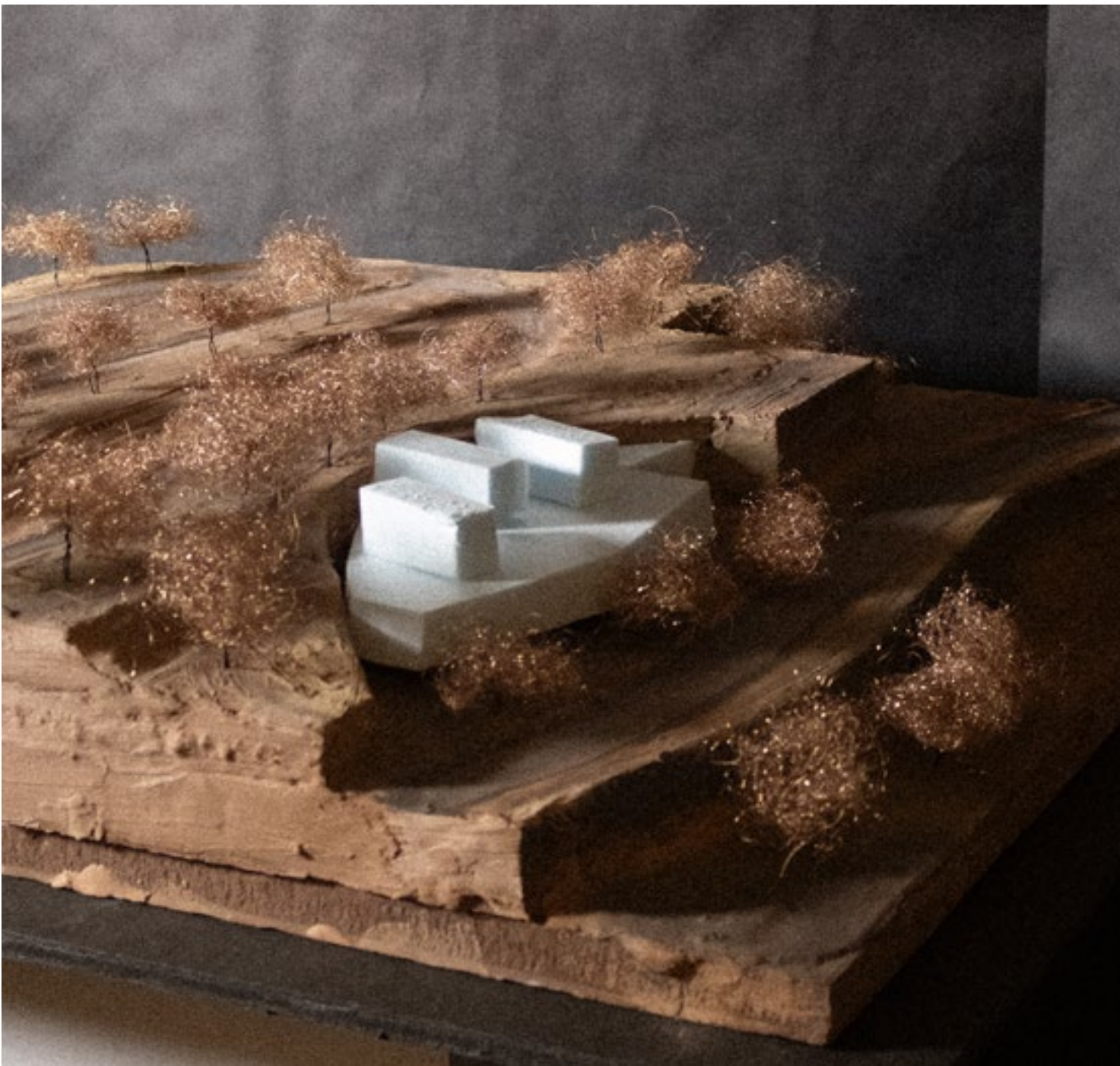


# Rajvardhan Thorat

A futurist's inquiry into spacemaking, through models and drawings.



## *The Birth Place for Imagined Flora.*

*Instructor: Philippe Rahm*

*Let's imagine a mountain, composed of matter in various forms. Most of this matter is Inorganic. The same mountain is in contact with the clouds, which condense onto it in the form of snow and rain. The water molecules seep through and on the surface of this mountain to bring potent minerals to the landscape, where plants use this not only to evolve but become a source of food for other forms of life including the human species.*

*Now let's imagine a building, with the same sensibility as a mountain, composed of inorganic matter trapped in various natural stones compressed together. A material designed to erode over centuries, giving life to the plants that grow under its roof.*

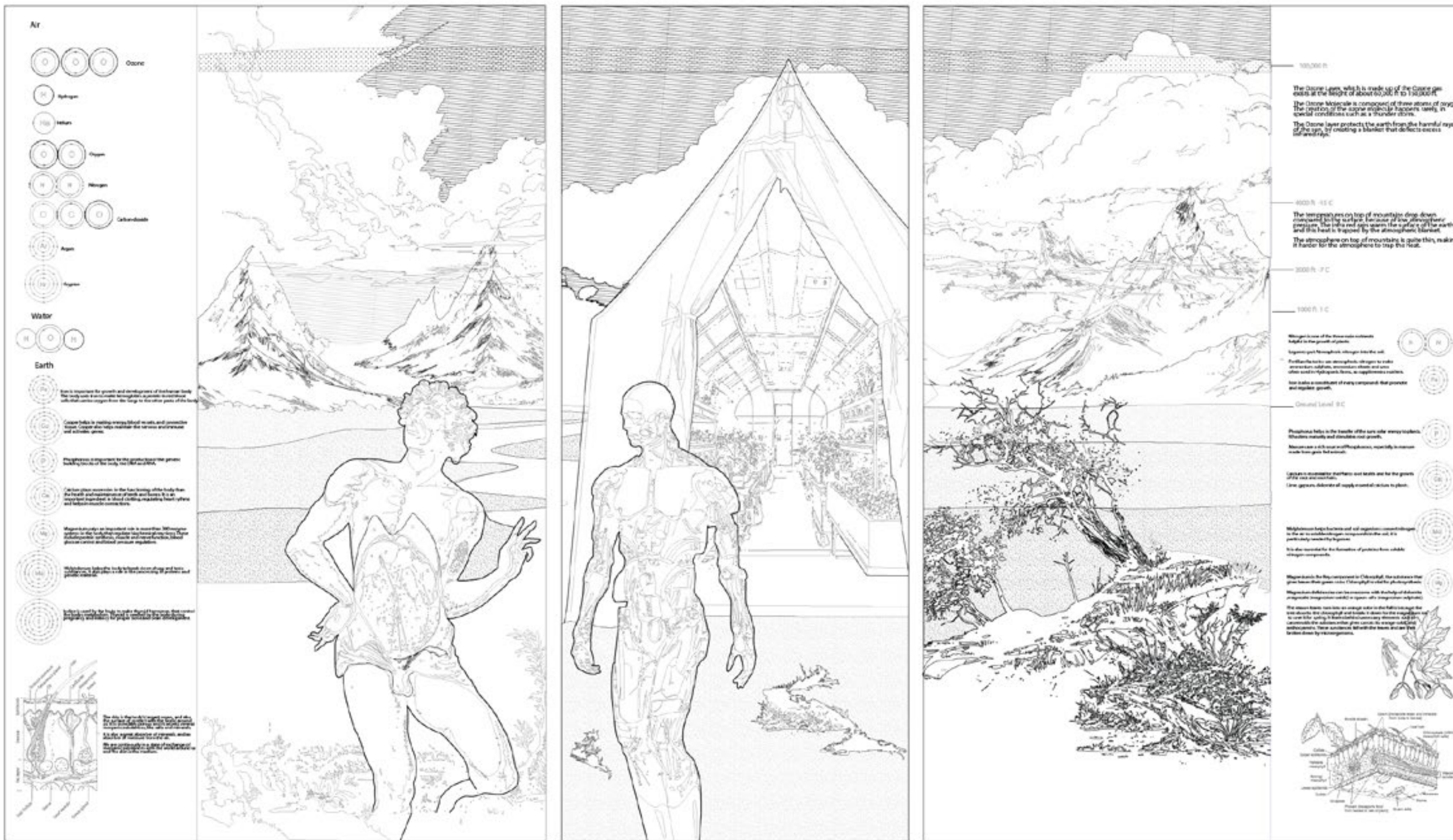
*Situated in Fort Tyrion Park in New York, among the grandiosity of nature and the mighty walls fabricated by stone masons, the building is cacooned within the safety of a cavity in the cliffs.*

*The building is composed of three parts. The innermost and the most protected vault is like a mountain peak that collects condensation that travels on the inner lining, collecting minerals to meet a pond where tissue cultures for imagined plants are situated.*

*The roof is the second part which is a habitable hollow mass designed to insulate the building below but also give forms that let rainwater travel along its surface, letting itself erode onto the landscaped floor below.*

*The Landscape is the third part of the building, where the imagined plants are taken and planted among cobblestones that create surface area for minerals that have eroded from the roof to crystalize. The landscape floor is open to the surroundings, where the newly birthed plants that are materialized from an idea take a breath on this magnificent planet.*

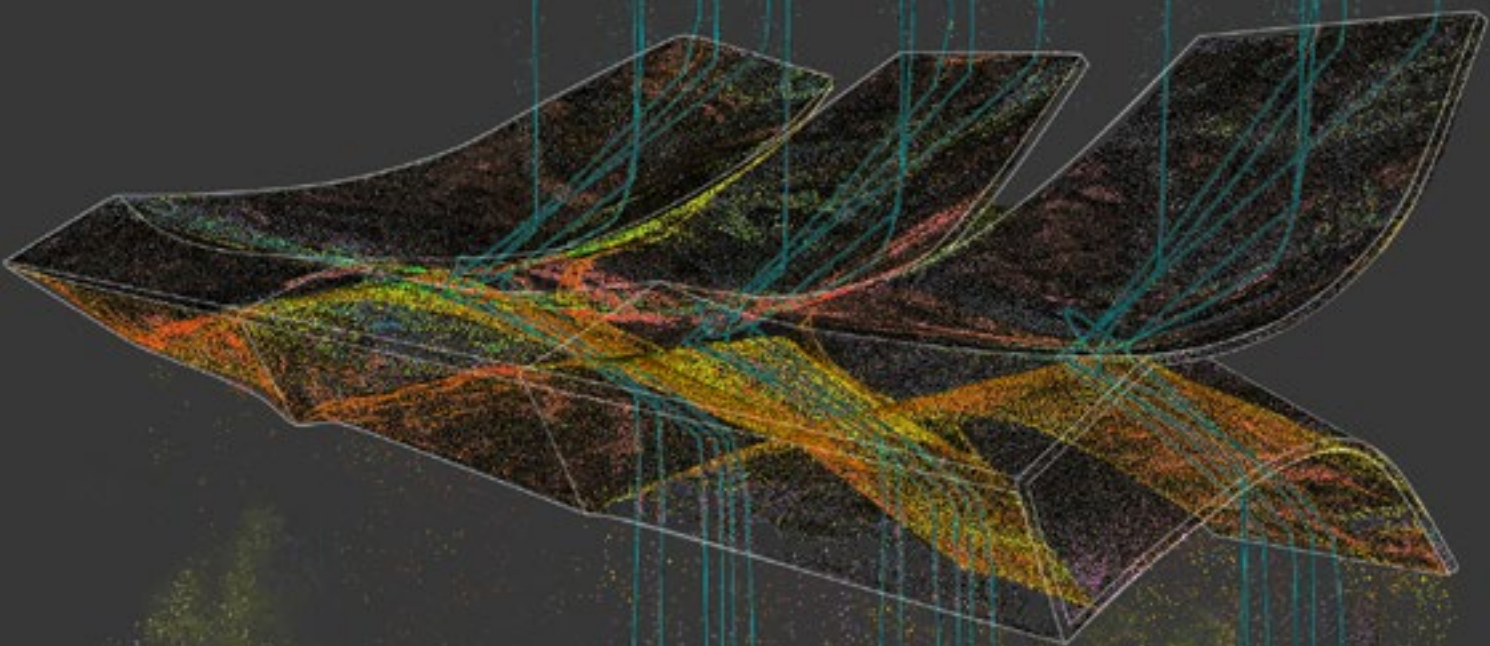




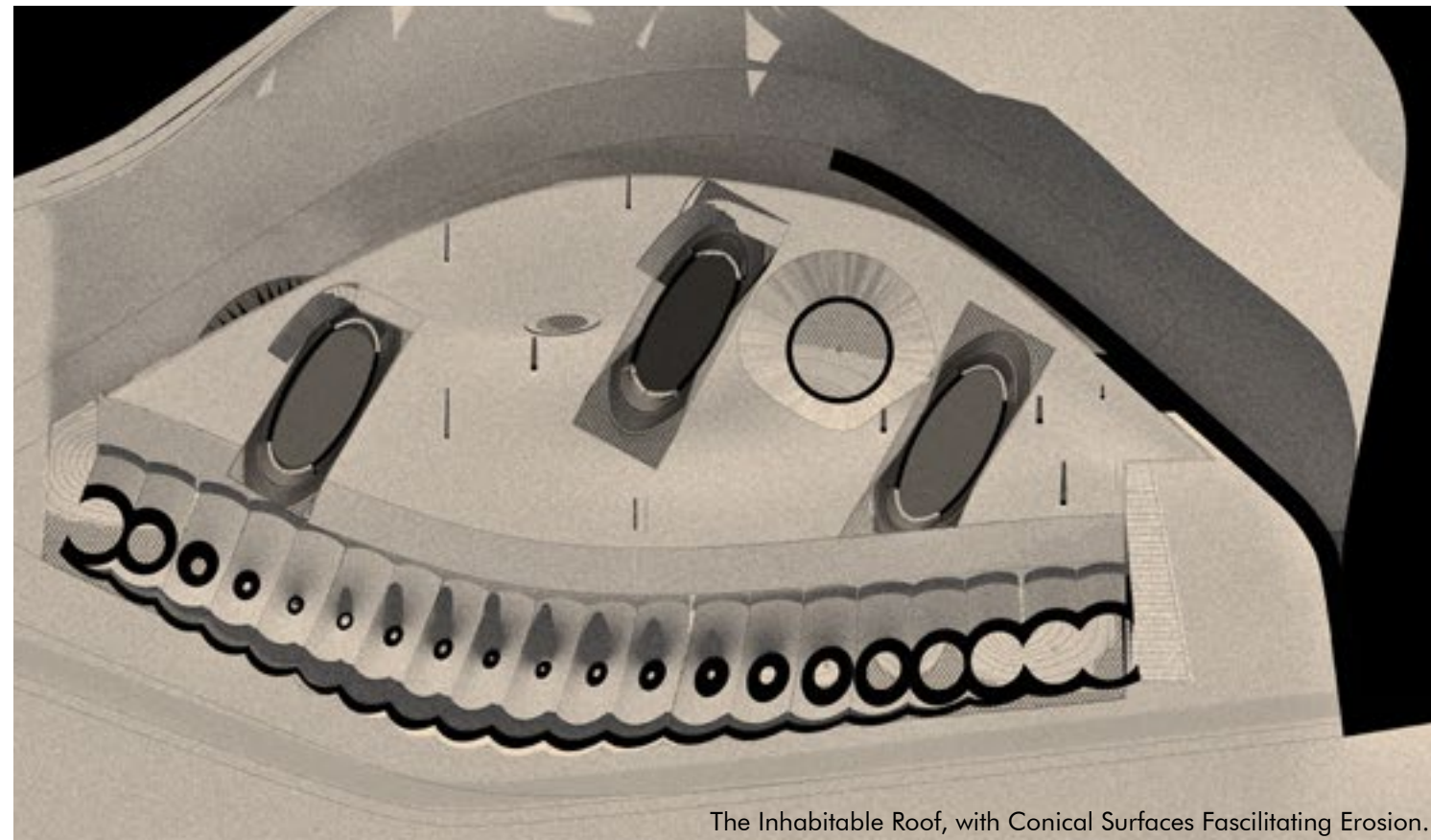
*The transformation of matter* from the womb of the earth and the mass of the mountain to plants, animals, and humans and further down into machines of human making with creativity on the resolution of nature itself is one of the great phenomena of the contemporary world. The great outdoors has become the great indoors in the name of efficiency. Nature through our being as humans has shown tremendous capacity to create what would have been thought unthinkable for nature alone to have created.

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr



Point Cloud study mapping the chemical composition of the roof element designed to erode. Formed with the lighter elements at the top and the heavier elements at the bottom half of the conical surfaces. The path that the water droplet takes facilitates a gradual increase in its weight, giving it the ability to complete the journey along the surface with the help of surface tension before falling onto the bed of plants below.



The Inhabitable Roof, with Conical Surfaces Facilitating Erosion.



