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Columbia University MSAAD 2024

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HALOPHILIC ISLAND

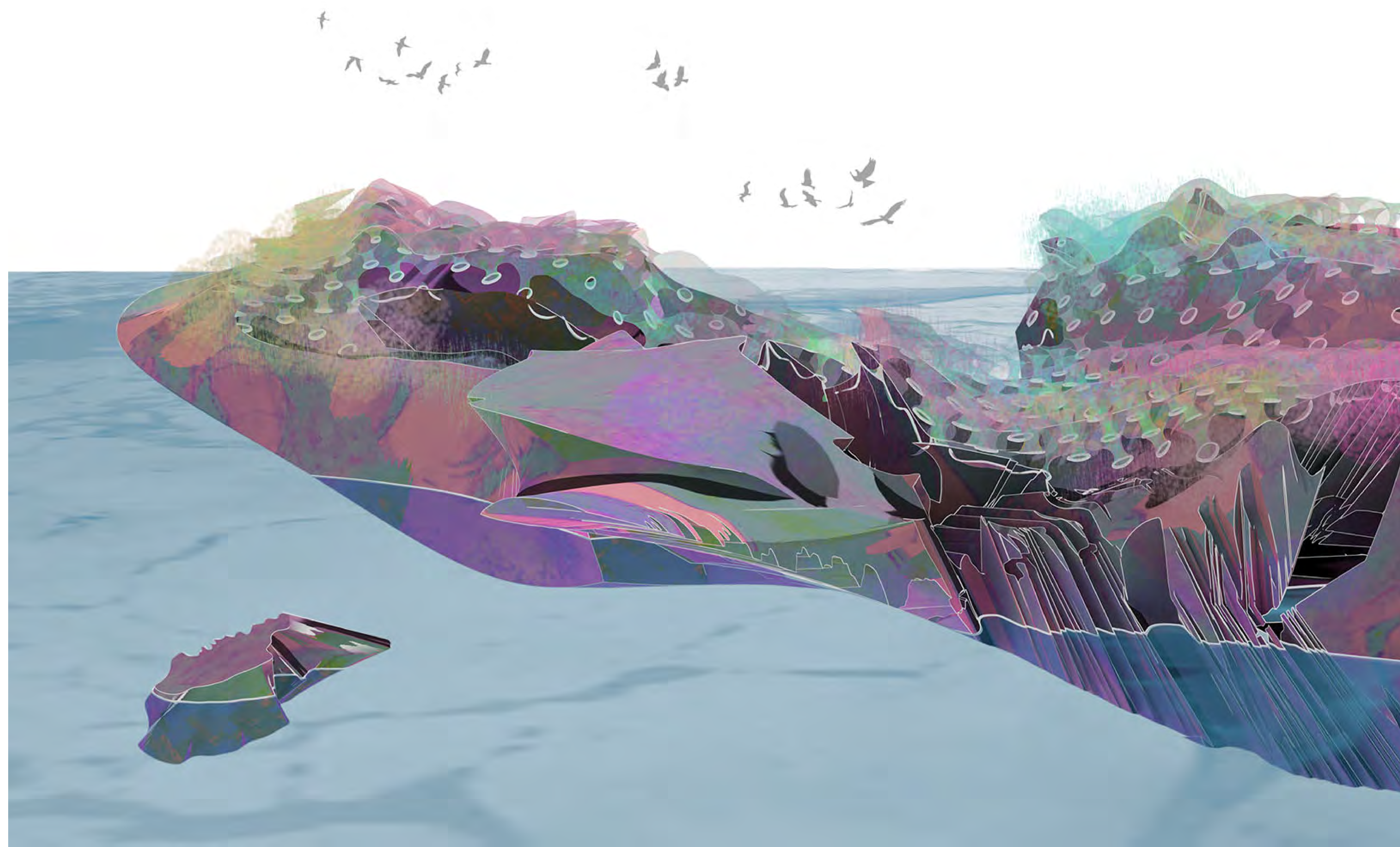
SITE: Dead Sea

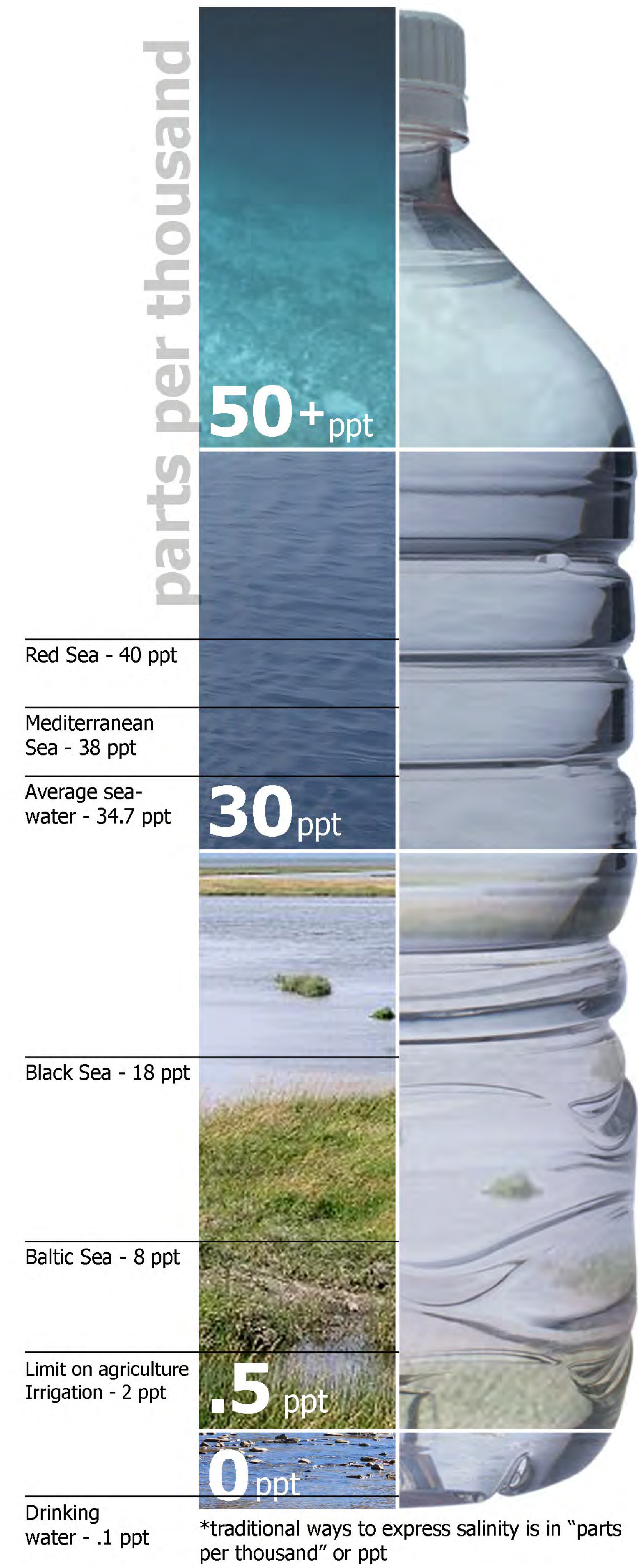
SU 2023 Design Studio || Critics: Bittertang Farm

This salt island revolves around the metamorphosis of salt in many stages, from particles in saltwater to crystallization through its interaction with water.

As the salt farm on the original island starts to overflow and expand within the island, saltwater erodes the island's boundary and break the landmass's solidity. As salt flurries parasitize the rocks and solids, they form natural patterns by interacting with tides and wind.

While heat and wind evaporate salt from water, wind also brings fine salt particles back into the water. The saltwater reacts with oxygen and the sun to transform the landmass into a salt entity. Part of the original island geology remains, working as the foundation for this island.





