SYNTHESIS TYPOLOGY

PORTFOLIO OF XINQI MENG

Selected Works 2023-2024

Columbia University MSAAD

PROLOGUE

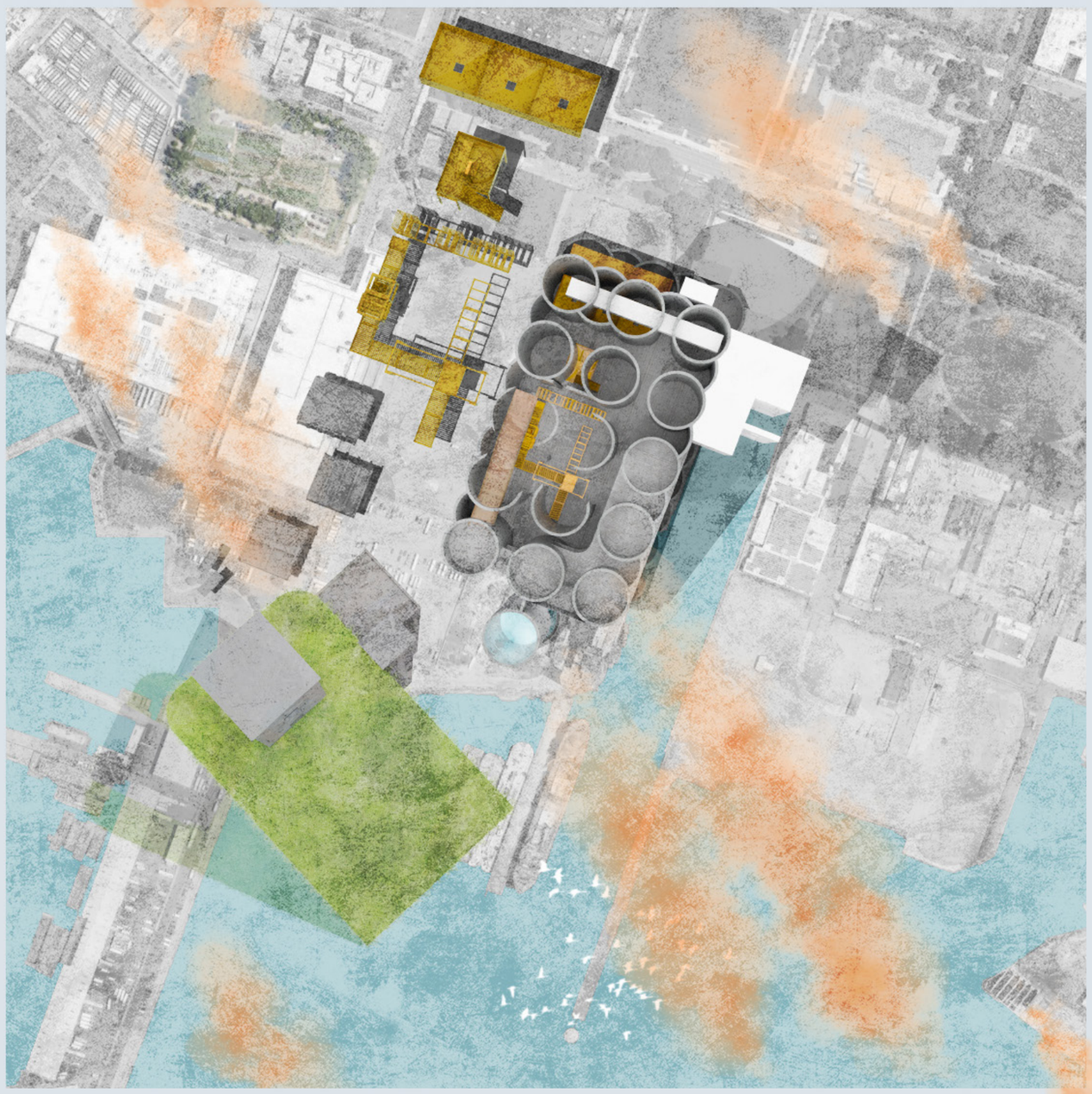
Navigating Urban Form and Landscape Integration

How architectural elements follow the rules and principles in the norm and define the relationship between components and the code in various possibilities is the focus of architectural typology and the essential operation of exploring regularity. In other words, identifying the composition of architectural objects are a series of personal simulations that reflect the thoughts of abbreviating and rearranging the hidden information behind the common. As an introduction to the urban—which I understand to mean not just "the city" as a thing, but a dynamic complex of spatial conditions and the quotidian experiences and lived. In the process of systemizing, it tries to figure out the continuity of urban form, which is obtained by exploring the choice and transformation of urban space types further to maintain the order of urban space.

In studying the composition of architectural space, spaces with different functions and sizes have different meanings due to people's design. The studies in the living, landscape, urban, visualization, and free types of architecture further helped me to develop the purposes of space buried in these common typologies. In this way, I regard typology as not merely a means to design but a fluid ideology to detach and consider architectural form under different social contexts. The examination of the type of system also allowed me to observe the limits of architectural change. In my works, the goal of typology is to obtain the continuity of urban form through the individual understanding and treatment of types, which perceives the order structure of the urban physical environment as a meaningful entity.

As a designer, I regard myself an observer and mediator of the city, bringing new cognition and ideology to the design environment. The typology study is not aimed at establishing a set of logical and self-consistent ultimate truths and aesthetic dogmas. It is instructive and open and needs to be constantly tested, corrected, and updated in practice. I wish to explore this ideology: to investigate better and find meaningful and viable solutions that ultimately facilitate the situations.

CONTENTS



01

INDUSTRY OF WASTE

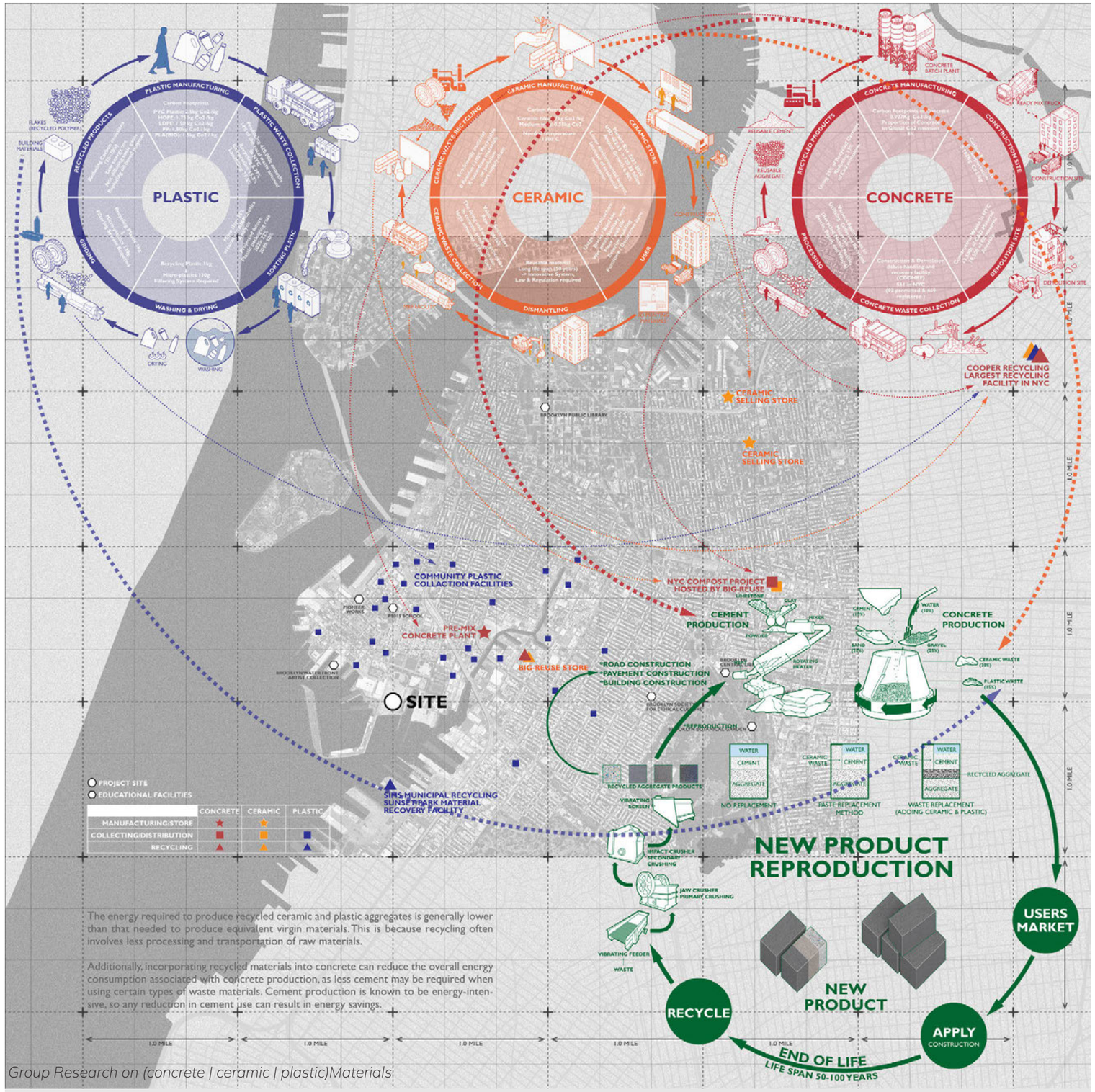
-CONCRETE RESURGENCE-

Reproposing a new architecture typology for material cycling & promoting resiliency

Columbia University Architecture, Planning and Preservation
(Advanced Architecture Program)
Professor: Robert Johnston / Ruth Mandl
Individual work
Fall 2023

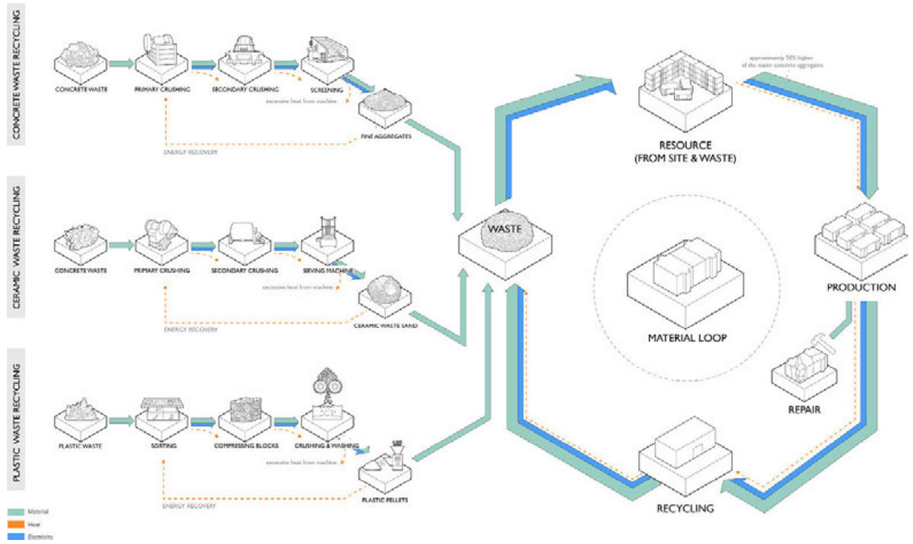
The notion of waste is closely connected to objects losing their inherent value. Given the increasing scarcity and costs of new resources, architects now find it crucial to explore existing waste streams for optimal utility and adopt innovative design practices utilizing repurposed materials. Efficient design, focused on extracting maximum value from waste, requires a comprehensive understanding of material procurement processes, the flow of manufacturing by-products, elements suitable for disassembly and reconfiguration, as well as considerations for the building's operational and maintenance planning.

Within the economic system, which relies on depleting natural resources for production, waste is generated, impacting our social integrity and environmental sustainability. Urban poor searching landfills for valuable items serves as an iconic representation of the entanglement of economic success and rapid urbanization with social segregation. Waste is often considered as part of a linear process with a dead-end scenario, buried or burned out of sight. However, examining waste products reveals a different narrative—one of wasted resources. This alternative perspective on waste material holds potential for community prosperity, revenue generation, and a shared sense of achievement.

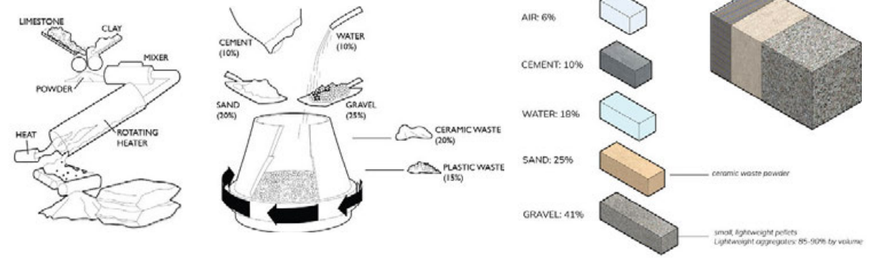


Group Research on (concrete | ceramic | plastic)Materials

Energy and Material Cycle Process



Concrete Production Process and Formation

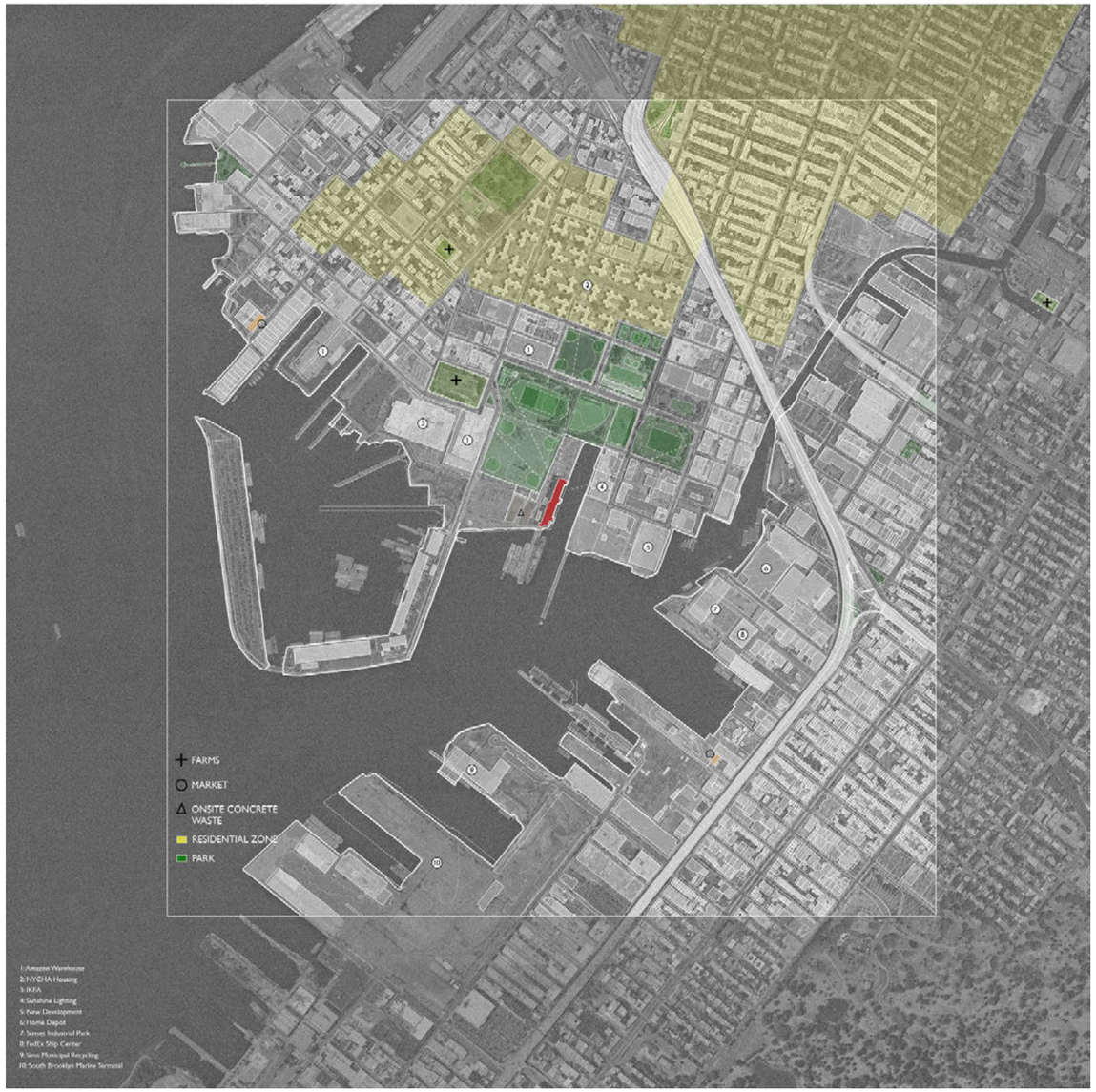


The project centers on the innovative transformation of the widely employed architectural material, 'concrete,' with a focus on developing a sustainable and lightweight variant that integrates with waste materials. Acknowledging that traditional concrete is often perceived as environmentally unfriendly, the goal is to explore ways to extract its potential by incorporating waste materials.

This approach aims to redefine the sustainability of concrete by maximizing its inherent properties and utilizing waste, thereby enhancing both the value of concrete and addressing environmental concerns. Through the exploration of plastic, ceramic, and cement materials, we discovered a correlation among these three non-degradable substances. By recycling plastic and ceramic waste and incorporating them into cement production at a specific ratio, we can enhance the ductility and durability of the resulting cement. The energy required to produce recycled ceramic and plastic aggregates is generally lower than that needed to produce equivalent virgin materials. This is because recycling often involves less processing and transporting of raw materials.

Additionally, incorporating recycled materials into the new concrete can reduce the overall energy consumption associated with concrete production, as less cement may be required when using certain types of waste materials. Cement production is known to be energy intensive, so any reduction in cement use can result in energy savings.

LOCATION & NETWORK ANALYSIS



The project is located at the Red Hook Grain Terminal in Brooklyn, strategically positioned within an industrial zone with numerous manufacturing facilities. The Red Hook Grain Terminal sits at the mouth of the Gowanus Canal in Brooklyn. Constructed in1922, it was immediately deemed unuseful and redundant by the time of its completion and decommissioned 43 years later. The abandoned 12-story grain elevator terminal sits on a 43.4-acre site, and is 70 wide by 429' long, comprising 54 concrete silos with panoramic views of New York harbor.

