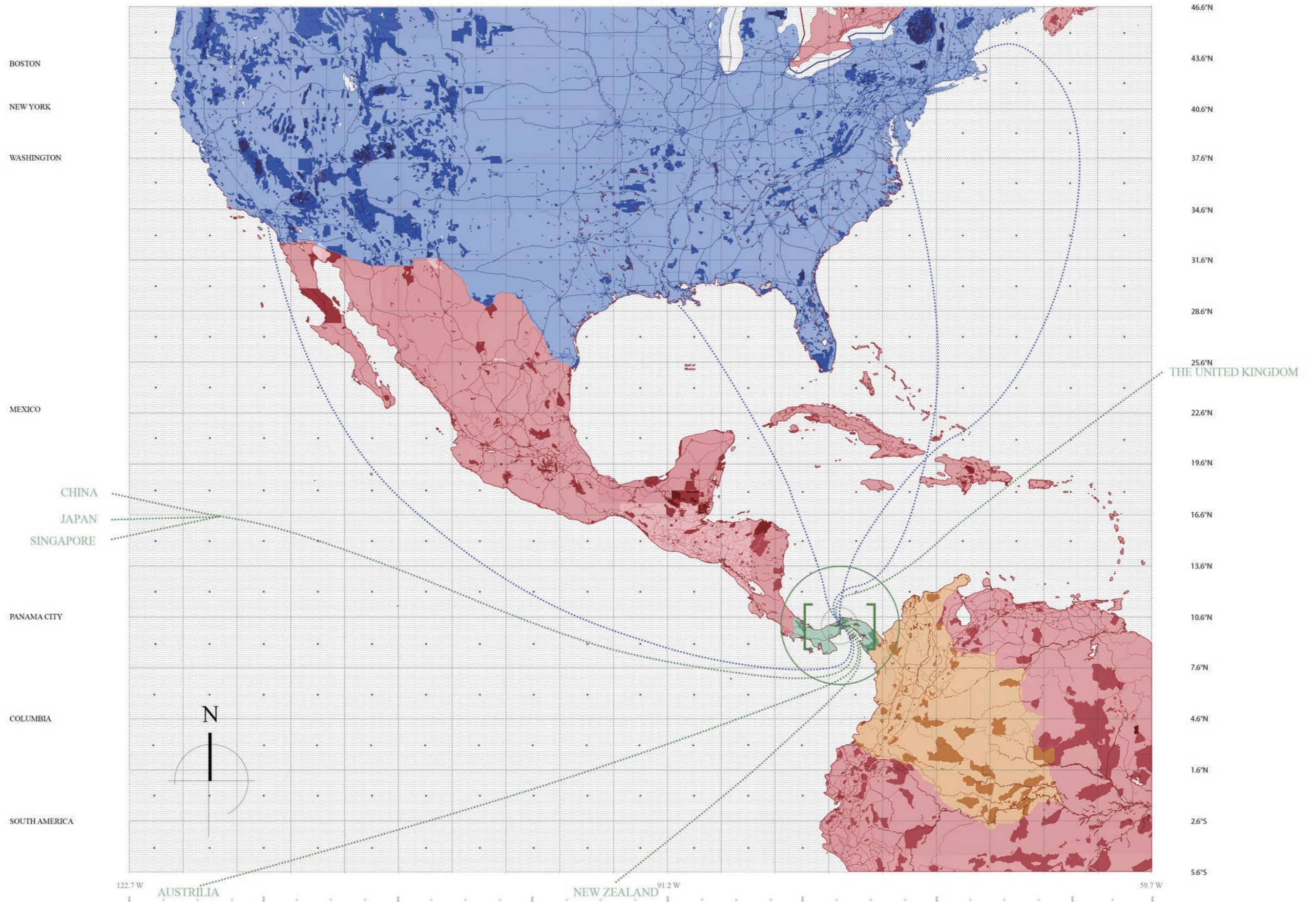
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THE CANAL OF EXTRACTION

1914-1999















The Metropolitan  
Museum of Art



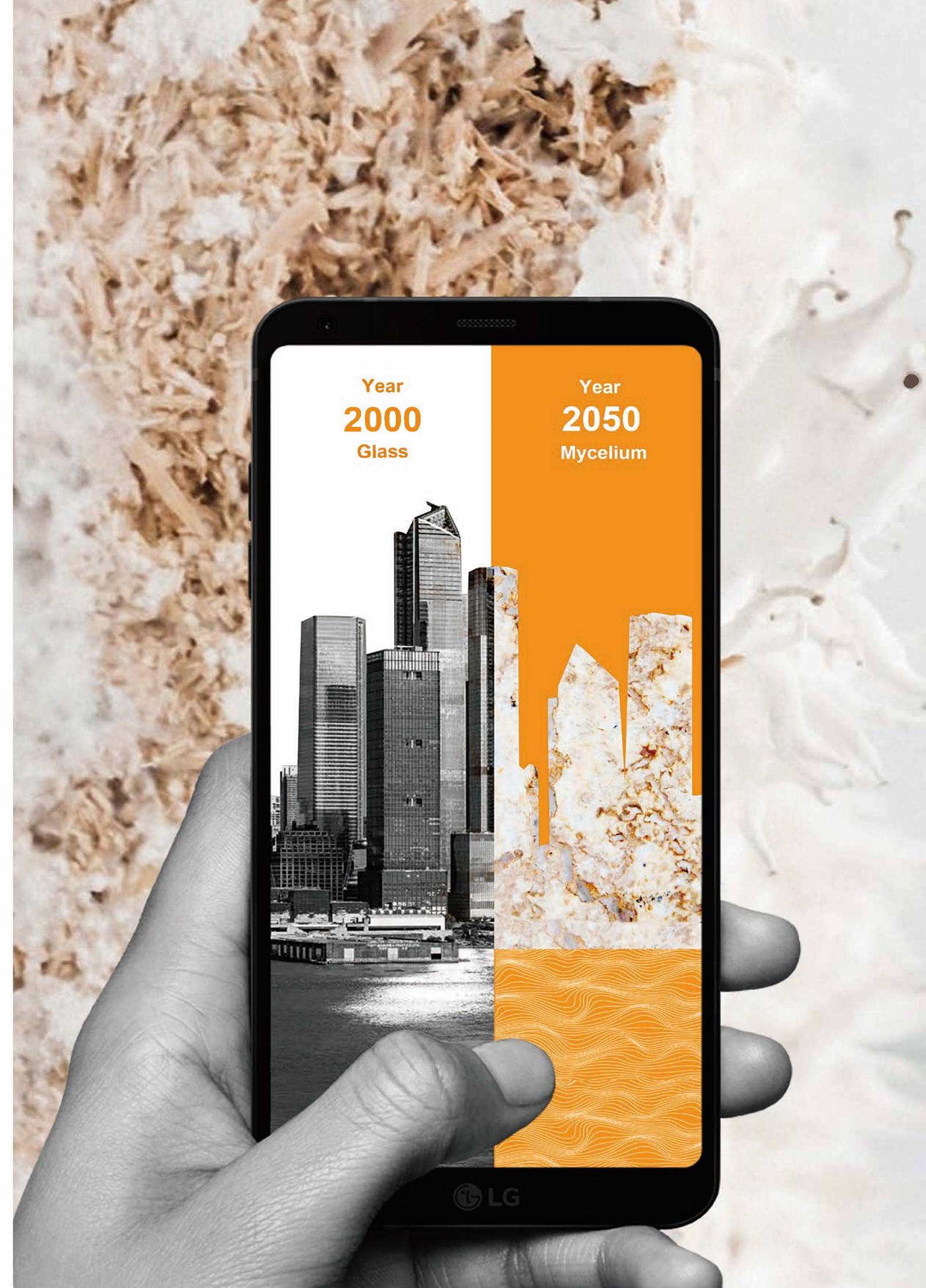
## THE SEASONS IN THE CITY

• Shading as Billboard •

Columbia University, Fall Semester, 2022, Cooperation project  
Instructor: David Benjamin Site: New York (Time Square)

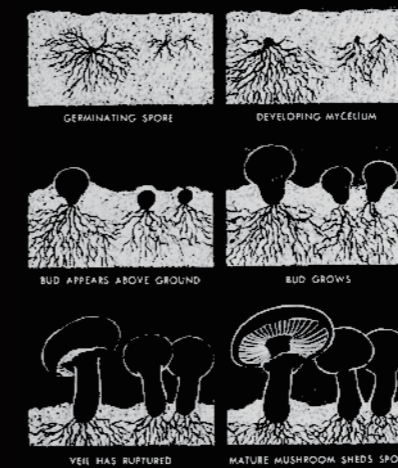
The aesthetic quality of a material determines public consciousness, which in turn highly influences the scaling-up process. The project re-designs a new façade image of urban glass towers to be a new paradigm of the city's appearance.

It will be a starting point of a redefined renovation process. In the context of local law 97, we can foresee a continuous renovation of high-rise buildings, we want to re-wrap the glass buildings with a semi-permanent envelope system, in which naturally degrading mycelium was used as the shading system, and the bamboo scaffoldings involved in the long-term maintenance and renovation process. The project puts the representative of environmental protection in the most prominent position and explores new ways of living and new forms of cities.