Section Drawing



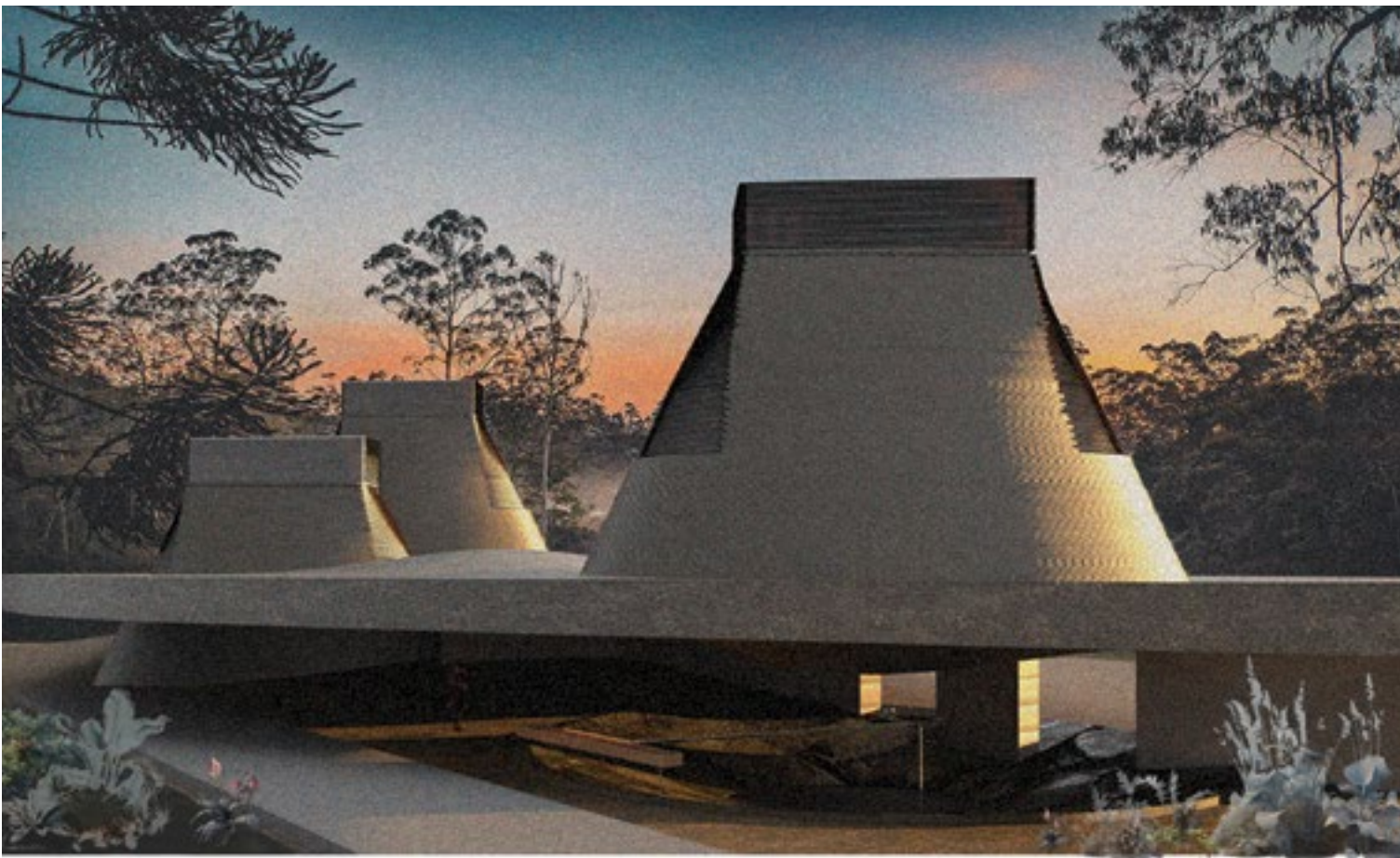
The Landscaped Floor



Study models of pieces of the conical roof structure designed to erode. Made up of various aggregates like waste stones categorized by their chemical composition and formed into inverted cones, the geometry tries to increase the time the water takes as it runs along its surface but also helps hold the weight of the pieces as each cone helps hold the other up.

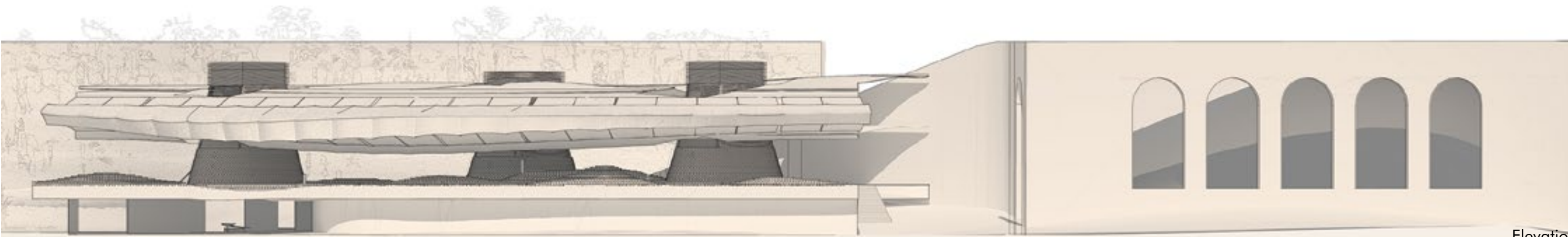


Documentation of the site on 35mm film. Experiencing the materials on the site was crucial to understanding the magnificent presence of the site that the project had to match and respect at the same time.

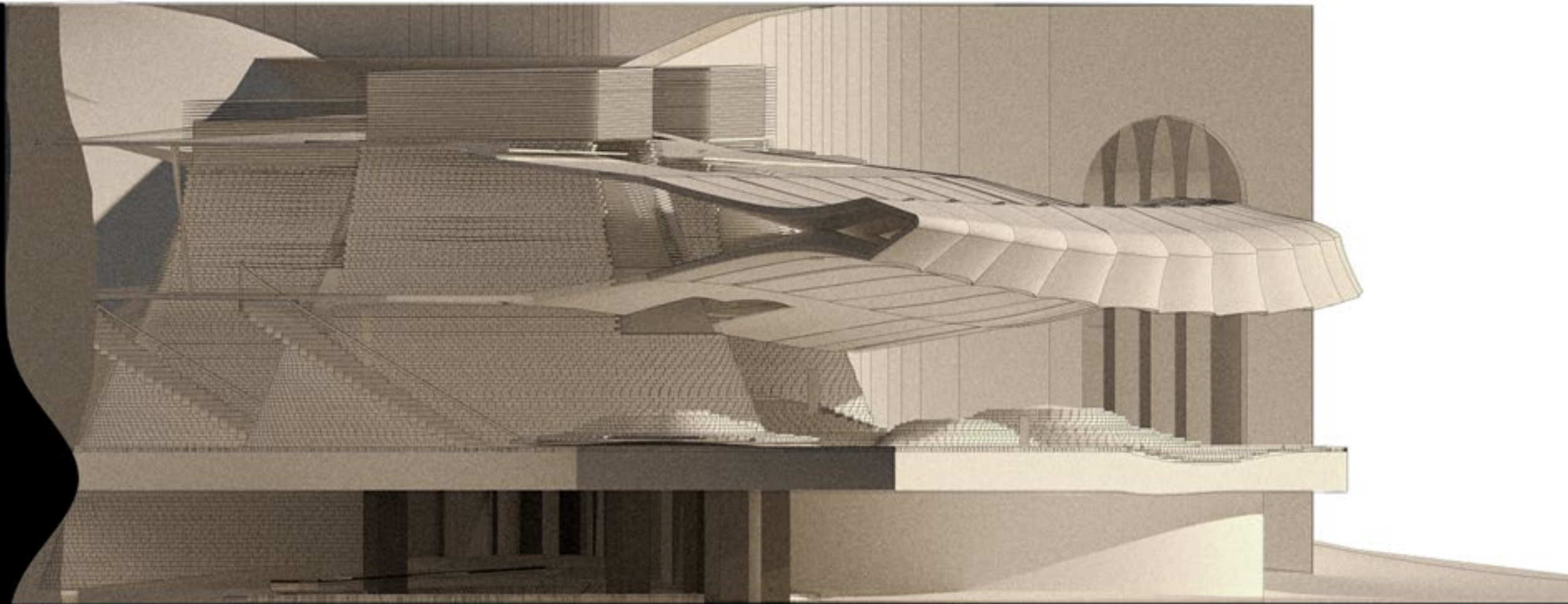


The render above shows the structure in an unfinished form, with vaults that rise in the botanical setting receiving the light from the sunset in the west. The render shows the cavernous space under the structure. This grotto-like space becomes a space for collection of the water that has been flowing through the building. The same water is rich in minerals and is purified as it moves through the stone construct and can be consumed by humans and animals. This space also becomes a space to store stone, which may be needed incase of repair.

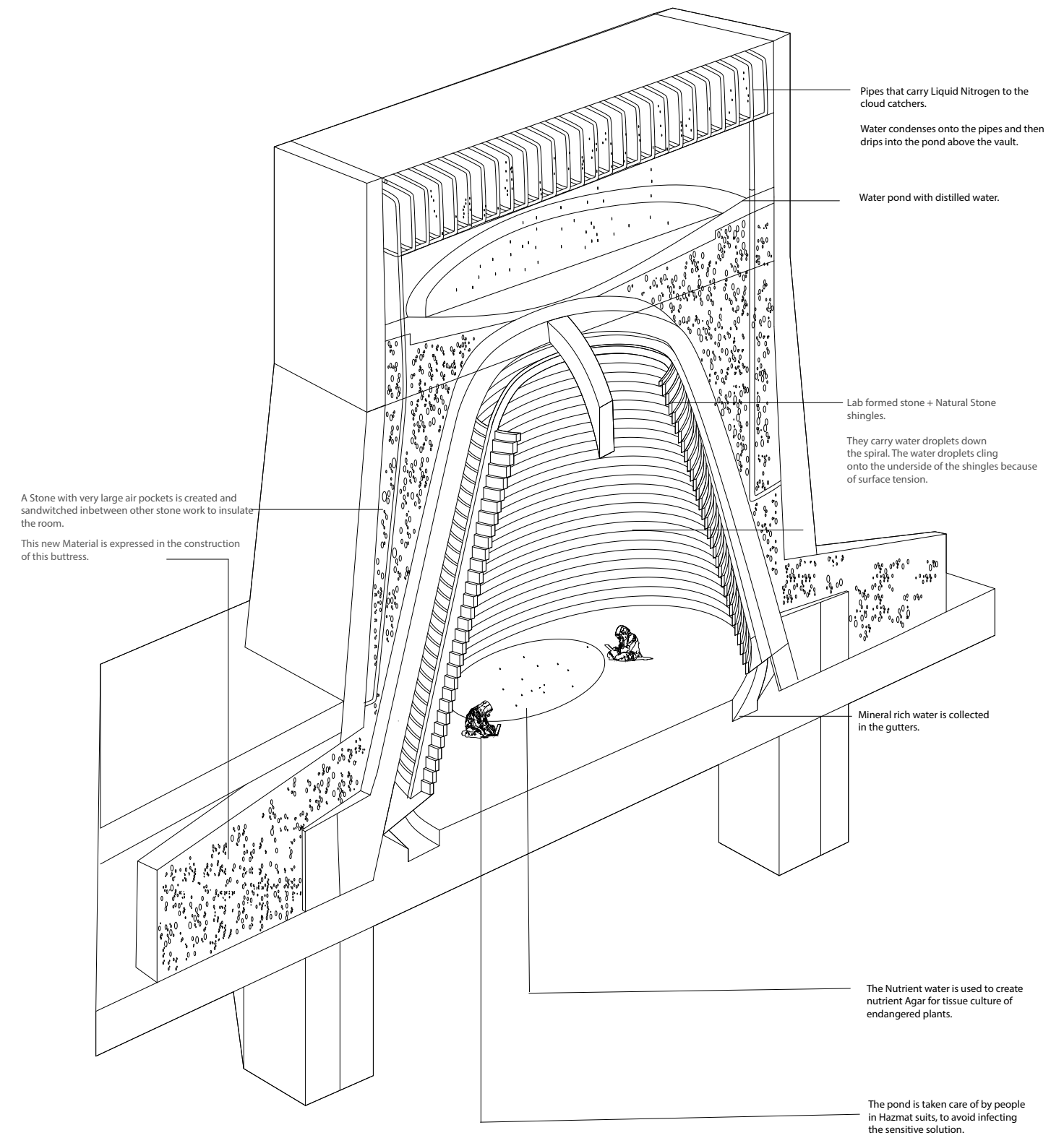
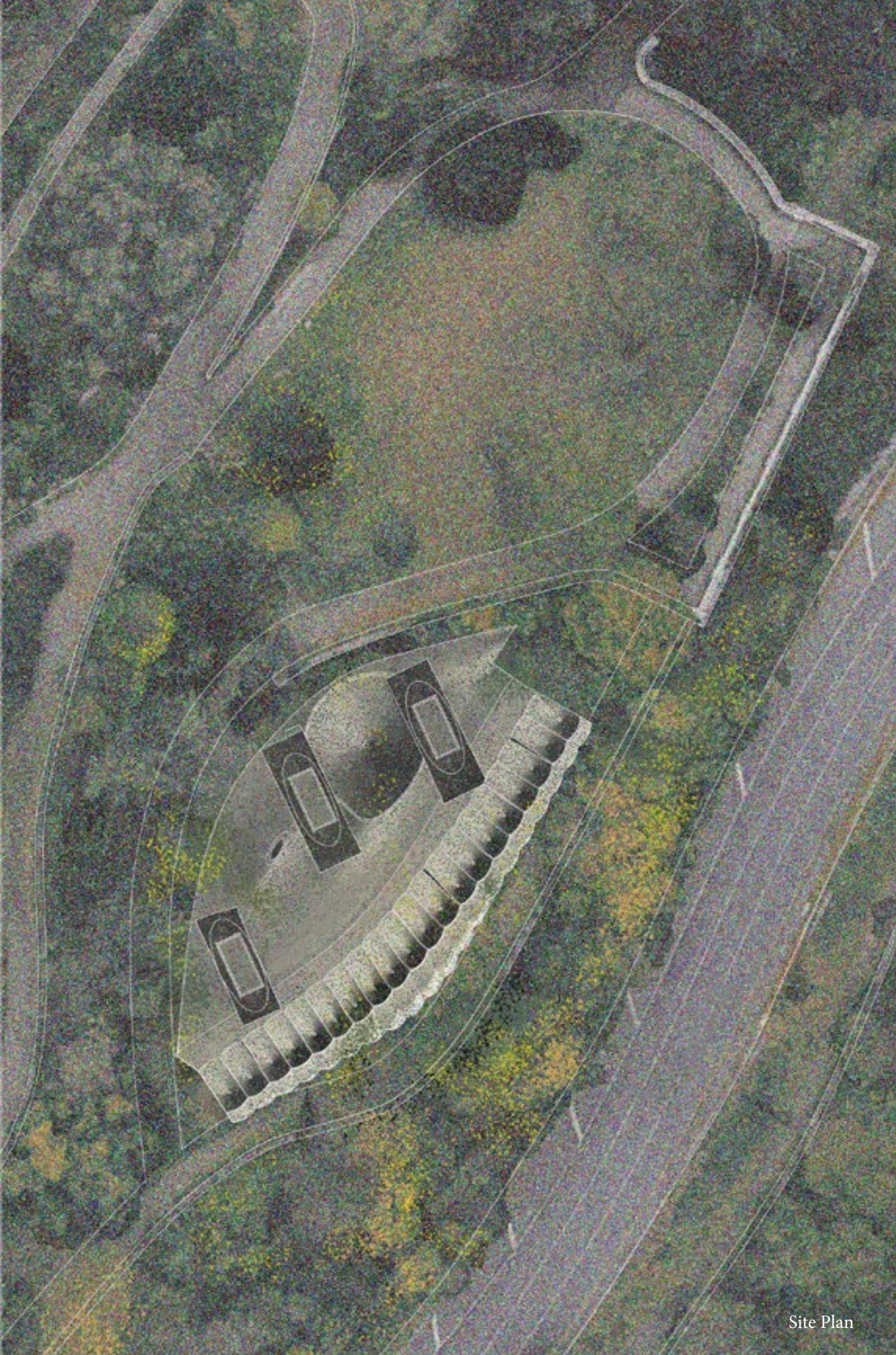
The project sits adjacent to a pre-existing vaulted pathway. The project does not disturb the integrity of the structure but resides within its shade. The pathway becomes a way to reach the building as it is revealed to one as one walks down the vaulted path. Stone is the common link as a material between the two structures, but the project creates an independent identity with the type of stone used and the construction methodology used.