briny water

brine pools
50+ ppt

saline water

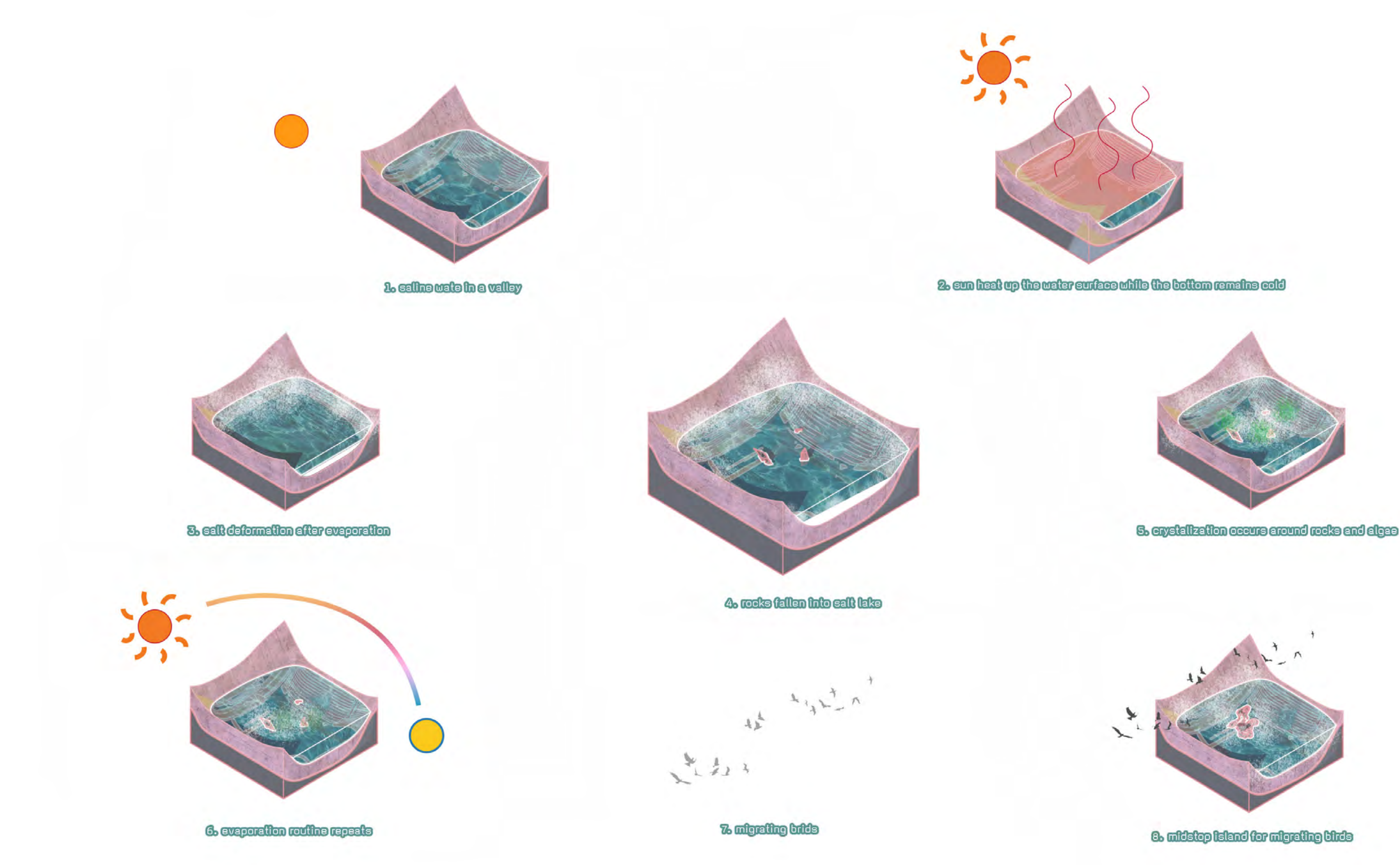
seawater, salt lakes
30-50 ppt

brackish water

estuaries, mangrove swamps,
brackish seas and lake, brackish
swamps
.5-30 ppt

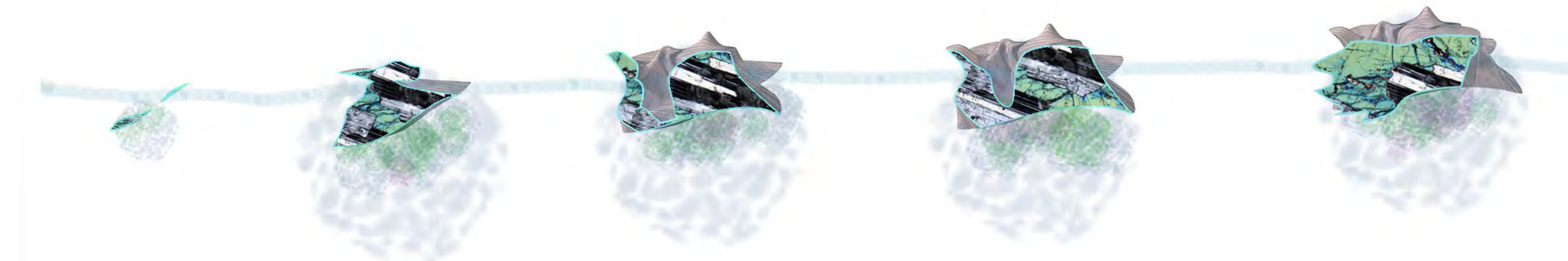
fresh water

ponds, lakes, rivers, streams,
aquifers
0-.5 ppt



accumulation of salt through sea water evaporation

sectional change of salt erosion happening to the island

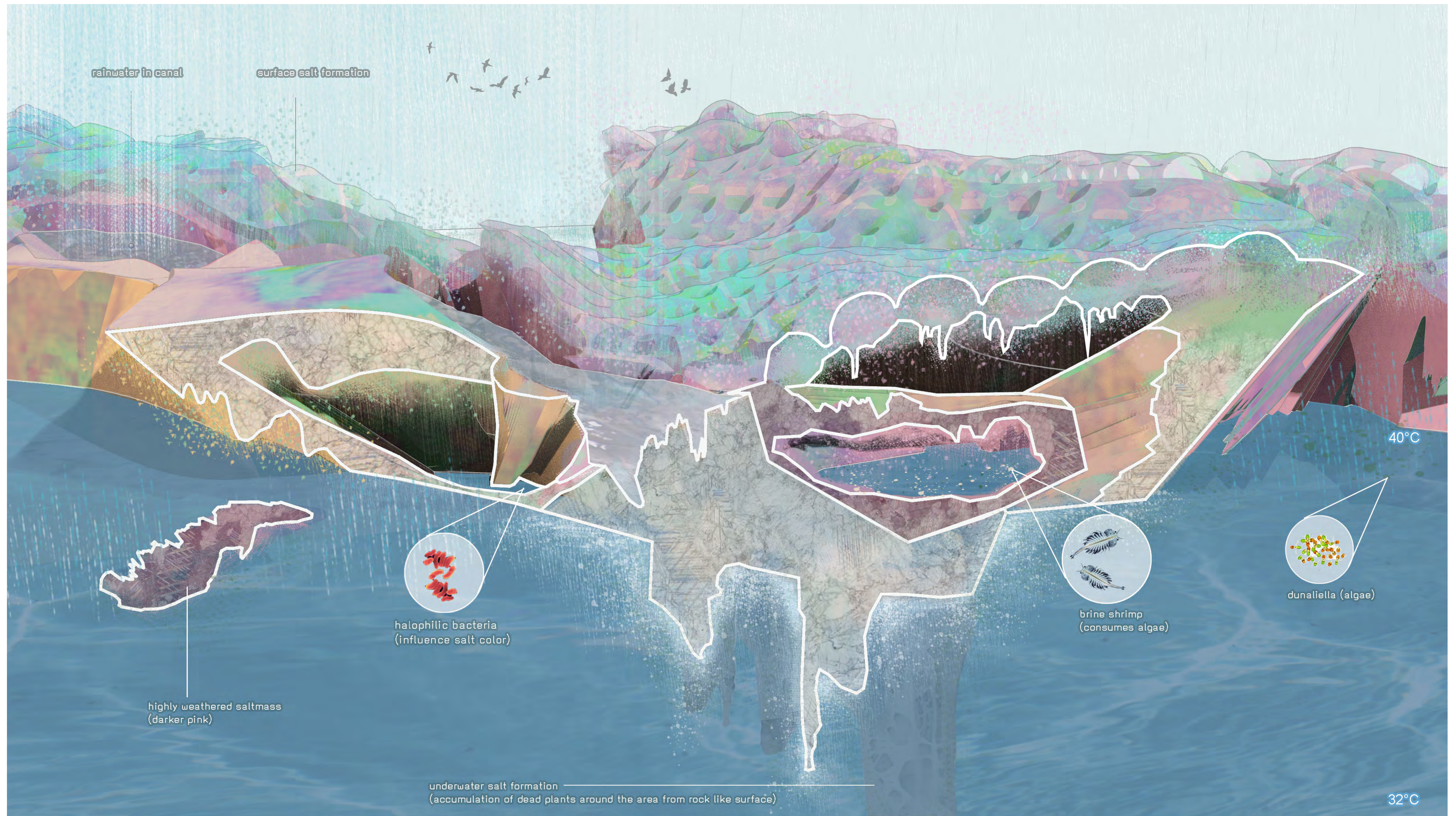


island top view

saturated colors represents lower salt concentration and high density of halophilic bacteria or beings

island bottom view





rainwater in canal

surface salt formation

highly weathered saltmass
(darker pink)

halophilic bacteria
(influence salt color)

brine shrimp
(consumes algae)

dunaliella (algae)

underwater salt formation
(accumulation of dead plants around the area from rock like surface)

40°C

32°C

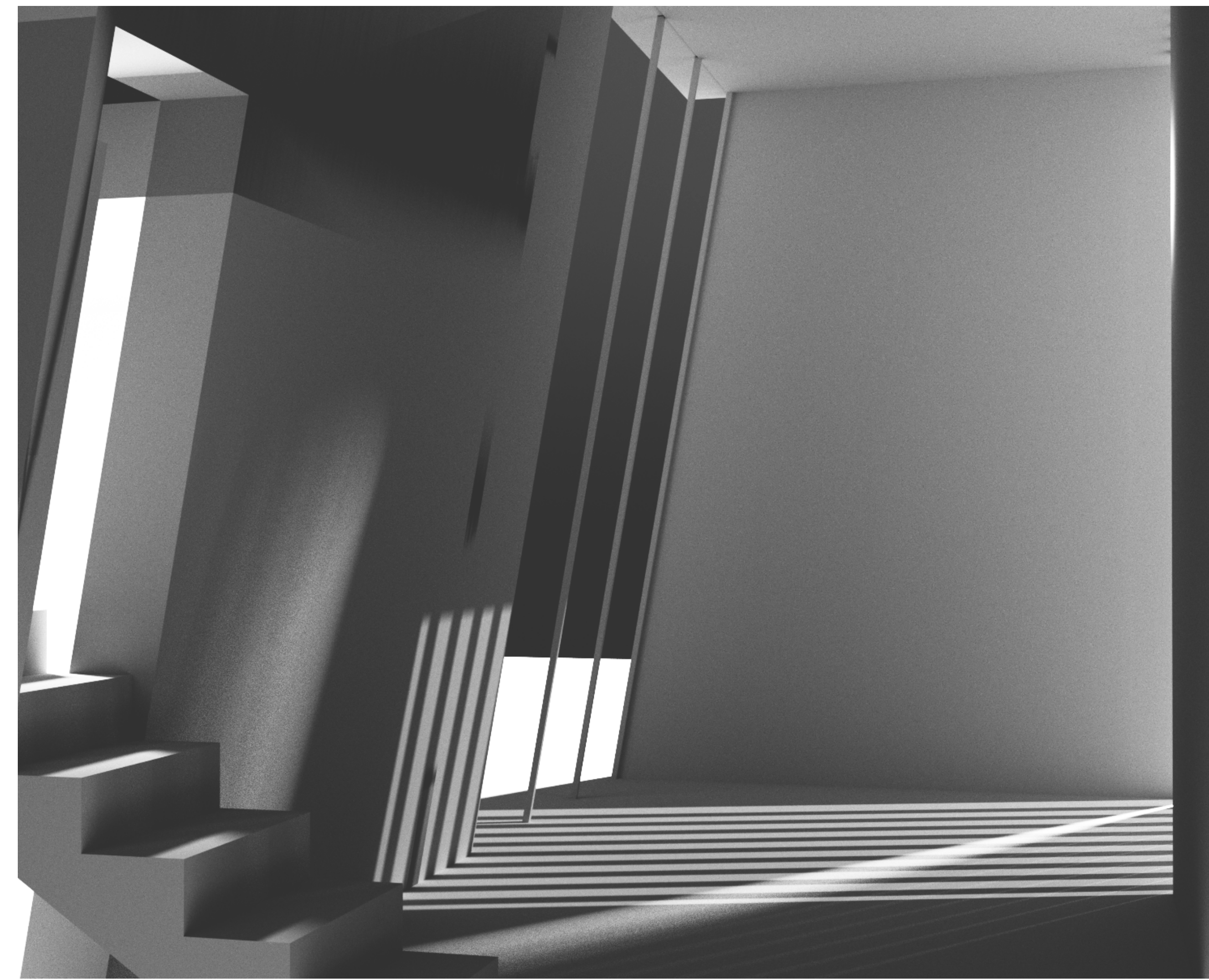
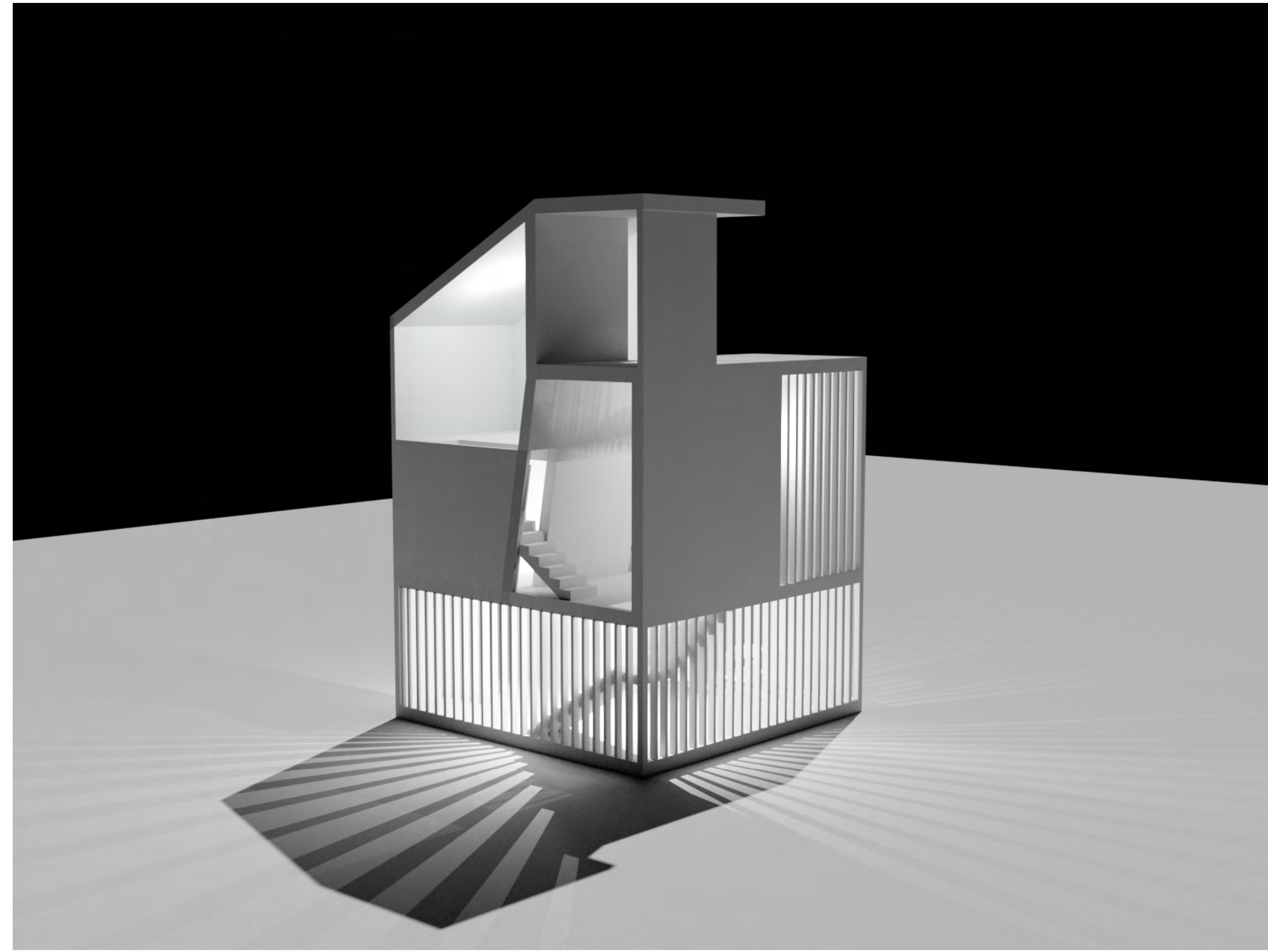


RENDERING SYSTEMS

FA 2023 Tech Elevtive || Critics: Seth Thompson

Explore the fusion of poetry and architectural visualization using Blender in this course. Students use Blender to create spaces that evoke emotion and narrative depth based on their choice of reference. Through a blend of theory and practice, students will learn to craft environments that transcend functionality, resonating on a profound human level. The rendering process in this course imitates animation and set design, where designers dedicate themselves to creating a portion of the environment in visual space, with the camera serving as the tool to produce immersive and poetic renderings.



