

ARCHITECTURE

Selected Works 2023 /2024

PORTFOLIO.

Presented by Wentao Zhu



MOUNTAIN AVEN HOUSE

PUBLIC INTERIOR

The subject of study will be the construction of a greenhouse in New York, but one that is climatcally inverted, i.e. no longer a warm greenhouse as in the 19th century, in the manner of the Palm House, where the societies of the cold West sought to reproduce the warmth of milder climates thanks to fossil fuels, but a cold greenhouse, proper to the 21st century, where the societies of a West that has become too hot seek to reproduce the coldness of milder climates thanks to renewable energies. To the "Palm House" of the 19th century, the proposal is to design a "Mountain Aven House", as the construction of a cold microclimate in the now scorching macroclimate of the West. The strategy leverages the demand of plants and human bodies for healthy visible light, and reduces indoor heat by blocking specific wavelengths of visible light through the interior. Finally, it utilizes a geothermal cooling system to further enhance cooling, achieving an indoor microclimate suitable for both plants and human occupants to escape summer heat in New York.

Columbia GSAPP Advanced Studio (Fall 2023)

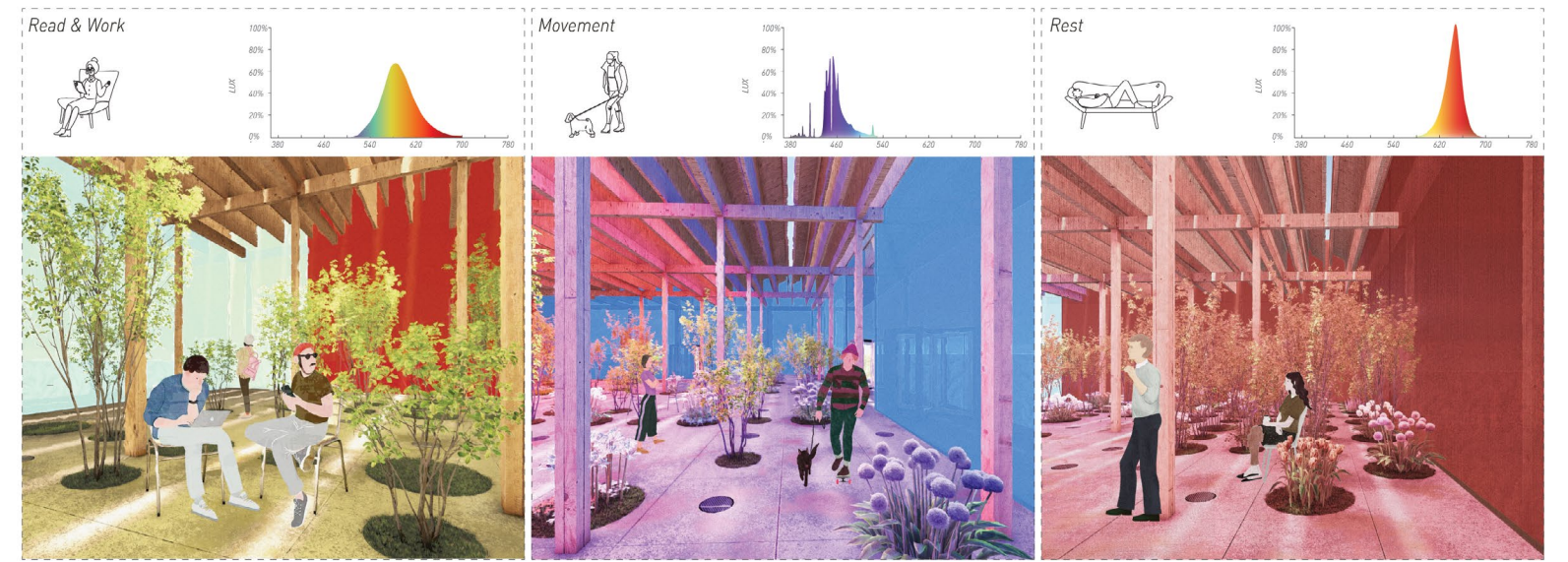
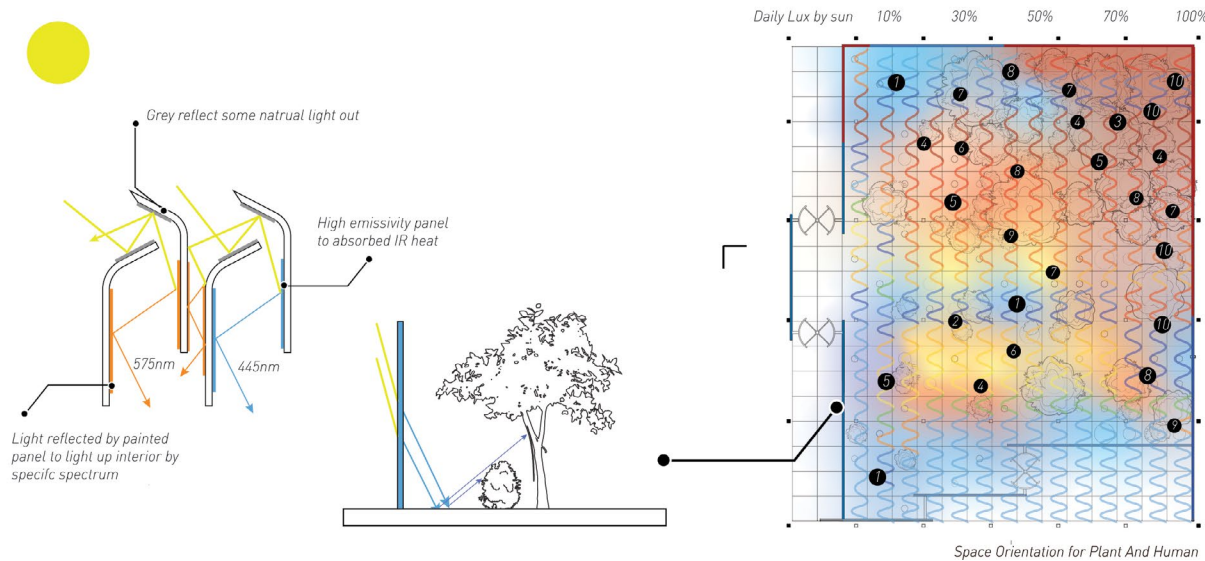
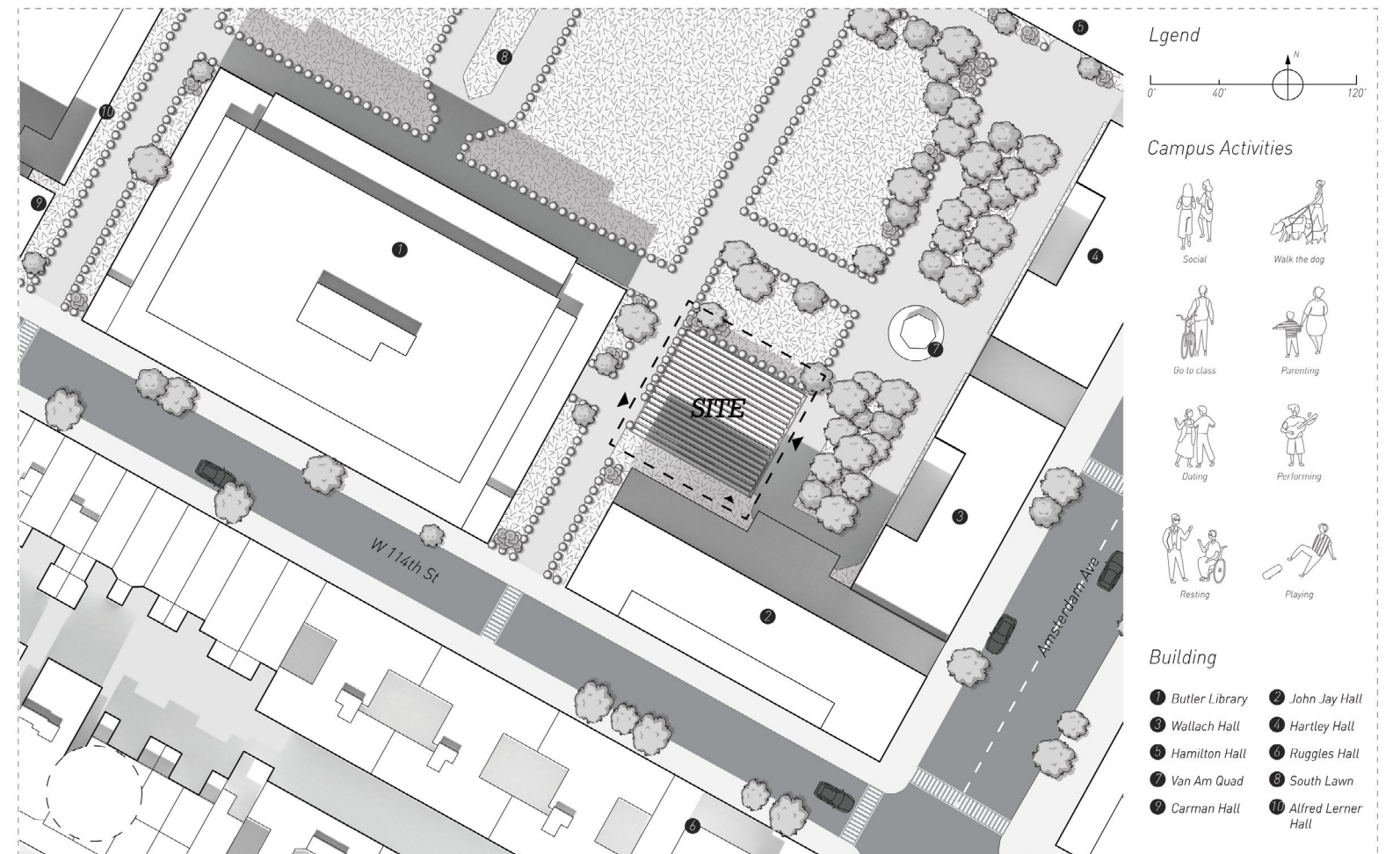
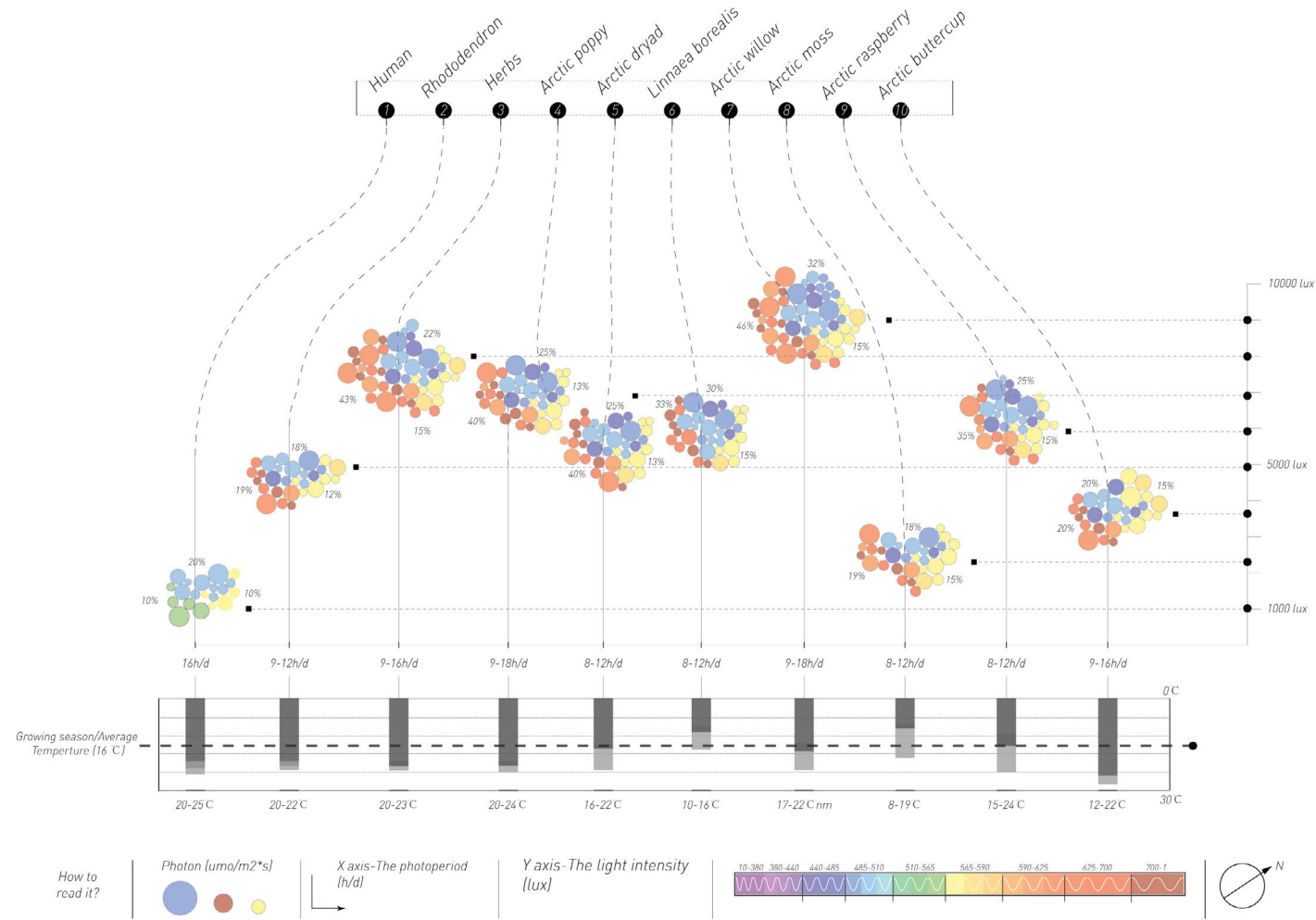
Instructor: Philippe Rahm, Mariami Maghlakelidze

