SOKAINA

[S O - C A N - U H]

ASAR

WORK SAMPLES

architecture

fine arts & fabrication

essays

imagination

a catalyst for evolution, adaptation, and design

KNOWLEDGE, DESIGN, AND CONTEXTS | SPRING 2021

PRATT INSTITUTE | GRADUATE ARCHITECTURE AND URBAN DESIGN

4 Still life oil painting, Intermediate Painting course Fall 2018.

In terms of the evolution of the modern human being, a feature that distinguishes humans from other species is cognition, language, and a developed neocortex that allows for specialized thought functions. Brains in the Homo sapien were fairly larger and more cognitively developed than predecessors. There is a connection between brain development and history of human evolution, as demonstrated by Daniel Lord Smail in On Deep History and the Brain. The neuro-historical perspective adds a new narrative to the known prehistorical and historical evidence of Homo sapien origin and evolution, that pushes the role of cognitive development to the forefront of discussions of how humans interacted with their environments in the Neolithic and Paleolithic eras. A variation of the Homo sapien, Homo erectus, demonstrates increased brain size at 1,250 cc, which is within the same range of the modern human brain. This was around the same time that bifacial tools were present on fossil records, providing evidence of improved and modified tool technology.

Brain size and tool-making are almost synonymous with the development of Homo erectus, a close variation to the modern human. Homo erectus's creation of the bifacial tool is crucial in this timeline. This was one of the first moments when we see a record of modifications in tools, as tools on the fossil record had remained unchanged for 2 million years prior, as well as the first time we see a carefully controlled manufacturing system necessary to create multiple bifacial tools.

The tool-making process "could be controlled only by constantly comparing the work in hand with an image of the finished product that is fixed in the mind's eye. This capacity to visualize things that do not yet exist has been seen as the fundamental hallmark of culture. Imagination. Combined with memories of the past and experience in the present, imagination enables people to plan for the future - tomorrow or years hence." (Reader, 85).

The message in this moment of tool-making history is profound. The human brain, specifically the neocortex, had developed enough to start visualizing a future with experiential and visual evidence from past moments. The modification in the design of a tool was a result of visualization, perception of an object, the imagined object, and ultimately the manifestation of the perceptive object. Therefore, imagination has significant implications for evolving design, even in prehistoric times that most likely led to more modifications in tool technology.

- excerpt from academic research paper

DECON-STRUCTING WASTESCAPES

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SCHOOL OF ARCHITECTURE
GRADUATE ARCHIECTURE AND URBAN DESIGN

Featured in Pratt SoA x NJIT
WAST[ED] exhibition at SOM.
Nov 2022.

a waste to energy facility

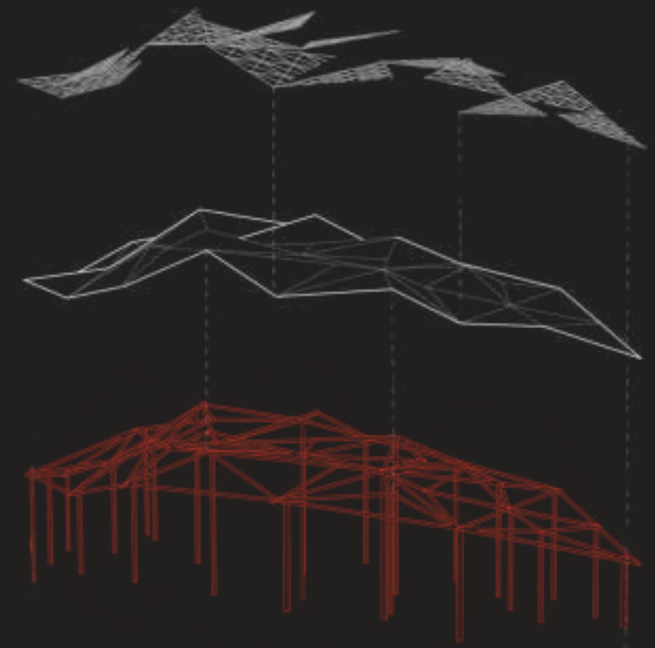
PARTNER: MARISSA ZHAO

INSTRUCTOR: JUSTINE SHAPIRO-KLINE

SPRING 2022

Wastescapes are the result of unsustainable linear growth processes and their spatial consequences within the context of urban metabolic flows and related infrastructure. They represent the operational infrastructure for waste management and include Drosscapes [1. "urbanized regions as the waste product of defunct economic and industrial processes," 2. "waste resurfaced, and reprogrammed for adaptive reuse"], generating complex relations with the servicing and surrounding territory.

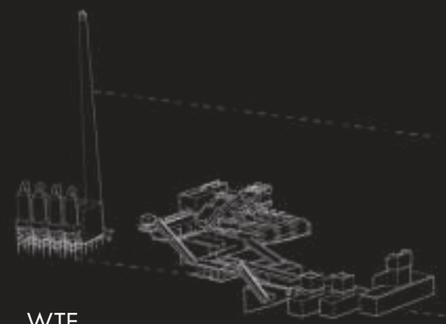
The project is about how to connect urban residents to the magnitude of collective waste and to the phenomenon, process and power of the biome to transform organic waste back into soil, into food, and into a new life cycle, especially with our urban agricultural program. Preserving our site's potential to extend this service, and integrating it with green spaces and uses, explores the symbiosis of industry and sustainability.



STRUCTURE

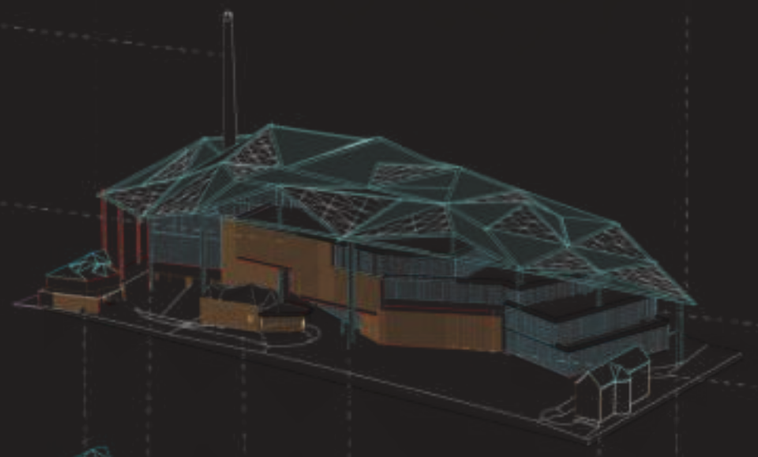
glass panels
open areas for plant growth
shading