## Mycelium as a Living Material

Mycelium is the root system of fungi, it's a living material. It plays the role of decomposer in nature, different strains can decompose different substrates, the main types of substrates are agricultural waste such as straw, rice bran and forestry waste such as wood chips. After the mycelium eats the substrate, the mycelium material has good heat insulation and fire resistance, and now it is used as heat insulation and sound absorbing wall panel. In the process of making mycelium model, we found that the growing of mycelium shows a quality of seasonal from growing to decaying similar with tree leaves. This quality is followed by its texture change which led to our focus on the aesthetic quality of the material.



▲  
Mycelium Sample



### Seasonal Material

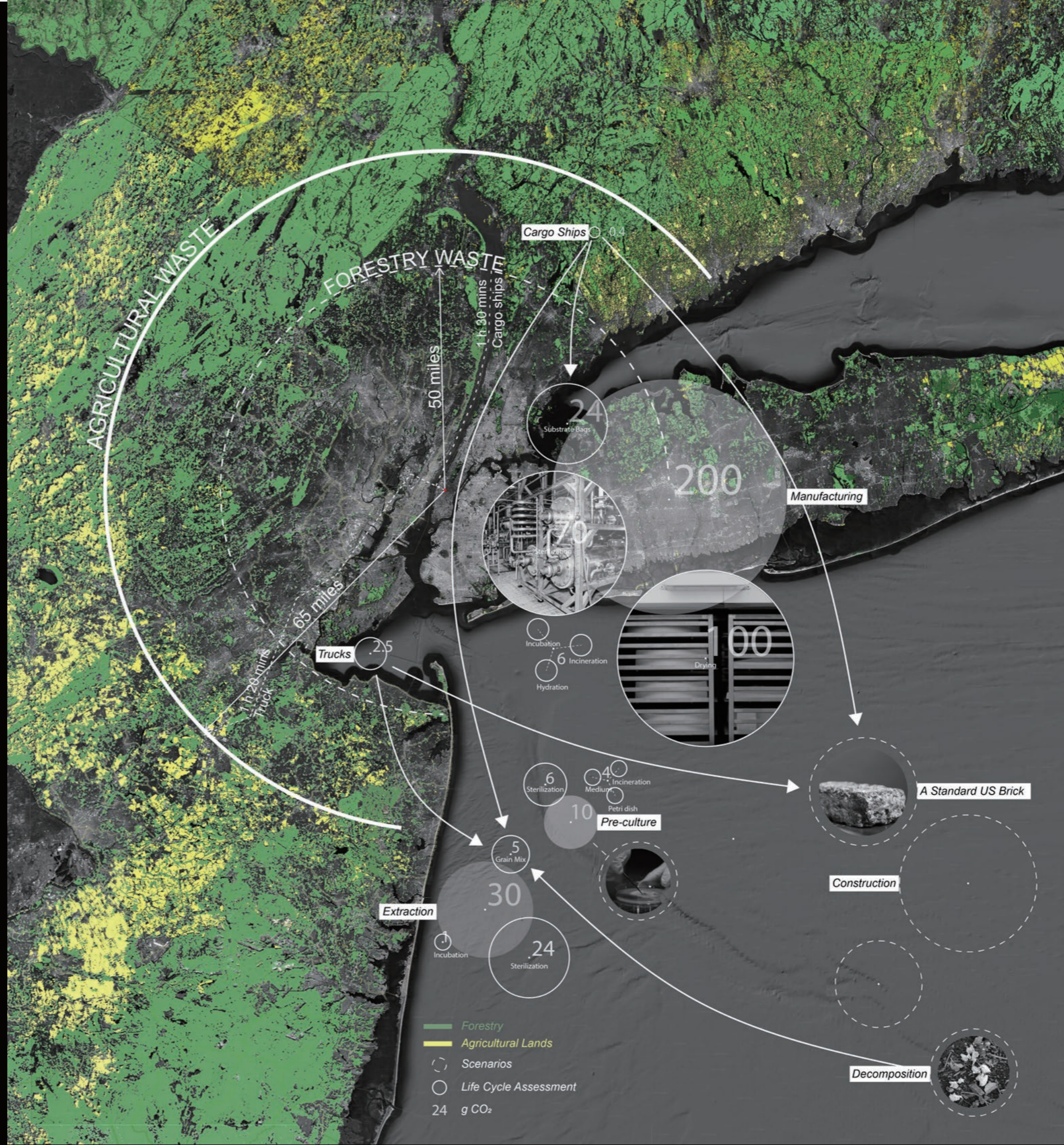
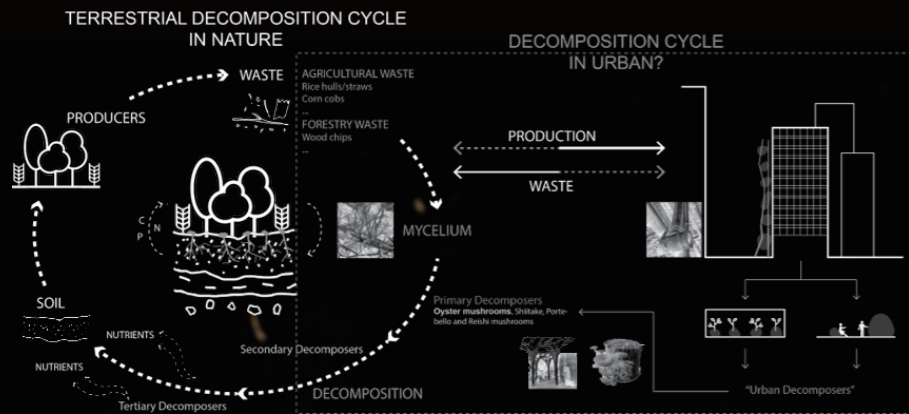
In the process of making mycelium model, we found that the growing of mycelium shows a quality of seasonal from growing to decaying similar with tree leaves. This quality is followed by its texture change which led to our focus on the aesthetic quality of the material. We intend to make fully use of the aesthetic quality of biological material to create a new city image, aiming to be a representative of glass facade and scale up the construction process to reduce carbon emission of urban architecture. The model we are showing tries to represent the transparent and reflection quality of the current city image. The design of the representative was mainly focusing on the exposure of the seasonal. We are trying to expose and enlarge the seasonal quality of mycelium.



The condition of the environment determines how mycelium grows in the substrate. When the oxygen and humidity becomes rich, mycelium could grow farther. On the surface where there isn't much water, mycelium would grow slower and even transform into mushroom later. But the bottom part of the object with enough oxygen and water becomes whiter and more solid than the top part. Compared between the brick and the slice of the material, the thinner of the material leads to a better quality.



40% of the world's carbon emissions are caused by buildings. Taking Manhattan as an example, the international-style high-rise buildings that emerged after World War II are typical of energy-intensive buildings that rely heavily on HVAC systems. In 2019, New York City enacted local law 97 to limit carbon emissions from high-rise buildings, with a goal of reducing carbon emissions by 80% by 2050 and fines for buildings that exceed the limit. Following this trend, we choose mycelium as the subject of this study, we experimented with these carbon-negative materials to see if its scaling up in buildings can mitigate or even reverse carbon emission figures. We calculated the carbon footprint per unit mycelium throughout the process according to the laboratory scale, the whole process is carbon negative, and the consumption of sterilization will be further reduced in industrial scale.



# MATERIAL

DECIDES  
"MATERIAL"?

CO2  
CO2  
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CO2

Emulated by buildings such as Lever House (1952) and the Seagram Building (1958), the glass-box became an explicitly commercial symbol.

Dovey has asserted that capital has become increasingly concerned with the generation of images and signs rather than 'use' value.

In 2019, 22 flat glass plants reported direct emissions of 2.95 million metric tons of CO2 to the U.S. Environmental Protection Agency.

Architecture must be understood as 'referent.'

Public Consciousness

Public influence, Brand effect

Who decided the scalability?

Material doesn't decide material.

Glass became a new fashion for skyscraper design as a influence of UN headquarters.

Artistic Matters

One particular clash involved disagreement over how to protect the Secretariat Building from excessive heat and glare. Le Corbusier preferred stone facades but the rest of the board preferred to maximise natural sun-light and use all over glazing. Experiments were undertaken to discover the most heat-efficient material and Le Corbusier's brise-soleil lost out to tinted glass. Koolhaas has described these (at times fractious) architectural collaborations as "enablers", as teamwork often perverts the 'master's' usual style and contributes to the more idiosyncratic elements of a building.

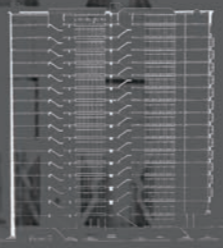


# QUALITY

LEADS TO  
"DECISIONS"

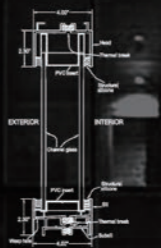


## Age of Stone



Stone was the first construction material that is used on high-rise building. However, the thickest part of the building could be over 2meters which also restricted the height of the building.