IMPACT & FACILITY SOCIAL NETWORK ANALYSIS

Material Recycling Facility

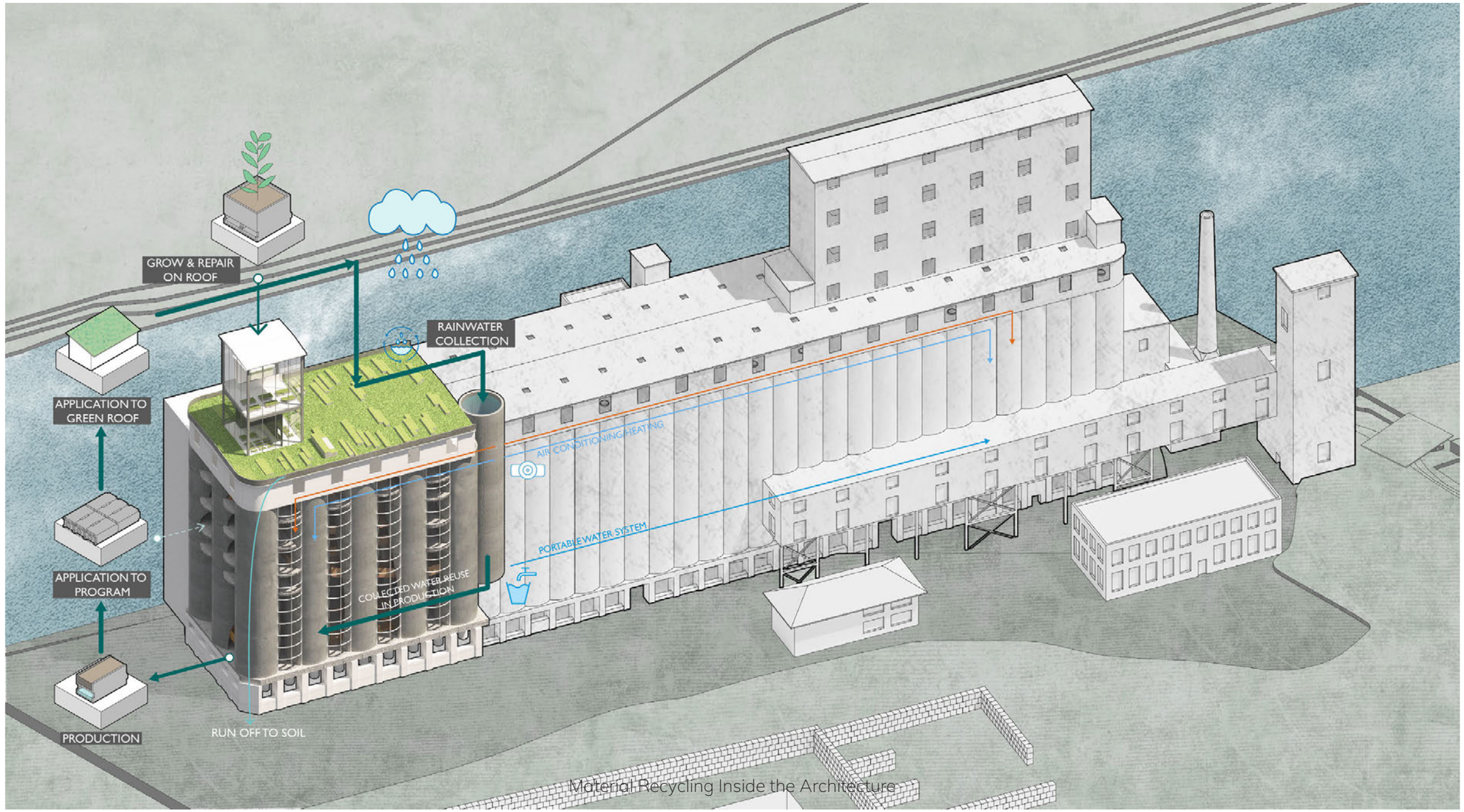
Industry

Nature & Recreation

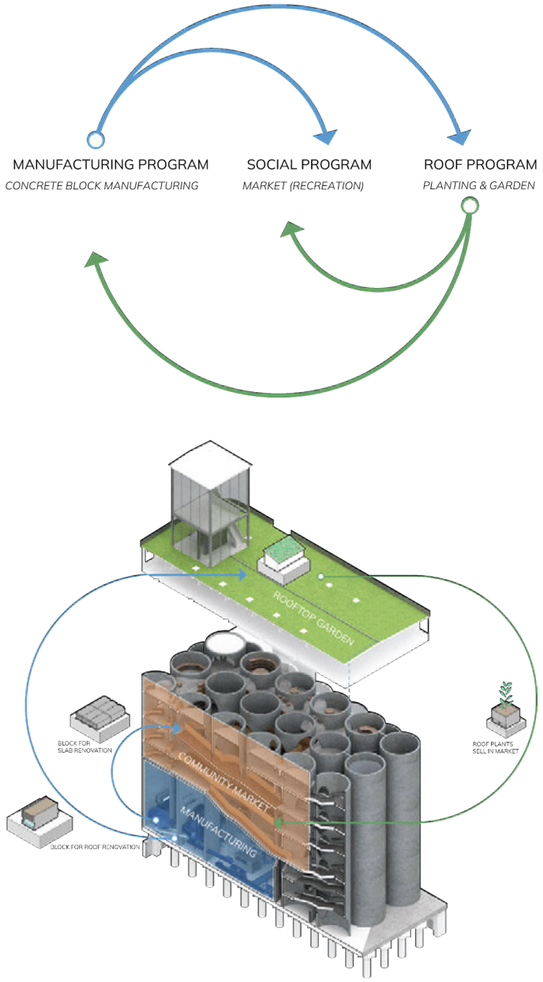
Social & Farm

The project will center on waste management and collection facilities in close proximity to the site, with the goal of maximizing the reuse of by-products, establishing sustainable waste material cycles, and fostering connections with the surrounding community. The primary focus of the project is on the development of a new concrete product, which will be integrated with a social program to explore its application in transforming the current condition of the terminal. Specifically, the emphasis will be on redesigning the Red Hook Grain Terminal through the creation of modular concrete blocks crafted from on-site concrete and ceramic waste materials.

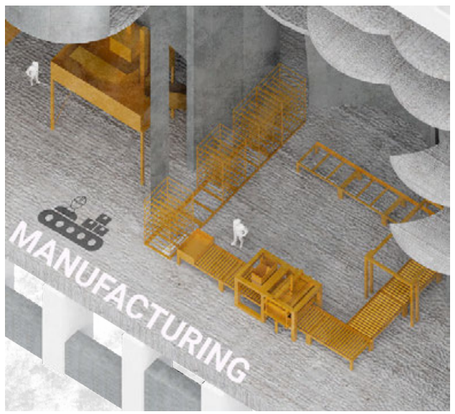
BEYOND BLUEPRINTS



Material Recycling Inside the Architecture



Program Relation

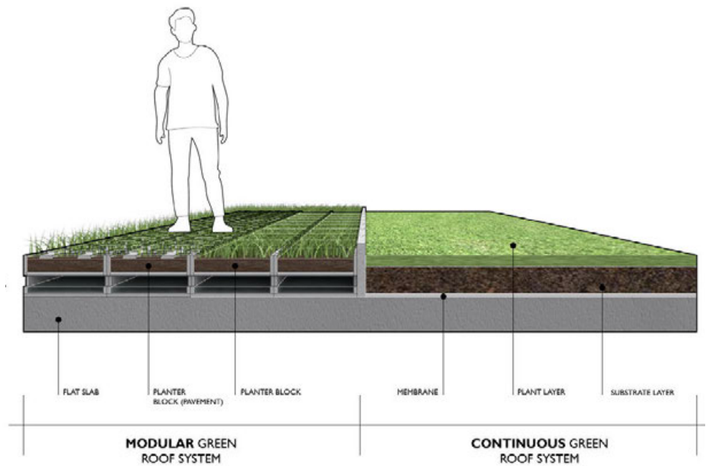


The chosen intervention part is the left-end corner of the terminal, where a holistic approach combines block manufacturing, social programs, and roof renovation to transform the space into a community gathering and educational hub. With the new design typology of modular concrete blocks serve a multitude of functions, including support for green roofs, integrated rainwater collection, cladding, and floor slabs. The integration of block manufacturing, social programs, and roof renovation envisions a seamless synergy, emphasizing the terminal's conversion into a dynamic community space with educational facilities.

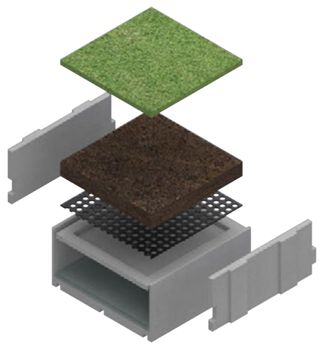
The three key programs harmonize effortlessly, as block manufacturing and slab creation complement roof and market initiatives. The rooftop cultivation of vegetation not only contributes to a self-sustaining community market but also promotes collaboration with nearby Brooklyn farms. This integrated approach not only facilitates the exchange of goods but also enriches community relationships by providing a dedicated space for planting and communal activities.

Benefit of Modular Roof

A particular emphasis is placed on the roof, which serves as the primary focus of renovation, utilizing innovative green concrete material to contribute to the overall sustainability and adaptability of the structure. The idea of a concrete modular block prototype emphasizes the design of modular concrete blocks crafted from on-site concrete, ceramic, and plastic waste. These blocks could offer a promising solution for various applications, including green roofs, integrated rainwater collection, cladding, and floor slabs.

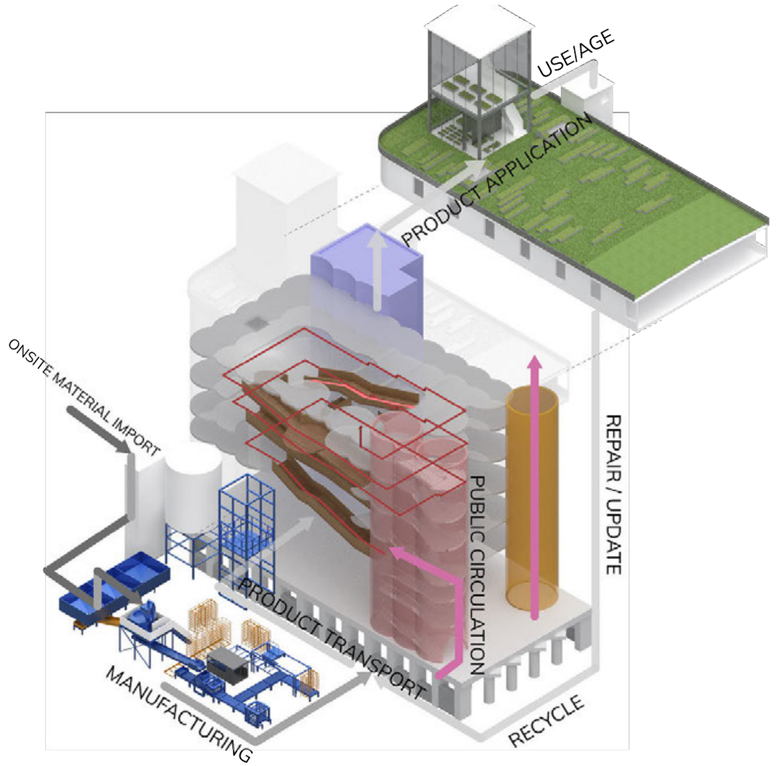


	MODULAR GREEN ROOF SYSTEM	CONTINUOUS GREEN ROOF SYSTEM
PLANTATION AND INSTALLATION:	INSTALLATION OF BLOCKS ALREADY PLANTED	PLANTATION AFTER INSTALLATION OF PREMOLDED STRUCTURE
ADVANTAGES:	INDEPENDENT SYSTEM; MOBILITY AND PRACTICALITY BLOCKS COULD BE INSTALLED TO GUIDE WATER	DEVELOPMENT OF VEGETAL DIVERSITY LATERAL DEVELOPMENT OF ROOTS AND MICROFAUNA
DISAVANTAGES:	HIGH WEIGHT (BUT COULD BE SOLVED BY MIXING WASTE)	NEED FOR A SUBSTRATE RETENTION MEMBRANE
MAINTENANCE:	LOW COST EASY REPLACEMENT OF BLOCKS	HARD NEED TO REMOVE THE LAYERS OF SOIL AND VEGETATION AND REPLANT IT

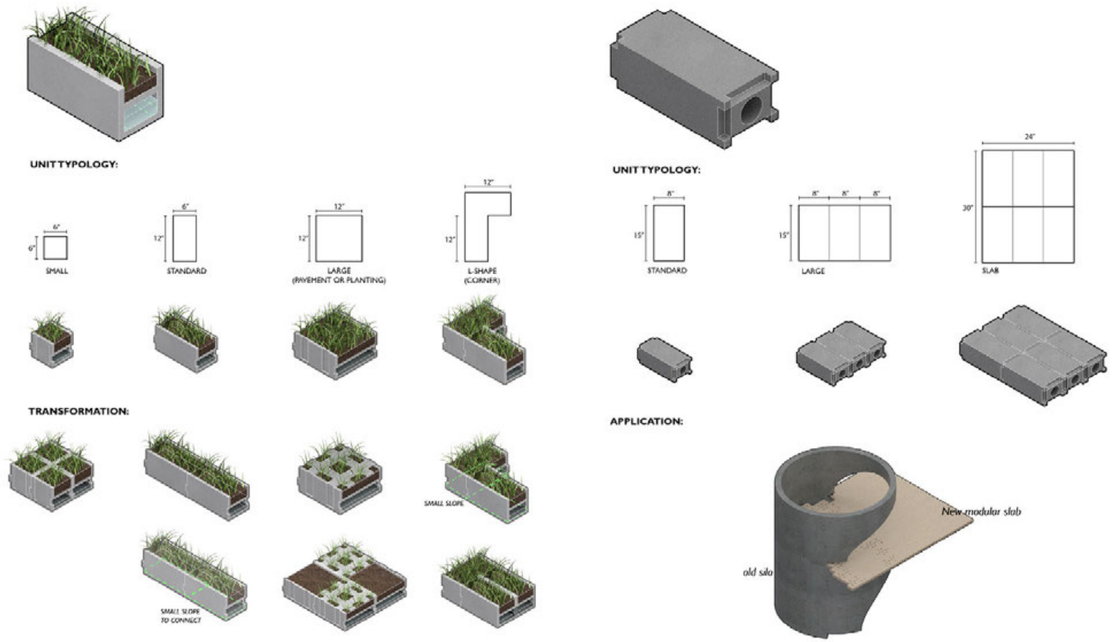


It could be adjusted and modified in different ways to treat the rainwater and manage the water flow, reducing runoff effectively first. The harvested water serves multiple purposes, including building heating, cooling, and integration into the potable water system. With the blocks providing planting and pavement, the old dusty concrete roof was turned into a garden with a simple construction application by adjusting the height of the planter box.

Product Cycle



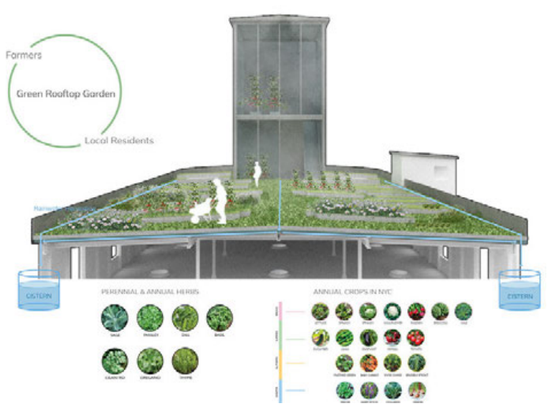
PROTOTYPE



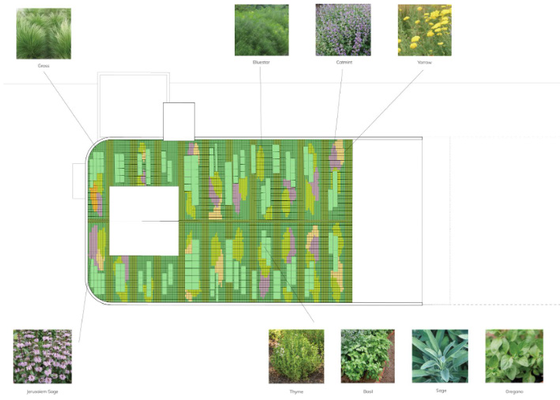
PROTOTYPE DEVELOPMENT WITH ARRANGEMENT

BEYOND BLUEPRINTS

Available in various dimensions, the cladding systems with innovative concrete modules can be effortlessly installed on existing roofs without causing damage. Serving as the focal point for rainwater harvesting, the rooftop channels water to storage silos below, streamlining initial treatment processes.

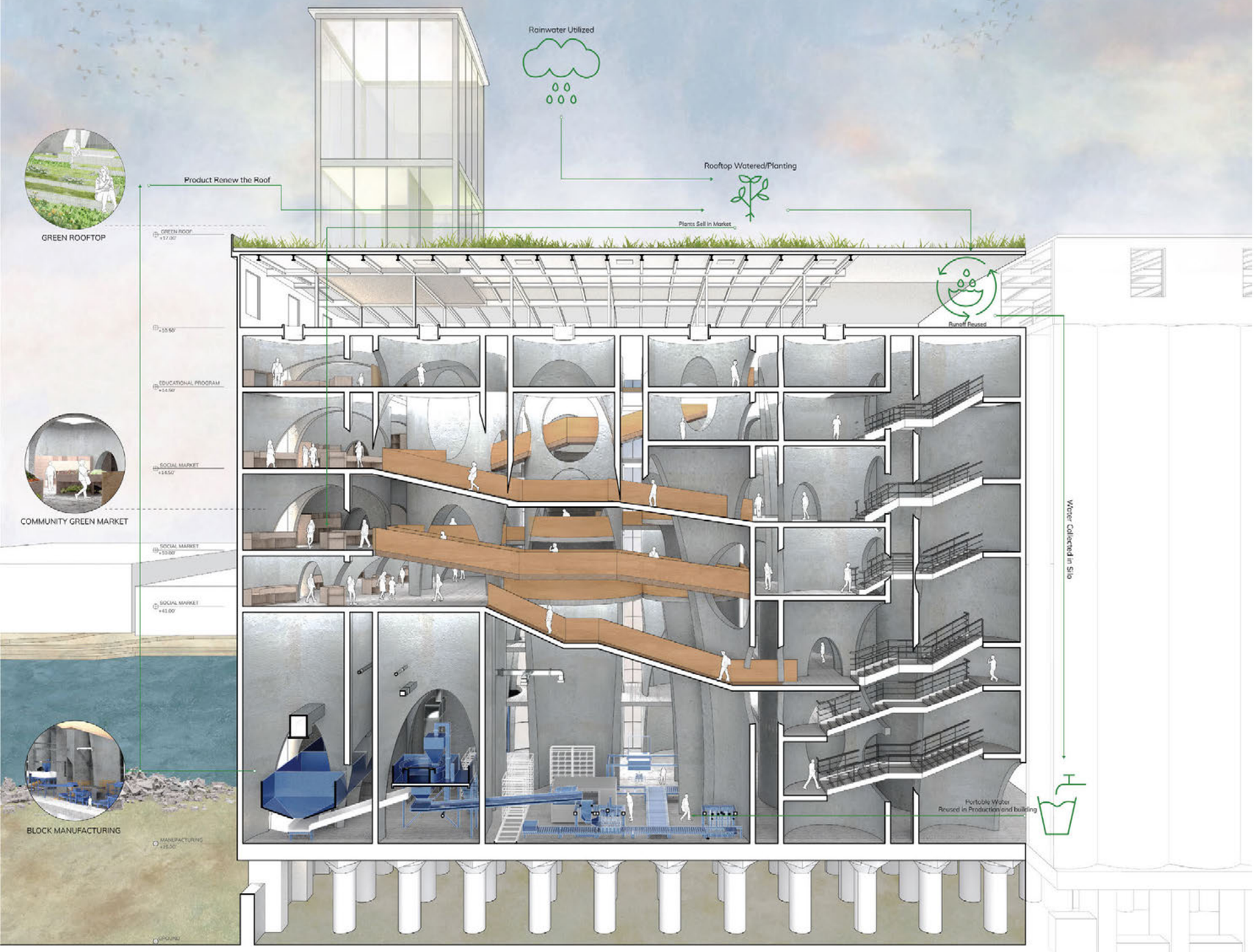


In contrast to the traditional green roof system, the modular green roof system concentrates solely on installing planting blocks. This approach enhances mobility and practicality while providing greater flexibility in planting, eliminating the need for additional layers in the green roof construction.



Industry of Waste- Concrete Resurgence & Future Resiliency I Fall 2023

LOOP & OPERATION

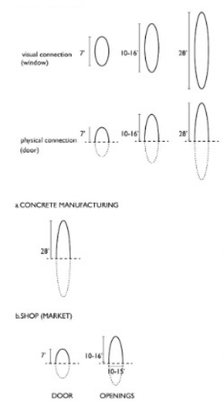


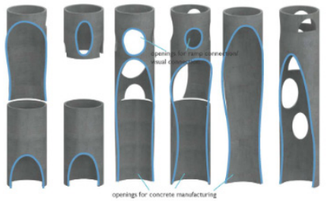
DESIGN LOGIC (CATALOG)

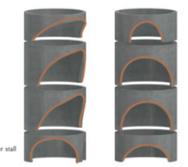
EAT-UP OPENINGS

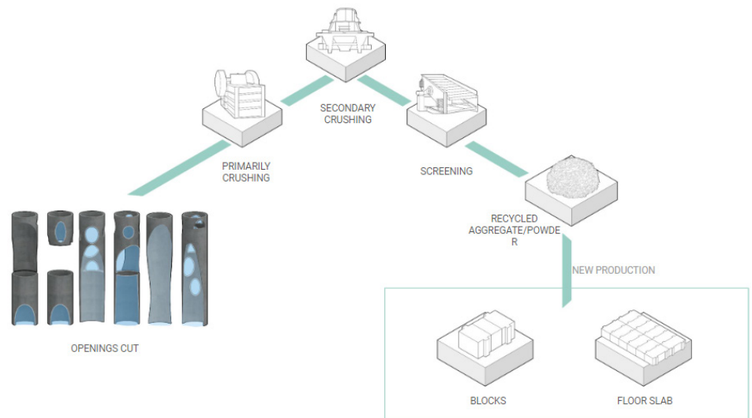
NEW FLOOR SLAB

CIRCULATION RAMPS







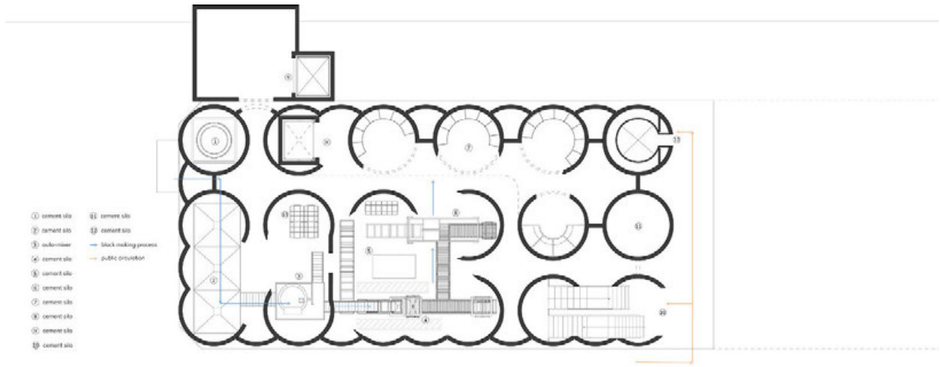


The architecture intervention employs three key architectural strategies to rejuvenate the aging concrete of the building. Initiating with the silo openings, strategic physical movements and visual connections guide the creation of openings at specific dimensions, maintaining a consistent punch shape for a cohesive design language.