engineered wood
beams + columns



WTE

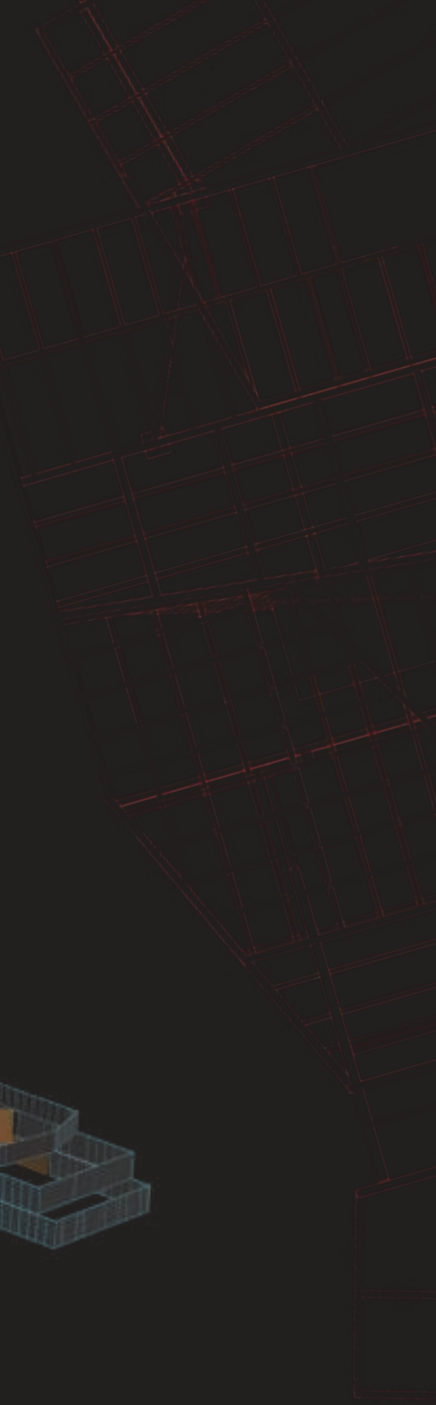
RECYCLING



ferry terminal

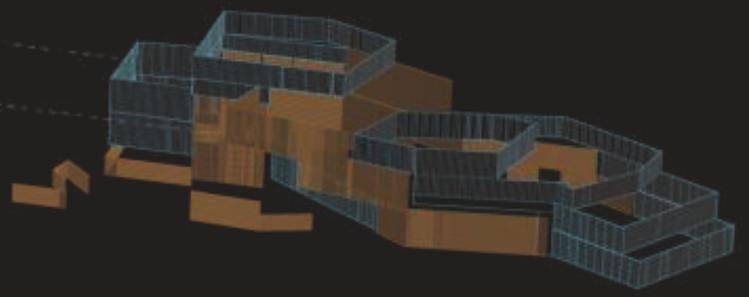
classroom + gallery

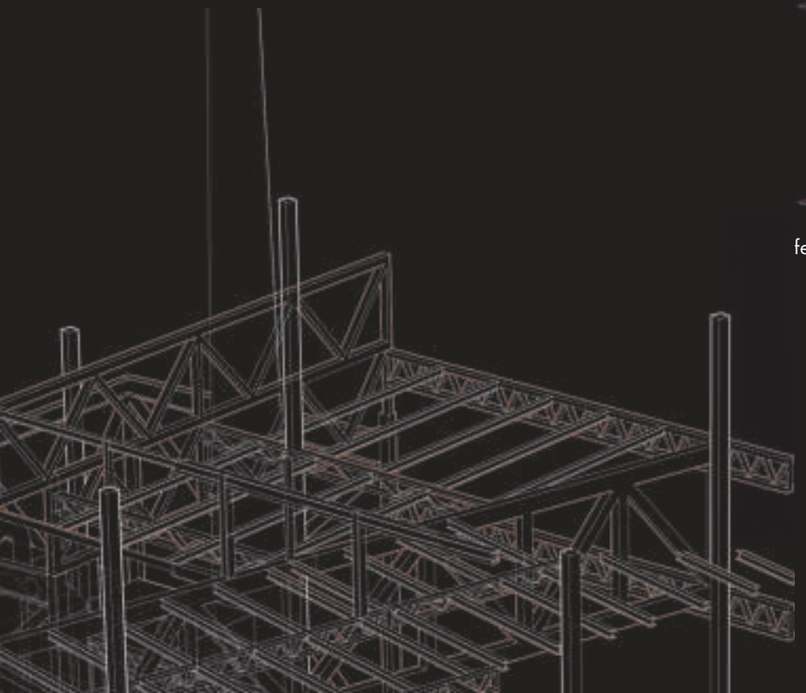
terracotta building

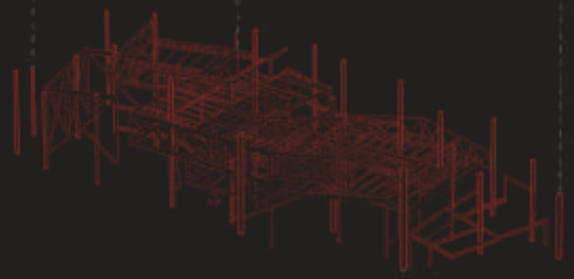


FACADE + ENVELOPE

channel glass
wood slat + glass curtain wall



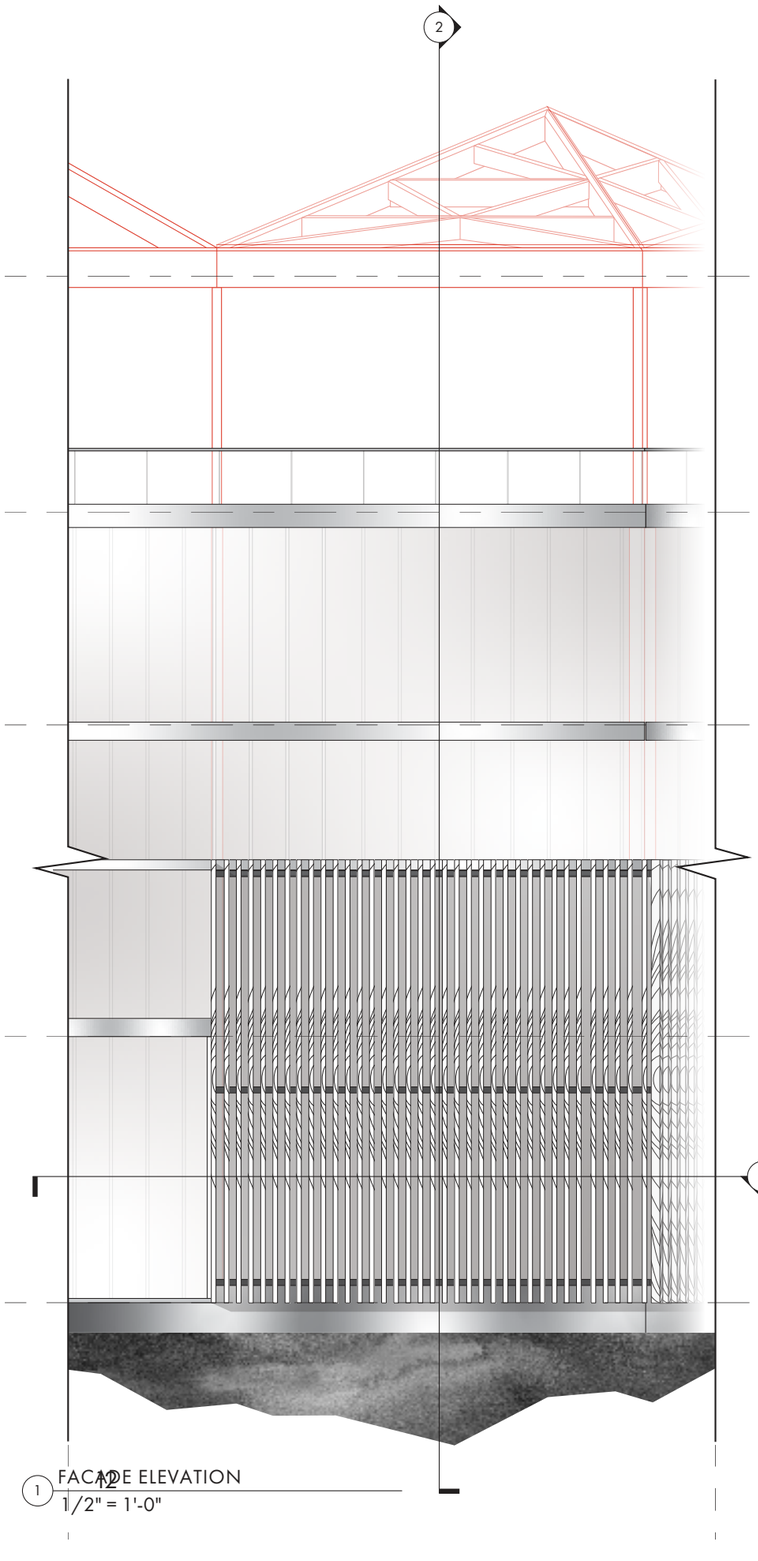




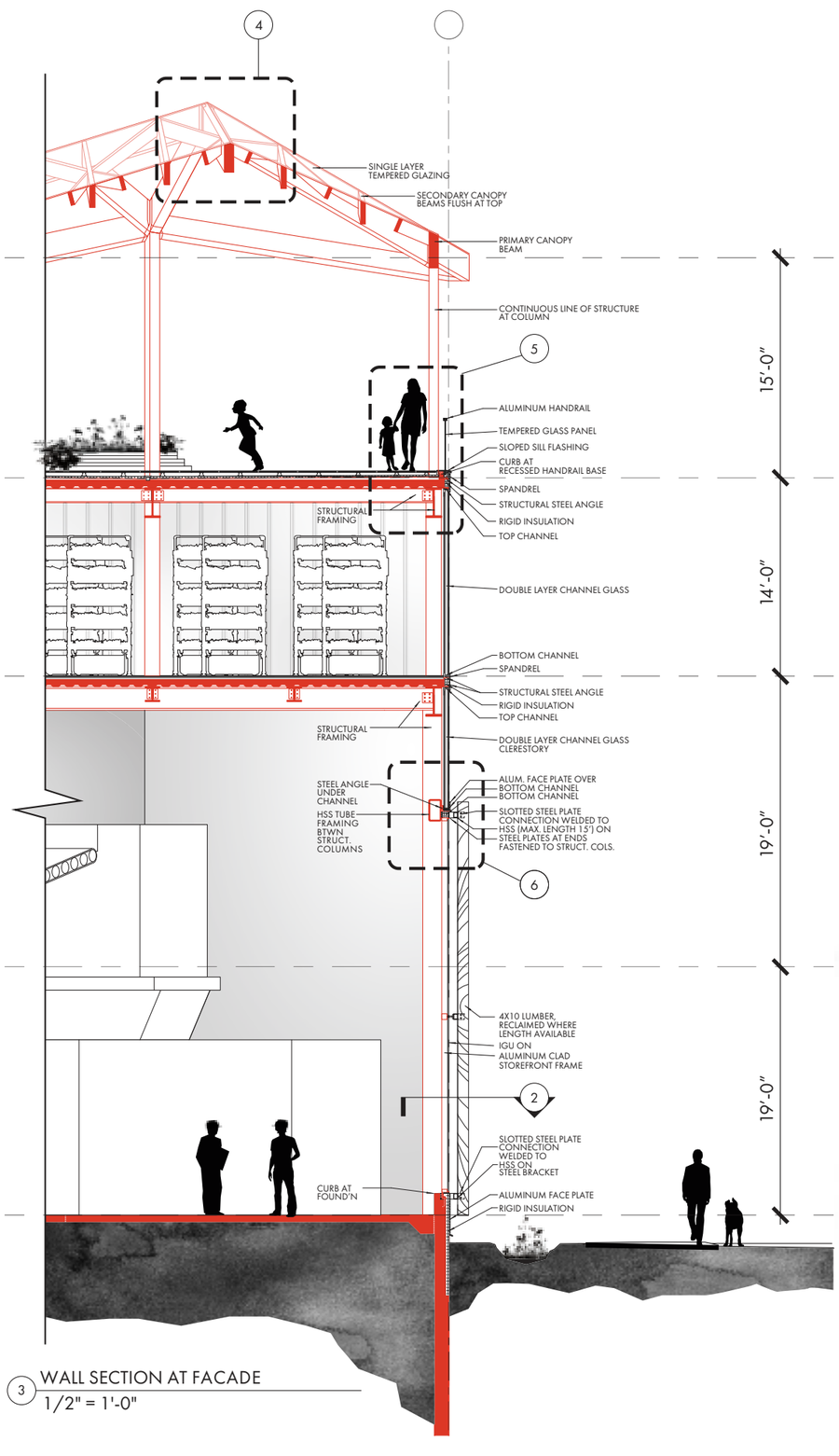
FRAMING

steel

