

Max Zhaoyi Wang

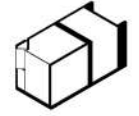
Harvard University
Graduate School of Design
Master of Design Studies_Ecologies

12/12/2001
2022-2025

Abstract

"Intersecting Force" navigates the interconnected realms of **Ecology**, **Humanity**, and **Technology**, with a focus on the challenges of contemporary urban environments. It addresses pressing issues such as biodiversity loss, soil degradation, and air pollution, proposing design solutions that foster ecological regeneration and urban resilience. By integrating inclusive strategies, the work also tackles social inequities like housing disparities and cultural erasure, empowering underserved communities. Through the thoughtful application of emerging technologies, these projects offer scalable and sustainable frameworks that bridge ecological priorities with human needs, reimagining architecture and urban systems as catalysts for equity, innovation, and coexistence.

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00 AERROTERRA

TPMS-Based Ceramic Façade Farming System for Urban Microclimate & Ecological Adaptation

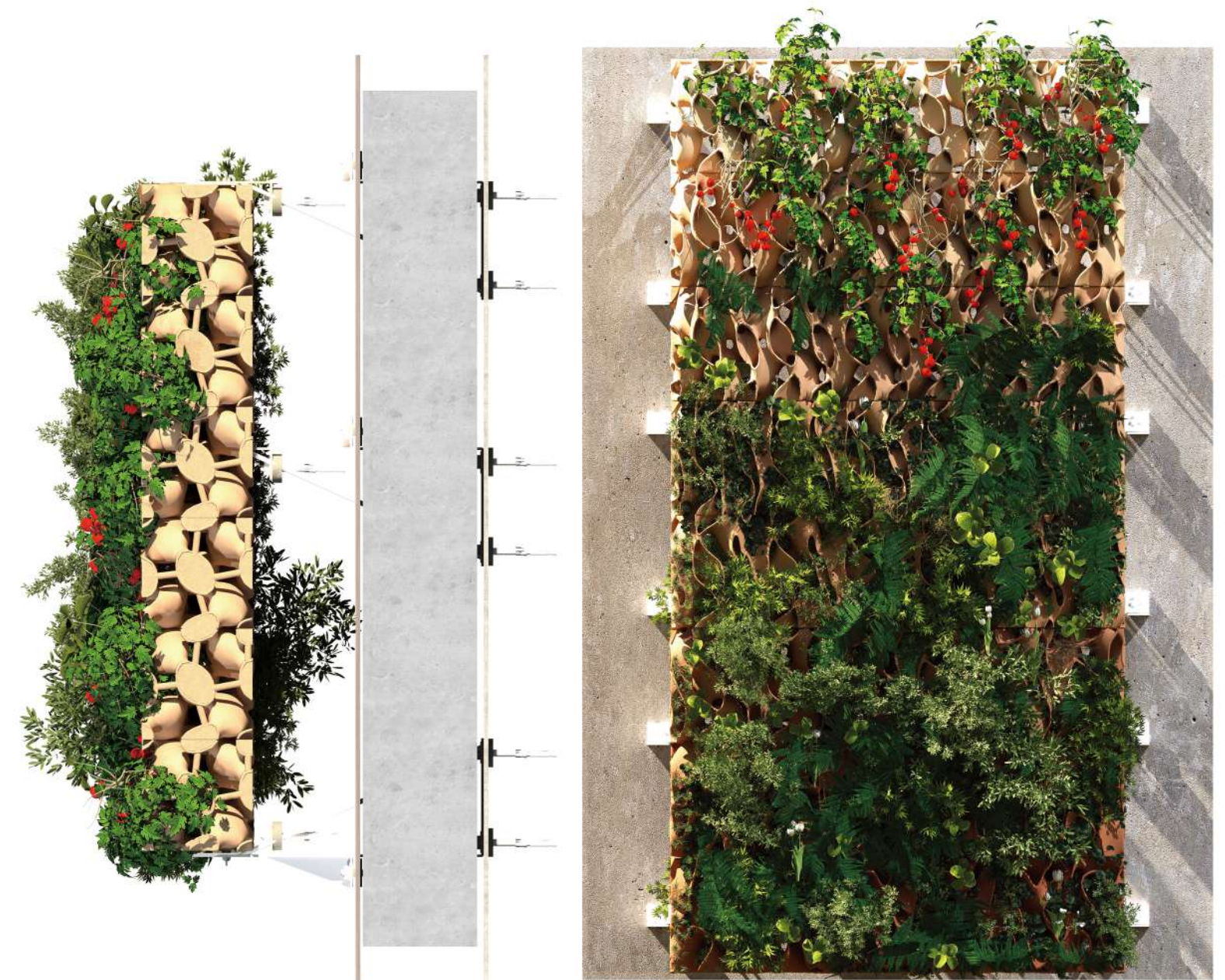
Research Project | Vertical Farming, Ceramic Fabrication, and Adaptive Building Envelope

Year Fall 2025-NOW

Category Thesis | Harvard Innovation Lab
Independent Project

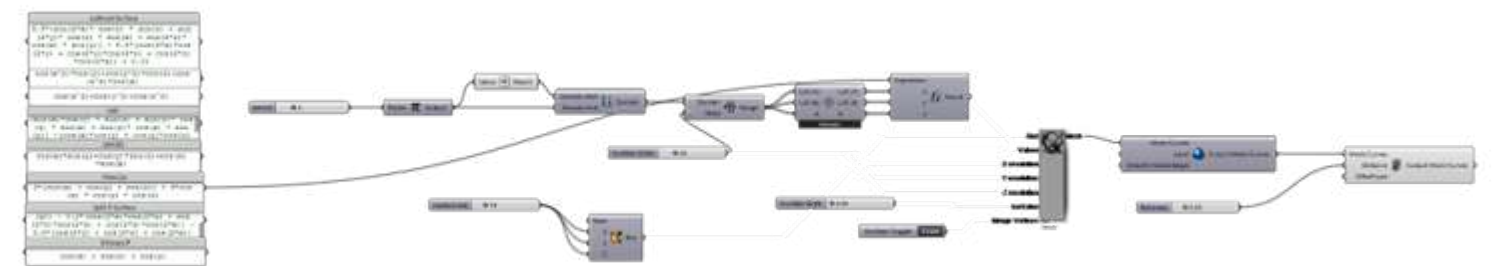


AerroTerra is a **TPMS-based** ceramic module system designed to integrate vertical planting, façade performance, and **passive microclimate regulation** within a single architectural envelope. The project explores how building skins can move beyond enclosure to become **ecological interfaces** that support urban agriculture, environmental adaptation, and more reciprocal relationships between architecture and living systems. By combining geometric efficiency, material experimentation, and plant-based performance, the system proposes a new **façade typology** that is both spatially expressive and environmentally responsive.



Parametric Form Optimization | Triply Periodic Minimal Surface

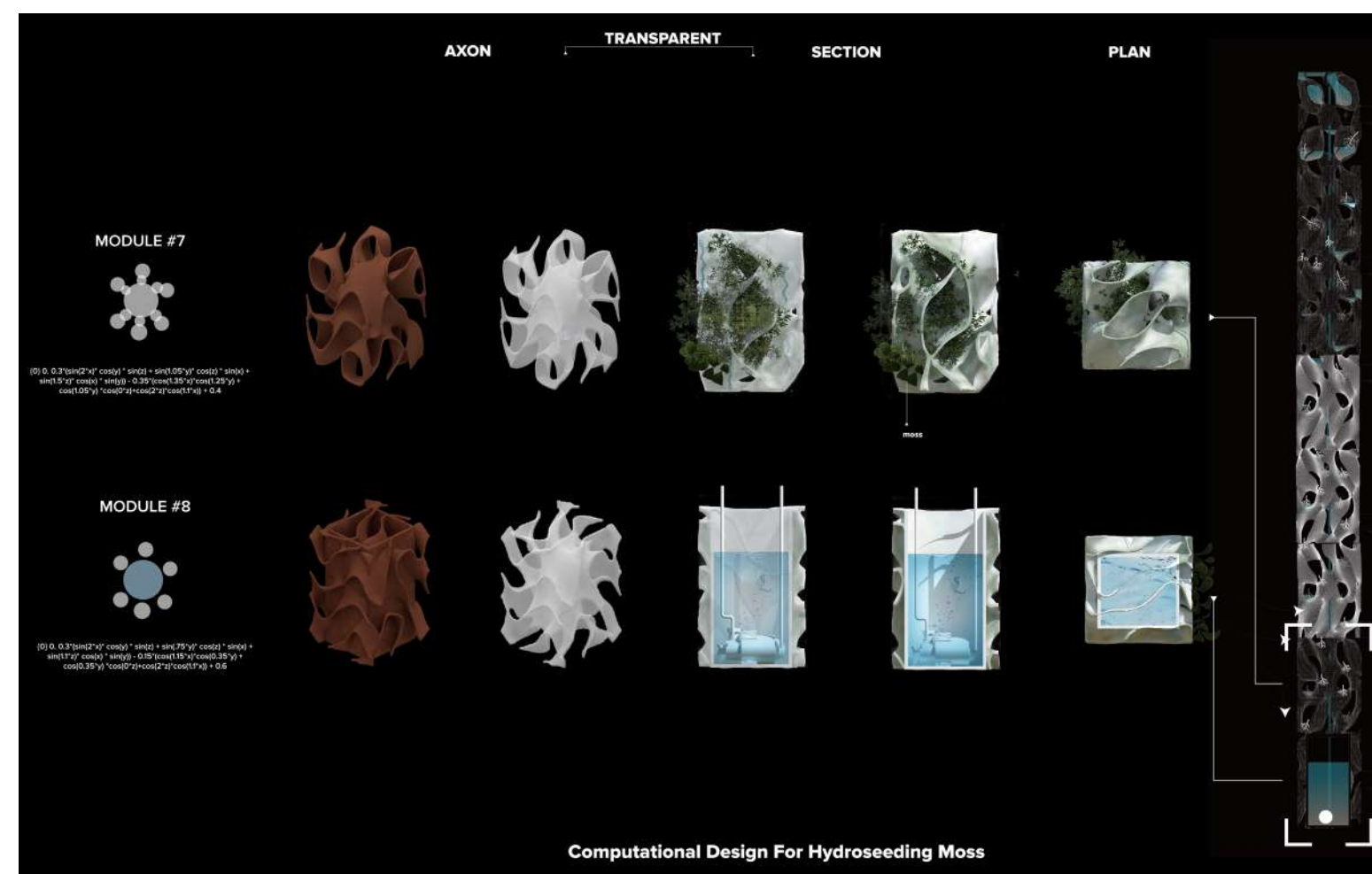
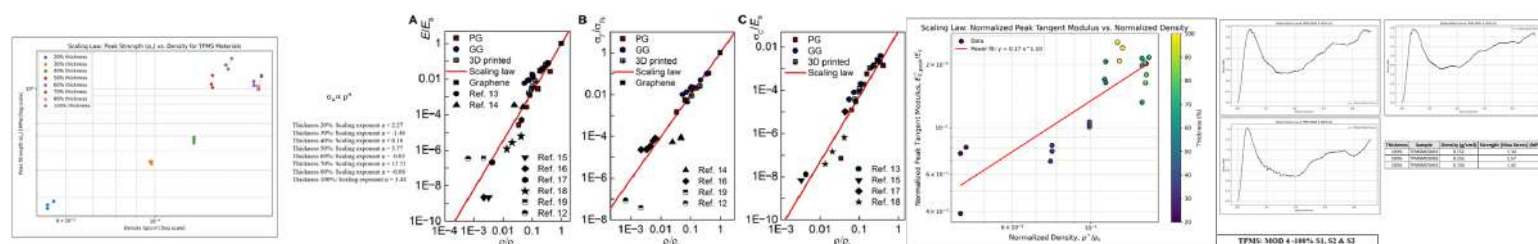
The project was developed through an iterative parametric workflow in Grasshopper, using TPMS equations as the geometric and performative basis of the system. Through repeated adjustments to equations, wall thickness, porosity, curvature, and module aggregation logic, the form was continuously refined in response to structural behavior, planting capacity, and fabrication constraints. Digital modeling was used not only to generate formal variation, but also to test how different parameters could influence surface-area efficiency, drainage, stability, and adaptability to different plant species. This optimization process allowed the geometry to evolve as a balance between computational precision, environmental performance, and manufacturability.





Experiment Process | From Digital Model to Ceramic Prototype

The project is currently in the prototyping and fabrication development stage, with a particular focus on ceramic forming methods including slip casting and press molding. Multiple strategies of segmentation, mold design, demolding, part assembly, and material translation are being tested to evaluate precision, repeatability, and production feasibility. This phase is not only about reproducing the digital geometry, but also about understanding how the module behaves as a physical ceramic object through each step of the making process. By comparing these fabrication workflows, the project is identifying a practical method for scaling the system toward larger architectural applications and future real-world deployment.





01 In-Situ Addis Ababa

Modular Waste Adaptive Approach Across Scales In Informal Settlement

The 21th Asian Design Award | Cultural Building and Space | **Gold Award**

Year Fall 2022

Category Architectural Design Studio | ARC307

Instructor Jiong Wu, PhD

Team Anyang Zu, Zeling Liang



In the heart of Addis Ababa, a critical challenge looms: informal settlements struggling under the weight of mounting waste. **Upcycling Urban Spaces** addresses this issue by turning discarded materials into opportunities for architectural innovation. By **Repurposing Waste**, we design adaptable furniture, reimagine living spaces, and breathe new life into communities. From **small-scale interventions** within homes to **large-scale transformations** of public streets, our approach promotes sustainability and strengthens social bonds. Through collaboration and creativity, we aim to reshape urban landscapes, one upcycled space at a time.

* All works done individually unless specified

City Expansion

Existing Planning

Residential Land Planning

Land Usage

POP. Density

Street

Country Boundary

Existing Residence

Condominium (PDR)

Addis Ababa, the capital of **Ethiopia**, stands out as a city with a rich history and urban fabric, offering lessons for development across Africa. Addis Ababa is a city with a **unique urban fabric**, where cultural, social, and spatial values are deeply rooted in its informal settlements **80%** of the city's housing units are **informal**, yet these areas foster vibrant social networks and adaptable spatial practices worth preserving and learning from.

Interview Decoding

So there are many different levels of legal, illegal, or semi-legal. So it's hard to say what's legal, what's not, what's illegal. And that's why always a question in Turkey, where there's a law that says, if you build a house overnight, you cannot get a title deed. Because it's an old law from the Ottoman era that if you just move into a vacant lot and build a house, then you cannot get a title deed. So people just live in it at night and get a very quick house and then occupy the place. So now they have the right to stay, yes, but for a very short time, the land is illegally occupied, but then the building might be actually legal. And they have the protection of the law to say, I'm not sure what the lawyers in Ethiopia are trying to find out. Zhaoqi Wang: I think, like in the urban areas, informal houses are partially legal because most of the people own the land, but they upgrade and extend their houses, which is partially legal. But in the suburban areas, a lot of houses are illegal, illegally built. So they don't even own land and we are trying to find the direction we should go. And also, it's hard to distinguish a region in the city center. But if all the people are on the land or they are legally on the land. So, like, it's hard to define.

Eskel Samuel Woldemariam: So what is your focus right now? Do ahead.

Zhaoqi Wang: We are focusing on the city center informal houses, which is partially legal, like they are upgrading and extending their houses. And we are trying to see, demolish, then find a good place for them to settle and live. During this transition process, we need to figure out a better place or like, a temporary place for them to live. So, we are trying to do that.

Eskel Samuel Woldemariam: But now like who is demolished, we're more like designing a module like a model that they could develop by themselves. Just like a half house. We need to know more about it, how the local people are feeling with their informal housing.

And we may develop a module that is better than informal housing that has a better living safety. And, also they bring the clean water in, but like that module that the local people can do, like displacing it by themselves.

Eskel Samuel Woldemariam: But that's still very vague. But the fact that you're focusing on the urban areas is one way to narrow down your focus. Because of course, all the informal buildings, even the formal buildings are built by themselves. That's what they do in most of Africa, so that's nothing new about it. Right? So if you have to have a contractor or an architect to build your house, then you must be really rich. And most people, they just build it themselves. That's the norm. So that doesn't focus enough for you. Right? But at the same time, looking into the available materials in Ethiopia is a very good start point, because given that everybody builds themselves, they have to be able to go get that material. What is concrete? Is it asphalt? Or is it soil?

Zhaoqi Wang: Soil and mud.

Eskel Samuel Woldemariam: Yes, but, you know, it's not most of the time, it's not very safe if you don't know how to make sure that mud bricks can be made safely. So that would be one way to focus. Another way is the urban aspect of it. What do people in the urban areas contend with? What are the challenges in building themselves or getting the amenities, getting the infrastructure for urban people, which is very different from the rural people. Transportation might not be a problem, access to food might not be a problem. Maybe it's, but getting the, I don't know, finding the land where they can cultivate their own food might be a problem. Water is always a problem everywhere. It's more of a valid area problem because the water source may have to just be water. If you're in the rural areas, especially that's hard to get. So if you have

