



STATES OF MATTER

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Columbia GSAPP

M.S. Advanced Architectural Design

2025-2026

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Natures*

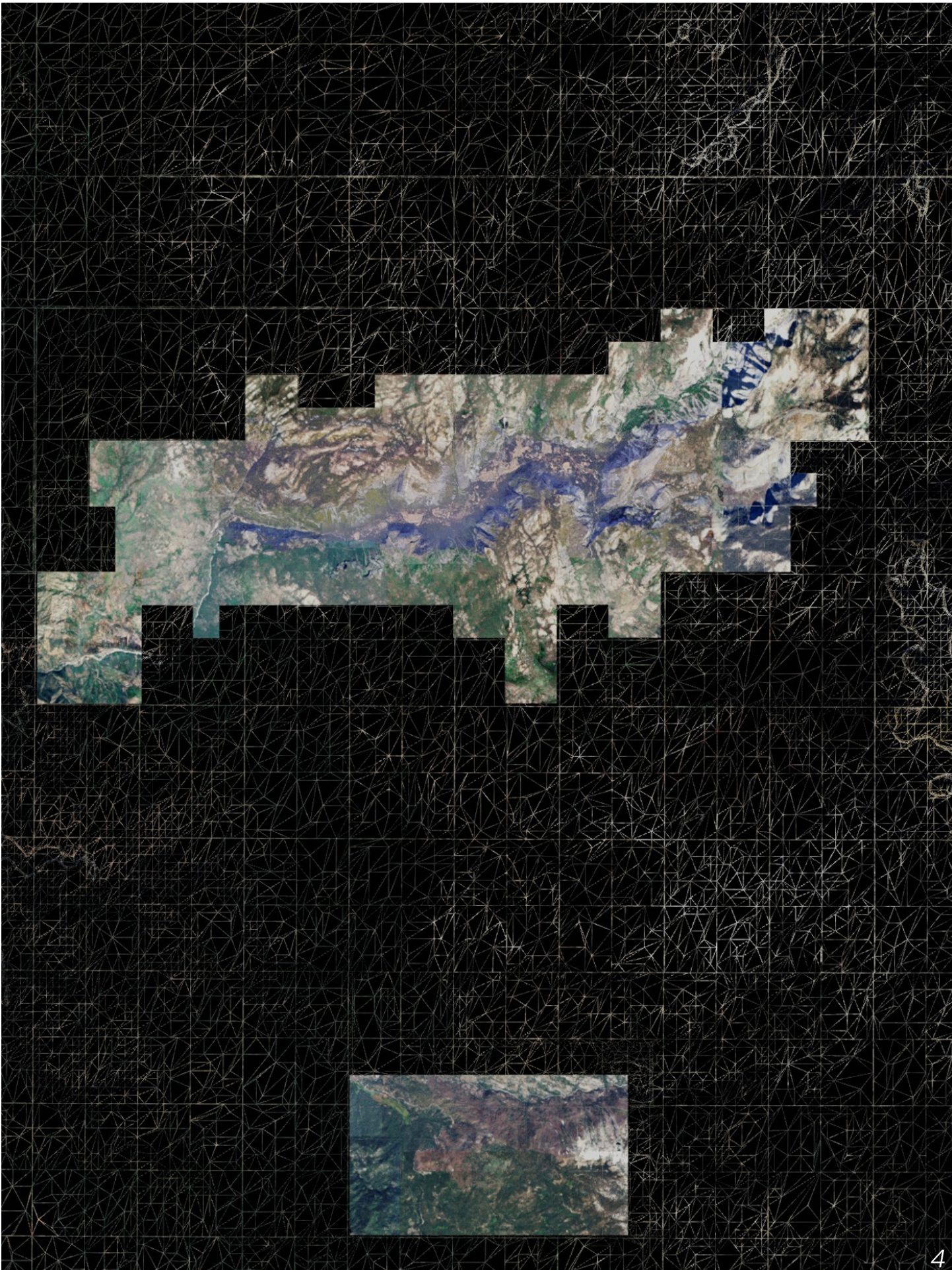
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01

Summer '25

After Simulated Natures - Yosemite Rendered and Remembered

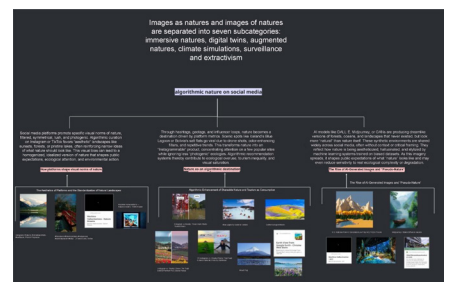
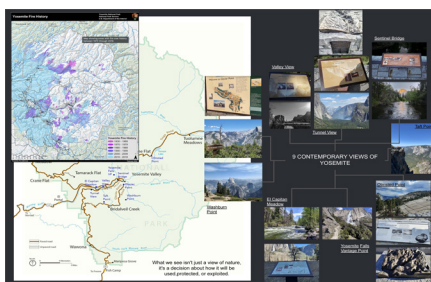
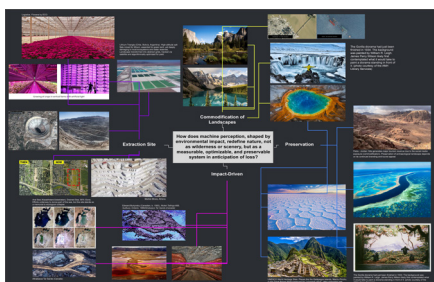
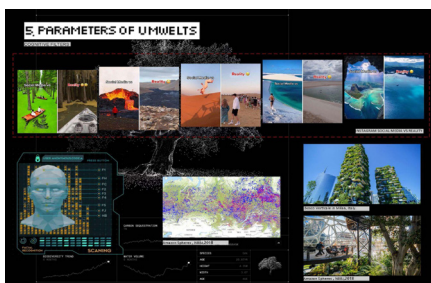
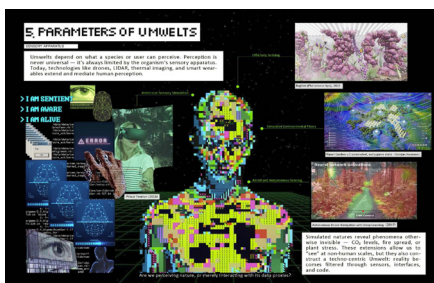
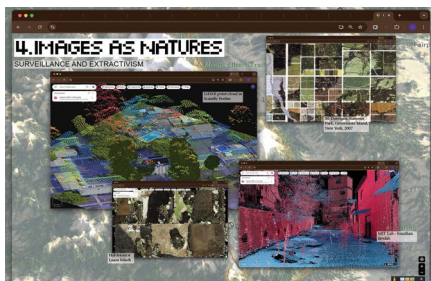
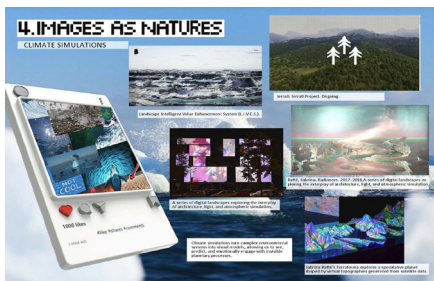
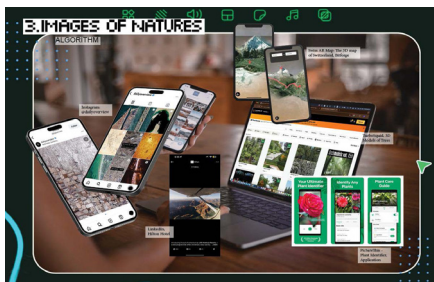
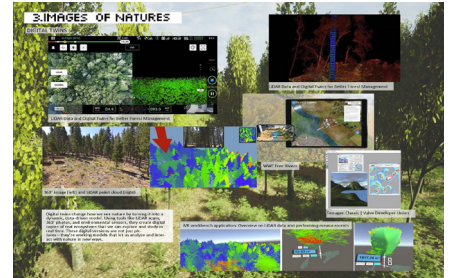
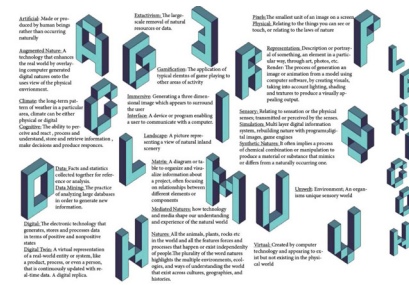
Instructor: Michiel Helbig

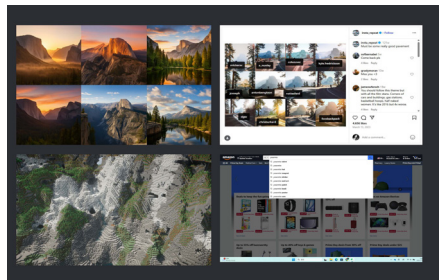
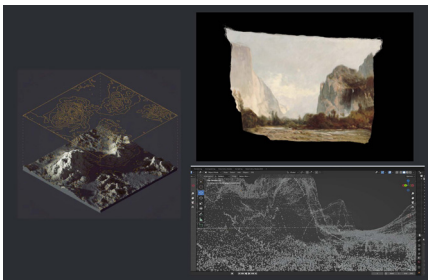
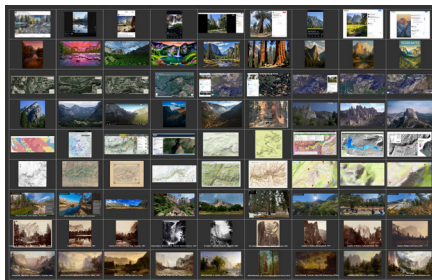
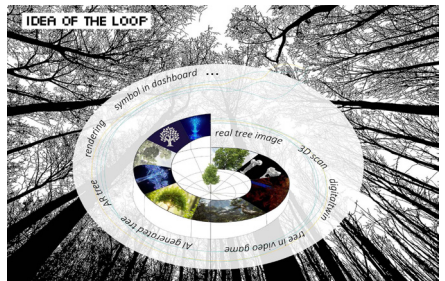
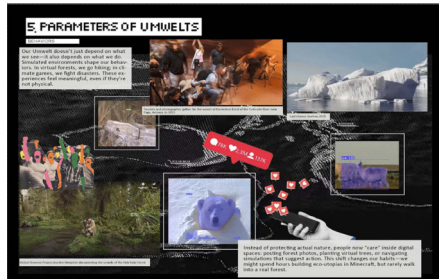
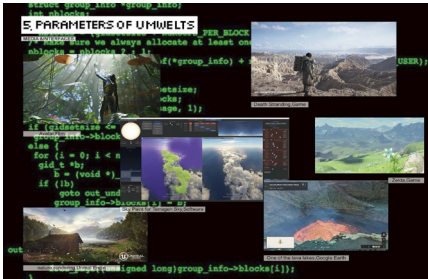
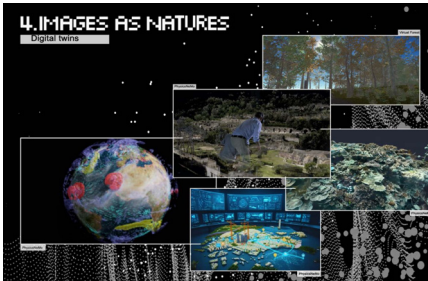
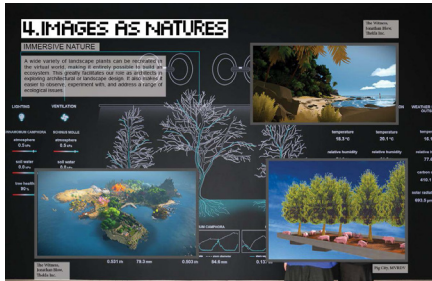
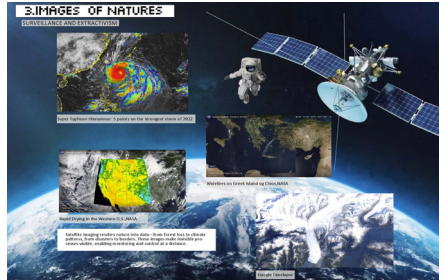
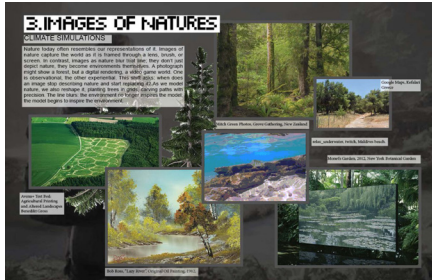
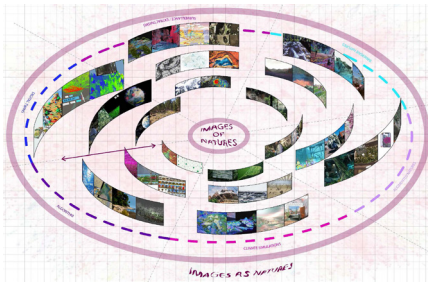
Teammates: Yifan Zhao & (Arthur) Yiquing Zhu