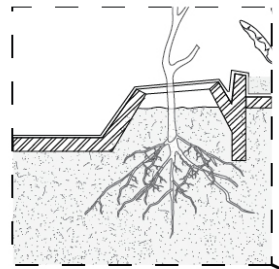
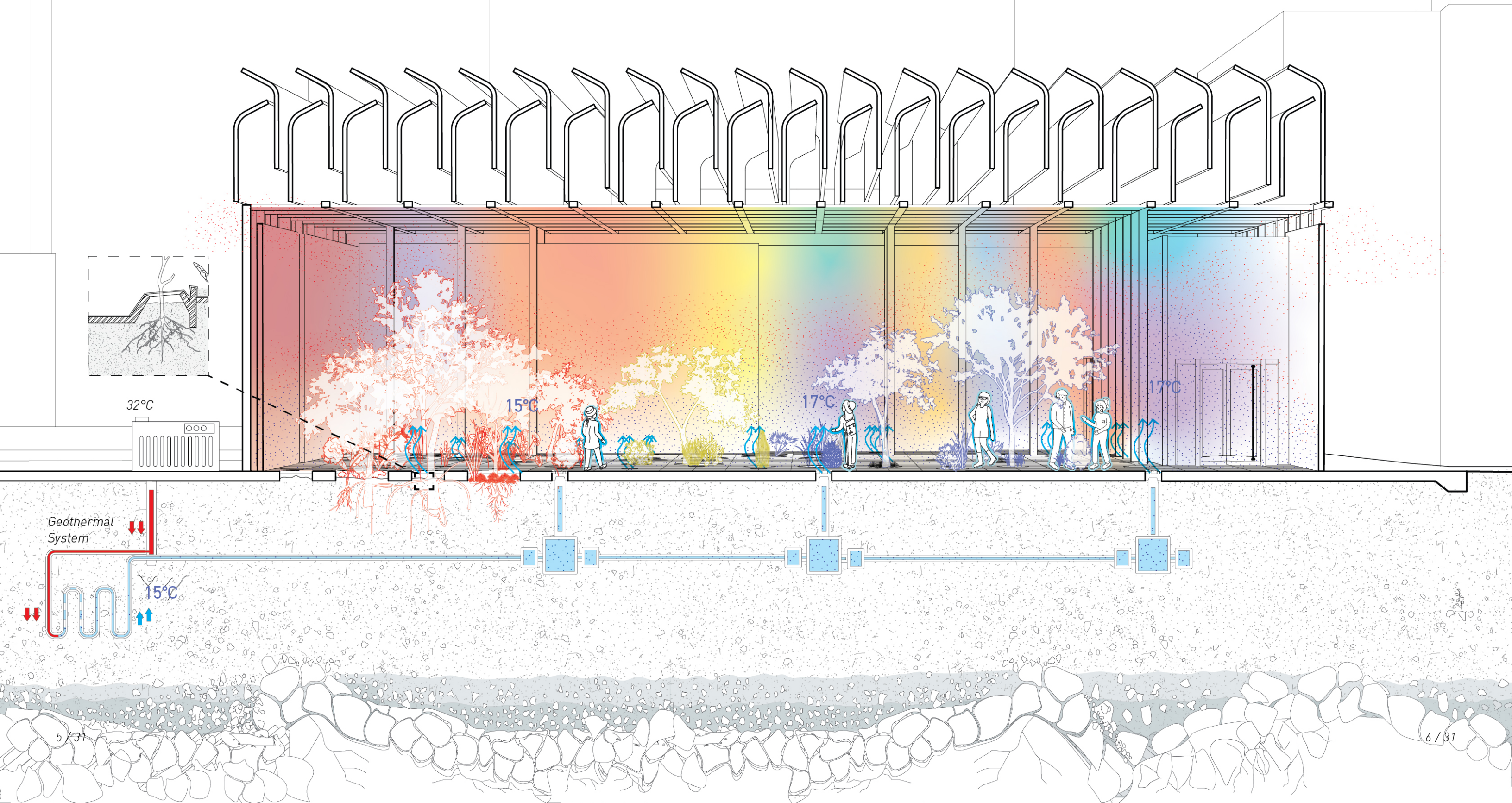
Role: Individual Work

Site: Columbia University in the city of New York, Main campus.

Tailor spaces and form's design to diverse species' visible spectral needs.

Nurturing Student Activities in a Healthy Light Environment





32°C

15°C

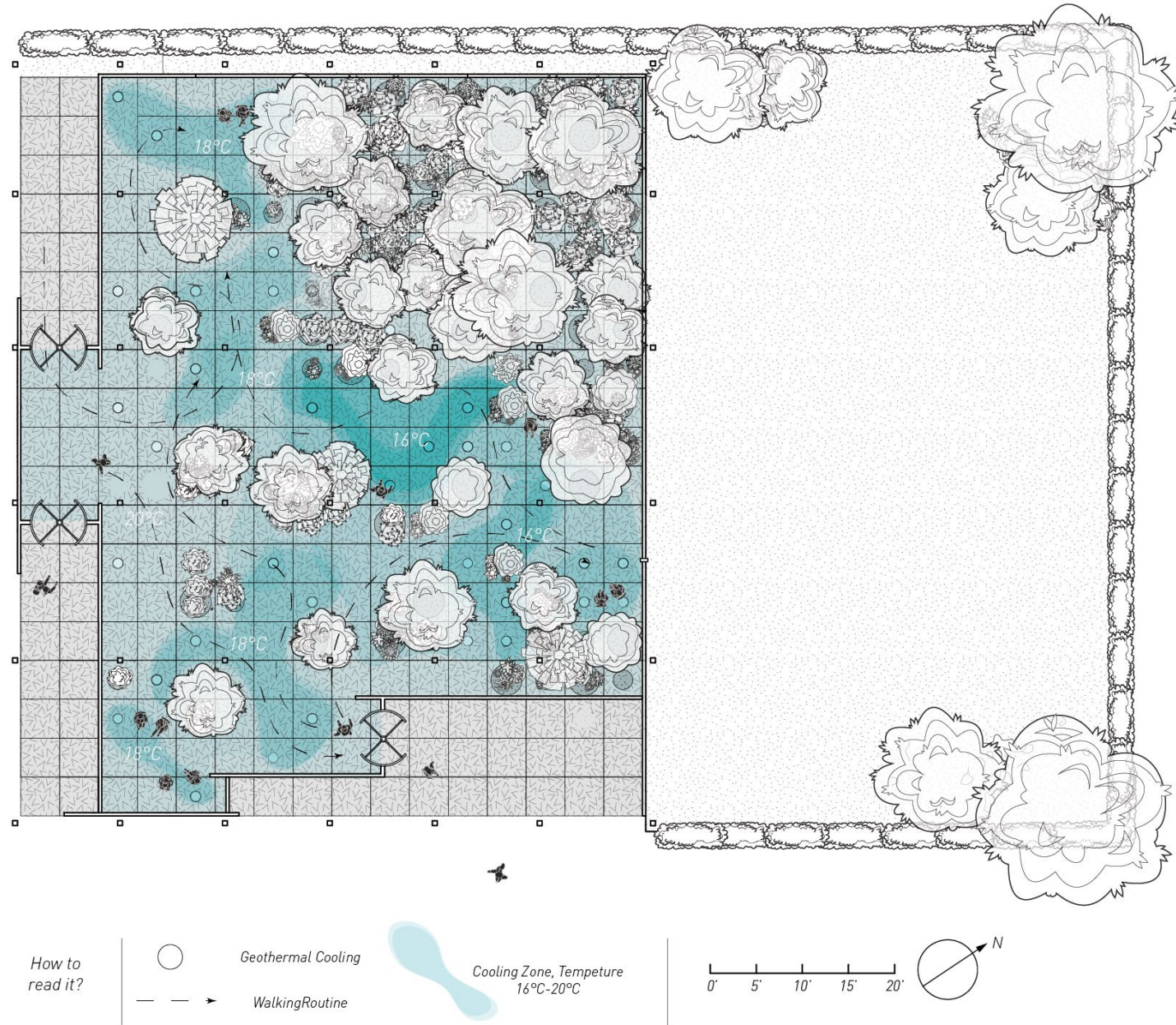
17°C

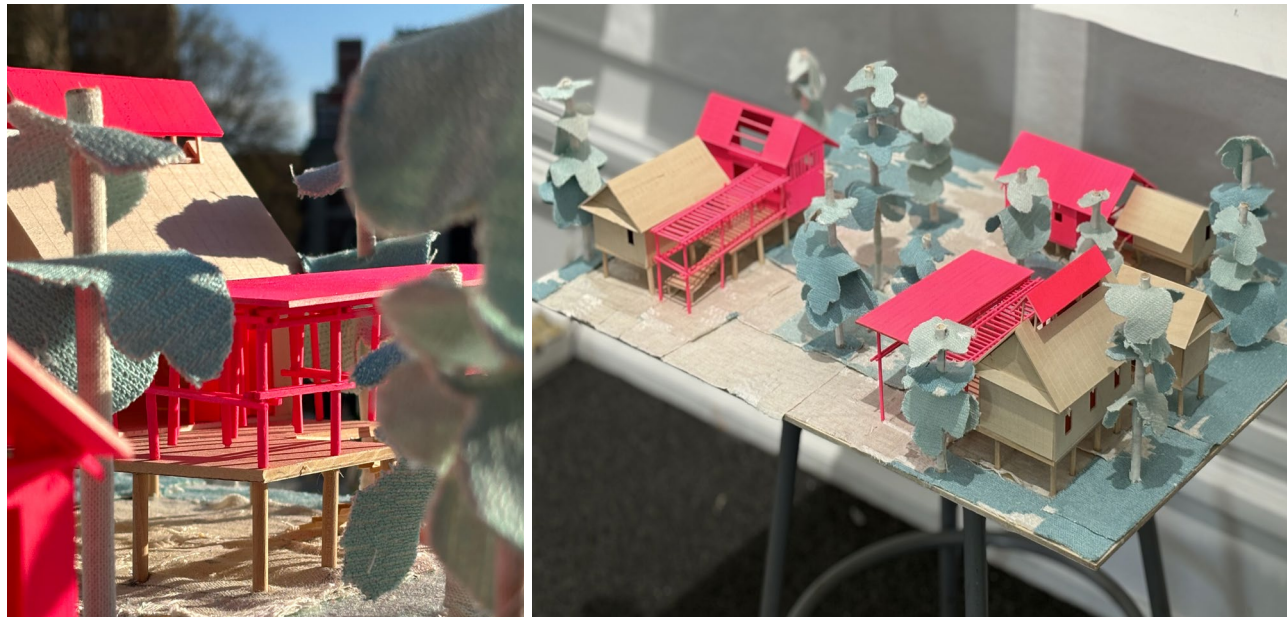
17°C

Geothermal System

15°C

Implement geothermal cooling to establish a cool microclimate zone for arctic plants and students.





JIM THOMPSON RESIDENCE

RESIDENTIAL

The project is working on the design of the residence units for artists and occasional guests in the spirit of Jim Thompson House and Isaan Village. Artists could stay for a short period of time as a few weeks, or several months. A lot of interaction among artists and the weavers of the farms are encouraged.