Key Information

Ability To Build

Close Neighborhood

Meager Earnings

Women Living

Limited Space

Waste Accumulation

Design Methodology

Material Upcycling

Contextual Vernacular

Adaptive Modular Systems

Material Research

Interview Script

Culture

Issue

Material

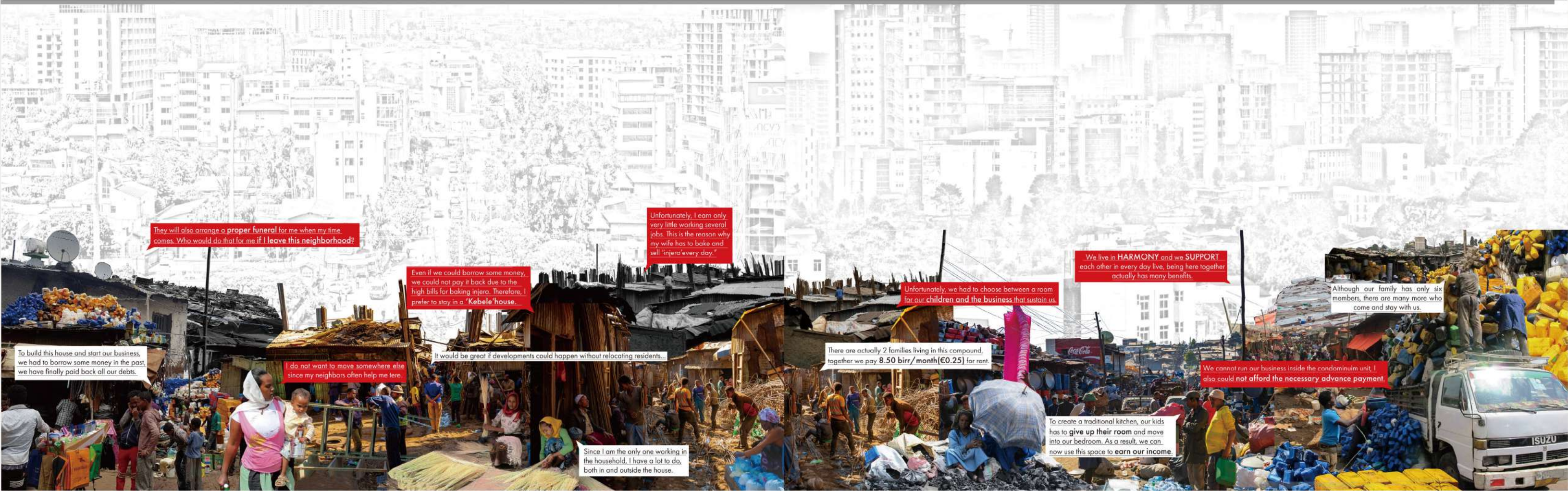
Measurement

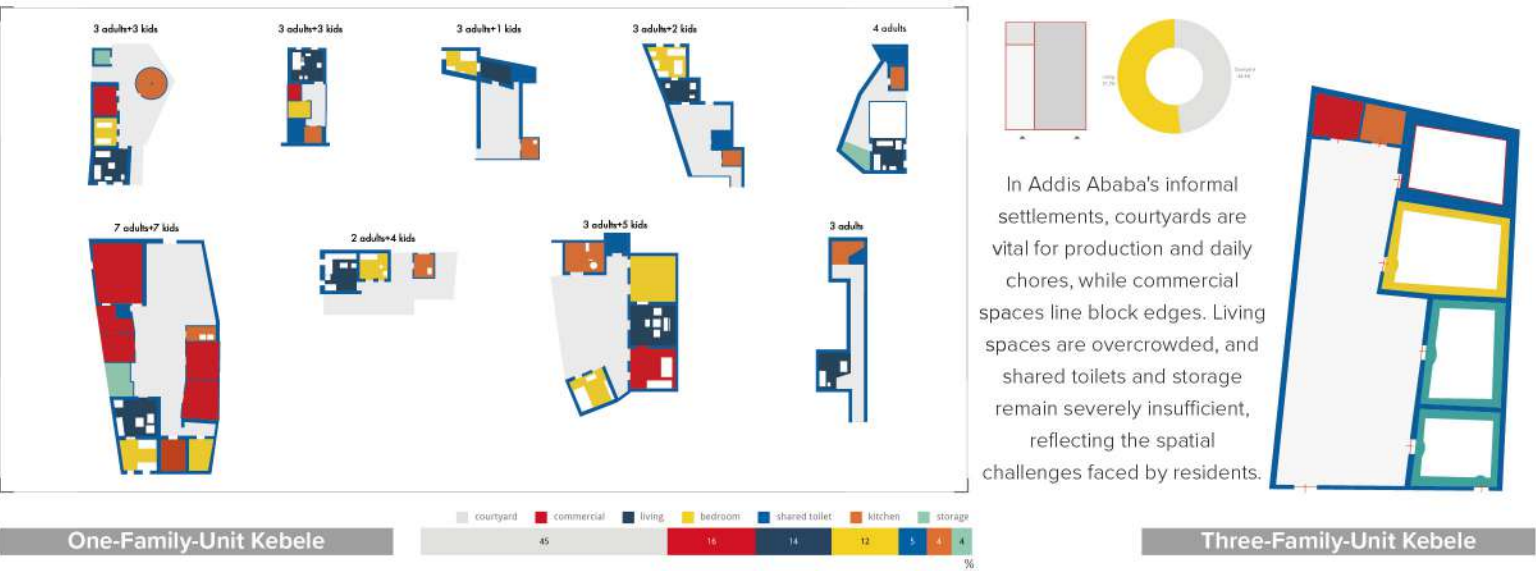
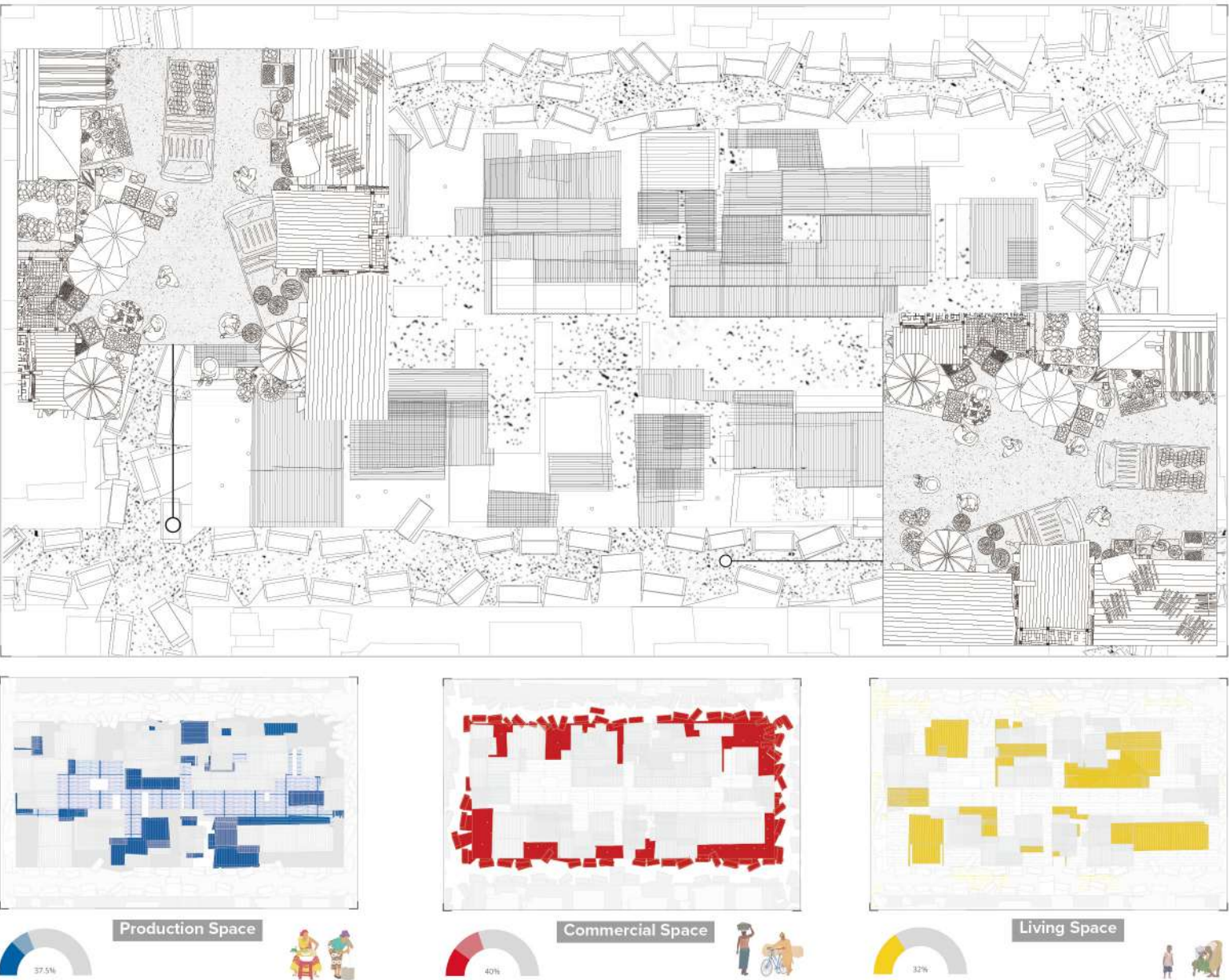
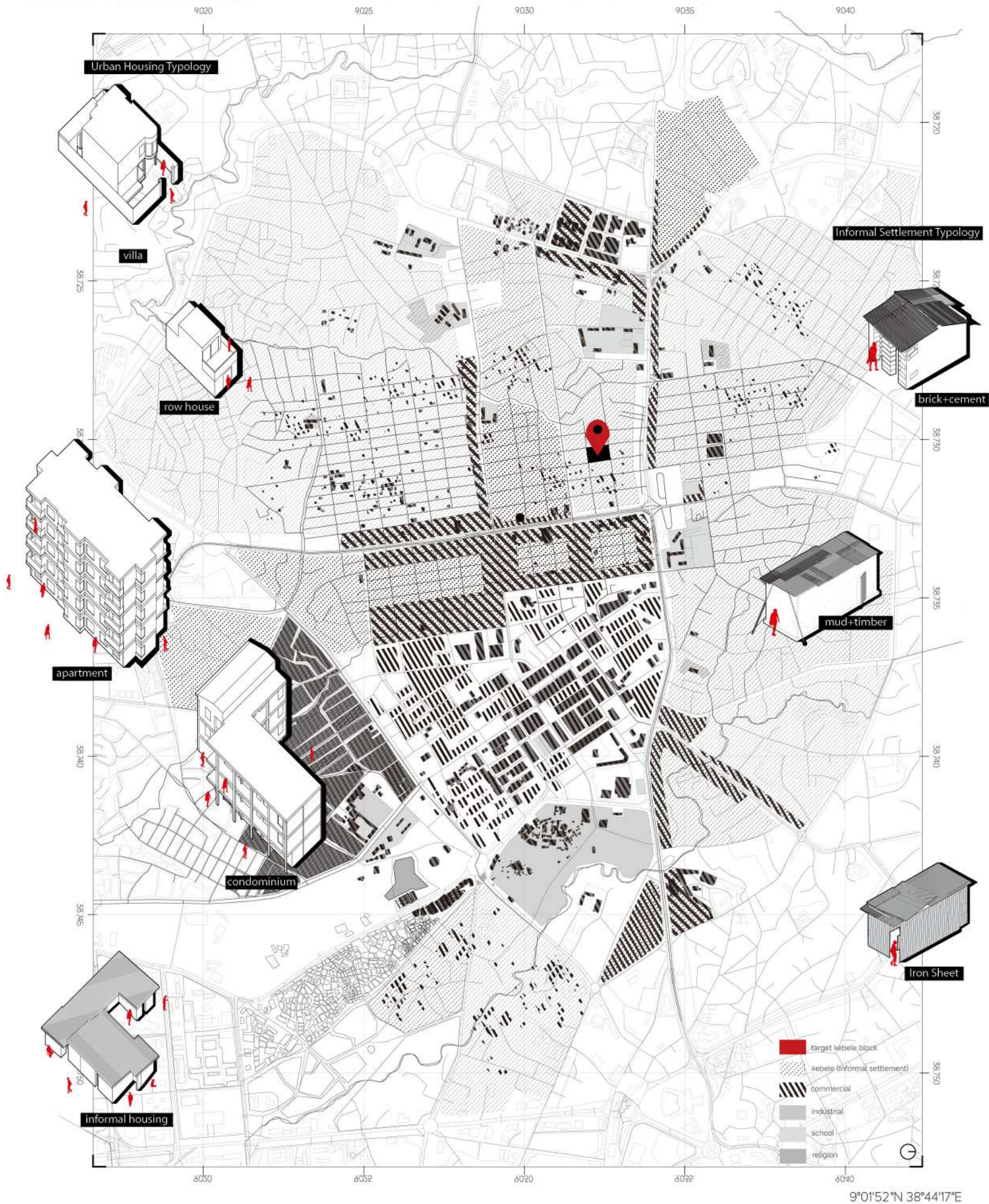
Politics

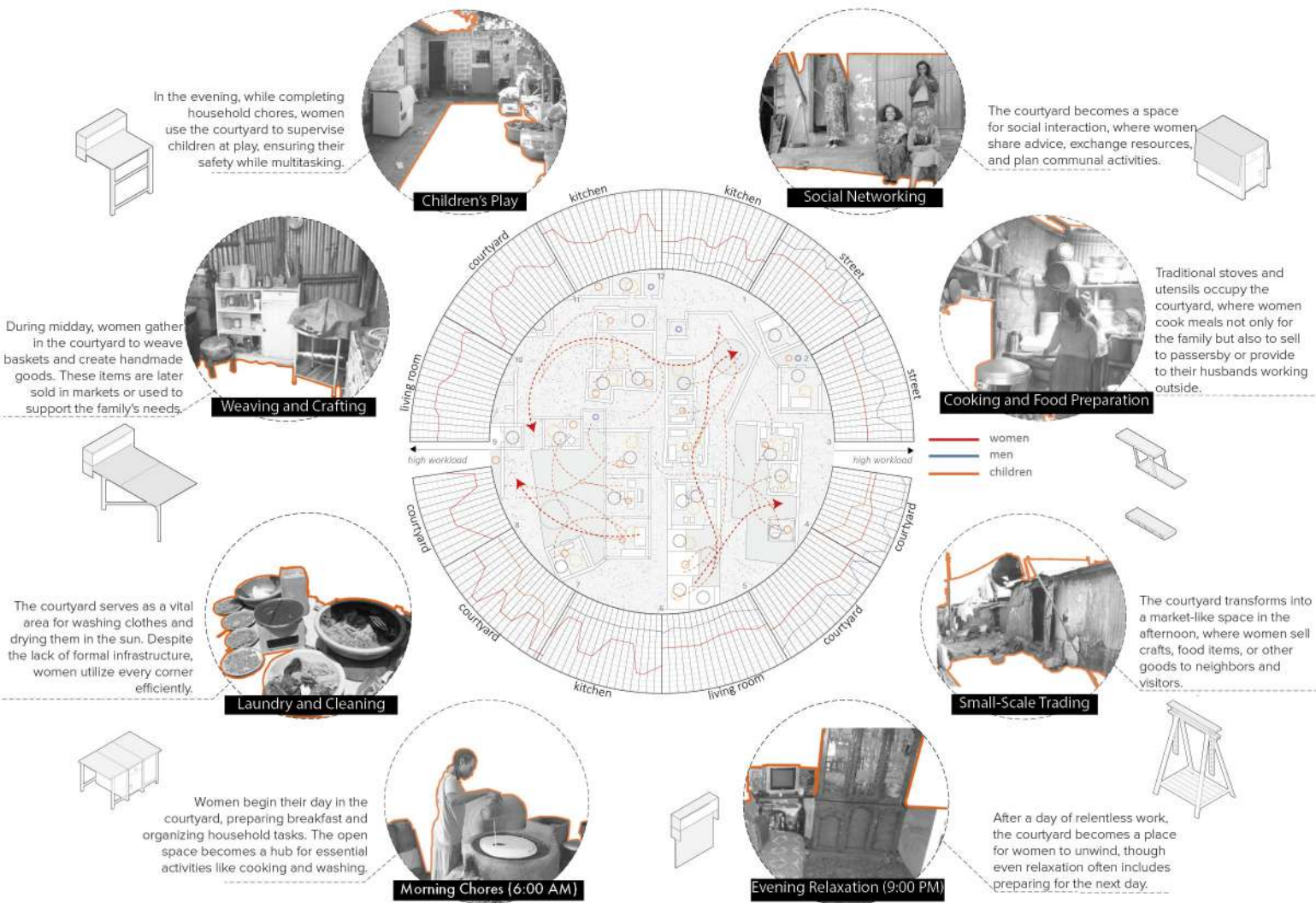
Religion

Safety

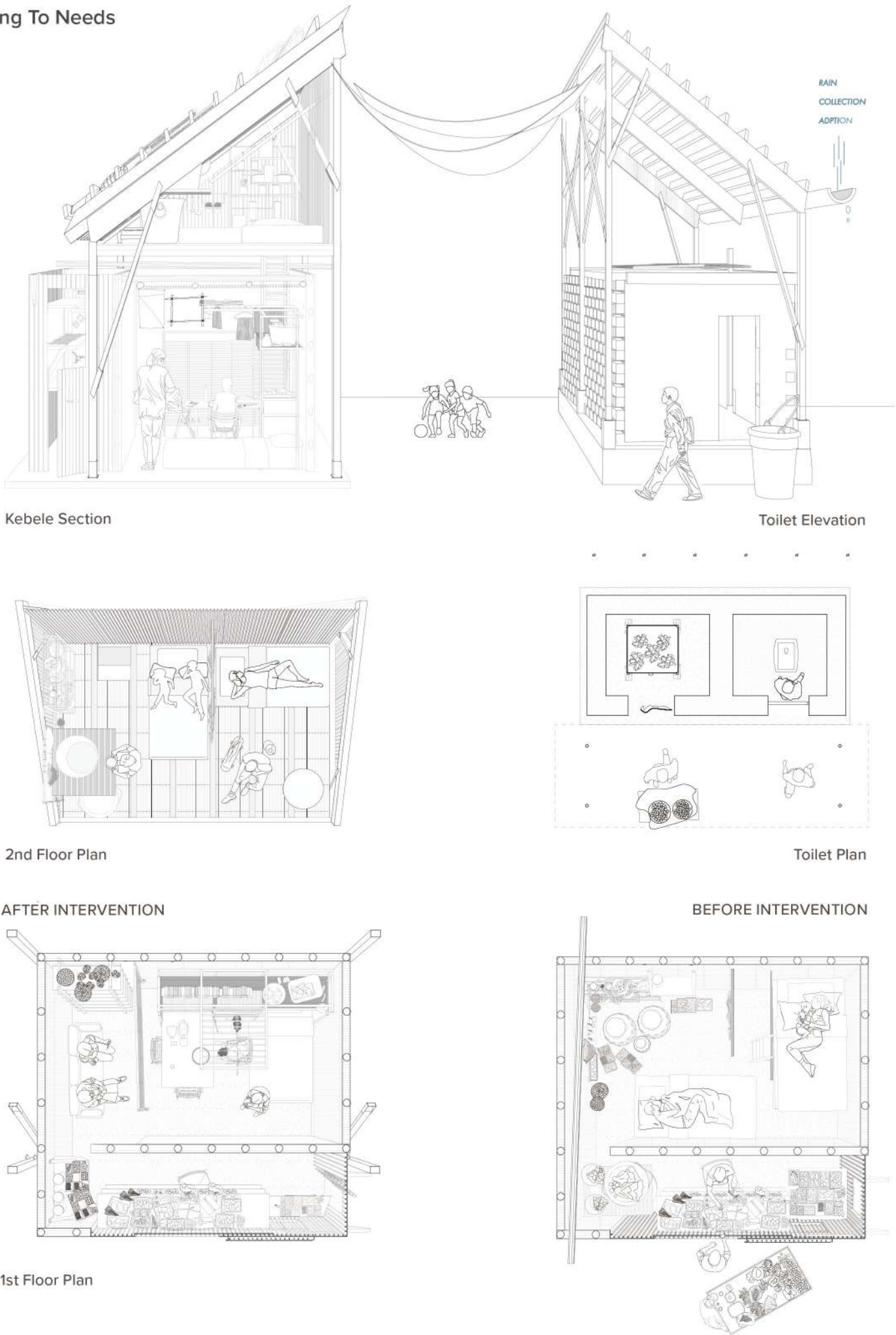
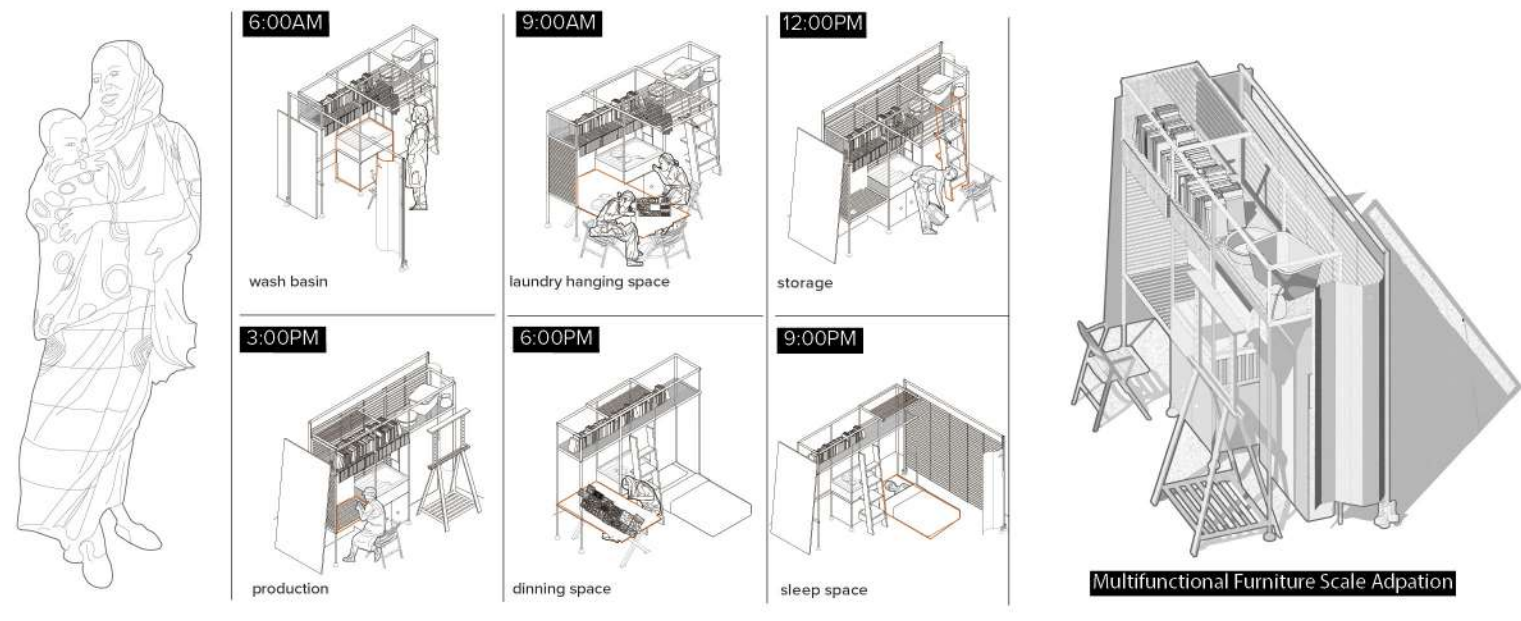
Social Life







The design incorporates adaptable folding and sliding furniture crafted from discarded materials, offering low-tech solutions to maximize space and functionality. These pieces create versatile scenarios within the same area, reducing labor and time for housewives. Additionally, a simple loft was introduced, enhancing privacy and expanding the livable space by 80%.



Waste To Value

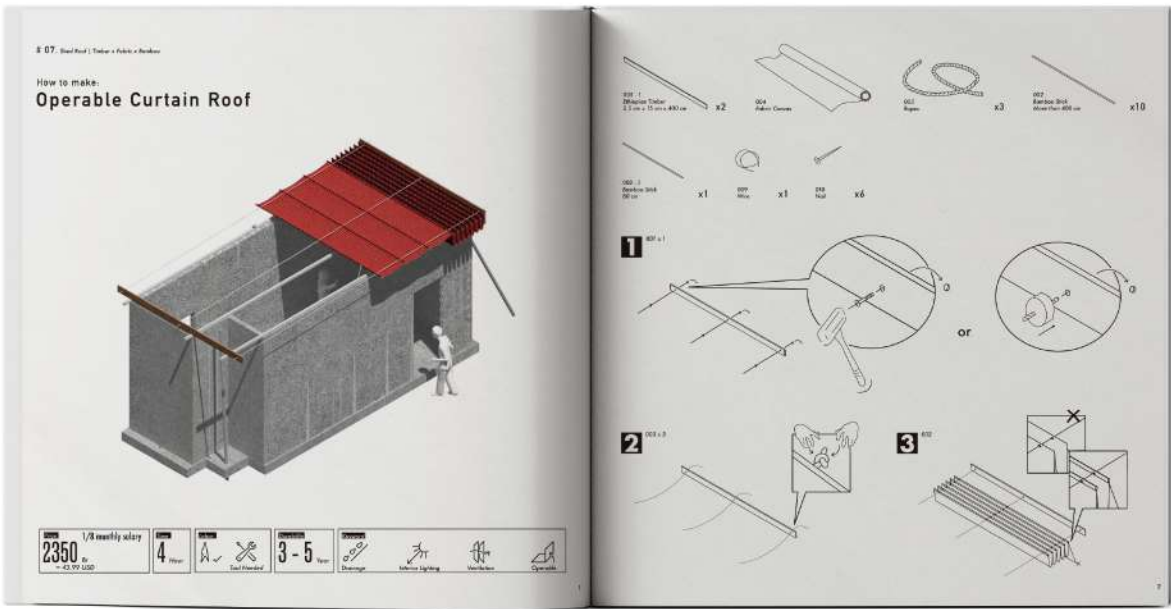
This design leverages abundant local waste materials, such as discarded fabric and bamboo, transforming them into practical solutions. By utilizing waste, residents can reduce costs and contribute to environmental sustainability, a critical need in Addis Ababa's growing urban environment.

Price

The total cost of materials and tools is designed to be affordable, requiring no more than three days' wages for an average worker in Addis Ababa (approximately 2350 Birr in total). This ensures the solution is financially accessible to most residents.

Time & Labor

The finished design is tested for stability and functionality under Addis Ababa's climate conditions. It is lightweight yet durable, capable of withstanding wind and rain. Simple maintenance steps ensure the design remains effective over time.



Materials & Tools

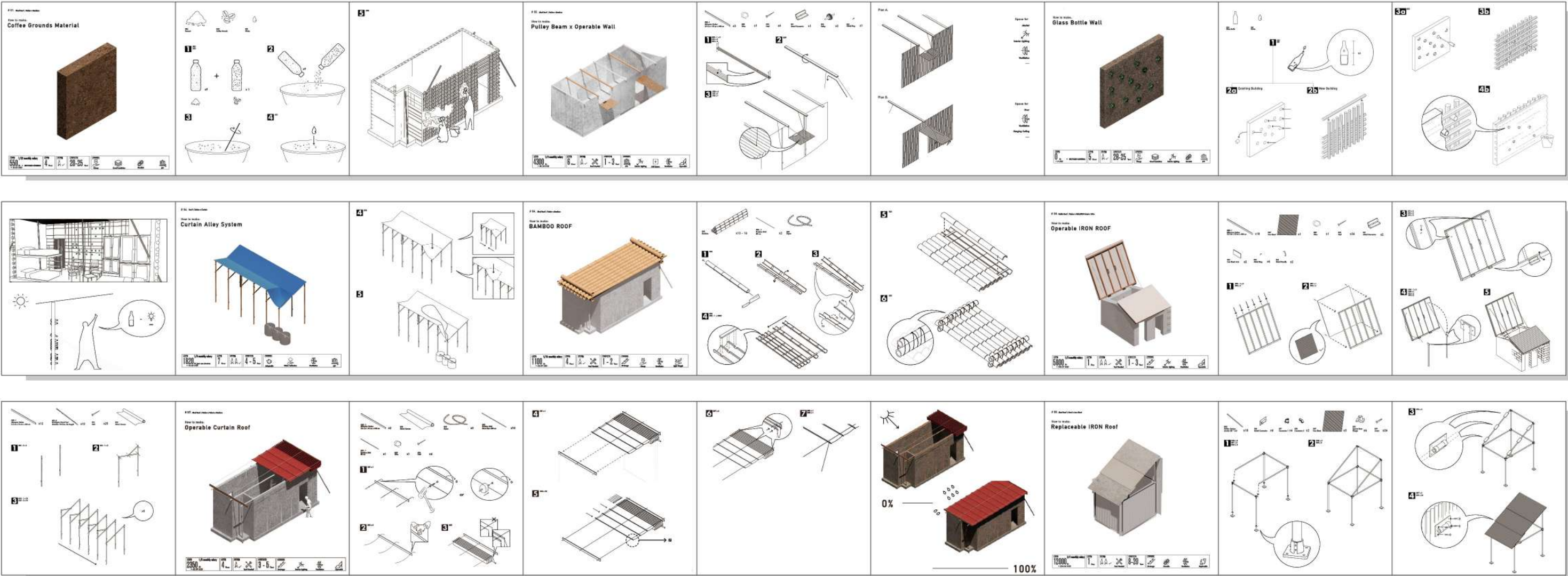
The required materials and tools, including bamboo sticks and fabric canvas, are widely available in local markets or can be scavenged from waste. All components are affordable, durable, and easy to handle, making them practical for informal settlements.