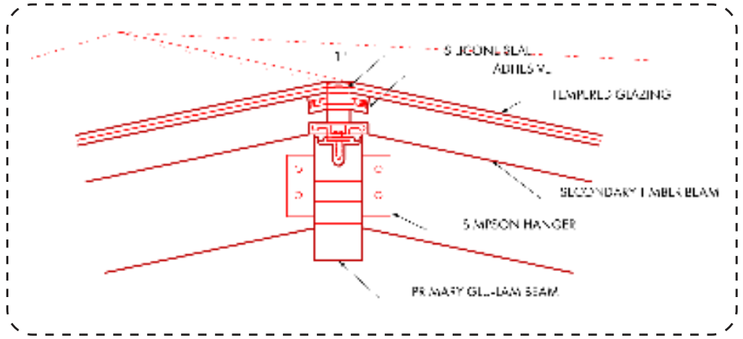
Ground Floor + Structural Framing

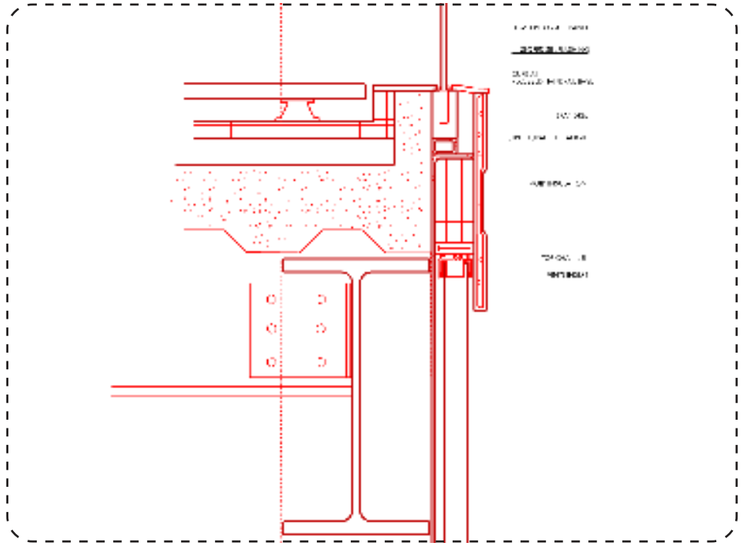


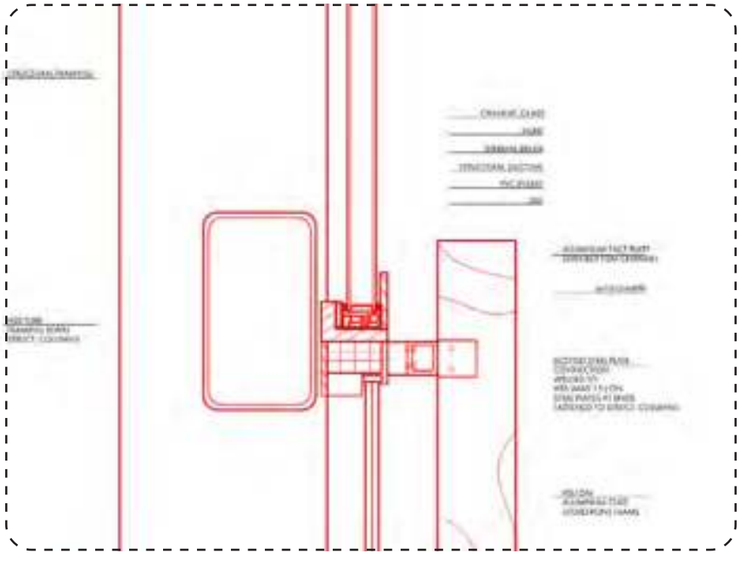
1 FACADE ELEVATION
1/2" = 1'-0"

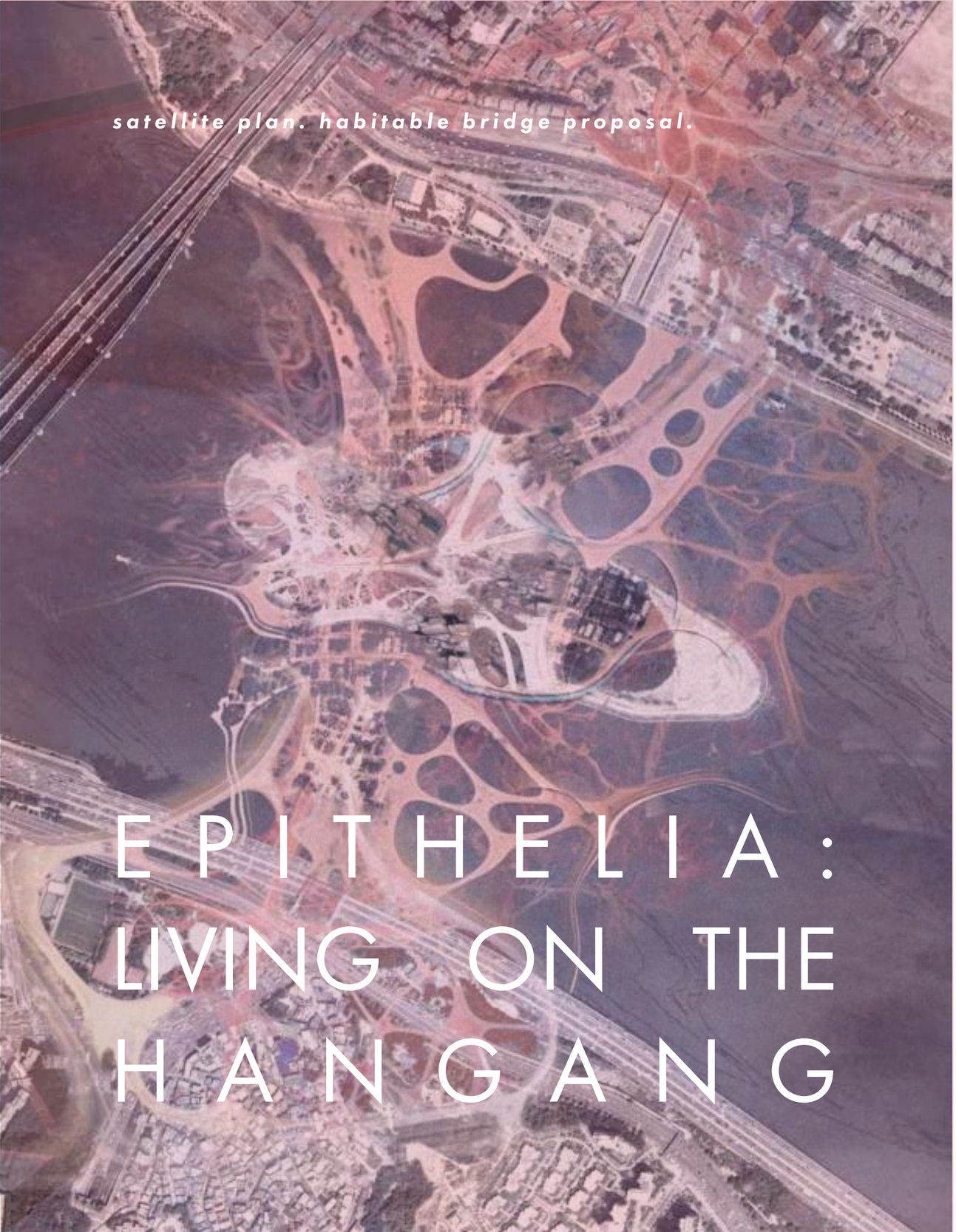


3 WALL SECTION AT FACADE
1/2" = 1'-0"









EPITHELIA: LIVING ON THE HANGANG

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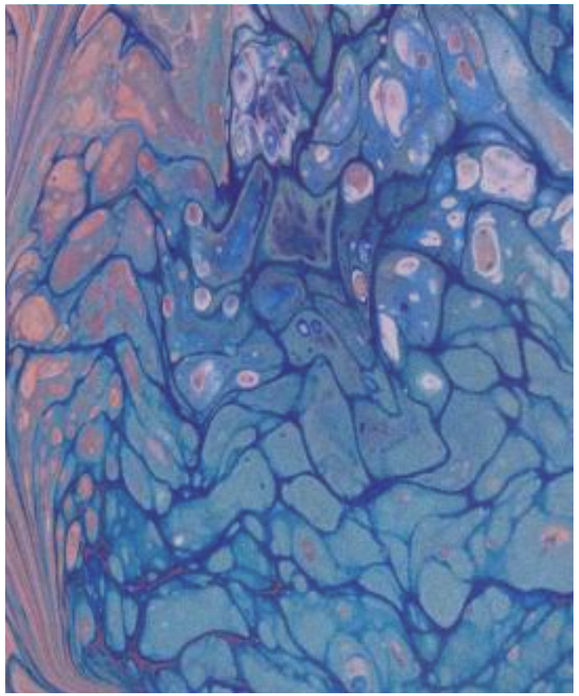
Featured in Seoul, Korea
2023 Biennele.