## Age of Glass



The use of glass symbolizes advanced techniques. However, the decision was based on the heat efficient quality that was discussed during the design of UN headquarters.

## Age of Mycelium?

Life cycle and construction strength are the two qualities that considered as possible negative carbon material that could be used on the facade. Besides, the quality of the material could be reflected on the surface which could act as propaganda.





The history of glass production led to the fact that the aesthetic quality of a material determines public consciousness which in turns highly influences the scaling up process. And our project is designed to be the start point of a new era to expand the ecological ideology through a new paradigm of the city appearance. We chose Times Square as the starting point. In the context of Local Law 97, we can foresee a continuous renovation of high-rise buildings in Times Square. The renovation process will interrupt the normal operations of the building while generating significant carbon emissions and consuming labor, and after the high-rise is wrapped for a few months, it will be business as usual. We want to make a semi-permanent system with two low carbon materials, bamboo as a permanent scaffolding to reshape the exterior of the building, and mycelium as a seasonal shade on the facade periodically, the new system will redefine the renovation process.



The Carbon on the Site



The Future Appearance

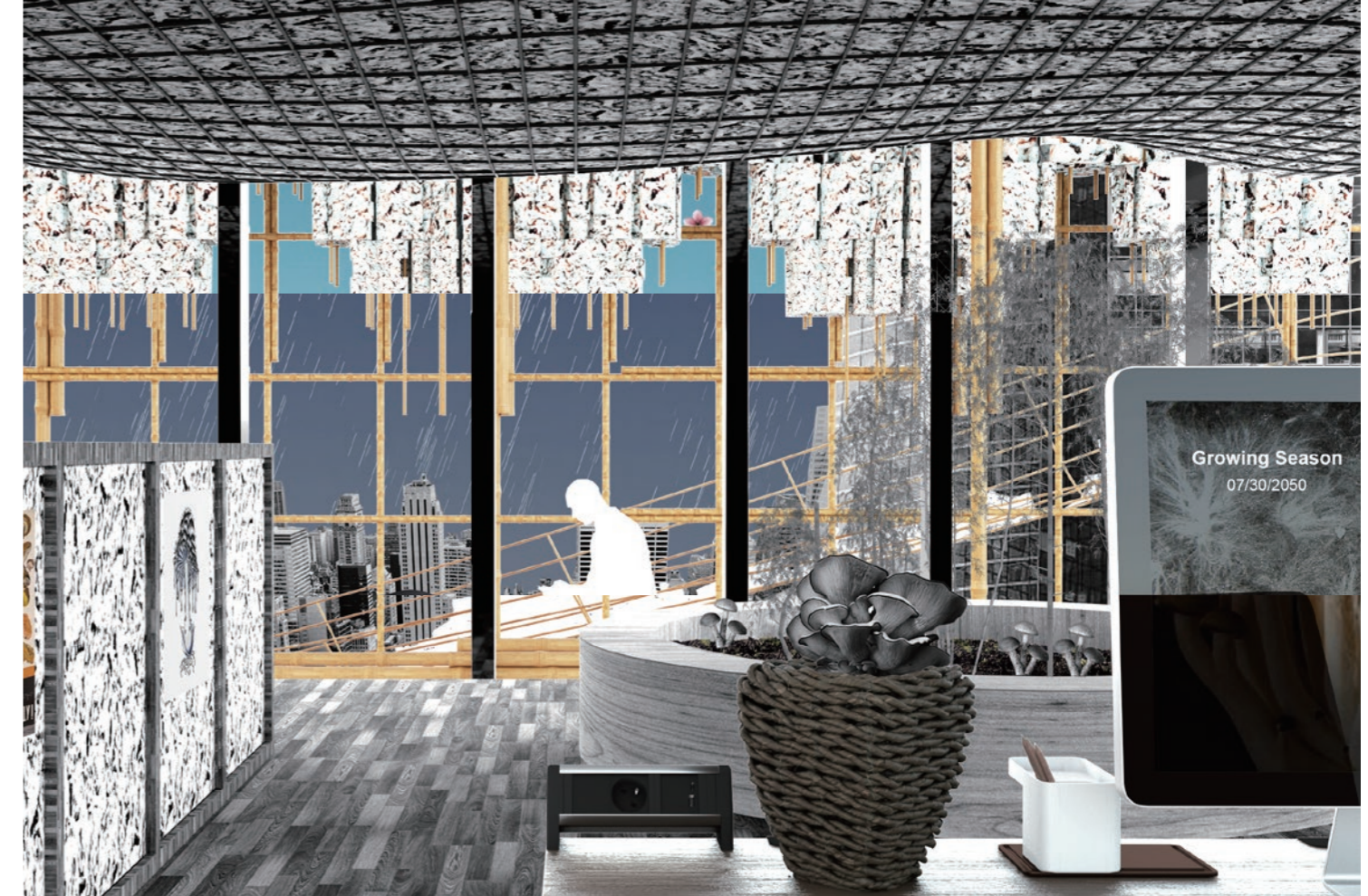
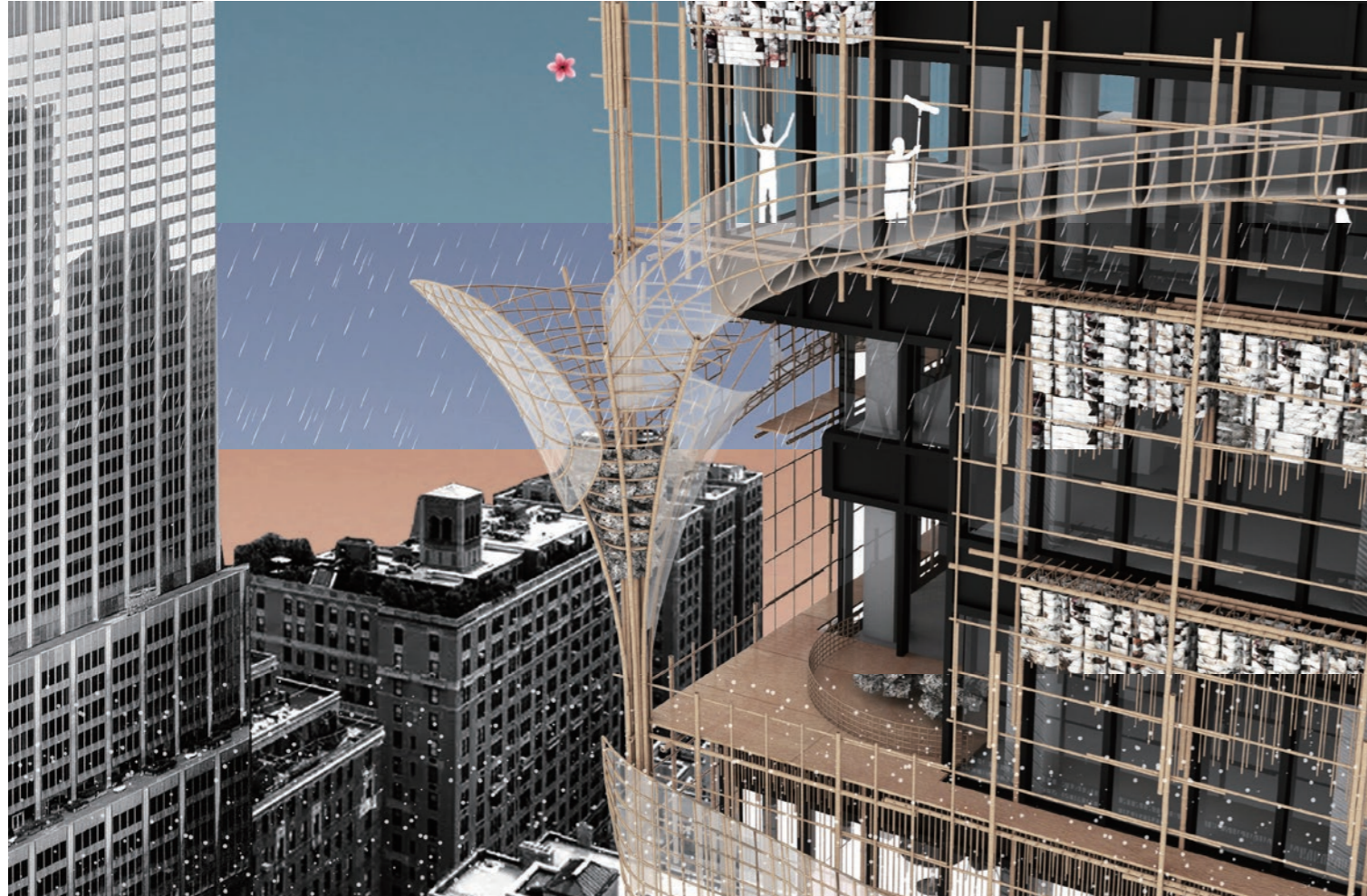
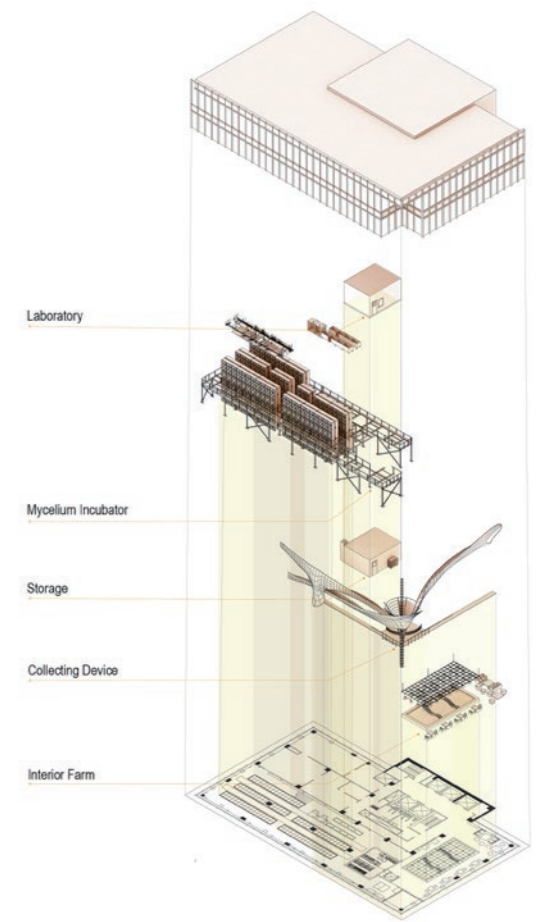
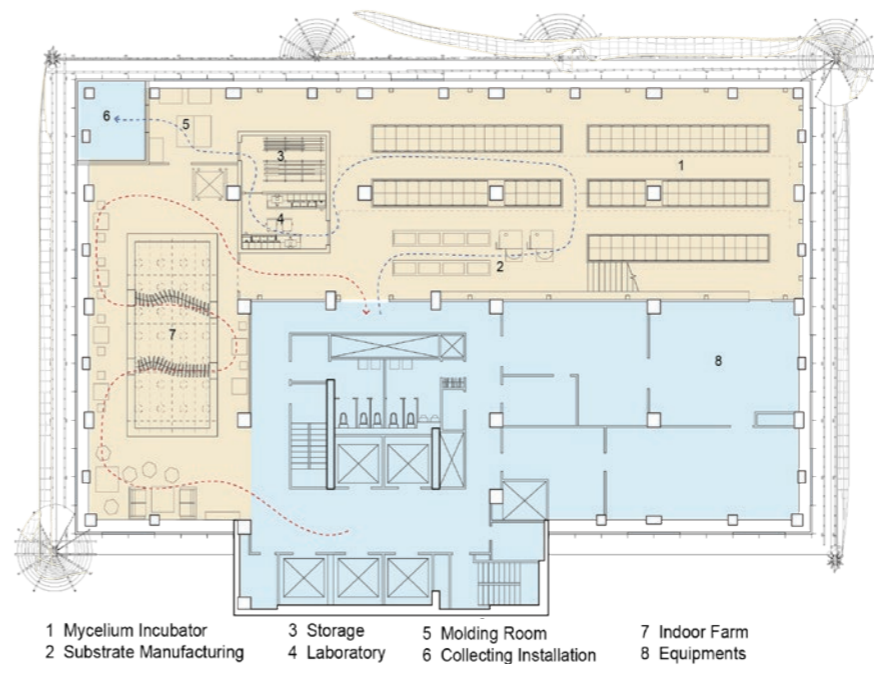
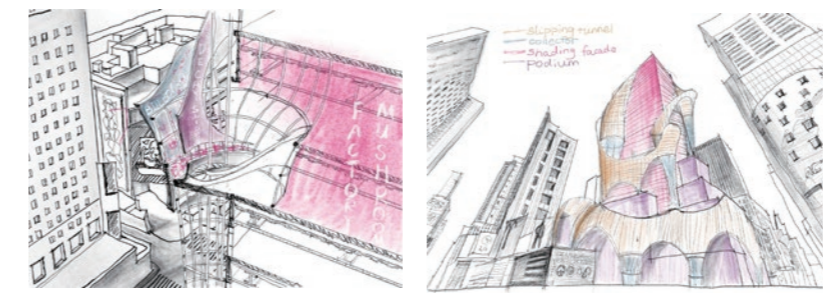
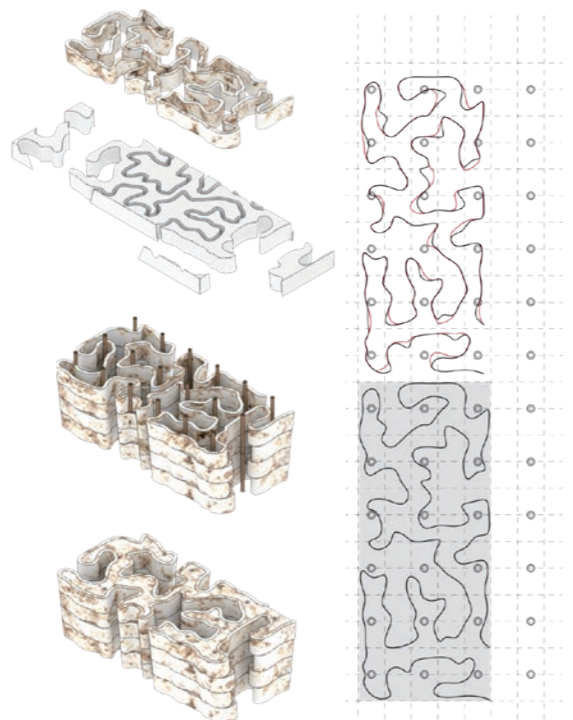
In order to avoid additional carbon emissions during the manufacturing process, the mycelium shade is manufactured using a combination of manual and mold. Four inches is the maximum size of mycelium that can be exposed to oxygen for normal growth, and this is the most basic module for the shade. The smallest mold unit is a 4 inch high, one inch wide strip of mycelium, which is stacked together and filled with mycelium after a week of incubation, bamboo is used to hold the layers in place. Each shade will occupy two spaces outside the curtain wall panels and will be 8feet wide The initial height varies from 5feet to 8feet.