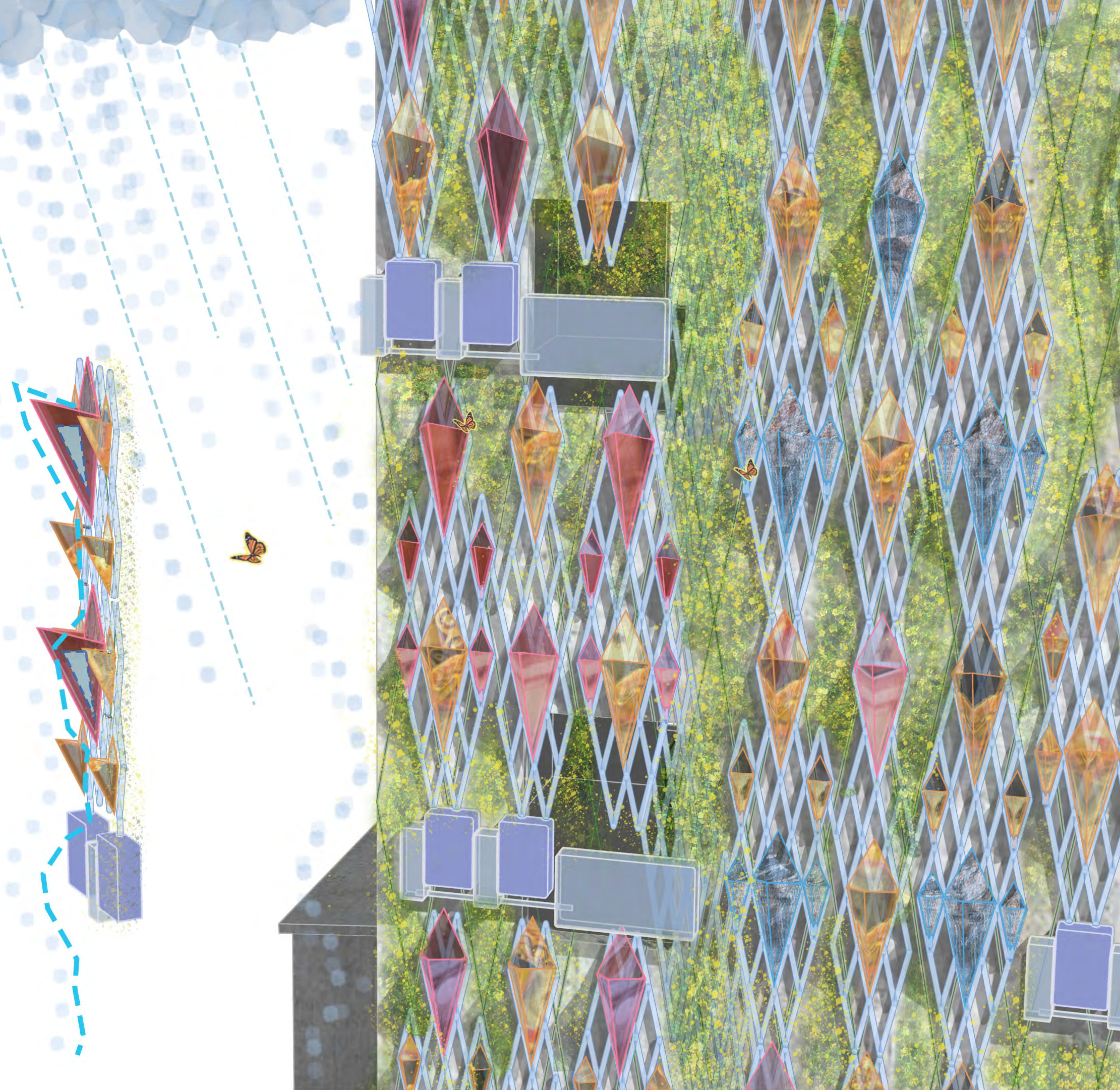


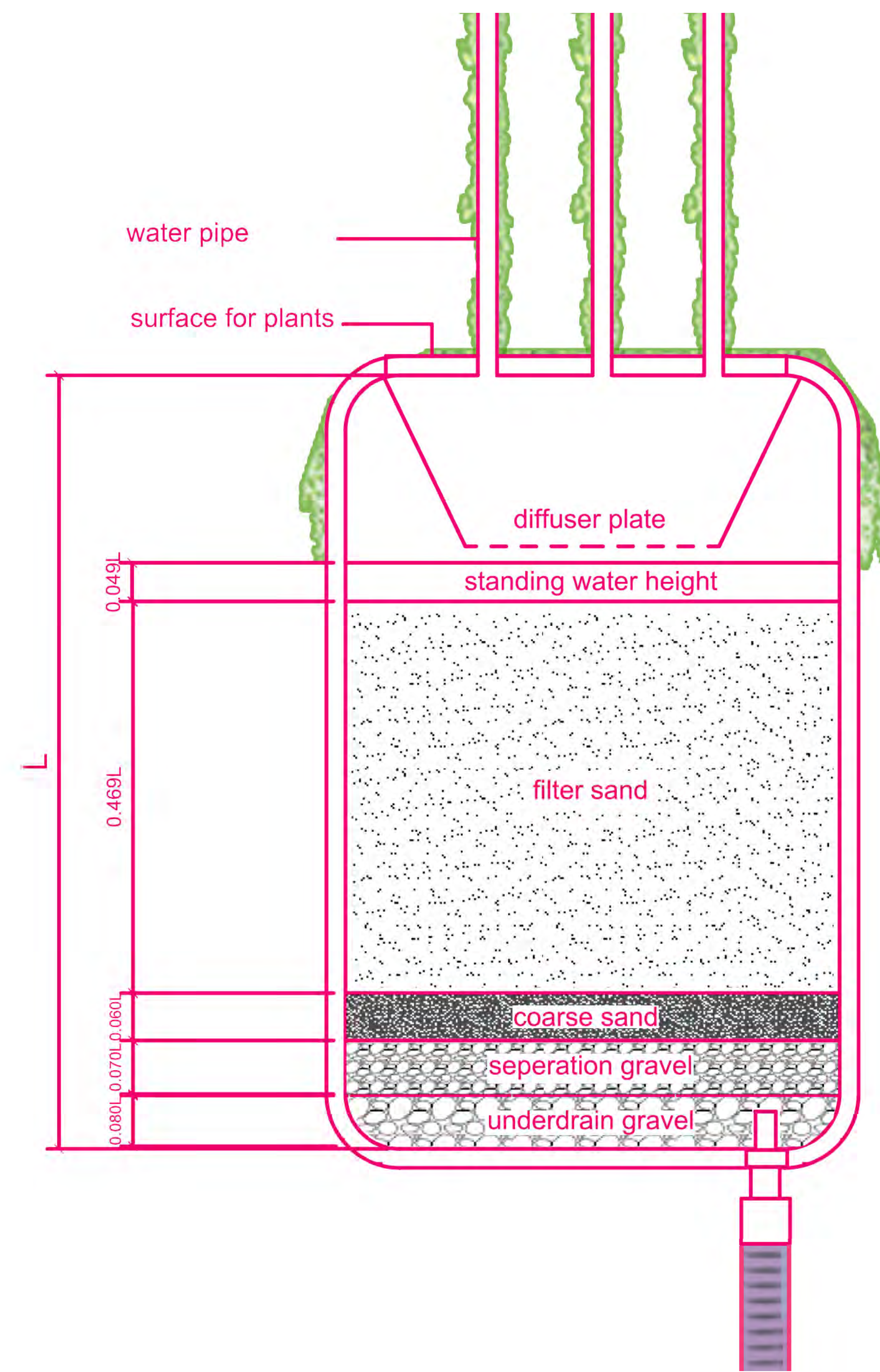
REDHOOK RAIN STORY

SITE: Red Hook, Brooklyn, NY
FA 2023 Design Studio || Critics: Mandl & Johnston

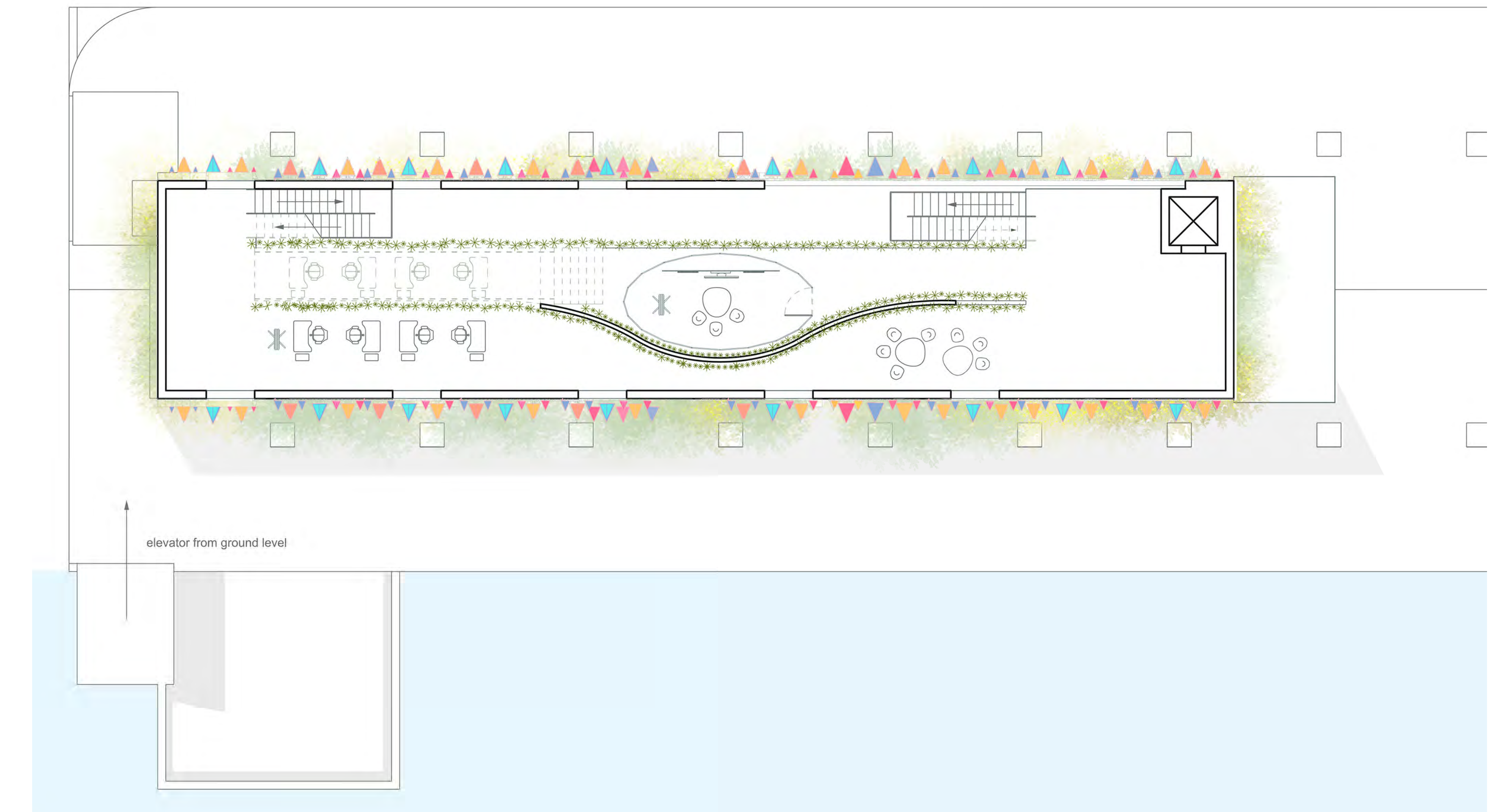
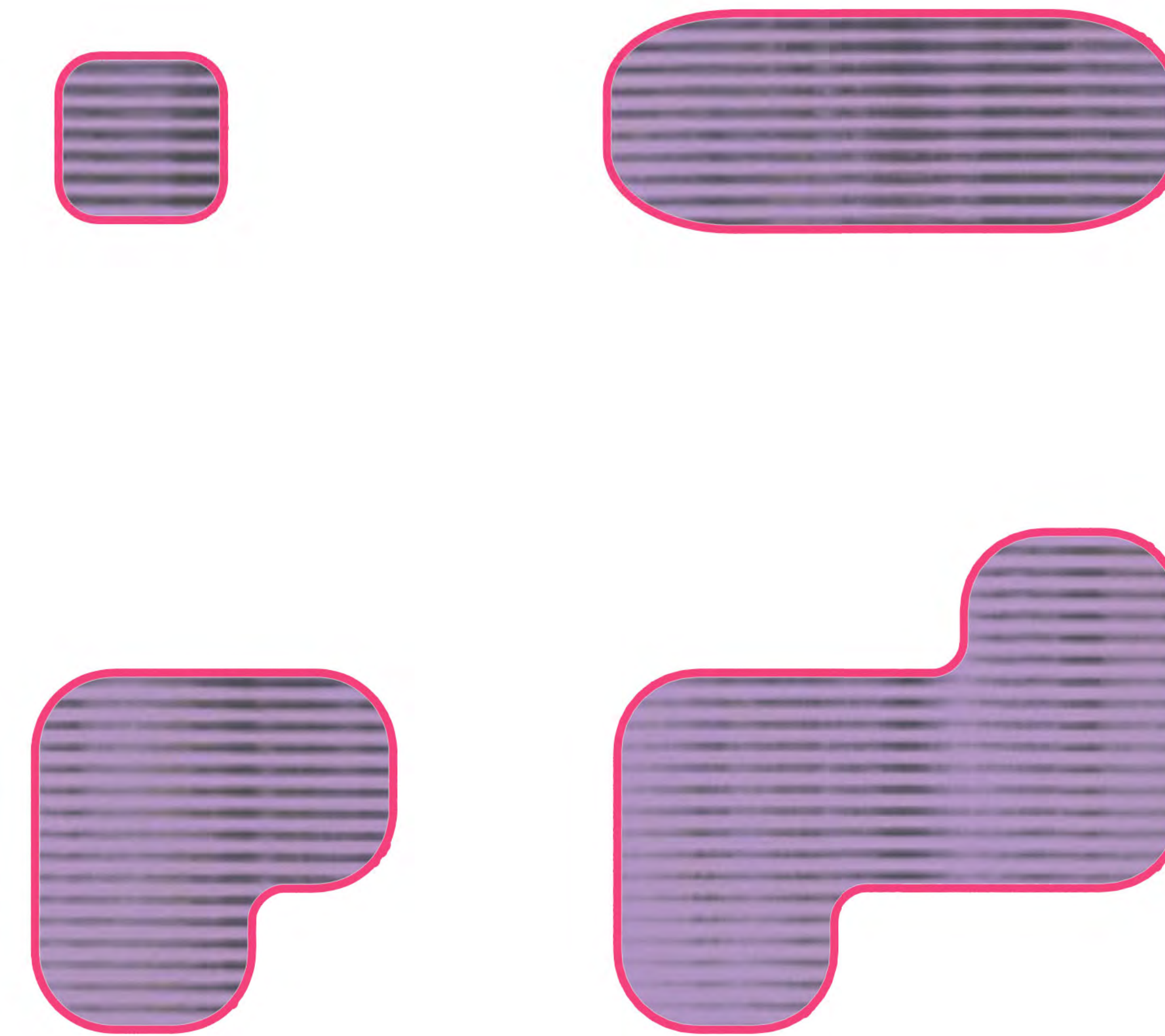
In an industrial environment near water that was once covered by greenery and wildernesses, the rarity of plants in contemporary settings suggests the highly compromised ecosystem of the natural beings including humans. Instead of reading such condition as an ecological crisis, I'd like to call for a playful reinstatement of plants and wilderness starting with water management and small scale plantations with the potential to adapt and grow.