Published in GAUD Painterly Urbanism book of studio work.

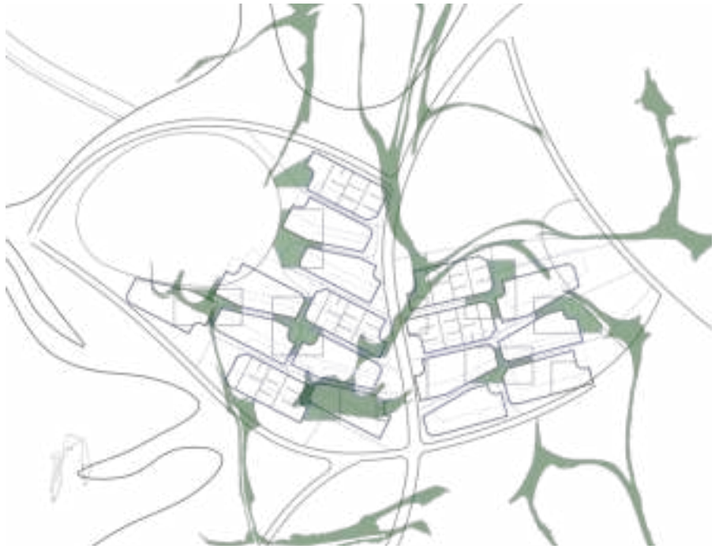


an occupiable bridge: painterly urbanism & AI

PARTNER: BEX ROMERO

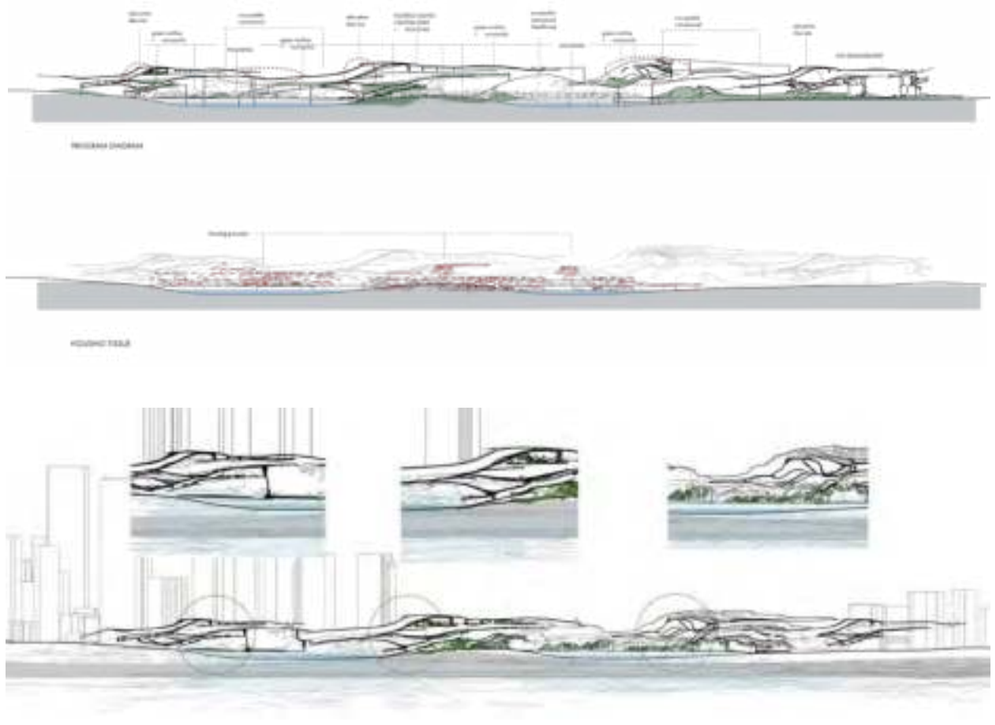
INSTRUCTOR: JONAS COERSMEIER

SPRING 2023

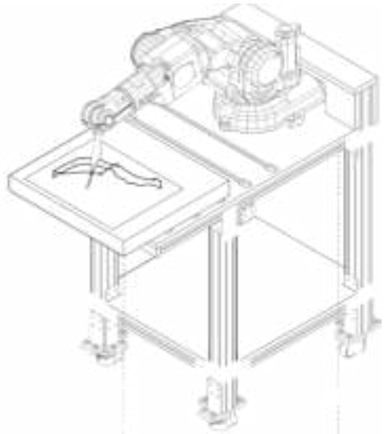


Epithelia is a bridge proposal on the existing Hangang Bridge in Seoul, South Korea. The proposal flips the housing model of semi-subterranean homes, Banjiha, and provides housing elevated onto the river. This is a solution to housing that is impacted by urban flooding.

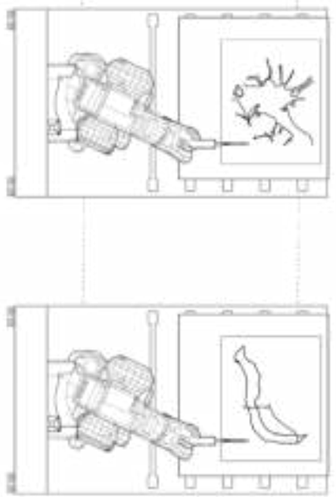
The process included painterly experiments with robotics and AI that facilitate speculative treatment of an urban landscape.



SITE DATA: Linework

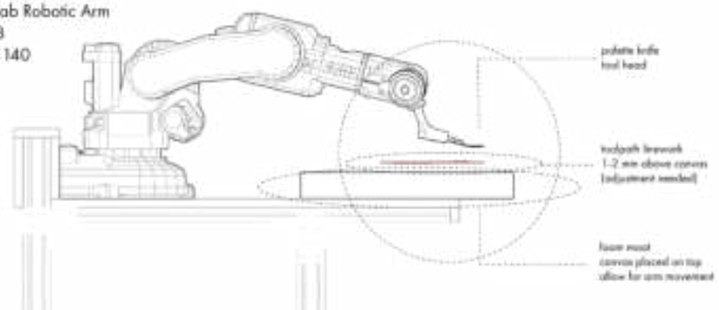


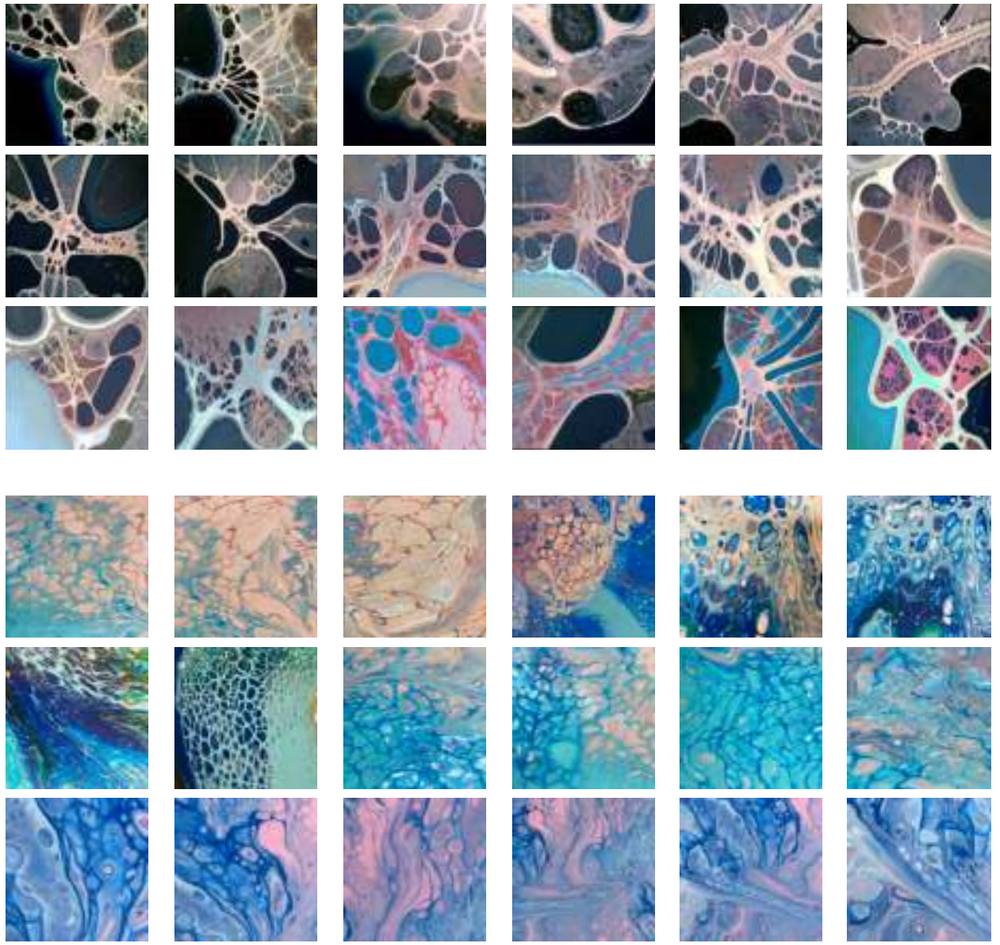
TOOLPATH 1: Bridge Proposal



TOOLPATH 2: Han River Input

Pi-Fab Robotic Arm
ABB
IRB 140





BIONIC ECOLOGY

Physical concept model. Laser cut acrylic + cast rockite.