Elevation



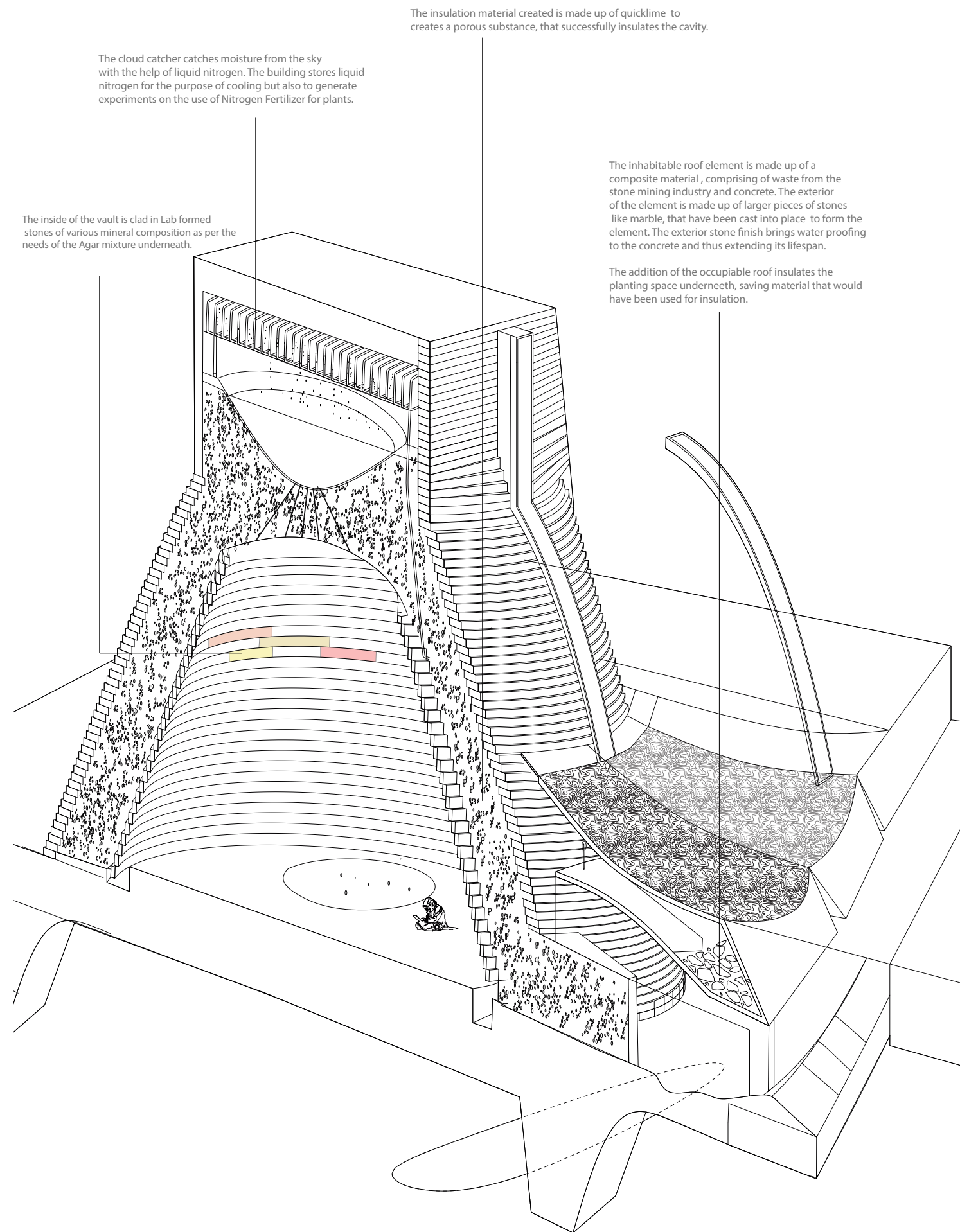




Preliminary design of the vaults that give birth to imagined plants. Designed with condensers at the top and a lab-formed stone spiral with mineral content necessary for tissue culture. The water droplet moves down on the underside of the spiral attached by surface tension collecting minerals on its way. The droplet then falls into the collection gutters at the foot of the vault.



Model of the vault structure in stone.



The cloud catcher catches moisture from the sky with the help of liquid nitrogen. The building stores liquid nitrogen for the purpose of cooling but also to generate experiments on the use of Nitrogen Fertilizer for plants.

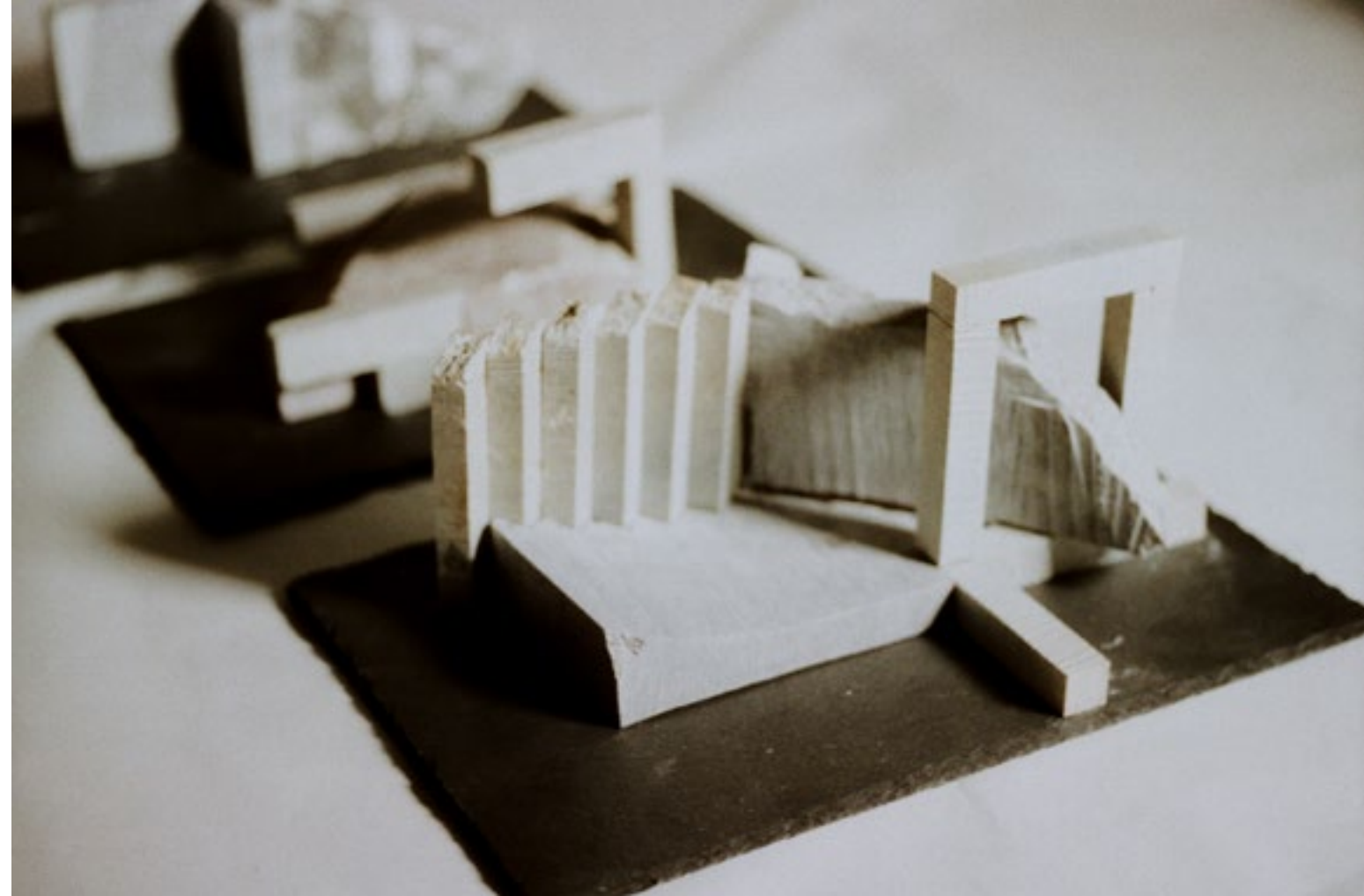
The insulation material created is made up of quicklime to create a porous substance, that successfully insulates the cavity.

The inside of the vault is clad in Lab formed stones of various mineral composition as per the needs of the Agar mixture underneath.

The inhabitable roof element is made up of a composite material, comprising of waste from the stone mining industry and concrete. The exterior of the element is made up of larger pieces of stones like marble, that have been cast into place to form the element. The exterior stone finish brings water proofing to the concrete and thus extending its lifespan.

The addition of the occupiable roof insulates the planting space underneath, saving material that would have been used for insulation.

Further developed section of the vault structure.



Study Models in stone, foam, paper, plaster, wax and wood.



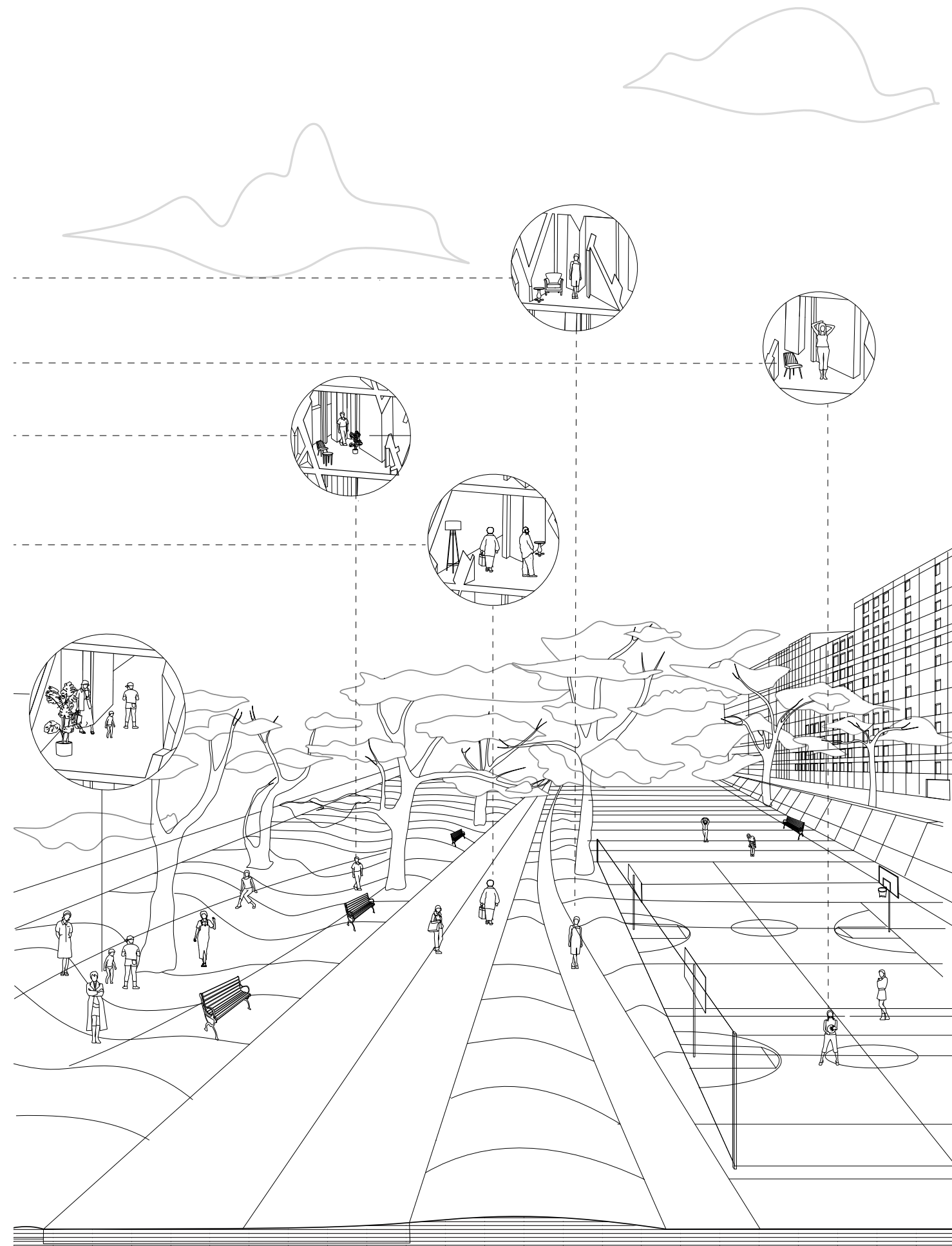
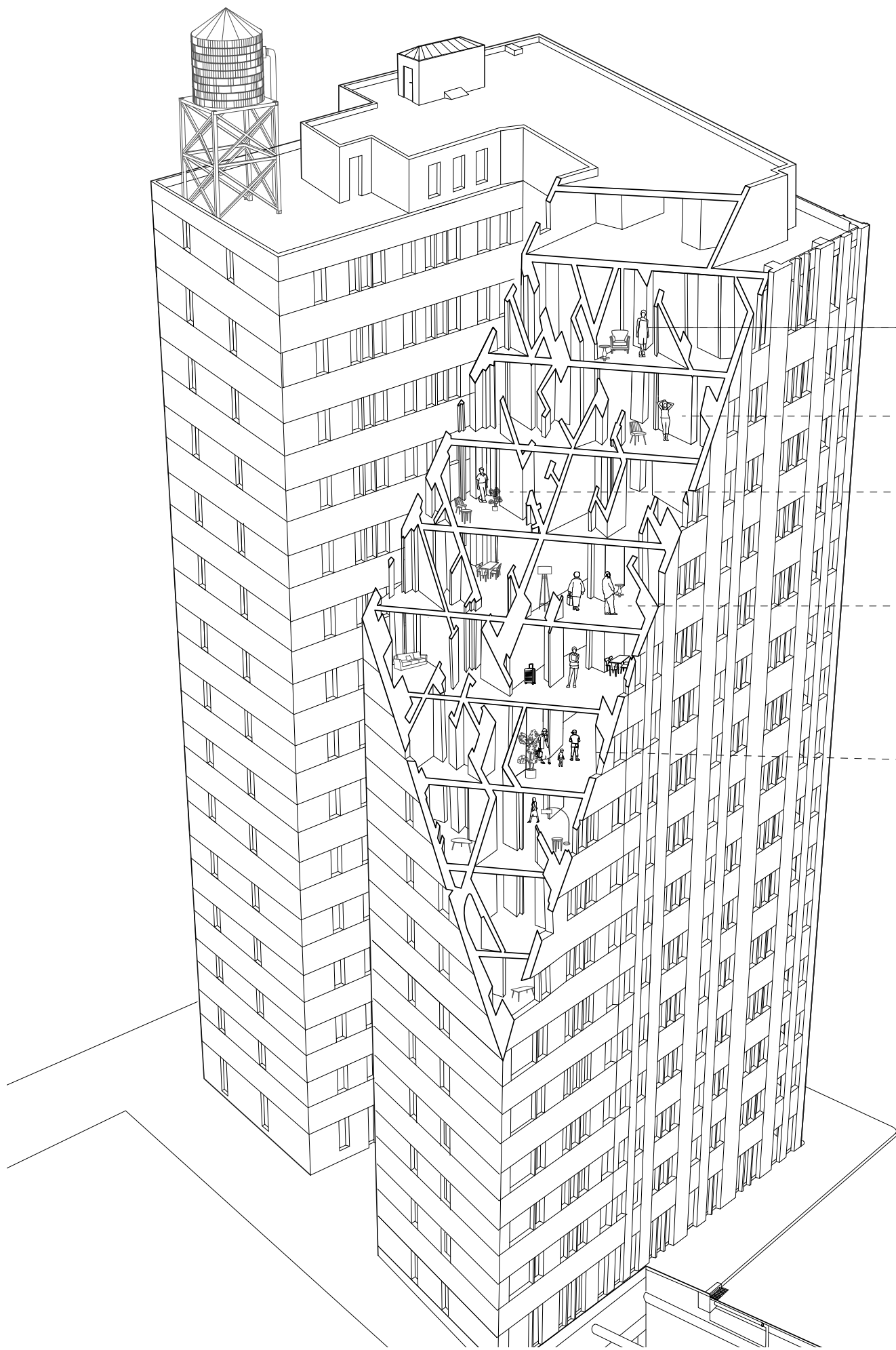
## *Linen Buildings in Riverside Park*