Step-By-Step Assembly

The manual provides a clear, visual guide with three simple steps. Residents with no prior building experience can follow the instructions and complete the assembly, ensuring accessibility for everyone.

Performance

The finished design is tested for stability and functionality under Addis Ababa's climate conditions. It is lightweight yet durable, capable of withstanding wind and rain. Simple maintenance steps ensure the design remains effective over time.

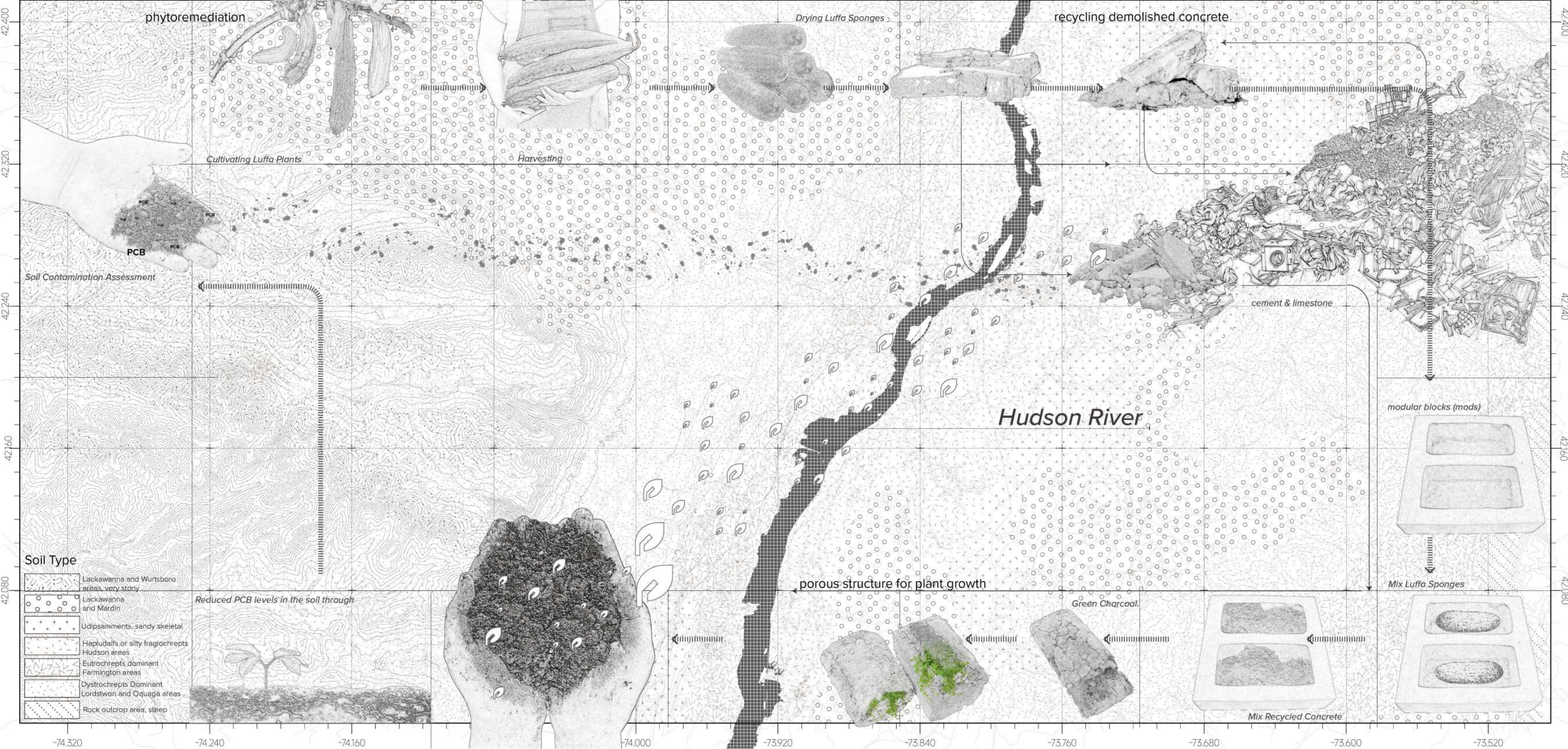


*manual in collaboration with Anyang Zu



Envisioning empowering kebele residents to transform their spaces by repurposing discarded materials like broken doors, timber, and sticks, addressing everyday needs while improving quality of life across scales from furniture to alleyways. This intervention focuses on underprivileged women by providing inclusive, practical solutions tailored to their needs. Through our **manual and metrics**, residents can independently implement designs, fostering ownership, improving **living standards**, and promoting **sustainable, self-sufficient communities**.





02 On-Soil

Regenerative landscapes embracing building material innovation to clean soil and honoring nature's cycles.

Year Spring 2022

Category Architectural Design Studio | ARC208

Instructor Yutaka Sho, PhD

Team Pengfei Yu Chen

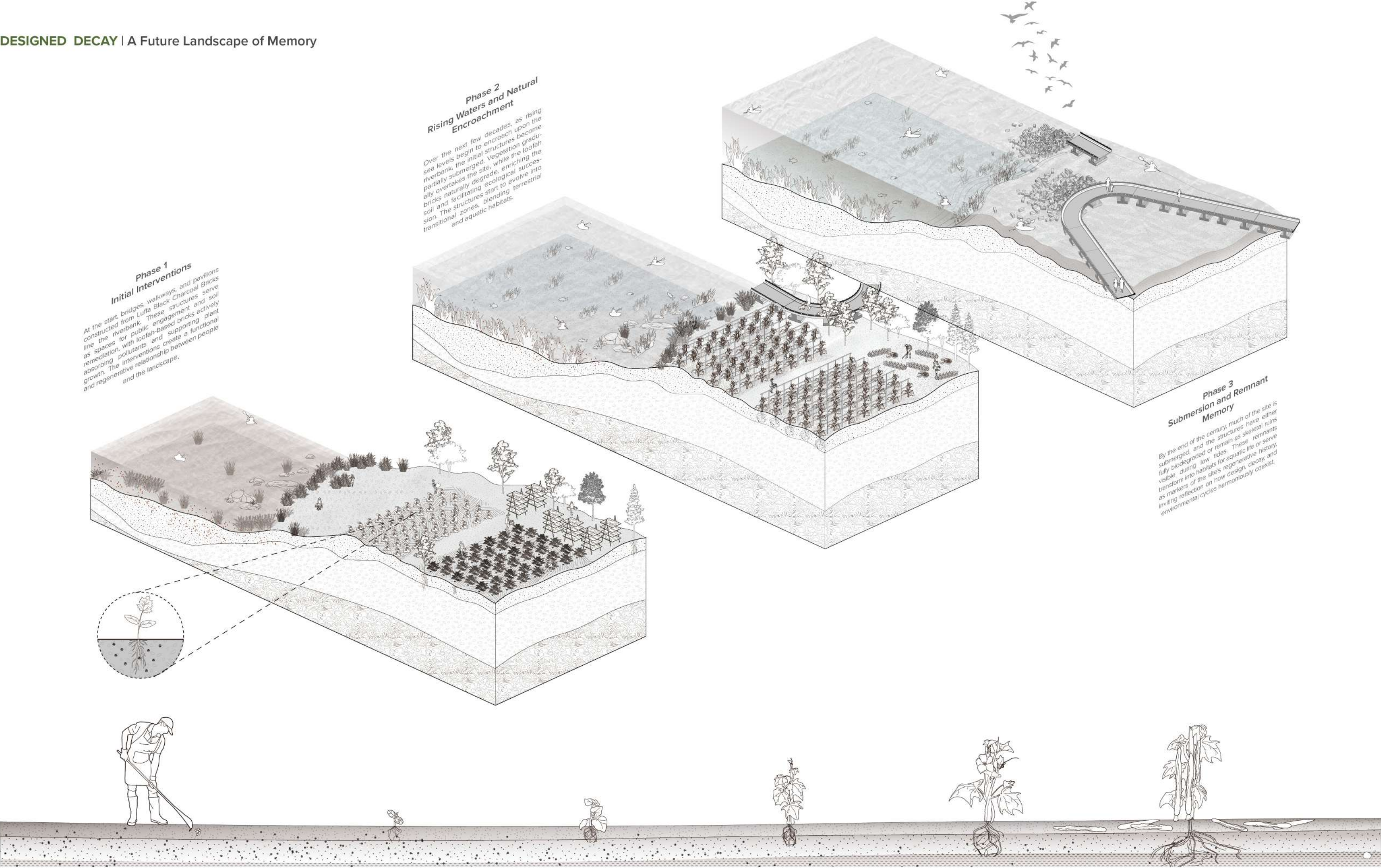
ARCHIVED MATERIAL IN HUDSON RIVER



CONTAMINATED CLAYED SOIL STRUCTURE SOIL BLACK SOIL

The Hudson River, long burdened by industrial pollution, presents an opportunity for innovative ecological restoration. Central to this project is the use of **Luffa Black Charcoal Bricks**, a sustainable bio-composite made from dried loofah sponges, treated cement, and charcoal. Loofah, known for its natural filtration and purification properties, plays a **dual role** in this design: first, as a tool for **soil remediation**, and second, as a **structural component in bricks** used for construction and landscaping. These bricks contribute to ecological restoration while being designed for "**designed decay**"—gradually breaking down to enrich the environment and adapt to natural cycles, bridging ecological restoration with architectural intervention to envision coexistence with rising river levels and environmental change.

* All works done individually unless specified





04 Eckel Art Enclave

Modular Bands: A Framework for Artistic Living and Creation

The King + King Integrated Design Studio Competition | **Finalist**

Year Spring 2024

Category Architectural Design Studio | ARC409

Instructor Rocio Crosetto Brizzio

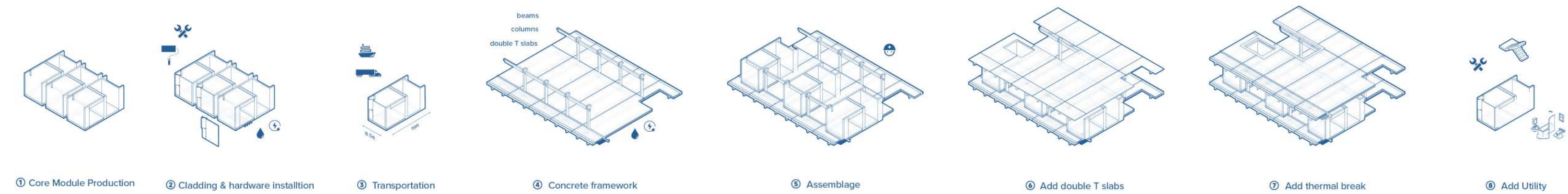
Team Parker Kulis



This project revitalizes a historic artistic site in downtown Syracuse, transforming it into a hub for creative **artistic living and production**. Central to the design is a **modular prefabricated band system** integrated with a concrete column-and-slab structure. These bands efficiently house essential functions such as kitchens, bathrooms, and circulation, while offering a **flexible framework** that empowers artists to customize and personalize their living spaces. This modular approach ensures ease of assembly and supports a dynamic interplay between **functionality and creative freedom**, fostering an **adaptable and inspiring** environment.

* All works done individually unless specified

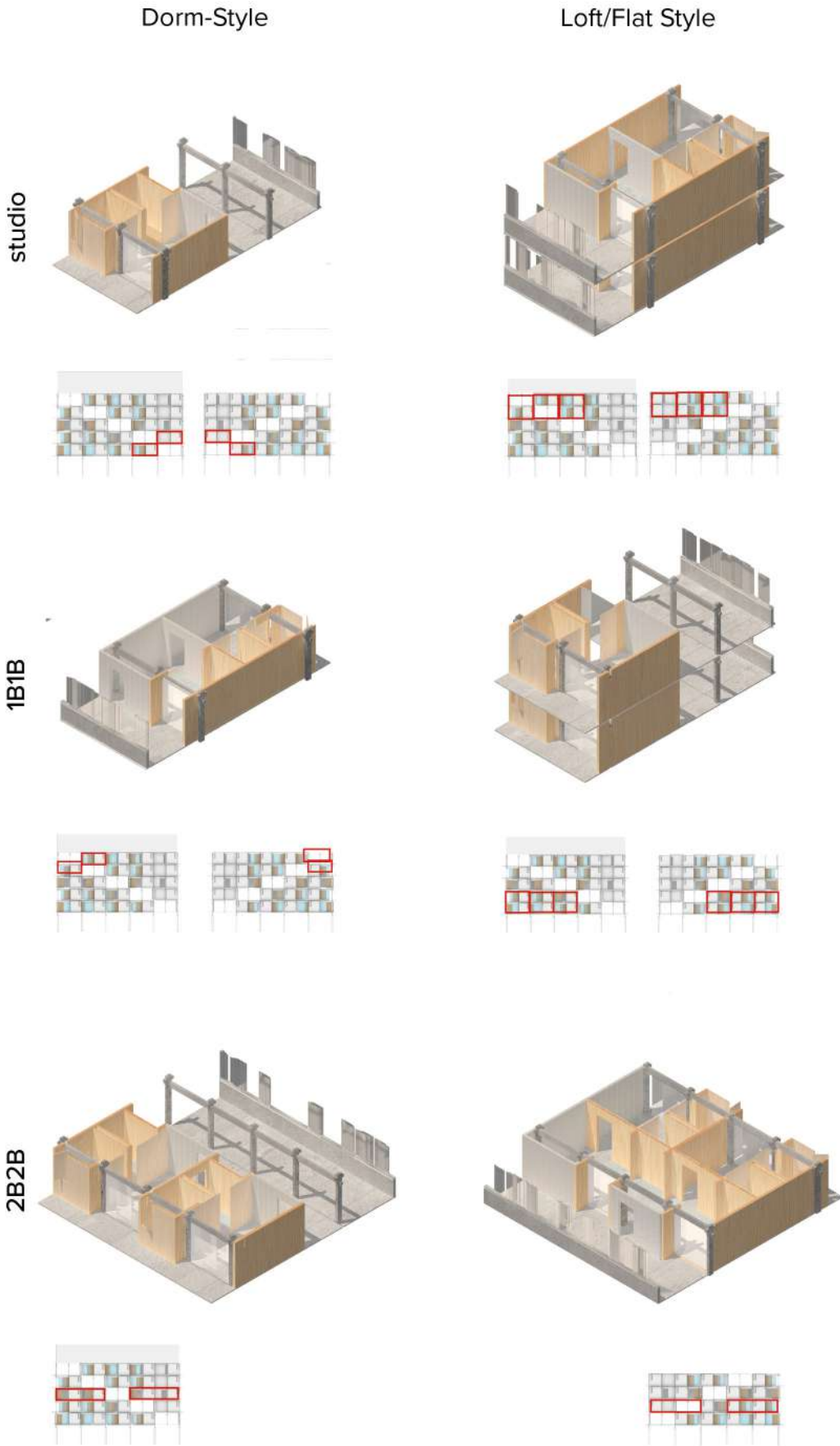
PREFABRICATED CORE MODULE | Assembly & Integration



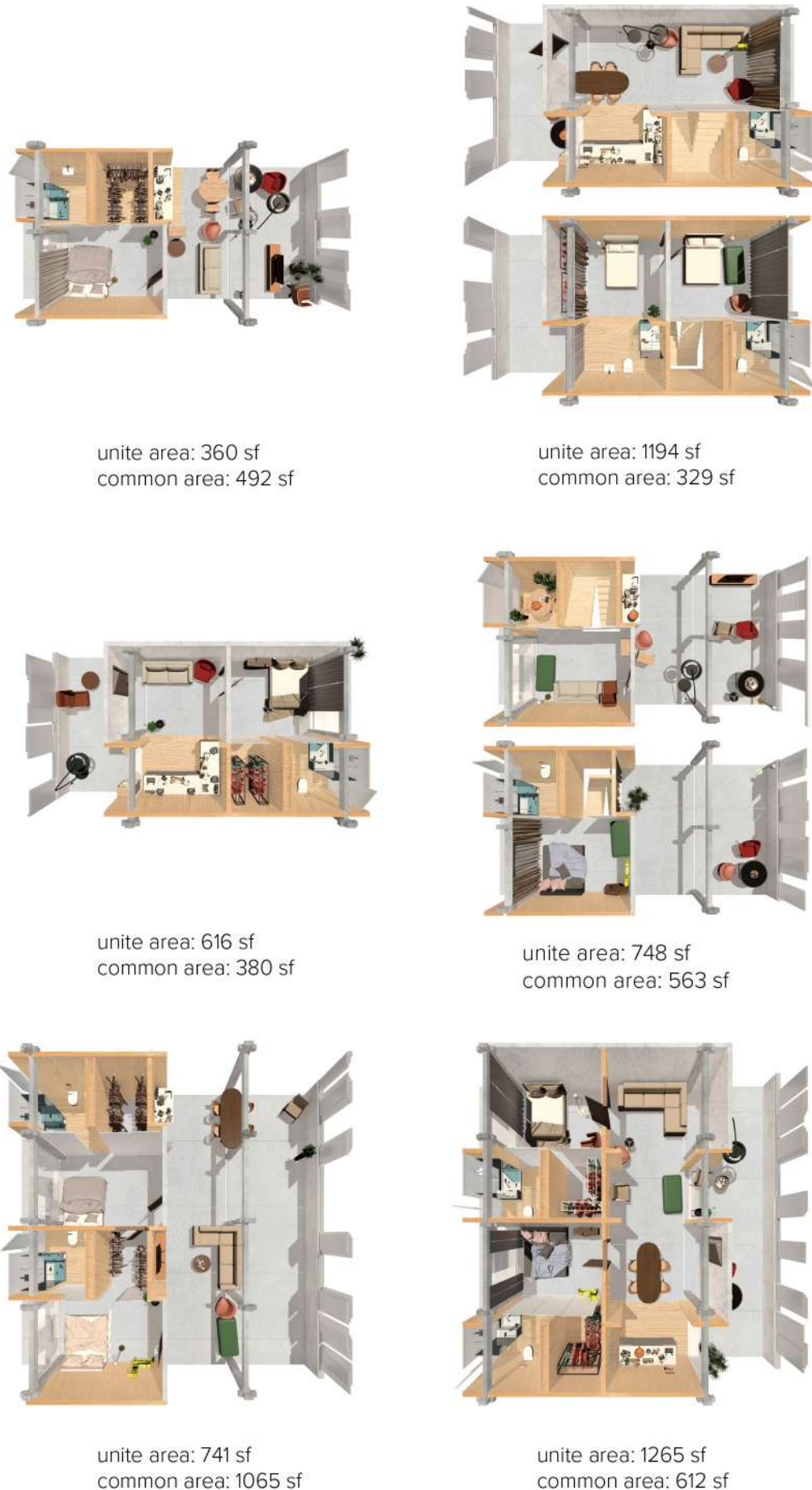
Interior View



Axon



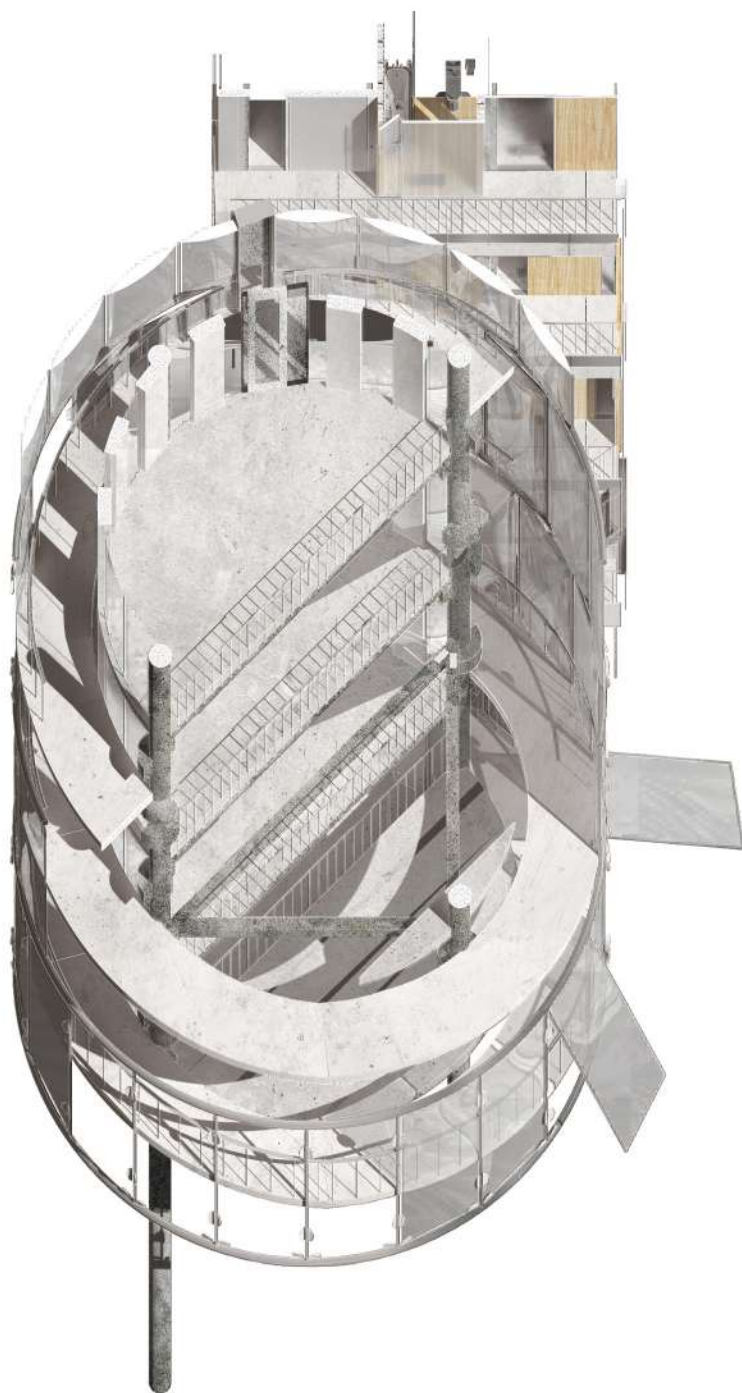
Plan





Fragment of the West-Facing Balcony

The enclosure system adds dynamism, while the simple concrete structure supports cantilevered slabs for shared balconies and sunrooms, optimizing solar gain in colder months. Fly ash aggregate is proposed to reduce the system's carbon footprint. Prefabricated units with integrated utilities like kitchens and bathrooms "plug into" the framework, enhancing efficiency and flexibility. The design highlights shared interior spaces and celebrates the modular nature of prefabricated bands extending beyond the structure.