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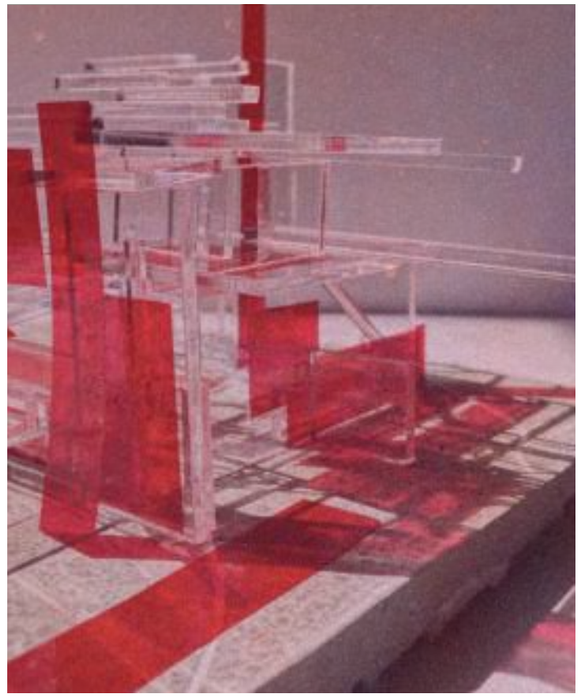
Featured in FX Collobarative "Real Estates" Exhibition in March 2022.

Featured in Pratt's Sustianability Center Website.



farragut housing project

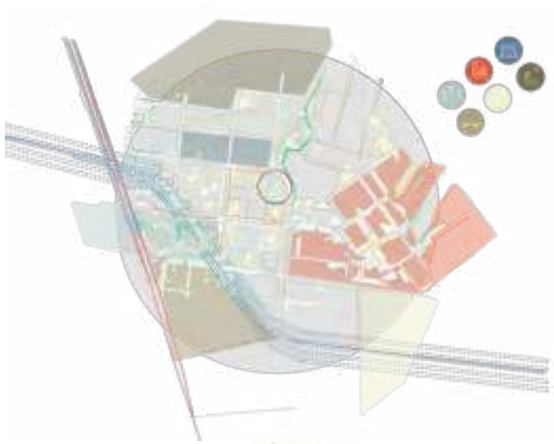
PARTNER: PRISILIA SUWUH

INSTRUCTOR: CARLOS ARNAIZ

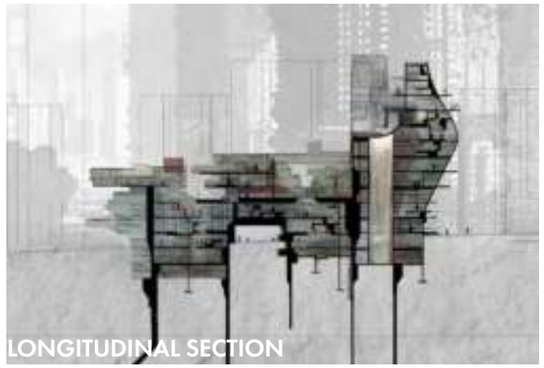
FALL 2021

Our housing project is at the intersection of technology and nature. Located on the NE corner of farragut housing in the Brooklyn navy yard, the project imagines a future where resources are redistributed, that is sensitive to local needs, while also understanding regional climate influences.

As it exists today, many urban communities face food deserts. This project does not only aim to create a machine but to also provide collective new living spaces especially for low income housing, access to high quality foods is not easily accessible.



ELEVATION

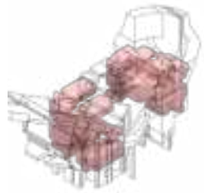


LONGITUDINAL SECTION

FLOOR 7 PLAN

Here we introduce agriculture programming through; hydroponic gardens, water filtration system, waste, compost and energy system. From this programming, this building functions as a machine, a metabolic system that is self-sufficient.

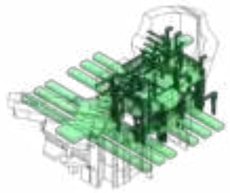
This building holds multi-family housing, one-bedroom, 2 bedroom units, multi-family housing is located on the west side of site as it has more access to yard space
The one-bedroom units are mostly located within the tower 2-bedroom units are located on the east side of the site.



3 bedroom

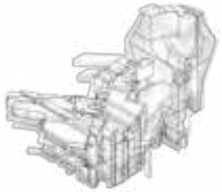
1 bedroom

2 bedroom

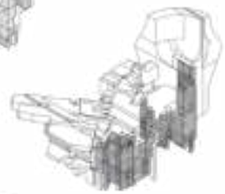


agri-infrastructure/terracing

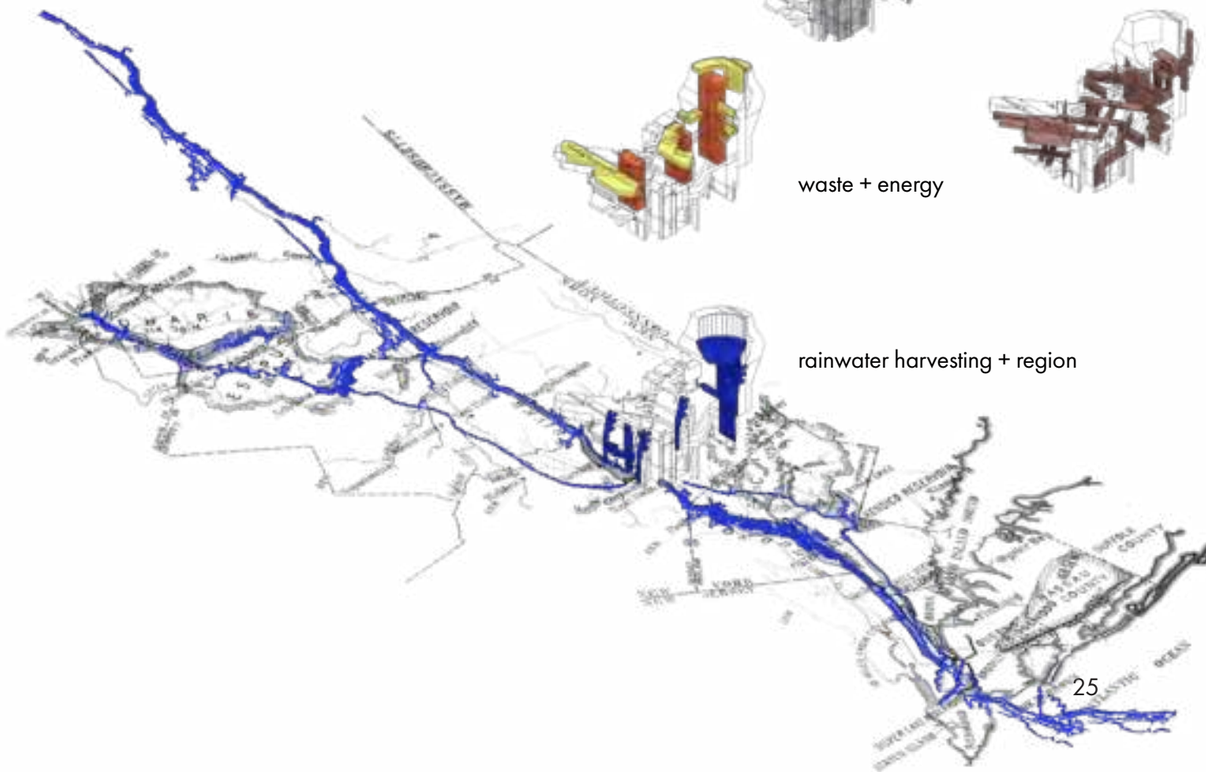
h2o + greywater collection



channel glass + brick



waste + energy



rainwater harvesting + region

CIRCULATION PARALLAX

Render. Street view of central circulation in school.