*Instructor: Anna Puigjaner*

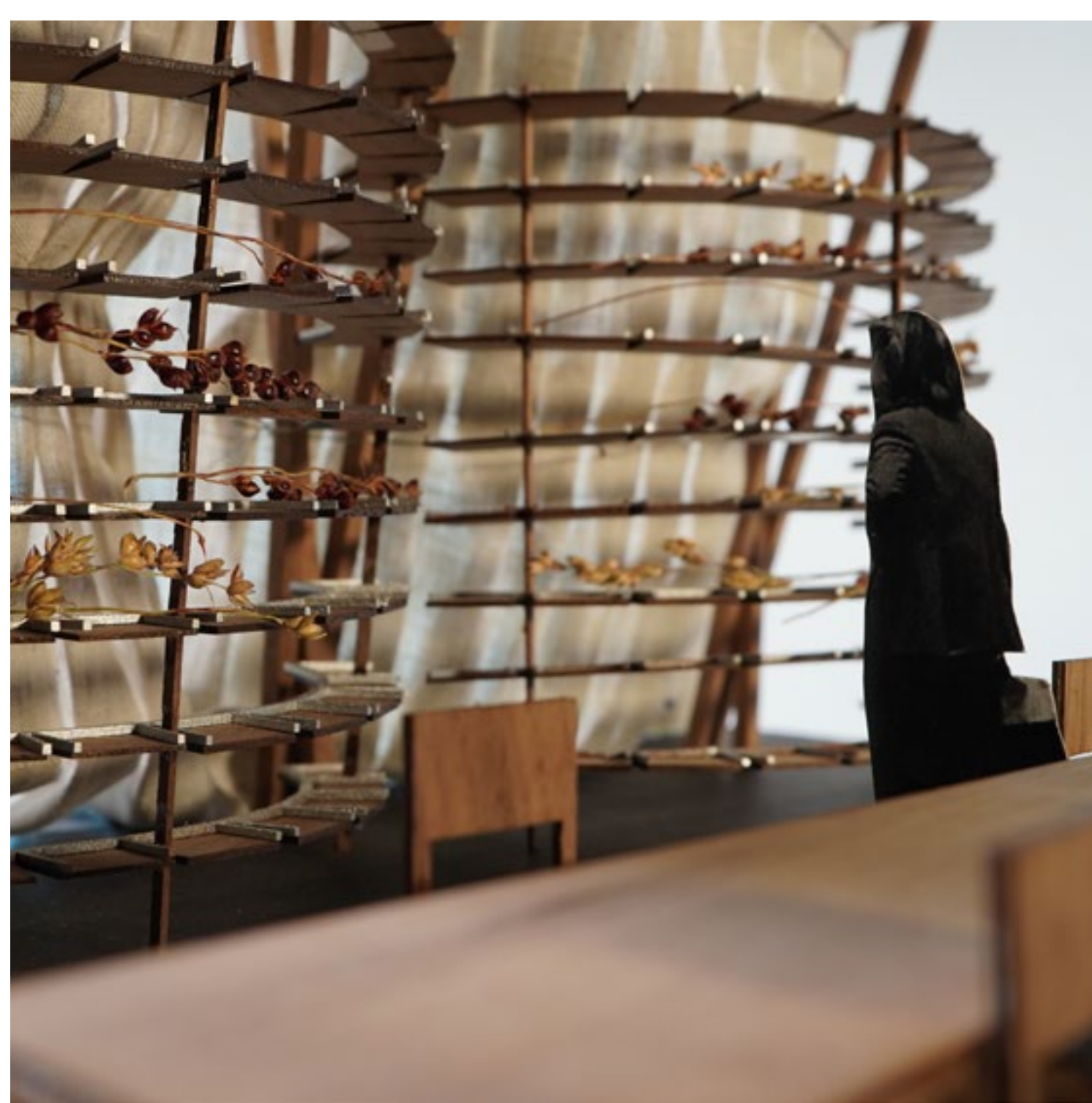
*Can a seed change a city, if we introduce it into the right context? Can buildings be grown from these seeds? Does a material have the power to change the social, economic and the physical landscape of a city? How do we design buildings that impact several aspects of their context?*

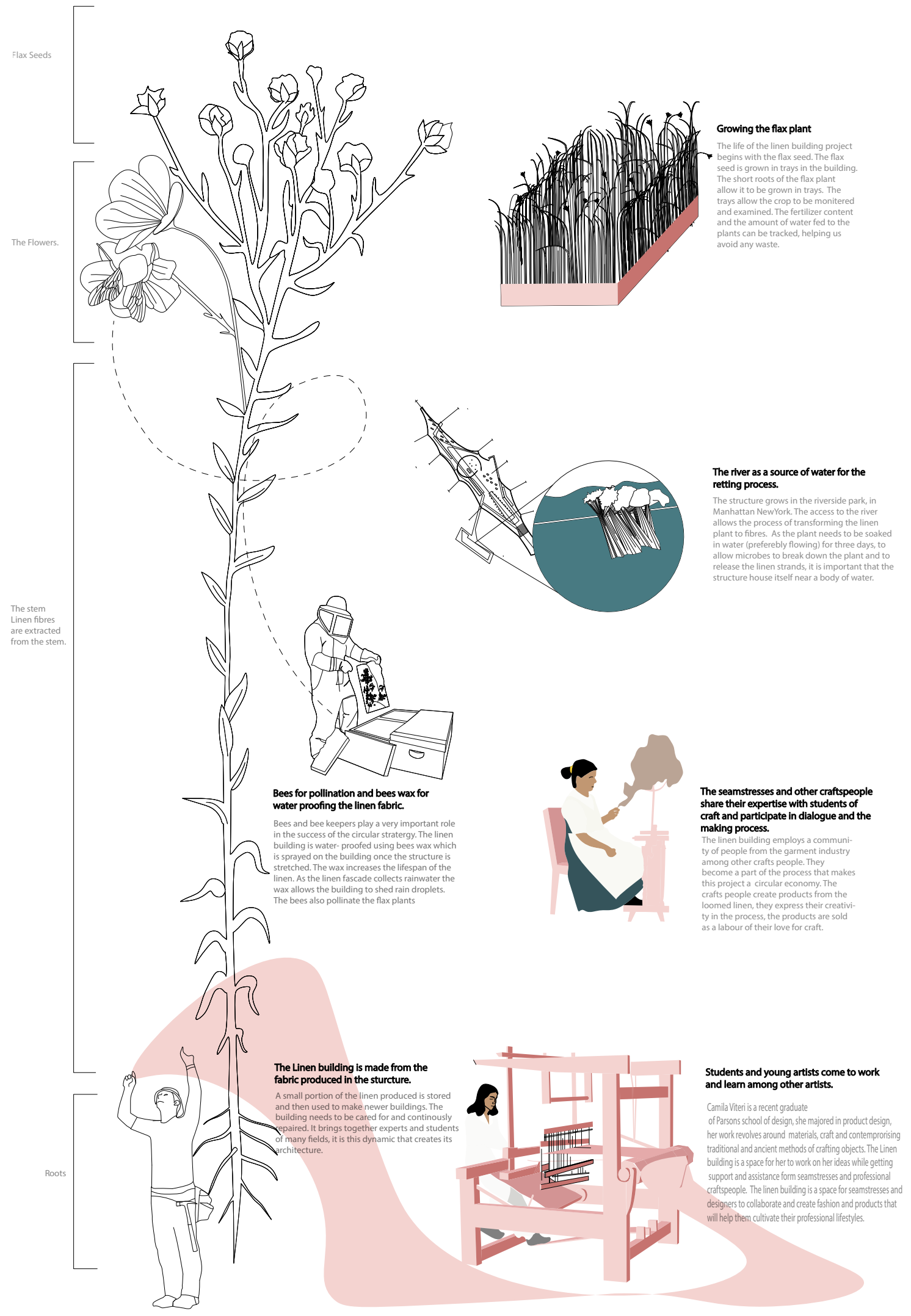
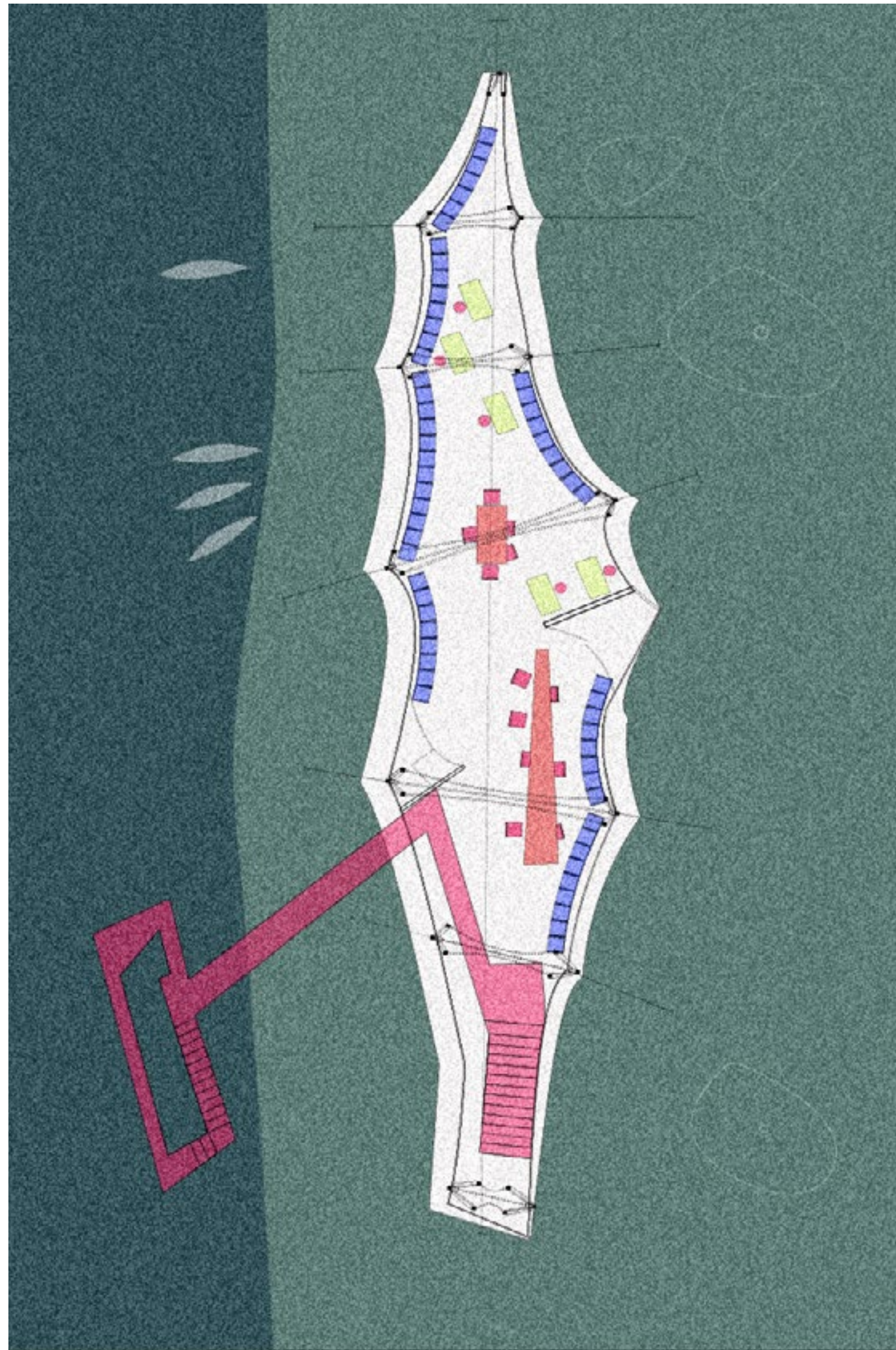
*Circular Economy.* This project looks into the creation of a building that generates a circular economy. Sited in Riverside Park in New York, the project is a linen structure. The walls of this structure incorporate a shelving system that grows the flax plant, which is later harvested and made into linen fabric. The production of the linen fabric and the flax seeds become a way to generate funds for the workers that maintain the structure, by selling a portion of the fabric and seeds. The rest of the material is stored inside the building and is used to extend the structure, repair it, and build newer structures.

*These structures become self-sufficient devices that can house several programmatic needs like schools, community gathering spaces, and spaces where skilled laborers like seamstresses can teach their craft. The structure sits in a natural context like Riverside Park to use the river water, and welcome the bees from the park to help pollinate the flax plant, thus helping integrate all aspects and completing the loop. In this way the structure is self-sufficient and self-generating.*



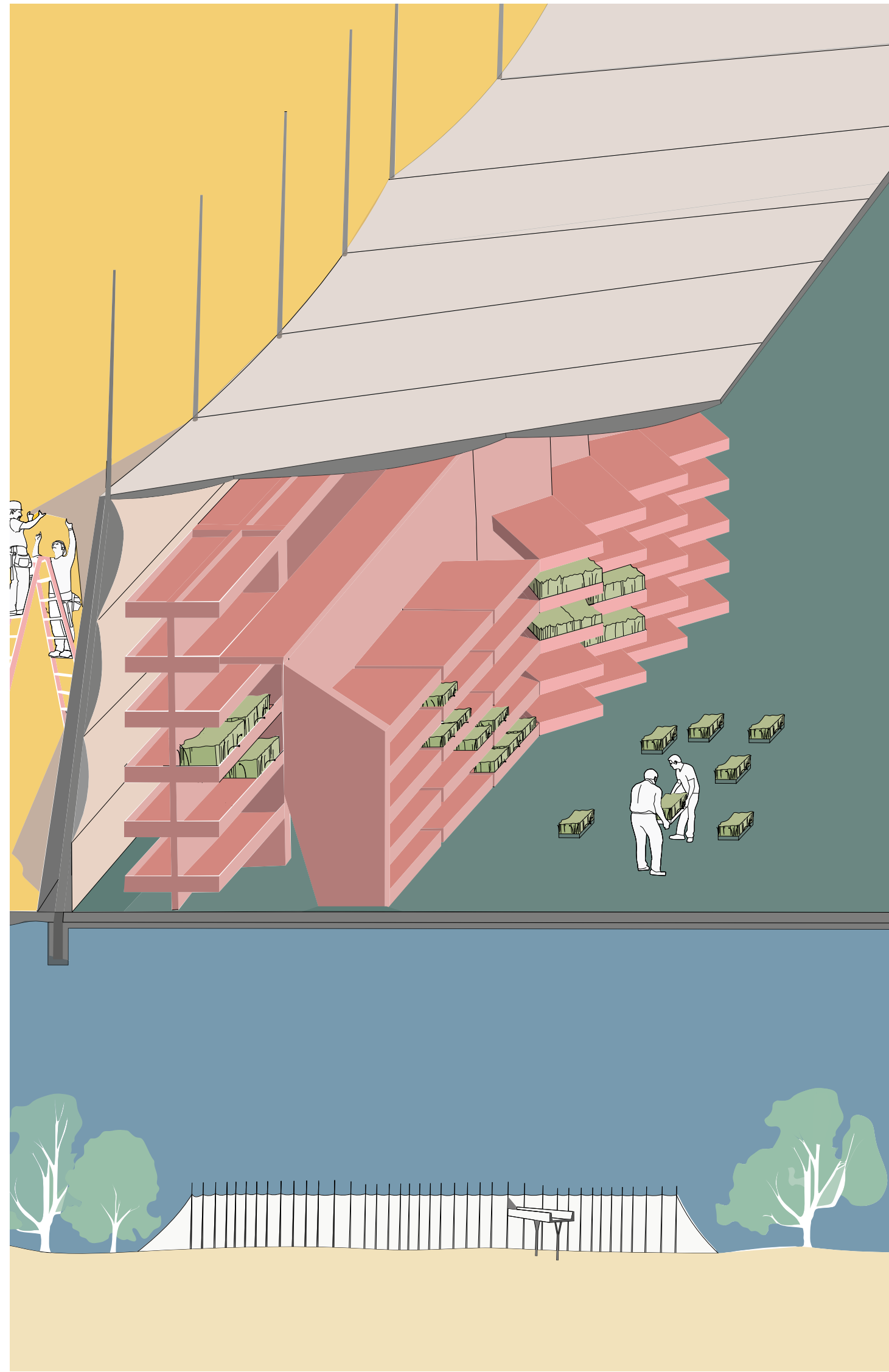
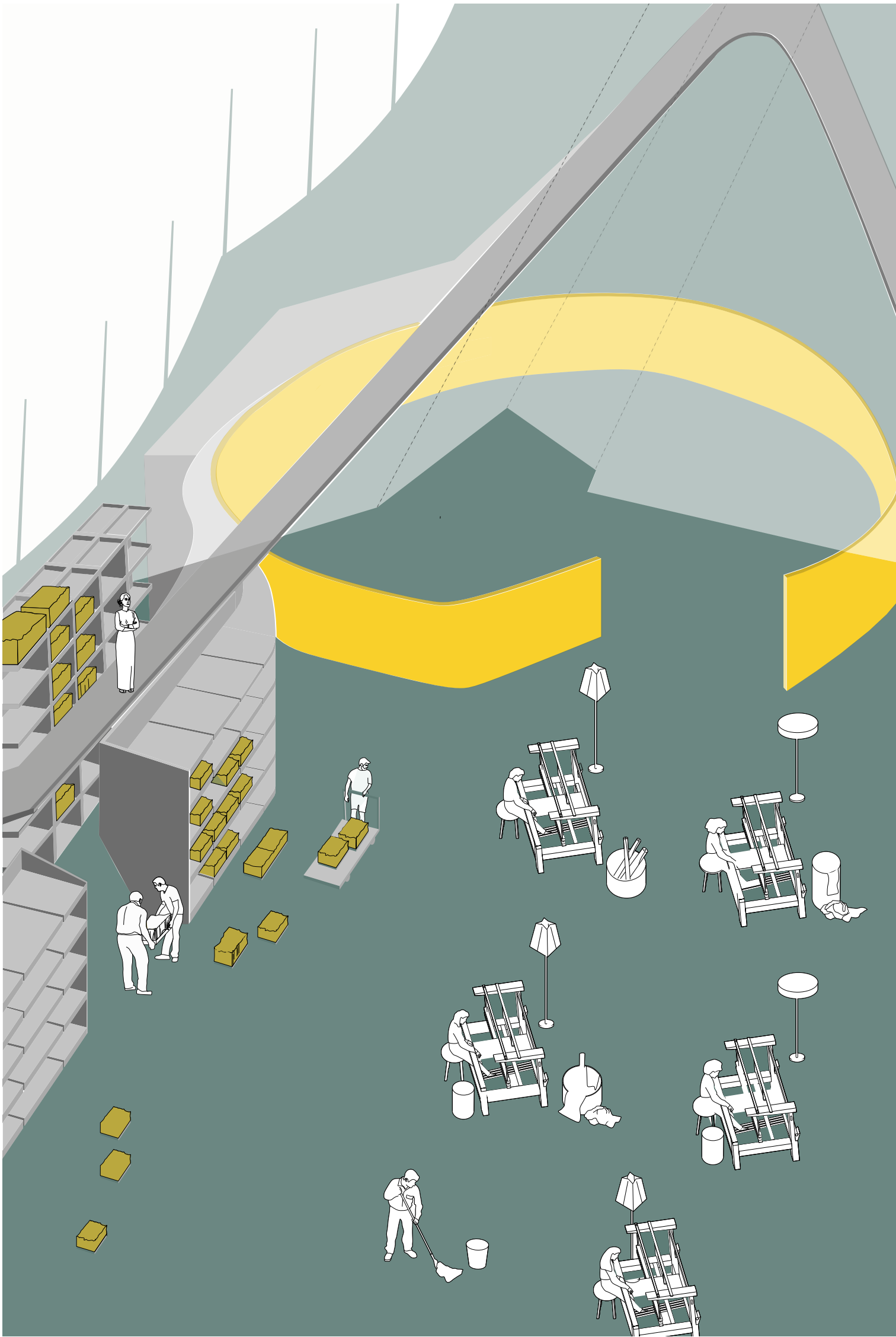
The context of the buildings is Riverside park. It offers rich landscapes of social activities, like public spaces to play sports or to gather under the canopy of trees. The park has the Hudson river on one side and mostly residential buildings on the other side. Situating the buildings in this context offers interaction with the people in the park as well as views from apartment windows.