Our design concept stems from a deep admiration for the adaptive ingenuity of local residents in Thai villages. Inspired by their lifestyle in utilizing upcycled materials to modify their homes for needs, we aim to breathe new life into long-vacant structure at the farm and enrich community spaces. Utilizing five existing structures, each with its unique character and history, we propose a transformative project. These structures, primarily used for one month of seasonal tourist visits, will be reimaged into different spaces, including kitchens, studios, and residences. Our design approach prioritizes sustainability, community engagement. By repurposing existing structures and incorporating upcycle materials, we aim to create spaces that resonate with the ethos of the village while offering new opportunities for social interaction and artistic expression.

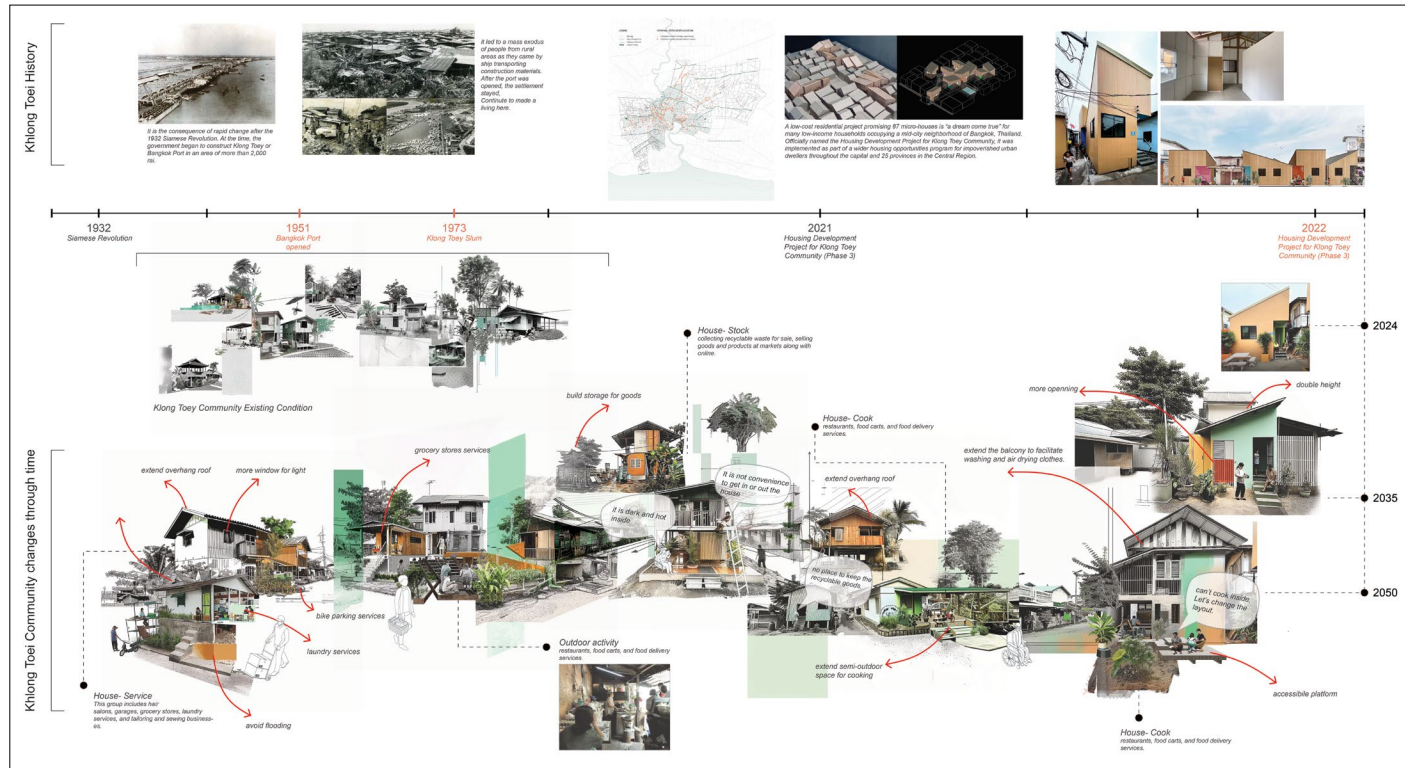
Columbia GSAPP Advanced Studio (Spring 2024)

Critic: Rachaporn Choochuey, Lucy Navarro

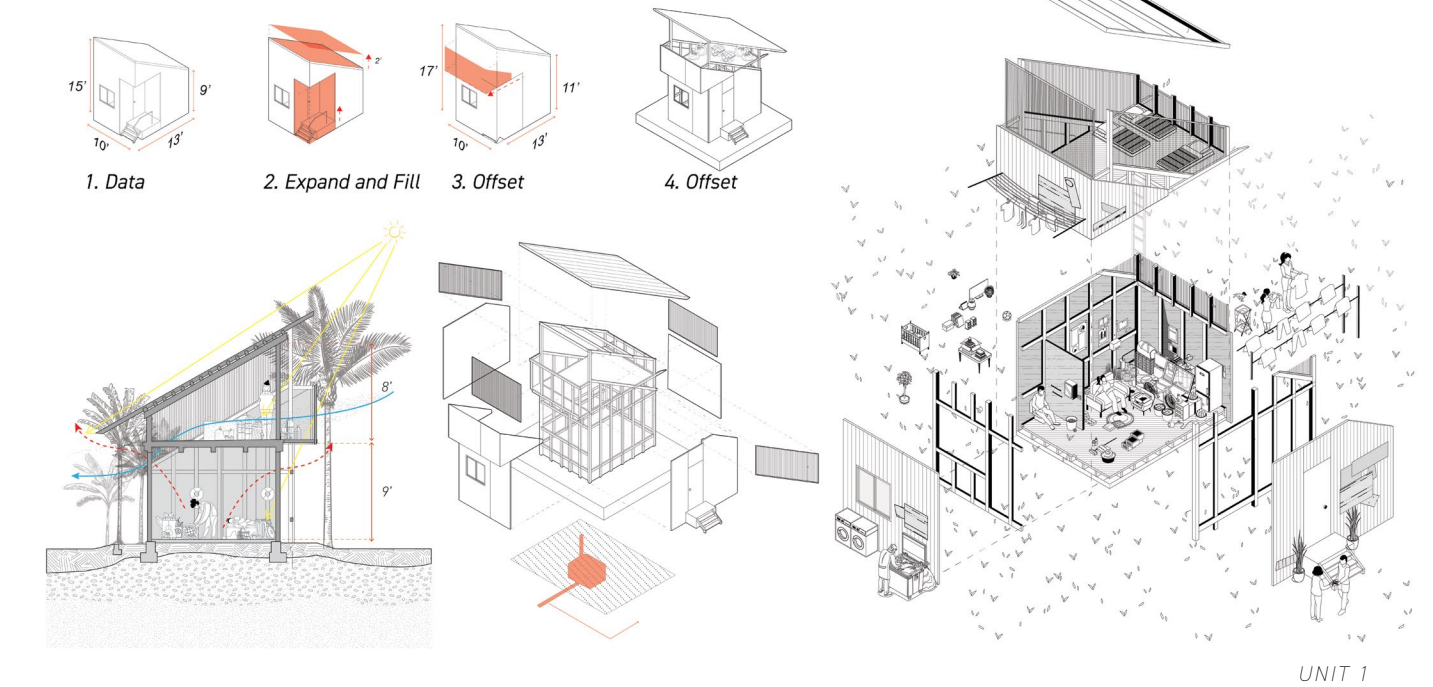
Role: Group Work, Partner: Licheng Huang

Site: Jim Thompson FARM, Thailand (14.644061979643595, 101.86663254042853).

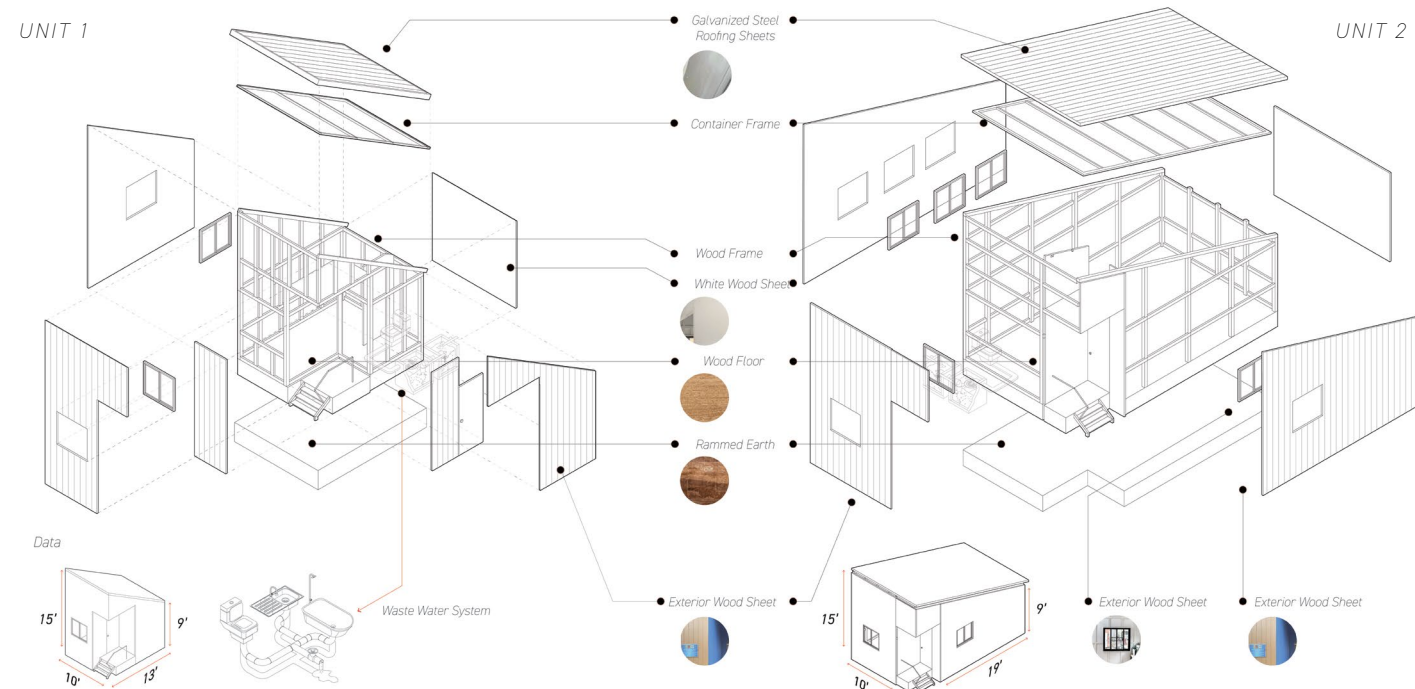
Local settlement analysis before going to Thailand : Khlong Toei Community Transformation



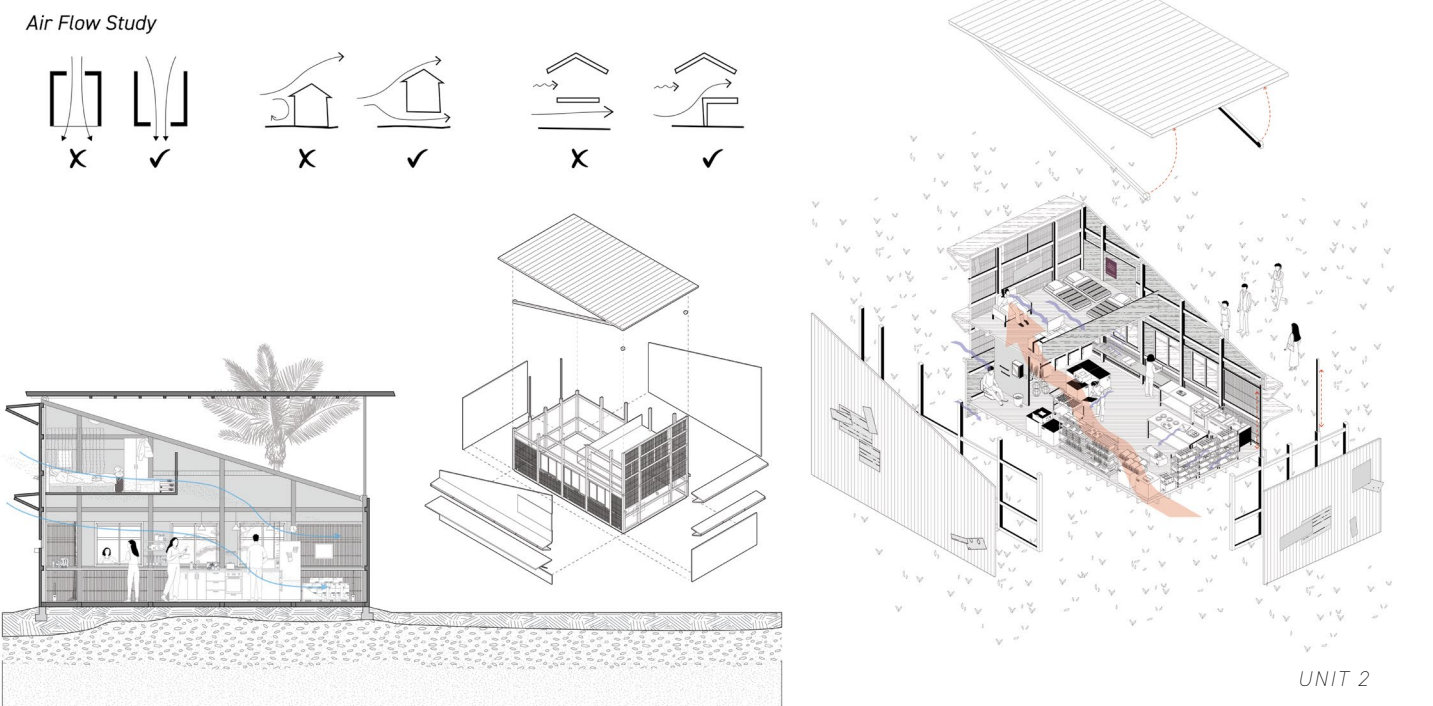
Adaptive Single-Family Housing: Stock-Centric Transformation: family is collecting recyclable waste for sale, selling goods and products at markets along with online.