Extract From Workshop

These polycarbonate, transparent systems can be fully closed in the winter, or opened in the summer, providing both thermal insulation and flexibility. The sunrooms are wider than the balconies to establish a hierarchy, and they connect to greenhouse spaces on each floor, which can also be utilized for cultivating plants or relaxation. These circulatory loops integrate seamlessly with the spiraling ramp around the workshops, allowing for easy connections between any of the units in the project. The workshops are designed specifically for artists, offering well-lit, adaptable spaces for painting, sculpting, and other creative endeavors.



Fragment of the East-Facing Balcony

The east-facing balcony overlooks the interior, facing the Green Park and serving as a connection to the inner courtyard. It features a circulation path along the façade, complete with staircases that provide access across levels. At the center of each floor lies a greenhouse, dedicated to residents for growing their own plants and flowers—a vibrant, shared space for gardening. These bands are an efficient way to stack the kitchen and bathroom spaces on top of each other in section. These remain along the same vertical axes, while the living and sleeping spaces around them adapt to form studio, 1 bedroom, two bedroom, and loft-style units.

*axon in collaboration with Parker Kulis



West Facade

- 1 radiator
- 2 thermal insulation
- 3 30 mm rear ventilation
- 4 glass window
- 5 column
- 6 floor joint
- 7 polycarbonate facade
- 8 polycarbonate window
- 9 TT beam
- 10 60 mm cement and sand
- 11 polythene separating layer
- 12 waterproofing layer

- 13 300 mm reinforced concrete floor slab
- 14 polycarbonate band window
- 15 sliding metal sheet
- 16 thermal break
- 17 100 mm concrete topping
- 18 concrete cladding
- 19 timber finishing
- 20 wall cladding
- 21 facade cladding
- 22 polycarbonate joint
- 23 chamfer cap attached to angle

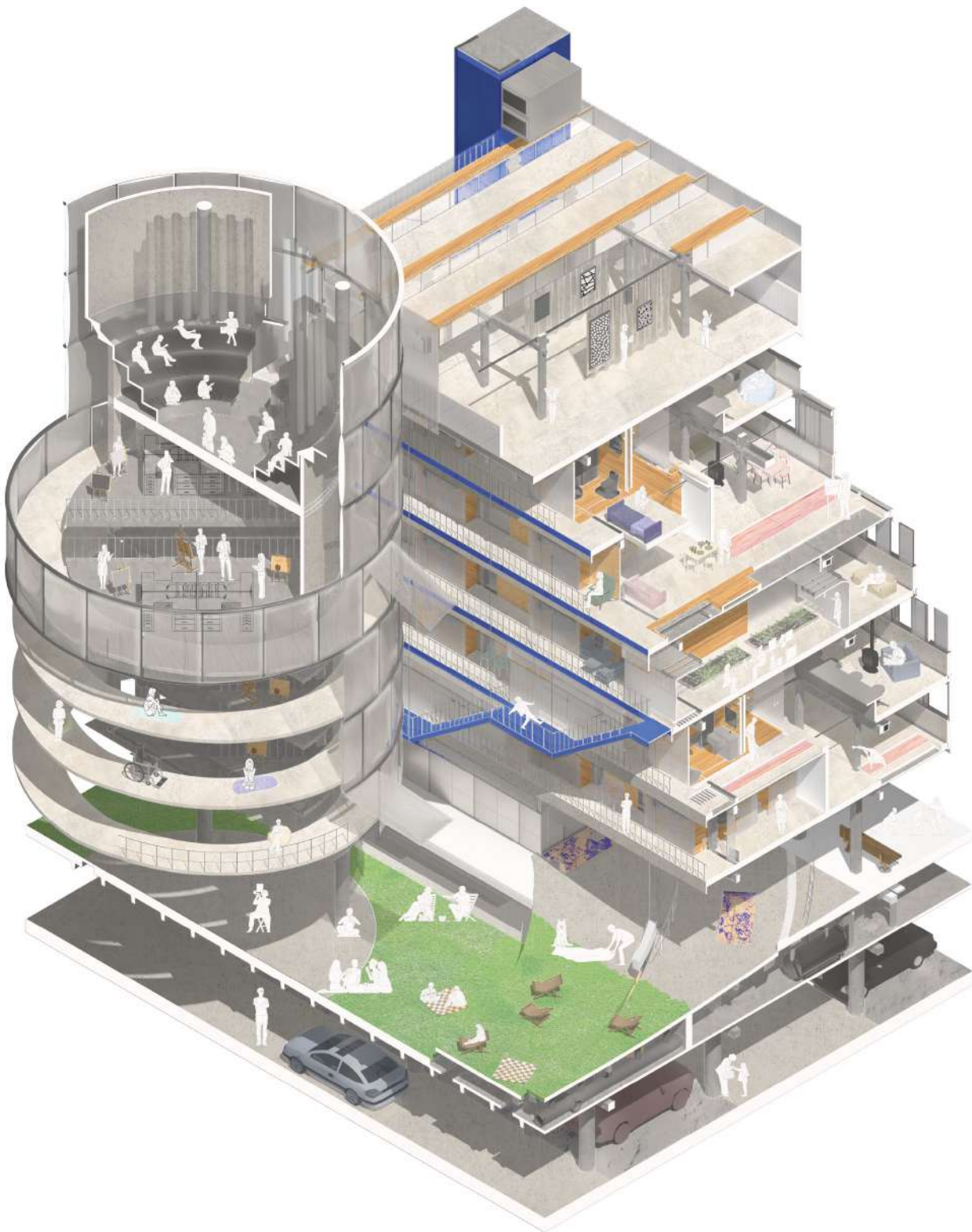
Workshop Facade

- 24 concrete panel
- 25 timber skylight panel
- 26 steel bracing reinforcement cables supported from concrete cores
- 27 reinforced post-tensioned concrete floor slabs railing
- 28 steel plate bolted back to concrete slab
- 29 steel lined into slab, welded to steel facade frame structure
- 30 galvanized steel covering
- 31 hard insulation

- 32 RHS (rectangular hollow steel)
- 33 facade bracket
- 34 100 mm air duct to facade skin
- 35 50 mm diameter polythene air tube to inflate facade skin
- 36 ETFE cushion with voltaic panels embedded in facade skin
- 37 PV energy transformer cable to solar converter
- 38 solar converter, connected to cable which transferred energy to plant room

East Facade

- 39 primary steel construction to support facade elements
- 40 ramps
- 41 material harness loop for facade maintenance
- 42 floor
- 43 staircase



At the heart of the project is the central workshop, which acts as both a physical and conceptual anchor. This space connects the each floor and serves as a hub for artistic production, education, and collaboration. Surrounding the workshop, greenhouse spaces on each floor provide **communal areas** that promote sustainable practices and **foster interaction** among residents. The workshop's open design invites public engagement, bridging the gap between **private living spaces** and the **urban fabric**. This integration of functionality and community enhances the project's role as a catalyst for creativity and connection.



05 IL SYMBIOTico muSEO

Transform Fascist architecture in Marsala, Sicily, mediated by the Mediterranean and its natural surroundings

Year Spring 2023

Category Architectural Design Studio | ARC407

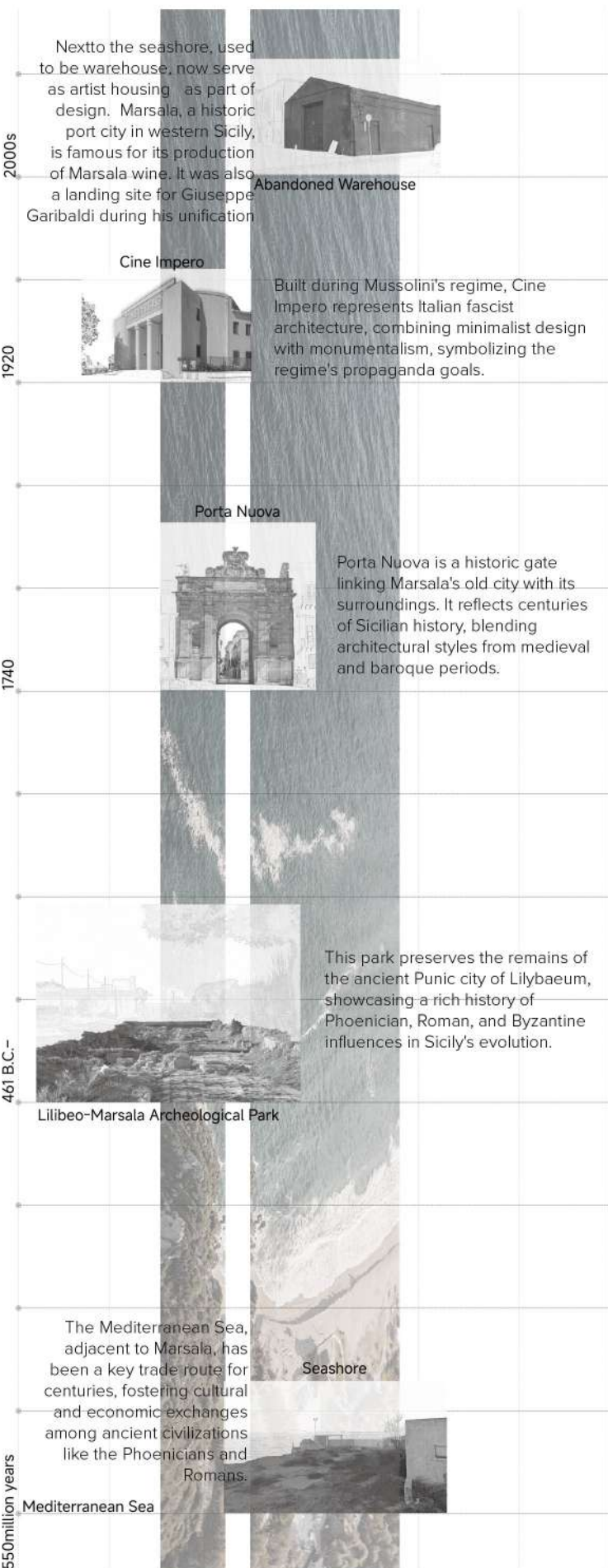
Instructor Daniele Profeta

Team Ziqi Wang, Yue Zhuo



People have interacted intimately with the **Mediterranean Sea** throughout history: the sea—this ancient being—has served as a carrier of history, **connecting** Roman archaeological sites, Fascist architecture, and contemporary communities. These connections reveal an intricate entanglement of interdependent relationships between **human** and **non-human entities**. Our intervention seeks to create spaces where humans and non-humans can coexist and interact in meaningful ways. By **re-positioning humans** within the environment, the project transforms a traditional Fascist-era theater into a museum and theater reclaimed by nature, symbolizing a harmonious balance between **history and ecology**.

* All works done individually unless specified



Sicily, Italy | 37.3979° N, 14.6588° E

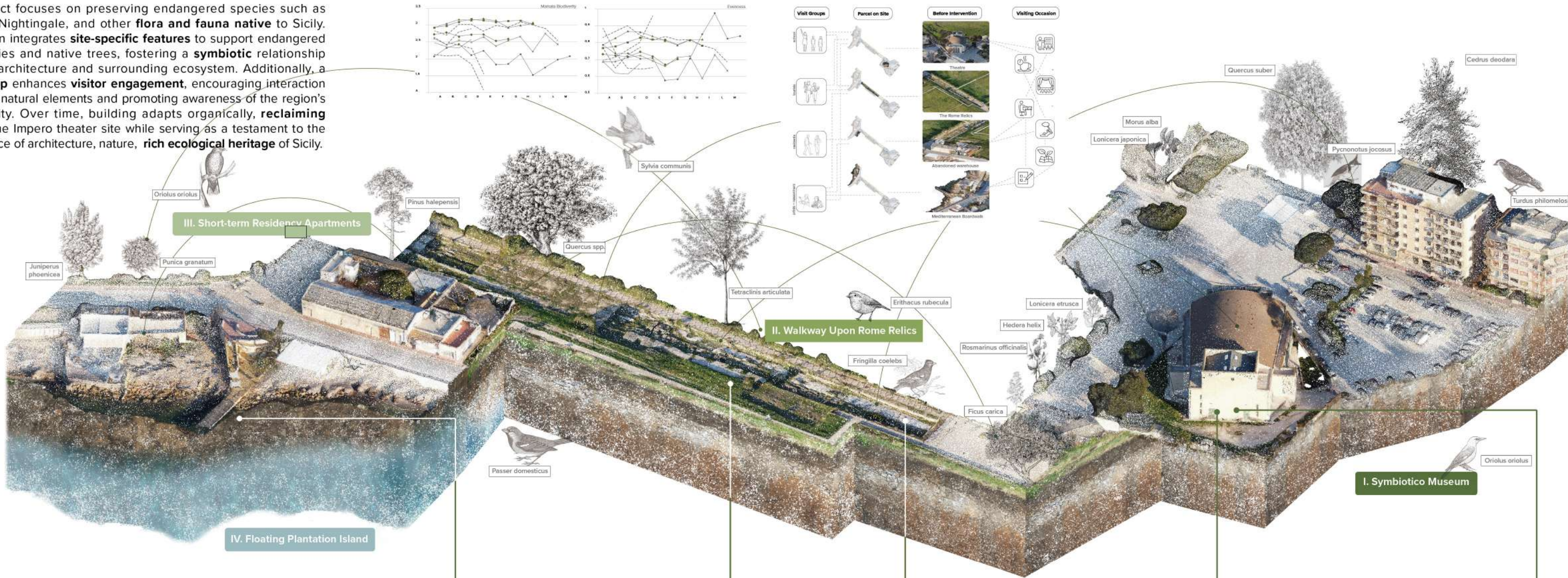


Marsala Region, West Sicily | 37.7980° N, 12.4372° E

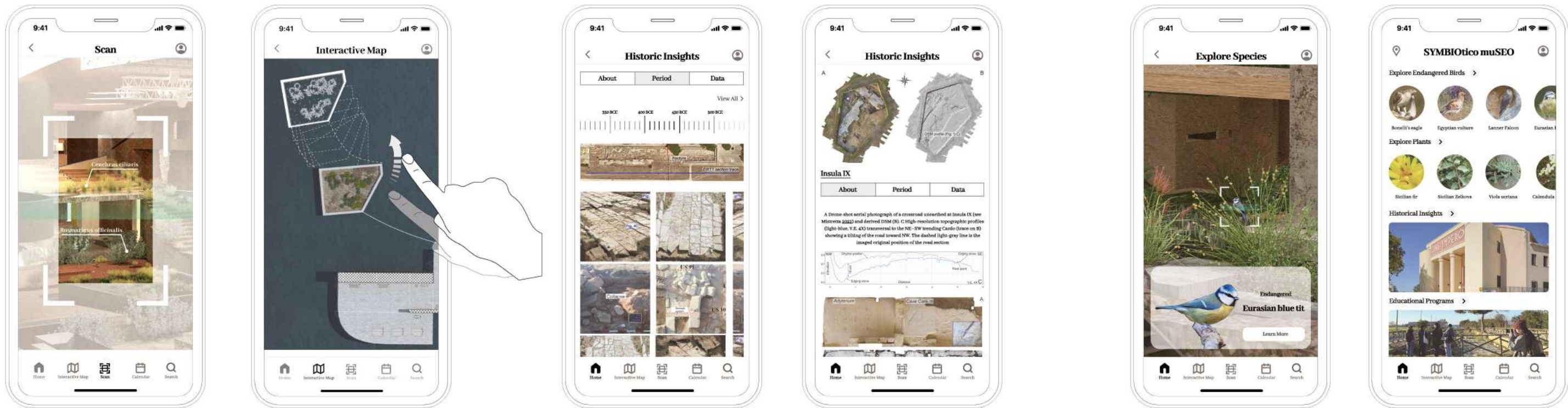
These four historical phases highlight the deep interconnection of time, culture, and nature. Spanning centuries from Roman archaeological sites to Fascist architecture and contemporary communities, they reveal humanity's **evolving relationship with the environment**. Our design bridges these temporal, physical, and cultural scales, centering on nature to harmonize the past and present. The project reclaims spaces once defined by human dominance, allowing ecosystems to thrive. It fosters coexistence between human and non-human entities, creating spaces of reflection and balance. By aligning with nature's adaptability, the design evolves over time, honoring the enduring resilience of the natural world.

INTEGRATED SITE ECOLOGY | Biodiversity in Sicily

The project focuses on preserving endangered species such as Jasmine, Nightingale, and other **flora and fauna native** to Sicily. The design integrates **site-specific features** to support endangered bird species and native trees, fostering a **symbiotic** relationship between architecture and surrounding ecosystem. Additionally, a **mobile app** enhances **visitor engagement**, encouraging interaction with site's natural elements and promoting awareness of the region's biodiversity. Over time, building adapts organically, **reclaiming** former Cine Impero theater site while serving as a testament to the coexistence of architecture, nature, **rich ecological heritage** of Sicily.



UIUX DESIGN | Learn Symbiotico Museo via App







I Floating Plantation Island
The Floating Plantation Island grows endangered Sicilian plants like honeysuckle and can be controlled through an app. Users can track plant growth and move the island, combining conservation with interactive technology.



II Short-term Residency Apartments
These apartments provide shared living and lecture spaces for artists and researchers studying Chinema Impalo. It fosters collaboration and creativity in a functional environment.



III Walkway Upon Rome Relics
The relics are preserved in their original form to protect their historical integrity. Visitors can experience the ancient structures without altering their authentic state.

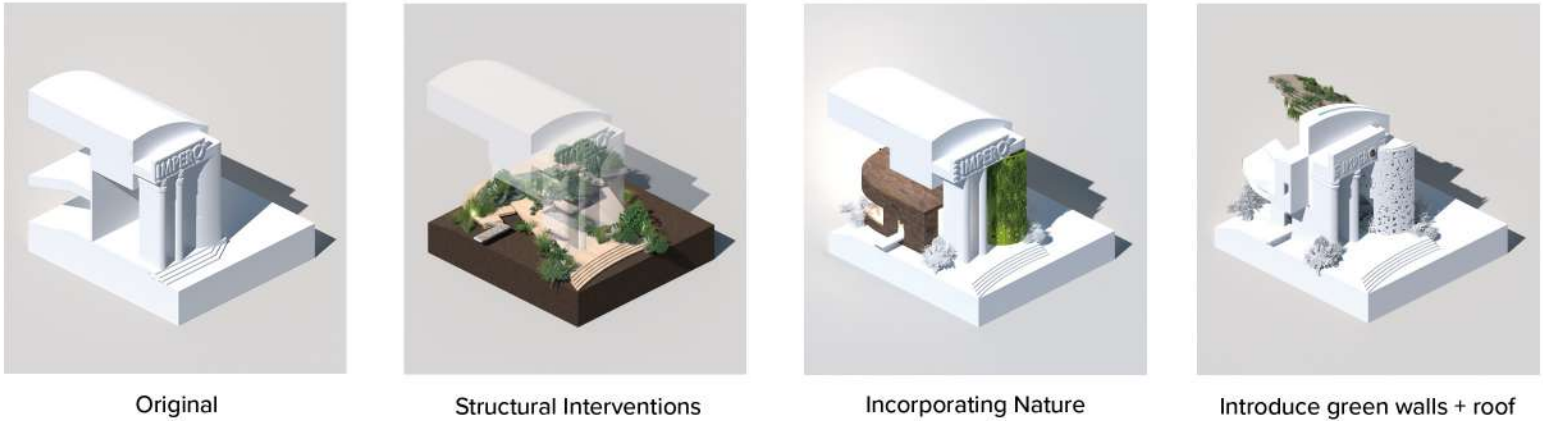


IV Symbiotico Museum
The museum integrates plants into its design, allowing nature to reclaim the space. Seasonal changes transform the structure, creating a living, evolving experience.



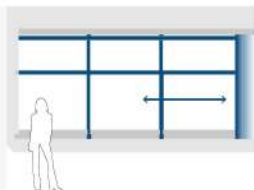
Chinema Impalo, like an ancient Roman temple, stands between the sea and the neighborhood, embracing both horizons. Its design flows with the natural form and orientation of the site, guiding visitors through a journey from the city's temporary market to the heart of the stage. Along the path, spaces for reading, gathering, and discovery weave together, allowing the site to unfold as a narrative of connection, history, and art.

Intervention Progress



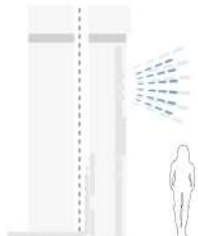


Empowered by **TECHNOLOGY**



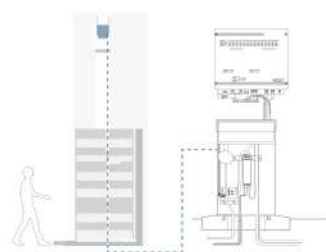
Mobile Roof

The mobile roof is installed above the stage, allowing users to control its opening and closing remotely. This feature enables the space to function as an open-air stage or a closed venue, offering flexibility for various events and weather conditions.



Water Spray

Designed for climbing plants like ivy, the water spray system ensures these plants receive adequate moisture. It not only supports plant growth but also contributes to cooling and beautifying the structure.



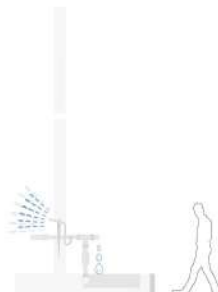
Irrigation Control+Rain Re-use Roof

This system collects rainwater and channels it into storage tanks, which supply water for toilets and plant irrigation. It ensures efficient water reuse and promotes sustainability.



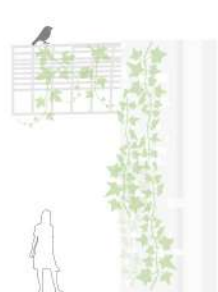
Bird Nest

Small cavities are deliberately left in the facade to provide nesting spaces for birds. These nests are integrated seamlessly into the design to encourage biodiversity.



Bird Drinking Sink

Specially designed water basins are embedded in the facade to offer birds a place to drink. This feature fosters interaction between architecture and local wildlife.



Bird Nest Wall+Roof

Walls and roofs are designed with textures and features that allow birds to perch and rest. These areas are tailored to support bird activity and enhance their habitat.

Habitat for **NATURE**



Timber Organic Roof

This space features large openings and views for visitors to observe birds and enjoy the surrounding natural environment. It creates a harmonious connection between humans and nature.