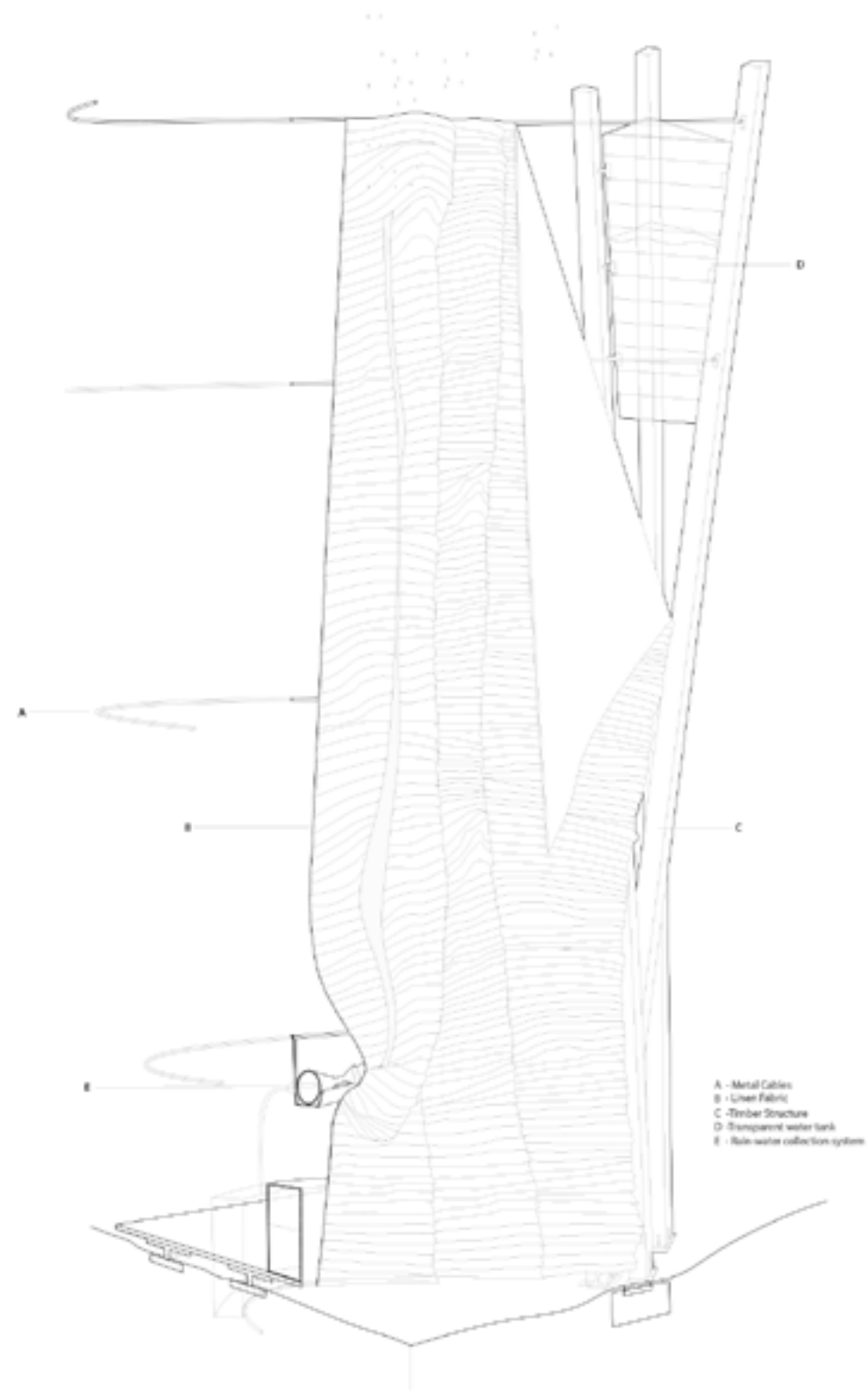












## *Forces and Philharmonic*

*Instructor: Rachely Rotem*

*A site with an uncertain future. Bridgeport Connecticut, faces the threat of being abandoned by its residents. Sea level rise, unpredictable storms, soil and air pollution by the coal-fueled power plants, and the lack of cultural institutions have left the residents to seek livelihood elsewhere.*

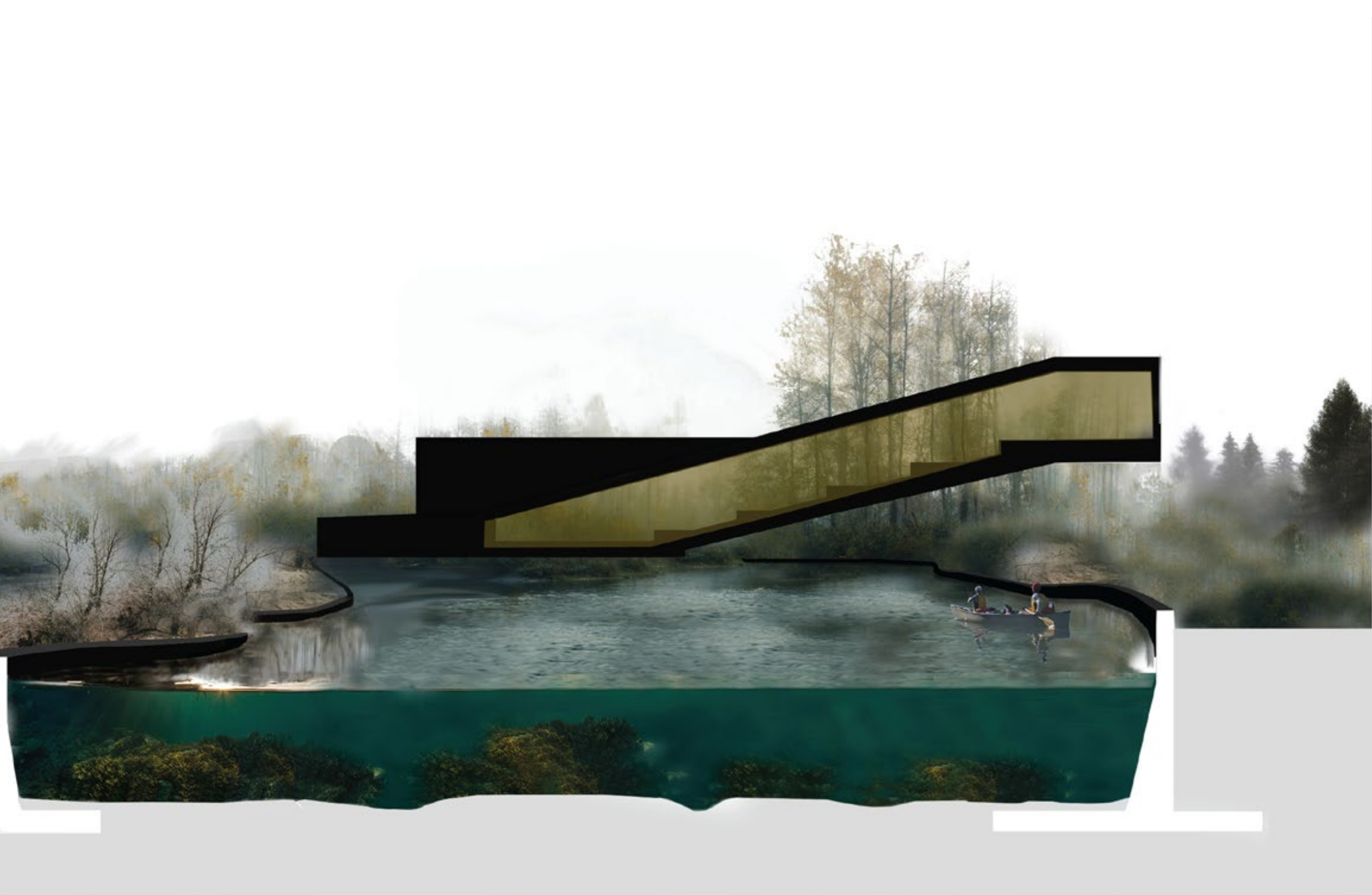
*A building built on the confluence of forces. The site for intervention is on the confluence of the ocean forces that move inward each day, and the capacity of the waters and the rains to erode the lands into the ocean.*

*The proposal. A building that holds the ground in place with the help of retaining walls, maneuvers the rising waters around the building with the help of landscaped diatoms, and uses the strength in the retaining walls, the tension within the rebars of the retaining walls, to cantilever a building out of the site, using the soil in the site as a counterweight.*

*The oblique cantilever becomes the philharmonic. The roof of the structure becomes an outdoor auditorium, the space in between becomes the practice spaces, and the indoor auditorium recedes into the ground.*

*Music brings people to the once-neglected site. They form a pleasant memory with the place, which is the first step to creating ripples that begin to heal the site, as these memories are conveyed throughout the world.*

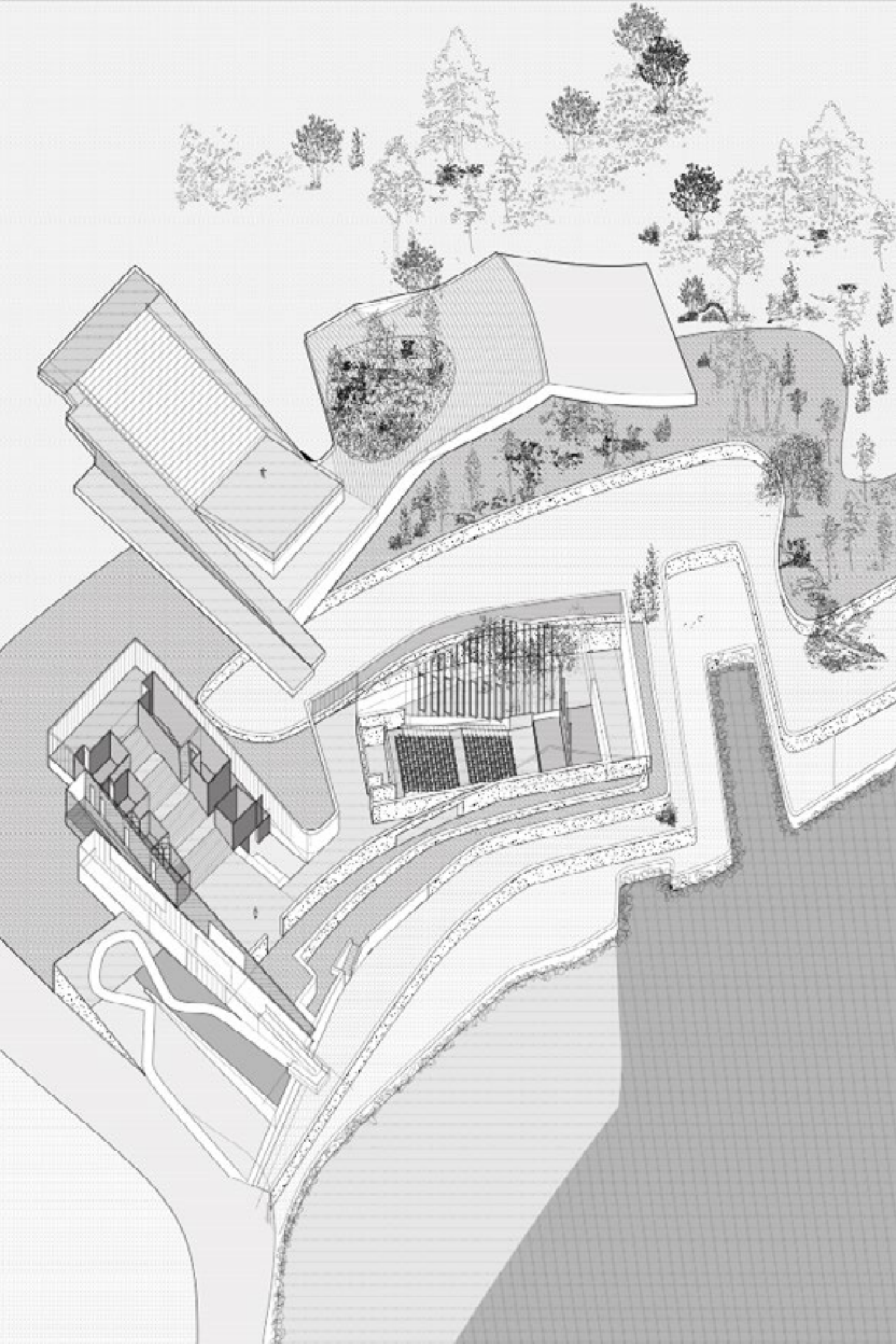




Concept Collage of the building viewed from the flooded waters maneuvered around the building with the help of landscaped diatoms.



Massing studies on the site model.



Concept models that test the balancing and cantilevering mechanism.