Analyzing settlement's units



Adaptive Single-Family Housing: Kitchen-Centric Transformation: family :restaurants, food carts, and food delivery services.

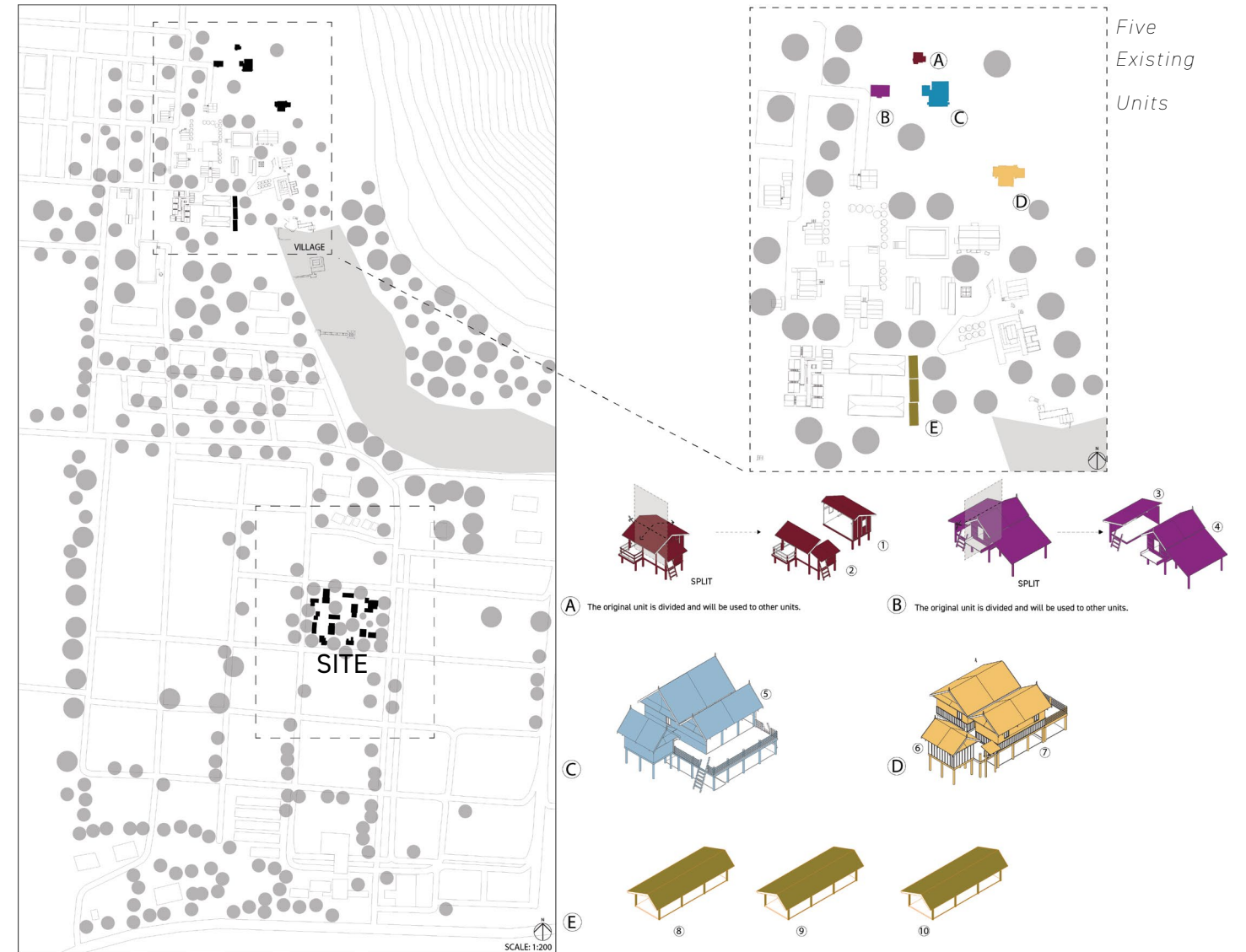




Local settlement analysis in Thailand

Resourcefulness and adaptability of local residents, who ingeniously repurpose upcycled materials to modify their homes, reflecting both necessity and creativity.

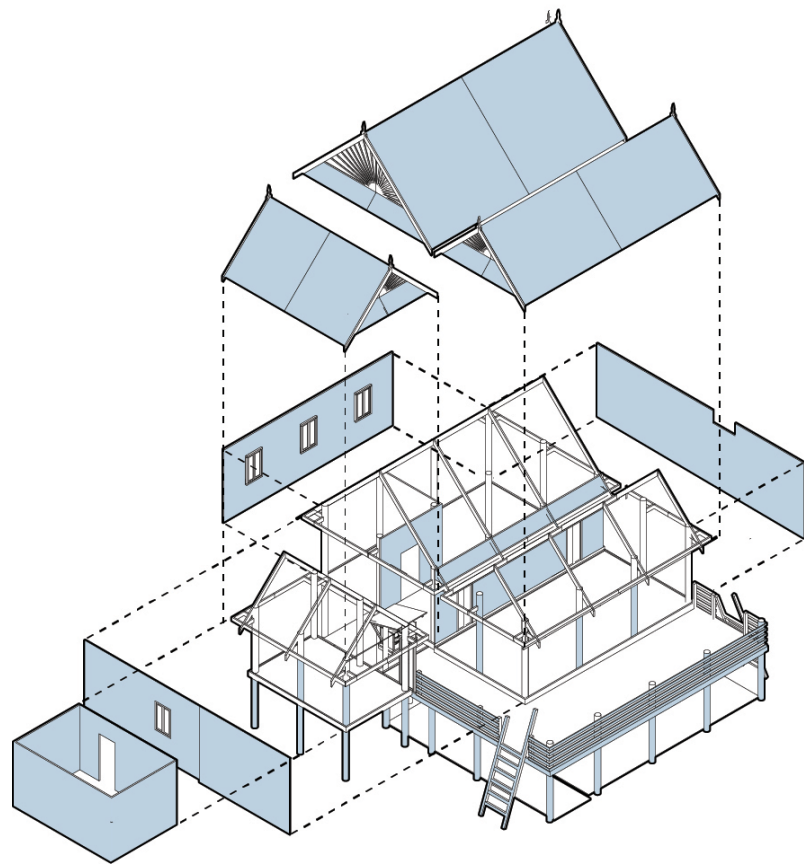
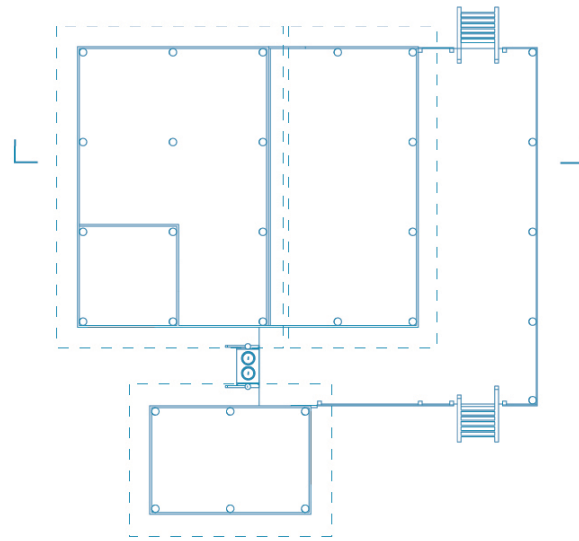
Farm Map



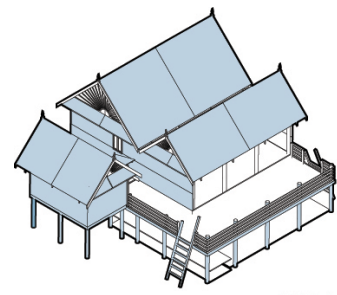
Site plan

During our visit to the farm, we learned from local operators that many traditional houses on-site remain empty for most of the year, with only about a month of usage annually, primarily serving as structures for tourist visits. Hence, we pondered whether we could repurpose these long-term vacant units and breathe new life into them. On-site, we identified five existing structures, each represented by a different color, situated on the outskirts of the village, mostly unused.

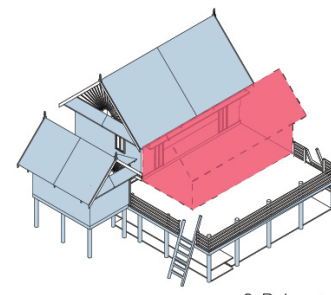
Kitchen & Dining



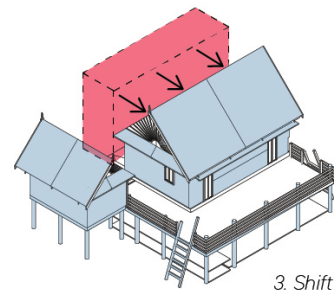
Existing



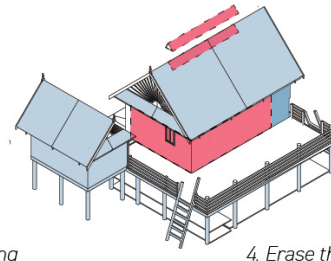
1.Original



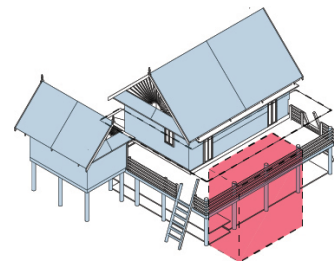
2. Relocate to residency unit.