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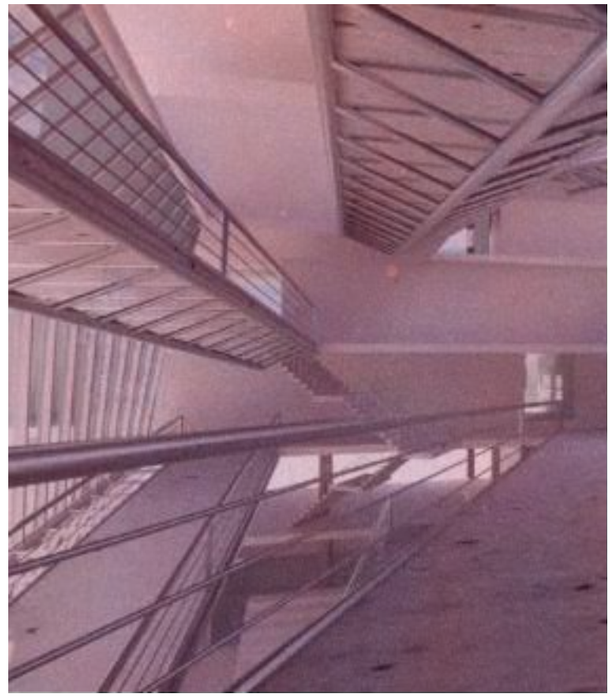


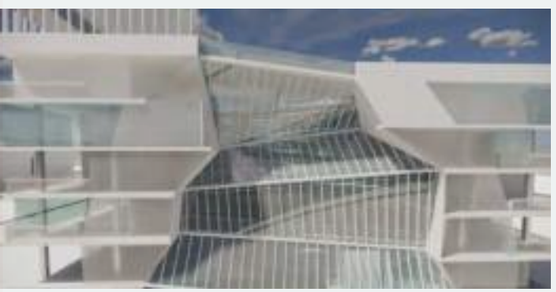
a middle school

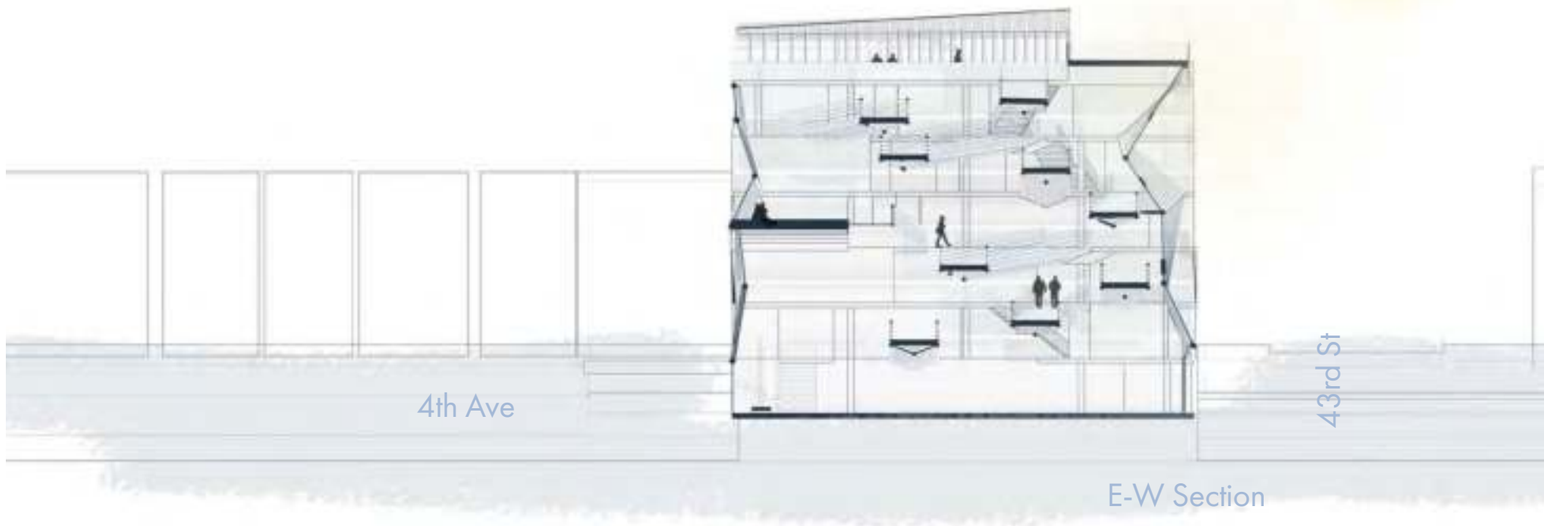
INSTRUCTOR: JAMES GARRISON

FALL 2021

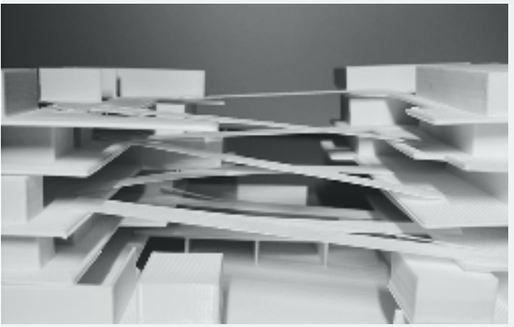
N-S Section

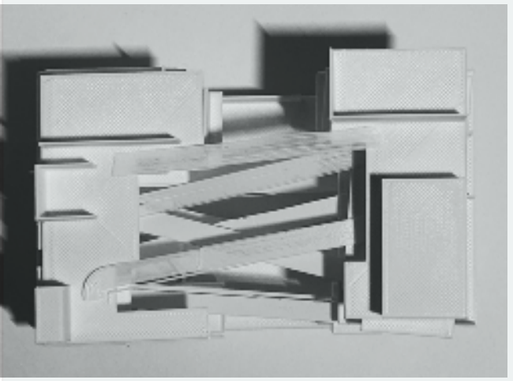
The proposed middle school sits on the corner of 4th Avenue and 43rd Street in Sunset Park, Brooklyn, NY. The design concept emphasizes dynamic circulation of ramps between split level floors. The expression of the facade reflects this movement within the school. The glass walls and atrium take advantage of sunlight for classrooms and circulating space. The idea of a circulatory parallax experience in the external and internal form of the middle school dominates the concept of the project.

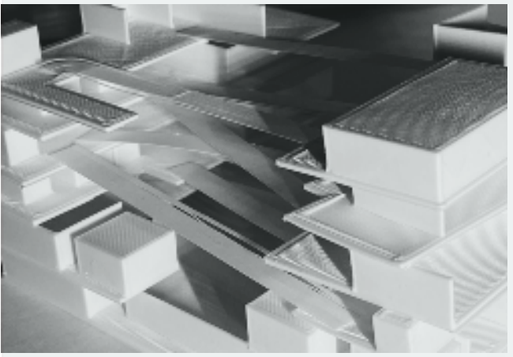




E-W Section



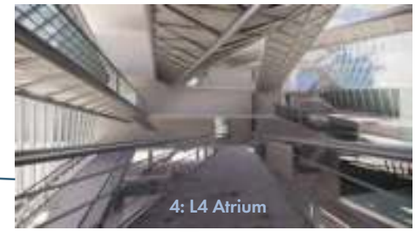





7: Rooftop - Complete Sequence

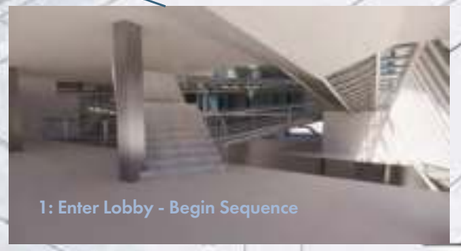

6: Ramp to L5/Class


5: L4 Library


4: L4 Atrium

2: Ramp to L2 Aud/Balcony


3: Ramp to L3 Balcony


1: Enter Lobby - Begin Sequence

ROBOTICS

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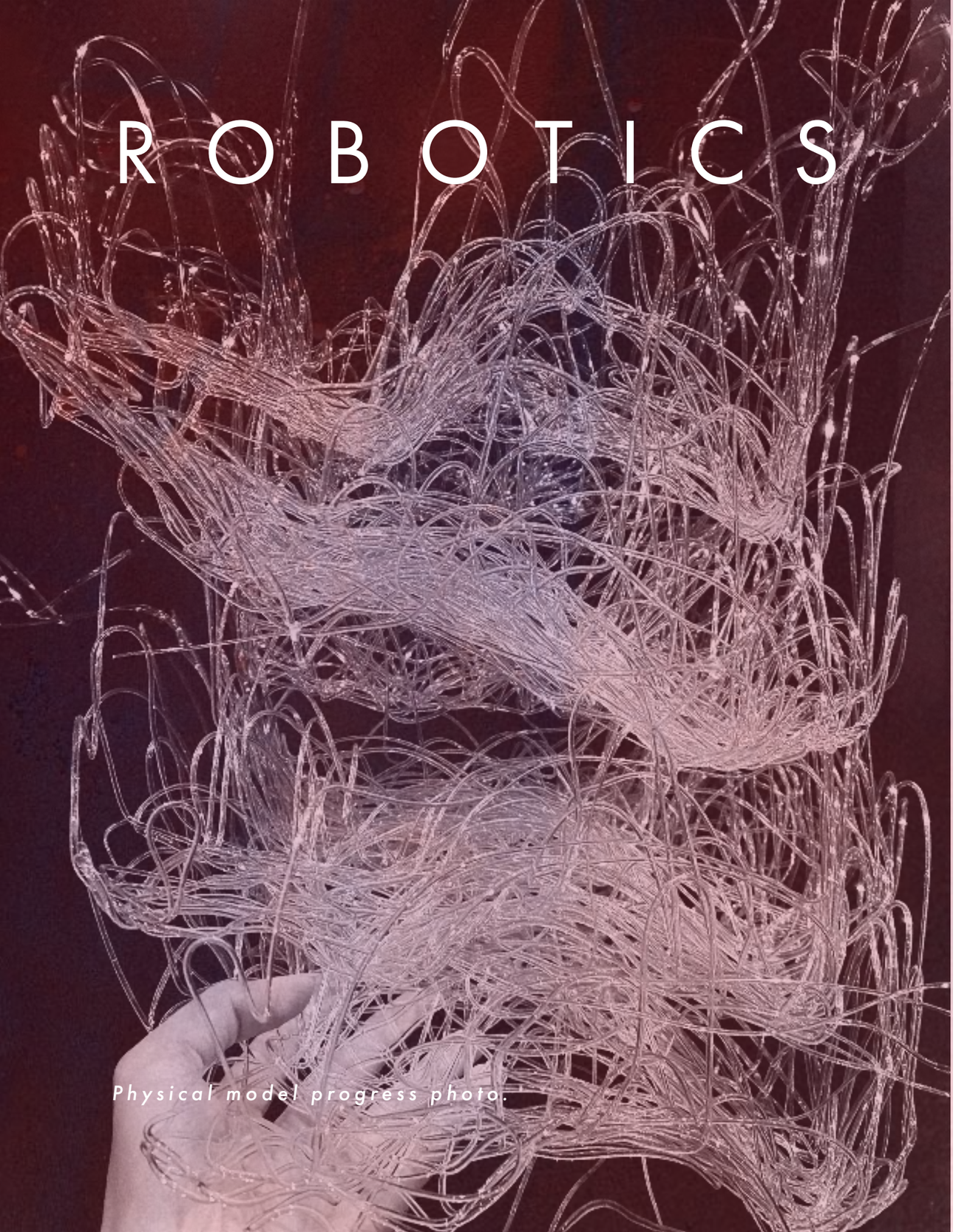
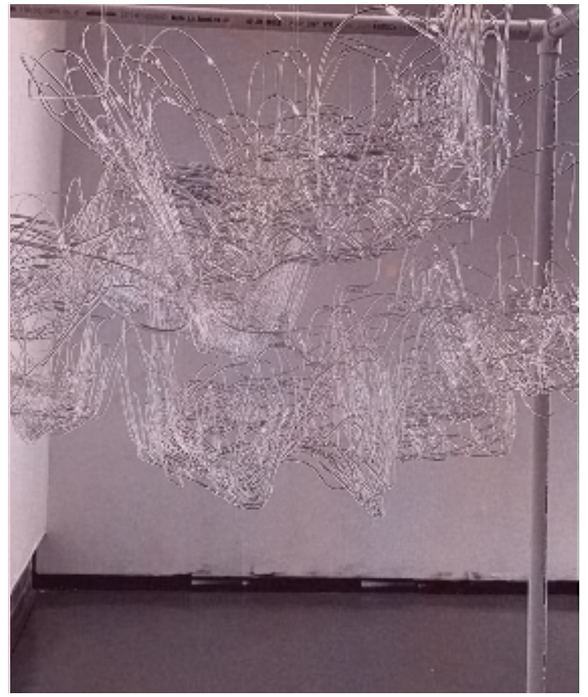