1. Stacking four layers of molds together. They will bond together naturally afterward. Total height 1' 4"

2. Insert bamboo of diameter 1" at intervals of 8" and fill molds with the substrate.

3. The final installation will take place on scaffolding.

4. The change in the curve creates gaps that allow air to enter.







03

## Light Traced

• An Exploration of Self-Identity •

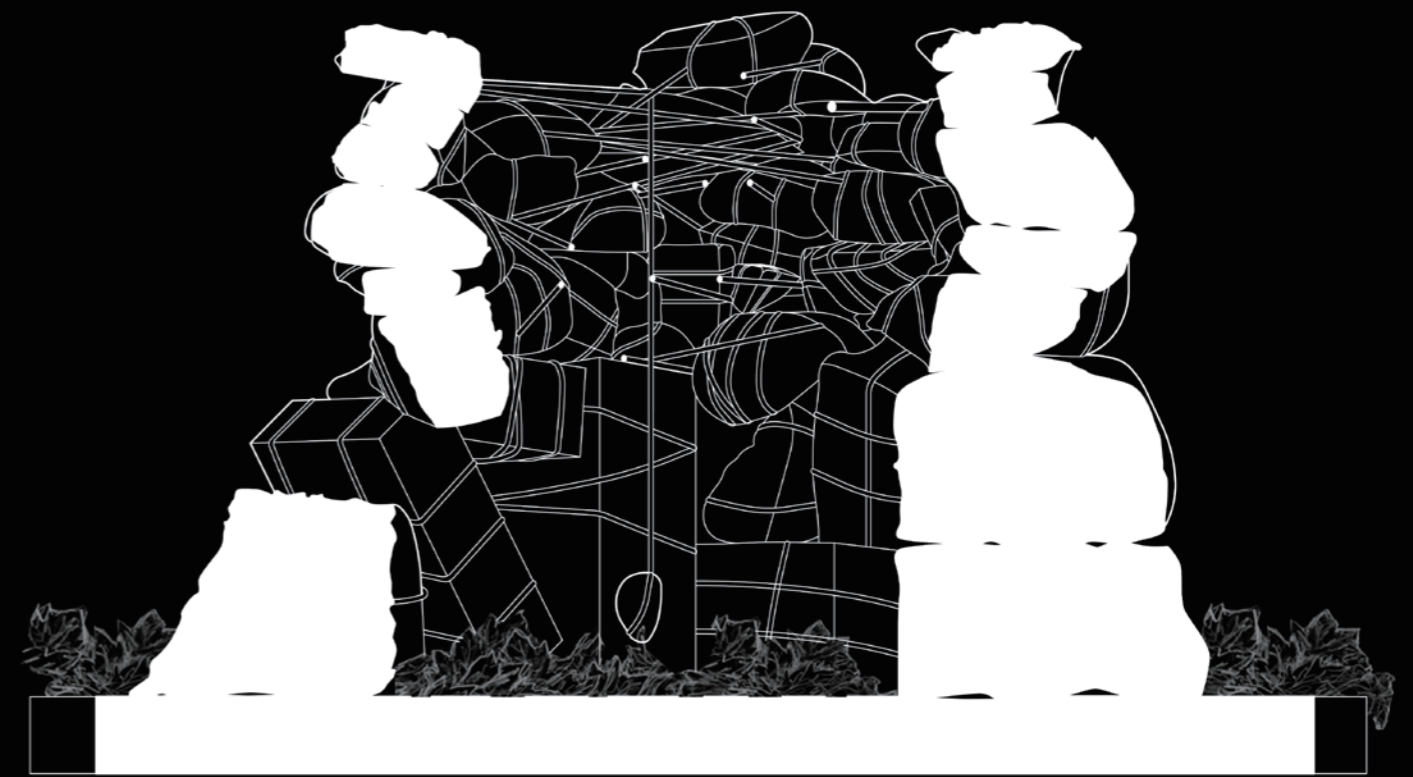
Columbia University, Spring, 2023, Individual project  
Instructor: Ada Tolla, Giuseppe Lignano