3. Shift the existing forward

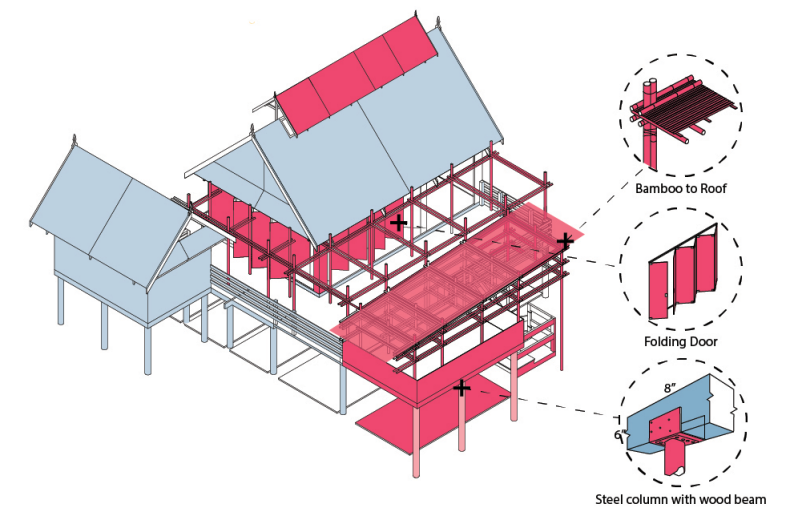
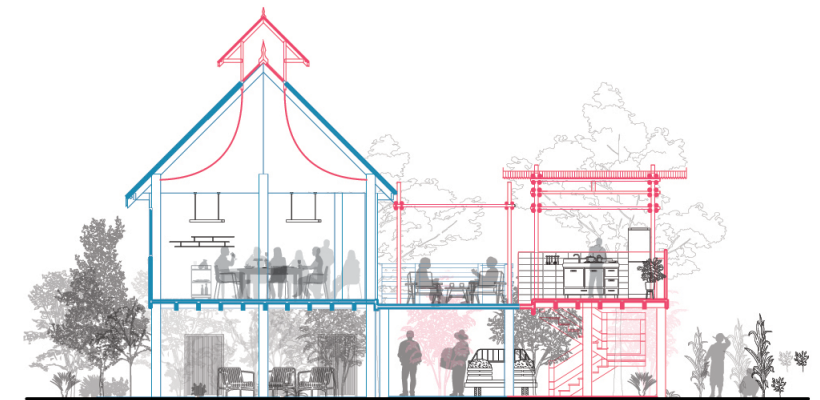
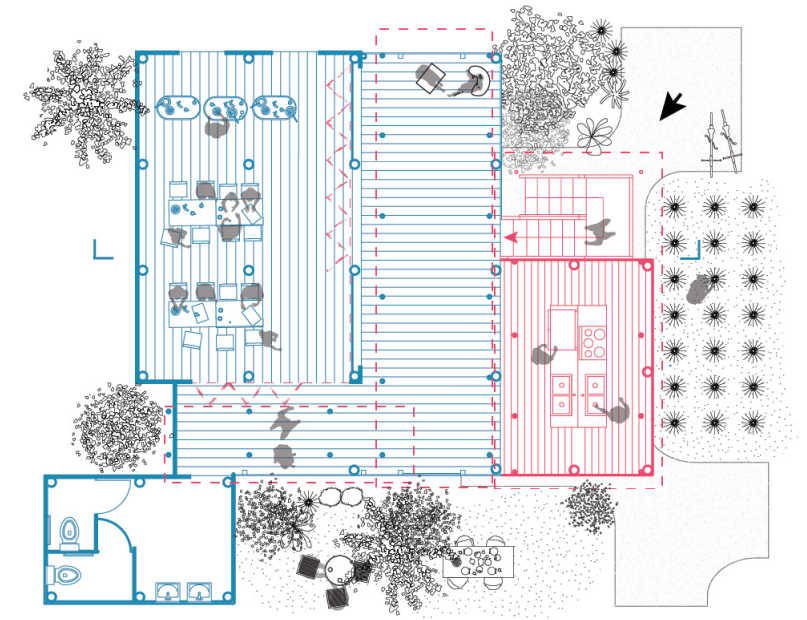


4. Erase the top light goes in / add folding door.



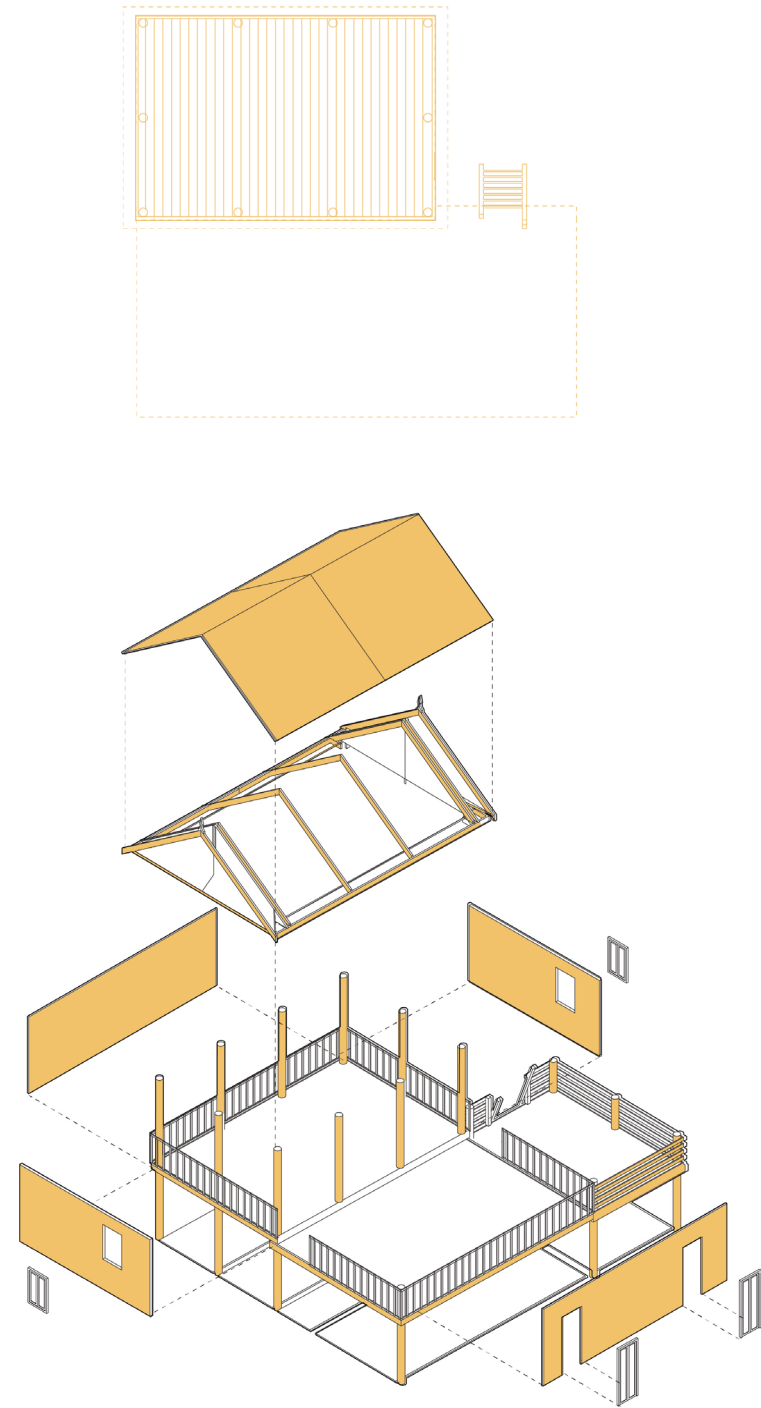
5. Adding bamboo canopy and kitchen program

Design Process

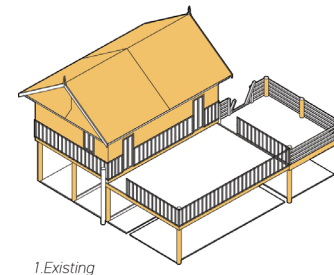


Proposal

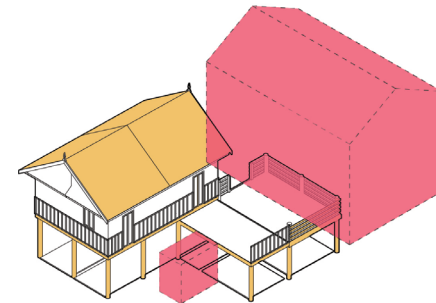
STUDIO



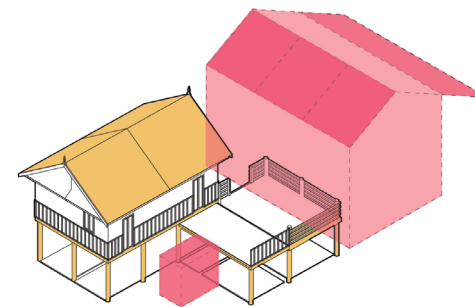
Existing



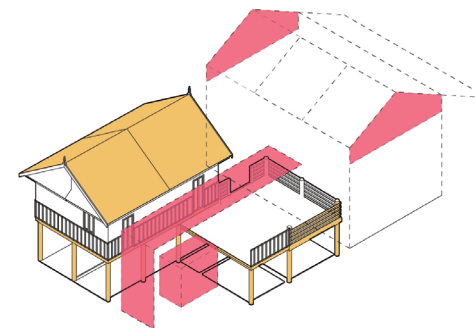
1. Existing



2. Relocate to residency unit.

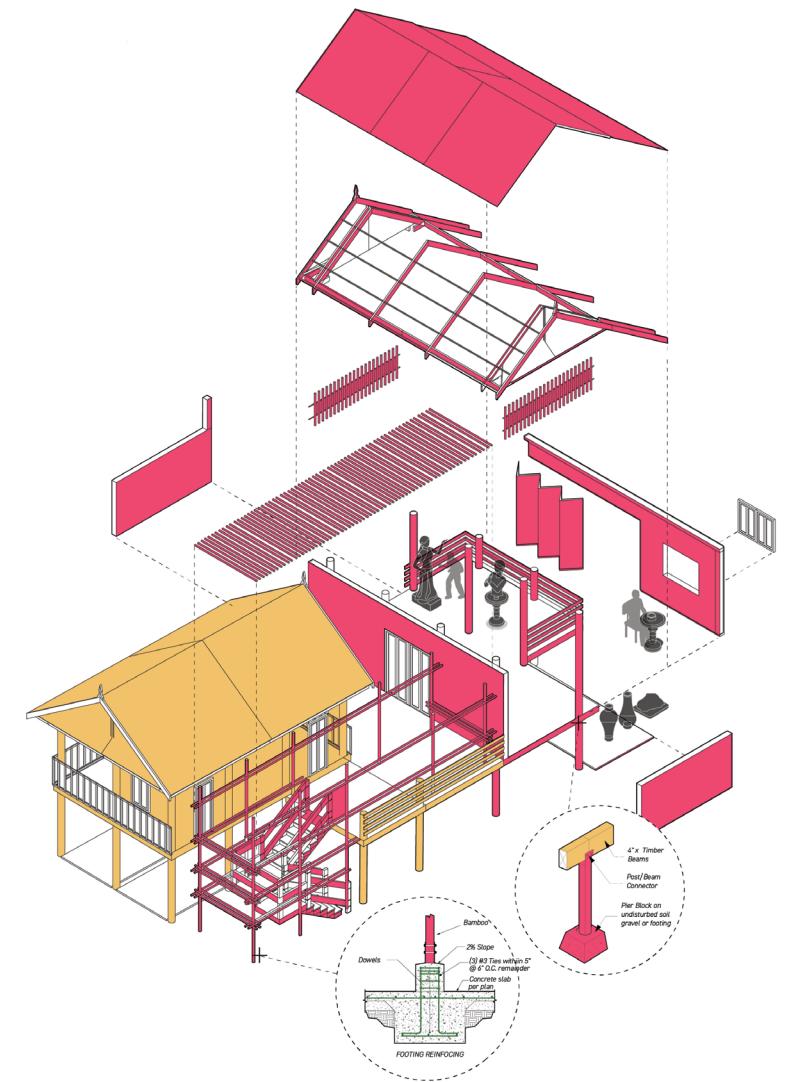
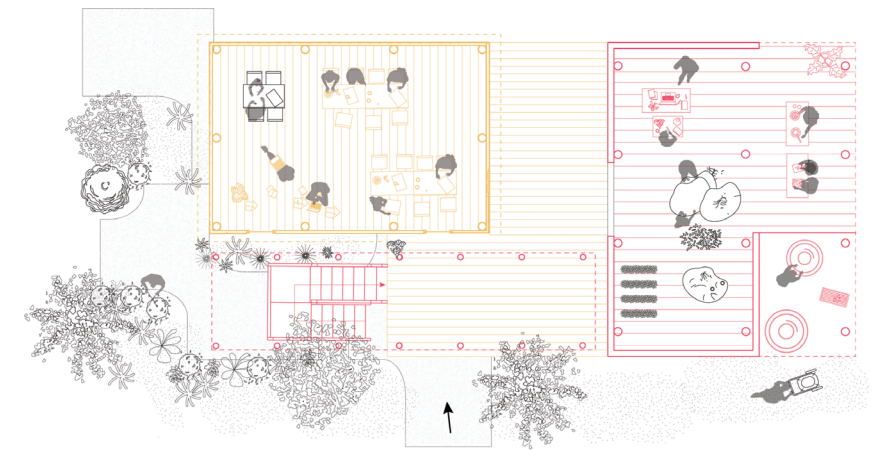


3. Adding Structure.



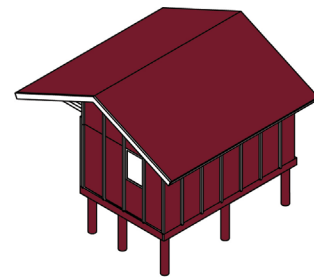
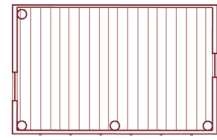
4. Creating Shading and Ventilation.