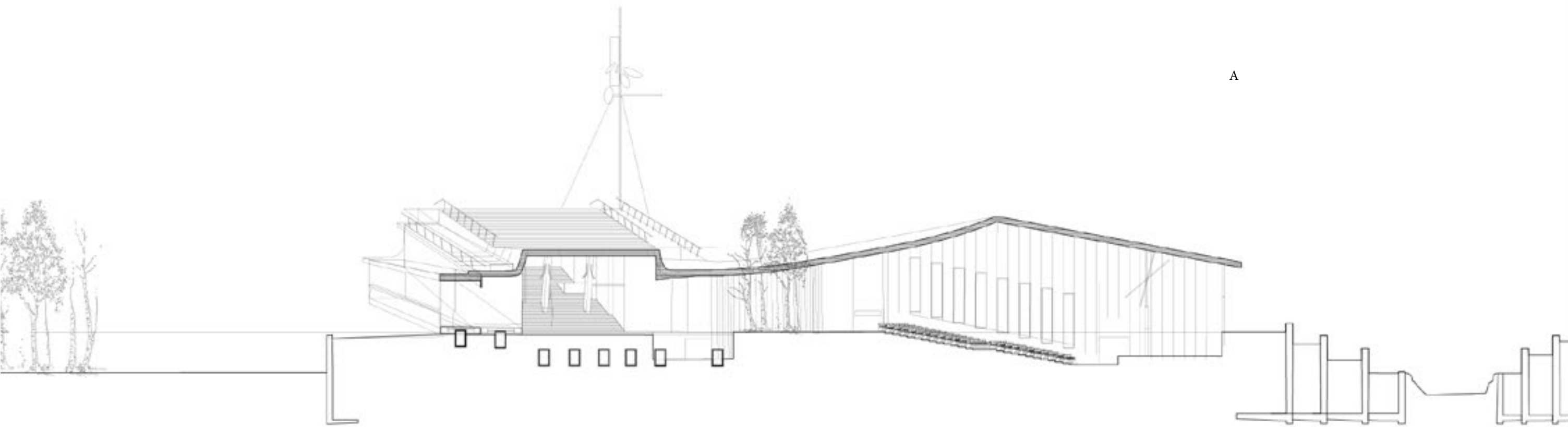
1/8th scale sectional building model.



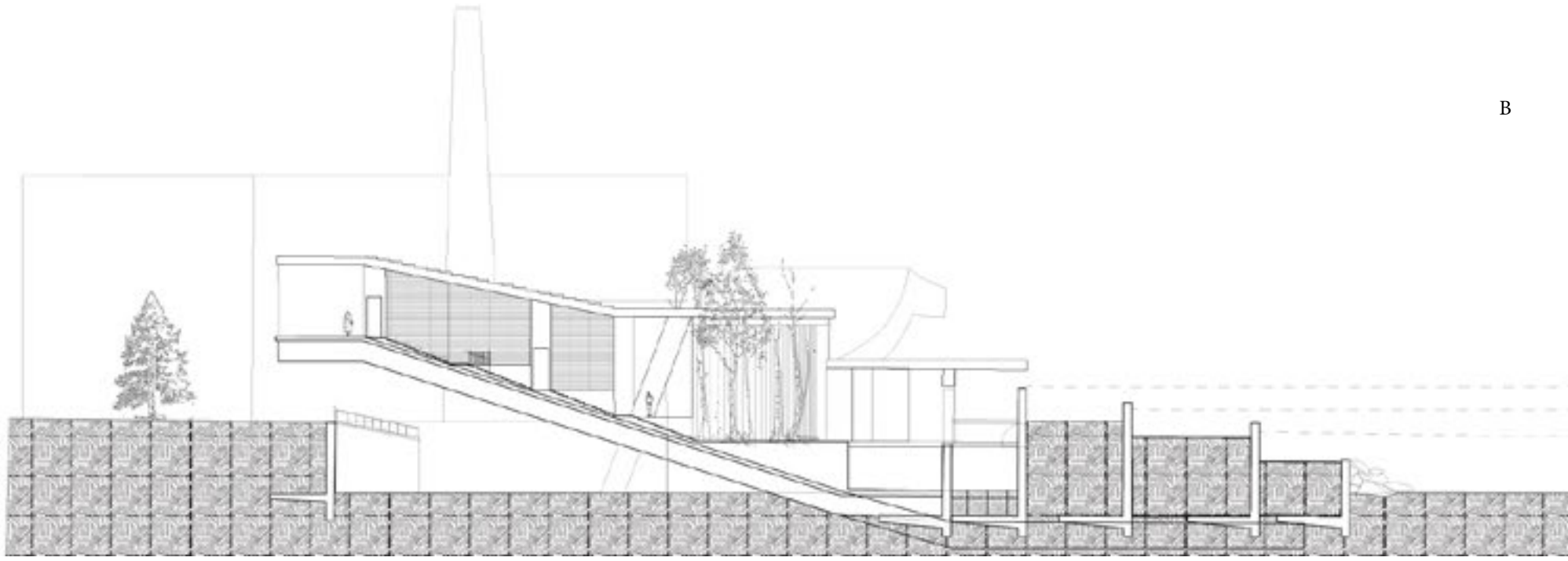
B

A

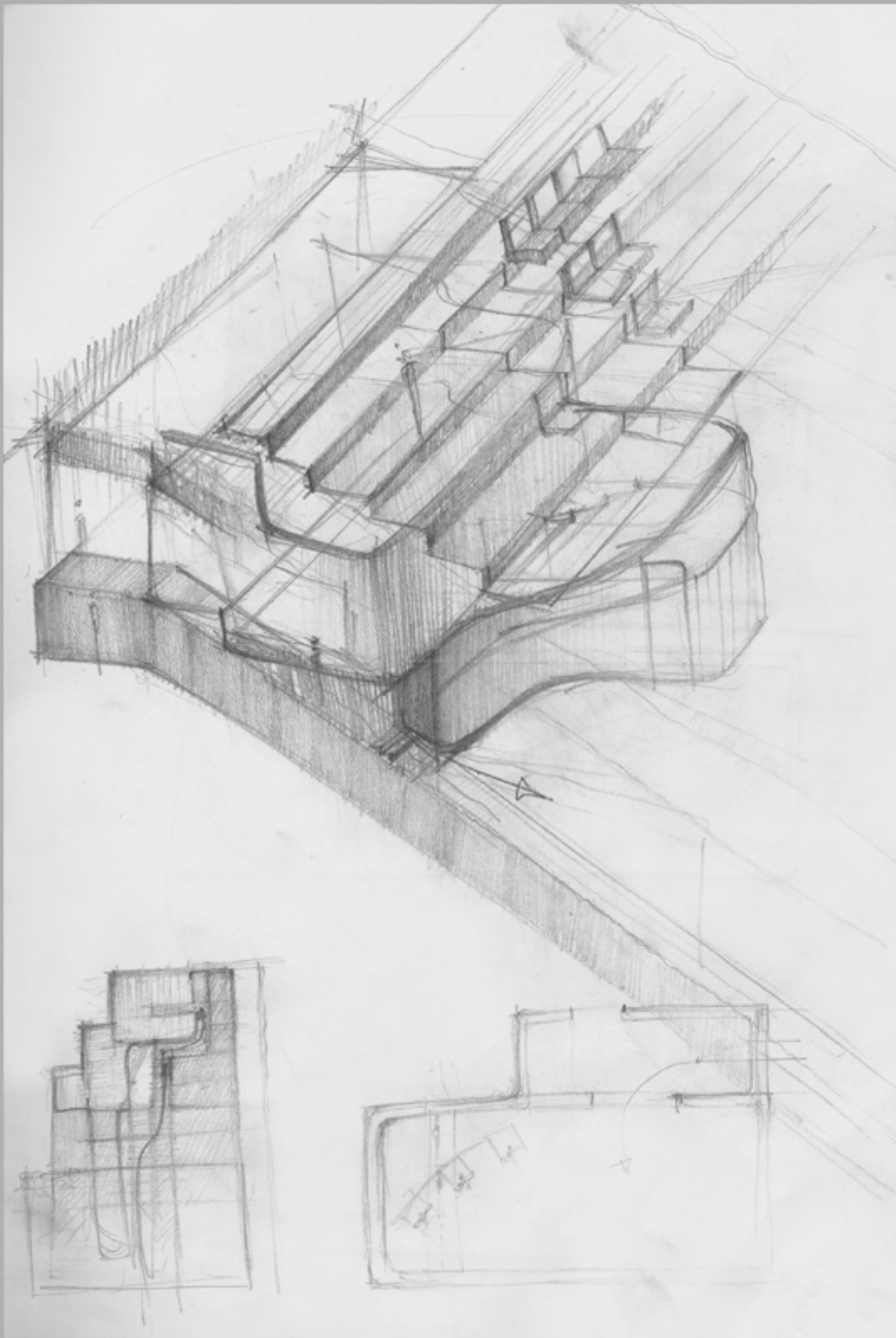
A



B







Process sketch.



Process models.



## Grounds of Care

Instructor: Christopher Leong

Designed with Jared Orellana

*Situated in the South Bronx. The project responds to the need for housing in the South Bronx. It intends to create an architecture of solidity in a neighborhood that is industrial and fleeting.*

*The Materials make the home. By using materials like limestone that age well, the project creates a home that can begin to accept the weathering caused by the use of the space. These materials also connect the resident to the earth because of their density.*

*The Concept. The project comprises of rectilinear housing masses that sit on longitudinal circulation spaces, these masses are composed in a manner that gives the impression of movement, and shifting. This dematerializes these heavy concrete and limestone structures. The shifting of the masses and the spaces in between them create courtyard conditions where light and air can circulate.*









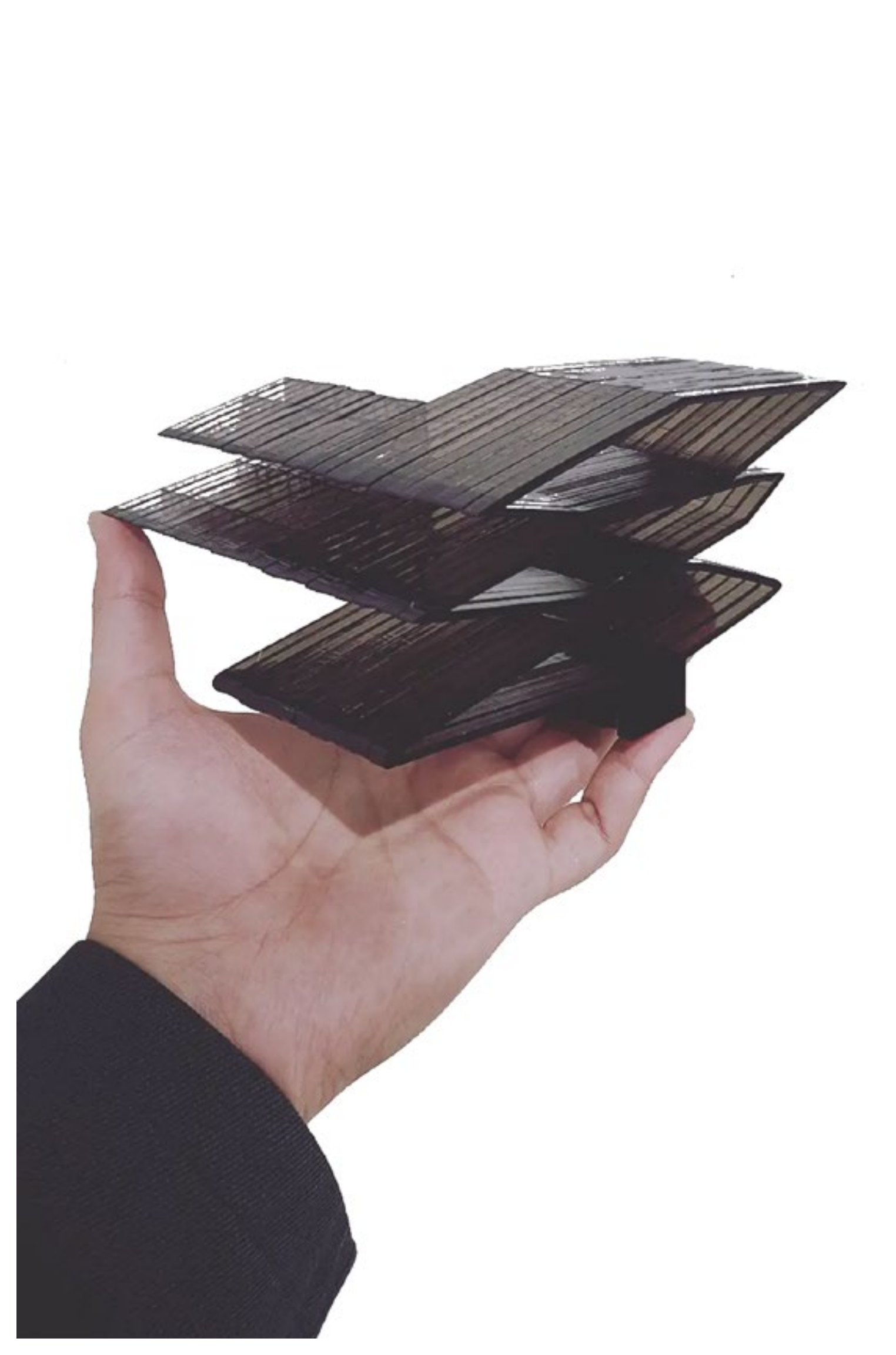






Precedent Study of Gifu Kitagata housing by SANAA





## *Monastery of the Present and the Future.*

*Instructor: Lindy Roy*

*What is required of a monastery in the contemporary world? The eclectic culture of today and tomorrow stands in confluence of deep spiritual values passed through generations and the technological dreams made possible by that same eclecticism.*

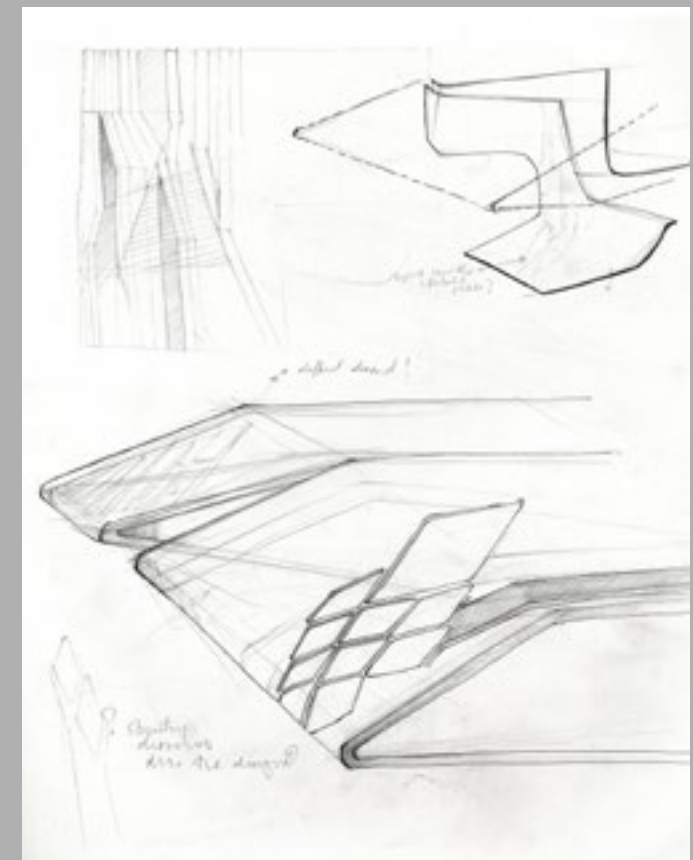
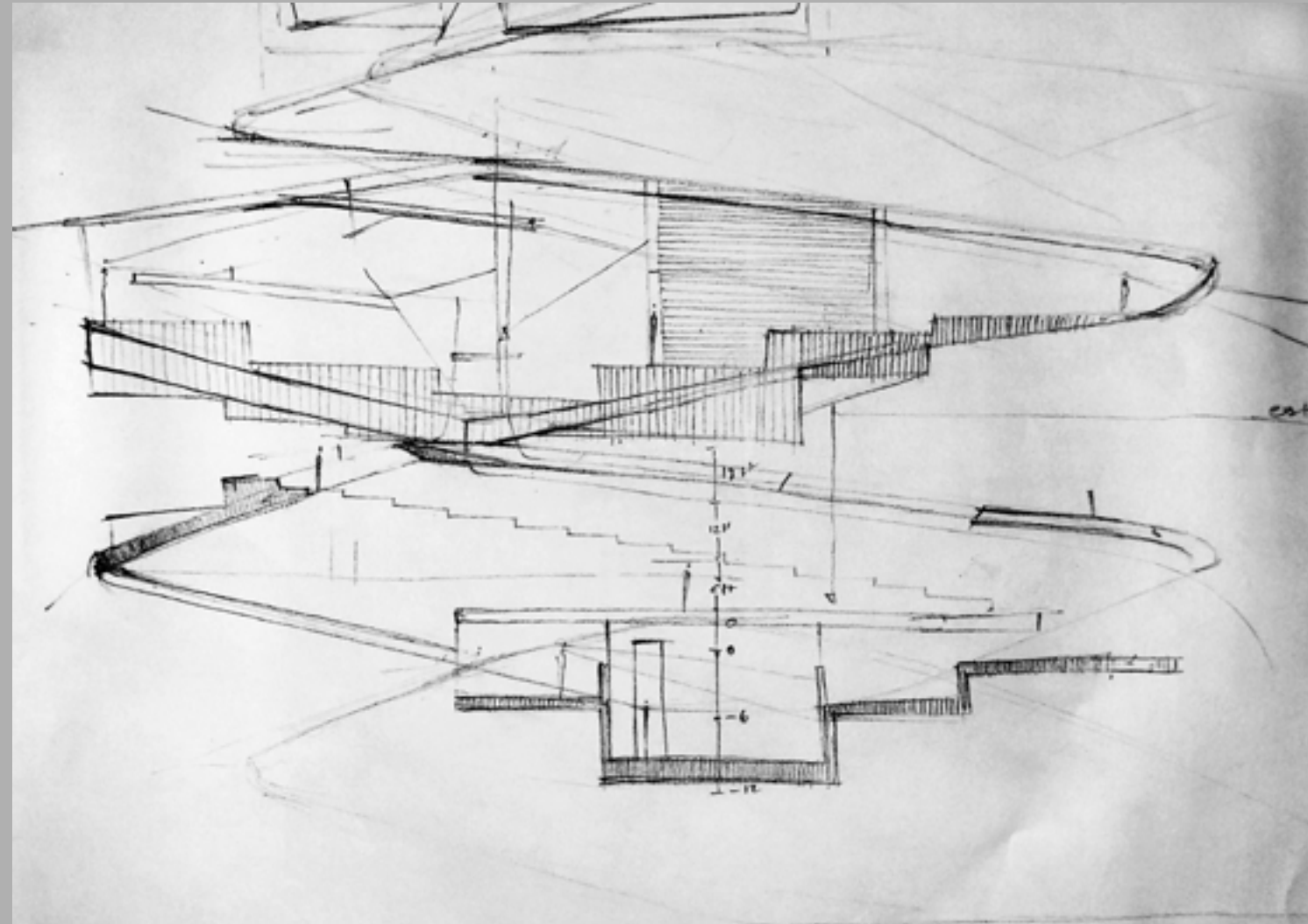
*In the intersection of the past and future there is a constant. Material. The monestaries of the past worked on bridging the gap between the human and the objects they produce. Rituals tuned to formgiving of material and connecting that power of creating to God or the greatness that lies beyond our understanding.*