Our relationship with landscapes has always been mediated through images, from paintings and photography to drones and digital simulations. Today, these technologies no longer just represent nature but actively reshape it, blurring the line between the natural and artificial. This shift is especially visible in Yosemite National Park.

The nine original views of Yosemite helped construct the idea of wilderness and played a key role in the Yosemite Grant of 1864. These images preserved not only the land, but also its picturesque views, turning Yosemite into both a protected landscape and a commodified image. Roads, guardrails, and viewing platforms continue to choreograph how visitors experience the landscape, showing how infrastructure and media shape perception.

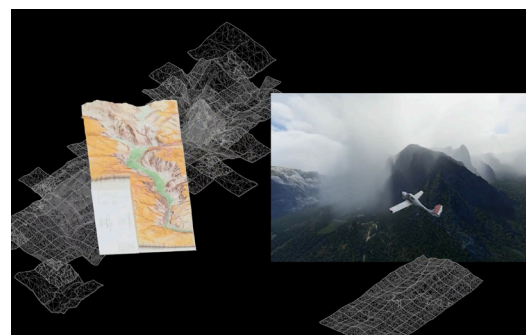
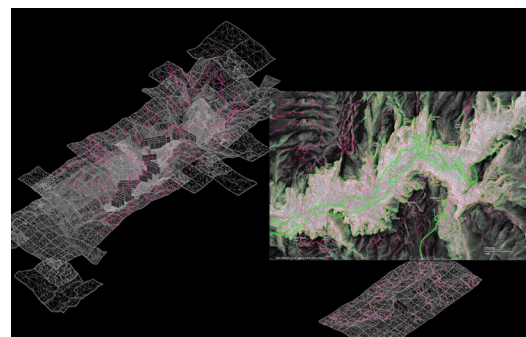
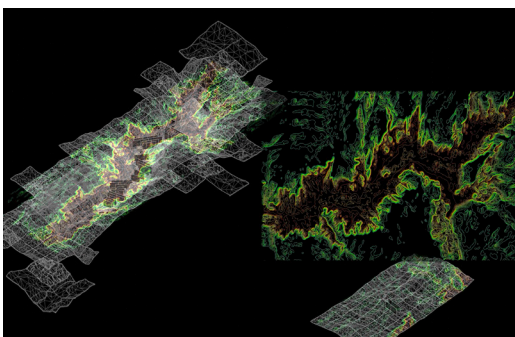
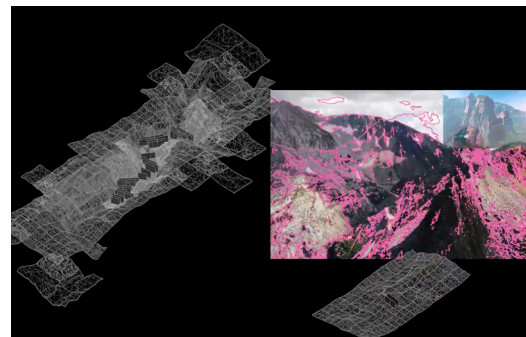
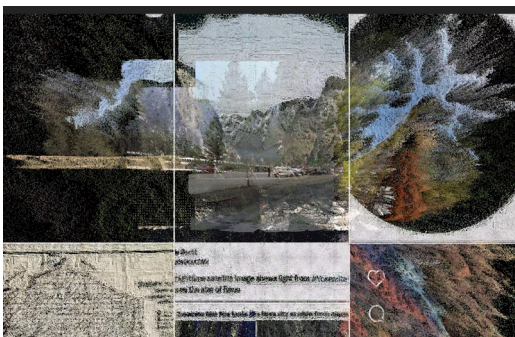
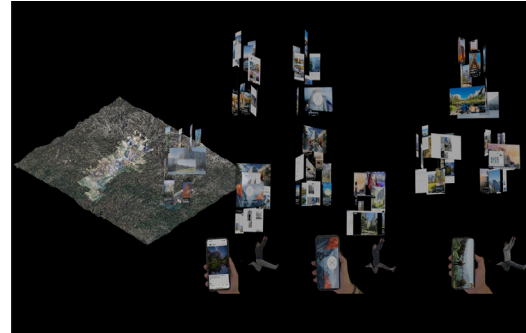
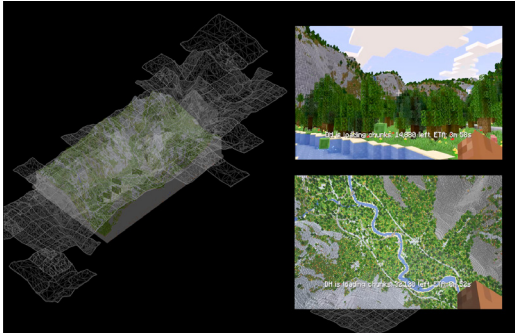
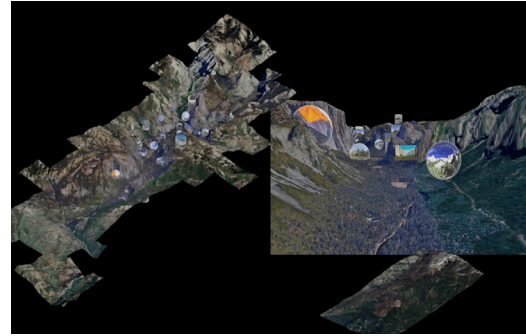
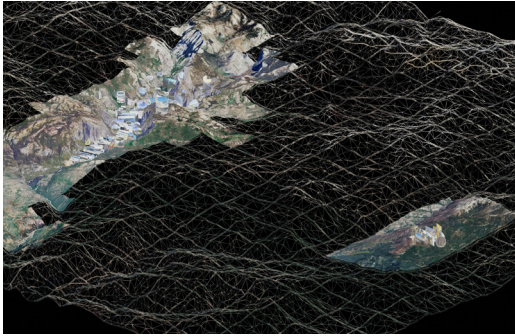
FieldGuide







Video Parts



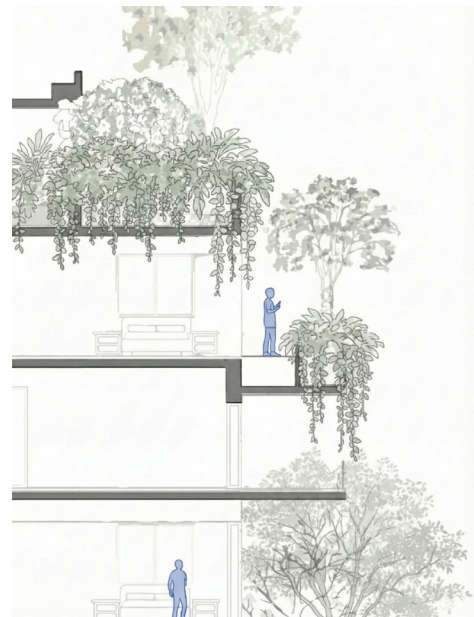
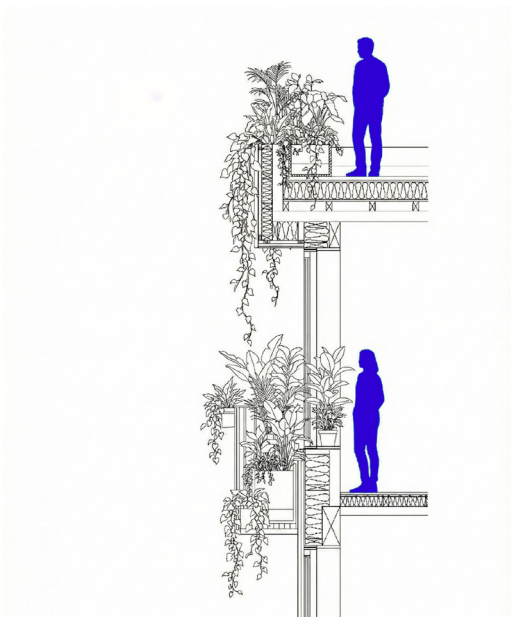
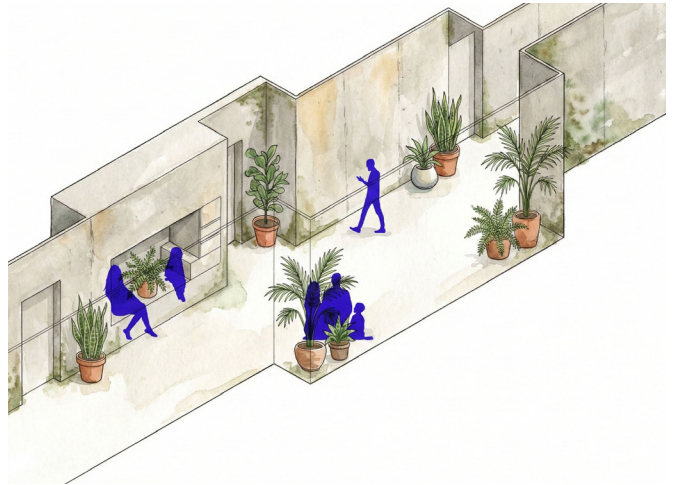
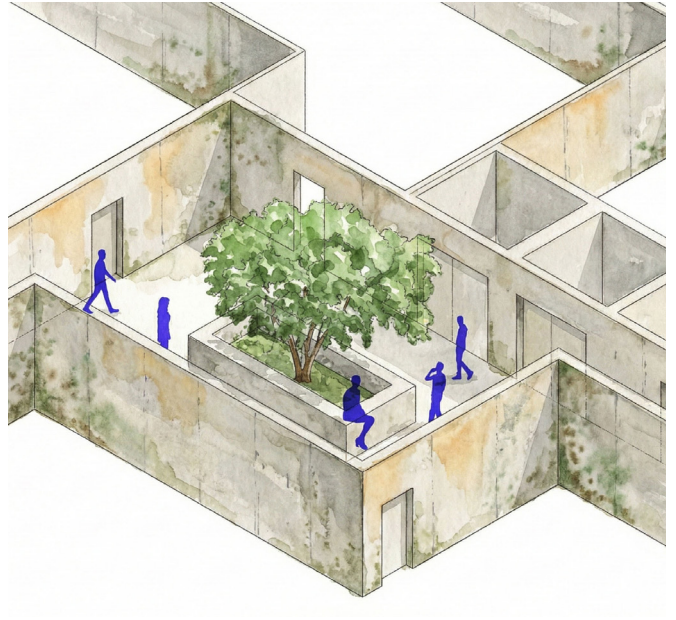
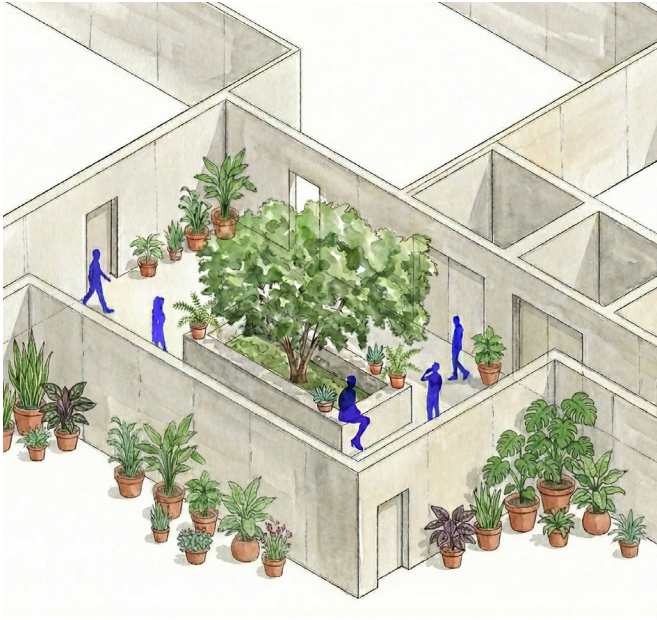
02 *Fall '25* *Falling Gold*