Physical model progress photo.

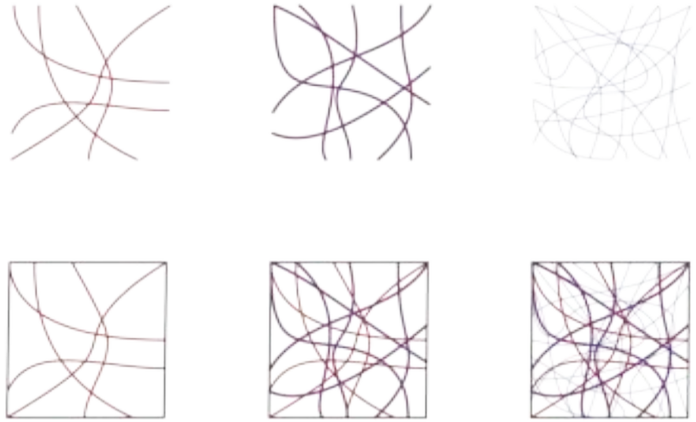


fabrication: the chrysalis
3D printing & hotwire carving

INSTRUCTOR: EMILIJIA LANDSBERGIS

SPRING 2022

ORGANIC CONSTRUCTION PATH



external layer

not firmly secured
0.5mm thick
23% of weight

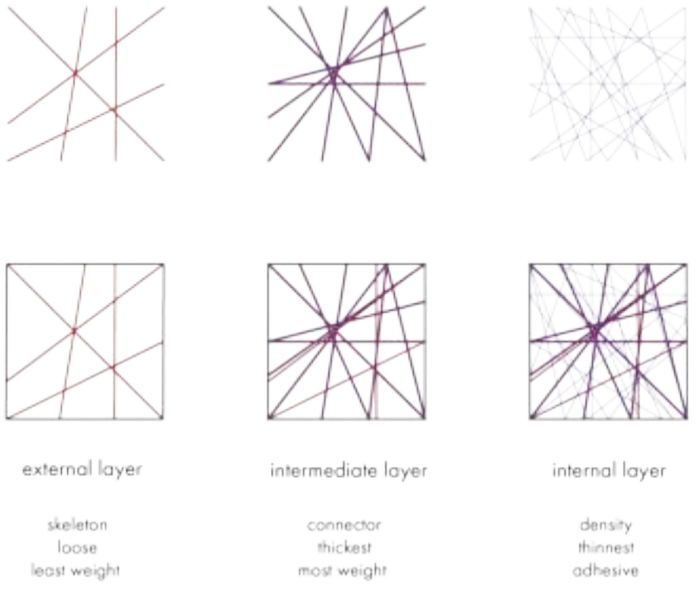
intermediate layer

connected to internal layer
0.6mm thick
43% of weight

internal layer

most compact + thinnest
0.2mm thick
34% of weight

STRUCTURED CONSTRUCTION PATH



external layer

skeleton
loose
least weight

intermediate layer

connector
thickest
most weight

internal layer

density
thinnest
adhesive

single layers

assembled

fibrous connections
(species specific)

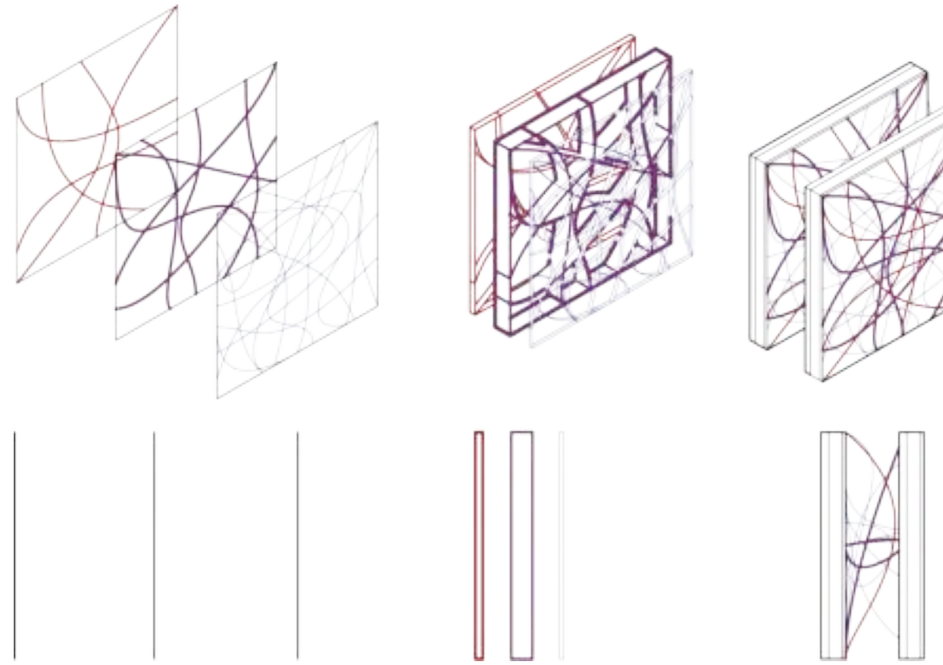


Figure 7: Section of structural assembled layers of a chrysalis.

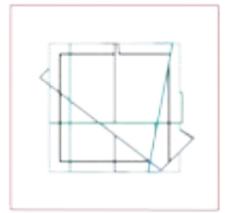
The structure and assemblage of the chrysalis or cacoon is an interesting study. The organic construction paths represent a biologic construction and navigation of threads. The structured construction path represents a robotic or engineered construction of the logic of the threads of the chrysalis.

The sectional study of these layers depict that the layers are primarily side by side. They can be interwoven or have fibrous connections based on the specific species of butterfly. They can be connected through adhesion or fibers.