This design is a further return and exploration for me. I use my past eyes to reexamine familiar materials in life, reshaping and translating them with existing knowledge. Mansory, steel, wood, and plastic all bear time and memory in different dimensions. Just as time and memory can shape a person, the past of each object has also shaped its present. In the process of exploration, I picked up these fragments of memory and used ropes as a medium to discover their characteristics, using them to construct my imagination. And I recorded observations and creations through my camera as my eye for narrative.



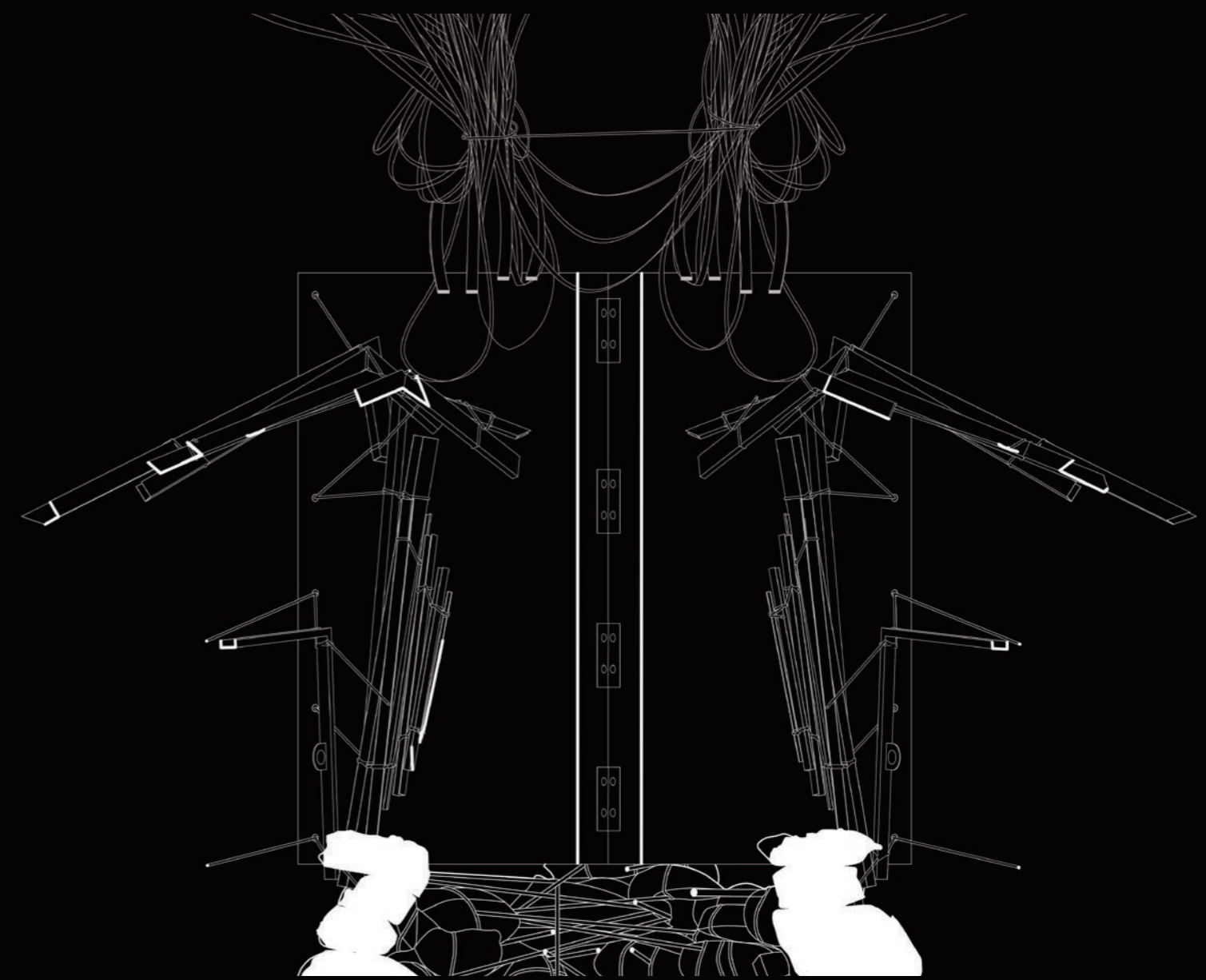
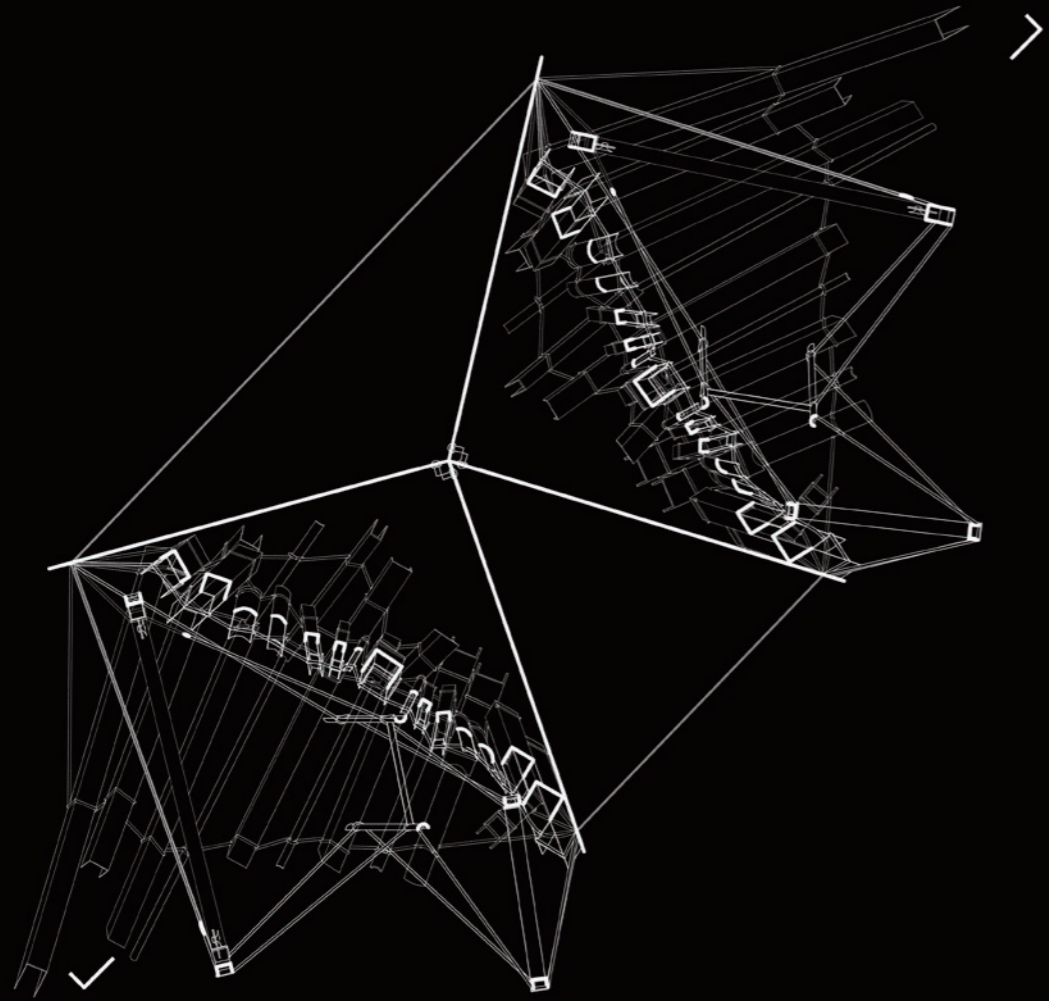