Instructor: Imani Brown & André B. Santos

Cracks in buildings are not simply signs of age, but evidence of care, maintenance, and the environmental conditions embedded within architecture over time. Grace Gold's death, caused by falling masonry from a Columbia-owned building, revealed how water infiltration, rusting steel, mold, and toxic materials can transform a façade into a dangerous and often invisible micro-ecology. Moisture trapped within wall cavities allowed mold, fungi, and airborne toxins to accumulate behind the surface, exposing the building not only as structurally compromised, but also chemically and biologically unstable. Her death ultimately contributed to the strengthening of New York's façade safety laws.

The Toxicity of Mold examines how deferred maintenance, moisture infiltration, and environmental deterioration can gradually affect both buildings and the people who inhabit them. Focusing on conditions in West Harlem, the project explores the relationship between toxicity, decay, health, and the built environment through research, mapping, and material investigation. Alongside the research, I designed and coded an interactive website to visualize these relationships between architecture, deterioration, and environmental exposure

<https://codepen.io/MariaEleni-Komninou/pen/ZYWbEww>





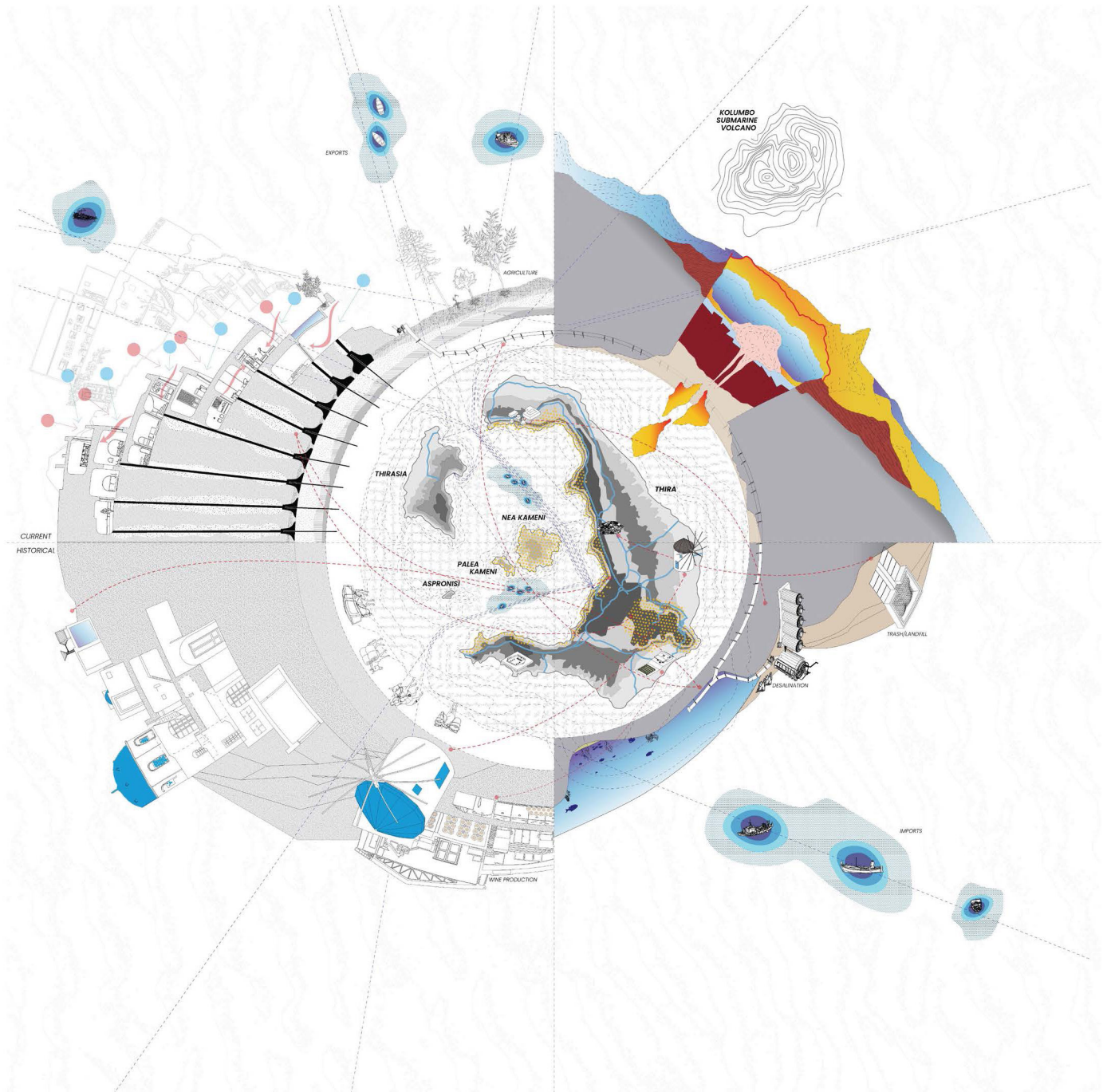
03 *Spring '26* *Along the Path*

Traces in the terrain: donkeys, soil, water & human movement across Santorini

Instructor: Mireia Luzarraga Alvarez

Along the Path reimagines the path in Santorini as the island's primary architectural and ecological infrastructure. Shaped by volcanic geology and patterns of movement, the project explores the relationship between the subterranean and the architectural through the connective role of the path. Historically, donkey routes linked yposkafa dwellings, agricultural fields, and sites of production, functioning as essential systems of survival and exchange. Today, these paths have become fragmented and reduced to circulation alone.