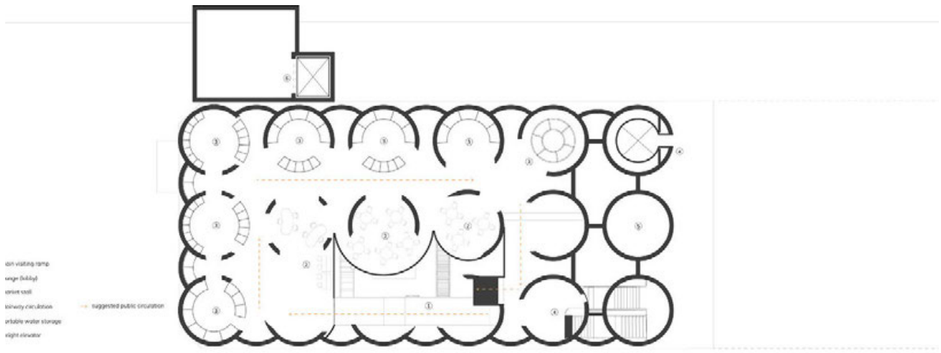
The second strategy involves recycling demolished sections of old concrete, incorporating them into a new manufacturing process to effectively renovate the structure. This process metaphorically aligns with a natural cycle, symbolizing shedding old skin to foster new growth. Utilizing recycled aggregates from the old silo, the second move introduces new precast concrete block slabs, placed within the original silo to establish varied levels accommodating diverse programs.

The third strategy introduces a central ramp, enhancing the terminal visitation experience significantly. These strategies, rooted in modular product languages, collectively shape the overall architectural form. Aspiring to extend the application of these modular blocks through green roof renovations or concrete replacement, the project aims to establish a typology applicable to diverse buildings, advocating for sustainable architectural practices.

ARCHITECTURE

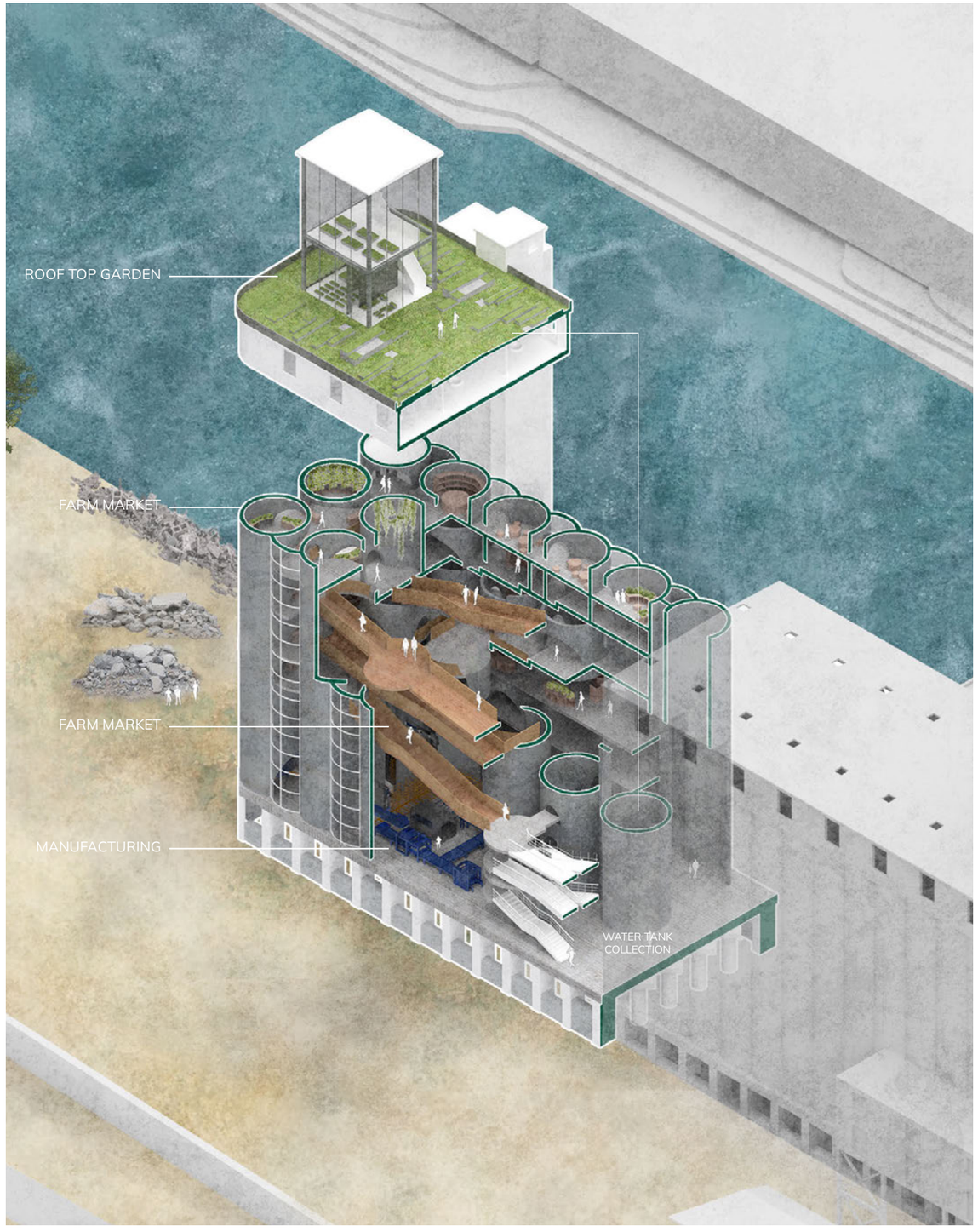


Manufacturing Floor Plan



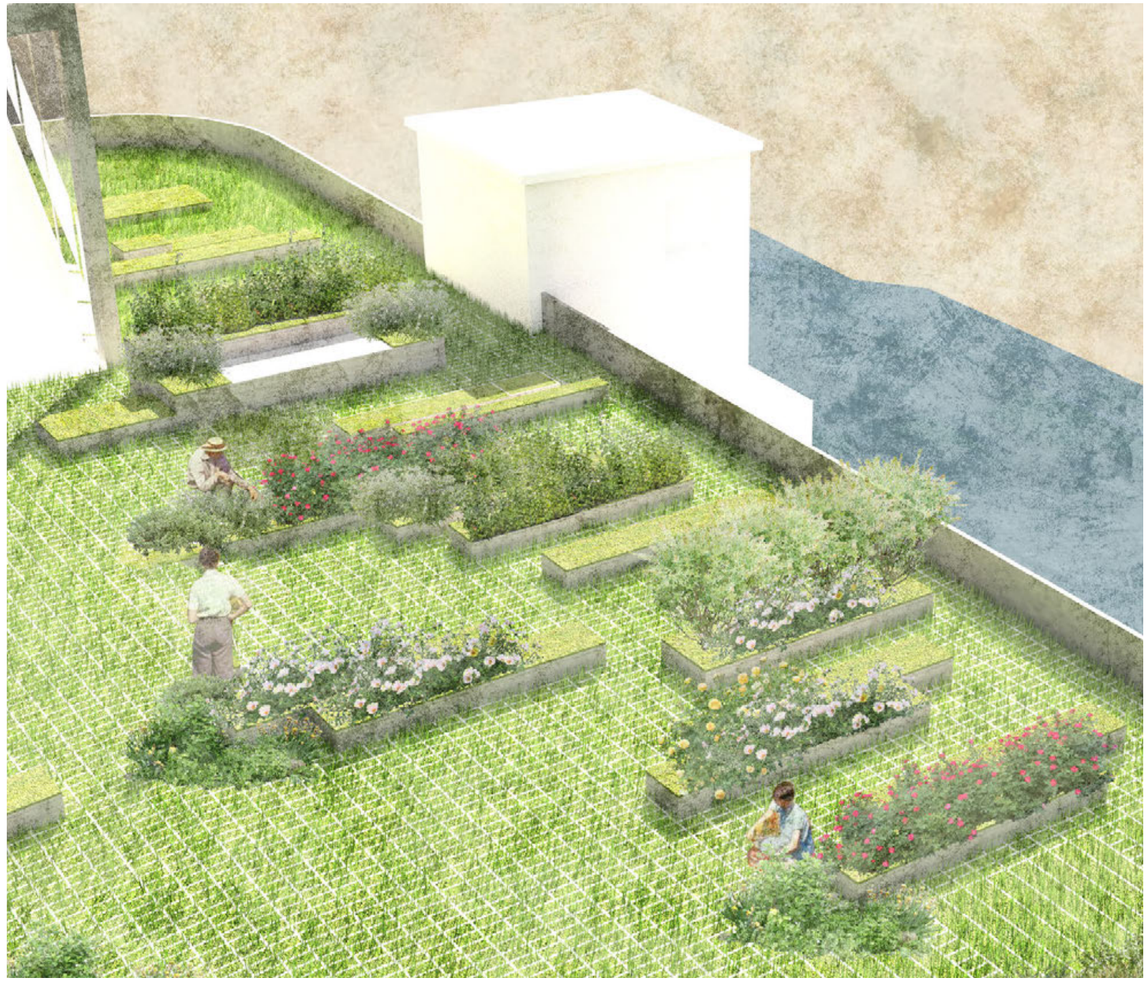
Market Floor Plan

PROGRAM STRUCTURE AXON



CONCRETE MANUFACTURING ZONE

SOCIAL MARKET SECTION



ROOF GARDEN VIEW

The conversion of the current concrete roof into a green modular roof facilitates the smooth integration of planting and recreational areas. With the goal of implementing these modular blocks in green roof transformations or concrete replacements, the modular planting typology can be effortlessly introduced and applied to various roofs, enhancing collaboration with rainwater collection systems.

02

GREEN NEXUS

-CLINTON COMMUNITY GARDEN-

VACANT SPACES - ENHANCING PUBLIC ACCESSIBILITY

Columbia University Architecture, Planning and Preservation
(Advanced Architecture Program)
Professor: Hilary Sample
Individual work
Spring 2024

The project revolves around the creation of a vertical urban green space within the Clinton Garden, aimed at providing a dynamic platform for public activities and installations. By incorporating movable seating areas and performance spaces, we seek to enhance community engagement and visibility of the gardens while seamlessly integrating with the surrounding environment.

Through strategic architectural interventions, such as integrating performance stages within existing tree plots and optimizing limited space like the current facade facing the community garden, we aim to offer panoramic views of the greenery while providing standing seating for performance viewing. Additionally, the introduction of a rooftop planting and resting area transforms this space into a focal point for community gatherings and cultural events, harmoniously blending nature and culture within the urban landscape.

Clinton Community Garden
Square footage: 14520
Location: 434W 48th st

In 1984, the Clinton Community Garden made history as the first NYC community garden to secure permanent parkland status, promising a bright future for urban gardening. Its story begins seven years earlier, when residents of West 48th Street rallied to transform a blighted lot into a green oasis. Initially leased from the city in 1979 via Operation GreenThumb, the property was divided into public front gardens and private plots. Over time, the garden expanded, boasting 108 plots, pathways of salvaged brick, and stone benches crafted from recycled materials, providing a sanctuary in the heart of the city.

Clinton Community Garden Winter

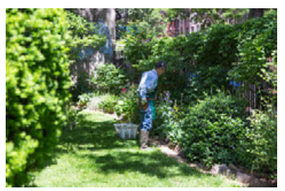
Clinton Community Garden Timeline:

1978- Transformation

1970s-1980s Grow

1970s-1980s CHDC

The Clinton Housing Development Company (CHDC), a non-profit organization dedicated to affordable housing and community development in the area, likely becomes involved in the management and operation of the garden.



1980s-1990s Develop

2000s-Present

It continues to be managed and operated by the CHDC, serving as a hub for community engagement and environmental management.

Images accessed from https://sideways.nyc/discover/1jsYJH39xObdRzZSI27GXb/clinton-garden

GREEN NEXUS

ESTABLISHMENT: The garden was established in 1978 by local residents who sought to transform a vacant lot into a green space for the community. The establishment of the garden likely involved collaboration between community members, local organizations, and government authorities to secure permission to use the vacant lot for gardening purposes.

OWNERSHIP: The land where the Clinton Community Garden is located is typically owned by the government, likely the city government of New York. However, the garden is managed and operated by the Clinton Housing Development Company (CHDC), a non-profit organization dedicated to affordable housing and community development in the area.

MEMBERSHIP:
Membership in the Clinton Community Garden is open to plot-holders, herb gardeners, beekeepers, front plot gardeners, back patio head gardeners, compost coordinators, and regular key-holder volunteers meeting service hour requirements or sponsored by a Steering Committee member. All members must reside within one of the five boroughs of New York City. All members of the Clinton Community Garden must reside within one of the five boroughs of New York City: Bronx, Brooklyn, Manhattan, Queens, or Staten Island.

AREA: The garden covers approximately 1/3 of an acre, which is equivalent to roughly 14,520 square feet or 1,346 square meters.

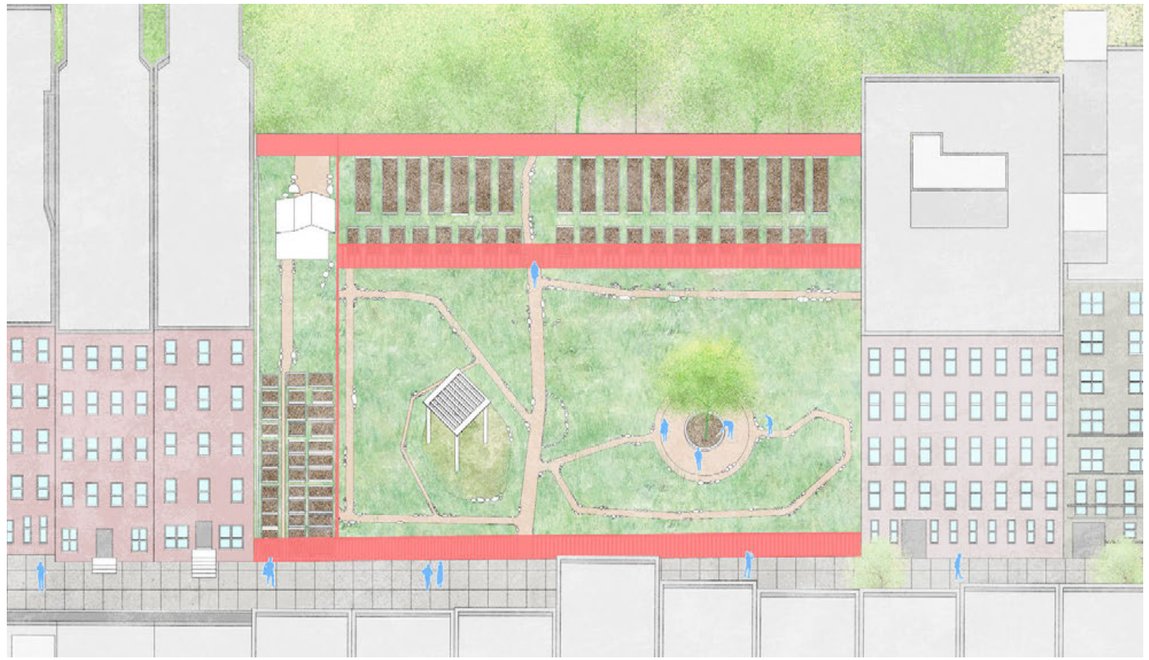
View From Entrance

Clinton Community Garden Spring

Clinton Community Garden Location & Zoning

The Clinton Community Garden, situated near Hell's Kitchen Park on 48th Street, occupies a unique position between the R-9 (residential) and M2-4 (light industrial) zones. This strategic location offers an opportunity for the garden to serve as a vital connection point between the surrounding residential and commercial areas. While the end of the street is bustling with commercial establishments such as restaurants and shops, the garden stands as a critical connector of greenery and community amidst the urban landscape.

Clinton Community Garden Gates & Limitation



Currently, the community garden is enclosed by three layers of fences and subject to regulations that limit access to the public, rather than being inclusive to all members of the community. However, it has the potential to become a more welcoming space that bridges the gap between residents and businesses.

By embracing its role as a connector, the Clinton Community Garden can foster interactions, collaboration, and a sense of unity among diverse stakeholders. Whether through hosting events, offering educational programs, or providing a peaceful retreat in the midst of city life, the garden has the opportunity to enrich the neighborhood's fabric and strengthen its social and economic ties.