Climbing plants and moss grow naturally in moisturized condition. Water tanks, pipes, water apparatus are industrial places for facade plants to grow and expand. As rain fall into the water retaining installment on the facade, some will escape from the water management system and dance with the plants instead. The filtered water will feed the plants on the 3D printed soil wall through the managed system. The excessive water will go into the gray water system and support human activities like eco brick or soil printing.





bio-filter (tank) design variation



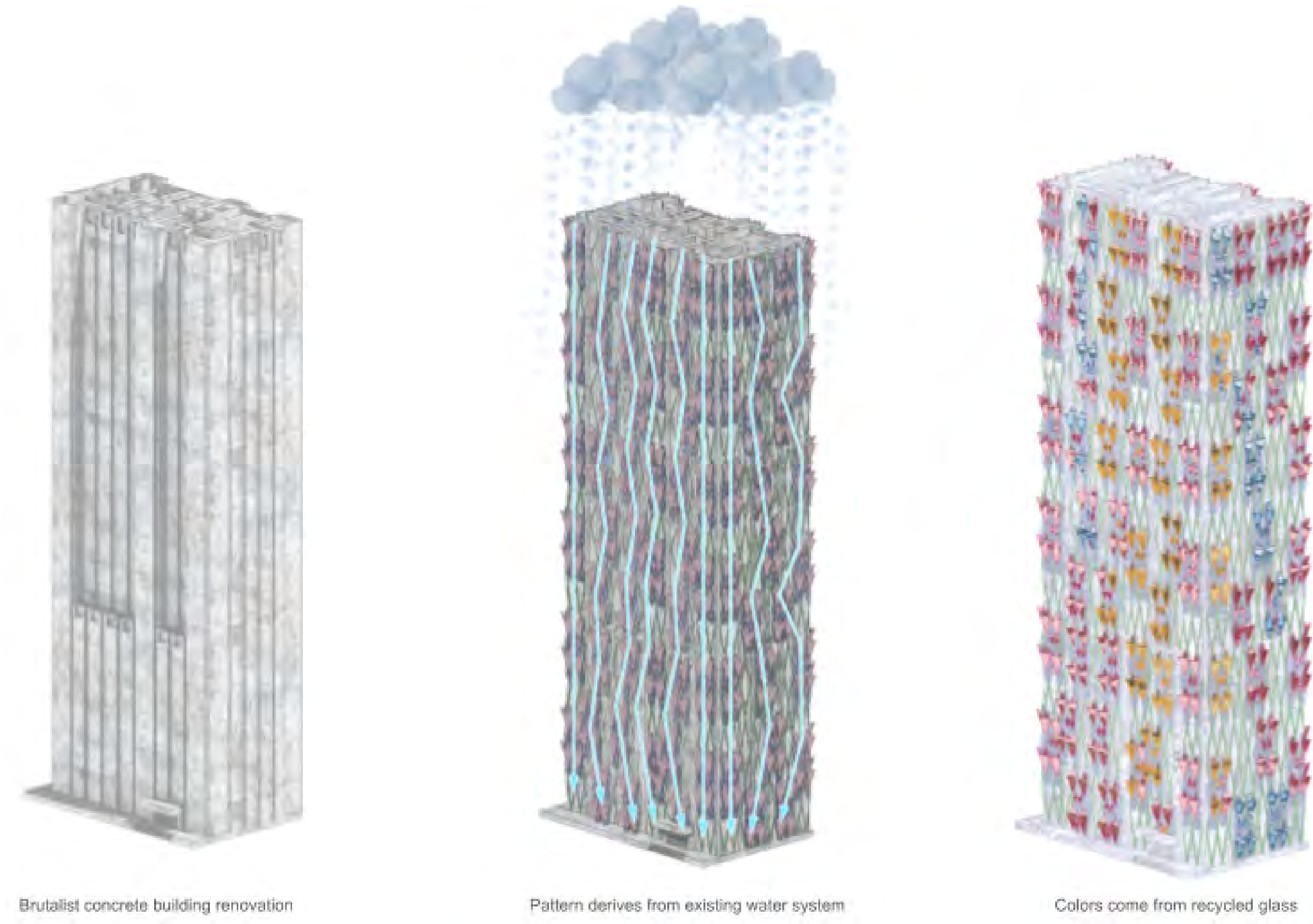
PLAN: bio-filter and facade system research lab

PLAN: facade plant research lab



The bio-filter system uses gravity to filter water.

The research centers are dedicated to plant studies and water studies, and hold periodical workshops that teaches locals about robotic 3d printing, plant and water. The bio-soil wall work are experimental installation for the facade research team and partitions to provide privacy to researchers and students.



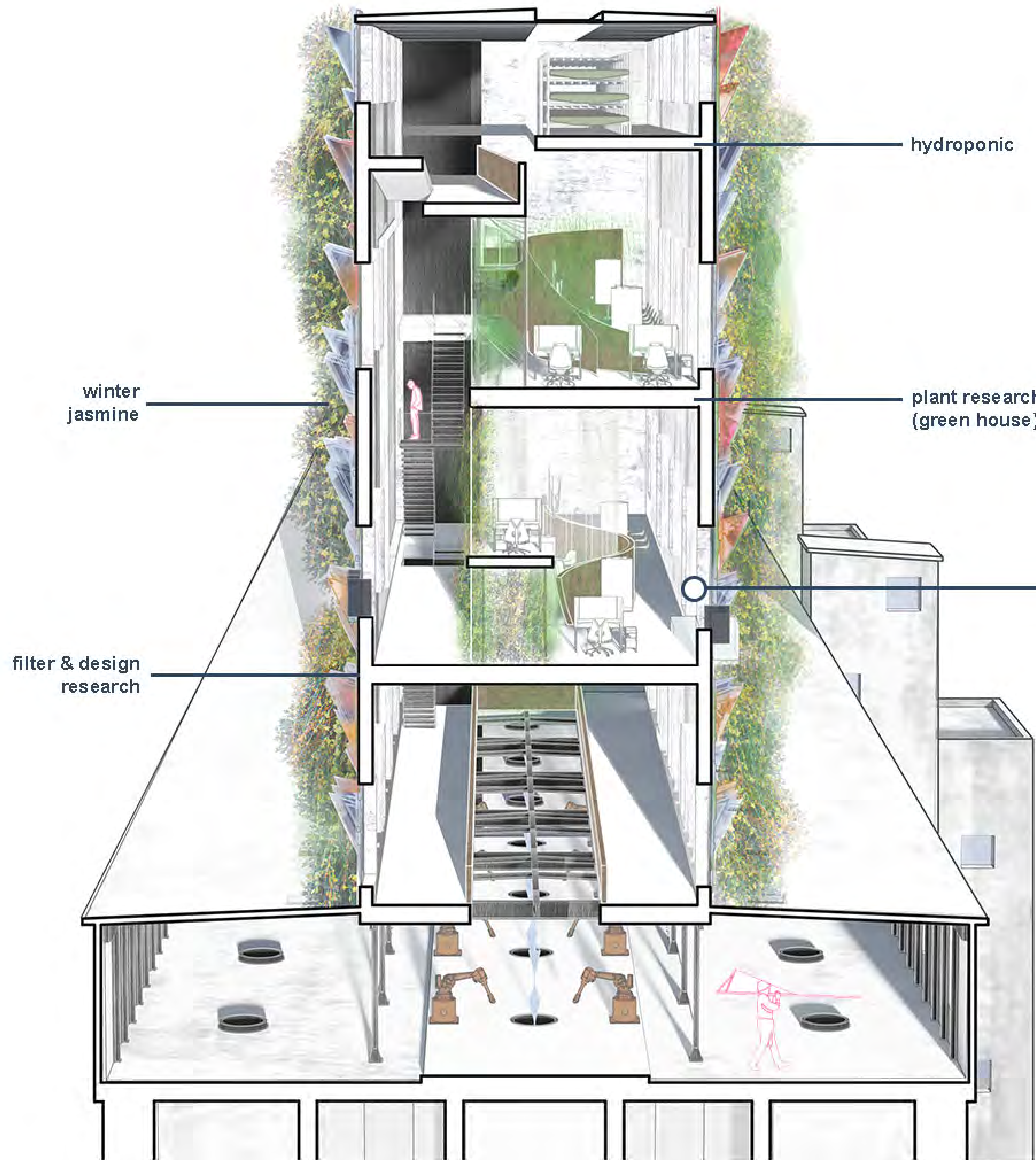
Case Study: AT&T Longline facade application

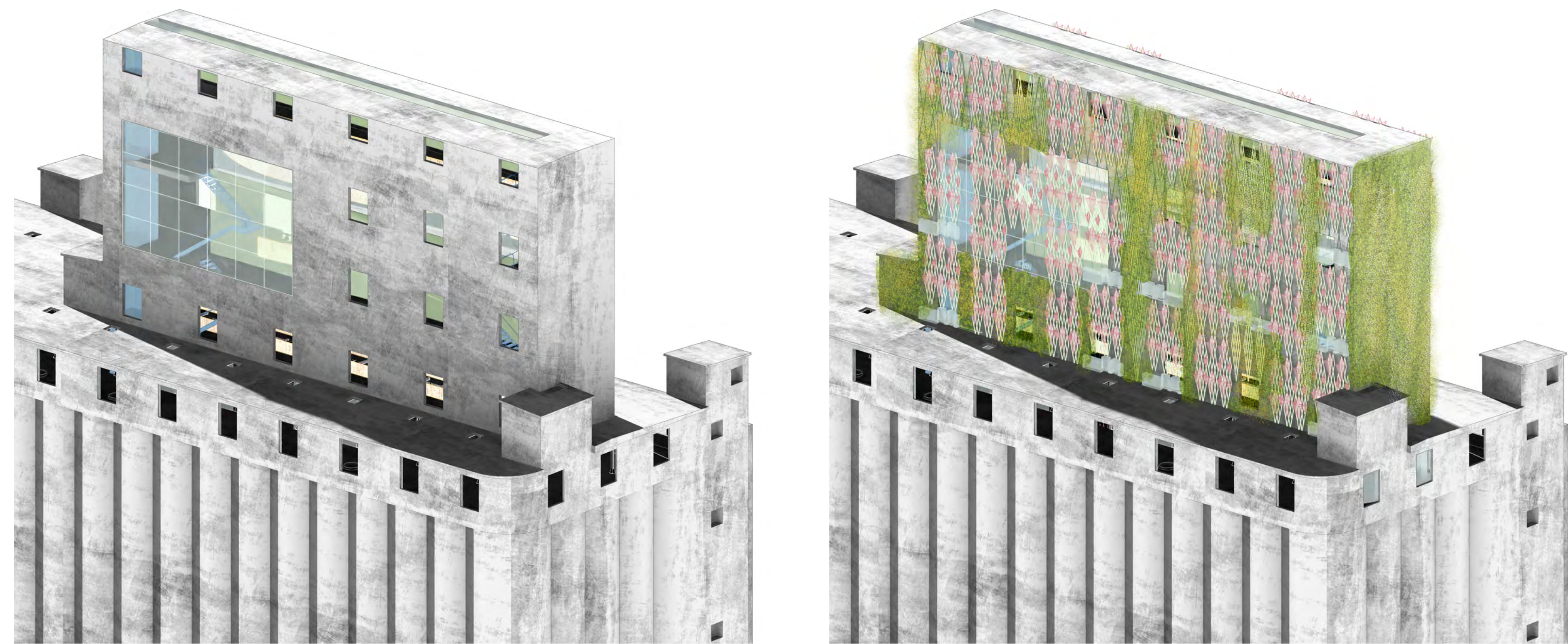
Case Study: AT&T Longline after face application



The water filtration device occupies the facade with winter jasmine to rejuvenate the facade with greenery and potentials of attracting bird and butterflies back to this concrete forest. It's a small step to bring back some of the pre-colonial nature back to Red Hook. The filters captures rainwater for manufacturing and the gray water system like lavatories.