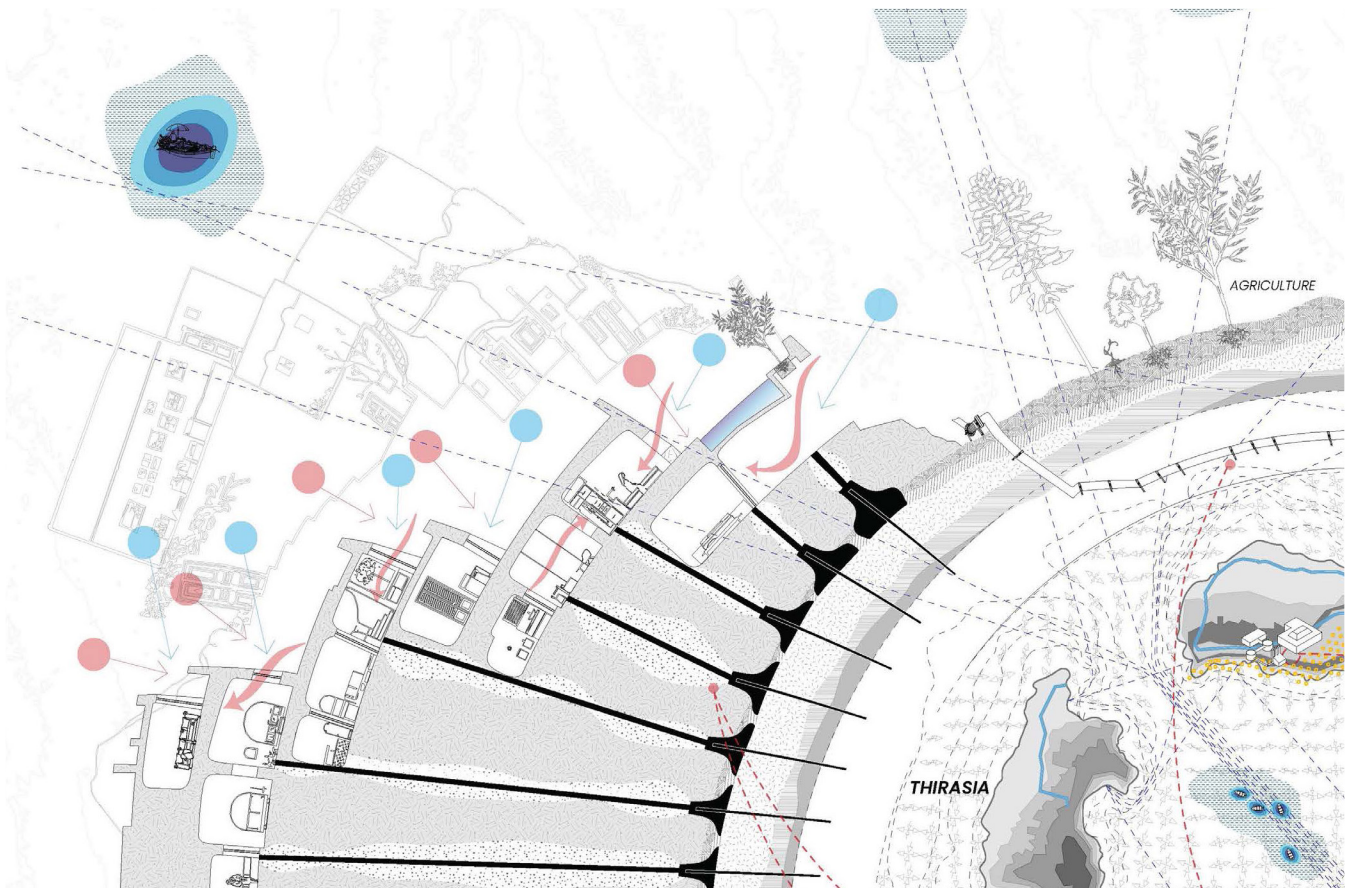
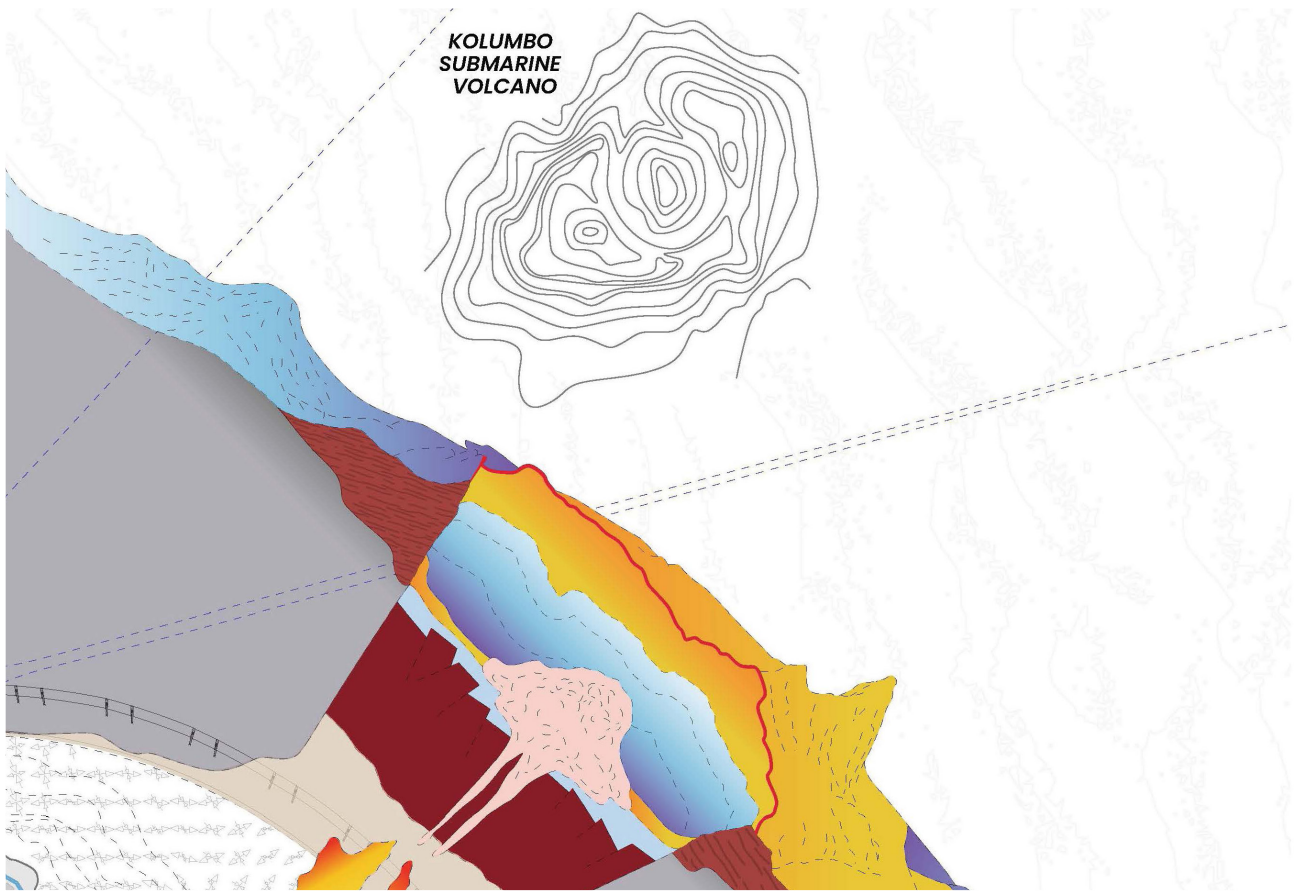
The project proposes the path as a productive corridor that integrates cultivation, water distribution, and material flows directly into movement. Through a reciprocal relationship between human, animal, and land, donkeys become part of an agricultural cycle that fertilizes and supports productive terraces along the route. By transforming infrastructure from a passive line of transit into a living system of cultivation and habitation, Along the Path redefines the path as an active ecological and architectural agent across the island.