GREEN NEXUS

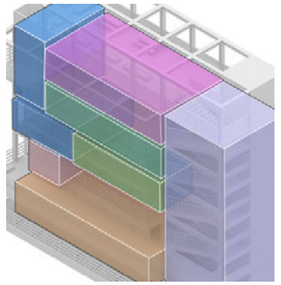
a. Verticalized green public space (Green Nexus)

b. Leafy Lounge (Tree Protectioon & Performing)

Vacant Spaces- Green Nexus I Spring 2024

VERTICALIZED GREEN PUBLIC SPACE

Green Facade

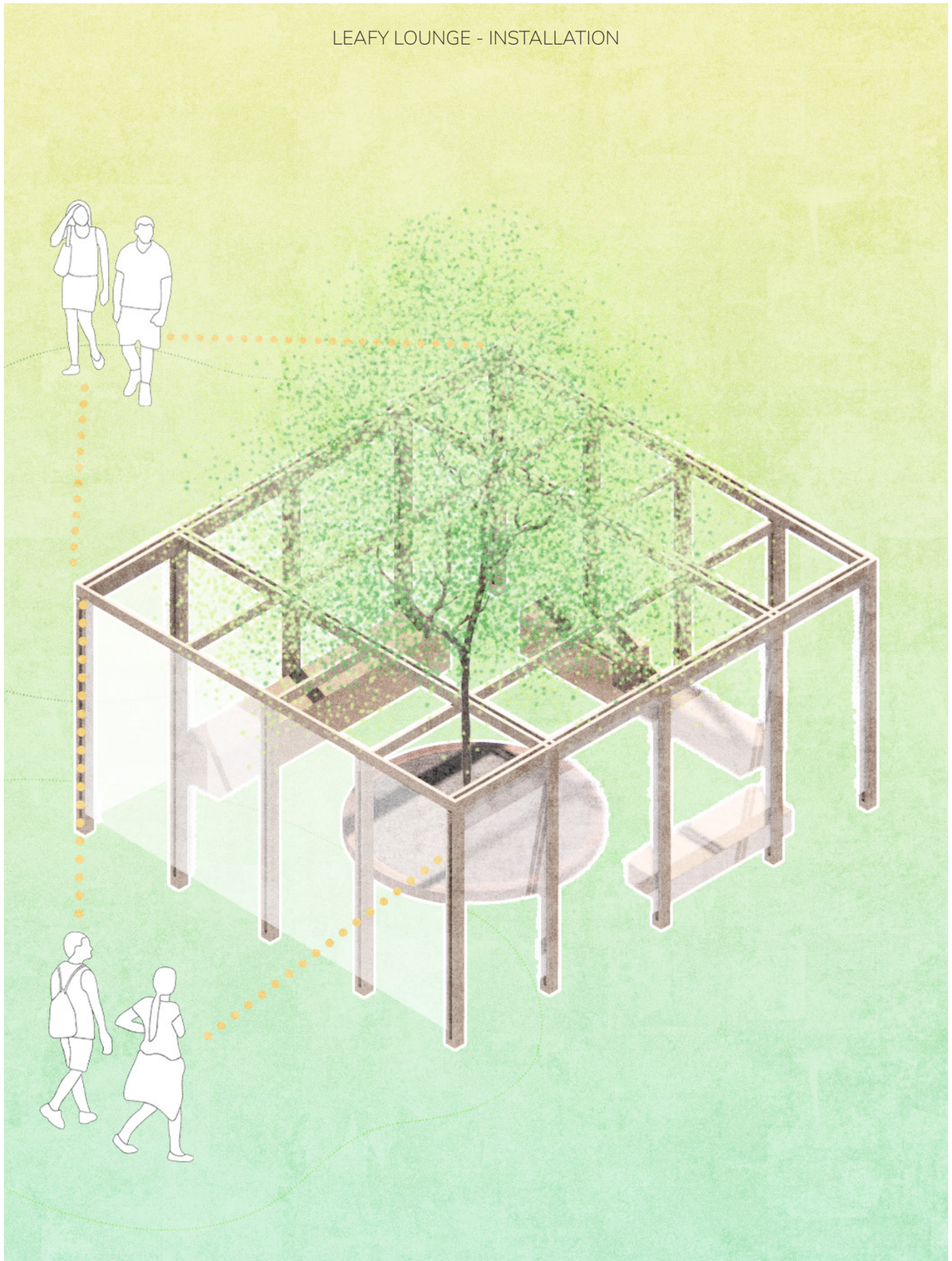


Public Programs

Rooftop Garden

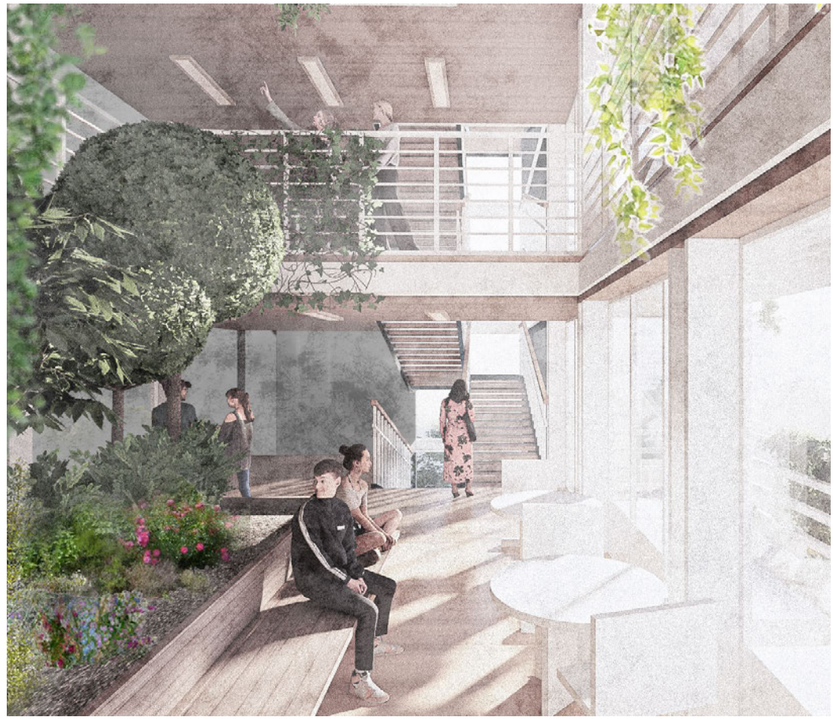
PROGRAM & ACTIVITIES

LEAFY LOUNGE - INSTALLATION



In addition to the public program, the pavilion surrounding the existing tree, known as “Leafy Lounge” served as a versatile installation. It provided basic outdoor educational functions and furniture, offering a space for small activities that the public could engage with.

I. View from Rooftop
II.The Green Nexus: View-looking inside the community garden



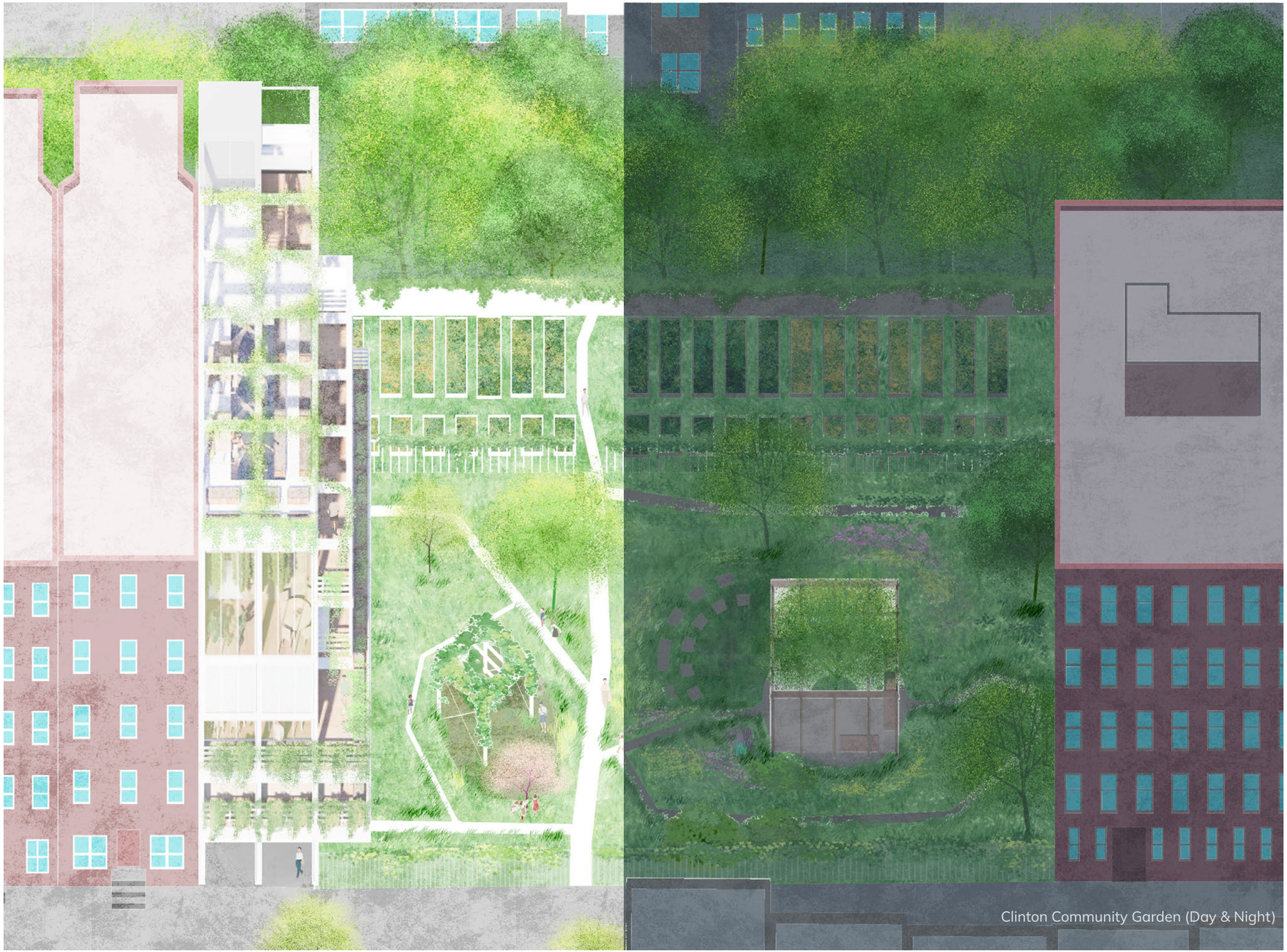
III. View Inside the second Floor
IV. The Green Nexus: View-inside the Third Floor Lounge

GREEN NEXUS

The designs exemplify the dynamic interplay between community engagement, accessibility, and the transformative potential of urban green spaces. By recognizing and accommodating the diverse needs and preferences of community members, these spaces not only serve as venues for social interaction, recreation, and cultural exchange but also foster a sense of belonging and connectedness within the urban fabric. Through thoughtful design and management, once-vacant spaces can become vibrant hubs of activity, enriching the lives of residents and visitors alike.

Vacant Spaces- Green Nexus I Spring 2024

GREEN NEXUS



Clinton Community Garden (Day & Night)

Vacant Spaces- Green Nexus I Spring 2024

03

REWASTE WOODWORK

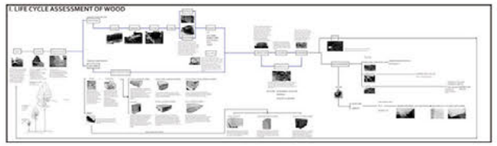
Reproposing a new lifestyle program for Kensington & Soil-Friendly

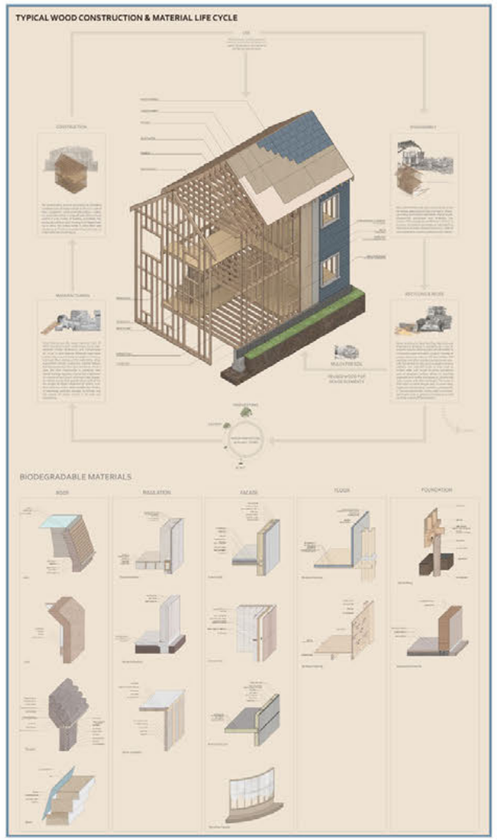
Columbia University Architecture, Planning and Preservation
(Advanced Architecture Program)
Professor: Mio Tsuneyama & Fuminori Nousaku
Individual work
Summer 2023

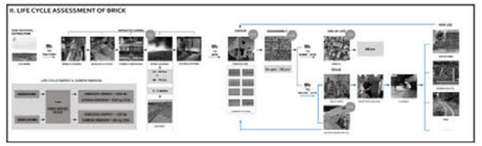
In today's rapidly changing world, where environmental concerns are at the forefront and sustainable practices are becoming imperative, the concept of a woodshop with a recycling focus emerges as a beacon of innovation, creativity, and responsible living. Beyond a mere workspace, this woodshop represents a paradigm shift in the way we perceive woodworking, recycling, and community engagement. Its significance goes far beyond the scope of crafting; it encapsulates a holistic approach to environmental stewardship, economic growth, education, and communal harmony.

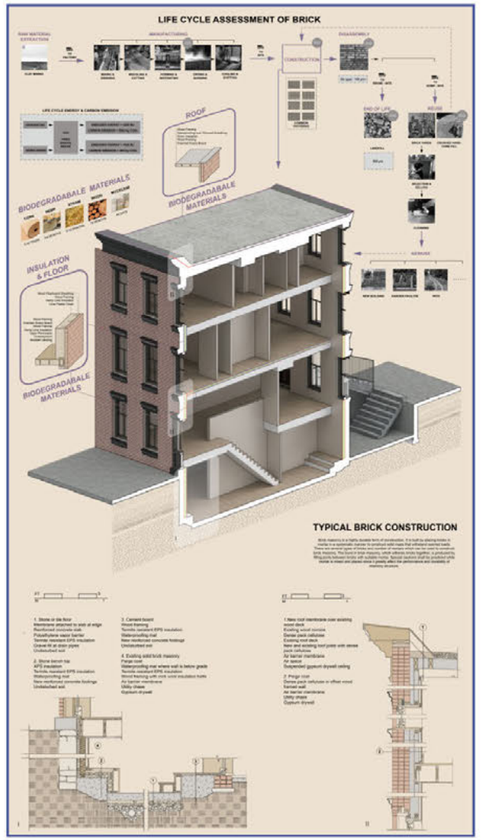
At its core, the importance of a woodshop with a recycling focus is rooted in its contribution to environmental sustainability. Traditional woodworking can be resource-intensive, often relying on the consumption of new timber. However, the recycling-focused woodshop acts as a counterbalance, redirecting discarded wood from landfills into the realm of utility. By repurposing wood waste from construction sites or old furniture, this facility becomes an active agent in the conservation of forests and reduction of waste. It strikes a chord with the ethos of conservation and responsible consumption, aligning with the global call for reducing our carbon footprint.

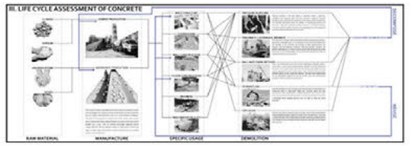
Economic growth and community vitality also find resonance within the walls of this woodshop. By nurturing local artisans, craftsmen, and small businesses, the facility becomes an incubator of entrepreneurship. The transformation of reclaimed wood into unique products sparks economic activity and reinforces local economic resilience. In essence, the woodshop becomes more than a space; it morphs into a catalyst for community prosperity, stimulating revenue generation, and fostering a sense of shared achievement.

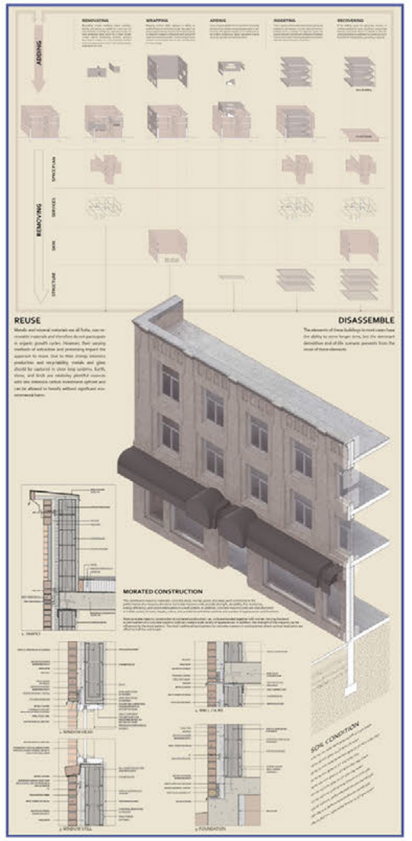


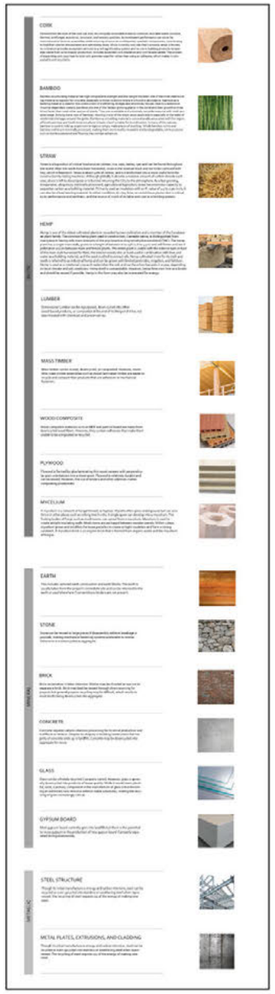










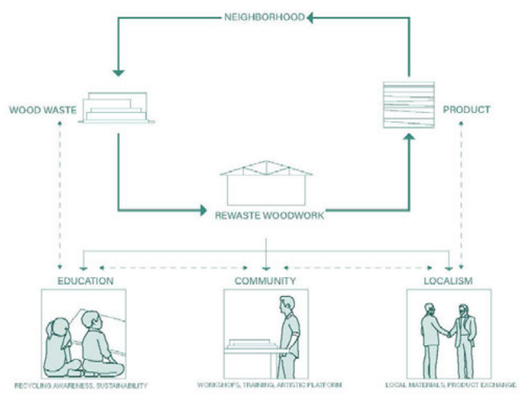


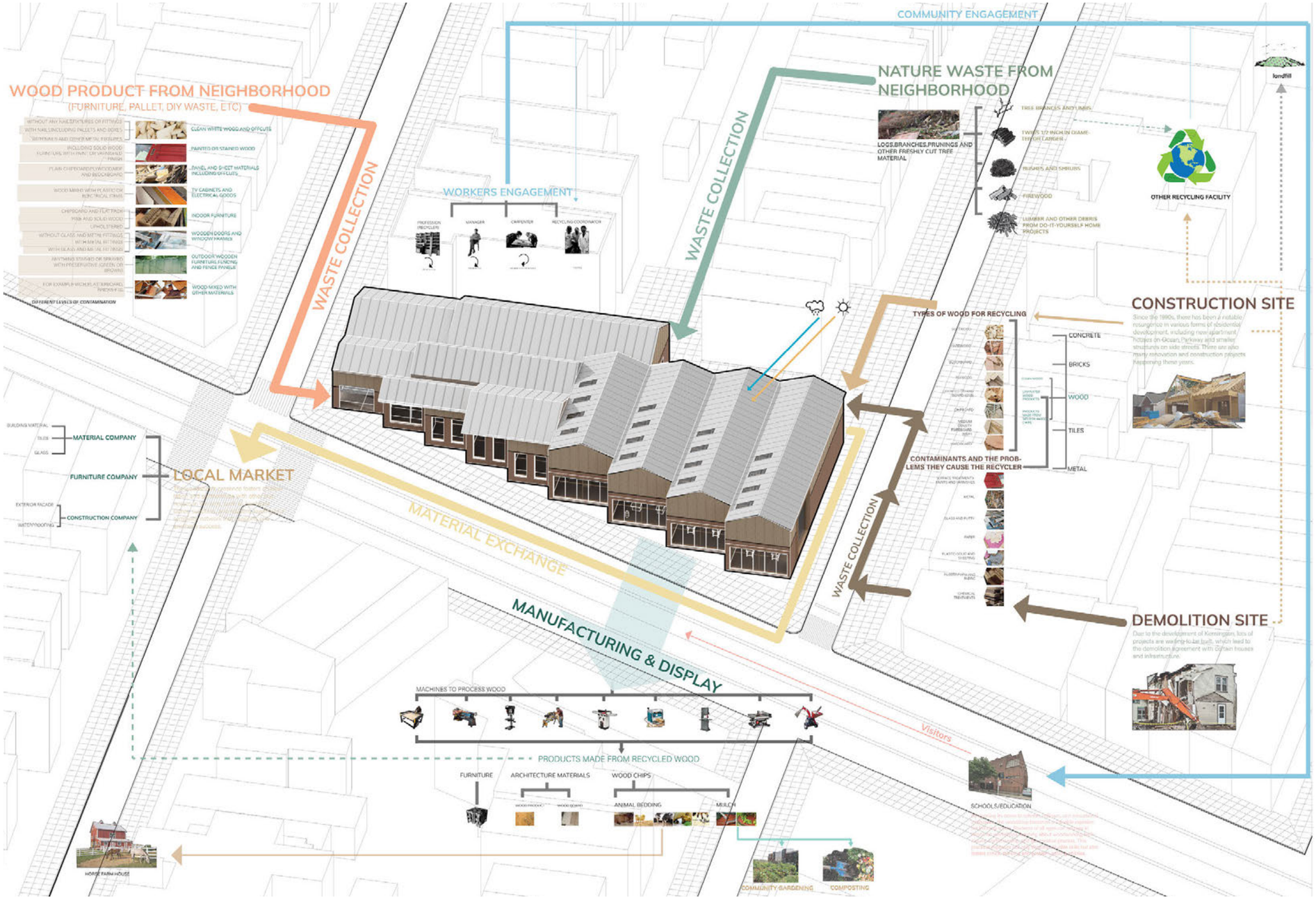
The adoption of concrete, metal, and plastic has enabled innovative, free-form architecture. However, integrating biodegradable materials requires careful consideration of durability. Our research focuses on the detail, shapes, and construction methods of wood, brick, and concrete, exploring the potential of combining biodegradable materials with them. In situations where robust durability is crucial, incorporating artificial materials may be necessary. To facilitate effective recycling, designs should separate biological and artificial components. Addressing both construction and household waste is essential. Deliberate efforts must be made to explore reuse, recycling, and upcycling options for non-biodegradable waste, promoting a sustainable future.