Design Process

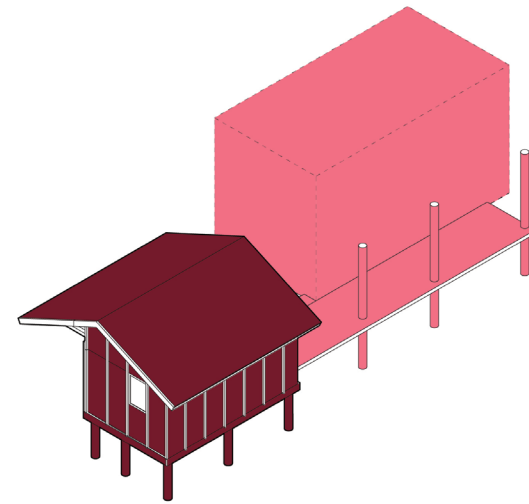


Proposal

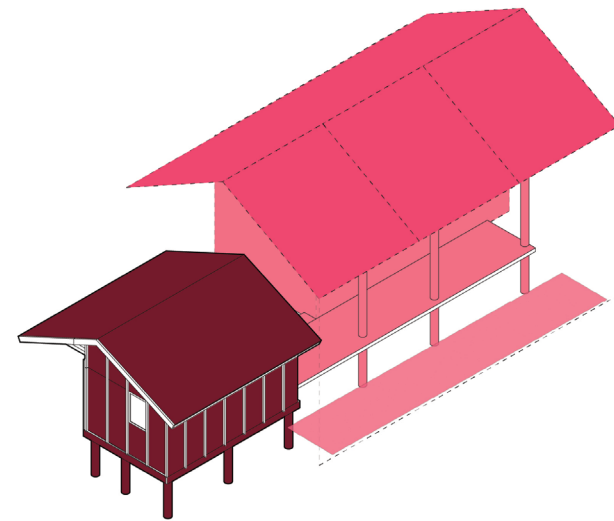
Residence



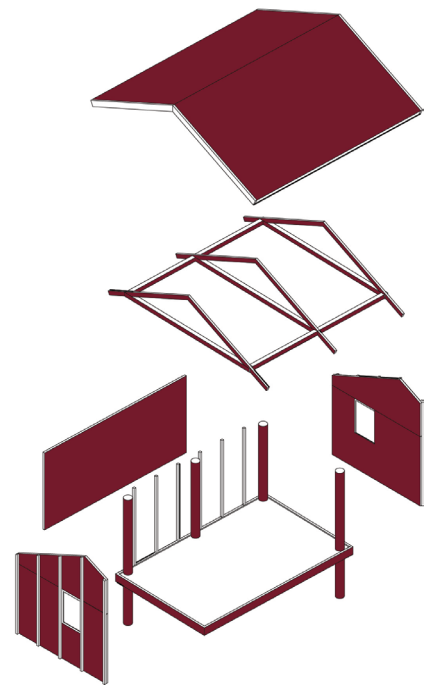
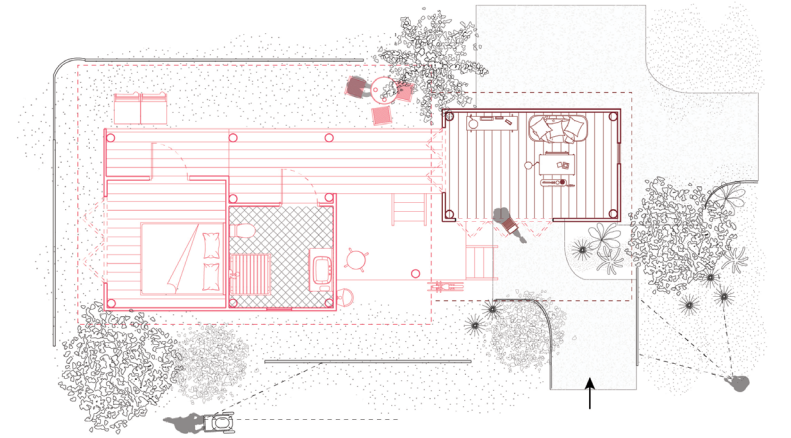
1. Existing program severe as livingroom and work studio



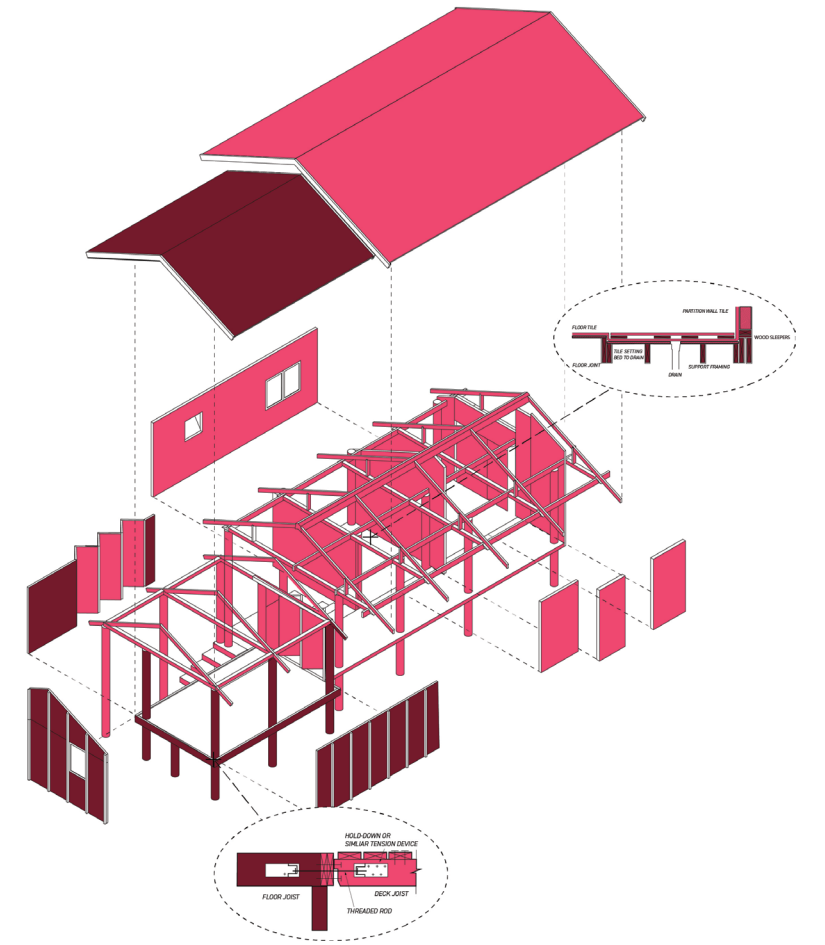
2. Add extra footprint for bedroom and restroom.



3. Extend roof overhang to create outdoor space for cooking, washing machine

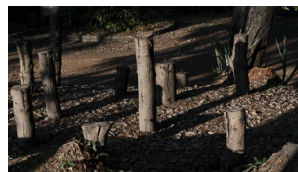
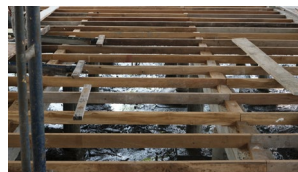
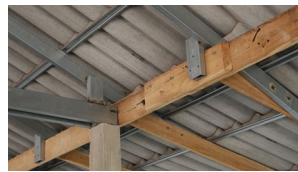
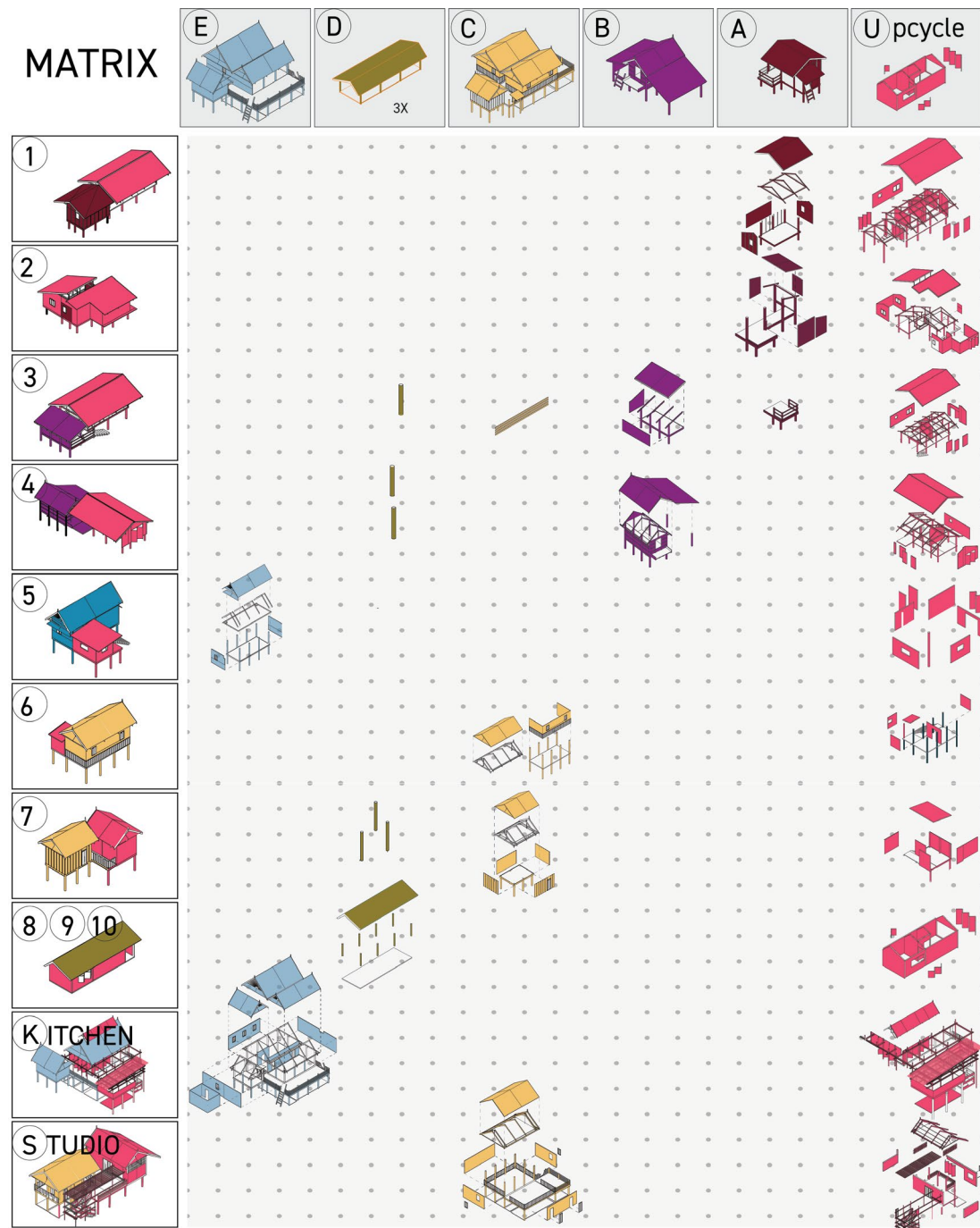