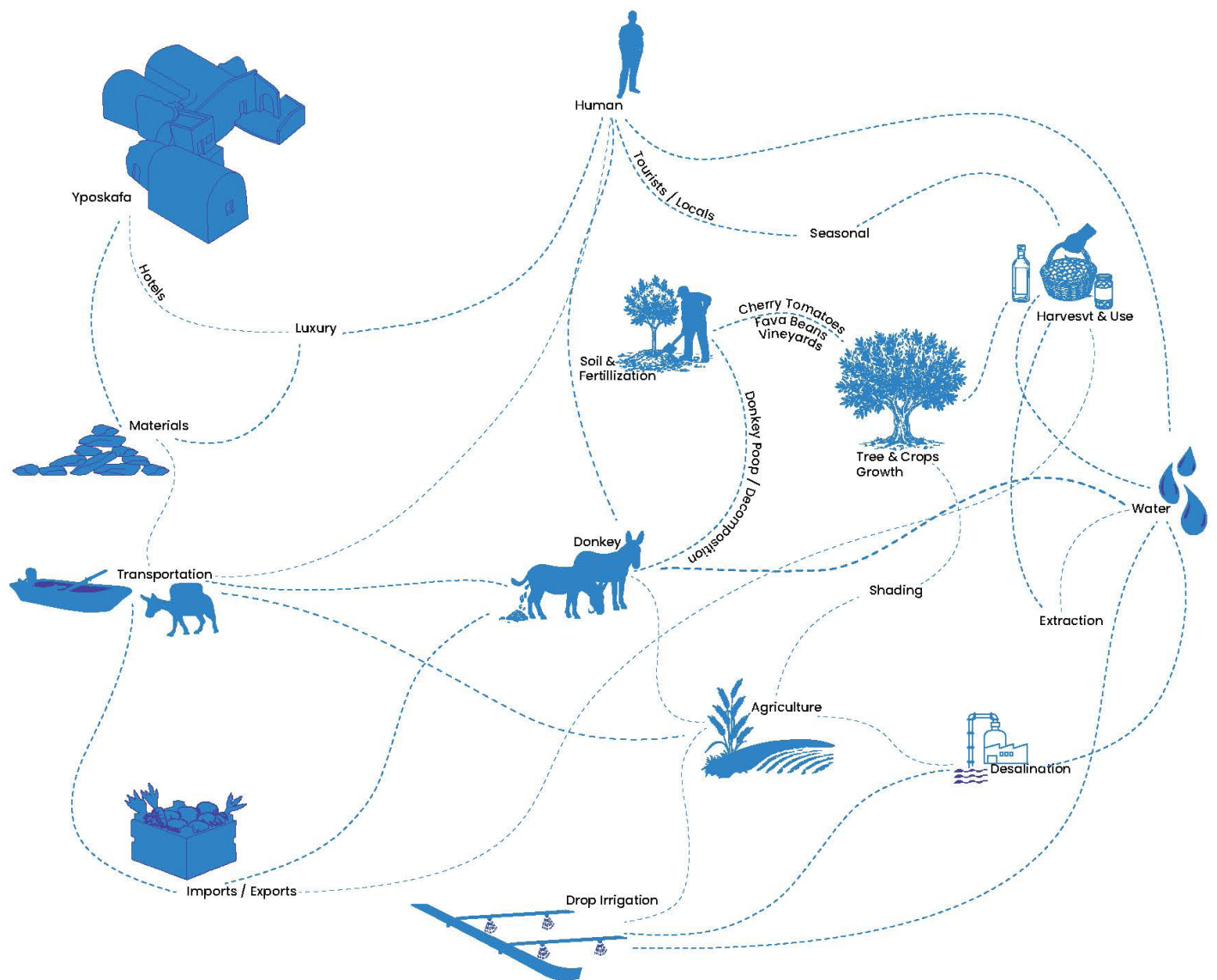




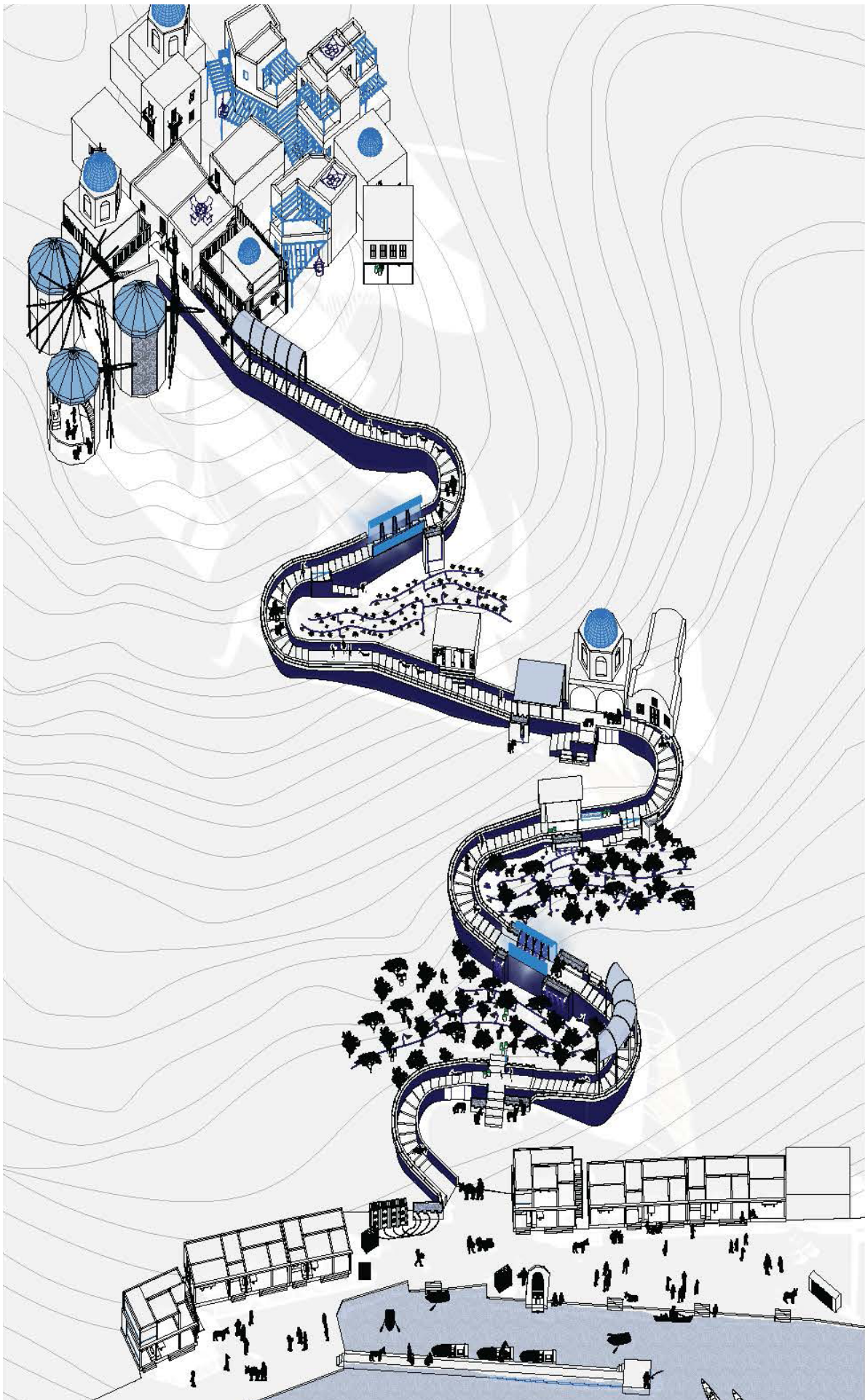
Volcanic Infrastructures of Santorini

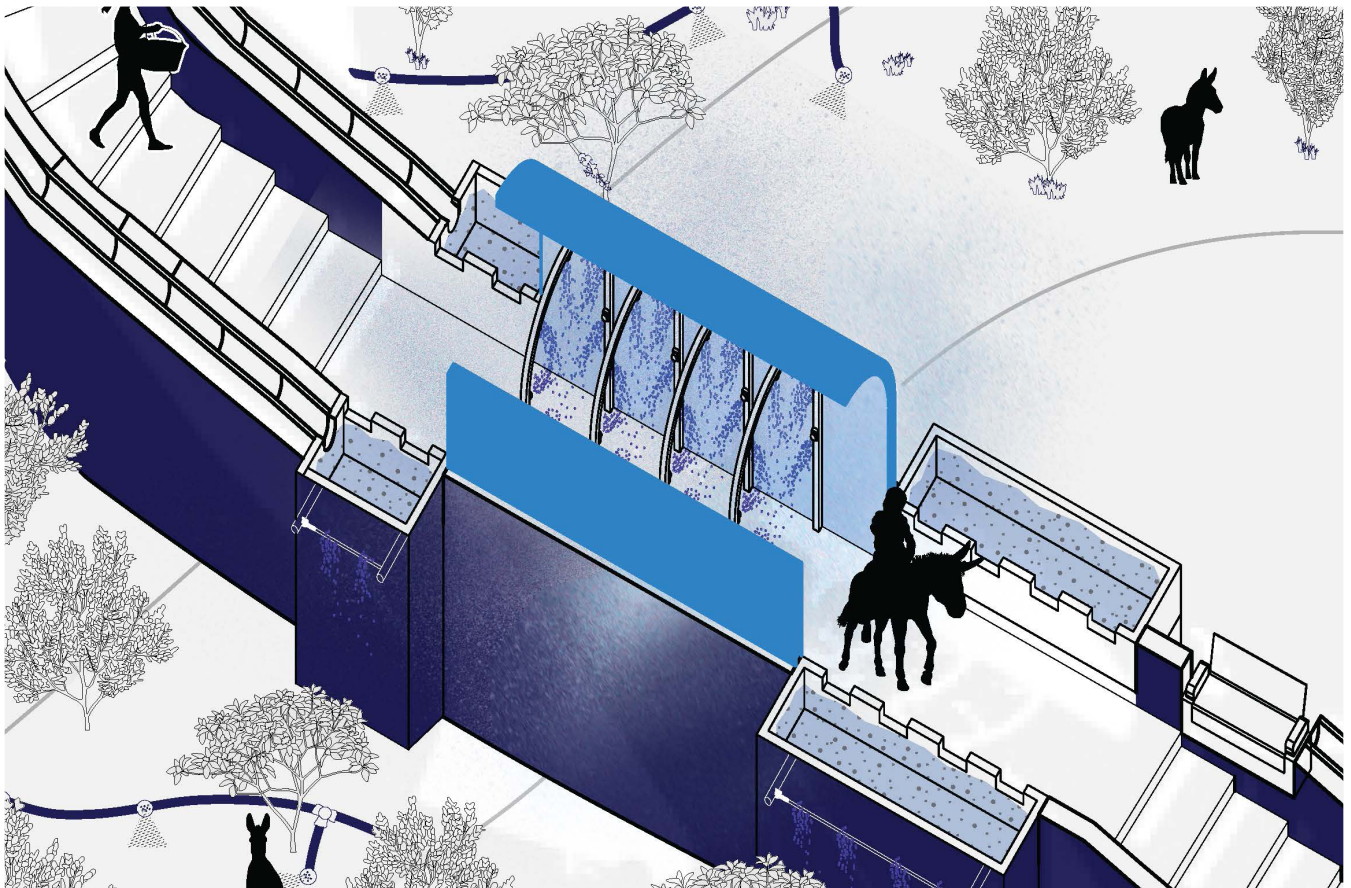
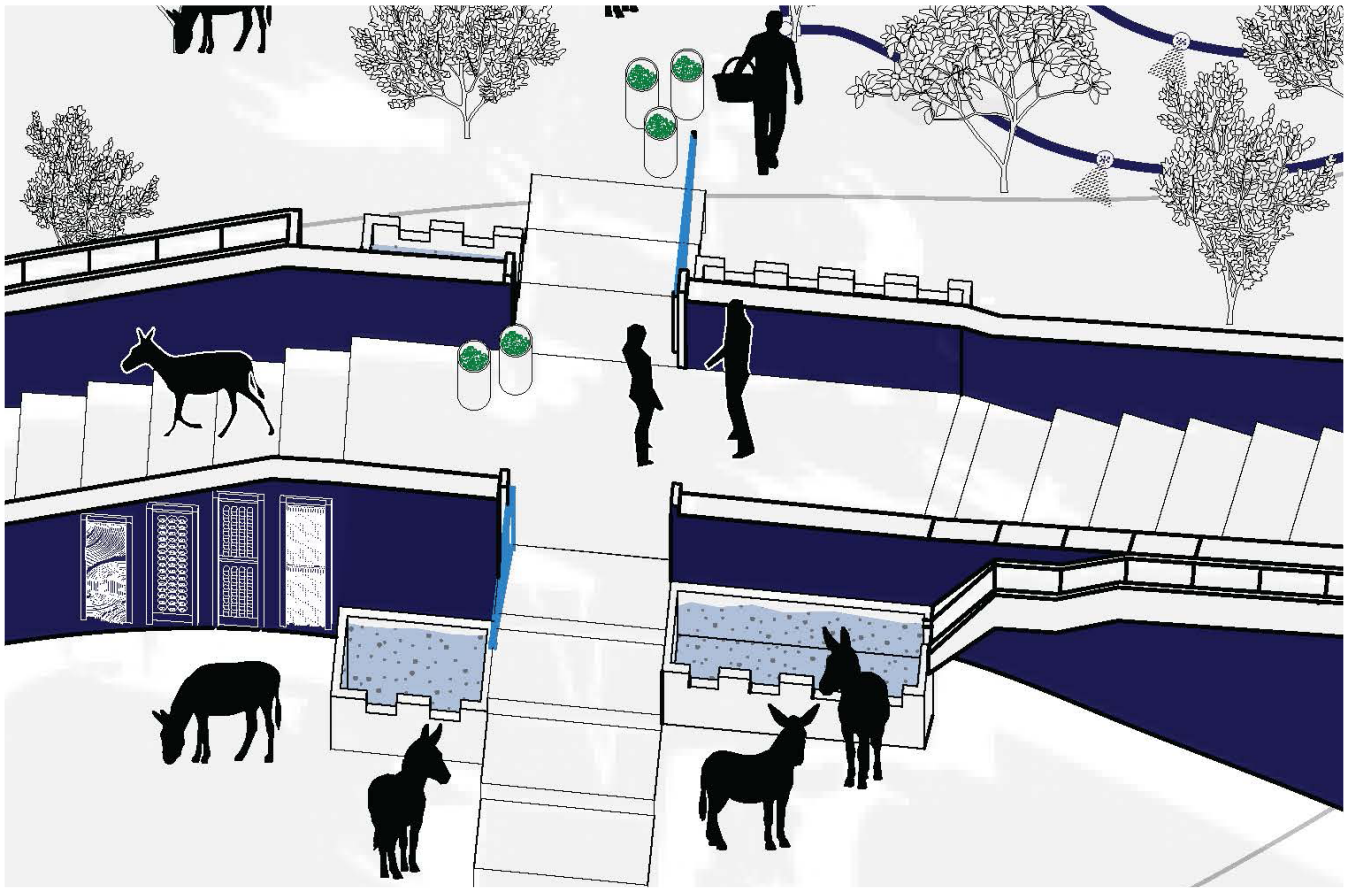
Geological formations, desalination systems, agriculture, tourism, and subterranean dwellings overlap to shape the island's environmental and architectural conditions.