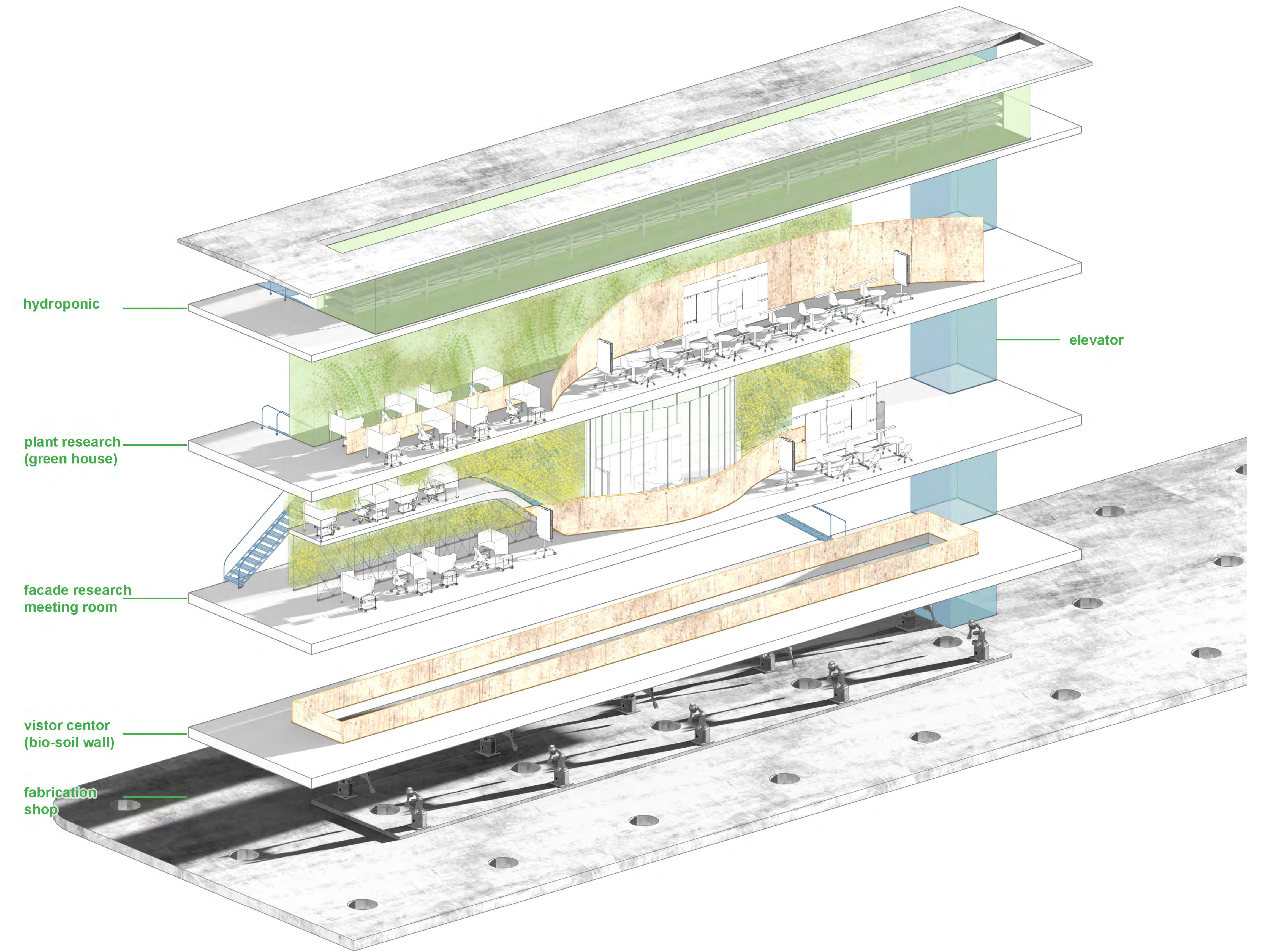
The case study focus on revitalizing burtalist concrete building blocks with this modular water collection facade system to attract insects and animals with self-sustainable facade plants.

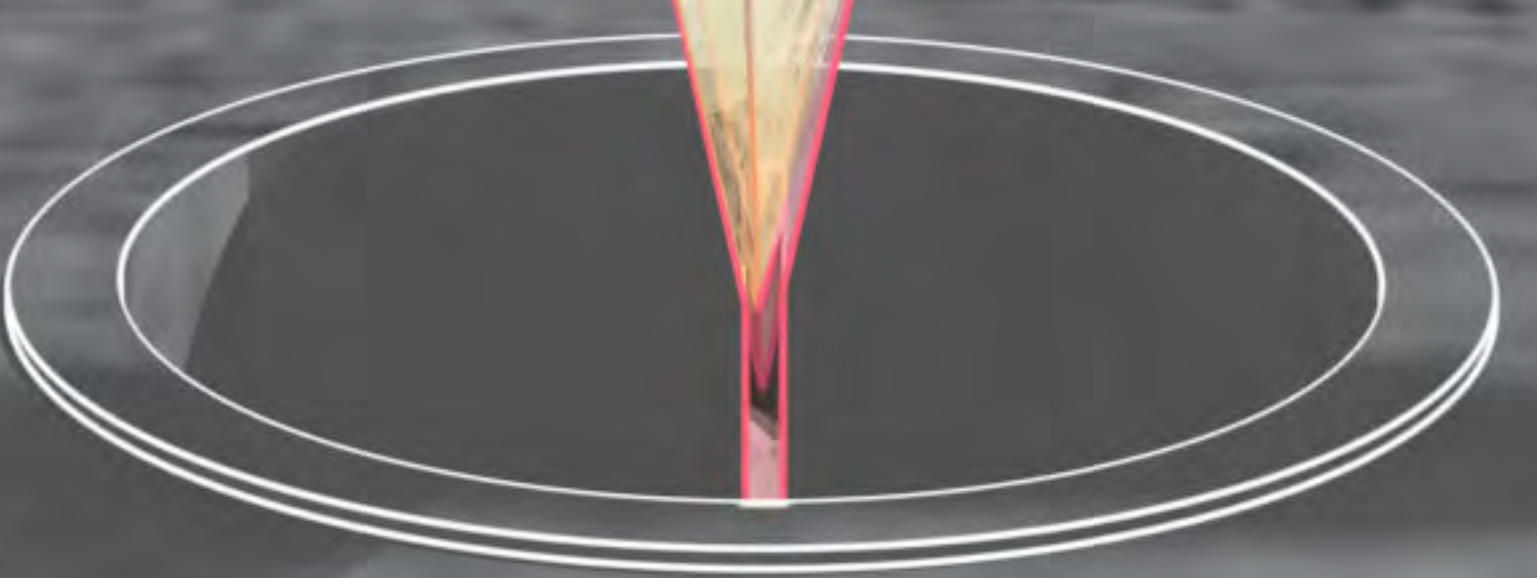
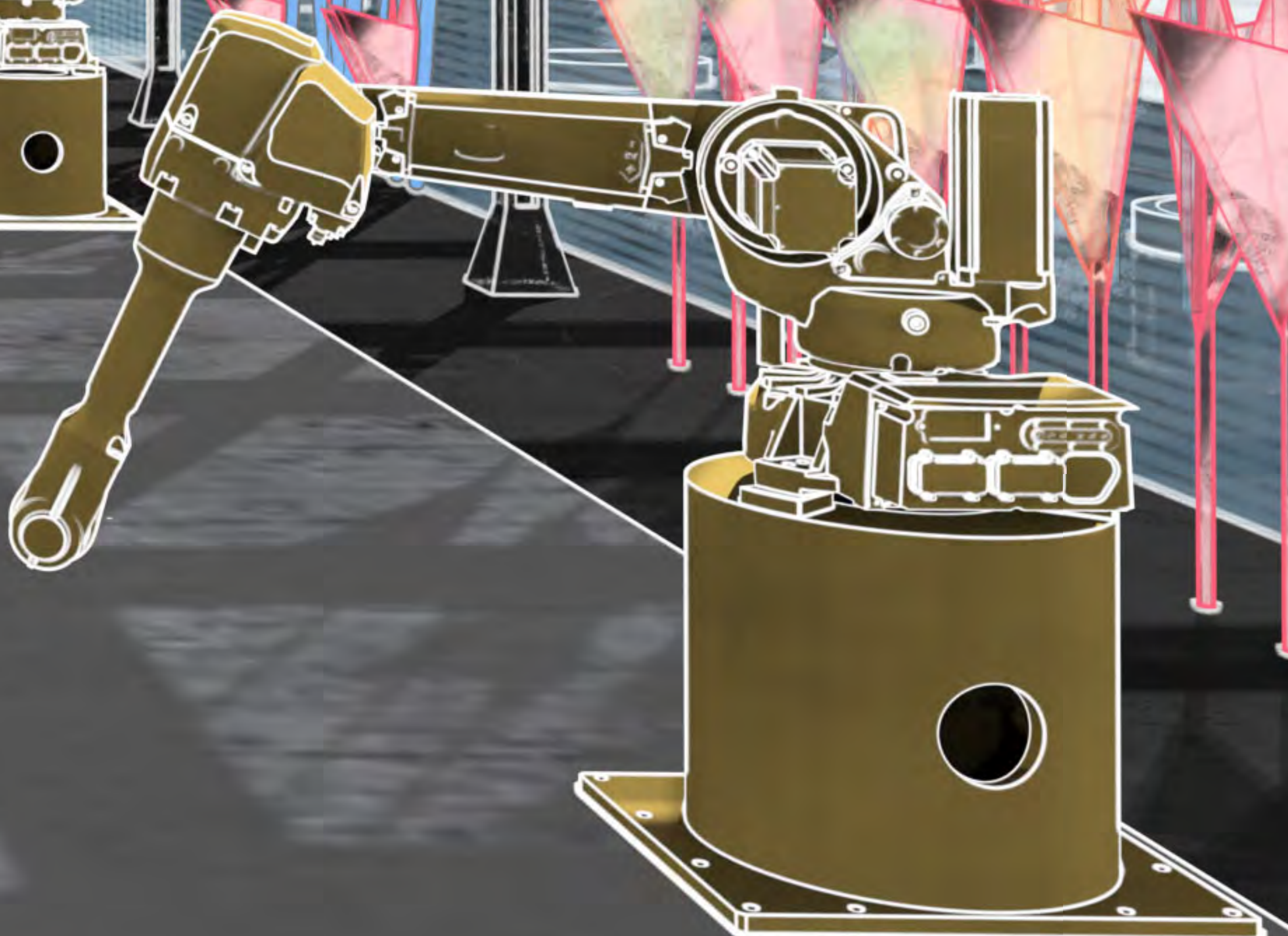
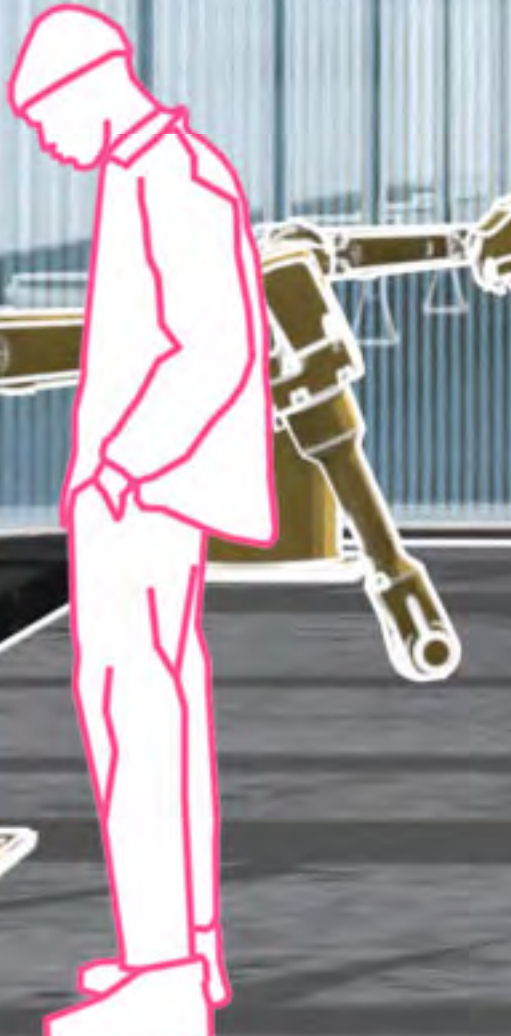
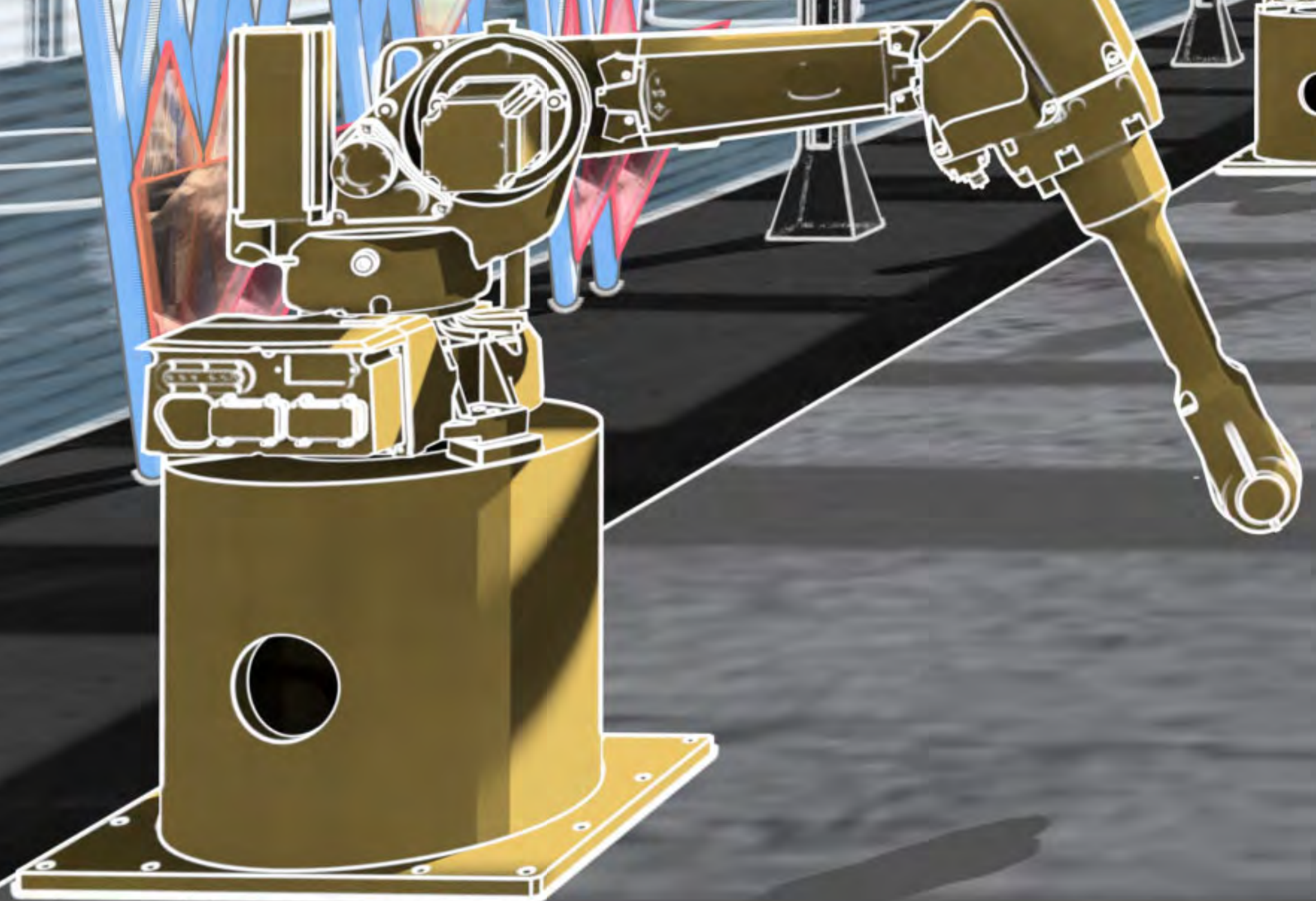