Green Space Cafe

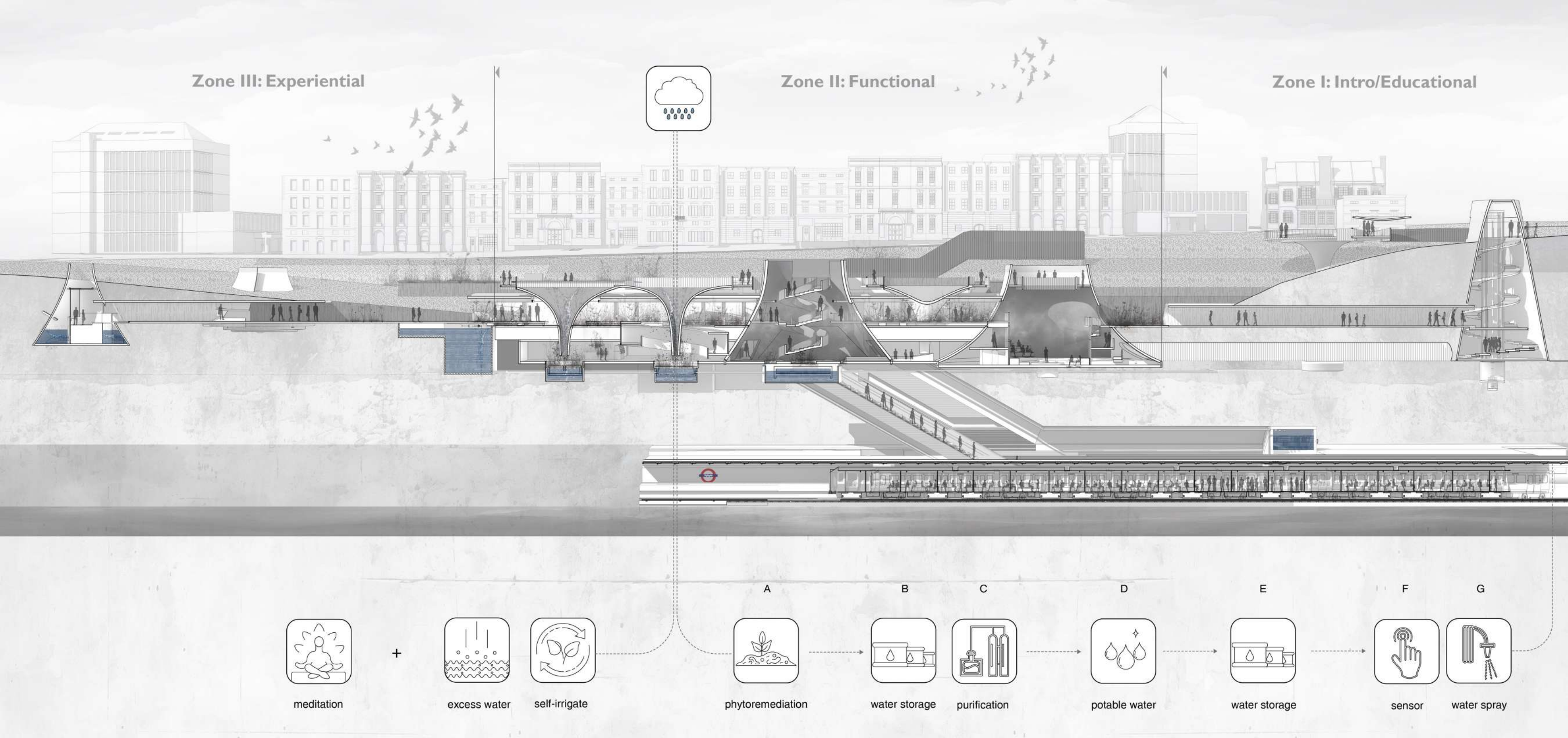
A café offers visitors a relaxing spot to enjoy coffee before or after events. Surrounded by greenery, it provides a tranquil experience within a natural setting.



Aquaponic+Porous Ground

Elevated pathways with porous surfaces allow plants and grass to grow through, creating a unique walking experience. Integrated green walls and plant features enhance the ecological atmosphere while connecting people with nature.

Spaces for **HUMAN**



06 Nature Sanctum

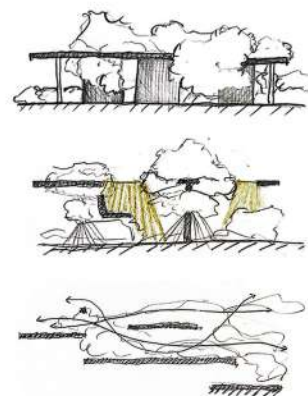
A spatial apparatus gracefully gathering rainwater to cleanse the air and uplift the spirit, offering a serene touch to the environment

Year Fall 2023

Category London Design Studio I ARC409

Instructor Amber Bartosh & Vanessa Lastrucci

Team Ziqi Wang, Sreya Ajith Pillai



The project reclaims an abandoned underground station to address **London's abundant rainfall** and the **severe air pollution** in its **subway** system. The proposal integrates two key architectural elements: The **Funnel** and The **Chamber**, designed to merge ecological and human interactions. The **Funnel** collects and purifies rainwater, which is then dispersed as a **fine mist** in the active subway level to capture **airborne particulates**, improving air quality. Experimental studies validate its efficacy in dust absorption. Meanwhile, The **Chamber** offers diverse spatial experiences, including meditative areas and interactive zones for commuters. **Architecture** here as a form of **technology**, intervening to redefine ecological and urban challenges through innovative spatial and environmental solutions.

MAPPING POLLUTED LONDON TUBE | Tube Network + Rainfall Distribution



Historical Morphology | Evolution of Highgate Station

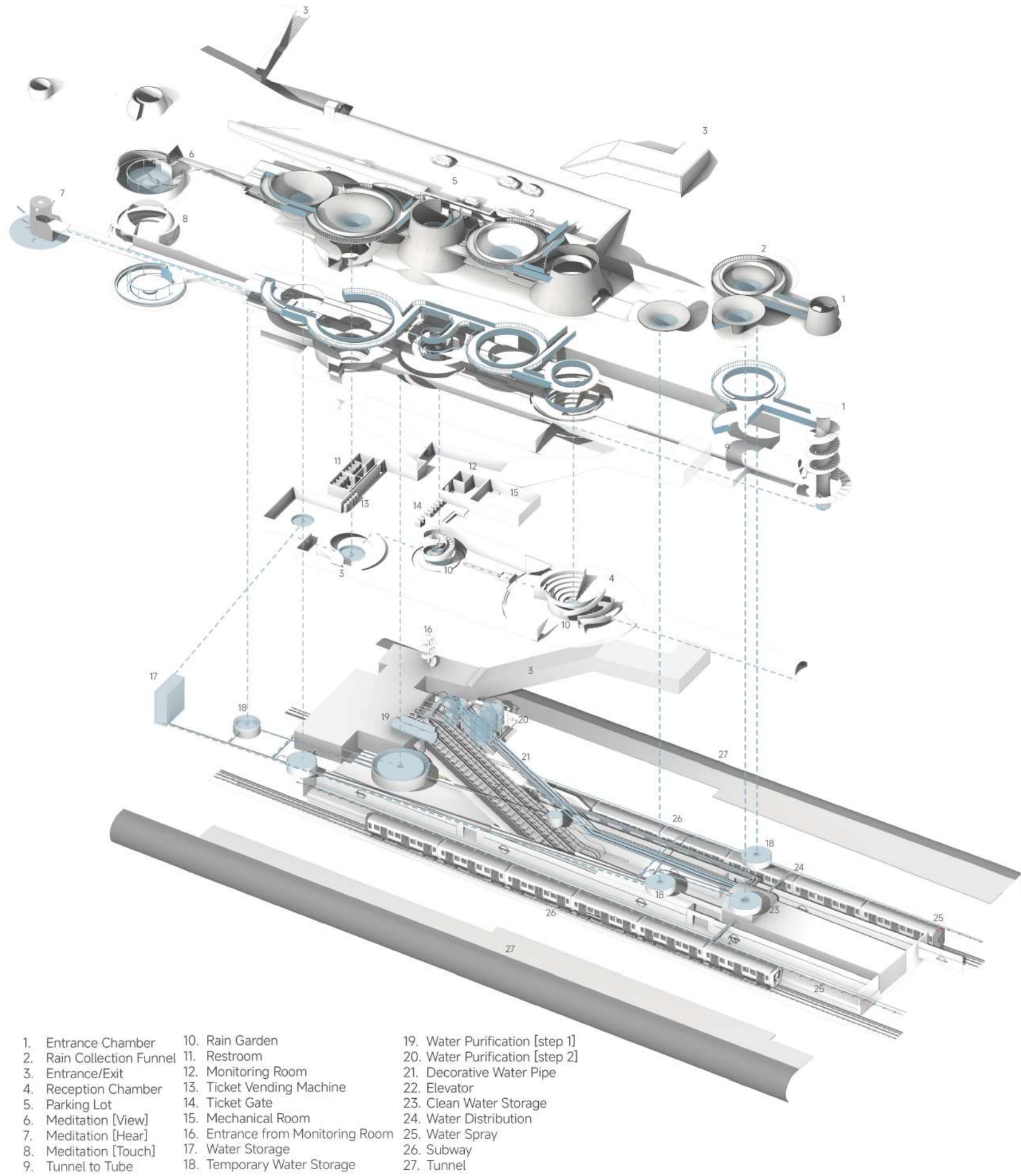
1 Inauguration and Expansion
Highgate station opens (1867), enhancing suburban connectivity.

2 War Impact and Transformation
Introduction of underground platforms during WWII.

3 Decommission and Abandonment
Track removal and cessation of all railway functions.

4 Revitalization Initiative
Plans to reactivate and repurpose the abandoned surface platforms.

EXPLODED VIEW OF THE INTEGRATED SYSTEM | Synergy Of Air Purification And Metro Infrastructure



EXPERIMENT + SYSTEM DESIGN | Water Mist As Solution For Tube Air Purification

I.(a) EXPERIMENT PREPARATION

TOOLS

air sensor

smartphone

water atomizer

I.(b) EXPERIMENT

METHODOLOGY

RECORD

Time	PM2.5	PM10	level
Before compressed air	11	15	✓
After compressed air	48	51	!
atomise just about to turn on	54	121	!
24"45	37	87	!
55"45	2	19	!
1'27"35	2	2	✓

RESULT

CONCLUSION

Experiment turns out that water vapour effectively bind the particles form large aggregates fall to the ground, removing from polluted air, in order to clean the air.

Iron oxides form majority of the pollutants are typically produced from the interaction between train wheels and tracks. PM concentrations are affected by particle resuspension a phenomenon where PM are disturbed and recirculate back into the air. This is due to trains and the train tunnel piston effect, as well as people's movement.

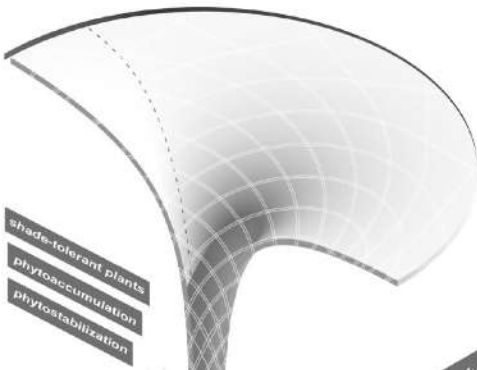
III. PHYTOREMEDIATION



uses soil layers and vegetation to purify water and soil contaminants. Plants absorb and stabilize pollutants, while subsoil layers act as natural filters. Rainwater is stored and reused for irrigation, supporting year-round plant growth and reducing reliance on external water sources.

II. RAINWATER HARVESTING

Rainwater is captured and funneled to irrigate interior gardens, with excess water stored. A "Costidrn" pre-filter removes debris and impurities.



Gravity Driven

water storage

self-irrigate excess water

IV. MECHINAL PURIFICATION

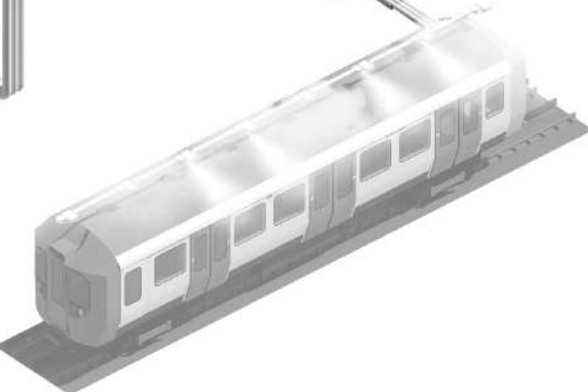


enhancing water quality. A water softener removes calcium and magnesium, reducing hardness and preventing scale buildup. The purified water is stored in a designated tank for future use.

V. WATER SPRAY SYSTEM

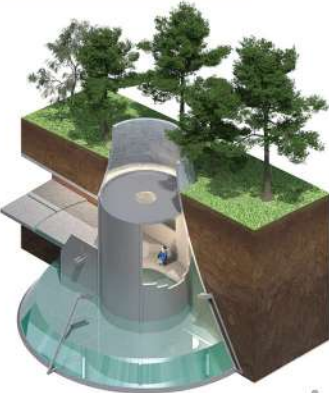


The water spray system on subway tracks improves air quality by dispersing mist to capture particles, with PM sensors providing real-time data. A microcontroller ensures efficient and water-saving operation.

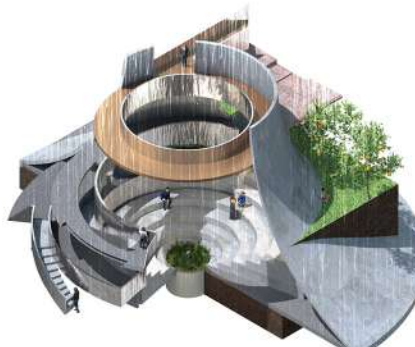


SPATIAL STRATEGY | Chamber & Funnel For Diverse Users

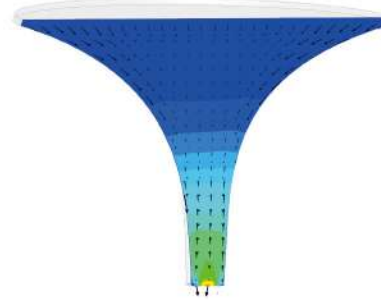
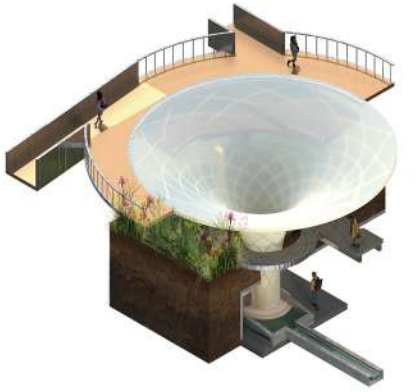
Experiential Chamber



Functional Chamber

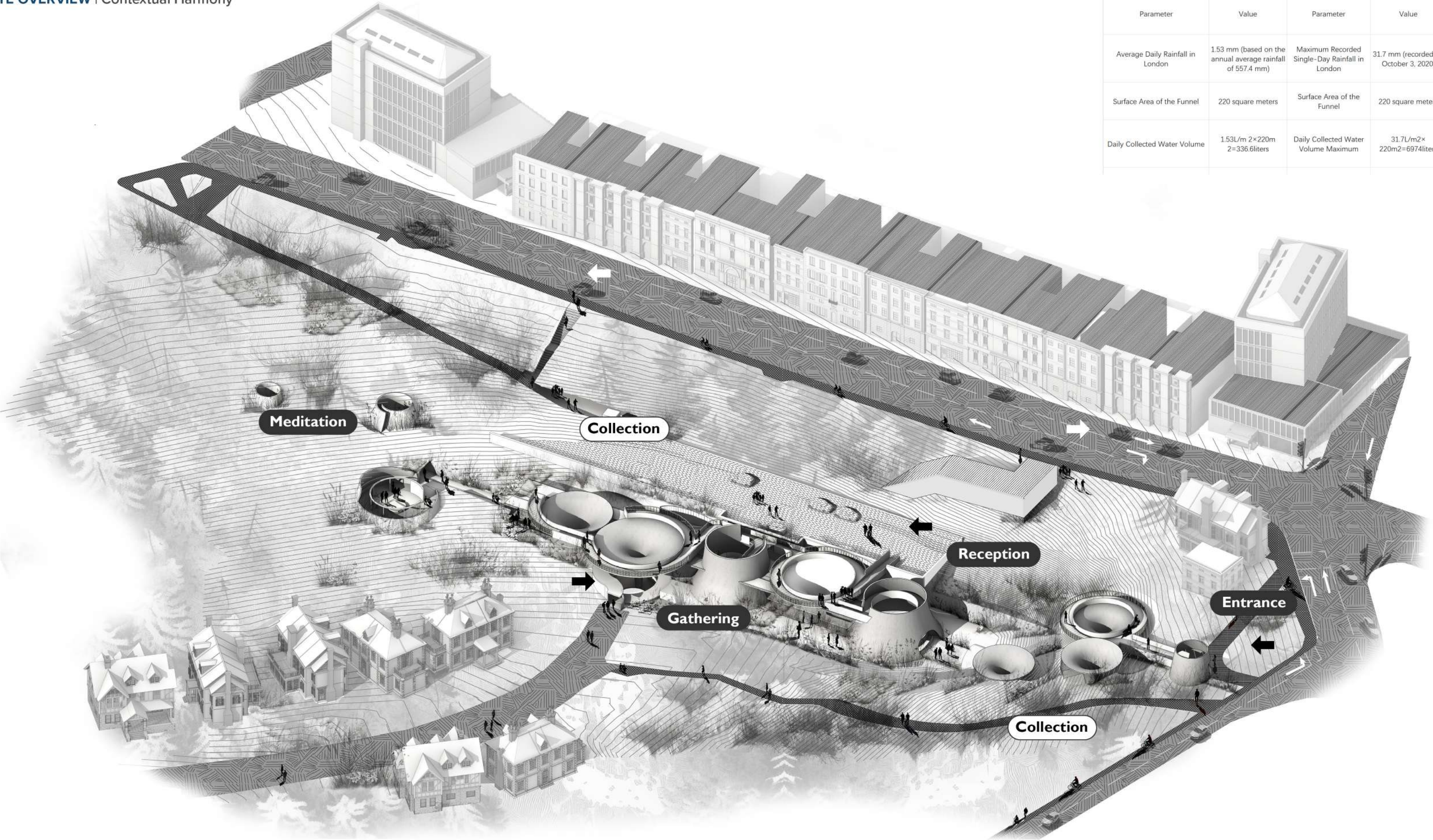


Harvesting Funnel



Velocity Magnitude: ft/s

Turbulent Kinematic Viscosity: m²/s



Parameter	Value	Parameter	Value
Average Daily Rainfall in London	1.53 mm (based on the annual average rainfall of 557.4 mm)	Maximum Recorded Single-Day Rainfall in London	31.7 mm (recorded on October 3, 2020)
Surface Area of the Funnel	220 square meters	Surface Area of the Funnel	220 square meters
Daily Collected Water Volume	$1.53\text{L/m} \times 2 \times 220\text{m}^2 = 336.6\text{liters}$	Daily Collected Water Volume Maximum	$31.7\text{L/m}^2 \times 220\text{m}^2 = 6974\text{liters}$



07 COLO Coffee Pop Up | Branding Design Workshop | Syracuse, New York

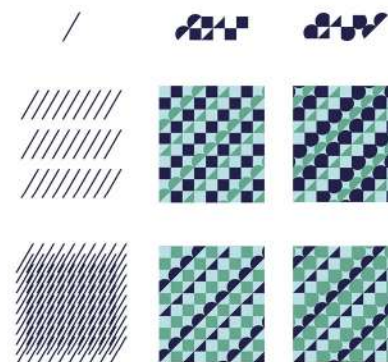
Pop-up Design | 2024 Winter

Course Instructor | Michael Speaks

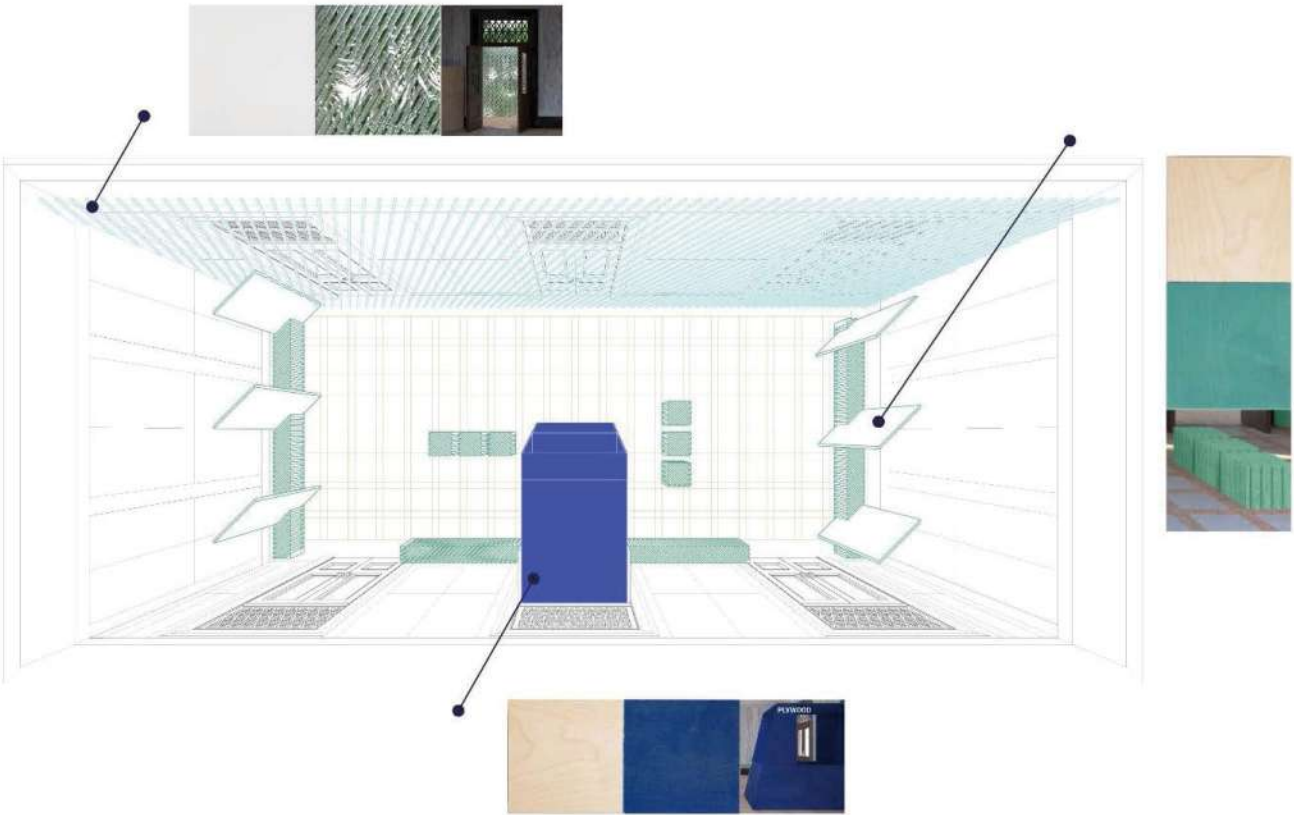
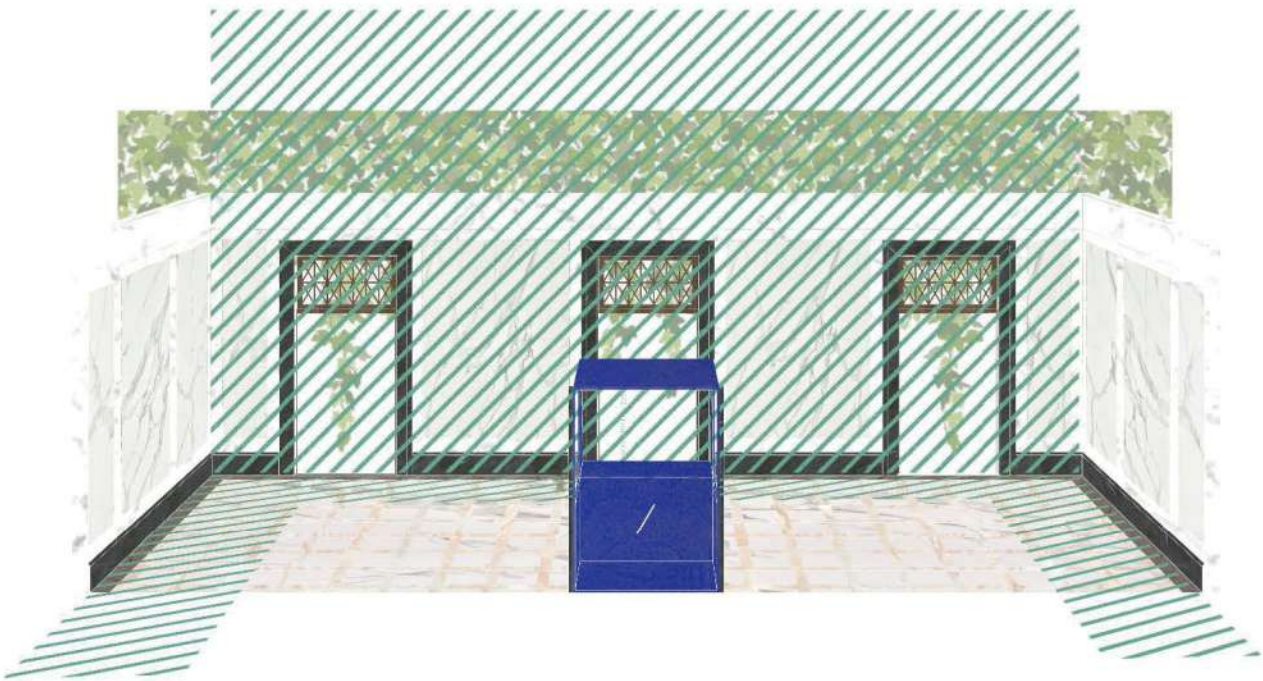
Team Member | Ziqi Wang, Jiwei Wang, Huilin Wu, Jinxing Zhan