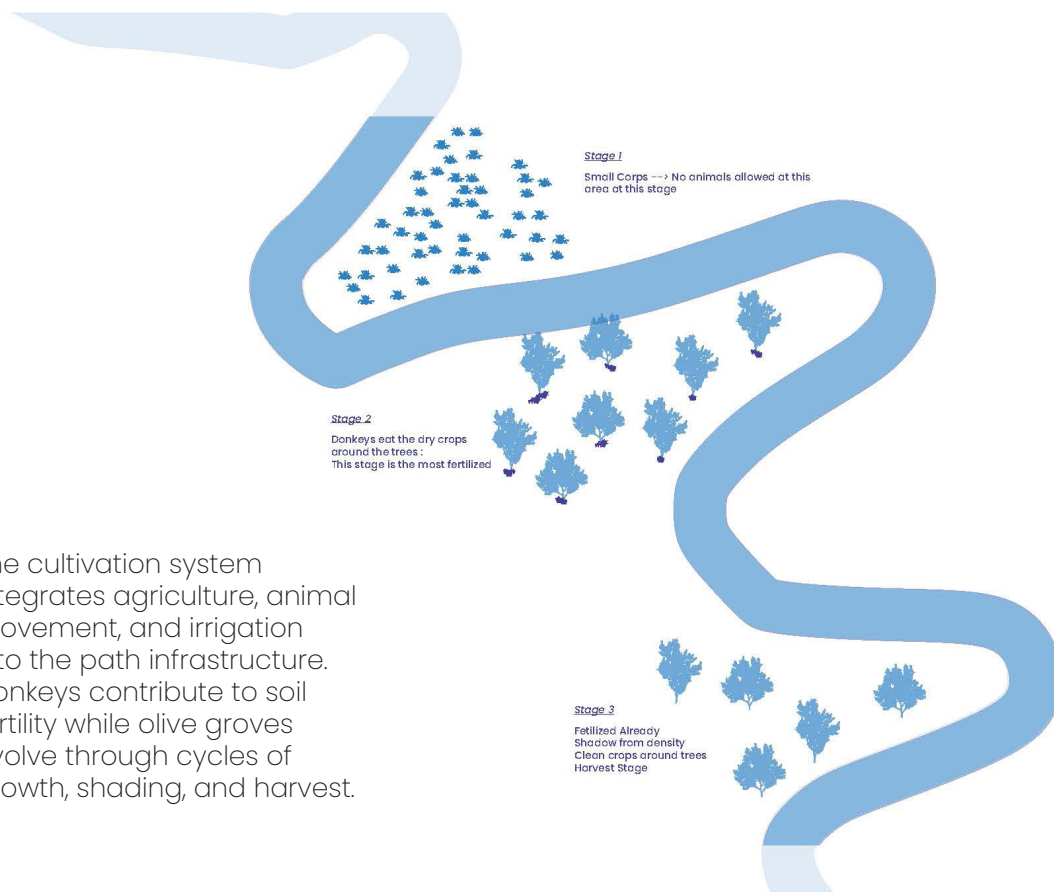




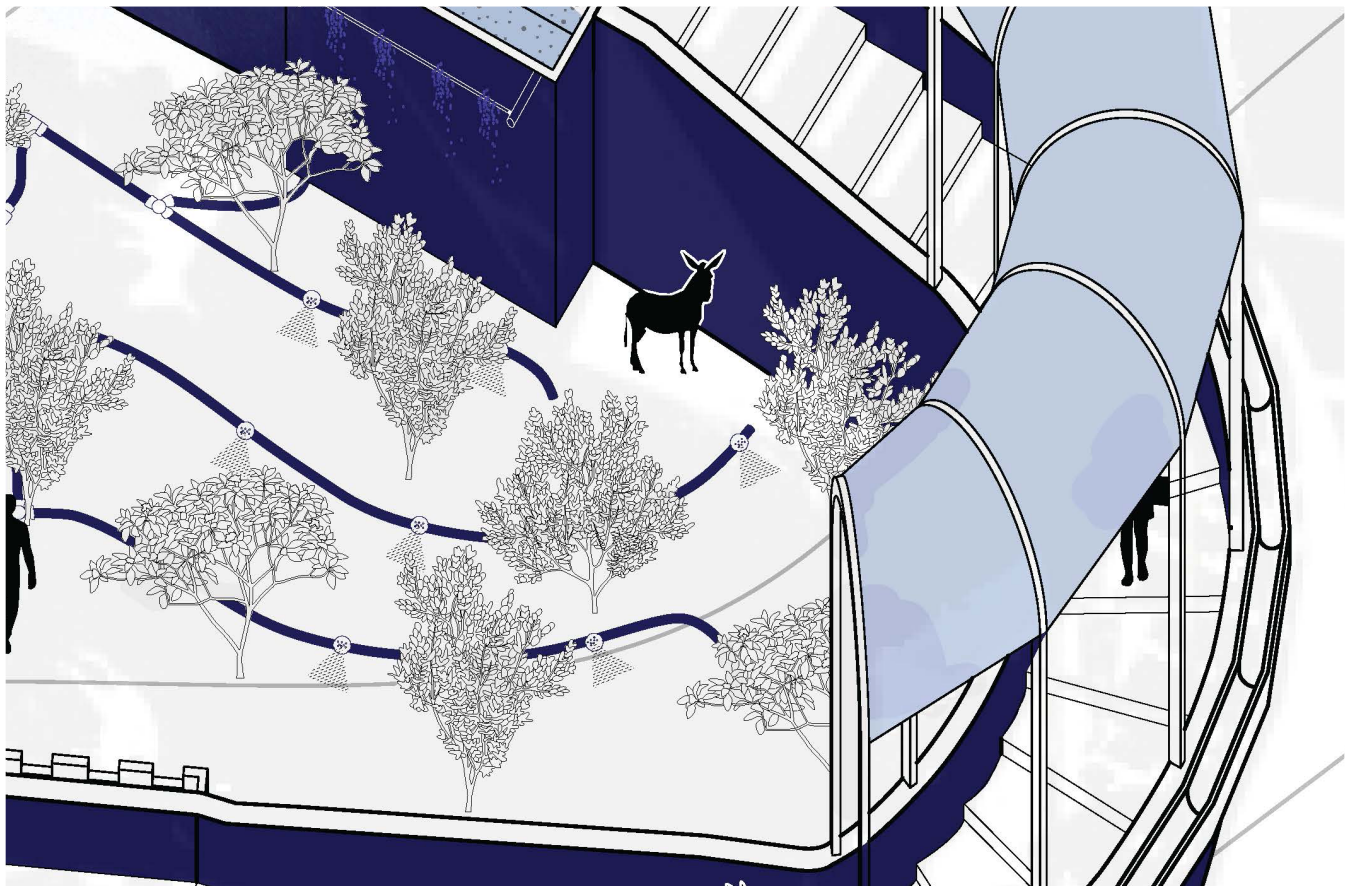
Cycles of movement, cultivation, fertilization, water distribution, and material transport become embedded within the path infrastructure.

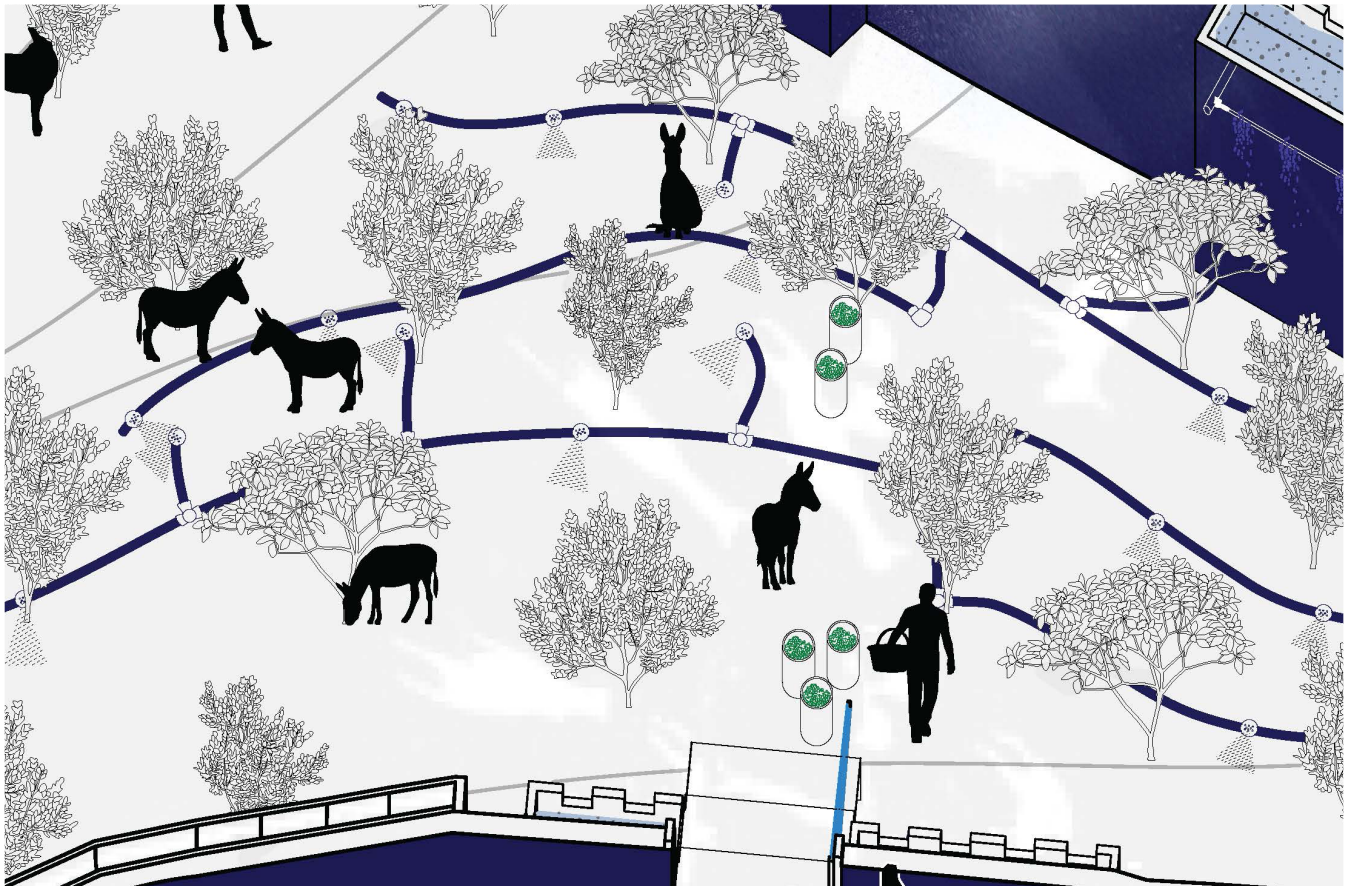
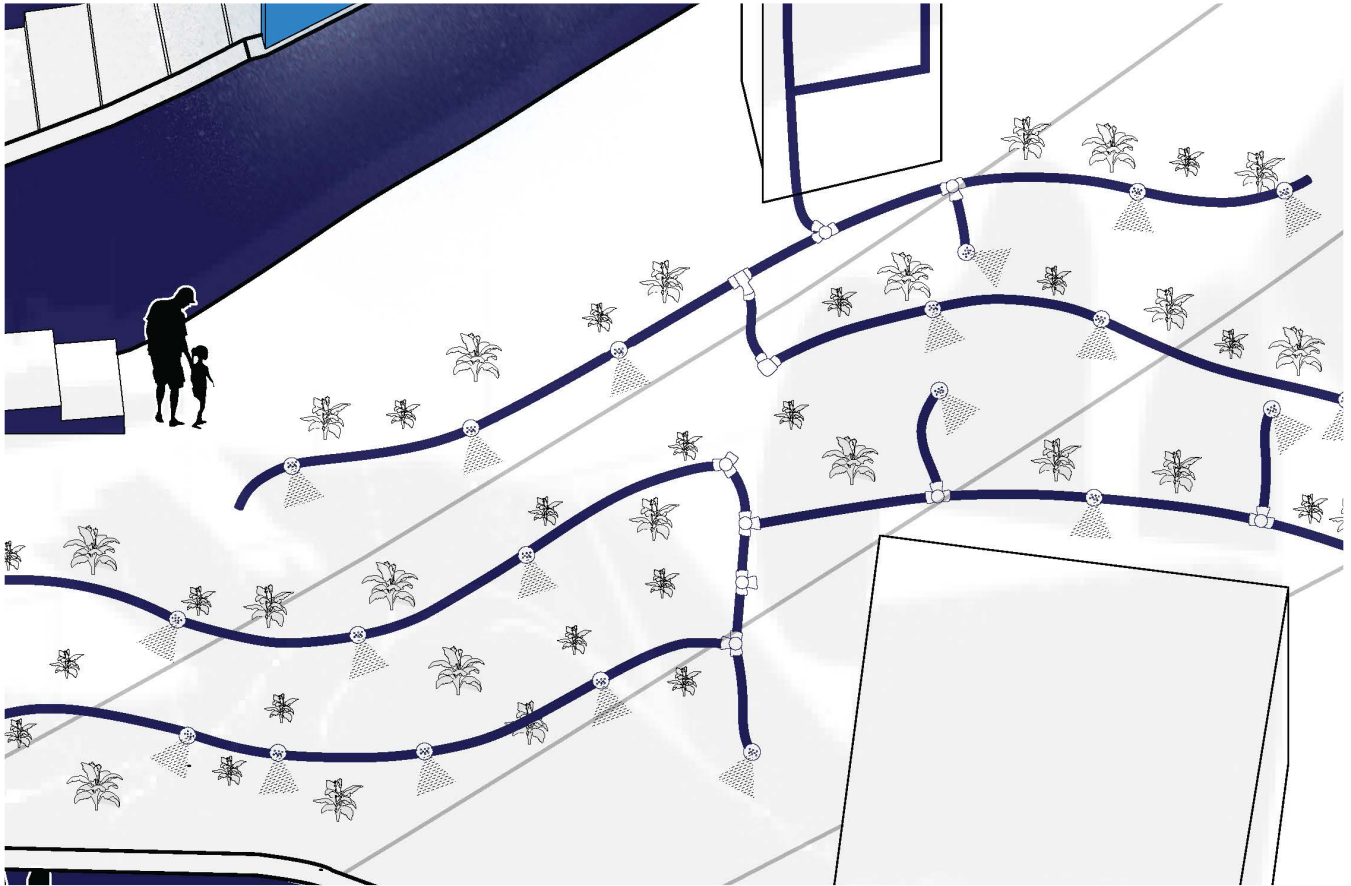