In Kensington, most single-family houses use wood or a wood-brick combination. Despite an increasing demand for wood production and recycling, the area lacks a dedicated wood shop facility. Current NYC wood waste disposal regulations require leaving debris on the ground for pickup, presenting an opportunity for a community-centered wood recycling facility. This initiative would address the mounting need for material recycling and sustainable practices in the region, contributing to environmental conservation.

The importance of a recycling-focused woodshop lies in its contribution to environmental sustainability. Traditional woodworking can be resource-intensive, relying on new timber. A recycling-focused woodshop counters this by redirecting discarded wood, actively contributing to forest conservation and waste reduction. The chosen site at the Boro Park Redemption Center represents a paradigm shift in woodworking, recycling, and community engagement. The workshop, situated amidst demolition waste, will continue existing structures and materials, aligning with the center's mission.

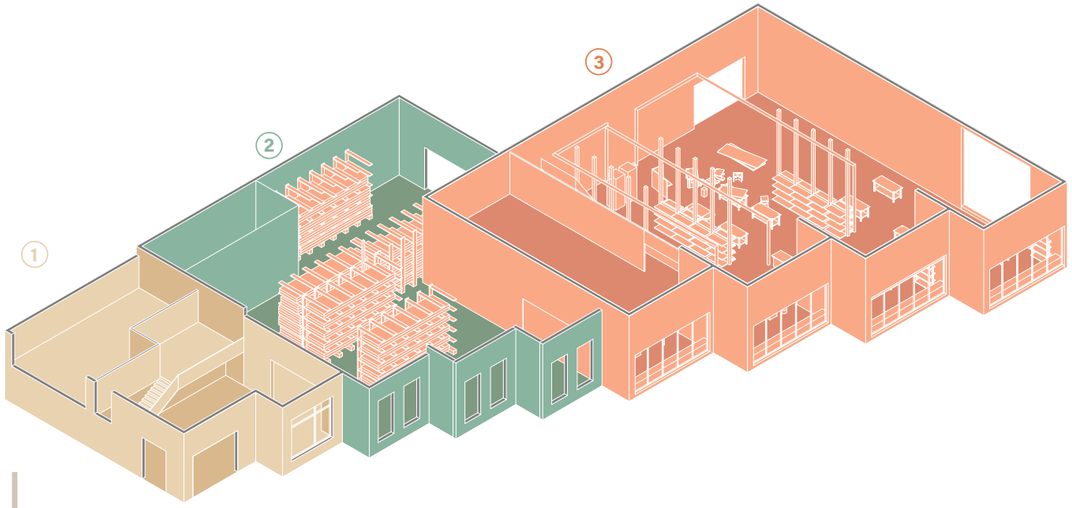
SYMBIOSIS STRUCTURES





At its essence, the significance of a woodshop with a recycling focus lies in its substantial contribution to environmental sustainability. In contrast to traditional woodworking, which often relies on new timber and is resource-intensive, the recycling-focused woodshop serves as a counterbalance by repurposing discarded wood from construction sites or old furniture. This transformation redirects material from landfills, actively participating in forest conservation and waste reduction. By supporting local artisans, craftsmen, and small businesses, the facility becomes an incubator for entrepreneurship, fostering economic activity and enhancing local economic resilience.

Education is another integral aspect, manifested dynamically within the recycled walls of the woodshop. Through workshops, interactive ses sions, and hands-on experiences, the facility imparts knowledge and skills, introducing young minds not only to woodworking but also to broader concepts of sustainability, resource conservation, and conscious decision-making. Consequently, the woodshop evolves into a hub of experiential learning, empowering individuals to make informed choices that positively impact both the environment and their own lives.

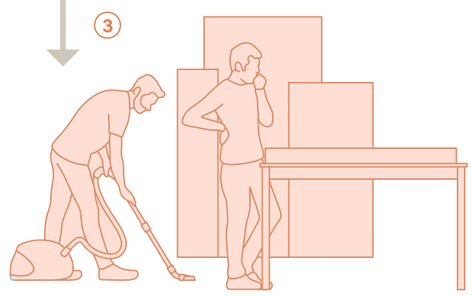


PRE-SORTING

Despite the construction and demolition waste, the wood furniture repair and reuse is also importance to be considered. The residents can bring their wood furniture, DIY products, wood waste for repair, reevaluation and refabrication. The pre-sorting space within the woodshop acts as a vital initial step in this process. Here, materials are carefully sorted, evaluated, and categorized based on their condition and potential for refurbishment. Salvageable components are identified, reducing the need for new materials in repairs. The pre-sorting space also serves as an educational platform, where visitors can learn about the importance of repair and witness the transformation of discarded items into renewed treasures.

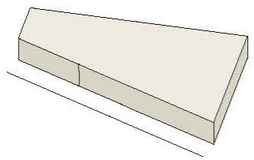
STORAGE

The lumber and wood waste material storage is another important part in the workshop, while it has various limitation and regulations. Lumber stacks must be on stable ground. Stacking shall be stable and in an orderly and regular manner. A collapse of storage stacks could obstruct access roads or contribute to fire spread. The height of stacks cannot exceed 20 ft. Storage stacks taller than 20 ft (6 m) can significantly impede handheld hose stream operations by fire suppression personnel.



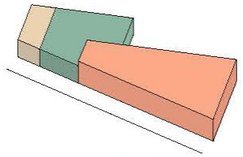
WOODWORKING → Product back to community

The process of material reproduction and recycling will be facilitated through the utilization of various machines within the wood-working workshop. To optimize the workspace, strategic positioning of these machines is crucial. The workbench will be placed against a wall, ideally positioned in front of a window to ensure ample natural light and a conducive working environment. For efficient use, the cutoff saw will be positioned along a long wall, with sufficient space on both sides of the blade to accommodate the cutting of lengthy stock pieces to nearly any desired length. Meanwhile, the table saw and worktable will be strategically placed in the center of the room. The worktable could potentially serve a dual purpose, functioning not only as a standalone workspace but also as an extension table to complement the table saw. The arrangement of these machines will be thoughtfully designed to align with the workflow, ensuring a seamless and efficient production process that optimizes every step of material transformation and recycling.



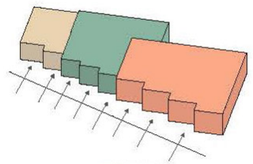
ORIGIN

BORO PARK REDEMPTION CENTER



DIVISION

BASE ON THE FUNTION NEED



ZIGZAG

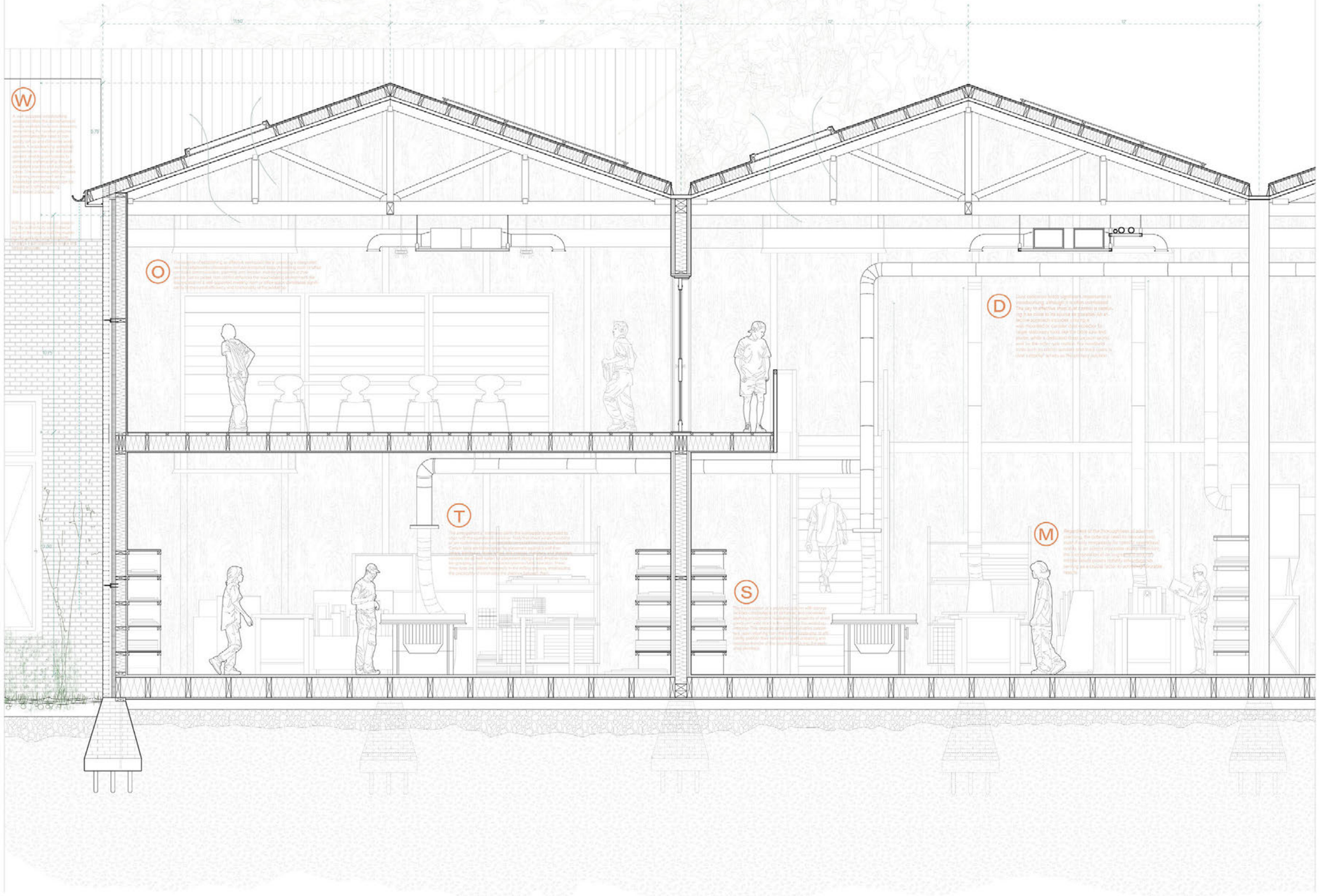
TO MAINTIN UNIFY FOR THE CONDITION

In terms of design, the woodshop embodies sustainability from its very architecture to its daily operations. Following the logic of the street, the overall form descend from the diagonal to create the uniform spaces for visual connection with the mainstreet and inviting the people to o look in. Natural light streams through strategically placed windows, fostering an inviting ambiance. The layout, meticulously planned for optimal workflow, ensures seamless movement between workstations and machines. Beyond aesthetics, sustainable practices are ingrained in the very materials that constitute the facility, with recycled and repurposed materials lending an authentic touch to the workspace.

Ground Floor Plan

Second Floor Plan

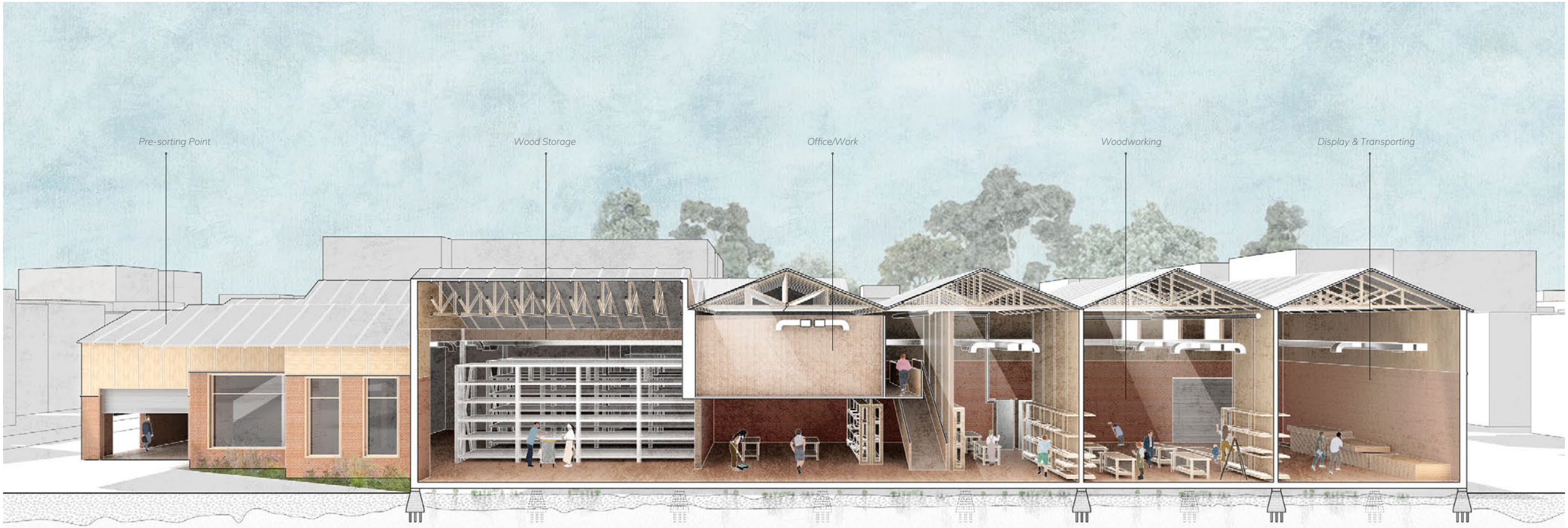
SYMBIOSIS STRUCTURES



The envisioned waste collection and manufacturing process involve residents bringing their broken furniture or DIY wood products to the pre-sorting zone, followed by simple treatment and temporary storage for exhibition. After initial treatment, the Storage area will receive clean wood waste material, functioning as a collection point. The workshop serves as a pivotal component for producing reclaimed wood products and acts as a learning hub for the local community.

The 1:10 Detail section presents the logic and partial view of the woodworking zone.The strategically placed windows allow skylight and natural light to create an inviting ambiance. The layout, designed for optimal workflow, ensures seamless movement between workstations and machines. Sustainability is ingrained in the facility, with original materials and reclaimed wood constituting the structure, including columns designed for storage and transparent walls for tool and wood storage while maintaining a free space for machine mobility. In creating the ReWaste woodworking workshop, the aim is to go beyond just a physical space; it aspires to be a catalyst for community prosperity, generating revenue, fostering shared achievement, and promoting sustainable living conditions.

SYMBIOSIS STRUCTURES

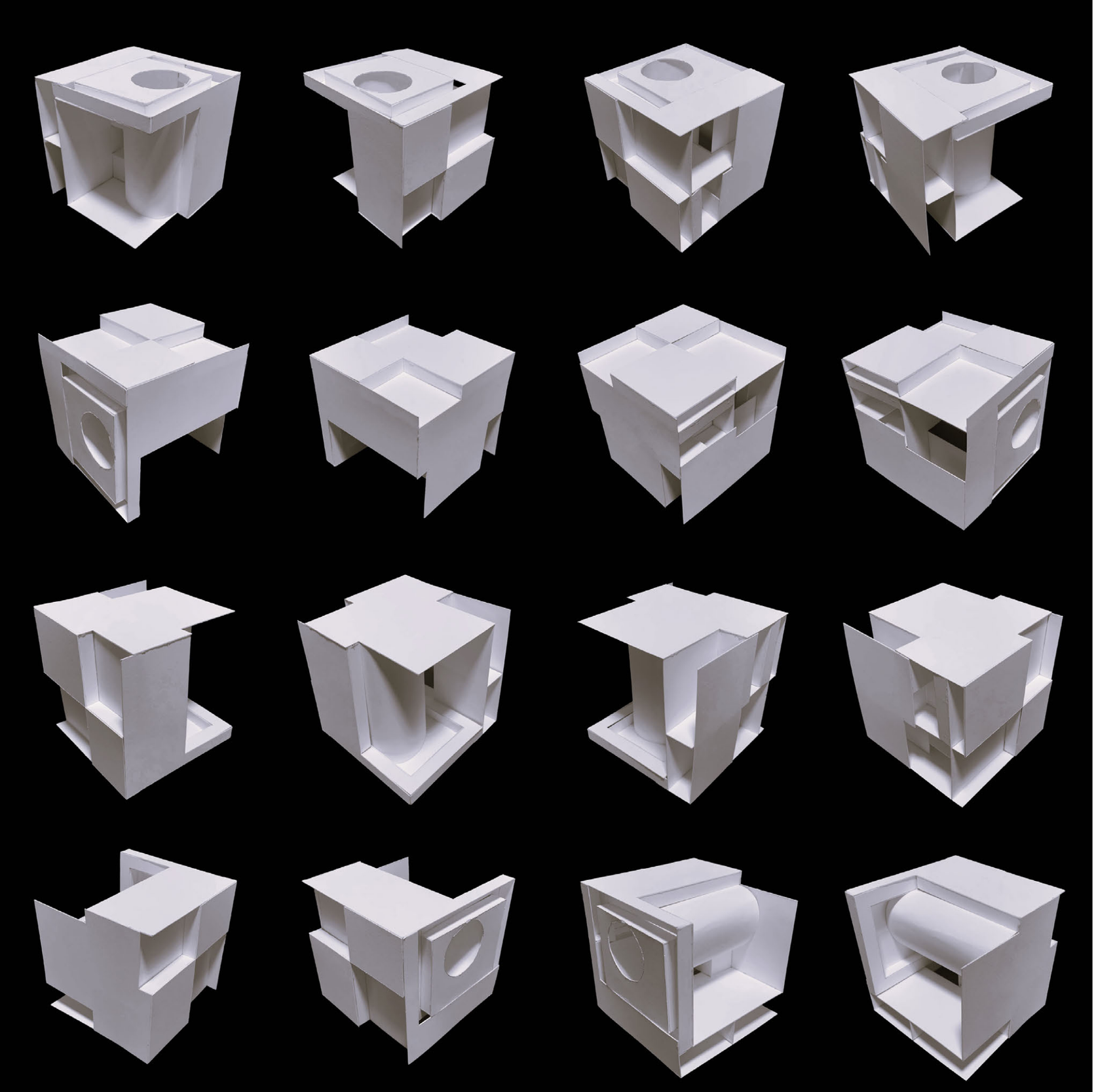


SECTIONAL VIEW FROM THE MAIN STREET

WOODSHOP

WOODWORKING

Rewaste Woodwork- Habitability with Urban Soil I Summer 2023



05

APROPOS ART

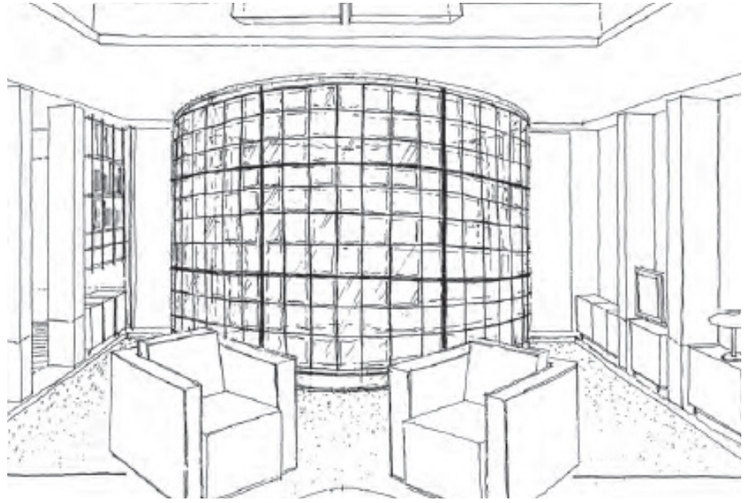
Transformation study and Analysis of Andree Putman

Columbia University Design Seminar
Professor Steven Holl / Dimitra Tsachrelia
Individual work
Fall 2023

The analysis project draws inspiration from Andree Putman's contributions to interior design, a revered French designer and pioneer in the revival of forgotten French modernist furniture. Focused on three of her iconic interior design projects and notable furniture design, this project aims to reinterpret Putman's innovative approach and contribute to the evolution of simplicity of geometry and spatial composition.