Red Hook Grain Terminal facade transformation

view on staircase

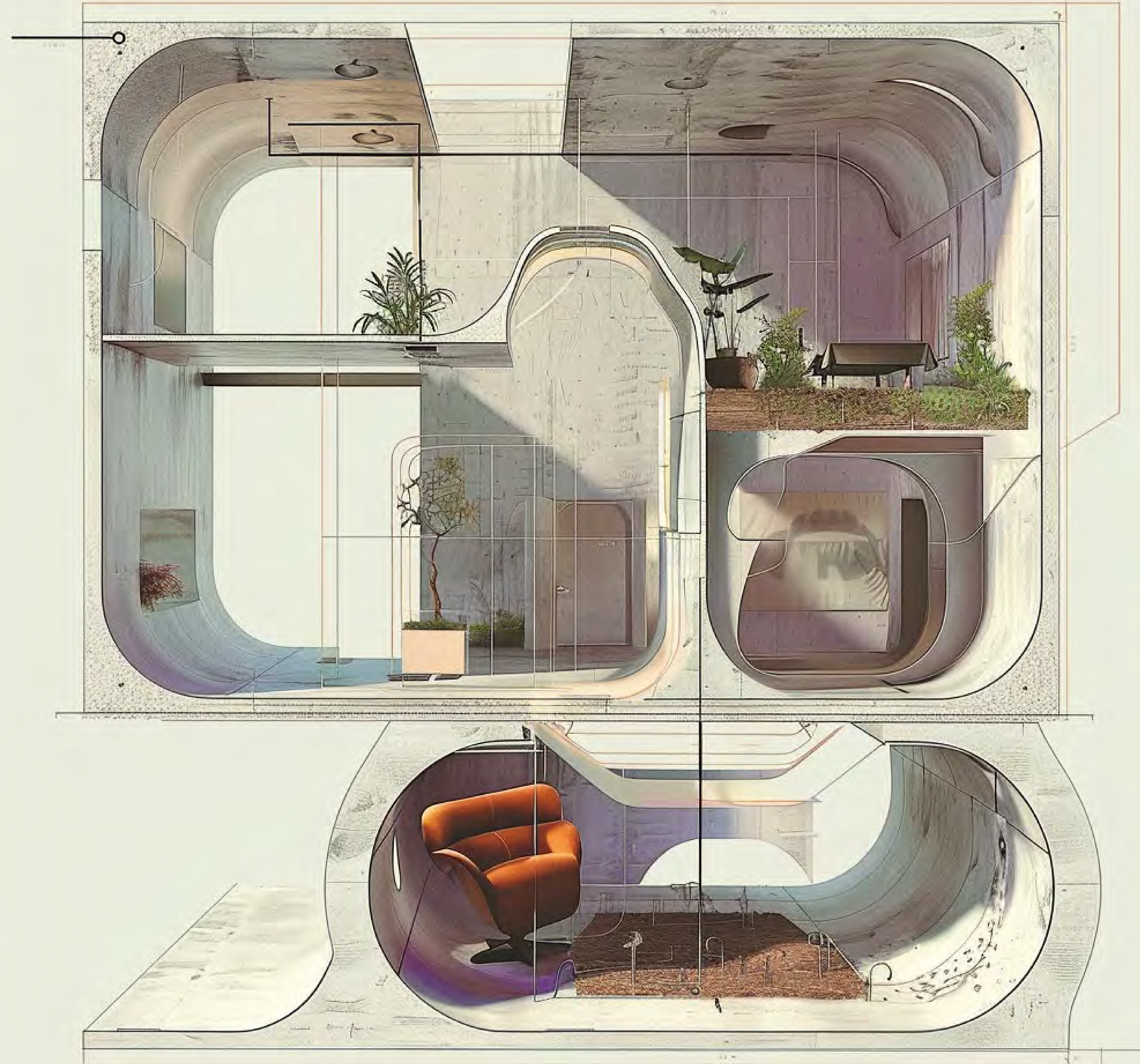




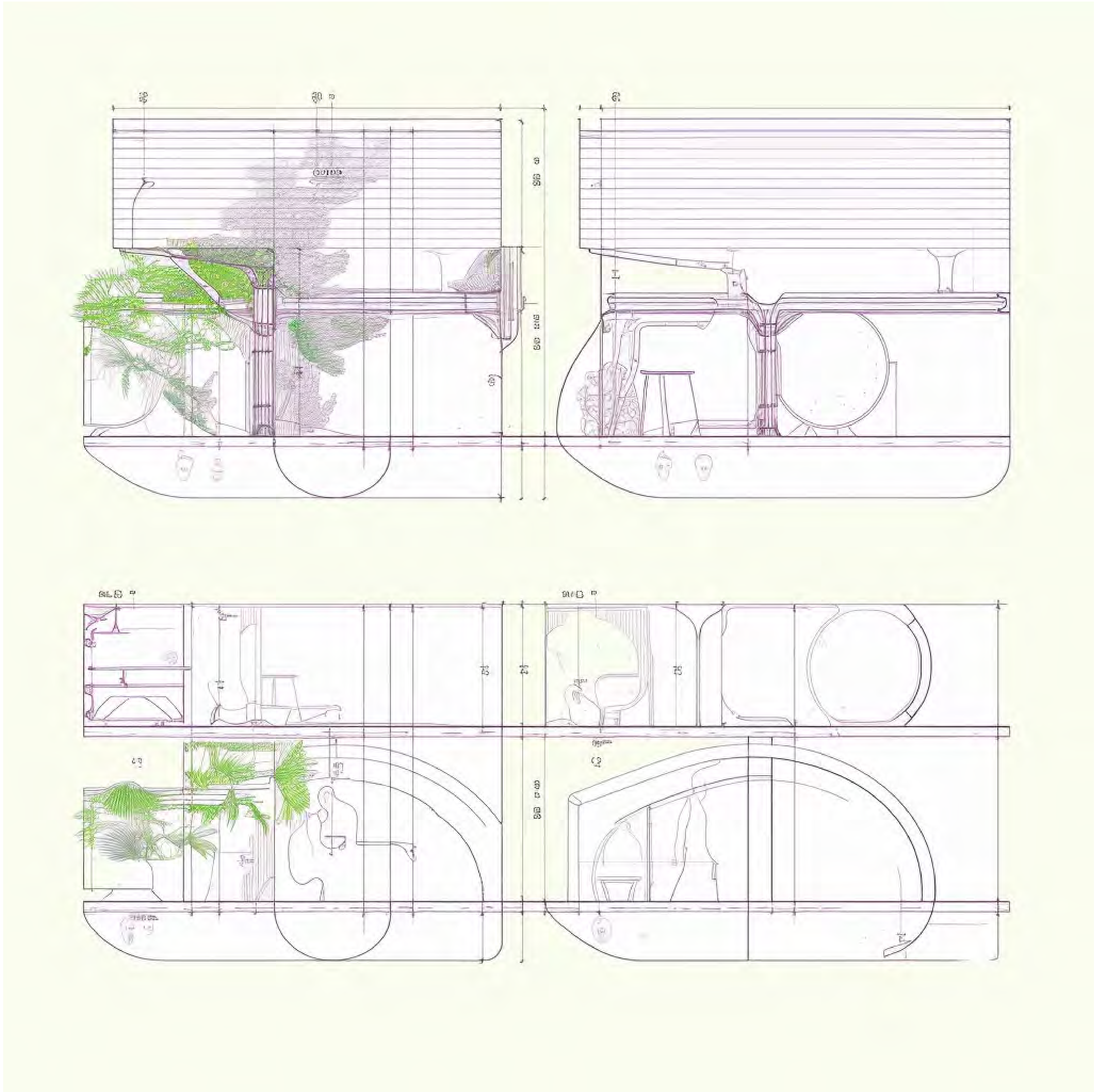
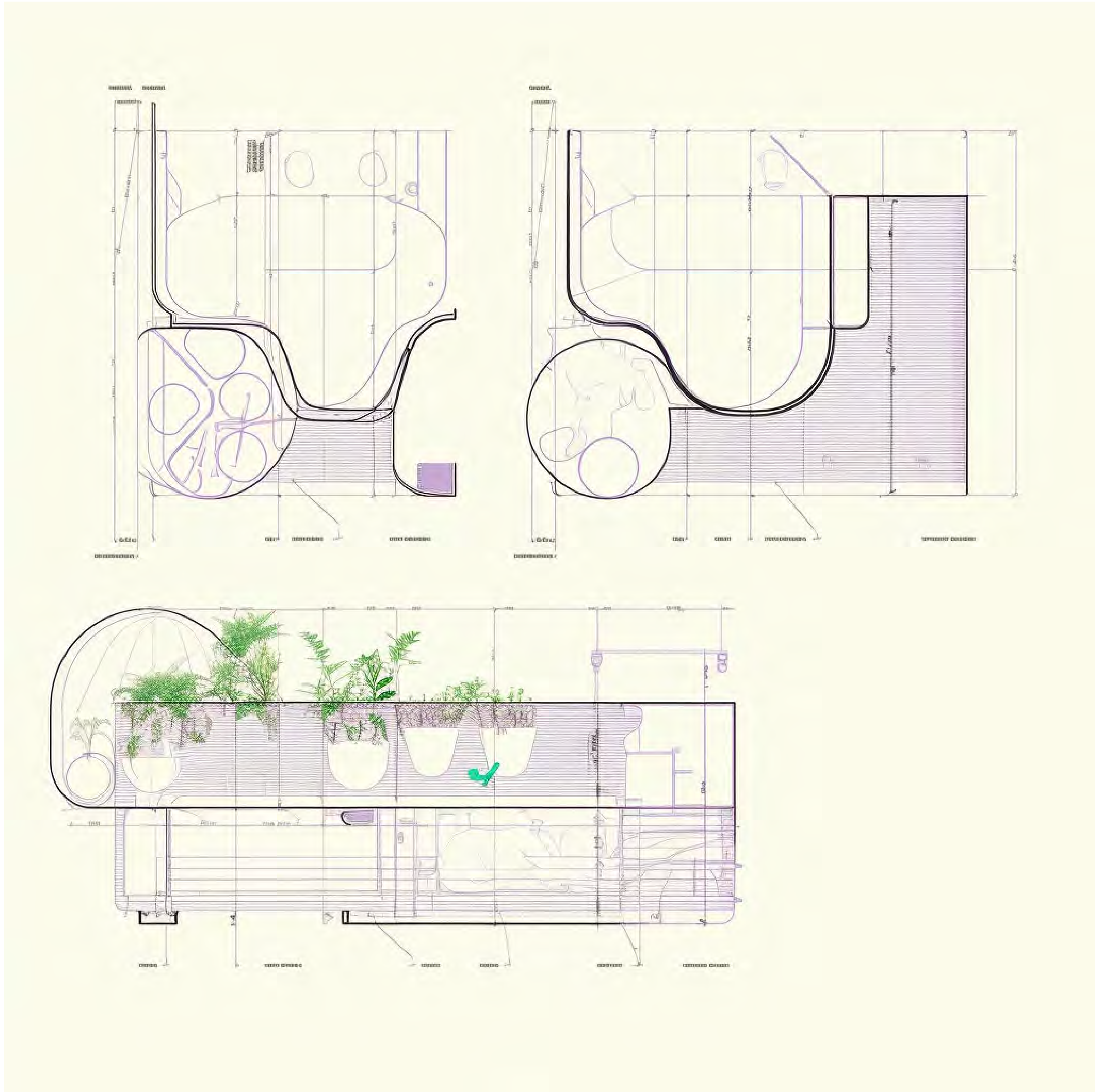
INVISI-BILITIES ENHANCING ACCESSIBILITY

SP 2024 Tech Elevtive || Critic: Zarina Farmer-George

In this course, students use AI tools to create speculative designs that redefine accessible spaces for individuals with disabilities. These designs are compiled into a toolkit and applied to redesign a library. Through practical application and theoretical exploration, participants learn to leverage AI algorithms to develop innovative solutions.