The cultivation system integrates agriculture, animal movement, and irrigation into the path infrastructure. Donkeys contribute to soil fertility while olive groves evolve through cycles of growth, shading, and harvest.



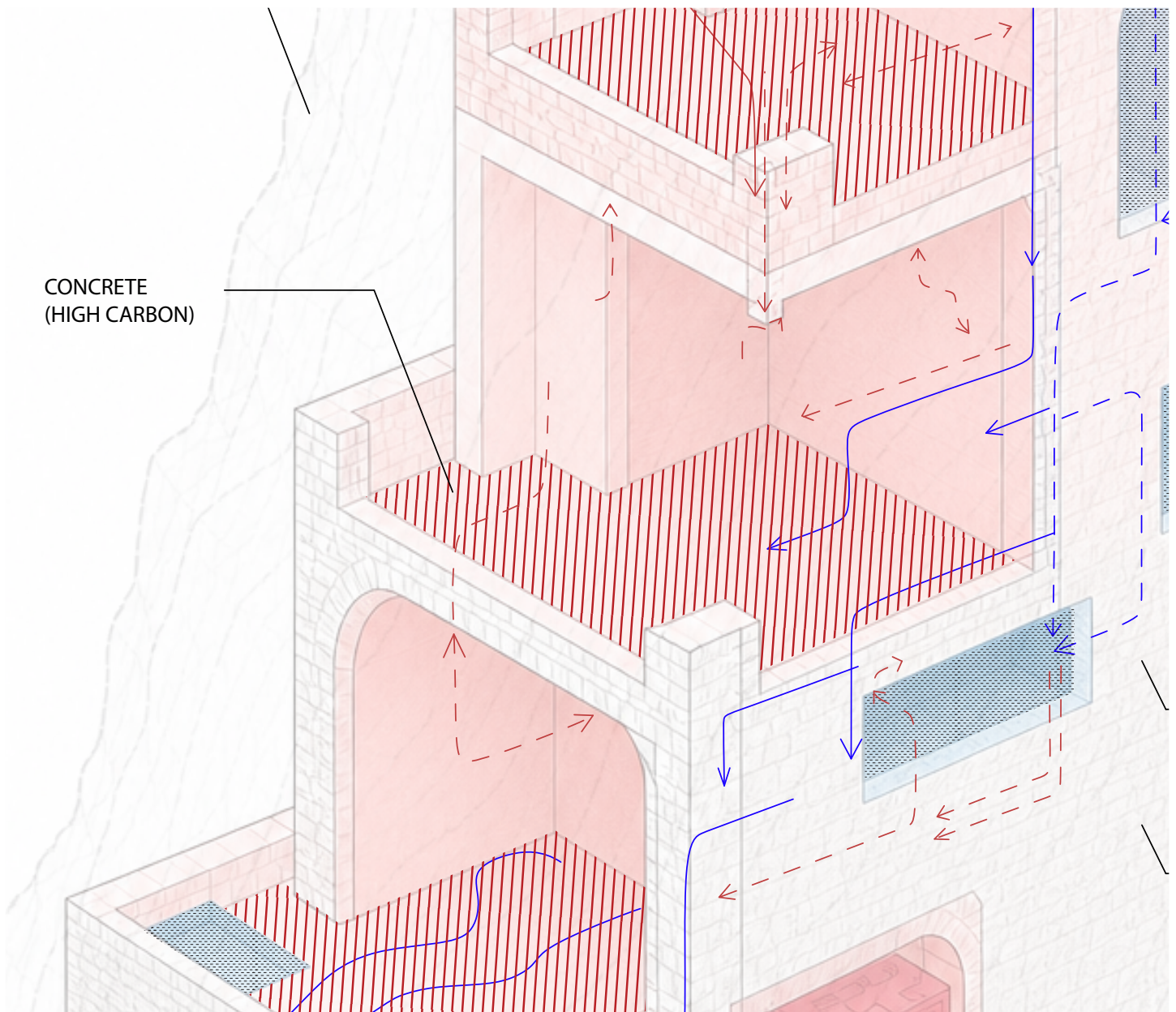
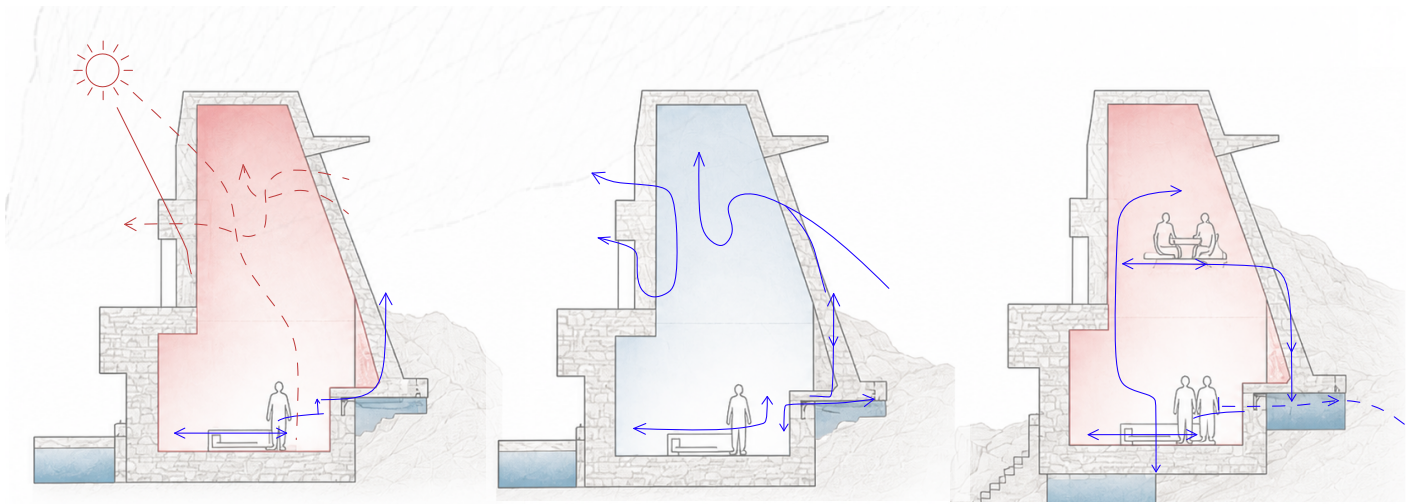


04 Spring '26 Ruin as Environmental System

Instructor: David Benjamin

Based on the Advanced VI project Along the Path, this proposal repositions existing ruins in Santorini as sites of material and environmental exchange. Rather than introducing new construction, the project works through the selective stabilization, subtraction, and reuse of local volcanic stone, treating the ruin not as a remnant but as an active environmental infrastructure. The existing fabric operates as both structure and system, where thick stone walls function as thermal mass and carved cavities integrate water storage, cooling, and ventilation directly within the architecture itself.

By embedding occupation back into the terrain, the proposal aligns material logic with environmental performance, allowing heat, airflow, and water circulation to emerge from the section rather than relying on high-energy systems. Through material reuse and passive environmental strategies, the project transforms the ruin into a framework for habitation that reduces embodied carbon while making carbon, water, and heat legible through the performance of materials over time.