*The sensitivity found in the unstable and the precarious has the capacity to tune into the forces around that go unnoticed by the stable.*

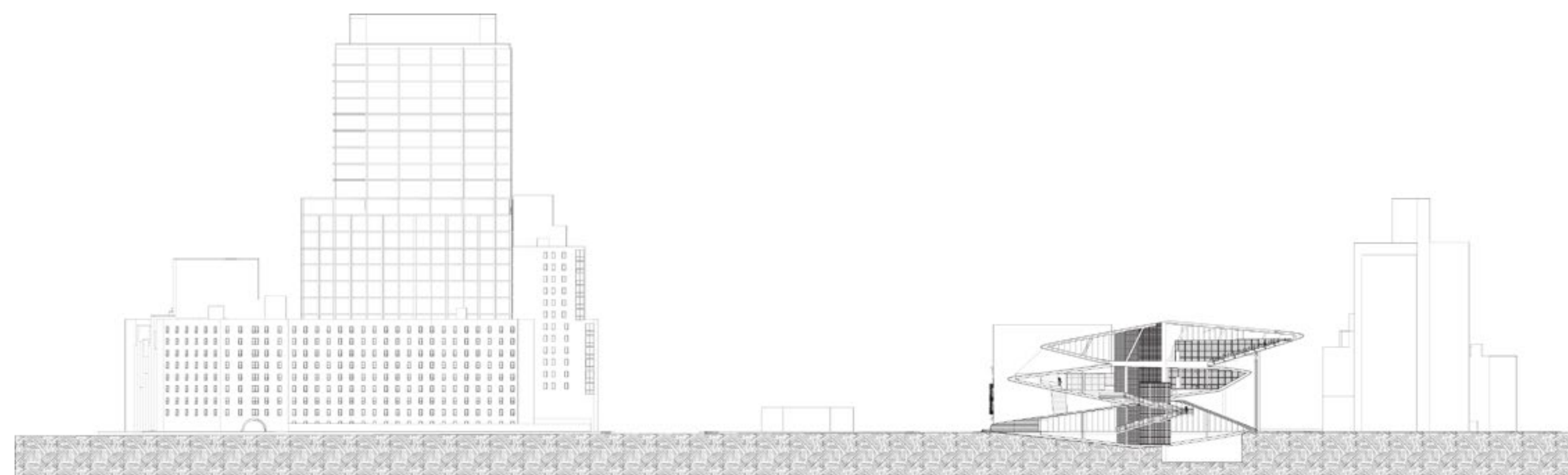
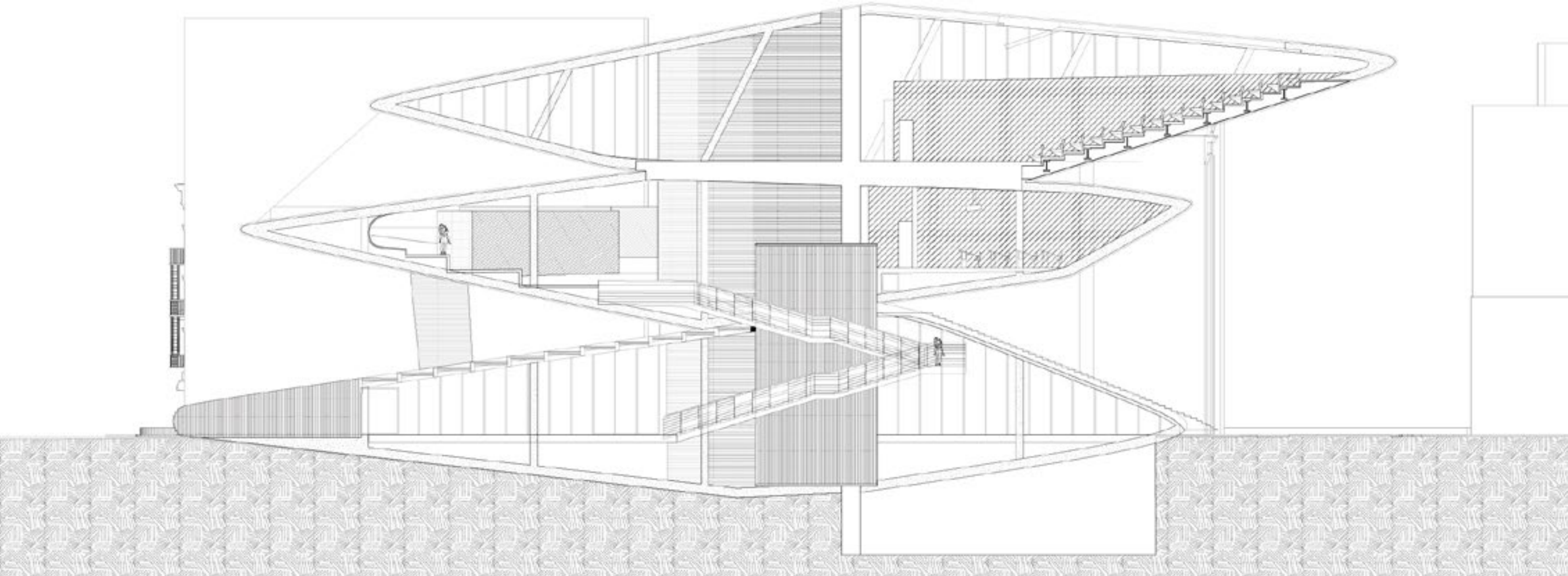
*Within these values lies the monastery of the present and the future.*

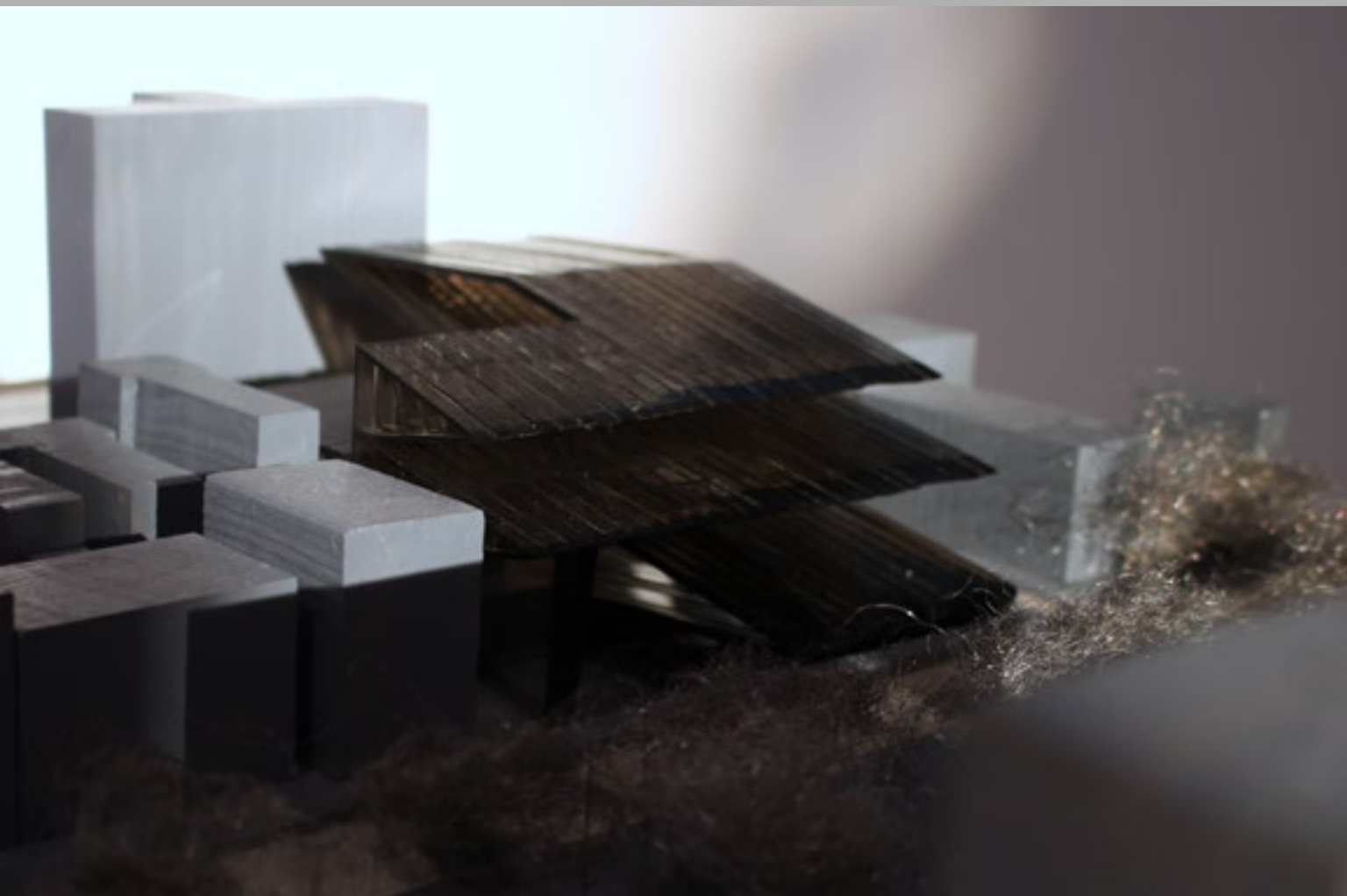
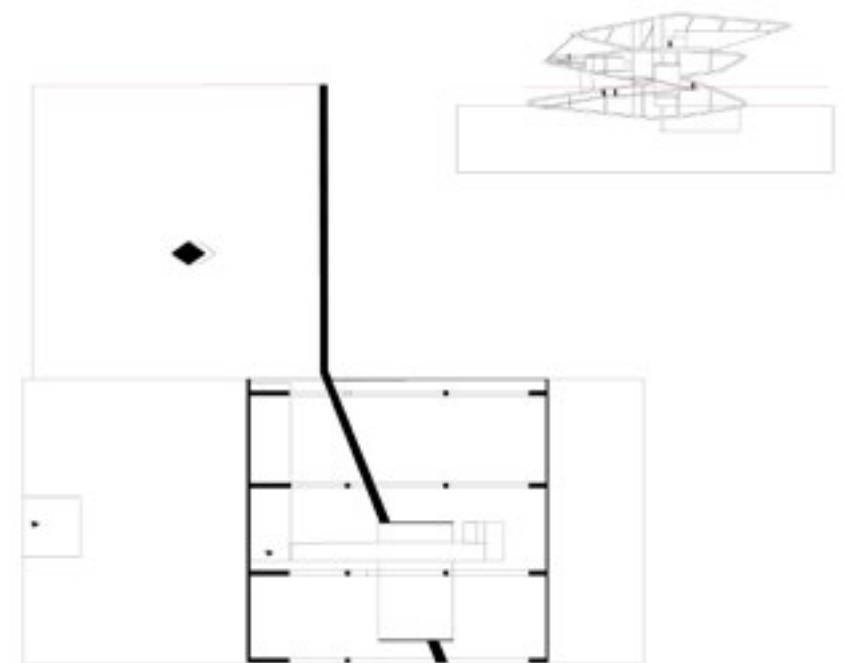
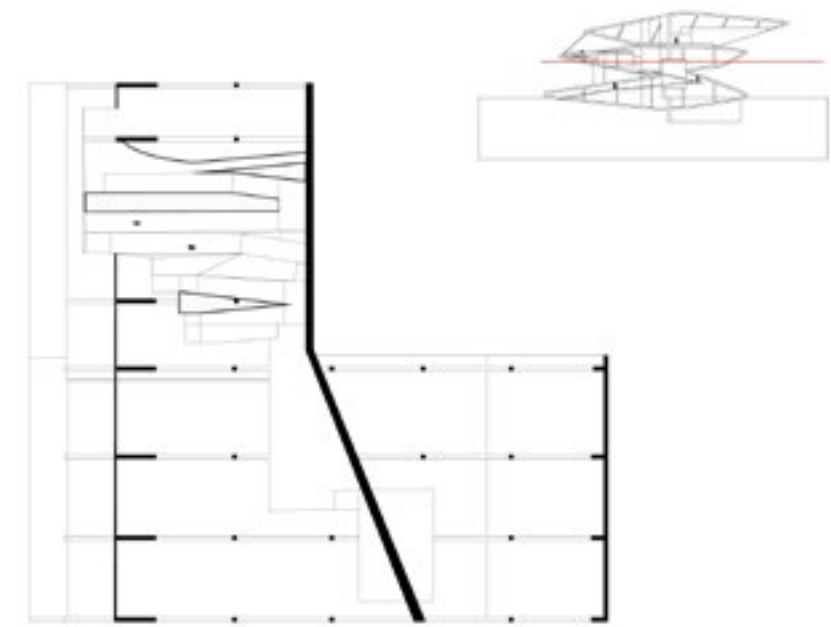
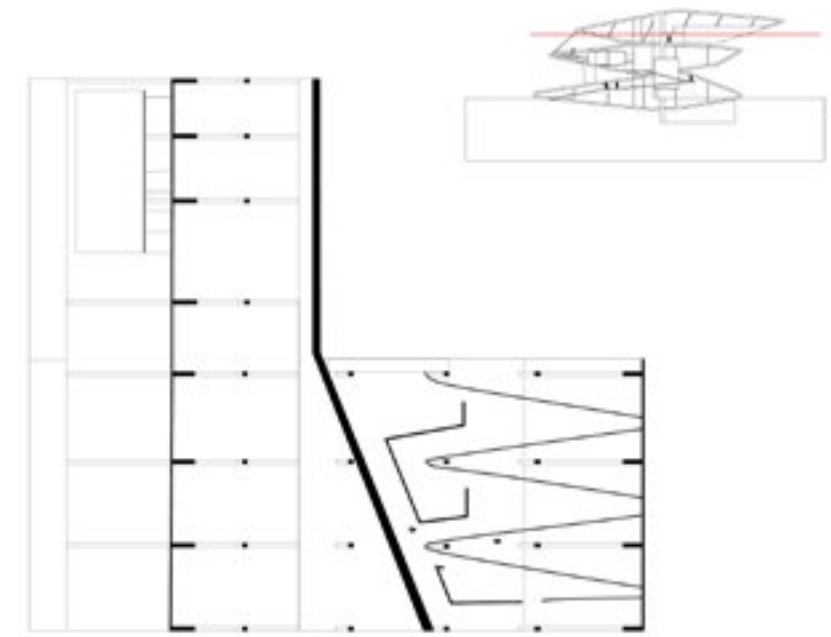
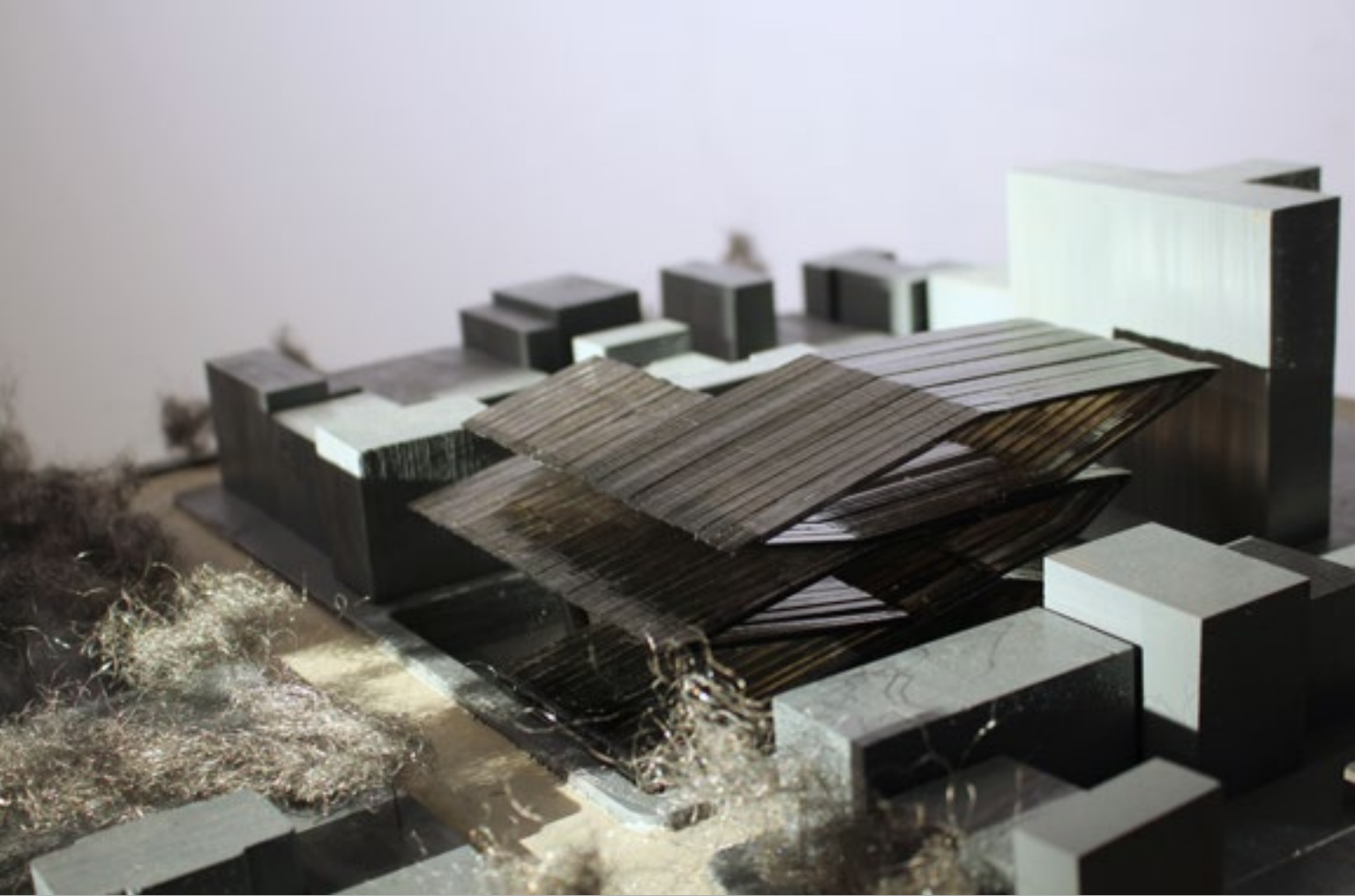
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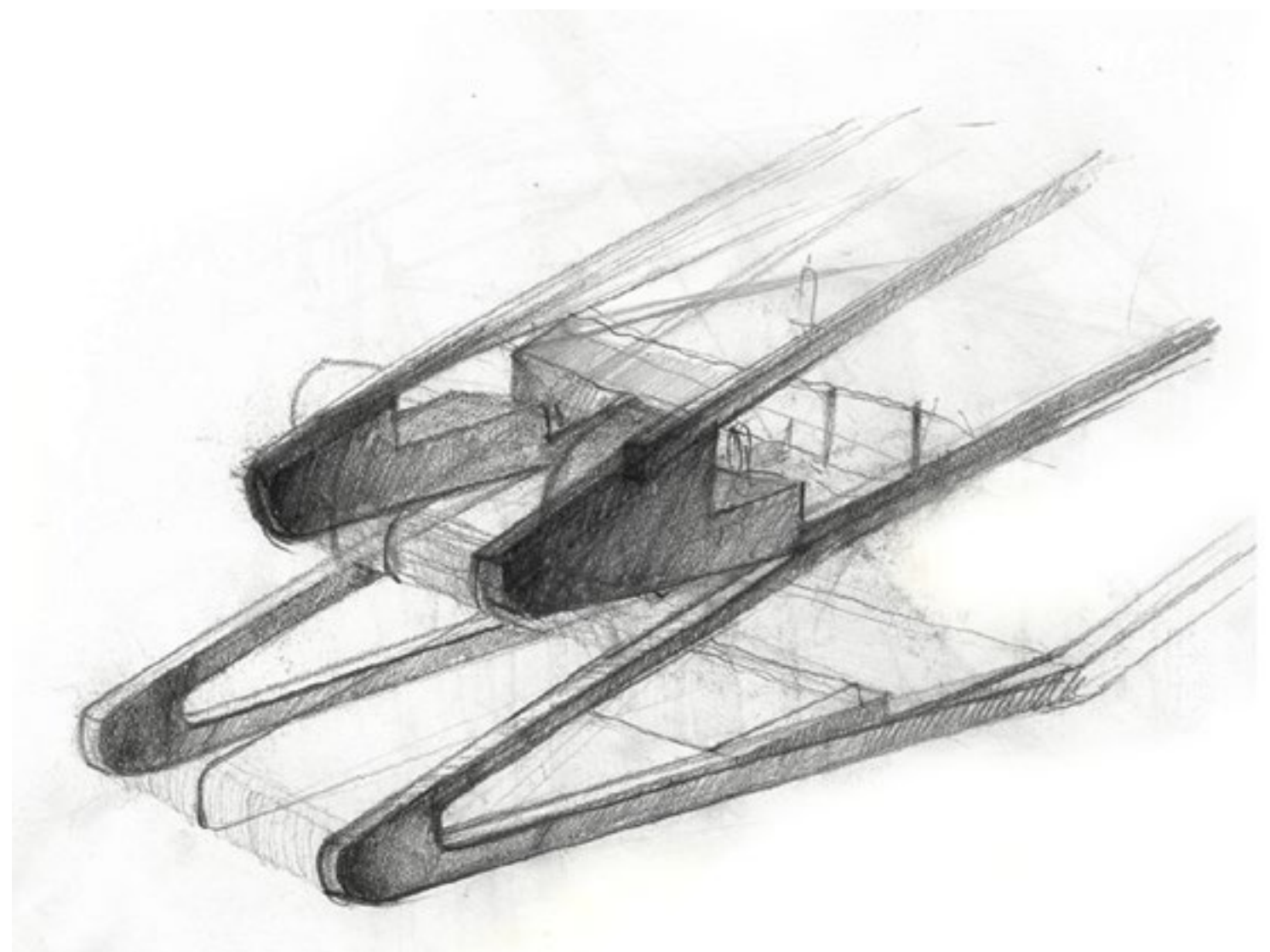
*Interior landscapes are the cosmos in themselves, they become the ritual of movement along paths throughout the building.*