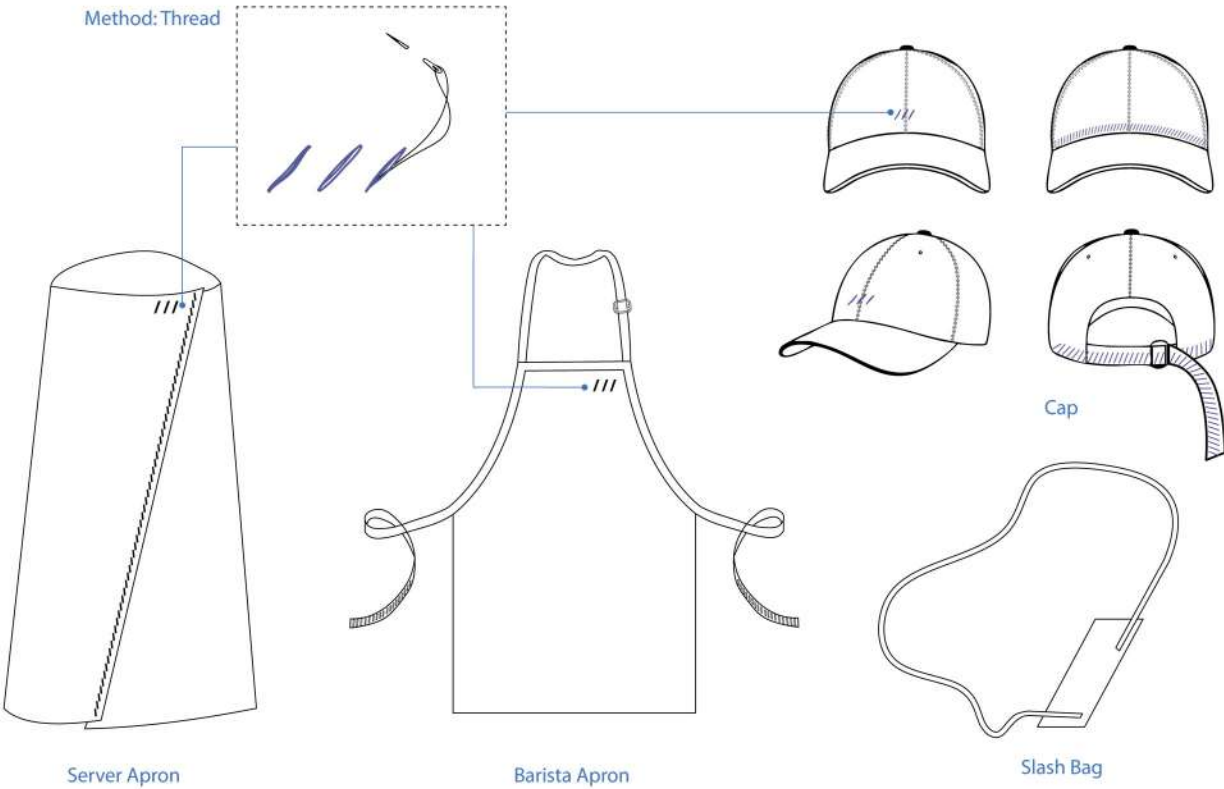
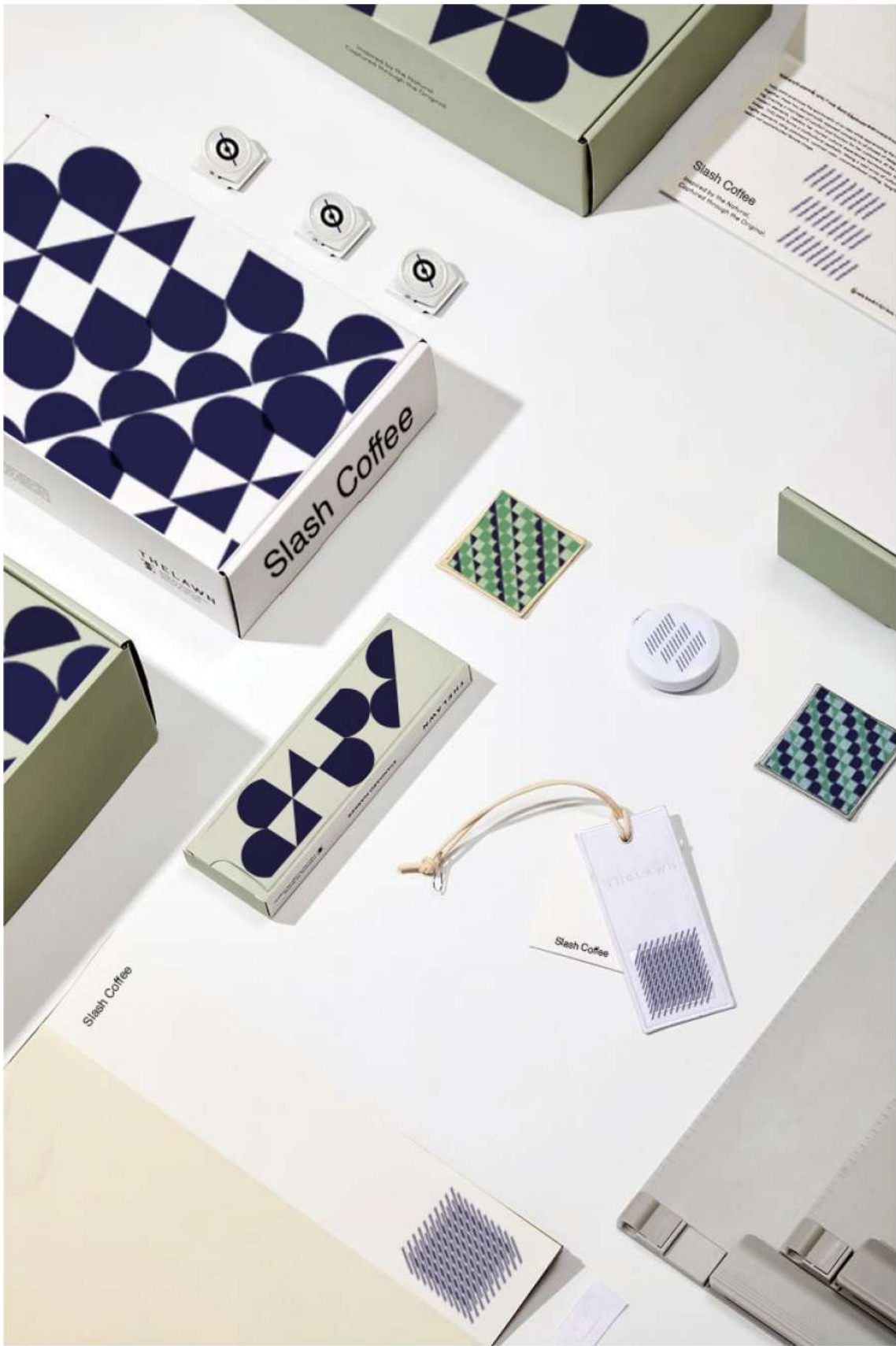
Role Of The Project | Concept/ Logo/ Program/ Space/ Appreal Design

Coffee Experience Design (Self), Appreal/Space Design(in collaboration with the team)



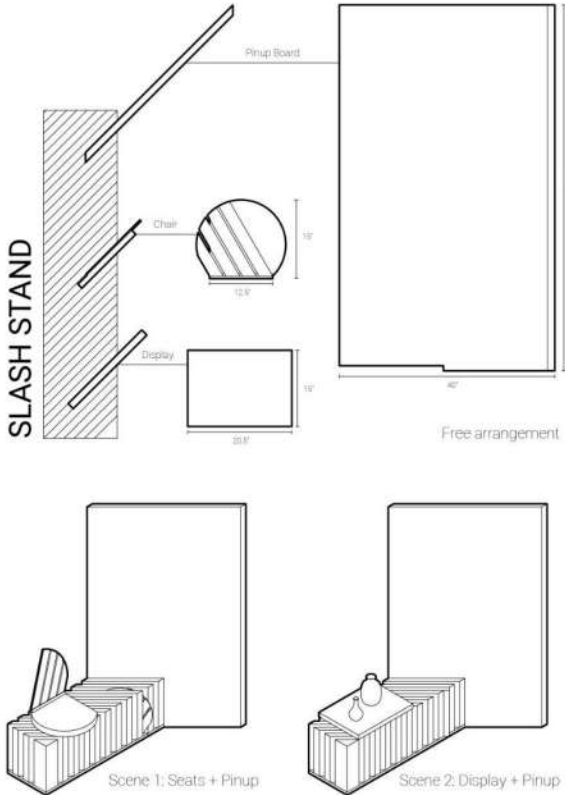
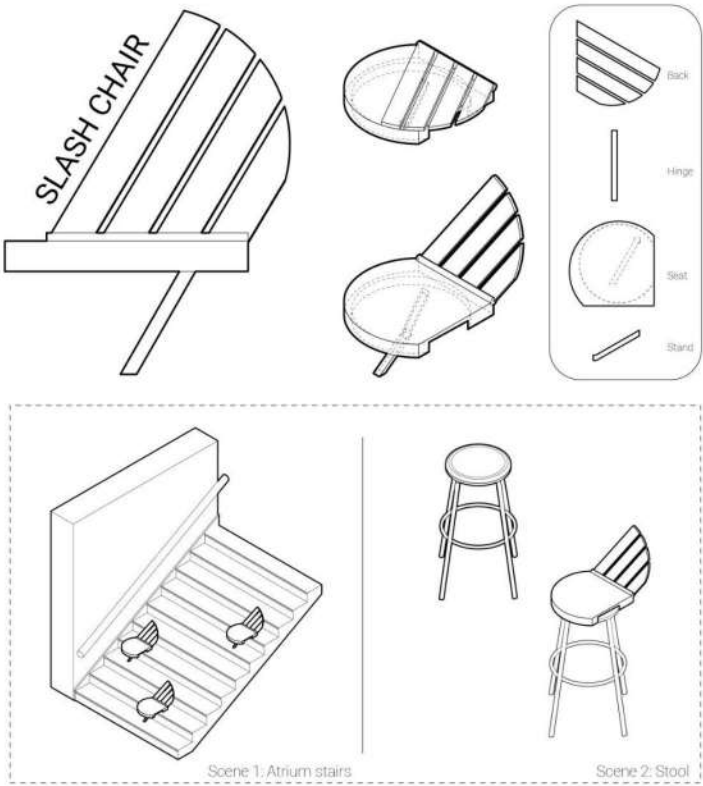
Dean Speaks introduced a workshop at School of Architecture, focused on transforming Slocum Hall's Marble Room into a **Colo Coffee-Sponsored Pop-Up**. Colo Coffee, a brand specializing in **Colombian Coffee Beans**, was founded by an alumnus of the Syracuse University Architecture Department, who sponsored this workshop. Our project named "Slash" (/), Opening in February 2025, Slash will serve as a **Grab-And-Go** coffee space and a **Community Hub**, where students can **Exhibit And Trade** ceramics and artwork. The project encompasses space design, programming, branding, and apparel design, integrating Colo Coffee's **Ethos, Brand Culture** with the Slocum **Community Spirit** and **Creativity**.







/ is a pop-up café that blends Colo Coffee's rich Colombian culture with the creative spirit of Syracuse's architecture students — where coffee meets design, and the platform is yours.





08 Supergraphic Art Installation | Elective Class | Erie Canal

Instructor | Erin Cuevas

Supergraphic Class | 2024 Fall

Team Member | Ziqi Wang, Yilin Zhong, Mengzhi Xie

Role Of The Project | Concept/ Modeling/ Drawing/ Testing/ Installtion

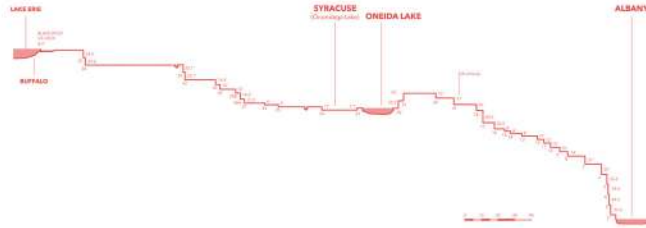
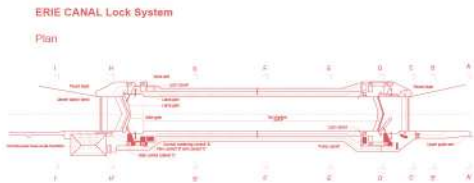
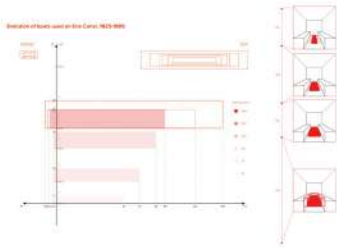
Lock System Analysis (Self), Design&Installation (in collabration with the team)



History of Erie Canal

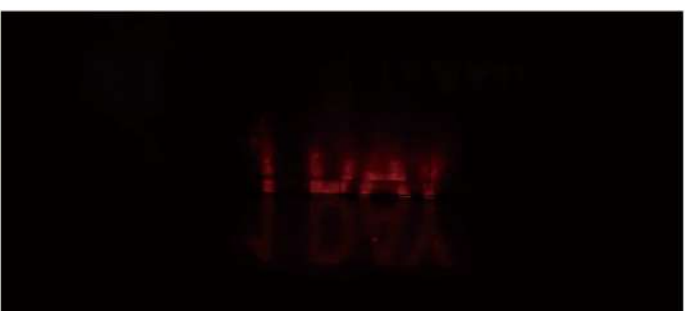
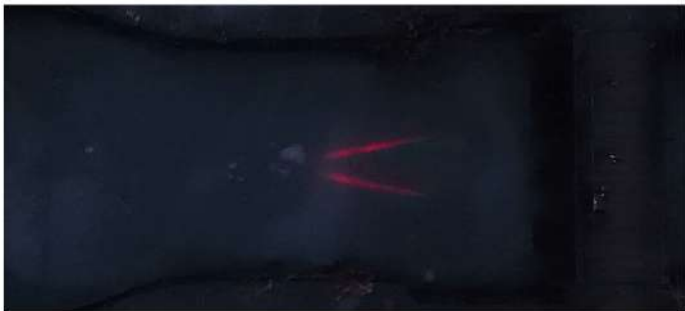
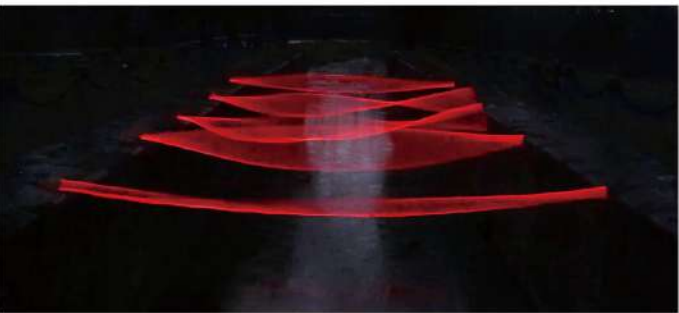
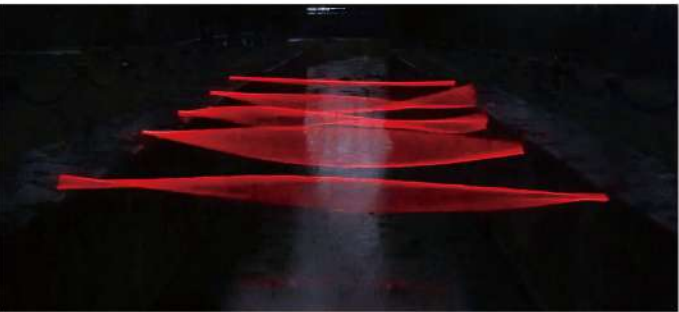
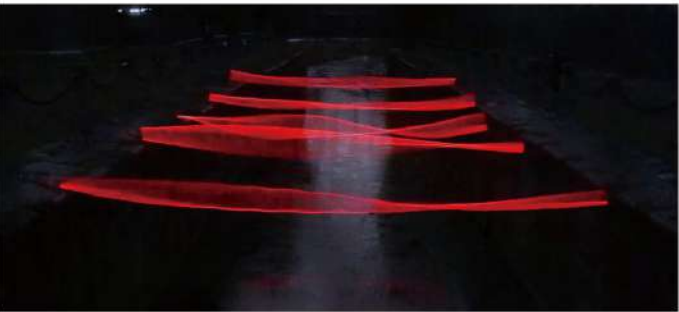
This project transforms the iconic lock systems, the rich history of the Erie Canal, and the legacy of its cargo ships into an evocative art installation. Through this work, the canal's innovative design and enduring influence on infrastructure and commerce are reimagined, offering an immersive and educational experience. The journey culminates in an exhibition, where history and art converge to tell a story of ingenuity and transformation.

CONCEPT



INSTALLATION

Through studying the traces left by boats on the river's surface and discovered that underwater patterns remain consistent regardless of cargo type. Simulating a cargo ship's journey in Erie Canal, we analyzed lock systems, latitude shifts, and distances between cities. These findings were abstracted into concepts and transformed into light art installations, reflecting the dynamics of maritime systems.