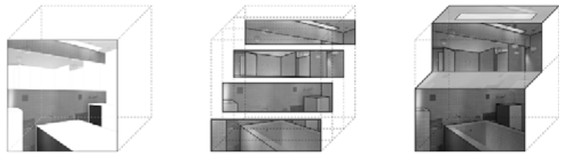
Beginning with James Brown's apartment, the project delves into the deliberate influence of geometry and depth in the design of essential elements such as the bathtub, square sink, and mirror. By investigating orthogonal lines and planes as reference points, the aim is to contribute elements that redefine the interior and provide innovative ways of spatial reassessment. In the Duplex apartment, Putman's composition of furniture and a circular staircase accentuates spatial uniqueness. Abstracting spatial geometry and considering masses, axes, perspectives, and lighting, the goal is to transform these elements into a three-dimensional inspiration, pushing the boundaries of conventional spatial design. Culminating in the San Sebastian apartment, the study explores the integration of a Mondrian worktable into the office.

Drawing from the concept of a Module, this phase aims to transform simple geometry and proportion into a 3D architectural form, developing varied spatial experiences within a room and extending the abstraction of spatial composition into three-dimensional inspiration. Embracing Putman's concept of "Scenography" as a tool to shape and carve out room for imagination, the project transcends static spaces, facilitating a transition from real to imaginary space by simplifying spatial geometry and translating it into the three-dimensional composition of the apartment, reintroducing simplicity, light, and the potential of the interior.

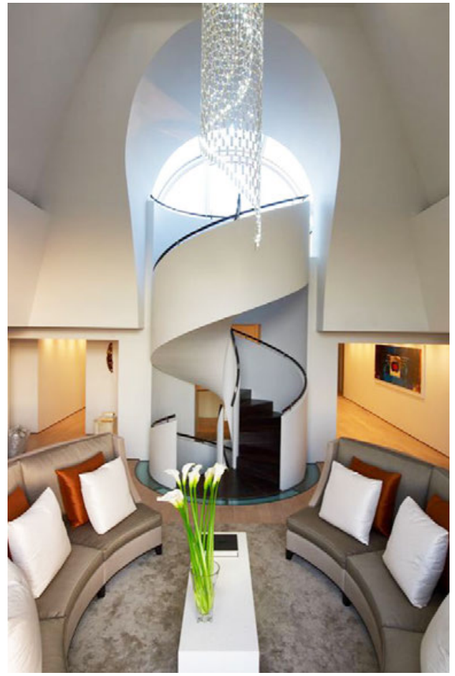


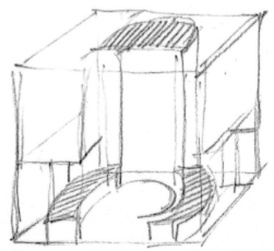
Andree Putman is a great French designer, journalist, interior editor, and art director. She found the Ecart International selling furniture she found at flea markets. Through Ecart, she popularized forgotten French modernist furniture and designers including but not limited to Eileen Gray, Pierre Châreau, Rene Herbst, and Jean-Michel Frank. She is still credited for the revival of early modernist designers and the reproduction of their iconic designs.

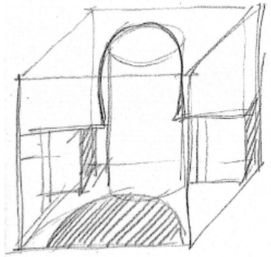
The interior design of the Morgans Hotel in New York marked a turning point in her career. The black and white checkered bathrooms became iconic and an example of the “style of Putman”. Following the success of Morgans Hotel, she was commissioned by many famous designers. Her approach to interior design aimed to experiment with light in different ways and reveal the essence of spaces while addressing geometry and spatial composition. The analysis primarily focuses on her three interior design projects and one of her furniture designs.

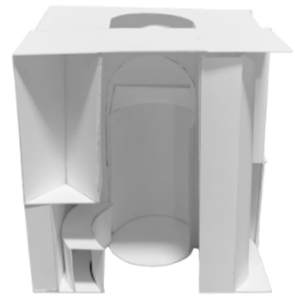


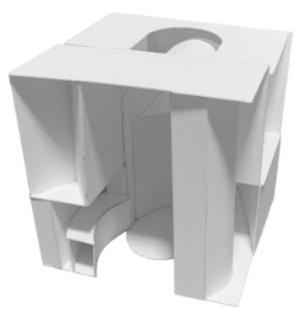
James Brown Apartment Spatial Analysis -3D Transformation



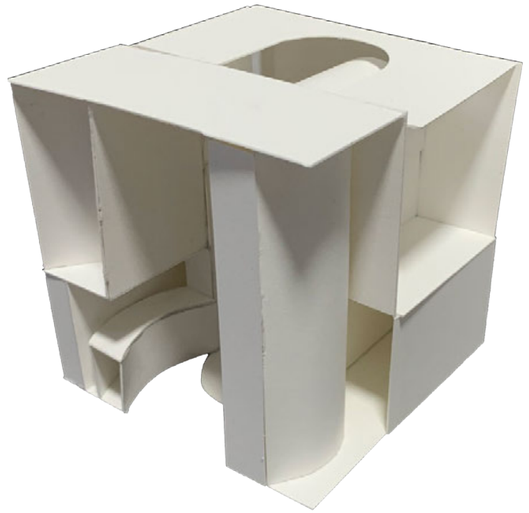




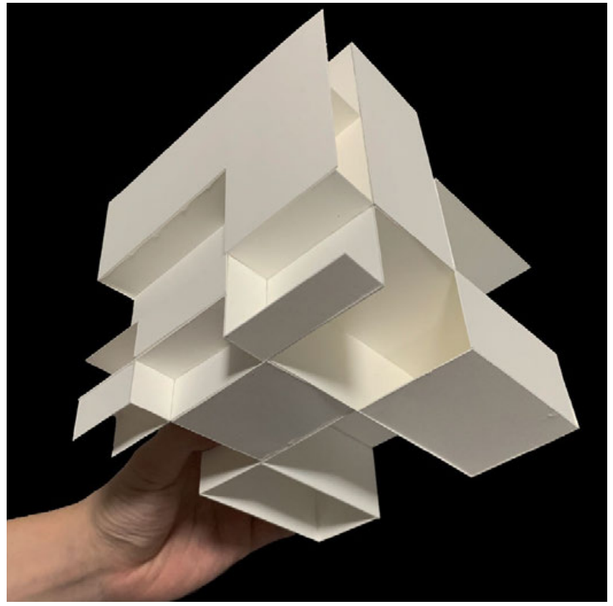




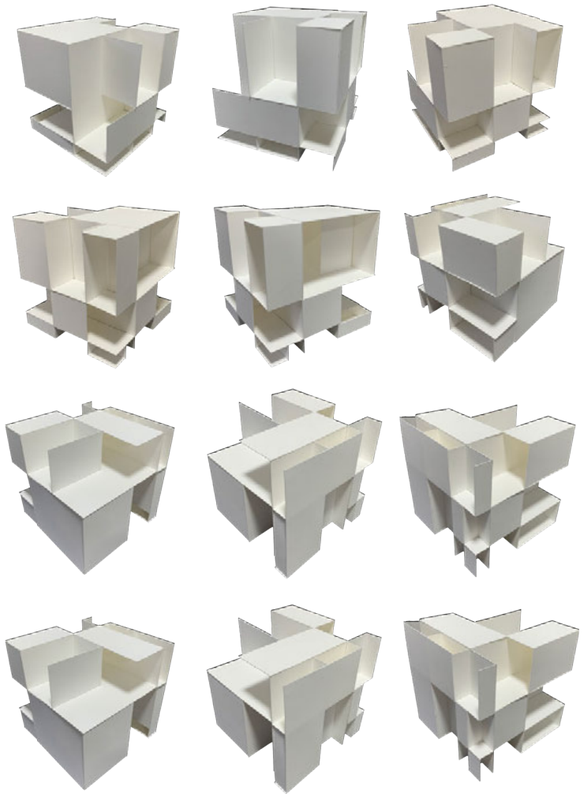
Interior Design - Duplex apartment Spatial Analysis



Duplex Apartment Abstraction - Spatial geometry, masses, axes

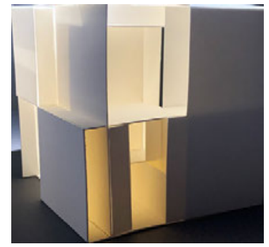


Interior & Furniture Design Analysis - San Sebastian Apartment



Furniture Analysis - Mondrian worktable 3D Abstraction

Watercolor -San Sebastian Apartment Scene



Interior Analysis - San Sebastian Apartment 3D Transformation

05

POWER TOOLS

Street Life & Sanitation in New York City

Columbia University Design Seminar
Professor Steven Holl / Dimitra Tsachrelia
Individual work
Fall 2023

In the urban landscape of New York City, the coexistence of sanitation efforts and the presence of rats, pigeons, and other city animals reflects the intricate dynamics shaping urban environments. Despite ongoing sanitation measures, these animals thrive among the city's labyrinthine streets, sustained by the abundance of waste generated by residents and businesses.

The research aims to explore the symbiotic relationship between sanitation practices and the proliferation of rodents, examining historical conflicts such as the 'Piggery War,' the rat reduction program, the pigeon control efforts, and the use of horse-drawn carriages in Central Park. By analyzing the interactions between sanitation efforts and urban wildlife, we seek to understand the ongoing battle for control and equilibrium in NYC's streets. Through a focus on sanitation practices and street life, this study will document the nuanced interplay between human intervention and the resilience of city animals, shedding light on the complexities of urban ecosystems.

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The research will investigate sanitation workers' critical role and laws and explore innovative solutions to tackle the challenges of urban wildlife management and waste disposal. Through a comprehensive analysis of quantitative data and on-the-ground observations of street life, including the intricate interactions occurring above and below ground, we aim to construct a visual narrative interwoven with New York City's iconic architecture. This narrative will contextualize historical animal conflicts, shedding light on their implications for wildlife dynamics and the coexistence of urban animals within the cityscape.

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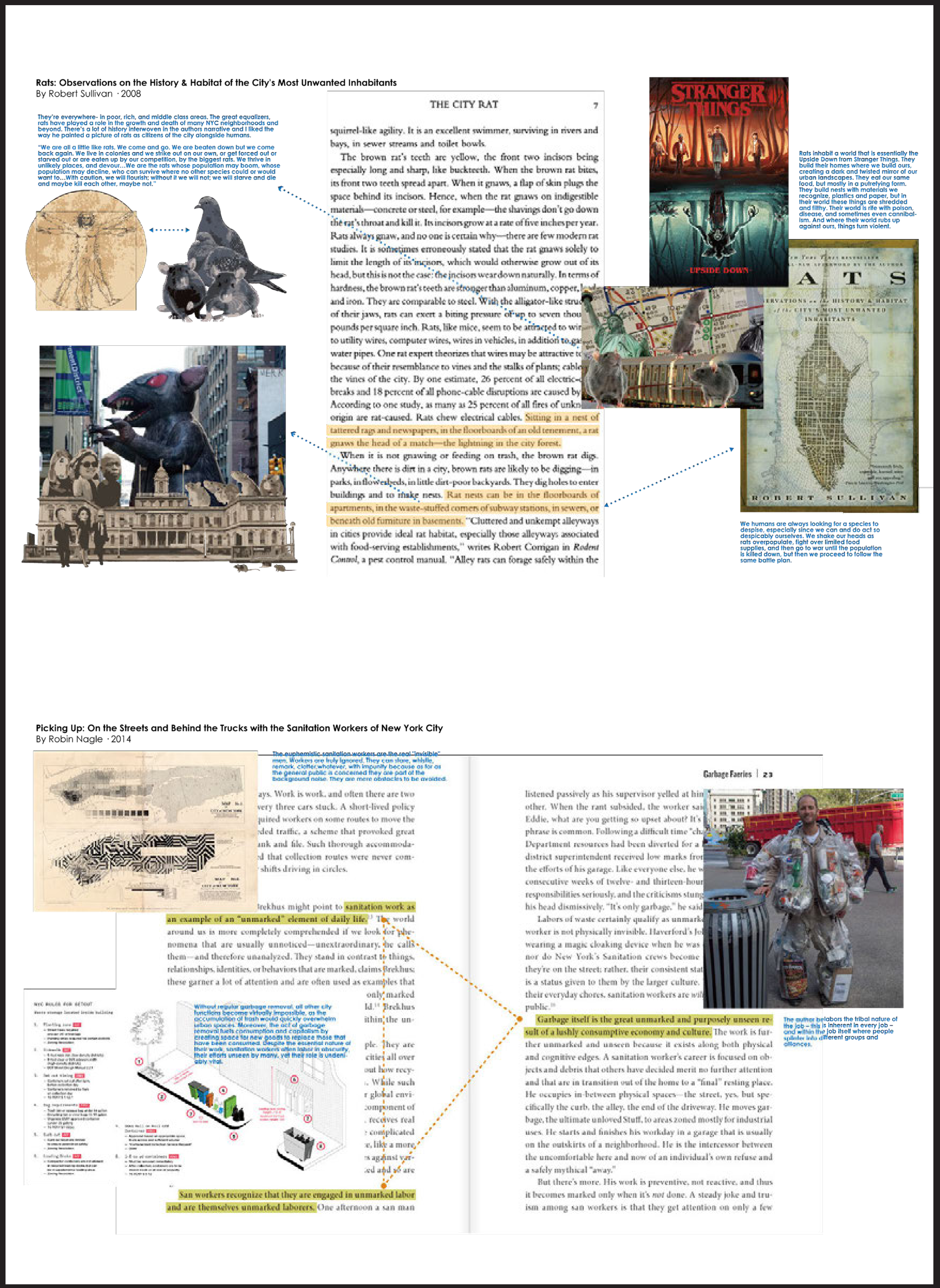
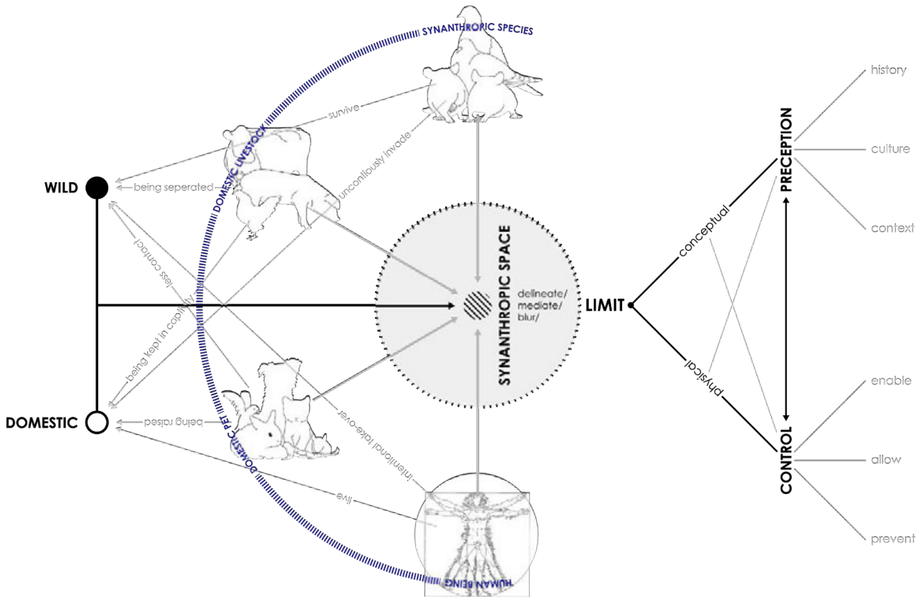
Reading Annotation & Analysis



Power Diagrams: Animal & Human | Animal & Sanitation in City



Population (P), Garbage (G), Bacteria (B), Disease (D), Sanitation Facilities (S), Modernization (M) and City Migration (C)

Urban Animals - Collages

Animals in City

Storybooks

05

ARCHITECTURAL PHOTOGRAHY

Space & People | Light & Shadow

Columbia University
Professor Michael
Individual work
Spring 2024

The analysis project draws inspiration from Andree Putman's contributions to interior design, a revered French designer and pioneer in the revival of forgotten French modernist furniture. Focused on three of her iconic interior design projects and notable furniture design, this project aims to reinterpret Putman's innovative approach and contribute to the evolution of simplicity of geometry and spatial composition.

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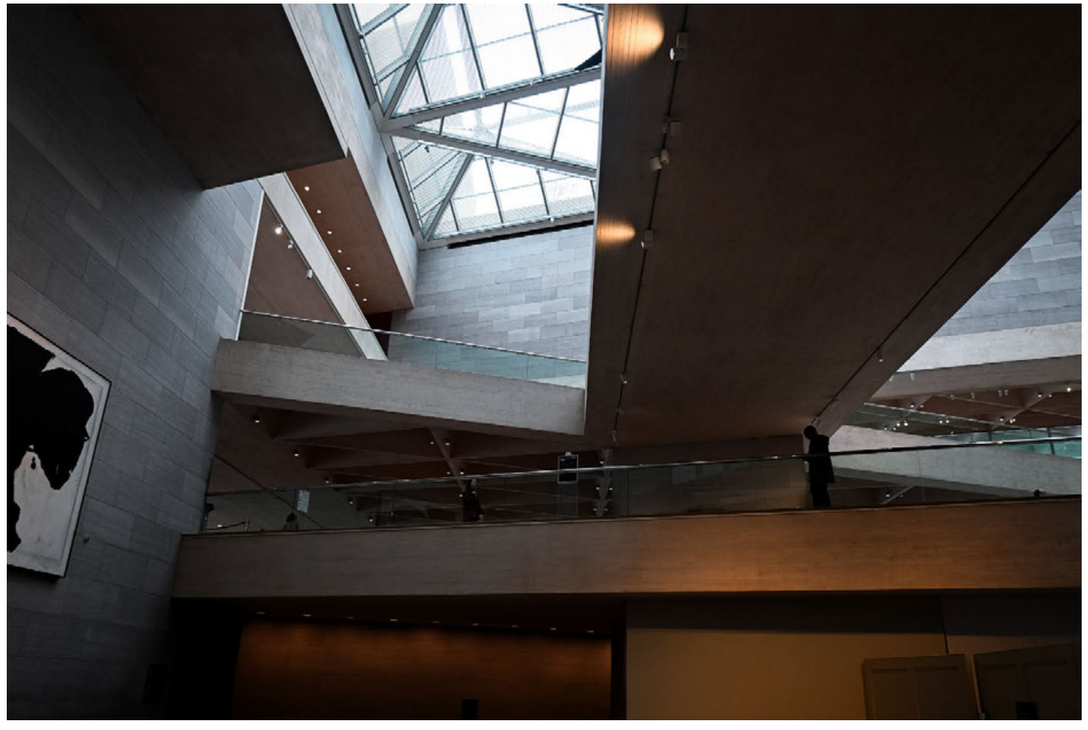
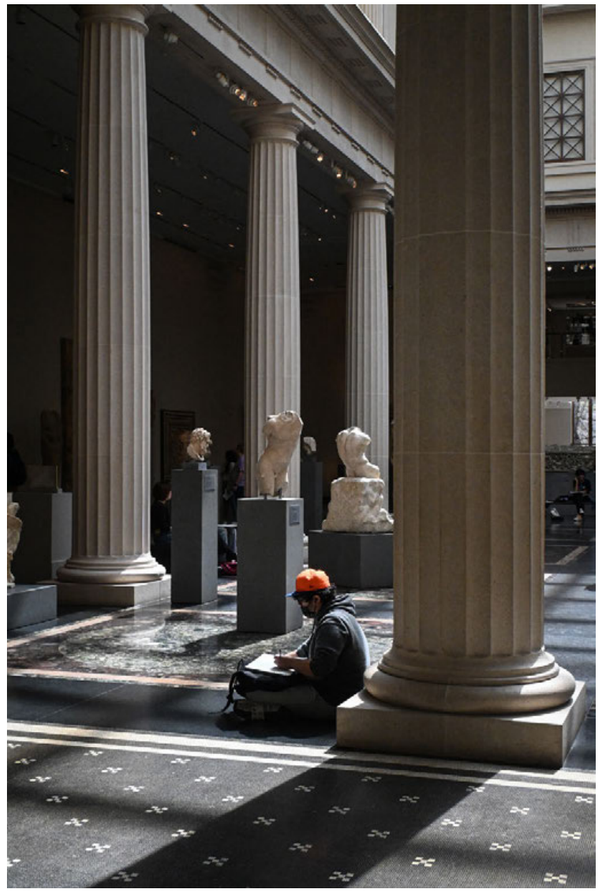
The National Building Museum