EMBODIED
CARBON
kg CO₂e / kg material



CONCRETE
+0.8 to +1.2



STONE
(reused)
-0.1 to +0.2



PLASTER
-0.2 to 0



TIMBER
-0.6 to -1.0

WATER
FOOTPRINT
L / kg material



CONCRETE
150 - 250 L



PLASTER
5 - 15 L



STONE
(reused)
50 - 150 L



TIMBER
10 - 30 L

SYSTEM
IMPACT
Building Scale

extractive

optimized

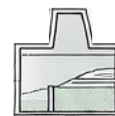
regenerative



CONVENTIONAL HOTEL
high embodied carbon
high water demand



HYBRID HOTEL
reduced carbon
balanced water use



EXCAVATED HOTEL
low embodied carbon
low water demand



EMBODIED CARBON SAVED
~400 to 700 kg



WATER USE REDUCTION
~50 to 70% (construction)
~30 to 50% (operation)



LOCAL & REUSED MATERIALS
minimize extraction
maximize circularity



05

Fall '25

Threshold of Decay

Instructor: Karla M. Rothstein

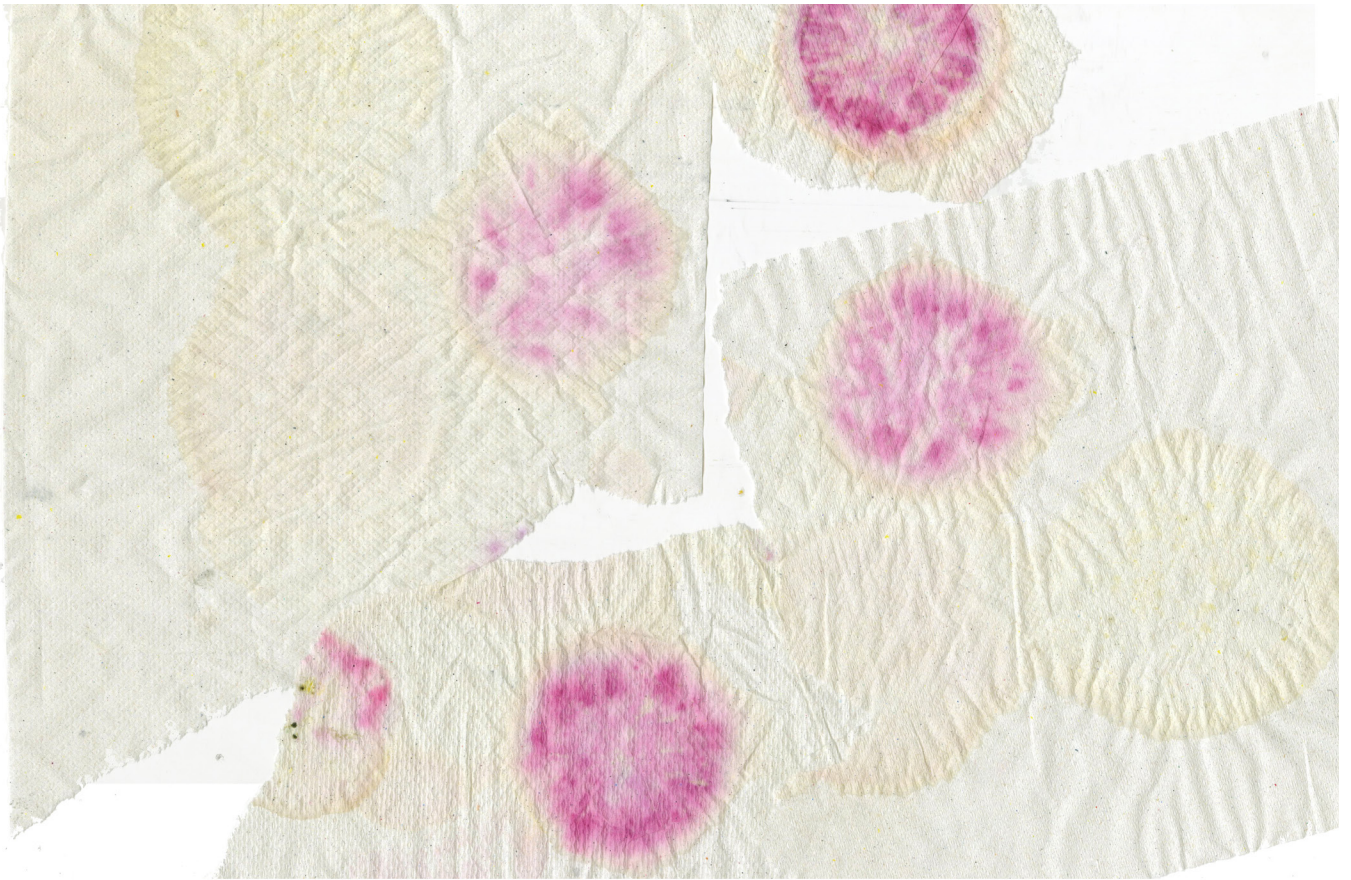
Teammates: Georgios (George) Koltiris

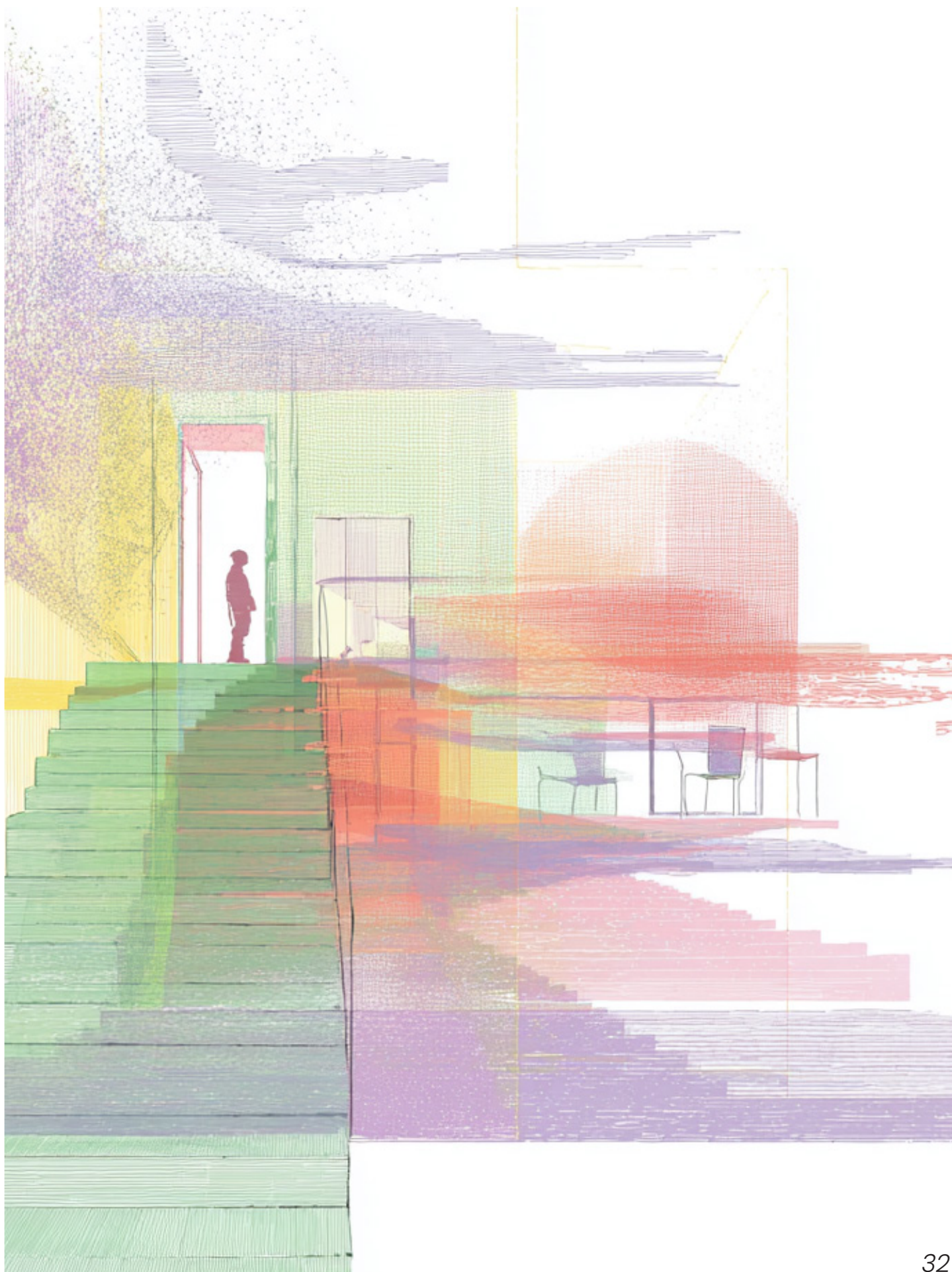
Threshold of Decay explores death, decay, and transformation through a series of material experiments using citrus fruits, liquids, stains, burns, and organic traces. The project documents processes of separation, delay, suspension, withering, incineration, and aftermath as ritualistic acts that reveal the passage of time and the physical transformation of matter. Drawing from funerary traditions and historical understandings of death, the work examines how rituals leave behind traces, stains, debris, and imprints that become records of both destruction and preservation. Through photography and material manipulation, the project reframes decay not as an end state, but as an active process of transition and memory.

The project further investigates fruit decomposition through both macro and micro-scale photography, documenting evolving textures, mold growth, stains, and surface transformations over time. By focusing closely on these material changes, the work reveals a "topography of decay" that moves beyond the objectified scale of the fruit itself and instead captures the landscapes, traces, and hidden processes produced through deterioration.

Rituals as a Form of Investigation







06

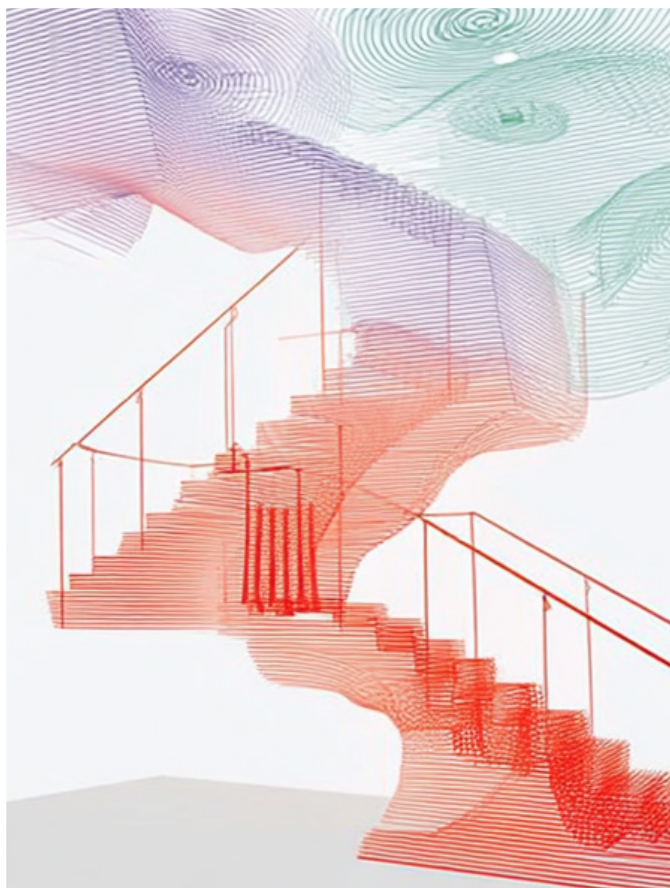
Fall '25

Corridors of Colorful Wonder

Instructor: Zarina S. Farmer-George

Corridors of Colorful Wonder explores how architecture can support accessibility through color, movement, touch, sound, and spatial rhythm.

Rather than treating accessibility as a set of regulations, the project reimagines it as a sensory and emotional experience that guides movement, orientation, comfort, and social interaction. Influenced by the immersive light environments of James Turrell, the project uses layered colors, gradients, tactile materials, and fluid circulation to shape perception and atmosphere. Through these sensory conditions, the proposal creates inclusive environments that respond to diverse physical and sensory needs while transforming movement through space into an intuitive and engaging experience.









*Across these projects, architecture becomes
a medium for examining relationships
between ecology, material systems,
environmental change, perception, and
human occupation. The work positions
design not as a fixed object, but as
an evolving process shaped by time,
infrastructure, and transformation.*

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