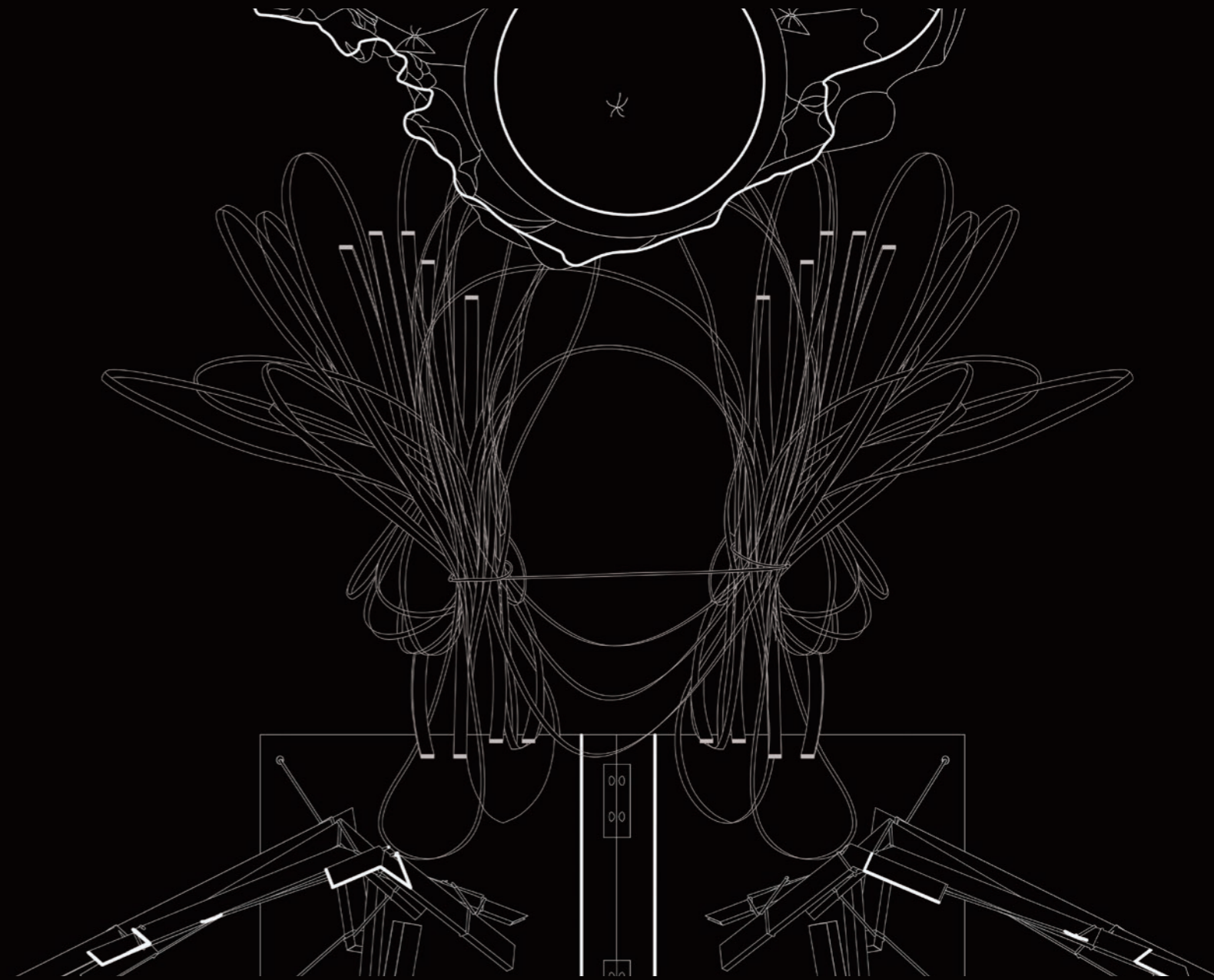
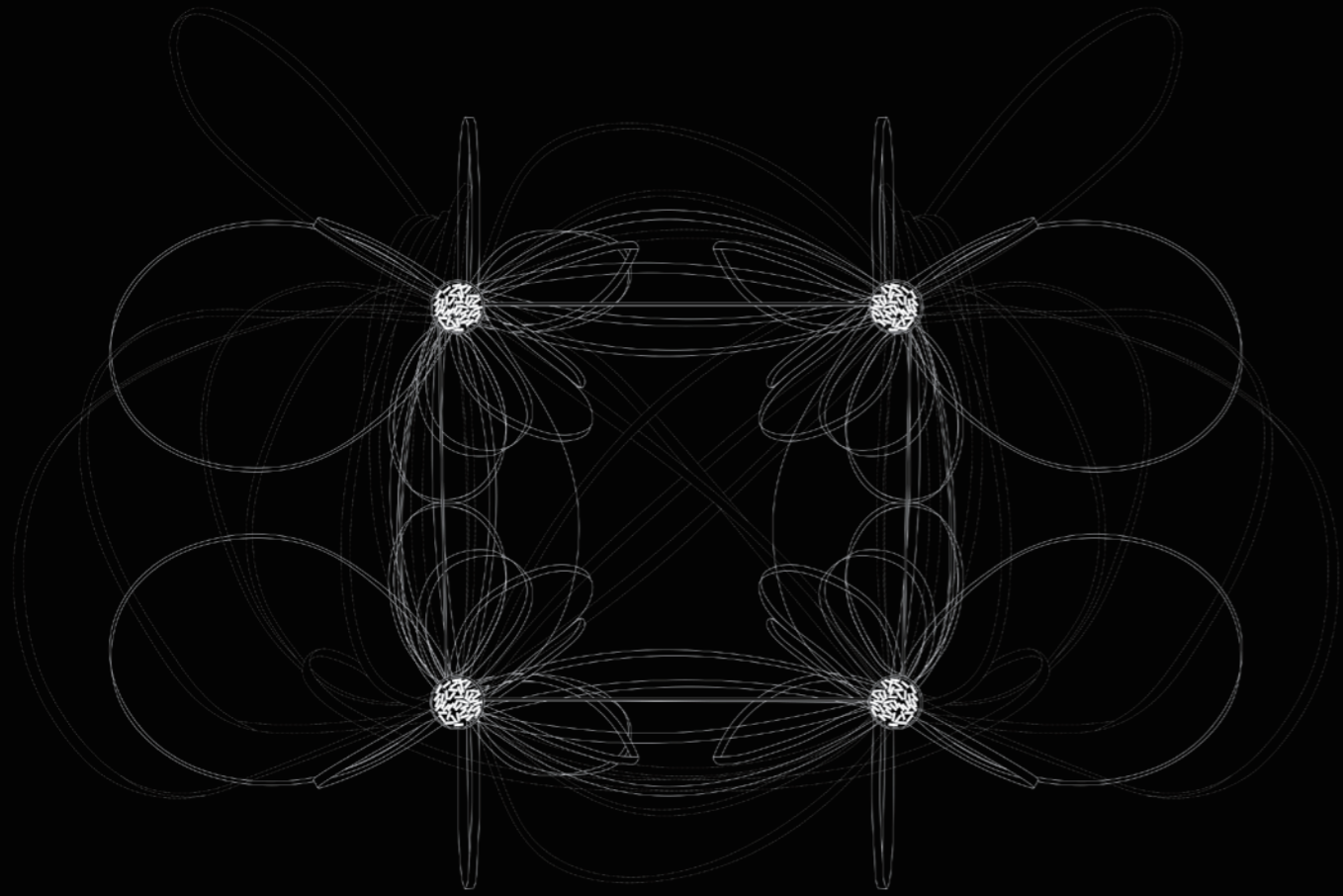