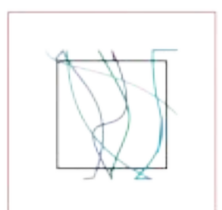
robotic hotwire carving

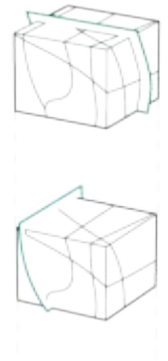
tracing pathways

LOGIC: internal 2 layers connect to external
or to each other (adhesion)



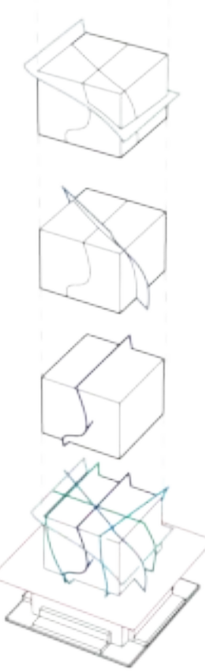
90 x-axis for robotic
foam carving





-90 z axis
-90 x axis

connective fiber

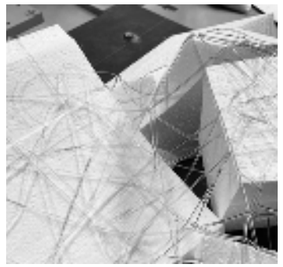


90 x-axis

connective fiber

90 y-axis

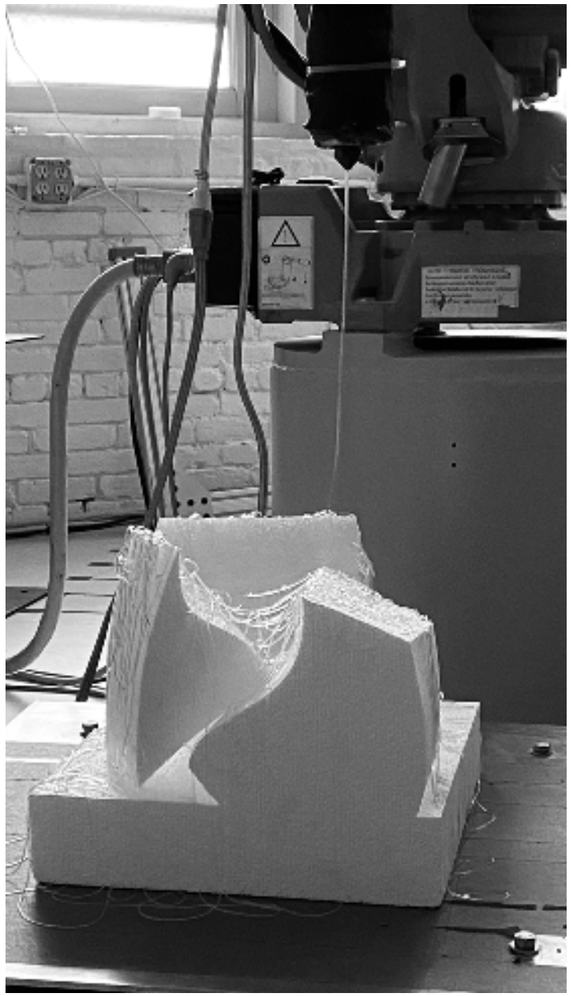
connective fiber



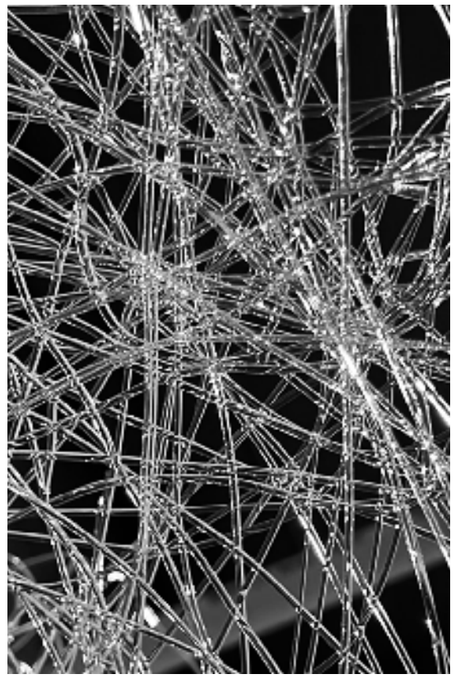
The images depict the process of using the robotic arm to 3D print linework onto a foam form. This was the initial test of printing the diagrams of construction pathways of a chrysalis.

The foam represents the positive voids of cuts that came from lines that represented a simple layer of construction path. This was an experiment to see how the printing would react on the foam. Would the form of the print hold? Would the foam melt? How do the linework manifest into a 3D form using the foam carve cuts.

These were all questions that came about through this experimentation and started to get answered as more tests were done with differing patterns and densities.



Test print Pattern 2.



GOSSAMER NOTATIONS

Physical model progress photo.

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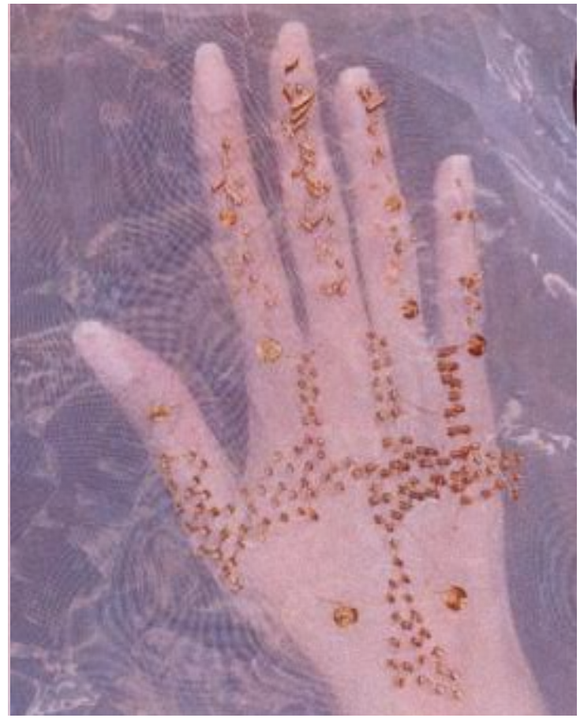
GRADUATE ARCHIECTURE AND URBAN DESIGN



3D stitching & 3D printing embroidery on silk screen

INSTRUCTOR: SULAN KOLATAN

FALL 2022

Iteration 1 + 2 + edited stitching.

Extrusion range: 1mm to 3mm.

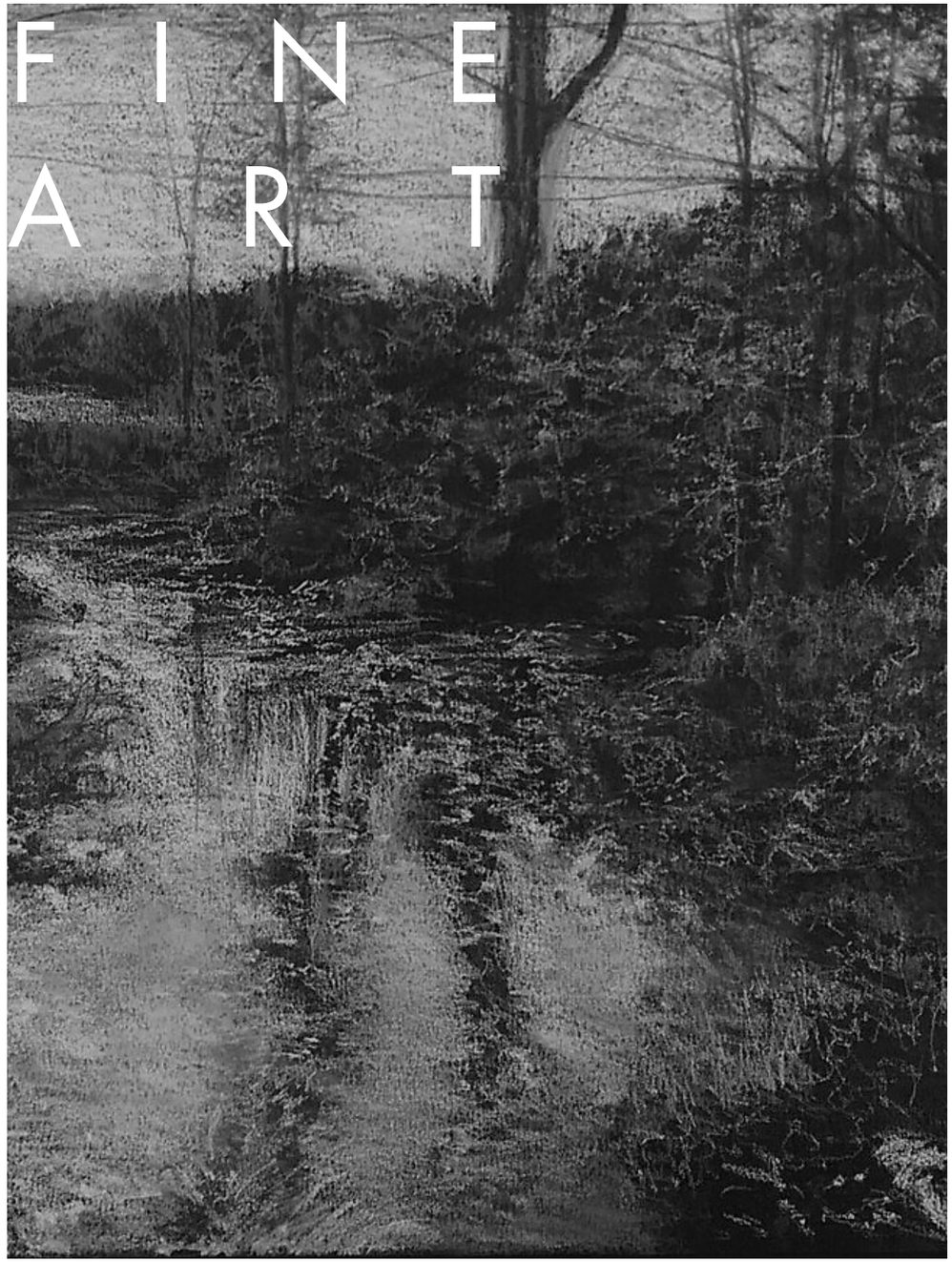
Stitching: 1.5 mm thick, 4.06 mm high.

Copper PLA.

GOSSAMER NOTATIONS

THE MODERN BRIDAL GLOVE

FINE ART



12"x16" charcoal drawing. Gold Key portfolio. 2015.