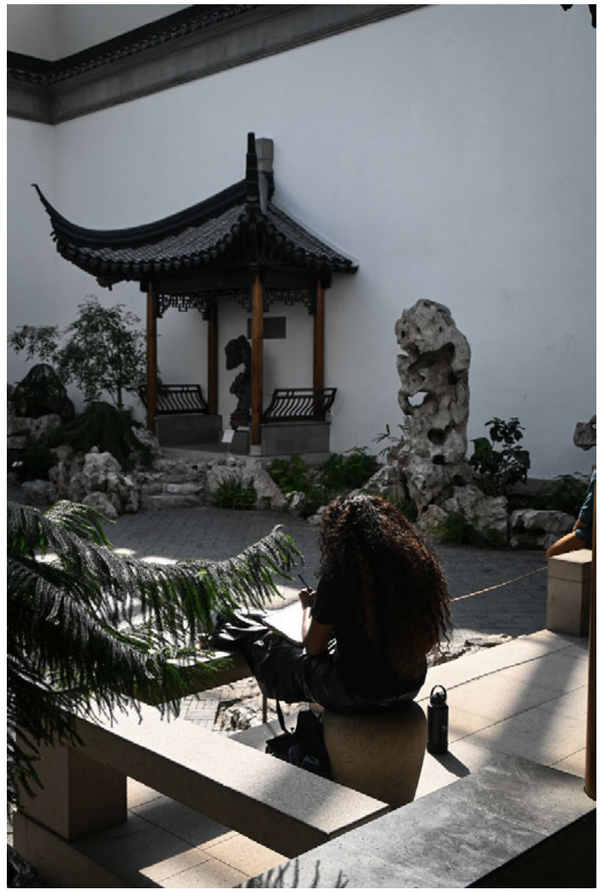
The REACH Expansion at the Kennedy Center

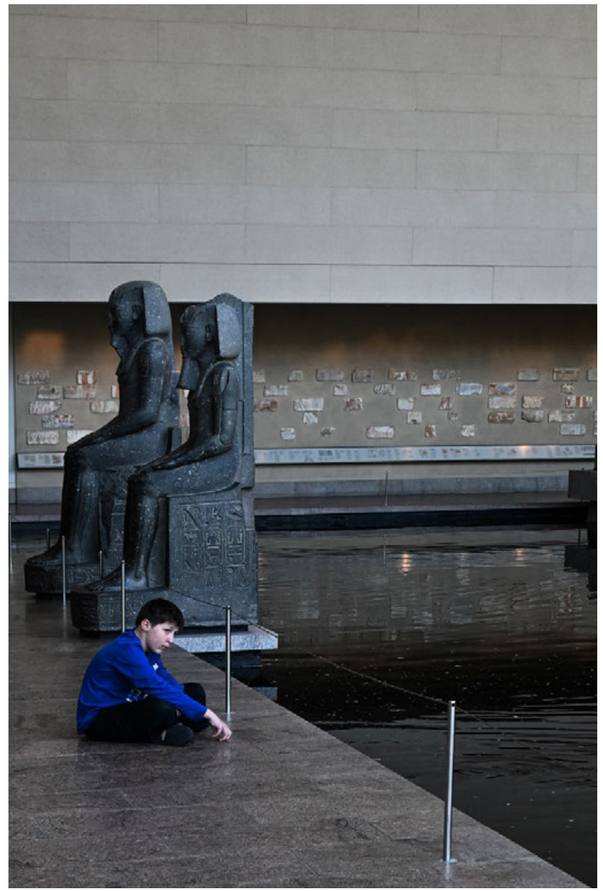


National Gallery of Art - East Building

PHOTOGRAPHY







The Metropolitan Museum of Art

Architectural Photography -People & Space I Spring 2024

The Glenstone Museum (Maryland)

Transcalarities: Arenas of Design

Arenas of Design

Transscalar conditions - relational and environmental entities

Columbia University
Director & Coordinator: Andrés Jaque & Bart-Jan Polman
Instructor: Ibiayi Briggs
Individual work
Summer 2023

#1 The Role of Citizen Participation in Shaping Sustainable and Inclusive Cities: Lessons from 'Building Yourself and Urban Reserve'

"Building Yourself an Urban Reserve" by Santiago Cirugeda showcases a series of provocative urban projects that exemplify the multifaceted role of architecture in addressing societal transformations and evolving community needs. Against Spain's economic crisis, characterized by abandoned properties and mass evictions, Cirugeda and his collective architects aim to redefine architectural possibilities and breathe new life into historic towns by reimagining public spaces in unpredictable ways. Not only challenging the traditional notion of urban planning, but their work also served as a temporary weapon within legal and bureaucratic frameworks that influence mutual participation in shaping the urban environment.

One notable project within the series is "Scaffolding," where Cirugeda repurposed scaffolding to create a minimal house within a heritage-protected building. The project served as an architectural intervention, questioning the role of municipal leaders also highlighted the potential of architecture to foster social interaction and address urban conflicts. To do this, he devised a minimal house built on a scaffold and installed it in a building listed with grade B for heritage protection. Instead of merely removing graffiti, he utilized scaffolding projects as an opportunity for architectural interventions. The project "Scaffolding" also challenged the traditional role of municipal leaders in graffiti removal and developed a new legal reconsideration strategy to build, this time, a habitable space within the old town of Seville without implying a deterioration of the heritage existing history. However, the scaffold was used as a temporary shelter during the three months it was installed and was taken down before the permit expired.

In another project within the series, "Occupying the Streets," Cirugeda requested a license from the City Council to occupy the public highway to install a container. The stated purpose of this container was to facilitate the removal of rubble resulting from a minor construction project in a nearby house. However, once the permit was granted, the container supported a swing, which was the first self-managed playground; the project initiative transformed local regulations into an urban blueprint, encouraging residents to repurpose everyday objects and reimagine their urban spaces. While initially successful, the project's long-term sustainability faced challenges due to residents' reluctance to repeat the experience.

Cirugeda's approach blurs the lines between legality and social action, empowering residents to construct living spaces. As a mediator rather than the ultimate designer, Cirugeda enables artistic forms that contribute to residential planning while emphasizing residents' input. His approach involves empowering communities and involving them in decision-making processes regarding urban development. He advocates for participatory democracy and challenges top-down decision-making models. By placing residents as the major catalysts for their projects, their active involvement becomes a crucial factor in determining the success or failure of these endeavors. These projects also prompt a critical examination of how to maintain or foster sustainable and inclusive cities, given their temporary nature as solutions to legal constraints. While the projects offer potential solutions, their temporary nature underscores the importance of developing long-term strategies to foster lasting impact and transformation.

By redefining public spaces, he envisions vibrant, harmonious, and sustainable cities for future generations. In contemplating the impact and success of these projects in serving the public's right to space, it is evident that Cirugeda's work presents a compelling solution. By prioritizing community engagement and social interaction, his innovative approach paves the way for cities to evolve into inclusive and sustainable spaces, benefiting present and future generations.

#2 How to make sustainable that which already exists: Transformation of 530 dwellings (Lacaton & Vassal)

While demolition in cities has become increasingly prevalent and socially accepted in France and worldwide, it is no longer regarded as taboo but as a quick and convenient solution for urban development; demolition is irreversible, resulting in the loss of valuable information, historical layers, and cherished memories, all of which are invaluable and take time to develop in a city. Lacaton and Vassal embarked on the transformation of 530 dwellings to combat this critical issue, pioneering an innovative alternative to demolition. They advocate for creativity and innovation by revitalizing existing buildings rather than tearing them down. By doing so, they create generous, pleasant, high-performing spaces that redefine urban housing typologies, comfort, and overall desirability while addressing sustainability concerns.

In 2004, Lacaton & Vassal and Frédéric Druot responded to a government plan to demolish post-war social housing with the PLUS manifesto. Instead of demolition, they proposed adding, transforming, and reusing existing structures to save costs. Since then, they have successfully reimagined Modernist housing in various cities, including successfully transforming 530 dwellings in Bordeaux's 'Grand Park City' program. These 10 to 15-story buildings are being revitalized with winter gardens and balconies using polycarbonate materials.

The architects embrace an ecological, economic, and optimistic approach by adapting and extending existing structures. They value and preserve the buildings' qualities, providing generous spaces uncommon in social housing. The strategic use of polycarbonate enhances sustainability, promoting energy efficiency and natural lighting while maintaining comfort. Polycarbonate catalyzes what Lacaton & Vassal describe as "spatial luxury," challenging norms by offering generously sized spaces in social housing. The design embraces simplicity and "less is more," maximizing living possibilities for families with limited resources. The polycarbonate design transforms the 16-story slab blocks into a shimmering bas-relief, evoking a giant theater where each apartment becomes a private loge, concealing and revealing daily activities. Amid this backdrop, the vibrant colors and forms of the plants and bricolage take on an intensified presence, resulting in a unique and vibrant urban living experience that empowers residents to create their own spatial uses.

Over time, the refurbishment process has evolved to minimize construction impact and duration. A notable feature is prefabricated modules securely clipped to the existing building like scaffolding. Precast concrete slabs and columns are transported to the site and skillfully craned into position, forming a freestanding structure that extends the flats by 3.8 meters. Additional components like external lifts gliding up and down translucent shafts are seamlessly integrated. Remarkably, residents remain in their homes during work, avoiding disruptive decanting, and every 530 flats are refurbished within a mere 12 to 16 days. The design thoughtfully caters to the intimate, human scale of the inhabitants, empowering them to transform and utilize the new spaces while minimizing adverse renovation effects. These two essential features demonstrate a sustainable living solution for social housing, further fostering its harmonious integration within the existing environment.

The project offers an alternative view of public housing typology, contrasting with the cautionary tale of wasteful demolition in the Pruitt-Igoe Housing complex. Lacaton & Vassal's approach proves that upgrading existing structures can be cost-effective and transformative, emphasizing architecture as a socially responsive process. Their methodology of "Never demolish, never remove or replace, always add, transform and reuse" proves that upgrading the building's physical structure can be more cost-effective than demolition while transforming its image and public perception. They showcase the importance of renovation and reuse in creating sustainable and harmonious urban living environments by appreciating and utilizing existing qualities.

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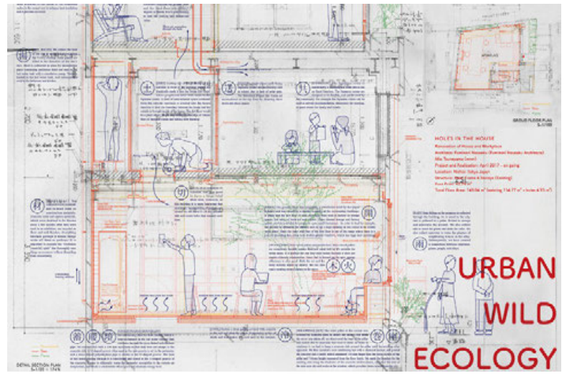
Fig.1 Image accessed from http://www.virose.pt/arch/clusters/act/santiago/santiago03.htm
Fig2. Image accessed from https://www.lacatonvassal.com/index.php?idp=80

Arguments

Exploring Urban Wild Ecology

A Path to Future Sustainable Development

Columbia University
Director Xiaoxi Chen
Instructor Oscar Oliver-Didier
Individual work
Summer 2023



Construction, pollution, and habitat fragmentation have altered ecosystems in urban areas, yet various species flourish amid these changes. Urban wild ecology delves into their survival, reproduction, and interactions in urban settings. The revelations shared by Mio Tsuneyama and Fuminori Nousaku during their lecture have been instrumental in shaping my perspective on the intertwining relationship between human activity and nature within urban spaces and how that methodology can influence urban life in the long term. During their lecture, Mio and Fuminori comprehensively elucidated various projects, unveiling the methodology behind urban ecology and the underlying reflections driving their work.

Their lecture encompassed an array of projects such as “House for seven people,” “String brace House,” “Akeno raised floor,” and “Holes in the House,” all of which were introduced against the backdrop of varying urban crises and the inexorable tide of urbanization. Their insights into “urban wild ecology” unveiled the intricate interdependence between human endeavors and the ecosystem, prompting me to perceive urban spaces beyond their surface aesthetics. The delicate equilibrium they illuminated between urban development and ecological preservation provoked introspection about my role as an architecture student and propelled me to consider how their methodologies could potentially guide the trajectory of urban evolution, ultimately fostering a lasting impact.

The connection between humanity and nature has reached a state of imbalance. Both the land and we, as its inhabitants, are urged to transcend the boundaries of industry and technology. A more profound comprehension of our rapport with the natural world is necessary. By embracing the concept of the ‘happening of wildness,’ both architects are determined to raise awareness and promote action rather than waiting passively. Rather than emphasizing natural forms, they are exploring a symbiosis between the pursuit and the environment. Mio and Fuminori, in their architectural projects, echo these sentiments as they reexamine the dynamic interplay between human and natural networks. The “Holes in the House” project stood out as a symbol of the struggle to find equilibrium in an urbanized world. It beautifully exemplified how partially dismantling existing structures can create literal and metaphorical “holes.”

The term “wild” stands as a pivotal concept, a means to break free from the rigid and thoughtless state we find ourselves in. Their “Holes in the House” project centered around transforming an existing city structure, specifically an affordable pre-owned house. Through a process of partial dismantling, both physical holes created by cutting through floor slabs and metaphorical holes representing societal fractures emerge. These spaces provide fertile ground for the emergence of something novel and untamed, akin to the untamed wild. This manifestation of wildness possesses the potential to invigorate life, thought, and creativity. These spaces, reminiscent of the wilderness, serve as a canvas for novel growth and ideas. Blending the wild with the artificial unveiled the possibility of a new narrative for urban living. Mio further explains that the concept of ‘Urban wild ecology’ embraces a bottom-up living strategy, advocating for comprehensive utilization of the resources at our disposal. This approach incorporates do-it-yourself (DIY) methodologies to enrich our quality of life. I deeply resonate with the notion that such an approach necessitates a conscious commitment and engagement that aligns with a holistic vision of harmonizing our lives with the environment.

In addition to the undeniable importance of materials and network systems, their other projects highlight their current endeavor to tackle the persistent crisis through a unique typology, which offers a distinctly innovative approach to design solutions. While some may contend that achieving an aesthetic equilibrium with nature is elusive, I believe they exemplify a methodology that seamlessly integrates both material aesthetics and pragmatic solutions intending to catalyze an ecological turning point in architectural practices. This sentiment is echoed in their works like the “String Brace House,” “Holes in the House,” and “Akeno Raised Floor” projects. In each of these endeavors, they present solutions that possess an aesthetic appeal and practical utility, employing biodegradable materials and ingenious utilization strategies to curtail reliance on conventional manufactured concrete and asphalt, harnessing the sun’s potential to provide warmth, hot water, and even electricity, and leveraging microorganisms within the soil to decompose waste and excrement. Moreover, soil emerges as a cornerstone, capable of tempering the heat island effect and offering a haven for sustainable waste management. An excess of waste accumulates within the confines of bustling cities, while discarded construction materials can be repurposed as valuable resources. This way of recycling beckons us to tap into the city’s intricate circulation of energy and materials, fostering a symbiotic relationship between urbanity and its edifices.

While the prevalent demolition trend has gained acceptance and momentum in recent years, the methodologies proposed by Mio and Fuminori offer an alternative approach to fostering soil-friendly living. However, as we explore these innovative solutions, questions arise regarding the sustainability and enduring functionality of the methodologies and building network ecosystems they propose. It becomes imperative to evaluate how these methodologies can be sustained over the long term and how they might shape the trajectory of urban development, promoting a lasting impact. A noteworthy contribution to this discourse is Fuminori’s diagram, which illustrates the transformative potential of an independent foundation in altering the contemporary soil condition often overlaid with impervious concrete. This diagram becomes a visual representation of the departure from conventional construction methods and a catalyst for reconsidering established norms in pursuit of sustainable and enduring urban development. This pursuit aligns with the essence of “Behaviorology,” a term elucidated by the founders of Atelier Bow-wow. This concept encapsulates architectural expression’s essence, rooted in comprehending the intricate interplay between inhabitants, the built environment, and urban spaces.

By analyzing factors such as heat, wind, light, water, soil, and individual and collective human behavior, architecture can be tailored to local contexts. Mio and Fuminori’s methodologies and projects resonate with this ideology, offering a platform for redefining architectural creation based on the notion of “form follows function.” Their work exemplifies how using natural materials and methodologies can enhance architecture’s longevity and contribute to the city’s sustainable transformation.
In pursuing these objectives, the integration of seemingly disparate elements becomes paramount. The tension between human-made constructs and the natural world is harnessed by forging an innovative architectural perspective that marries tactile richness with coexistence.
In doing so, Mio and Fuminori’s approach to design beckons us to embrace a holistic paradigm shift that transcends conventional boundaries and paves the way for a more harmonious, enduring, and sustainable urban future.

This endeavor exemplifies a daring initiative to establish a self-sustaining ecological loop within the urban fabric, intending to reignite our inherent connection to the untamed aspects of our environment. Exploring urban wild ecology has catalyzed a transformative shift in my perception of architecture’s role within urban landscapes. It is a resounding call to action, a poignant reminder of the intricate interplay between human progress and ecological equilibrium. It recalls the perspective of Henri Lefebvre, who posits that” ‘space is not consumer-generated but space-generated,” challenging conventional notions of space creation. Their works illustrate that urban wild ecology is an ongoing journey to shape social spaces and achieve the delicate equilibrium between nature and humanity.

What particularly resonates with me and deserves commendation are the practical strategies they employ, including implementing an independent foundation and utilizing DIY bamboo pipes beneath the ground. These seemingly modest interventions testify to the immense potential of incremental actions in fostering environmentally friendly practices over the long term. I find myself profoundly inspired by their ideology and the methods they embrace throughout the design process; their approach promises to significantly shape my understanding and application of sustainable design, ushering in an era of harmonious coexistence between human innovation and the untamed wilderness.

What particularly resonates with me and deserves commendation are the practical strategies they employ, including the implementation of an independent foundation and the utilization of DIY bamboo pipes beneath the ground. These seemingly modest interventions serve as a testament to the immense potential of incremental actions in fostering environmentally friendly practices over the long term. Beyond this, I find myself profoundly inspired by their ideology and the methods they embrace throughout the design process. This ethos not only resonates with my aspirations but also underscores the transformative power of merging architectural innovation with ecological consciousness. As I embark on my architectural journey, their approach stands poised to exert a profound influence on my understanding and application of sustainable design principles. Their paradigm heralds a new era marked by the harmonious coexistence of human ingenuity and the untamed wilderness, encapsulating the essence of a balanced and enduring future.

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Modern Japanese Architecture History

Mid-19th century to the present

Relationship between architectural practice and social change in Japan

Columbia University
Professor Janathan Reynolds
Individual work
Fall 2023

BUILDING AS A CANVAS FOR ART AND LIGHT -THE NEW MUSEUM EVALUATION

Designed by the renowned architectural firm SANAA, the museum introduces an intriguing interplay of volume shifting, layering, and movement. In contrast to the design of Grace Farm, the New Museum by SANAA adopts a distinctive layering and shifting architectural approach, stacking rectangular volumes to create open spaces for galleries, skylights, and balconies. Positioned on Bowery Street, the museum's regular form complements the surrounding architecture. The initial rectangular shape aligns parallel to the building on the left, establishing a connection, while the unique layering and height set it apart, creating a visually noticeable presence in that gritty and messy urban environment.

Entering from the street, the lobby activities are visible through the glass wall, creating a seamless transition from the street to the museum's interior. The entrance has no redundant design but aligns uniformly with other glass walls, allowing straightforward access that is marked by signage on the glass wall. The first lobby floor features a souvenir shop close to the entrance, accompanied by a model of the museum. To the left, a ticket window and the main giant elevator are situated. The layout of the museum store and displays in the lobby appears random to me, like the small art stores in Soho. A café and three glass room exhibition halls are located further into the lobby, with stairs to the underground theater spaces cutting through the floor.