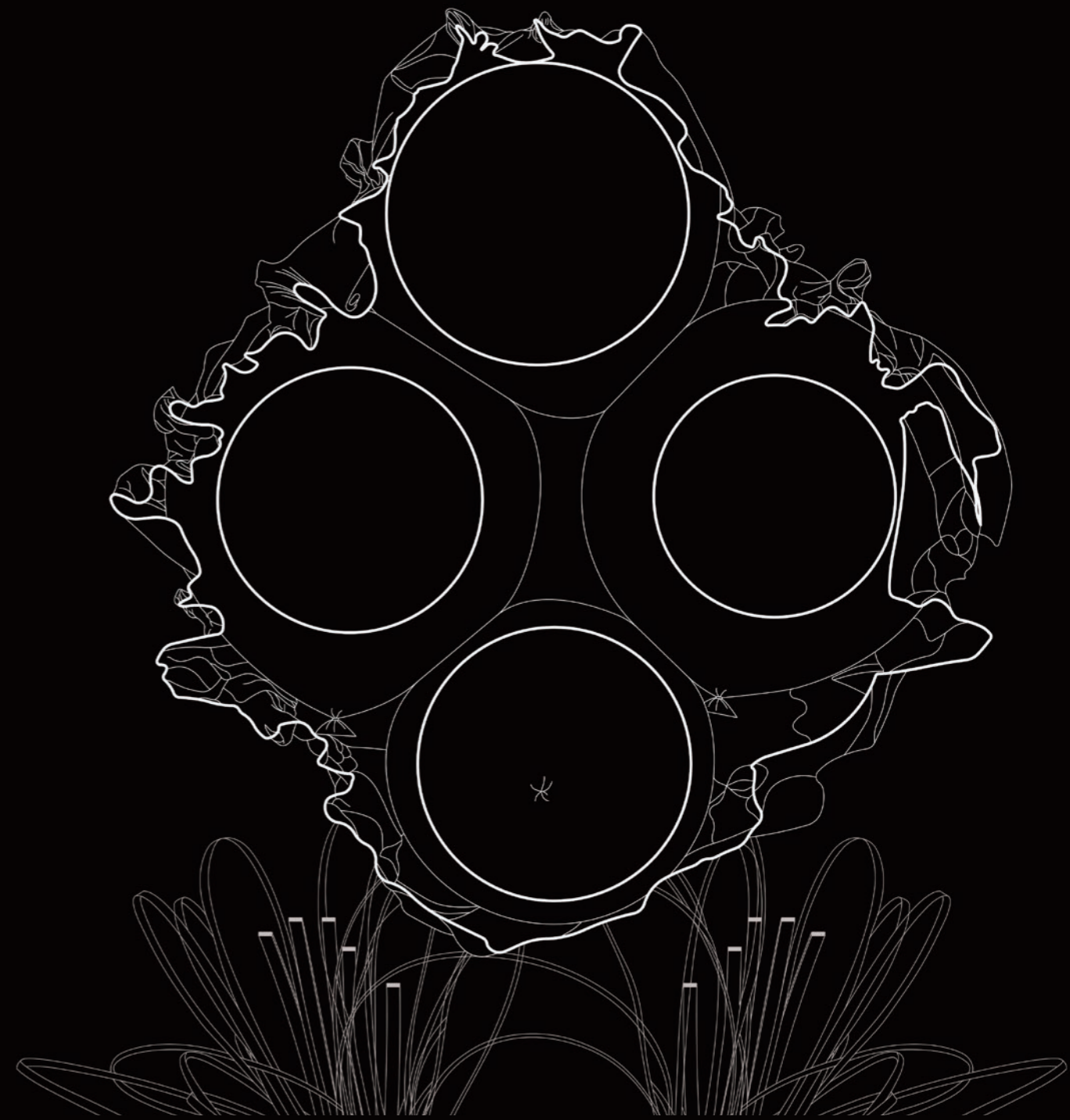
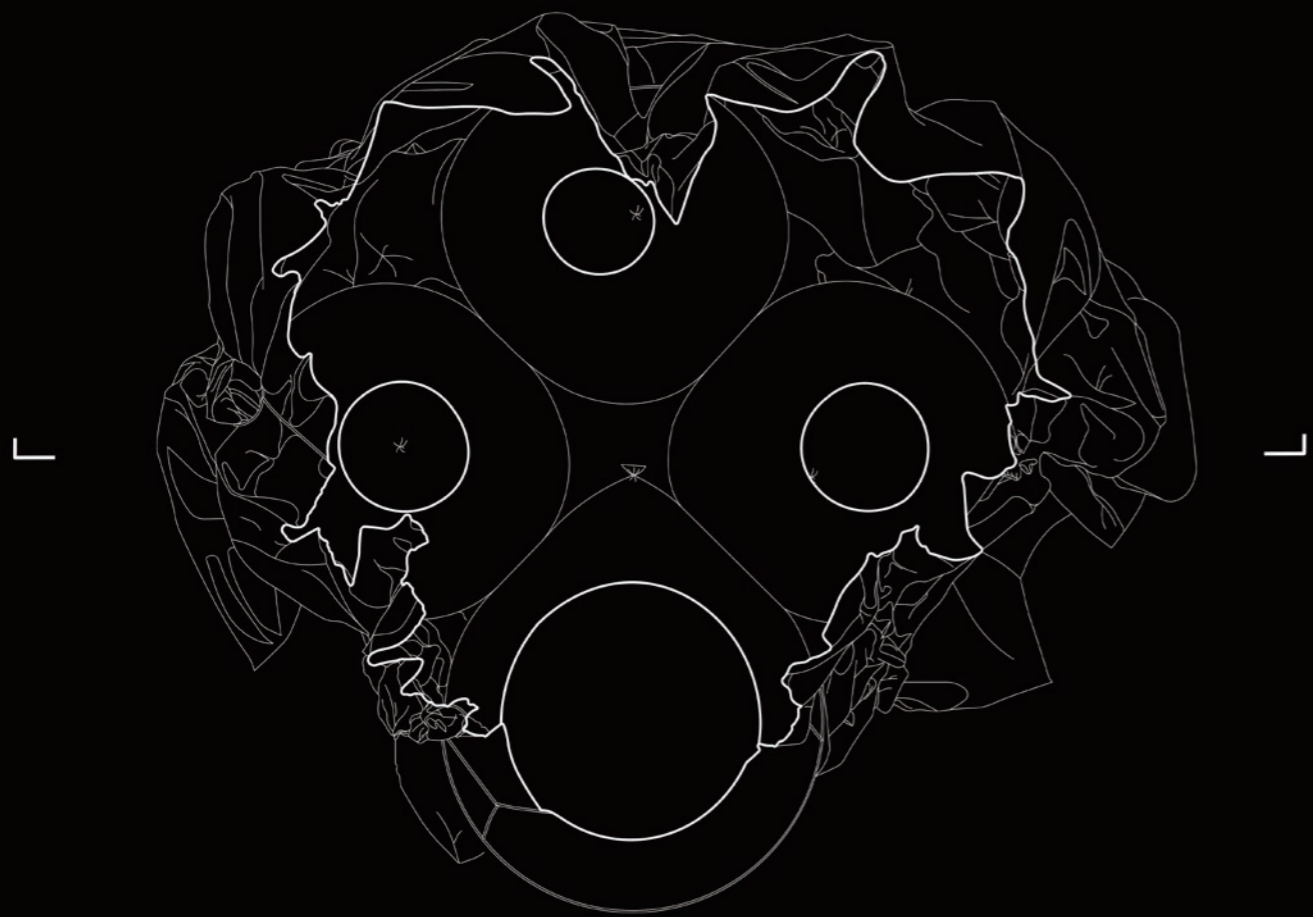












# TRANSSCALARITES

## Green River--Olafur Eliasson

The meaning of artworks to the public is always confined by the reality that we know it is an exhibition. Green River is a series of experimental projects that aimed to evoke public responses to environmental change without the institutional premise of art. Olafur Eliasson, the creator of the project, poured an innocuous green material into rivers in different cities and landscapes secretly, leading to hot debates among citizens, media, and governmental institutions.

The project was first created in 1998 when the world was suffering from the highest global temperature in the 20th century. Industrialization brought severe environmental problems including pollution and global warming in the process of rapid development.

When artwork itself became an intense change in an ordinary day, the public participated in the discussion from different perspectives. Public attitude would have been different if the Green River projects were preannounced as art productions. Rivers in Chicago undergo the same process every year to celebrate St. Patrick's Day. The response is always positive when people understand that the intense change is preplanned and could be digested by the river system in a few hours, and citizens admire the compelling effects of the bright color. However, the project created by Eliasson experienced different judgments. The work was unannounced before it came into being. Individuals noticed the intense change in different attitudes. In Stockholm, newspapers featured the intensely green river on front pages, with a fabricated but reassuring explanation for the color change. Reporters claimed that it was a result of leaking from the heating system which required an urgent check. At the same time, a large number of people regarded it as beautiful scenery, and they raised their cameras to capture the moment. For the artist, it didn't matter how the public judged the projects. The public voice itself was a symbol of success by raising awareness of changes in the living environment.

Green River has been exhibited both in museums and in the actual rivers. In the museum, Green River was shown by photographs or became an interactive device. Awesome photos which were recorded in Iceland were exhibited in The Menil Collection. In the gallery of Basel, the ground of the floor was filled with a layer of green water, and visitors walked on the wooden path. Although the audience could realize that the exhibition was closely related to environmental change, aesthetic meaning surpassed the concept of environmental change. Walter Benjamin described this aesthetic viewing: "Its self-alienation has reached the point where it can experience its own annihilation as a supreme aesthetic pleasure." The awareness of the audience changes when they enter into the interior space, turning the focus of the crisis to aesthetic appreciation.

In conclusion, the meaning of Green River could be interpreted differently depending on how it is presented. When the artwork suddenly appeared into public life, it became a way of interacting with the public, leading to the awareness of environmental protection and public involvement. Conversely, the interior exhibition gave the audience a premise before the visit, resulting in comments about composition and color rendering.

## Building Yourself an Urban Reserve

Local citizens could hardly act to change their surroundings under strict restrictions of the law. Santiago Cirugeda used subversive tactics and collective approaches to question the legality of construction and government control to improve urban designs. *Building Yourself an Urban Reserve* is a series of provocative urban projects that instruct citizens to be involved in the construction of a living environment through a process of subverting regulations.