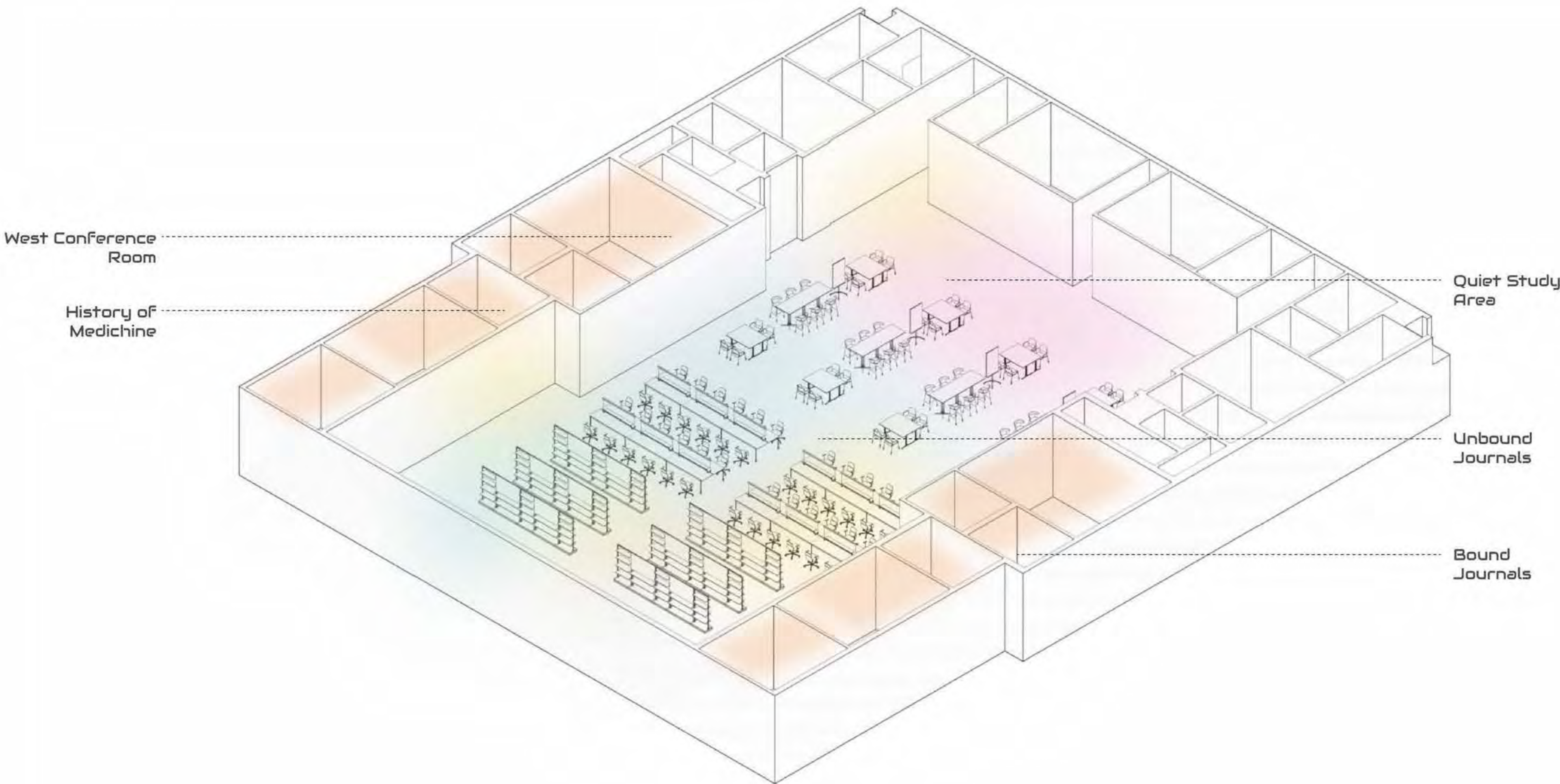


Soft Space tool kit

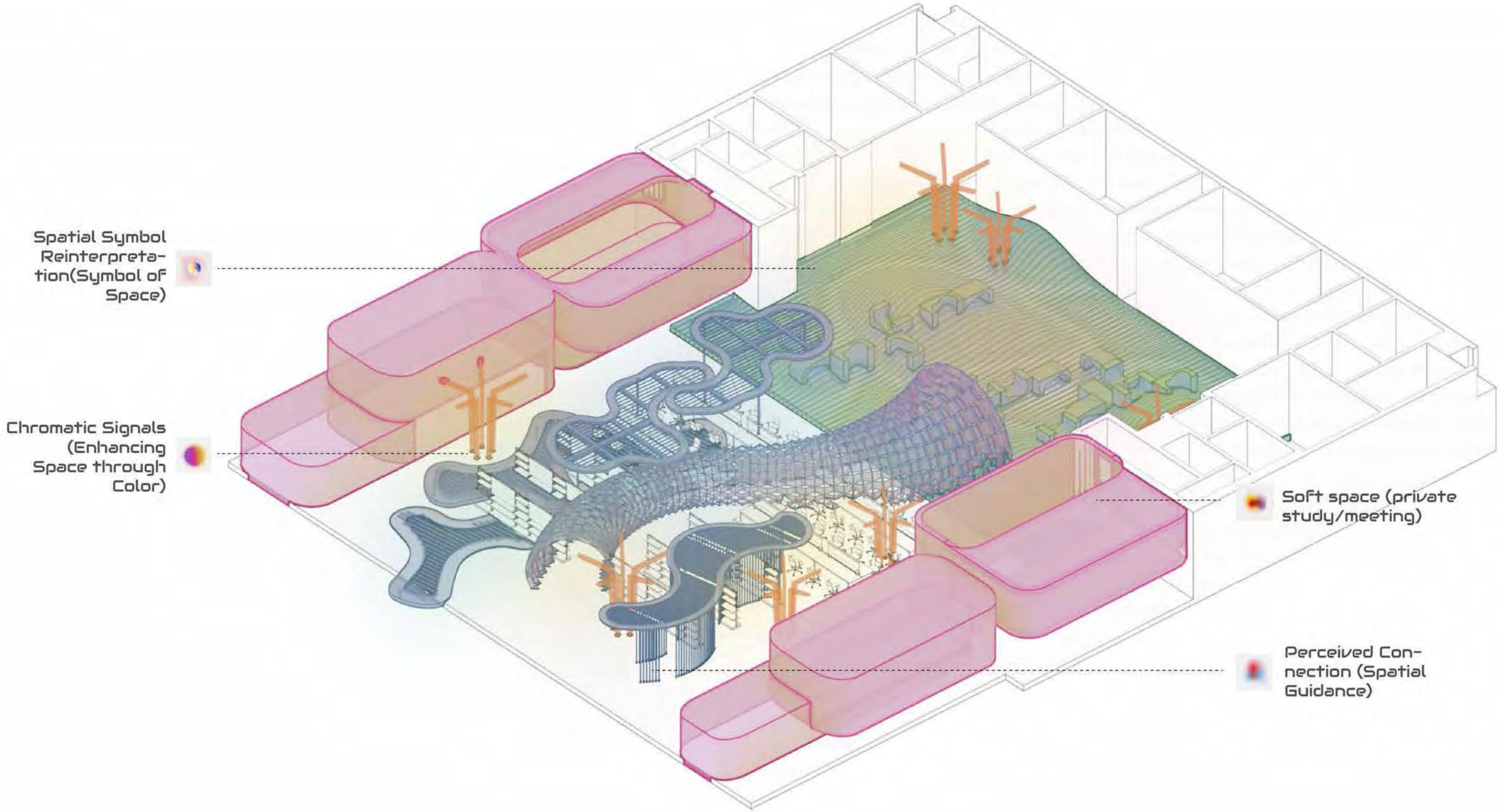


Soft Space Redesigned

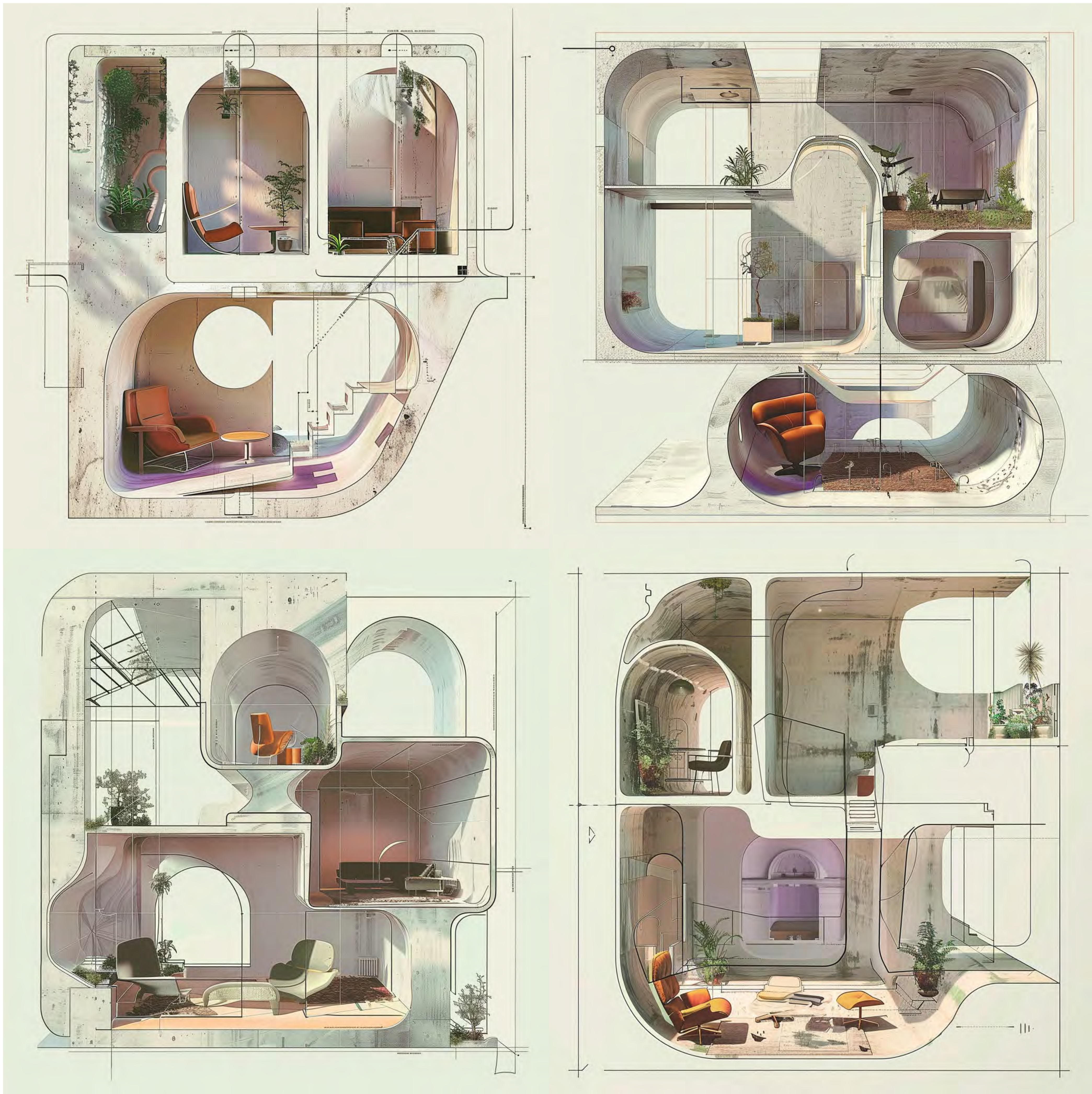
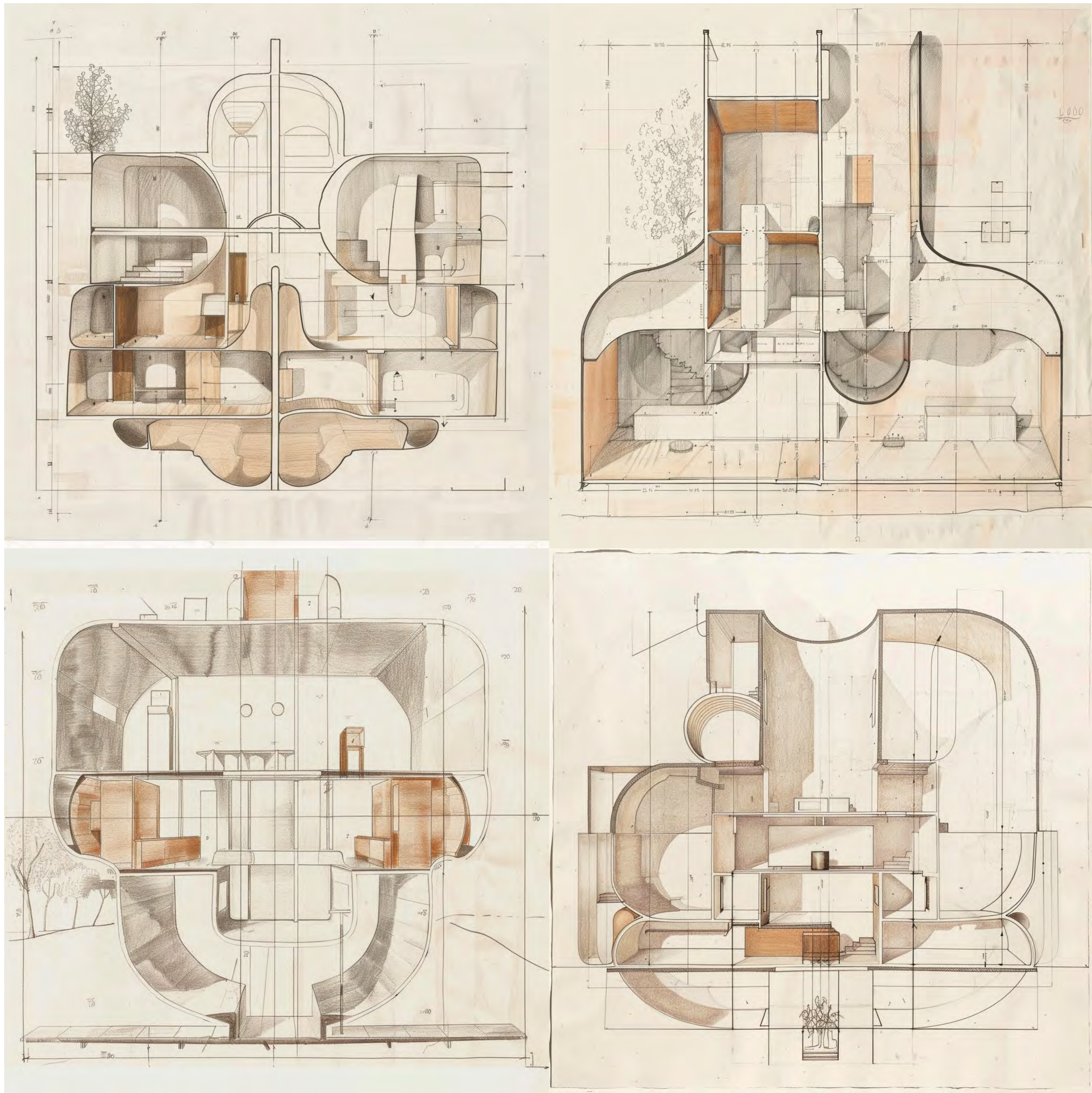
Original Library