The glass wall facing the street provides natural light, though the illumination wasn't optimal on that day. The exposed structure of the lobby ceiling and the reflective concrete flooring present a calm, industrial vibe. Through my observation, the entire building's exterior employs aluminum mesh panels, extending a consistent design language that reveals portions of the ceiling structure through perforated metal plates. Balanced with lighting, this design creates a sense of lightness, contrasting with the weighty concrete floor. The concrete floor and glass wall reflections counterbalance the heaviness of the material, creating the overall effect of a light, elegant, and relaxed interior lobby space. The lobby's design resonates with the charm of a small street art store in New York City. The glass panel for the exhibition room in the lobby deepens the spatial experience and works well with the simple geometry of the stairs to the basement.

The main circulation for the new museum uses the central big elevator. Entering the 7th-floor space, the expansive trussed glass windows elegantly frame the cityscape from the gallery. While the height of the seventh floor is not particularly towering, the outer circle of the balconies facing the city imparts a comforting sense of openness to the urban environment. During my visit, the exhibition on the seventh floor didn't use artificial lighting, relying instead on abundant natural light to create an immersive lighting atmosphere. Although the overall room isn't spacious, the integration with the city through glass curtain walls and balconies results in an environment-rich urban character. I believe the atmosphere of the seventh-floor exhibition area heavily depended on the changing natural light illumination. Unfortunately, the subdued lighting conditions on the day I visited somehow hindered the appreciation of this space. However, the view from the 7th - floor was breathtaking, offering an extensive panorama of the cityscape. These 7th-floor balconies serve as a form of architectural expression, successfully merging with the surrounding city scenery.

Walking down the stairs from the 7th - floor, the stairwell is discreetly tucked away in the corner, intentionally concealed. The lighting on the stairs exudes comfort, and there's a captivating artistic spiral when gazing downward. The concrete steps offer a comfortable walking surface. However, due to the varying height of each floor, navigating the stairs can induce a sense of dizziness.

Entering the fourth-floor gallery (Dakis and Lietta Joannou Galleries), the height of the space has increased significantly compared with the seventh-floor space. Arriving at the fourth-floor gallery, namely the Dakis and Lietta Joannou Galleries, the spatial elevation noticeably increases from the seventh floor. The entire gallery is covered in yellow, with closed windows, relying primarily on subtle artificial ceiling lighting. Noticeably, the main exhibition banner hangs suspended from the ceiling, positioned toward the elevator. The yellow wall panels and contrasting purple carpet on the floor contribute to a visually striking color palette. Despite the gallery's height, the strategic placement of the exhibition's flags maintains a sense of spaciousness, avoiding the perception of a confined space. The exposed beam structure and white metal plates on the ceiling create a sense of separation from the vibrant exhibition space, although the white beam structure may not seamlessly blend with the main yellow theme. The staircase, due to the differing volumes and movement of the gallery, becomes nearly camouflaged, forming a long, narrow open passage. The opening space of the staircase down the experience of viewing artwork, provides a nuanced exploration of the levels between the gallery spaces. The concrete staircase serves both as a circulation pathway and a spatial dividing point within the building.

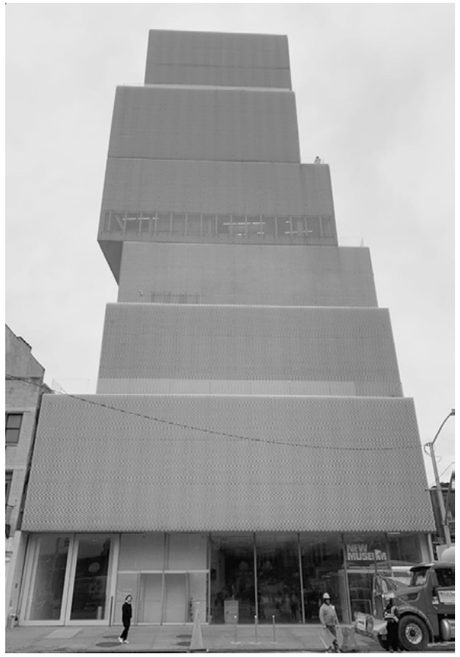
Further descending the gallery stairs on the fourth floor, the architect's attention to detail becomes apparent. A small volume set back in the middle of the stairs forms a setback dedicated space for artworks, showcasing the architect's thoughtful design approach.

Upon entering the Maja Novmann/Luma Foundation Gallery, the predominantly white color, mirroring the building's original hue, seamlessly integrates with the exposed white ceiling structure and reflective concrete floor. The structural framework delicately frames each small exhibition space, fostering intimacy for both viewers and the artworks on display. The absence of skylights diminishes the introduction of natural light, a minor regret given the overall exhibition's reliance on artificial lighting. The gallery primarily features paintings, distinct from the sculpture focused on the fourth-floor gallery. The space has a comfortable and modern ambiance, as the paintings adorn the walls without disturbing the designated visitor route. I believe the curators have meticulously arranged each painting's space based on size, ensuring a balanced usability that feels not too spacious, nor too confined. Despite the absence of natural light, the light and simple white cement floor maintains a cohesive and unfragmented atmosphere. Artificial light, serving as the primary source for displaying images, expertly illuminates every corner through reflections off the white walls and controlled angles above the paintings. The use of white imparts a sense of lightness, enhancing the overall appreciation of the artwork.

The building's overall geometric language is characterized by a clean and concise design, with a careful selection of materials that ensures the artwork remains the focal point. Situated in downtown New York, the structure seamlessly integrates with the cityscape while maintaining a distinctive independence from its urban environment. I interpret SANAA's design style as embodying a simple and light architectural language. The control of materials and the use of geometric shapes in their architectural works are executed with smooth and uncomplicated finesse. There's a detailed attention to architectural details, with no redundancies evident in their approach. The deliberate exposure of architectural language and elements further contributes to the transparency and authenticity of the design.

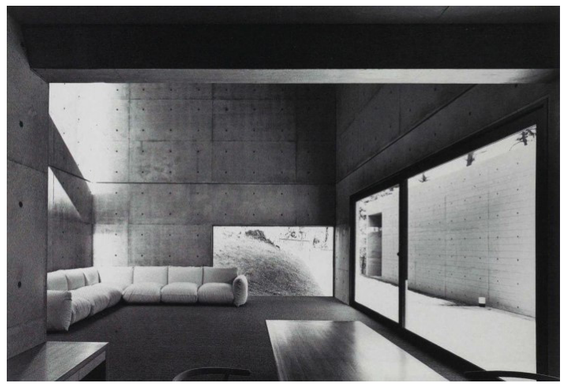
Evaluating the art museum's design, my criteria focus on the use of natural light, the seamless integration of building materials with artworks, the rationality of the visitor's exhibition route, and the space's service to the art itself. The building presents itself as a modern installation, featuring a unique fluorescent green elevator as the main vertical transport between floors. While novel, the fixed exhibition route around this vertical core can be somewhat inconvenient for those preferring to explore on foot. In terms of controlling natural light, I appreciate the introduction of it in the lobby on the first floor, especially with the captivating reflection of the city street on the glass. However, the reliance on artificial lighting in other galleries creates a somewhat hazy atmosphere. It contrasts with the feeling of dimness and disorientation one might experience in a hotel corridor with white walls and insufficient lighting. The lack of natural light in some areas compromises the integration of color and the exhibition itself.

While I find the building to be quite innovative, with a particularly well-designed and comfortable lobby and a notable 7th-floor space, there's a sense of missed integration in some galleries and with the artworks themselves. Despite these regretful aspects, the architect's ingenuity is evident in the overall design. From my perspective, it might be more fitting to consider the building as a novel city store rather than a conventional museum.



HARMONY IN MATERIAL, FORM, AND NATURE:

TADAO ANDO'S ARCHITECTURAL DESIGNS AND THE SYNTHESIS OF TRADITIONAL JAPANESE AESTHETICS



自然 | 造物

Renowned Japanese architect Tadao Ando is celebrated for his artful manipulation of light, space, and water in architectural creations. Born in Osaka in 1941, Ando pursued a self-directed study of architecture before founding the Tadao Ando Institute of Architecture in 1969. His notable works, including the "Church of Light," "Church on Water," and "Chichu Art Museum, etc." exemplify his mastery of crafting spatial geometries. The recipient of prestigious awards such as the 1995 Pritzker Prize and the 2005 International Union of Architects (UIA) Gold Medal, Ando has shared his expertise as a visiting professor at esteemed institutions like Yale University, Columbia University, and Harvard University. Since 1997, he has held a professorship at the University of Tokyo, where he currently serves as an honorary professor (Art Institute of Chicago, Dec 11). Ando's architectural style is known for creating an atmosphere of "nothingness," emphasizing space to showcase the beauty of simplicity (Tadao Ando Official Website). This essay aims to exemplify the significance of materiality, geometric design, and simplicity in Ando's work, exploring how these elements, in harmony with nature, contribute to the distinctive architectural style deeply rooted in traditional Japanese aesthetics.

Born and raised in Japan, Tadao Ando's architectural and design philosophy has been profoundly shaped by the rich Japanese religion and lifestyle. His distinctive architectural style is often likened to the evocative simplicity of a haiku, emphasizing the profound impact of nothingness and space in his creations (Re-thinking the Future, Dec.11). Ando demonstrates a preference for orchestrating intricate spatial arrangements, skillfully weaving complexity into his designs, all the while presenting an outward facade of simplicity. This approach highlights Tadao Ando's ability to balance intricate spatial elements behind a visually straightforward exterior, showcasing his mastery in creating architectural compositions that seamlessly blend sophistication with an aesthetic of elegant simplicity. Central to Ando's architectural vision is the concept of a house embodying the essence of human living. Through the development of his work, the prototype of Ando's architecture was completed, symbolized by keywords such as exposed concrete, simple geometric forms, and coexistence with nature (Tadao Ando Official Website). According to Ando, he seeks to create situations where man and nature commune, especially realizing spaces within his buildings that could promote the conversation with natural materials where one can feel light, air, and rain (Frampton, Ando, et al.,1989).

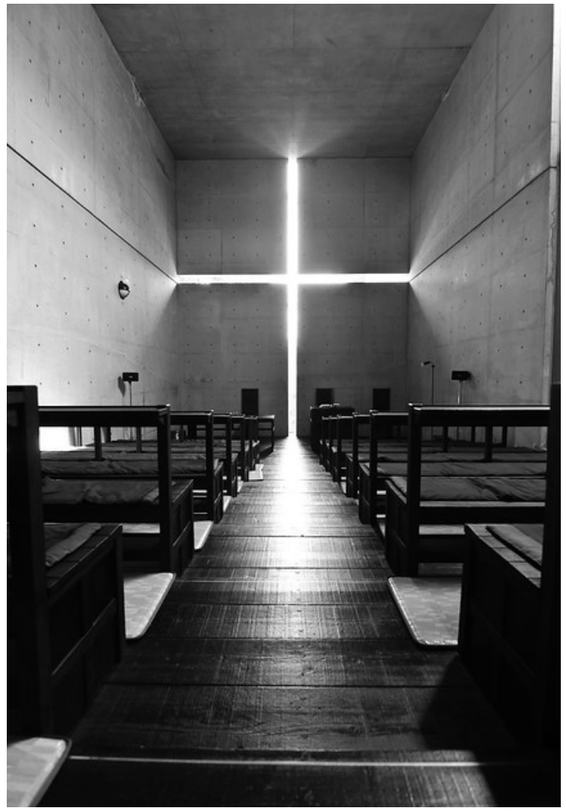
As a visionary architect, Tadao Ando believes that architecture possesses the transformative power to reshape society, encapsulated in his conviction that altering dwellings equates to reforming cities and societies (Furuyama, 2006). His early work, the Rowhouse (1975-76) in Sumiyoshi, is a prime example of this ethos. Commissioned to design a compact residence in the narrow confines of Osaka's Sumiyoshi district, this project laid the groundwork for Ando's future endeavors (lecture, Nov.15). "Composed of solid reinforced concrete load-bearing walls, this closed and sober house represents a radical revision of traditional architecture, the concept of Japanese housing."(Metalocus, Row and House in Sumiyoshi. Azuma House by Tadao Ando, 2021.). During its construction, Ando drew inspiration from the machiya, traditional row houses that survived World War II air raids. These machiya, characterized by their efficient use of plot space and light-filled landscaped patios, influenced Ando's design (Metalocus, 2021). Ando replaced the central volume of traditional row houses with a reinforced concrete box, organizing the space around a central, open-air patio that facilitated the flow of light and air.

Ando's architectural philosophy is deeply rooted in the interplay of geometric organization, history, and culture. He states, "I apply modernist vocabulary and technology to my architecture, overlaid with distinct contextual elements such as regional identity and users' lifestyles. I do not intend merely to mirror the formal traditions of the past; rather, I wish to define new forms through their interpositions with people's lifestyle and their relationships with distinct regional societies" (Frampton, Ando, et al.,1989). The house's exterior seemed to be abandoned with excessive decoration, remaining sober and calm with the texture of reinforced concrete, which prevented the audience from observing what was happening in the interior rooms. The house is divided into three distinct sections, with the central part dedicated to the patio (Lecture). The ground floor houses communal areas like the living room, kitchen, dining room, and bathrooms, while the upper floor contains private bedrooms (Metalocus, 2021). This central courtyard thus becomes a pivotal element, infusing the architecture with light and functionality. The Rowhouse project was the first style in the endless quest to harmoniously relate architecture and nature and play with geometry, which Ando has pursued throughout his career. The simple composition of the house and how the light gives character to its different spaces synthesize in a small volume the essence of all the architecture of Tadao Ando; according to Ando, "In its simple but rich spatial composition, in its expression of the enclosure, and in the way light gives character to daily-life spaces, this house encapsulates an image of my architecture" (Frampton, Ando et al.,1989).

Tadao Ando's architectural style, characterized by simplicity, strongly emphasizes sensory and physical experiences. It is deeply influenced by Japanese culture and the Zen philosophy, which values simplicity and inner feelings over external appearances. The Koshino house (1980-1, 1983-4) plays with the audience's perception of spirituality in the physical space (Frampton, Ando, et al.,1989). Designed by Tadao Ando and completed in 1984, this residence is famous for integrating traditional Japanese elements with modernist architectural principles. It features two parallel concrete rectangular confines. The forms are partially buried into the sloping ground of a national park and become a compositional addition to the landscape (ArchDaily. AD Classics: Koshino House). Placed carefully so as not to disrupt the site's preexisting trees, the structure responds to the adjacent ecosystem. At the same time, the concrete forms address a more general nature through a playful manipulation of light (lecture, ArchDaily. AD Classics: Koshino House). The connection between the two spaces is a below-grade tunnel that lies beneath the exterior stairs of the courtyard, with the northern volume consisting of a two-story double-height living room, kitchen, and dining room on the first floor and a study on the second floor. The southern mass consists of six linearly organized children's bedrooms, a bathroom, and a lobby (lecture, ArchDaily. AD Classics: Koshino House).

The entrance, a wide staircase, follows the land's slope into a sunken courtyard, where light filters through the tree canopy, creating dynamic patterns. The square openings in the tunnel craft a play of light and shadow, providing a subtle yet powerful ornamentation within the simple interiors. Ando's design fosters a profound connection with nature; extensive glass windows frame views of the lush courtyard, blurring the lines between indoor and outdoor spaces (Frampton, Tadao, and Ando, 1991, p12). The natural light creates a spiritual ambiance reminiscent of a sundial, marking the passage of time within the rooms. This interplay of light and geometry not only accentuates the landscape but also deepens the use of light in the sunken spaces (lecture, ArchDaily. AD Classics: Koshino House).

Ando's expertise in manipulating light, nature, and space gained international recognition in the 1980s. His designs often contrast stark, heavy concrete with light to create a harmonious balance. His visit to Rome, especially the Pantheon, profoundly impacted his understanding of natural light, reinforcing his architectural ambitions. Coming from a culture where Jun'ichiro Tanizaki celebrated the beauty of shadows and subtlety in "Praise of Shadows," the intense light in the Pantheon contrasted sharply with the soft illumination of shoji and the diffused daylight of Japanese gardens (ArchDaily, When Sunlights Meets Tadao Ando's Concrete,2023). Ando's most notable projects, the Church on the Water (1988) and the Church of Light (1989), exemplify his architectural philosophy. In the Church on the Water, a window cross bridges the gap between the congregation and the aquatic cross, with the sun's trajectory casting moving shadows. This traditional Japanese aesthetic, focusing on nature, water, and light, is central to Ando's work, where he seeks to create a rhythmic interplay between concrete and dramatic daylight effects. Ando's connection with nature deepens and expands in a topographic sense as the scope of his architectural practice evolves, mainly when working on sites characterized by a growing sense of rustic simplicity and natural beauty. This shift is particularly noticeable in the Church on the Water, completed at Tomamu, Hokkaido, in 1988. In the Church of Water, where Ando said, "You cannot simply put something new into a place. It would be best to absorb what you see around you, what exists on the land, and then use that knowledge and contemporary thinking to interpret what you see" (Frampton 1991, 16). In a distinct manifestation of his approach, a composition of two intersecting cubes faces a spacious pond that gradually descends toward a small natural river. The more extensive cube functions as the chapel, seamlessly meeting the entrance of the smaller cube through a semi-circular spiral staircase.



Access to the church involves passing beneath a glass and steel cube at the northernmost end, which houses four imposing concrete crosses, drawing the visitor's gaze upward (Archidaily: Church on the Water). The pathway then guides them up and around these crosses, leading down a connecting dark spiral stairway into the expansive cube housing the chapel below. Upon entering, visitors are immediately captivated by the panorama of the pond and the encompassing trees and hillside visible through the operable glass wall. The remaining three concrete walls serve as a frame for a steel cross positioned at the center of the pond (Archidaily: Church on the Water). The contemplative space within the church reveals a carefully designed landscape with a free-standing steel cross placed in a shallow artificial pool and patently influenced by Kajia and Heikki Siren's Otaniemi Chapel of 1957 (Frampton 1991, 16). Within four seasons, the church will get different spiritual experiences with the surrounding natural environment.
He mentioned, "My buildings are being refined towards geometric simplicity, but I also seek to generate complexity by introducing various elements. This mixture is the true state of nature and man's existence. Different scenes are projected through the changing qualities of light and air, the movement of people, and their lines of sight" (Frampton, Ando et al.,1989, p.24). The significance of the cross symbol is accentuated in this arrangement, and its traditional meaning is vividly expressed through the repetition of four poles within a glass structure. This mirrors a comparable occurrence in the Church of the Light, erected in Ibaraki, Osaka, from 1987 to 1989. Despite the conventional elements of an eastern orientation and emanating light, the design is equally influenced by the architectural style of the concrete Tea House (Frampton 1991, 17).

Tadao Ando said, "I understand the 'abstract' to be modernism generated from 0mc geometric organization, and the real' to be the totality of the history and culture, the natural context, and the cities and the lives of their people. I strive to make the essential link between the two poles, not to abbreviate them" (Frampton, Ando et al.,1989, p.21). The insights gleaned from the reading "Tadao Ando and the Cult of Shintal" by architectural historian Masato Kawamukai provide a profound understanding of Ando's conceptual approach. Kawamukai emphasizes the pivotal role of material in Ando's design philosophy, noting that a concept holds for Ando only if it encapsulates a means of authentically expressing the intrinsic nature of the material and its subsequent spatial form. Ando tries to use natural or factory-produced material in its pure, solid form without working it and drawing inspiration from Ludwig Mies van der Rohe's tradition, Ando endeavors to showcase the unadulterated essence of natural or factory-produced materials, eschewing excessive manipulation (Frampton 1991, 21).

At the core of Ando's oeuvre lies a fundamental dichotomy between geometry and nature. However, Ando's interpretation adds a layer of complexity by viewing nature not as a purely organic entity but as a mediated and abstract form (Frampton 1991, 21). However, this opposition has another level of significance. Ando sees Western architectural forms as irreducibly geometric, volumetric, and vertical, in contrast to traditional Japanese architectural patterns, which are seen as natural, horizontal, and spaceless (Frampton 1991, 21). Ando's architectural work, therefore, represents a unique synthesis: while geometry shapes the structure, nature penetrates and expands the space, either from above or by extending into the surrounding landscape, blurring the lines between the built environment and the natural world, which offers a point that the architectural convergence, emphasizing the symbiotic relationship between human-made structures and the organic, creating an architectural experience that harmoniously coexists with its natural surroundings.

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Fig.
I. The Koshino House (Accessed from Metalocus: The dance of light. Koshino House by Tadao Ando | The Strength of Architecture | From 1998)
II. The Church of Water (Accessed from Archidaily)
III. The Church of Light (Accessed from Osaka Ian)

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