Water Wake

Lock Dimension

Destination

Water Wave

BEHIND THE SCENE

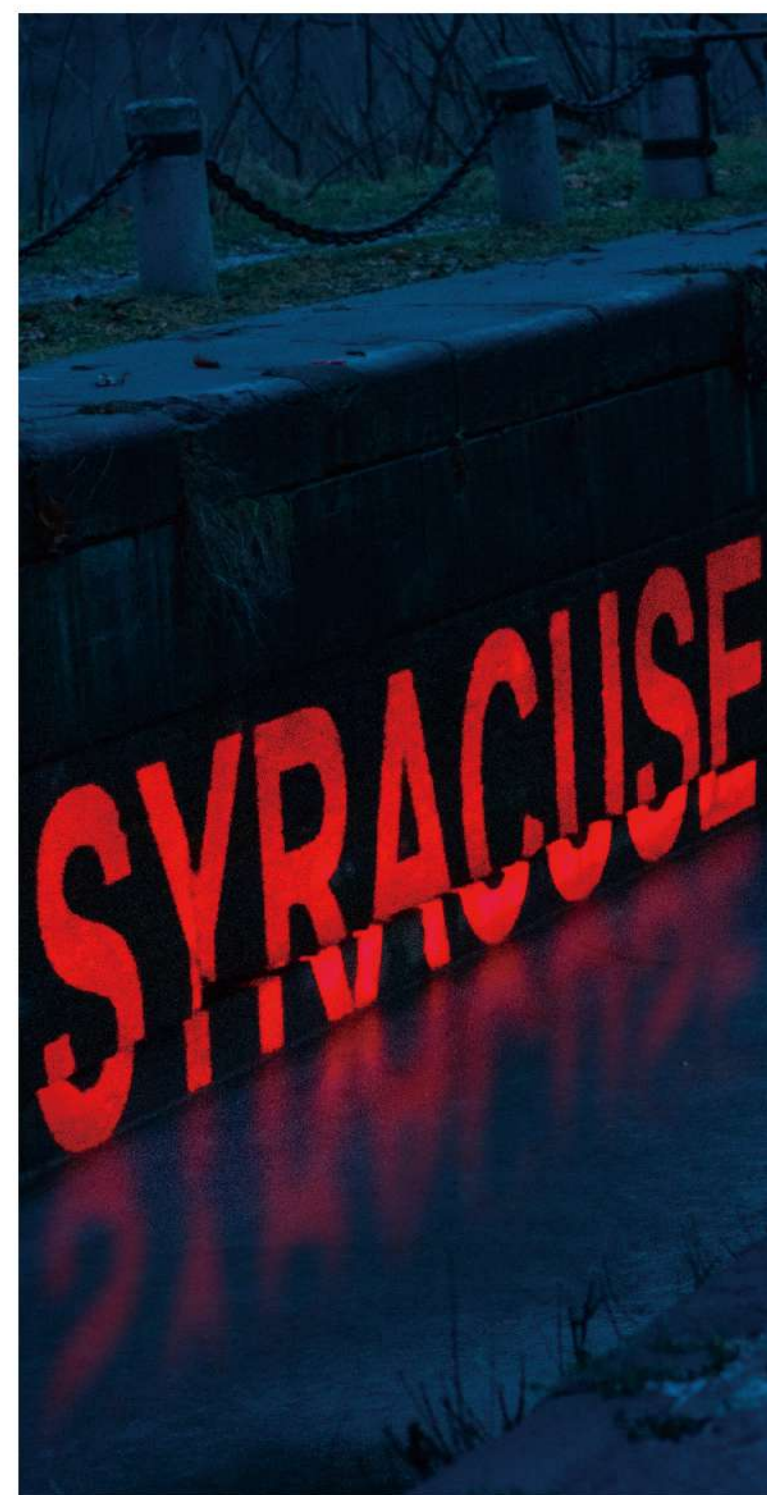




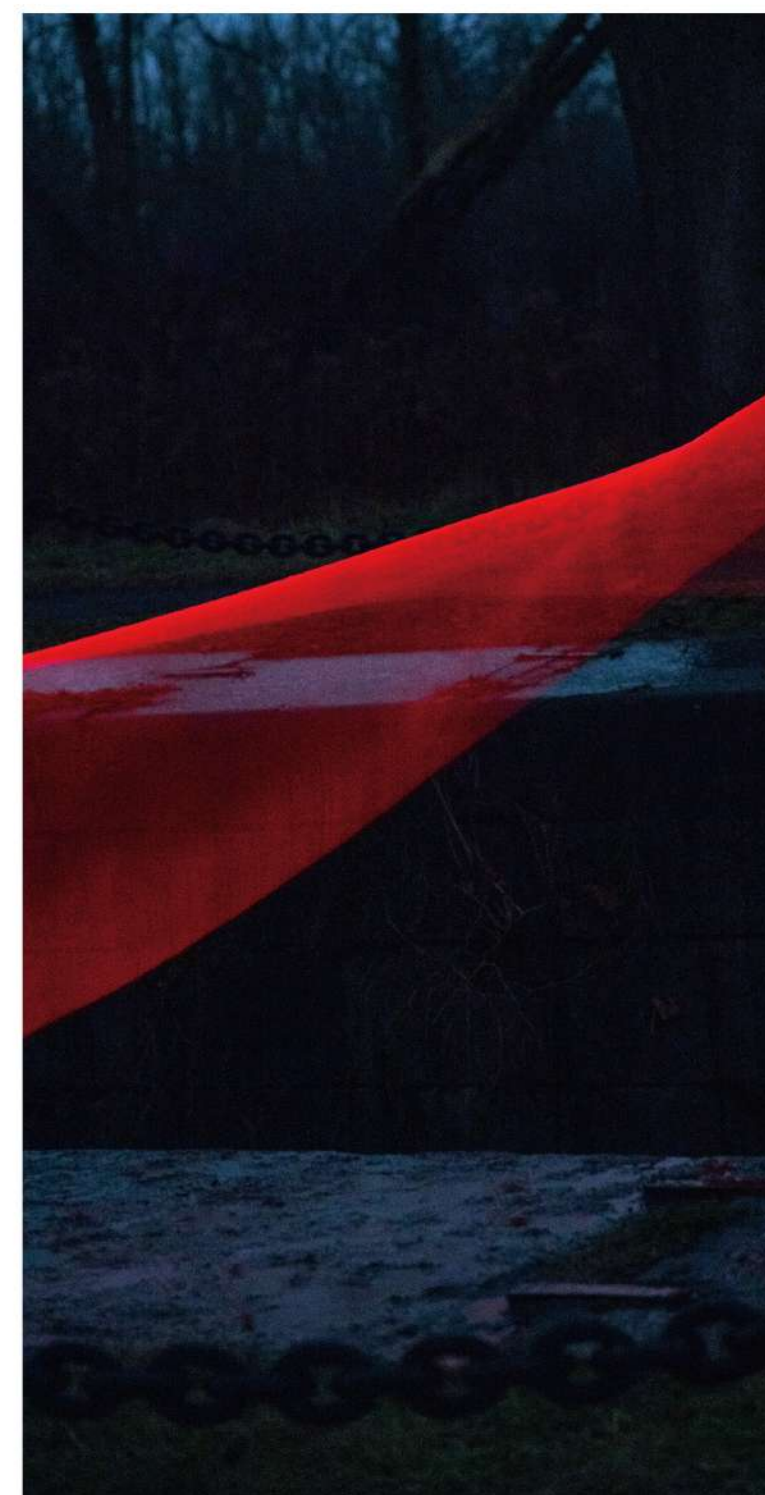
01/ Tree Wave



02/ Water Wake



03/ Destination



04/ Lock Wave



09 Rwanda's Architectural & Ecological Odyssey

Paint a 30-feet-long scroll tracing 130 years of transformations, where traditions are woven into the fabric of reinvention, and landscapes whisper the stories of resilience.

Exhibition in Syracuse University + Meiji University, Tokyo

Research Project | Aug 2023 - Apr 2024

Research Assistant under the guidance of **Yutaka Sho, PhD**

Scroll Artist | Self (Aug 2023 - Apr 2024), Ziqi Wang (Jan - Apr 2024)

Role of the project | Research+ Study on Local/ Modeling+Drawing Architecture, Ecology and Culture

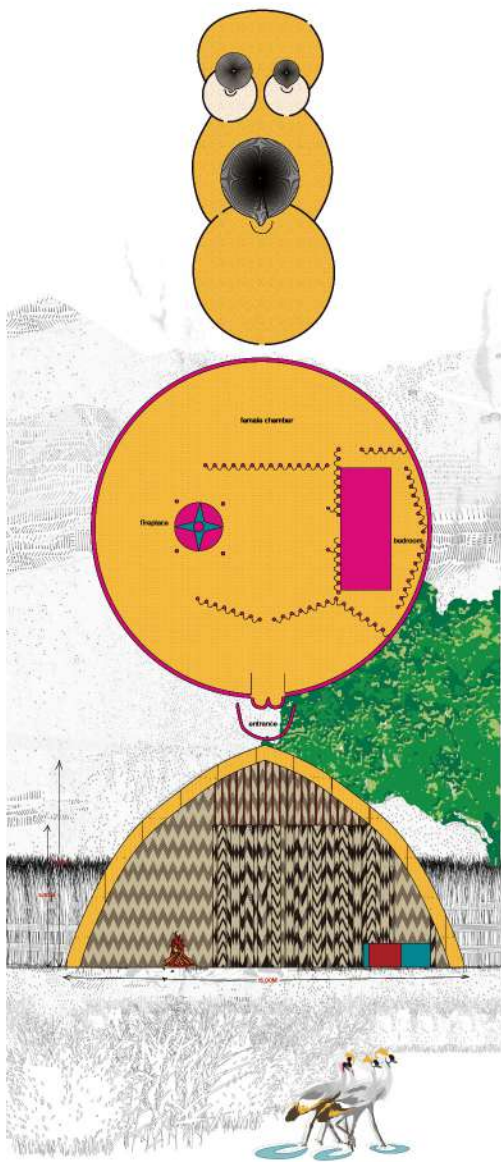
Research (Self), Colorful Mylar Paper Drawing (Self)

Scroll+Exhibition(in collaboration with Ziqi Wang and Yutaka Sho)



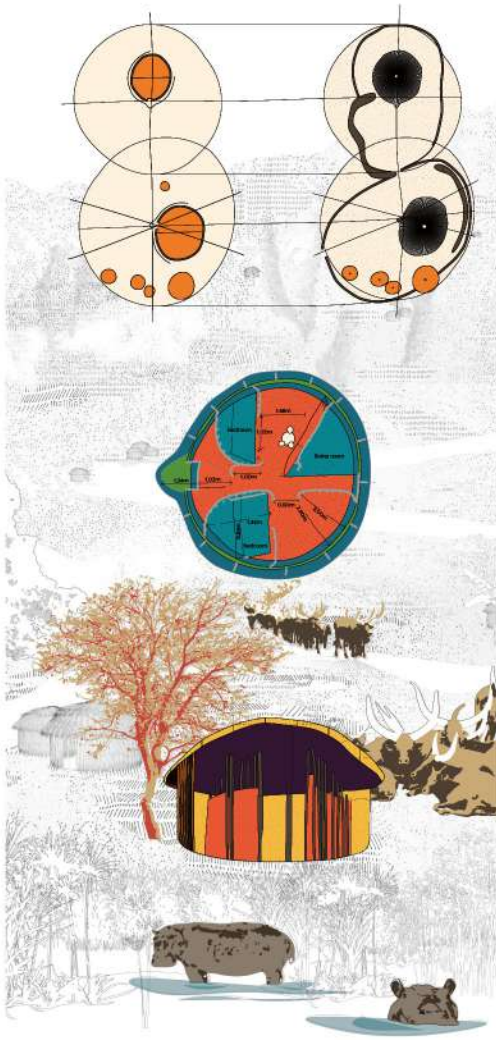
TimeLine

Throughout the scroll, ecological backdrops serve as silent narrators of the land's transformation. Native plants are juxtaposed with invasive species, symbolizing the impact of colonization and globalization on Rwanda's natural environment. Artistic layering of landscapes and architecture weaves together narratives of resilience, adaptation, and innovation, offering a poetic tribute to Rwanda's dynamic relationship with its history, culture, and ecology.



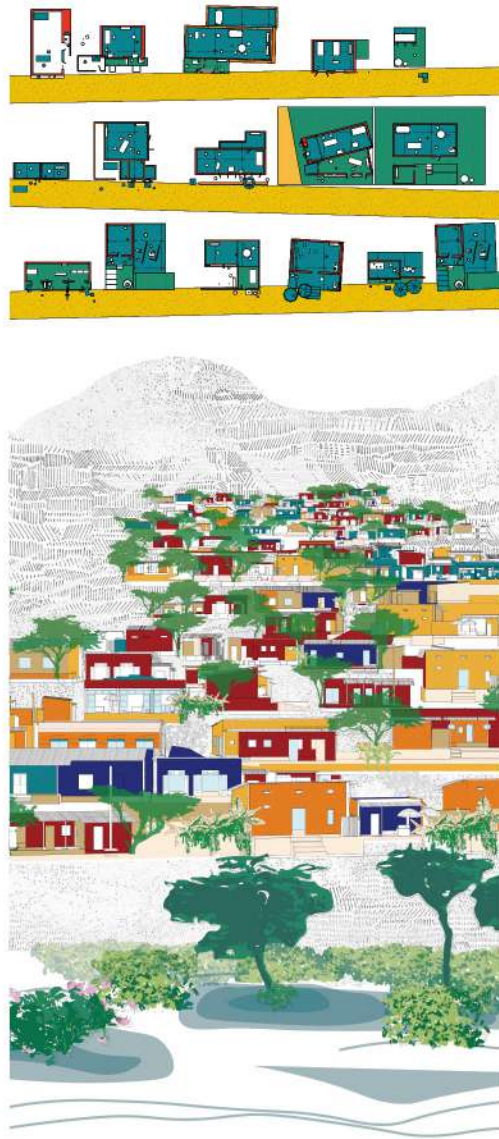
A symbol of authority and tradition, the King's Palace featured a thatched roof and harmonious integration with the natural environment. It reflected the cultural and spiritual significance of precolonial society.

King's Palace



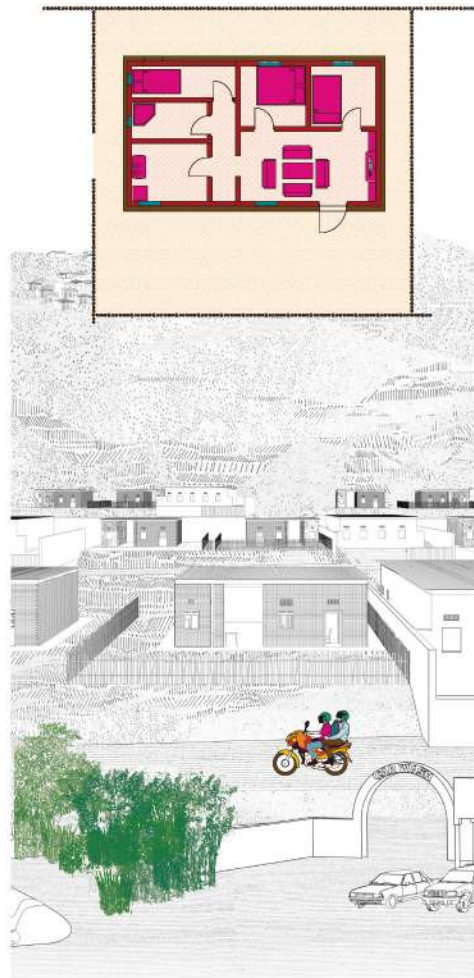
Simple, practical structures made with grass thatch and local materials, these homes embodied sustainability and community living, representing the ingenuity of precolonial rural life.

Thatch House



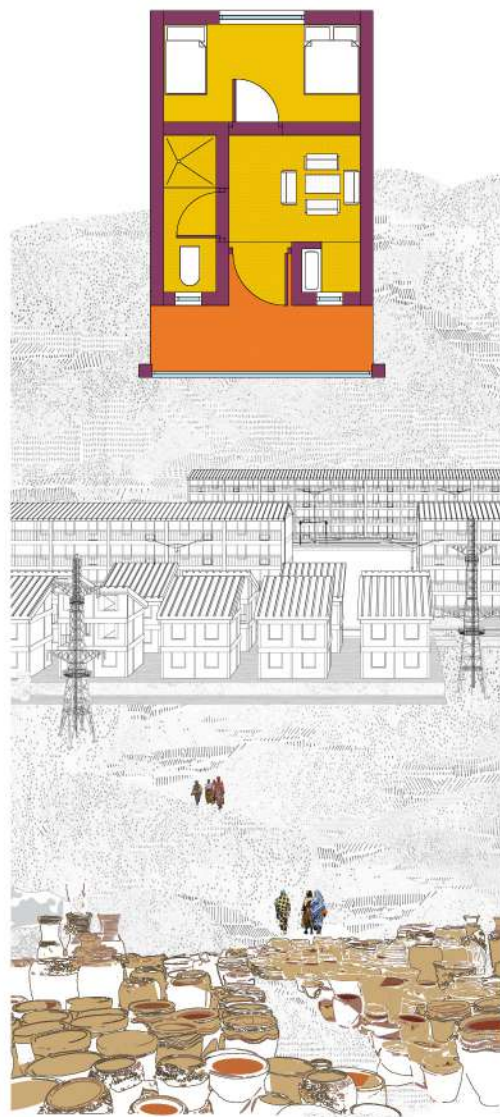
Temporary shelters built from improvised materials, these settlements emerged due to displacement and resource scarcity, highlighting the urgent need for housing during post-genocide reconstruction.

Informal Settlements

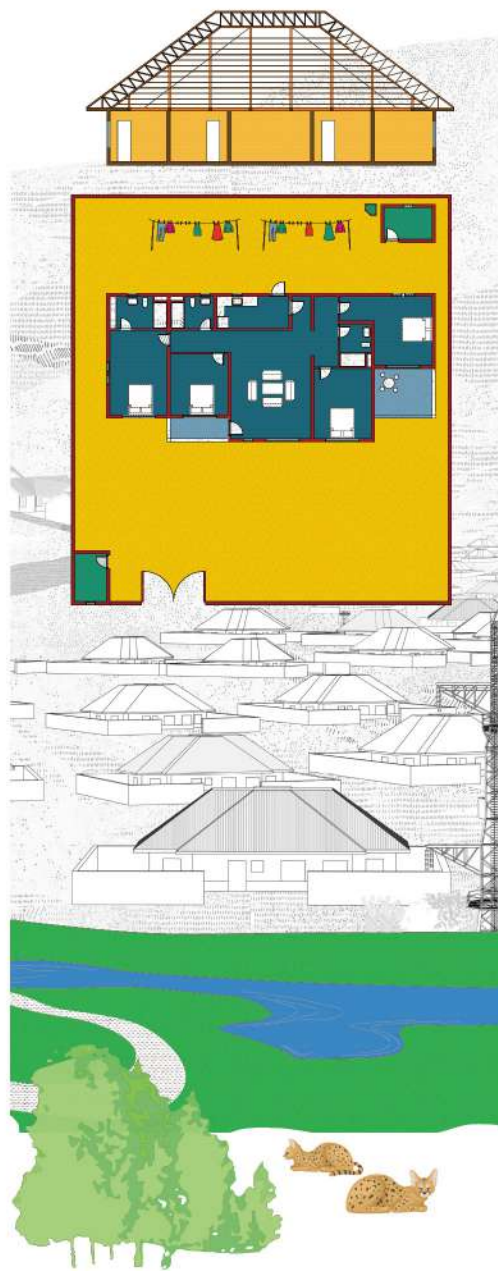


Clustered village settlements introduced to optimize land use and ensure security. These homes featured affordable, durable designs using soil blocks mixed with cement and corrugated metal roofs.

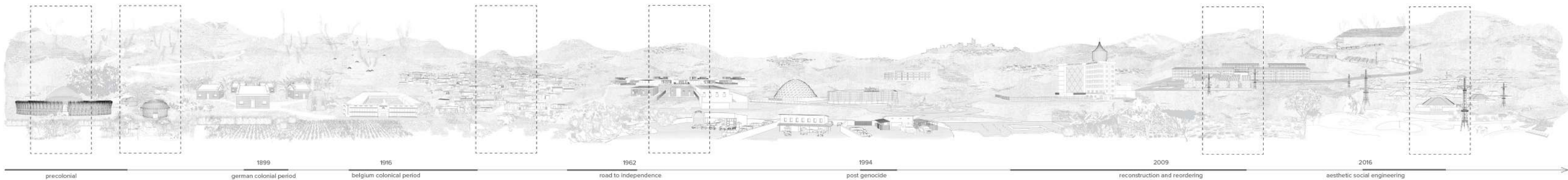
Imidugudu



Kigali Conference Center



Radisson Blu Hotel

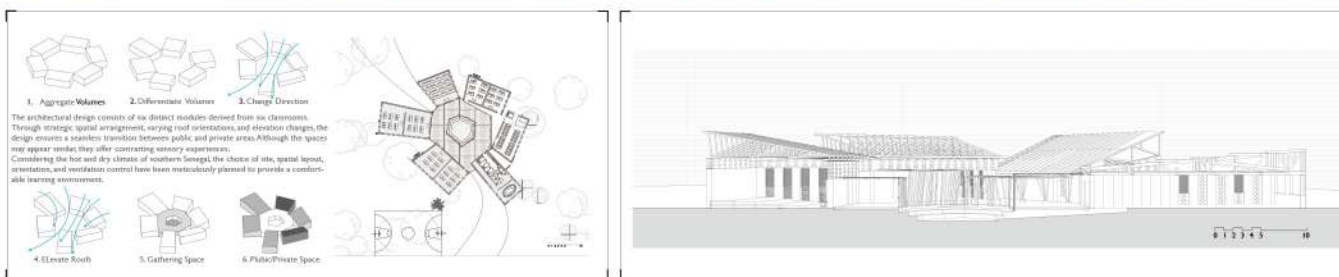


Sustainable and functional homes designed for displaced families. These structures balance local cultural traditions with modern needs, providing dignified living spaces for vulnerable communities.

IDP Housing

A forward-thinking housing model incorporating advanced architectural design tools, emphasizing aesthetics, functionality, and adaptability to urban and rural settings.

ArchiCAD Roof Housing



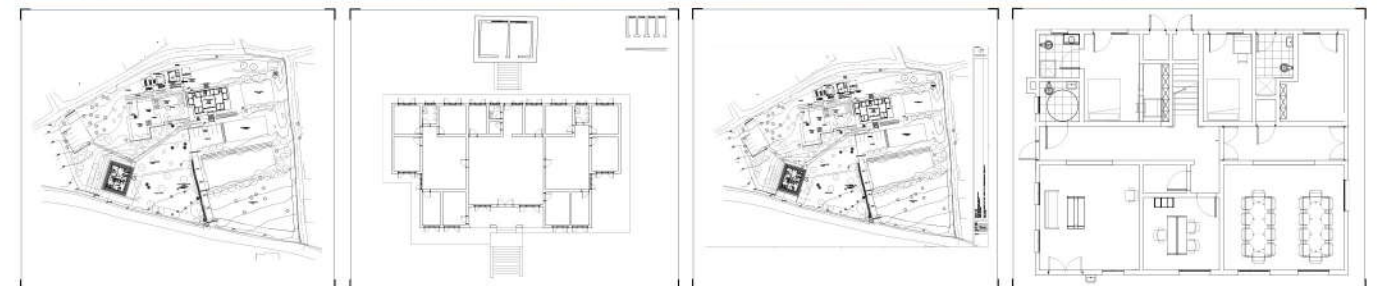
10 Primary School Design | Kairalooro Competition | Senegal, West Africa

Independent Project

Competition Project | 2023 Summer

Role Of The Project | Site Research/ Overall Schematic Design/Environmental Analysis/ Diagrams/ Drawings/ Renderings

All The Works Done By Myself



11 Hope For Life | Primary School Construction | Kigali, Rwanda

Construction Project | 2023 Summer

Design Assistant under the guidance of Yutaka Sho, PhD & Collaboration with General Architecture Collaboration (GAC) Non-Profit Organization

Role Of The Project | Modelling Site/ Circulation/ Landscape Design/ Diagrams/ Codings and Local Regulation

Construction (GAC), Modeling (Self), Design And Drawing (in collaboration with GAC)



12 Self-Build Houses For Both Rental And Personal Use | Kunshan, China

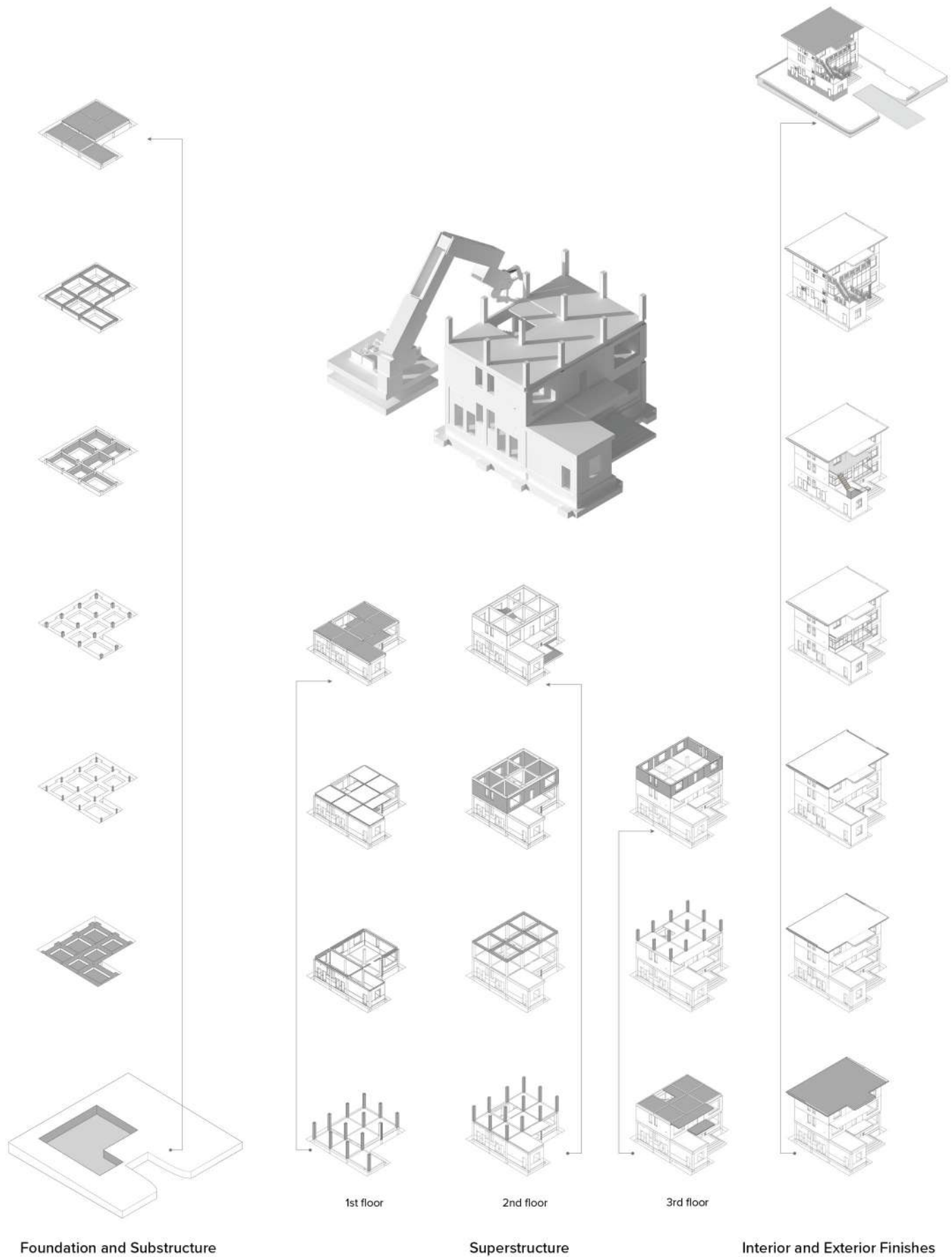
Research Project | 2023 Summer + 2024 Winter