Existing



Proposal

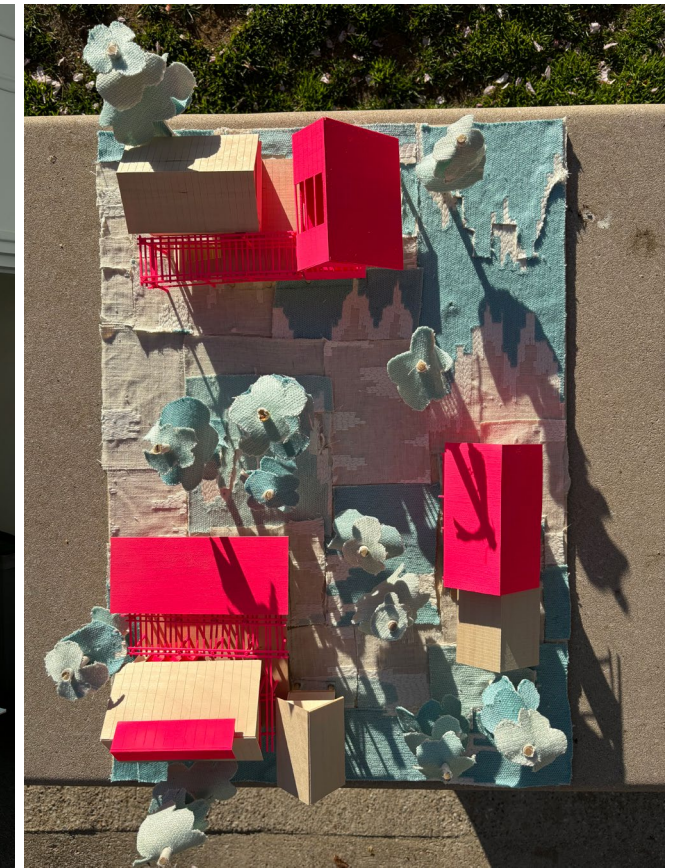
Design Process

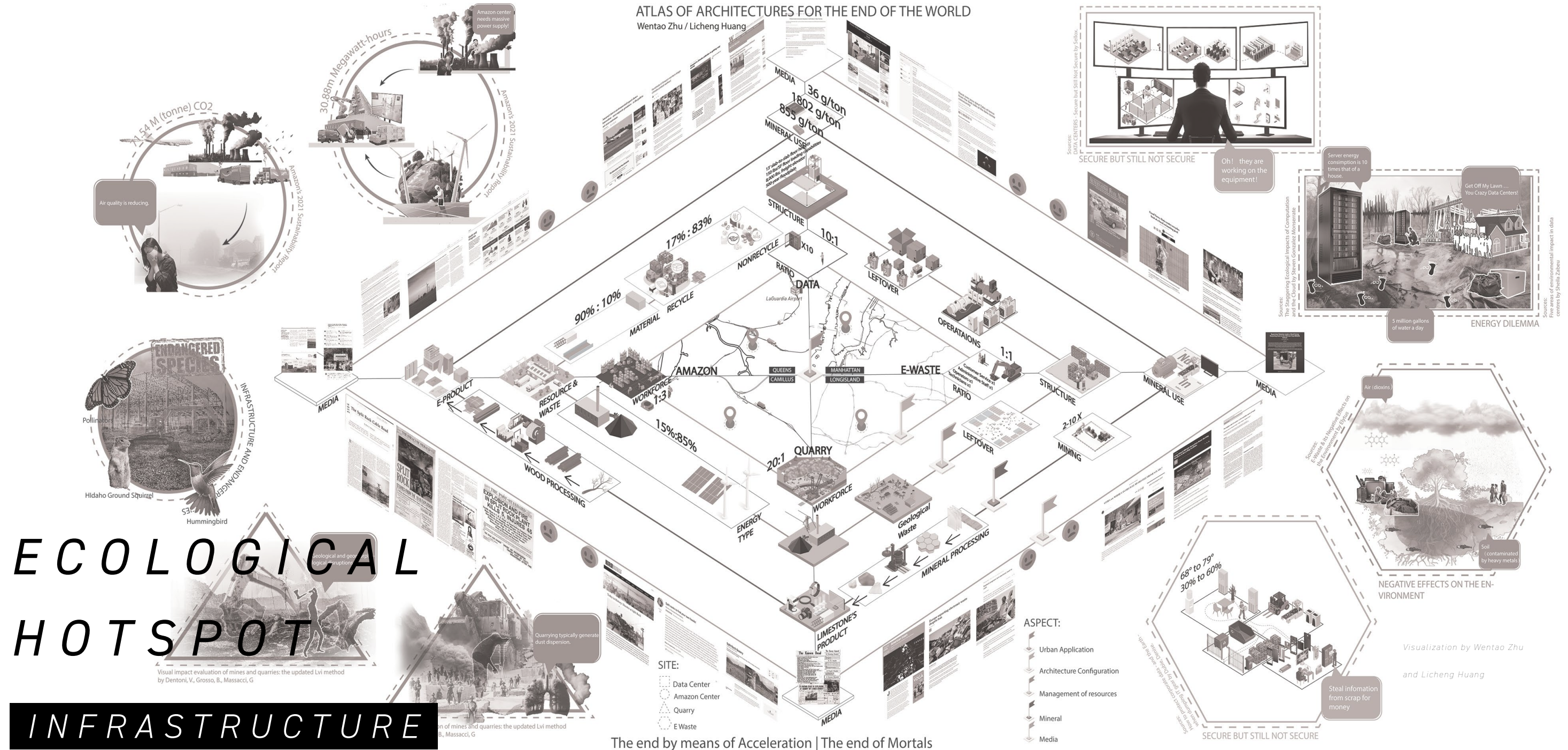


Studio Photos



Exhibition





Columbia GSAPP Advanced Studio (Summer 2023)

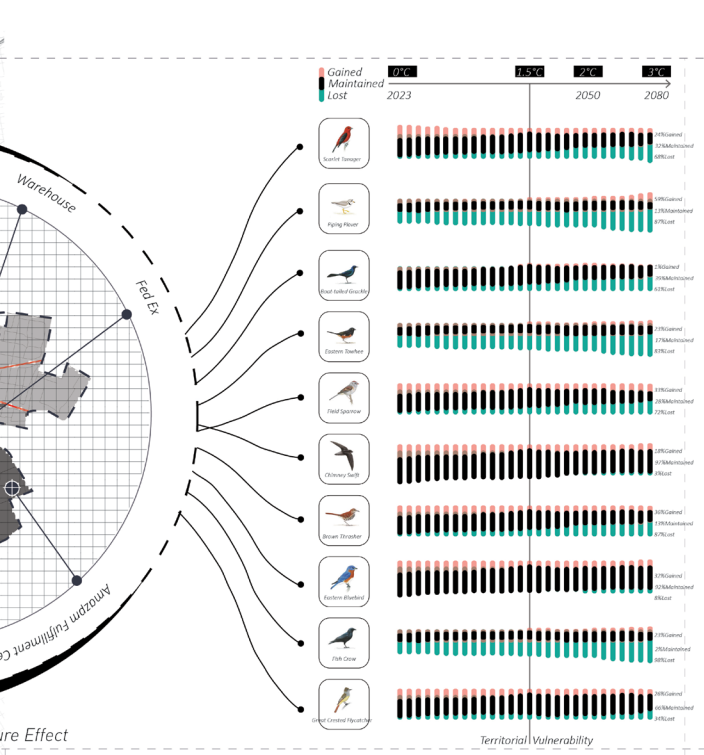
Instructor: Uriel Fogué

Role: Individual Work

Site: Newtown Creek, New York.

Through a series of installations and gardening devices, Ecological Hotspot is an innovative project that seeks to address the pressing environmental challenge faced by the Newtown Creek industrial area—the decline of bird habitats caused by the infamous “Earth Heater.” This visionary endeavor envisions a modern, public space designed to facilitate meaningful interactions between two distinct yet interconnected communities: the avian inhabitants and the Camper Force of Amazon Warehouse Center, also known as Nomads. They engage in a sustainable coexistence with their feathered counterparts.

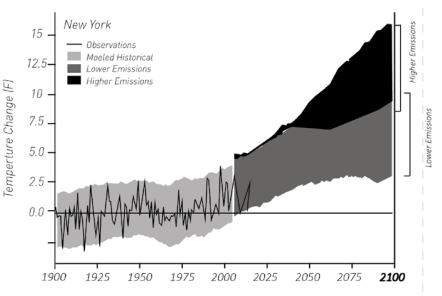
1 The End by Means of Acceleration
Ecological Hotspot
 Revitalizing Logistic Centers Through Camper- Community and Ecological Infrastructure.



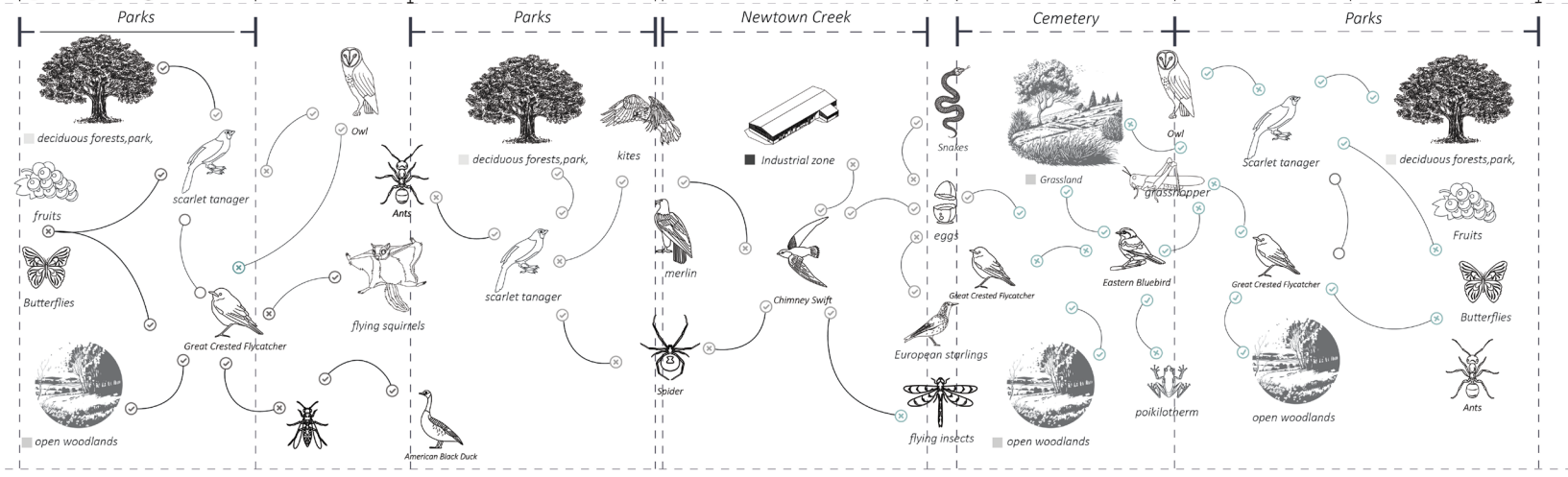
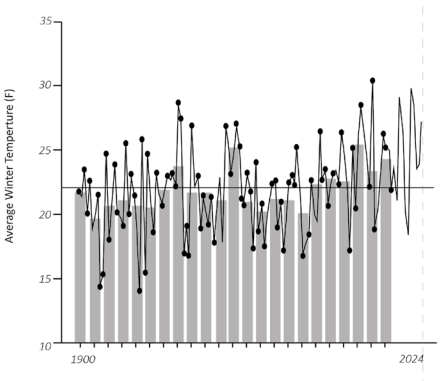
Urbanization's Impact: Accelerating Change and Avian Decline in New York City

In New York City, the average temperature has risen by at least 2.5 degrees Celsius due to urban development and various forms of pollution and greenhouse gas emissions. This increase in temperature has had devastating effects on the local bird population, with many species facing extinction in this century. For example, species such as the Eastern Meadowlark, once a common sight in New York, are now rarely seen. Additionally, habitat loss and changing environmental conditions have made it increasingly difficult for birds to find suitable nesting sites during their breeding season, posing a crisis for avian reproduction and biodiversity in the region.

State Climate Summaries 2022 150 NY
 Temperatures (Orange Line) have risen almost 2.5 since 20th century.