New Library



Soft Space Redesigned



IDLENESS AND LIBERATION IN WATER

SITE: Cape Town

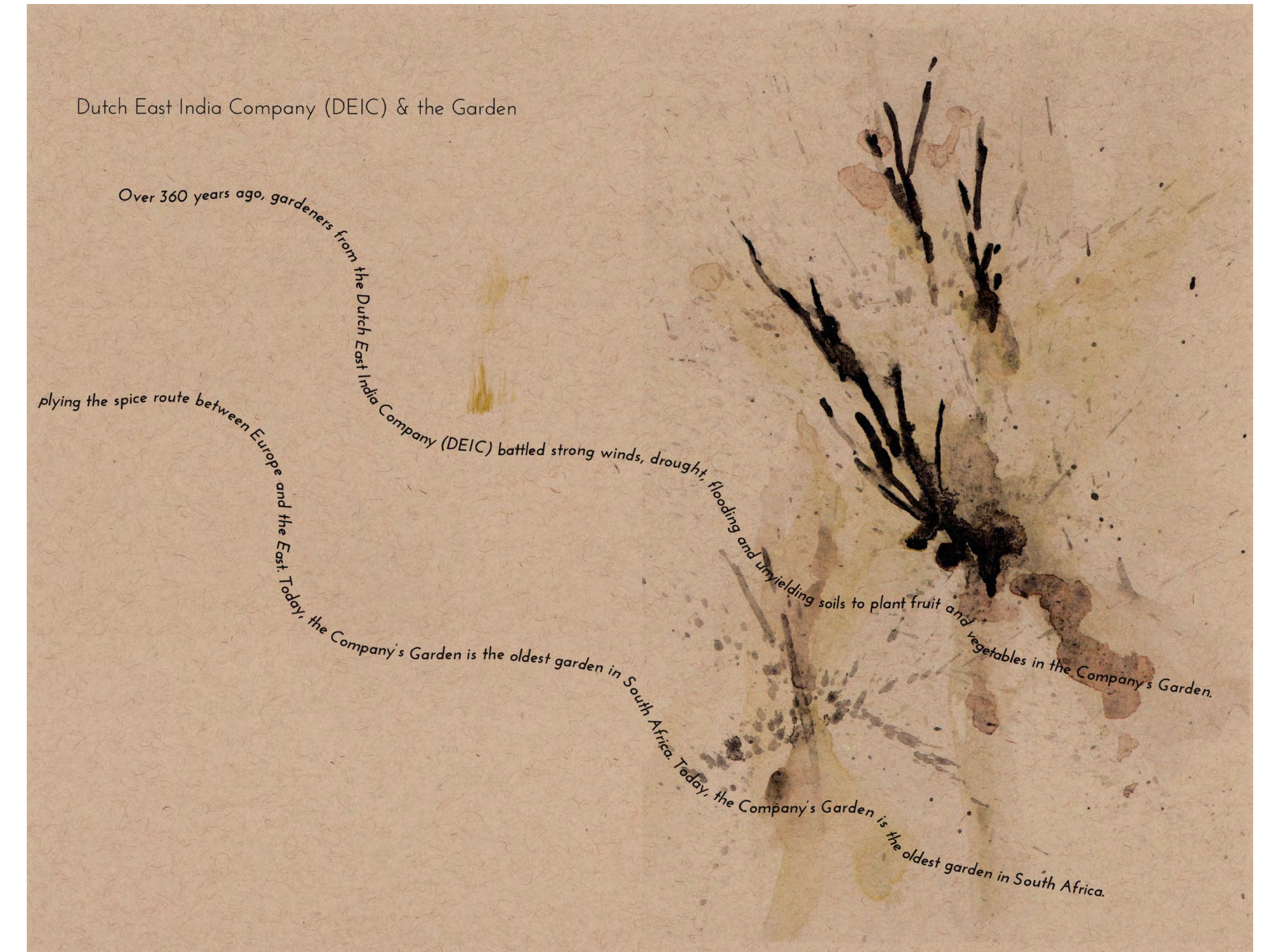
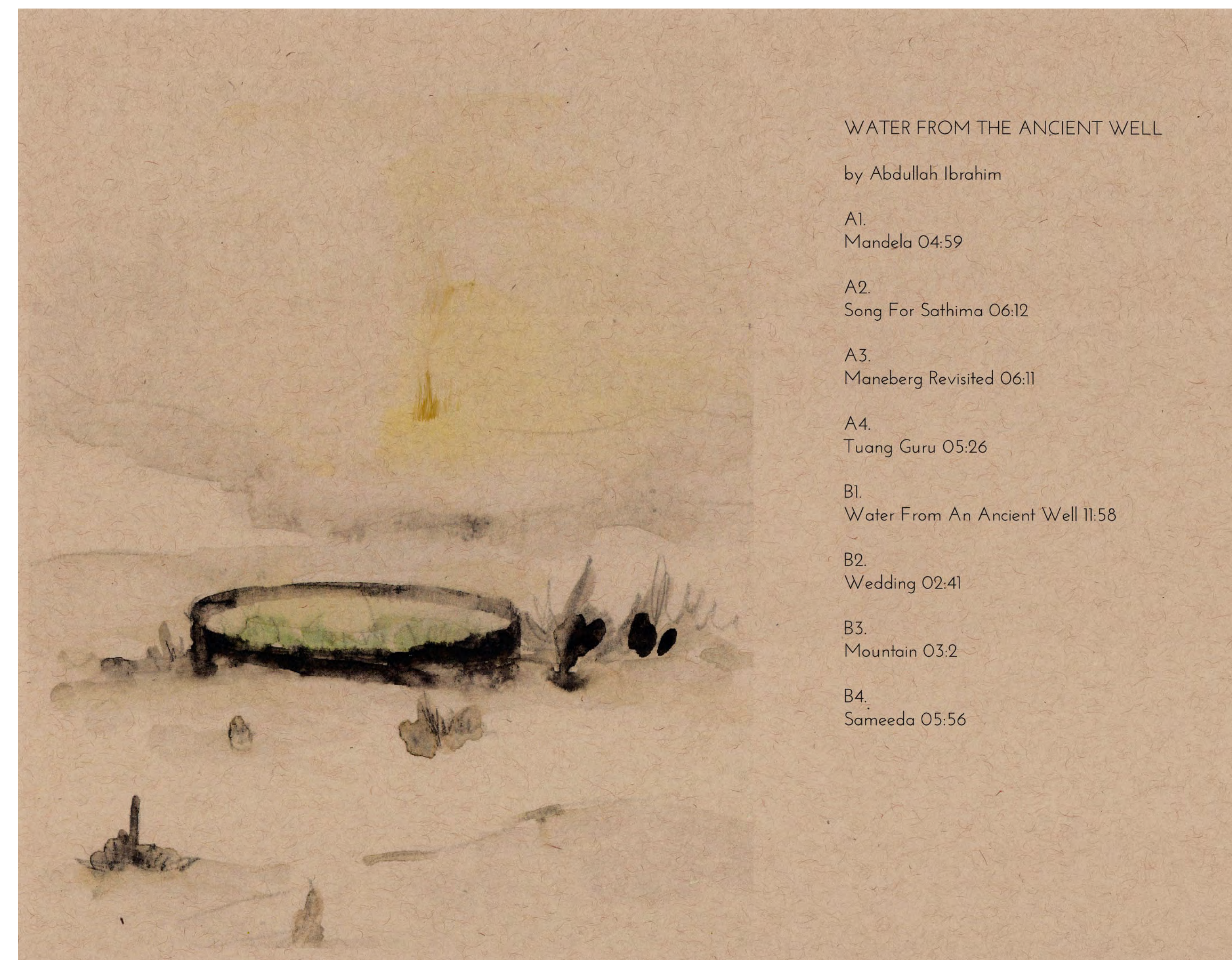
SP 2024 Design Studio || Critics: Ilze Wolff

The privatization of water in Cape Town presents a conflicting notion. Since the sublime nature of water is deeply embedded in African culture, water is not something to be tamed but rather a respected element in nature that nurtures the African people.

Water, as the embodiment of idleness, carries the idea of regeneration in indigenous culture, contrasting with the colonialist approach of water as a functional tool for segregation and profit. Reassessing the purpose of idleness entails re-evaluating the dynamic between work and labor. In most cases, things are subjected to labor, driven by capital rather than will. Conversely, work is associated with activities based on will, such as reading, drawing, and swimming.

Once humans begin to perceive themselves as machines, they are dominated by the Tayloristic idea of mechanizing their environment and themselves. In this crisis driven by the capitalization of our environment, liberation aligns with idleness, which is regenerative, nurturing, and healing.







Farming in Cape Town
indigenous vs colonial development

Rain falling on Table Mountain filters through the sandstone, seeps into the soil, and then flows through perennial streams in the Table Valley. These springs were important factors attracting people to this area.

Colonial culture sees agriculture as a way to constantly working, which is labor.

The Garden lies in the midst of a dramatic landscape, framed by Devil's Peak to the east and Lion's Head to the west.

Idleness in indigenous culture represents healing through rest.

The Gorinchacqua were indigenous cattle and sheep farmers who traveled between the area now known as Saldanha Bay and the Cape Peninsula. They traveled to different regions in different seasons to allow the land to recover from human intervention.

chapter 4
Privatization of Water

Privatization of Water
institutional injustice in water

The limitation on water usage in Cape Town eventually led to the privatization of water. The new tariffs and taxes surrounding water made it appear to be the center of urgency, while access to water has become the driver of foreseeable conflicts.

While retailers can raise prices on bottled water, the well-to-do class can either install private wells at home or purchase the water. Water as a resource is not their concern; they are concerned about who has the same access to water as them.

Water Master VS Institutional Injustice

Riyaz Rawoot manages the ancient well voluntarily, providing water to the elderly and industrious trolley operators ferrying water for a nominal fee.

Once the story became popular, the city decided to shut down Riyaz's operation and seal off the spring with concrete. This bureaucratic intervention proves the city is deliberately cutting off free access to water and trying to capitalize on water.

Privatization of Water
institutional Injustice in Infrastructure

The disparity between race and class becomes a daily reminder of White wealth and Black poverty in the city layout as the urban fabric largely remains unchanged after 1994.

Many accounts and blogs reported mass water hoarding issues, primarily among wealthier groups. Some even reported stocking up on 20-liter water containers from retailers before they reached the stores.

It only costs around \$800 to install a private well at your residence. The well is connected to a public reservoir, which can be seen as an act of privatizing public resources with money.

Expanding Colonial Dominance Through Garden
Development of public programs and changing landscape

The British occupied the Cape in 1805 and left the garden to deteriorate due to a lack of maintenance.

In the historical development of Cape Town, significant public institutions were strategically established. The Public Library adjacent to the Cathedral in 1860.

The Houses of Parliament were erected on expansive garden land in 1879.

The South African Museum in 1883.

They are all landmark buildings in colonial style.

This action can be viewed as an expansion of colonial influence within the colony through the establishment of cultural infrastructure, akin to the construction of churches.

Privatization of Water
social injustice in visual representation

The apartheid movement consolidated social and racial injustice in Cape Town by embedding institutional inequality in infrastructure and facilities.

Ripping apart functioning working-class communities like District Six, and turning the city into a patchwork of racially segregated residential areas (Shepherd, N. (2021)).

The image of Cape Town residents queuing at the springs becomes the visual representation of the water crisis. The obsession with inter-racial, inter-class pictures shifts the consensus towards the belief that the lack of water is driving this crisis. Yet, the reason behind people queuing up is that not everyone has access to running water in all areas.

Shepherd, N. (2021). Cape Town's 'Day Zero' Drought: Notes on a Future History of Urban Dwelling, Space and Culture, 24(3), 359-377.