The term "tactical urbanism" was popularized around 2010 which mainly referred to citizen-led temporary installations pressuring government agencies to improve the urban environment. Cirugeda's series of projects were designed in Seville in the 1990s to challenge the city's situation and argue for civil rights. The urban planning of Seville at that time was closely tied to the celebration of the Expo '92, with investments worth €6 billion. It focused on upgrading infrastructure and making laws related to protecting built heritage in order to prepare for the worldwide event. Although the strategy solved the existing problem of insufficient equipment, mobility problems were produced which created a process of gentrification. Miguel Torres Garcia described the phenomenon:

"European Union funds were employed to continue inner city reforms, only to fuel gentrification and the displacement of lower-income residents, which show that the city was increasingly dependent on the real estate market, tourism, and services. All of these activities converged in an overarching principle of the commodification of the historic quarters and contributed to the incipient residential and construction bubble that would worsen the effects."<sup>[1]</sup>

As a result, people in the lower class suffered a lot from losing homes and moving during the redevelopment. Under such circumstances, *Building yourself an urban reserve* tried to open a way for citizens to communicate with the government institution and fight for their own rights.

In *Scaffolding*, regulations of heritage protection districts were challenged by building a temporary urban shelter as an extension of a citizen's apartment in Seville. In *Casa Insecto*, the Alameda Viva collective constructed a temporary living structure on the tree to protest and inform the government about the implementation of an urban plan which decided to cut off the green area in the district. In *Kuvas S.C.*, debris containers were used to design temporary equipment in order to create an Urban Reserve of Public Land on the street without the control of the institutions. All of these projects represented ways of how citizens act to protest restrictions and government-controlled urban planning, aiming at regaining profits from the few.

The series also questioned the function of architects during the design process. Instead of cooperating with construction companies, Santiago Cirugeda and his team of Recetas Urbanas communicate with the users and encourage the community to take part in the construction process. In this way, architects supplanted the role of the public administration which is not capable of meeting citizens' requirements at a low price. In *Scaffolding*, Cirugeda created a plan for the user to apply for a license of construction on the building façade with a price of 42€. With a successful result, neighbors who had the same requirements were also encouraged to follow the same process. They used their professional knowledge to educate the public to gain the most benefit in a restricted environment.

In general, Santiago Cirugeda and his team of Recetas Urbanas tried to challenge the political, economic, and legal systems by intervening in the construction process. They stayed connected with the customers and worked together with them. As an architecture team, they used their knowledge and technical abilities to be an agency to help the public, filling in the role of an urban administrative service.

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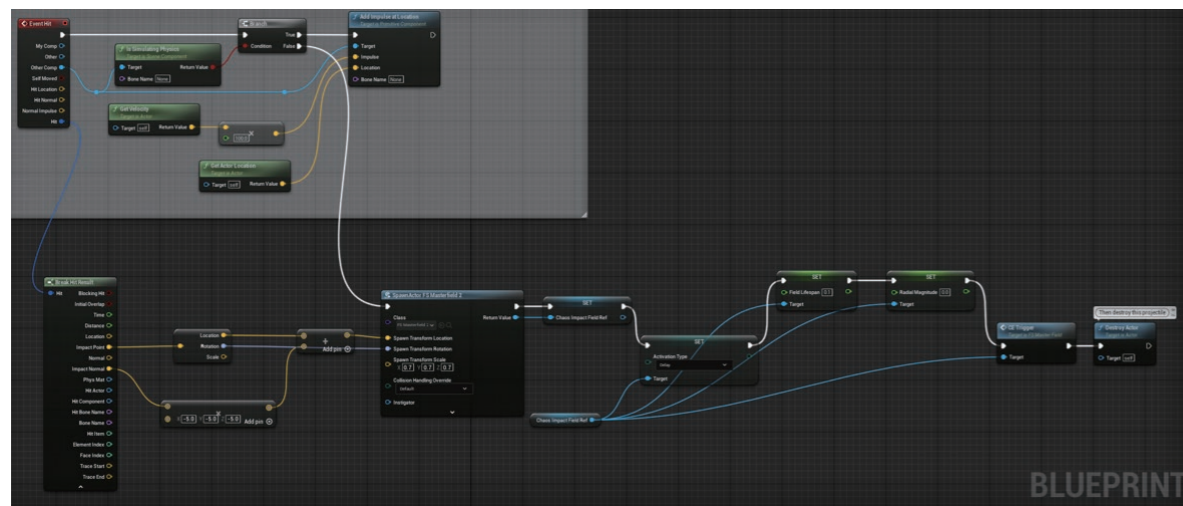
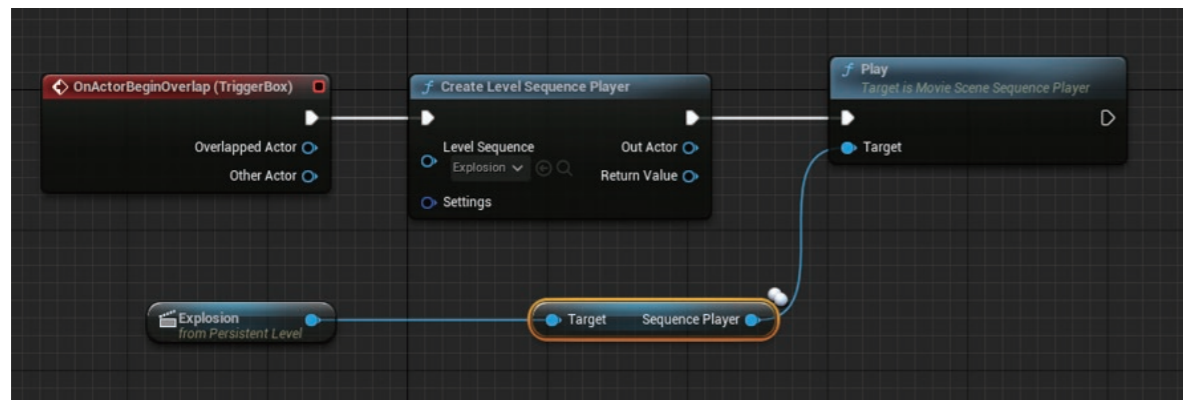
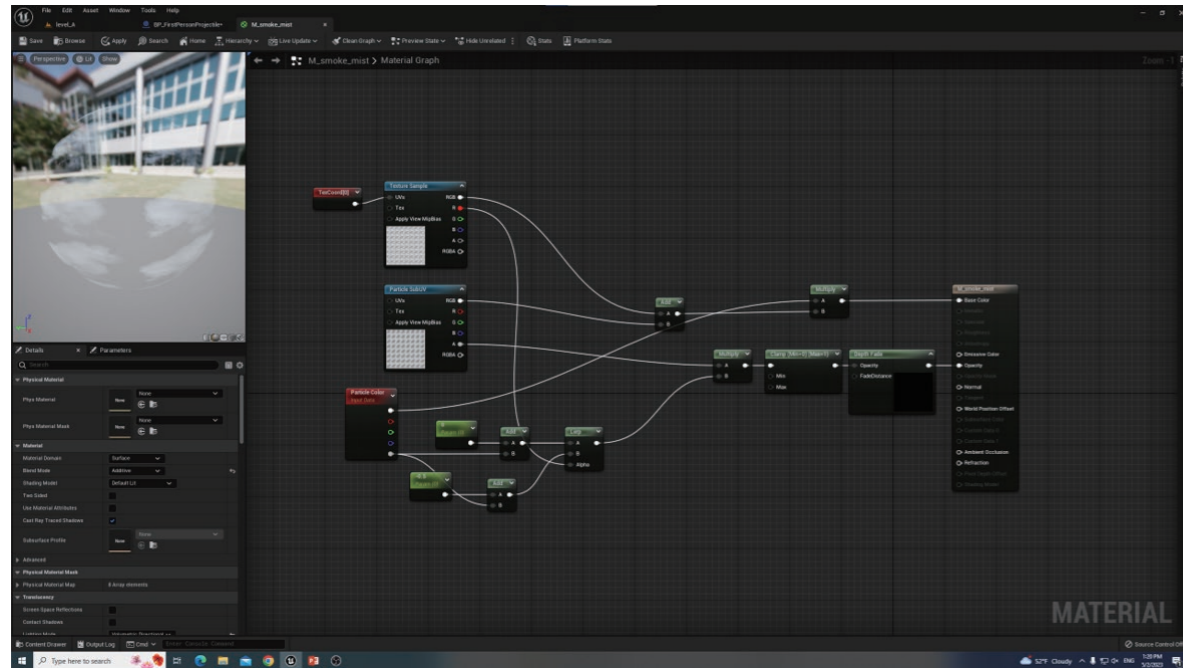
[1] Torres García, Miguel. (2016). Cultural Keys to the Evolution of Spanish Urbanism. Journal of Urban History. 45. 10.1177/0096144216672657.

# ARCHITECTURAL PHOTOGRAPHY: FROM THE MODELS TO THE BUILT WORLD





# VIRTUAL ARCHITECTURE: WORLD BUILDING AND VIRTUAL REALITY WORKSHOP



# SPECULATIVE CITY: CRISIS, TURMOIL, AND PROJECTIONS IN ARCHITECTURE

## Home Losing People People Losing Home

A Comparison Analysis of the Gentrification Process in Manhattan that has been affected by both the luxury housing construction and the crisis facing by Public Housing

Hetian Guan  
Columbia University  
MSAAD  
Instructor: David Eugin Moon