State Climate Summaries 2022 150 NY

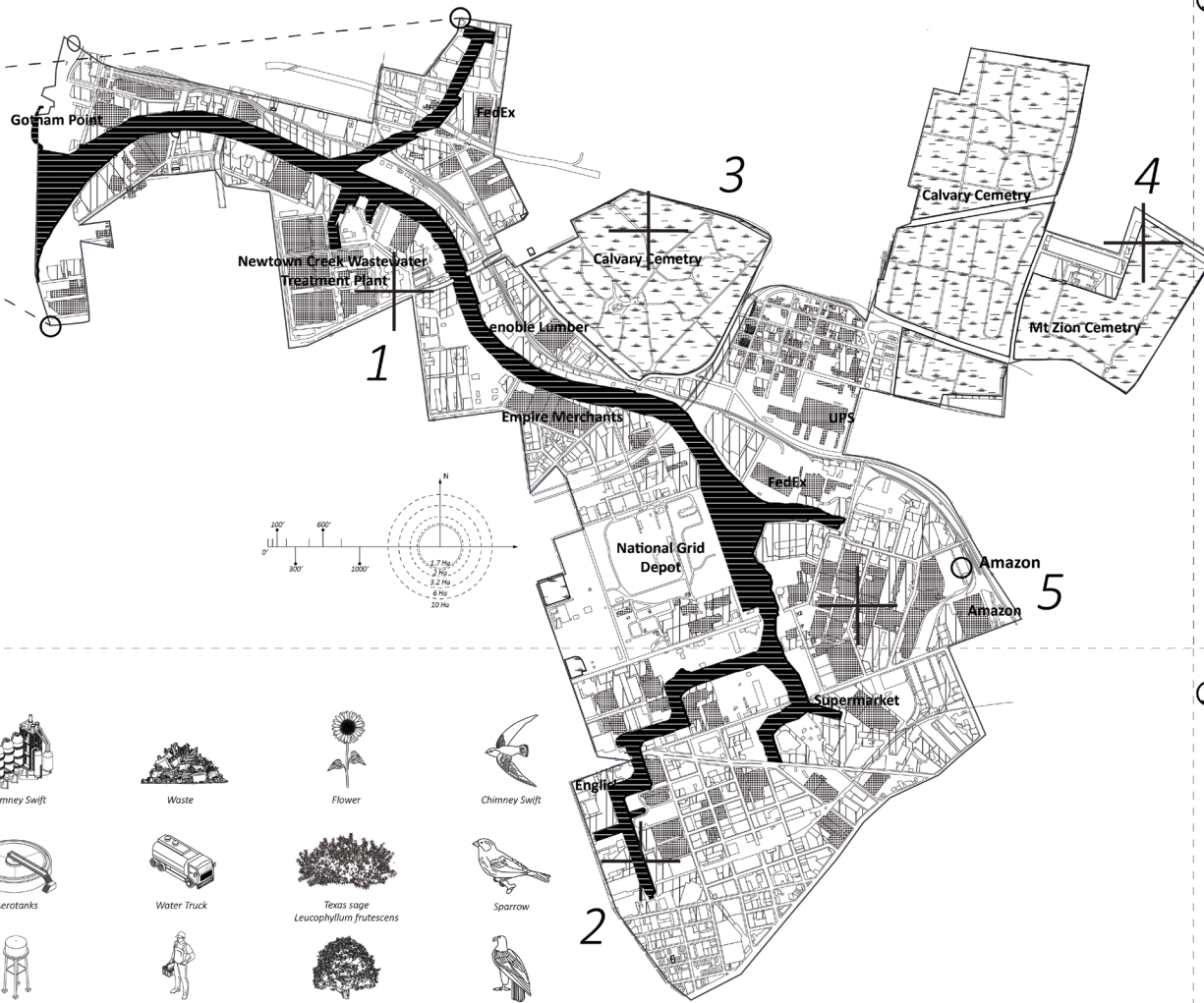


2. The End by Means of Acceleration
Ecological Hotspot
 Revitalizing Logistic Centers Through Camper- Community and Ecological Infrastructure.



Legend

- Parking Lot
- Roof
- Open Space
- Territory



1 Wastewater Treatment Plant



2 English Kills



3 4 Cemetery



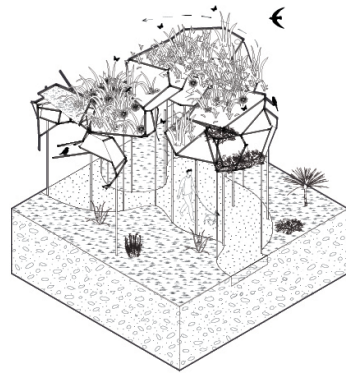
5 Warehouse



Adaptation Amidst Urbanization

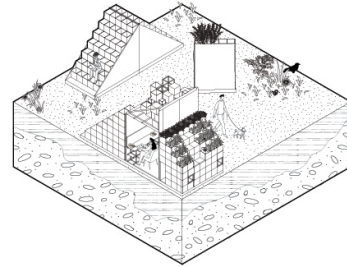
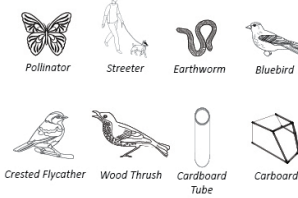
The Newtown Creek Area, once renowned as a significant nesting ground for both land and seabird species, has undergone a dramatic transformation into an industrial hub. This urbanization has reshaped the landscape, displacing natural habitats and threatening biodiversity. Despite these challenges, some species, such as the Chimney Swift, have demonstrated remarkable adaptability by finding innovative ways to coexist with human society.

While the industrialization of the Newtown Creek Area has undoubtedly altered its ecological dynamics, the presence of adaptable species like the Chimney Swift serves as a testament to nature's capacity for resilience and adaptation in the face of urbanization. Efforts to preserve and restore natural habitats within urban landscapes can help mitigate the impact of industrial development on wildlife and promote coexistence between humans and nature.



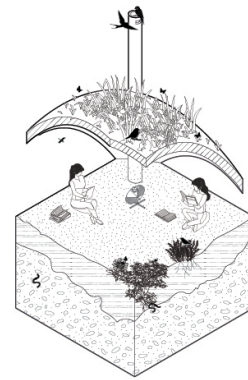
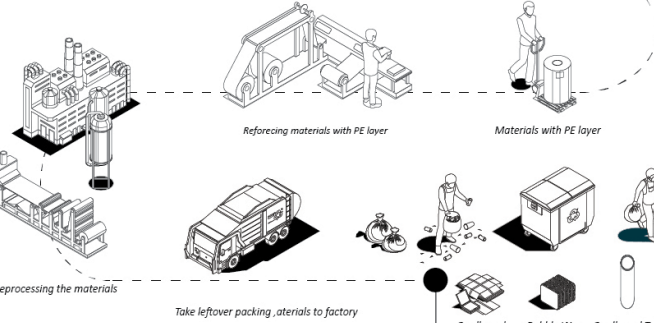
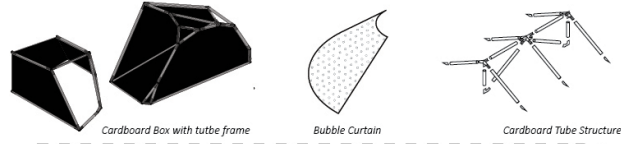
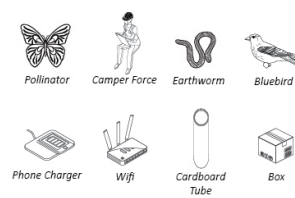
Carboard Canopy

Canopy made by cardboards form artificial tree like structure for birds and help shading the street of Newtown creek.



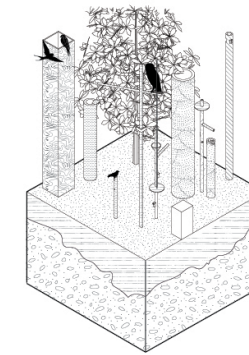
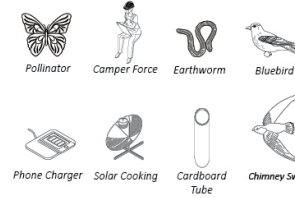
Mobile Station

This module is a mobile station that is consist of a charging room with wifi, moveable gardens also can be served as seat for camper.



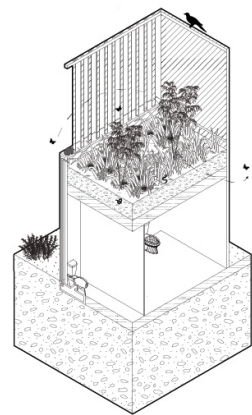
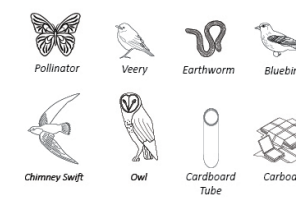
Cave Space

Community spaces for Camper Force of Amazon. The structure contains chimney for swift to nest, inside the cave will serve as warming zone for camper during winter.



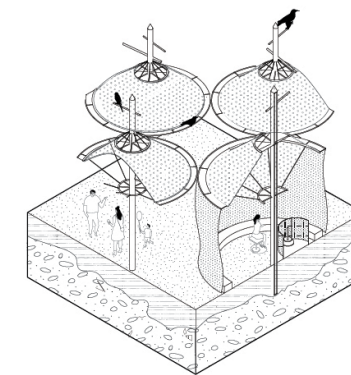
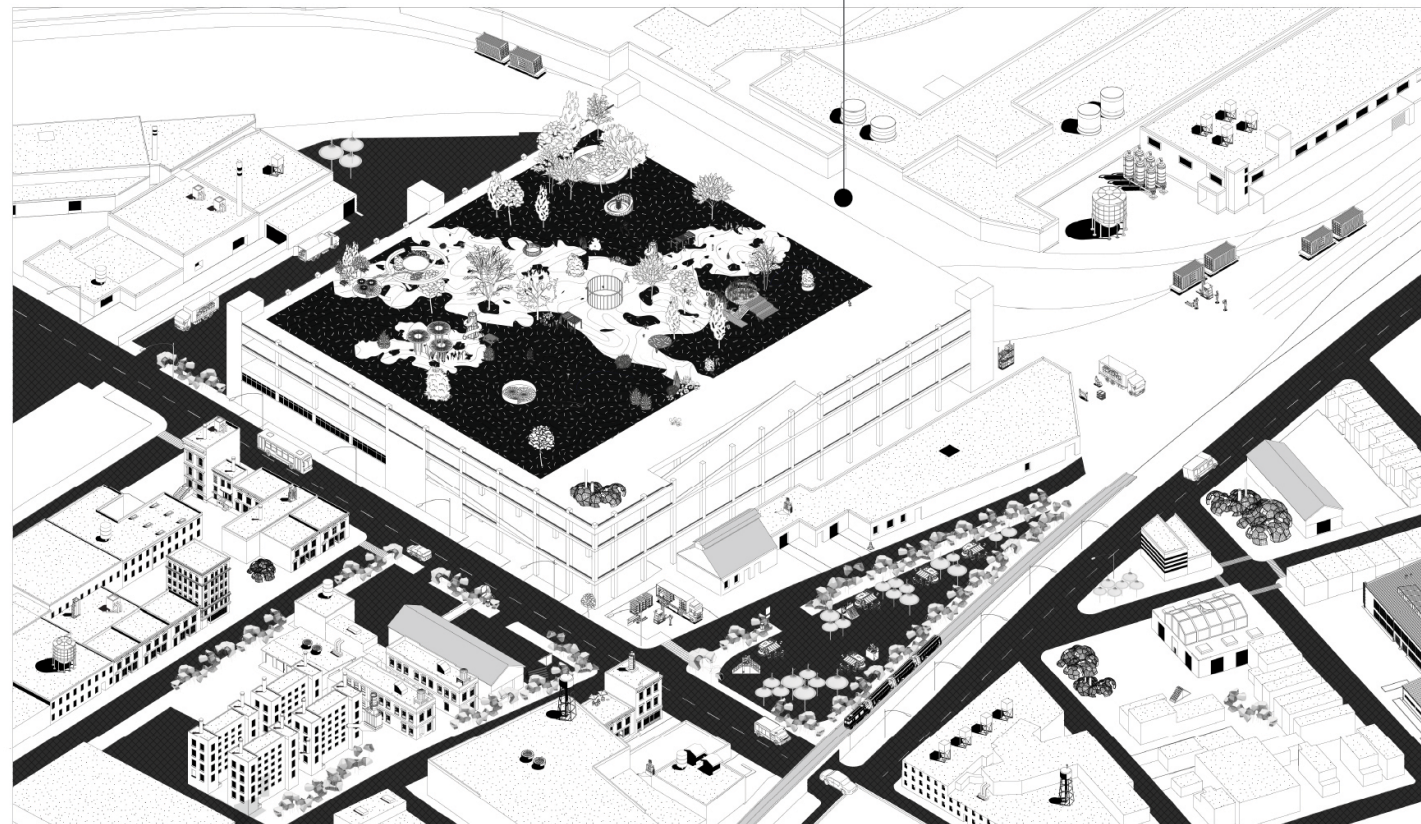
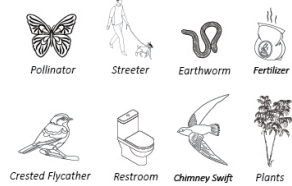
Garden of bird

Space for the encounter between the birds (native and non-native) and the people of New York (residents and commuters, students and tourists)



Pooping Cabin

Restroom for Camper Force of Amazon. The poop will be recycled for soil enrichment. From the compost material to the rooftop plants that are cultivated from it.



Bubble Hub

This module is a canopy placed on the street, parking. One canopy with bubble curtain becomes a private individual space. Three canopies together turn into a social space for streeters. Top can be served as stand for birds.



Design Proposal

This project focuses on the Amazon Fulfillment Center in the Newtown Creek area as an experimental site for reusing the substantial amount of packaging waste generated annually, including cardboard, wood, steel, paper, foam, and bubble wrap. These materials will be repurposed into various new installations that can be attached to different locations within the area. These installations serve two primary functions: firstly, to meet the living needs of the nomadic community working at Amazon, providing amenities such as restrooms, resting areas, charging stations, and internet access; secondly, to provide artificial bird habitats, allowing avian species to resettle and breed within the area. Through this innovative approach, the project aims to address both human and ecological needs, utilizing waste materials to create functional and environmentally beneficial solutions for the Newtown Creek area.

Presented By

Wentao Zhu

Copyright 2024 by Wentao Zhu

All Rights Reserved

wz2655arch@gmail.com