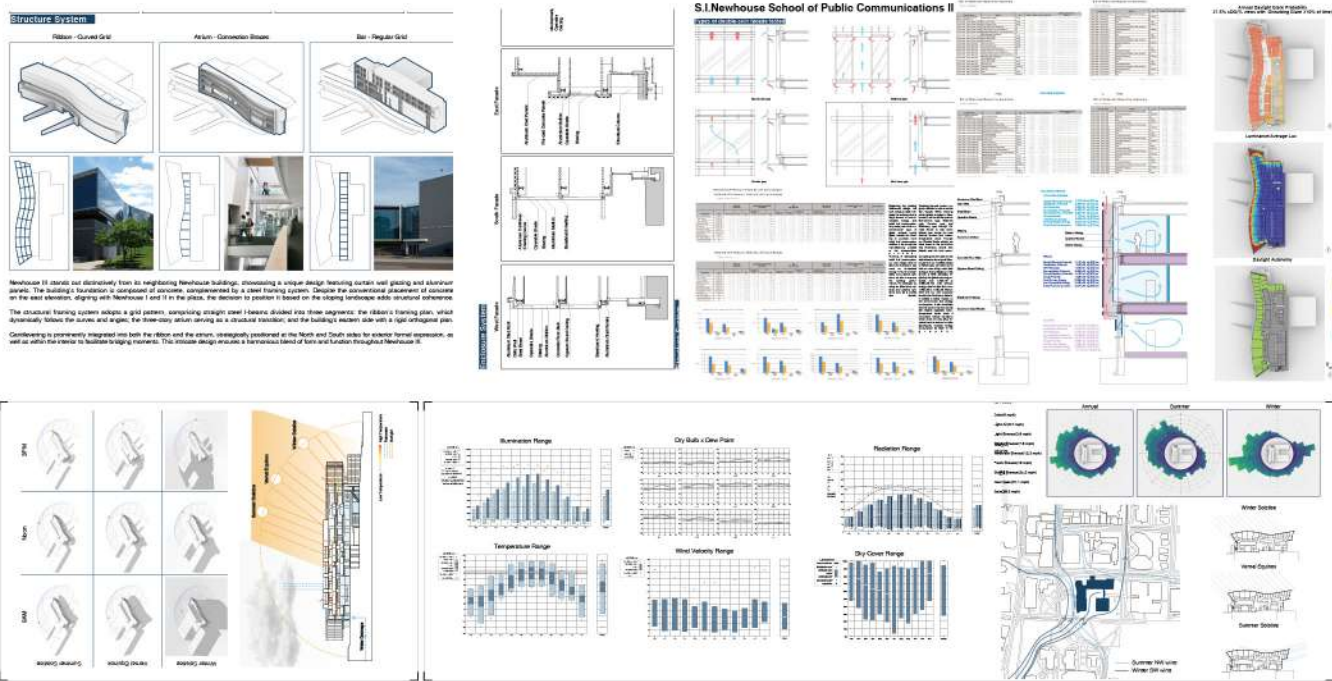
Research Assistant under the guidance of Jiong Wu, PhD

Role Of The Project | Modelling/ First hand Data Collection/ Interview/ Research and Study on Local Residents and Social Norms

Modeling (Self), Drawing (Self), Rendering (Self), Interview(in collaboration with Zhiyu Zhang)

REIMAGINE THE SELF-BUILT HOUSE | Empowered By Robotic Arm





13 Newhouse III | Applied Building Sciences| Syracuse, New York

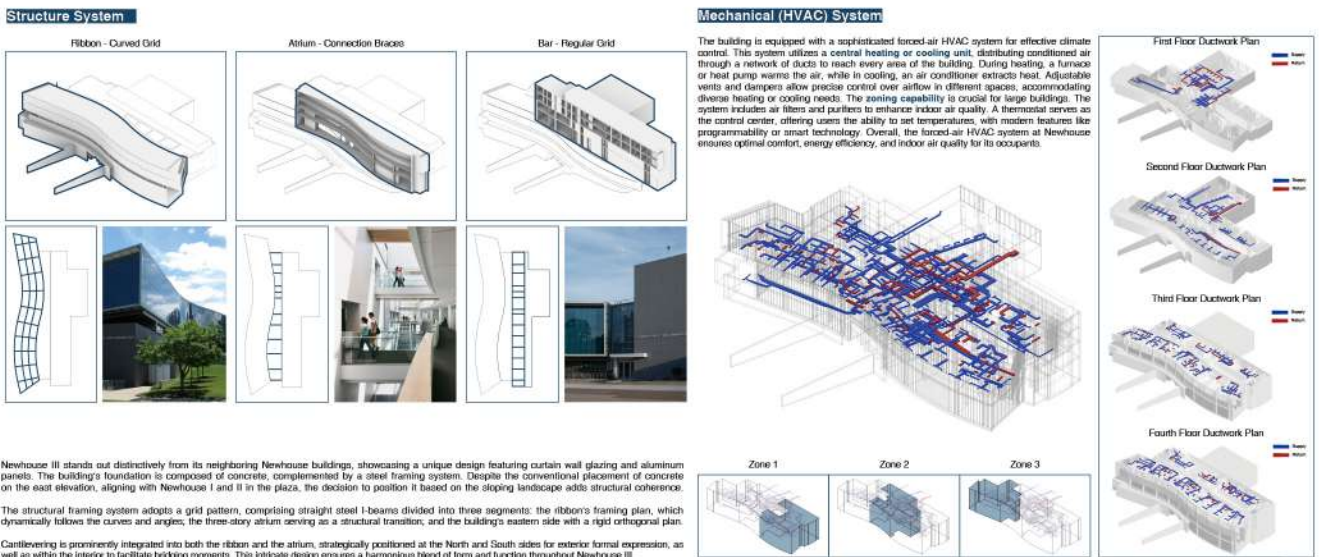
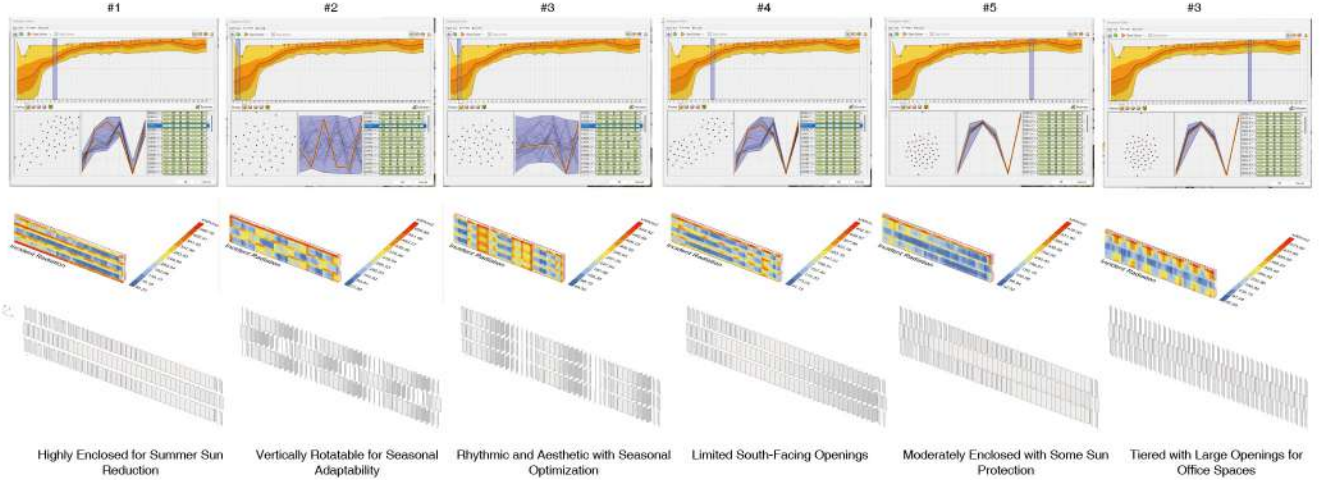
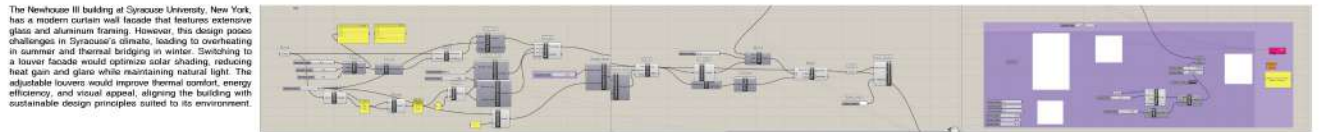
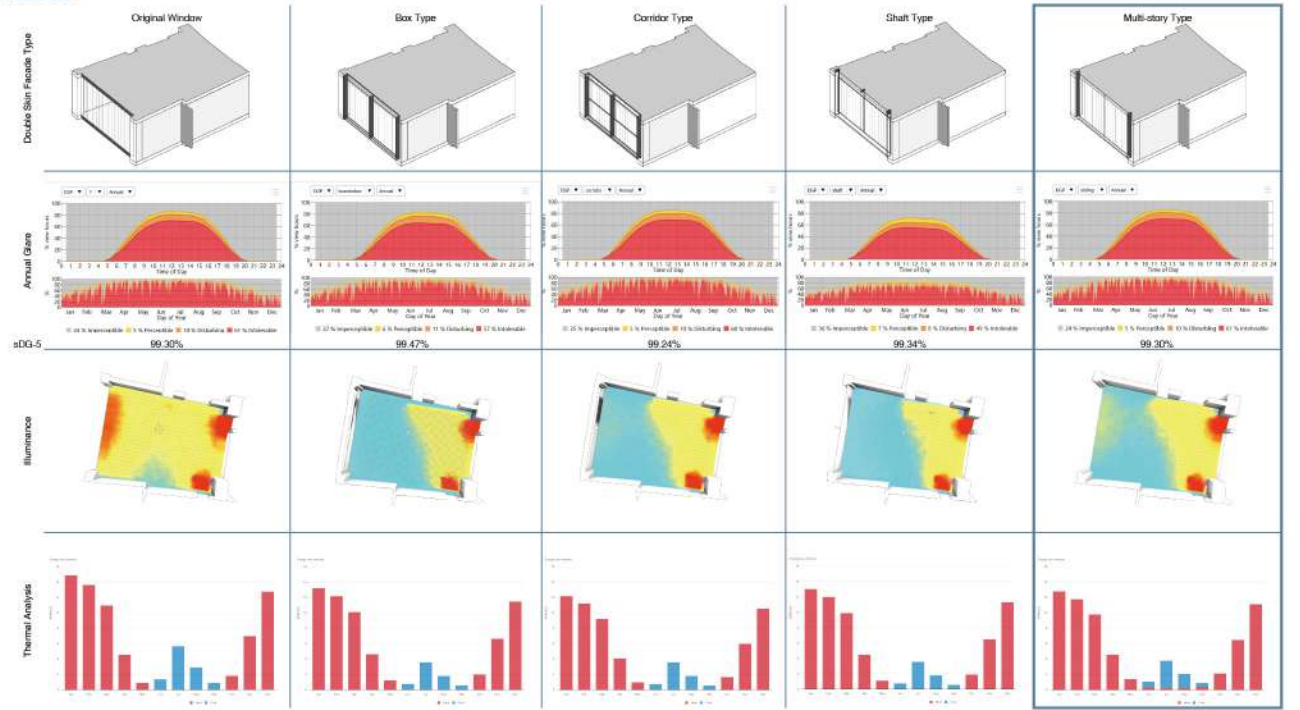
ABS Building Analysis | 2024 Spring

Team Member | Ziqi Wang, Stephanie Tang

Role Of The Project | HVAC System/Live Cycle Assessment/ Light/ Thermal/Weather Condition Analysis/ Galapagos Optimization

HVAC System+Galapagos Optimization+Thermal And Weather Analysis (Self), other parts(in collaboration with team)

On Process





14 The "Lotus" | Kinetic Architecture | Changsha, China

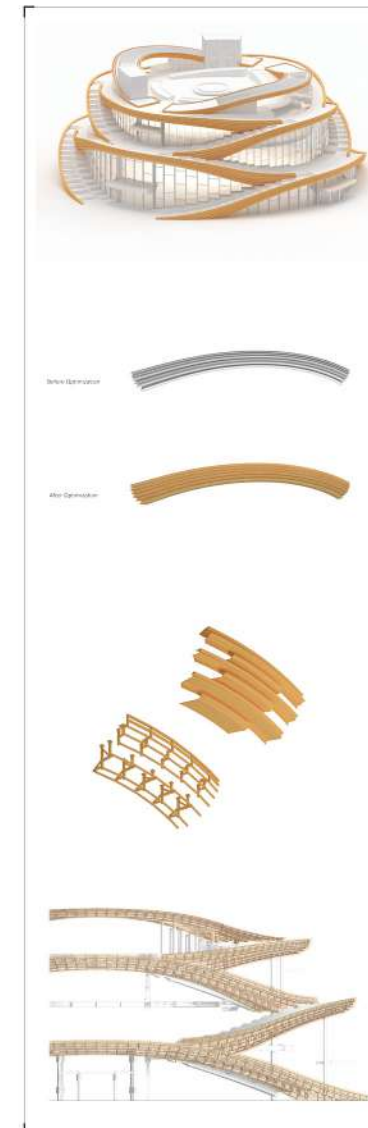
Professional Work | 2024 Summer

Architectural Parametric Design Intern | RoboticPlus.AI | Shanghai, China

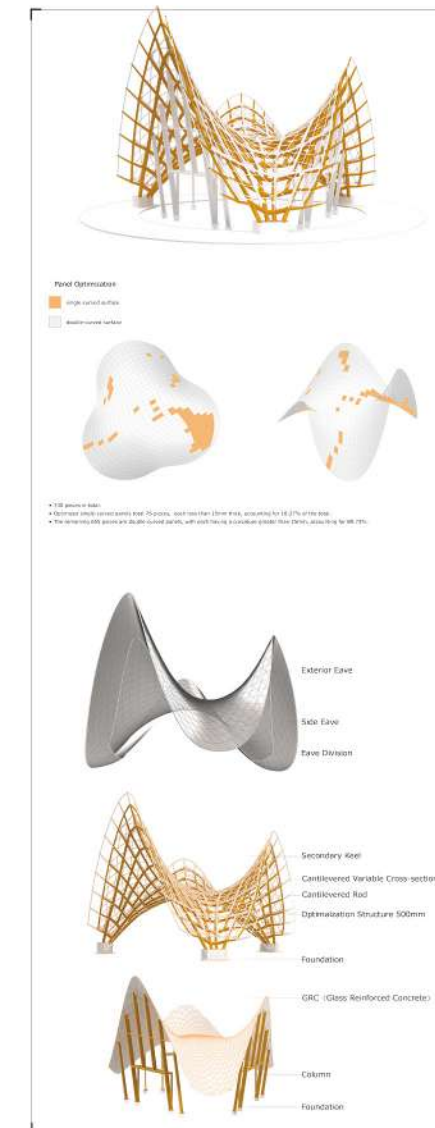
Role Of The Project | Analyzed Kinetic Mechanisms/ Created 3d-Printed Models/ Performance Simulation and Optimization/ Design and Build The Website Of Roboticplus.tech <https://www.roboticplus.tech/>

Drawing (Self), Website Design And Build(in collaboration with roboticplus.ai)

Project 1_West Bund Center

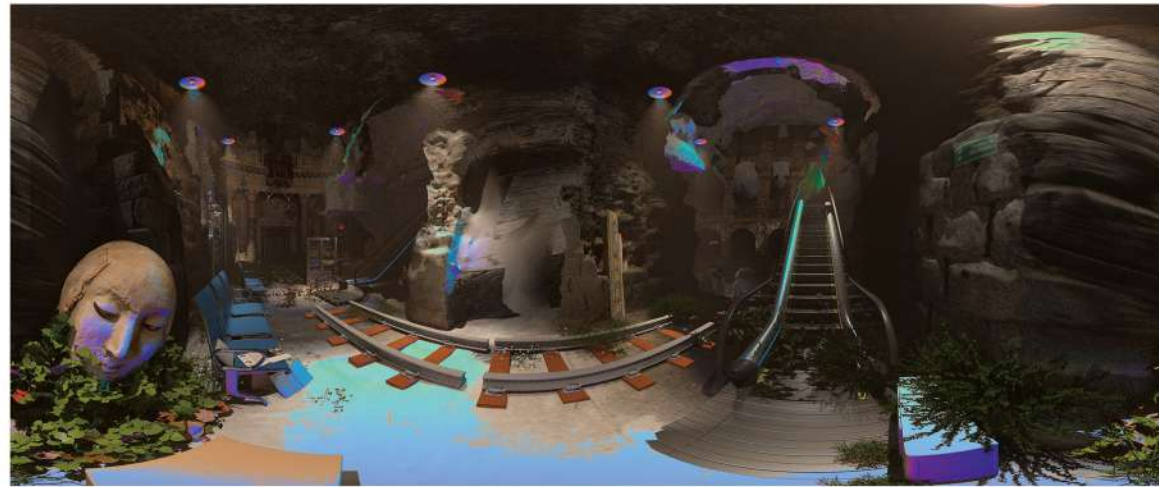


Project 2_TOD Subway Station



Project 3_The "Lotus"





15 "Have a good sleep" | Virtual Reality Video Art Work | Arezzo, Italy

Arc 500 Alberti's Window | 2023 Spring

Course Instructor | Daniele Profeta

Team Member | Ziqi Wang

Role Of The Project | Photogrammetry/ Modeling/ Rendering/ Virtual Reality Editing/ Story Script

Full VR Video | <https://www.youtube.com/watch?v=KBee8P-xJpU&t=14s>

(Works in collaboration with Ziqi Wang)



MODEL 1



MODEL 2



MODEL 3

STEP 1

This elective course, conducted during a study abroad program in Florence, Italy. All the assets in the video were created using LiDAR scanning technology. During the course, we collectively visited and scanned key landmarks in Arezzo, including the Museo Diocesano di Arte Sacra, Museo Archeologico Nazionale Gaio Cilnio Mecenate, Piazza Grande, Basilica di San Francesco, and Cattedrale di San Donato. Beyond the group visits, the course encouraged us to explore Florence in our free time, scanning unique architectural details or pieces of buildings we found intriguing.

STEP 2

The scanned assets in Florence included renowned sites such as the Uffizi Gallery, Accademia Gallery, Museo dell'Opera del Duomo, Piazza della Signoria, Piazza della Repubblica, Florence Cathedral, and Basilica di Santa Croce. These meticulously scanned and modeled elements were then reimagined to create the surreal and haunting VR narrative, blending the historic charm of Florence with an otherworldly, eerie aesthetic.

STEP 3

Culminated in the creation of a 1.5-minute first-person VR video produced using Adobe After Effects. The video, composed of three distinct scenes, tells the surreal story of a person waking up in Florence, only to fall into a bizarre and unsettling world. In this dreamlike reality, all the museums, churches, and landmarks they visited in Italy transform into eerie, nightmarish versions of themselves, leaving the protagonist questioning whether they are still dreaming or trapped in a twisted version of reality.

SCENE 1



SCENE 2



SCENE 3



OBSERVATIONS

STRATEGIES

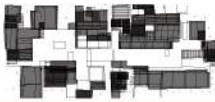
Natural systems are often overlooked or disrupted by human intervention, leading to issues such as **biodiversity loss**, **soil degradation**, and **urban air pollution**. Through my research, I explore how these environmental challenges can inform design practices that restore **balance and resilience**. My goal is to create architectural frameworks that work in harmony with nature, addressing ecological **vulnerabilities** while fostering **regeneration**, coexistence, and sustainability.

Architecture intersects with social inequities, from **housing disparities** to **gendered labor burdens**. These observations underline the need for human-centered solutions that **empower communities** and celebrate **cultural diversity**. Through research and design, I aim to redefine architecture as a tool for equity, elevating **marginalized voices** and fostering inclusive environments. Address the intangible aspects of culture, memory, and identity that shape human experiences.

There is a stark disparity in access of technological advancements, especially in **underserved regions**. While innovation has transformed industries, construction methods remain **outdated and inefficient**. The emerging technologies should be able to **democratize design**, bridging gap between precision and accessibility. Leverage technology to create **scalable, sustainable** solutions that serve for people and planet, foster **efficiency, adaptability**, and **innovation**

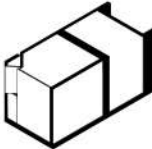
IN-SITU ADDIS ABABA

Adaptive Living Through Upcycling



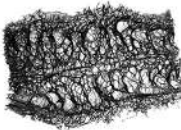
ECKEL ART ENCLAVE

Modular Pre-Fab Housing For Artistic Residency



ON-SOIL

Regenerative Design With Luffa As Building Material



IL SYMBIOTICO MUSEO

Nature Reclaims Built History



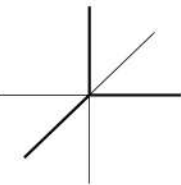
THE OCCUPIABLE_

Vertical Farming Through Adaptive Facade Systems



NATURE SANCTUM

Atmospheric Purification Through Rainwater



EXHIBITION RESEARCH PRACTICE

Soil Bioremediation

Urban Water Management

Vertical Agriculture

Climate Adaptation

Community Empowerment

Housing Equity

Cultural Memory

Preservation Of Heritage

Low-Tech Construction

Modular Prefabrication

Scalable Systems

Climate-Responsive Systems

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