Study model that explores the idea of unstable forms that are sensitive to the movement around them. The metal forms wobble when they come into contact with circulating wind or the movement of people that is felt through the vibrations of the ground. This brings to light the capacity to create structures that move from the state of dis-equilibrium and equilibrium in response to the forces around them. What can we learn from the forces that such sensitivity can amplify as occupants of such a structure? As occupants of a monastery listening to the forces in the world around is the first step to be able to move inward and listen to oneself.









### Figures in leather.

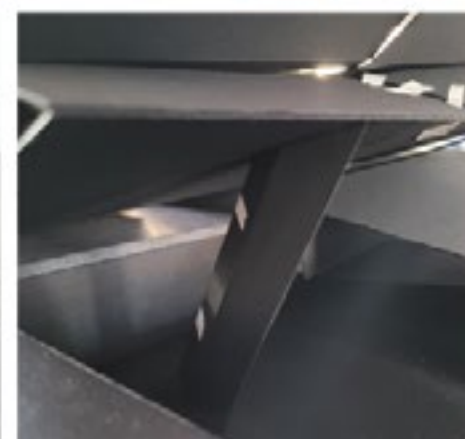
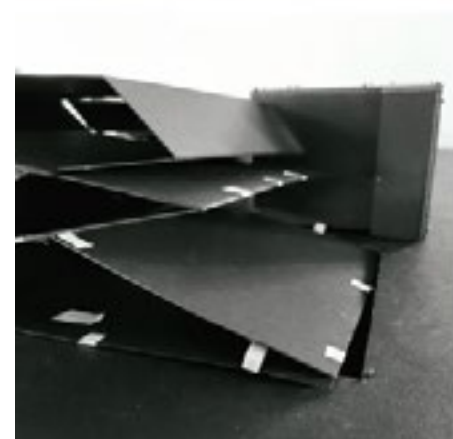
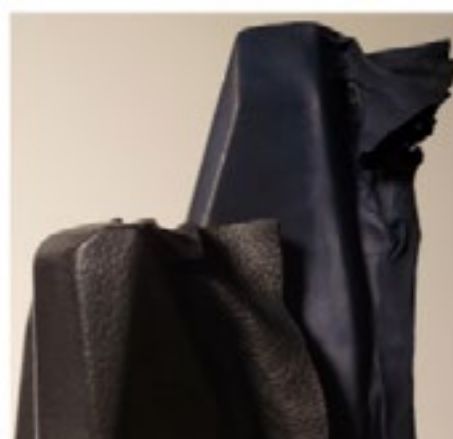
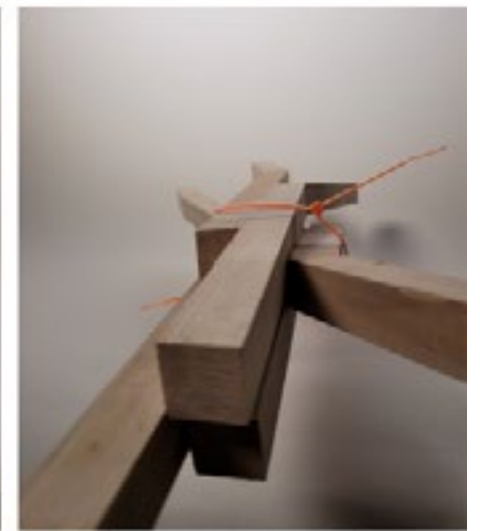
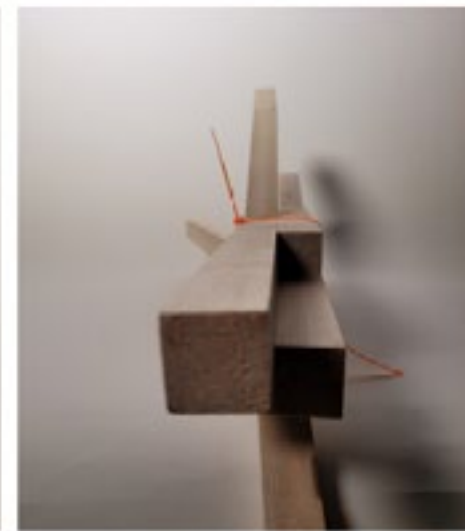
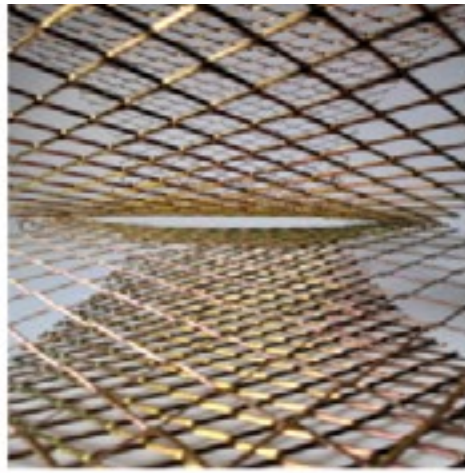
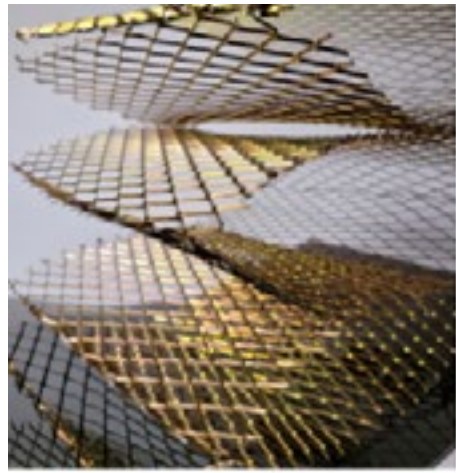
The creation of this object is an inquiry into the personality of the building. The soul of the project is feminine as the capacity to nurture, teach and care for the occupants is a feminine quality. The figures clad in leather reflect this powerful nature that is almost reminiscent of powerful sages and visionary Hermits.

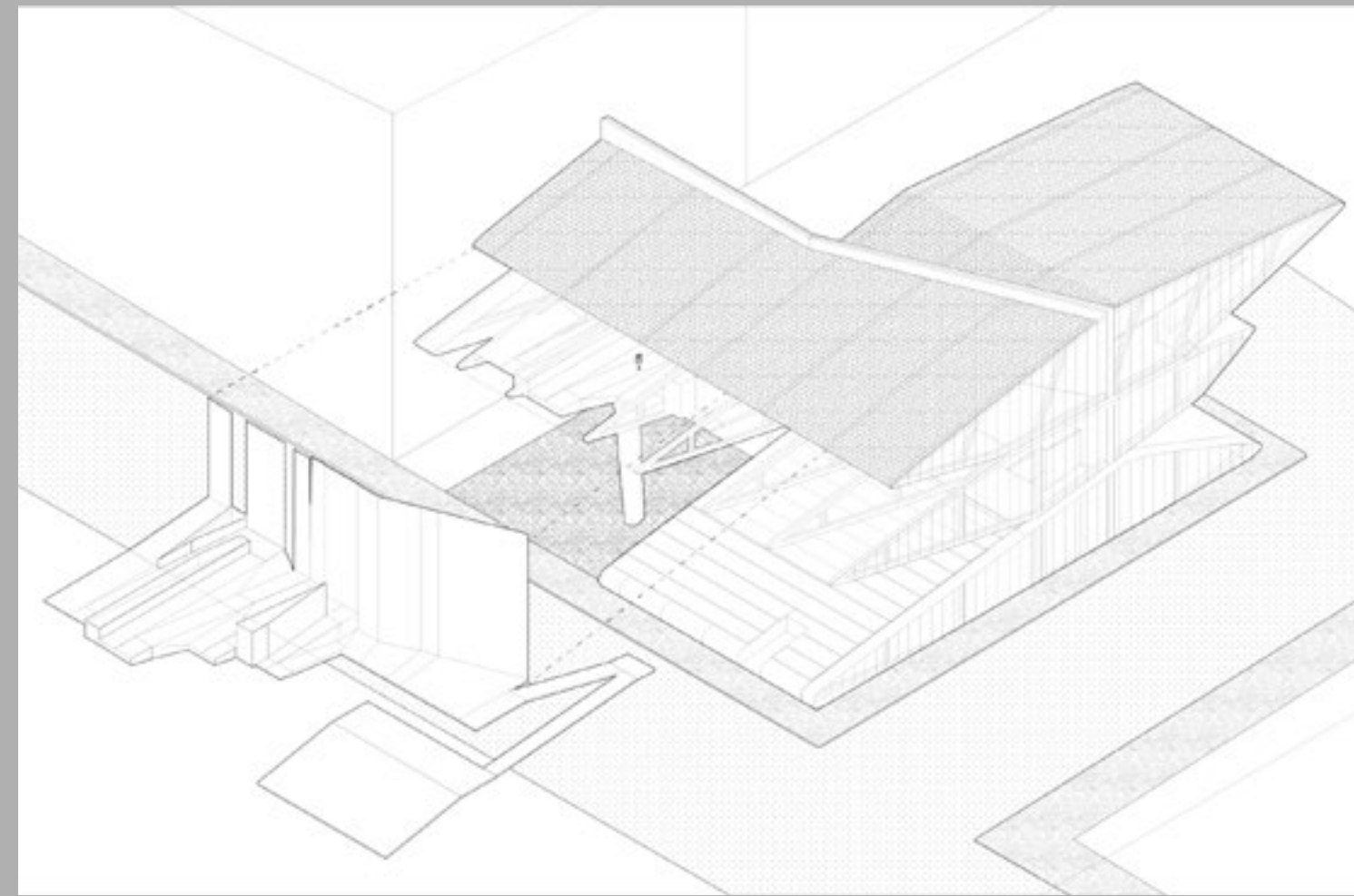
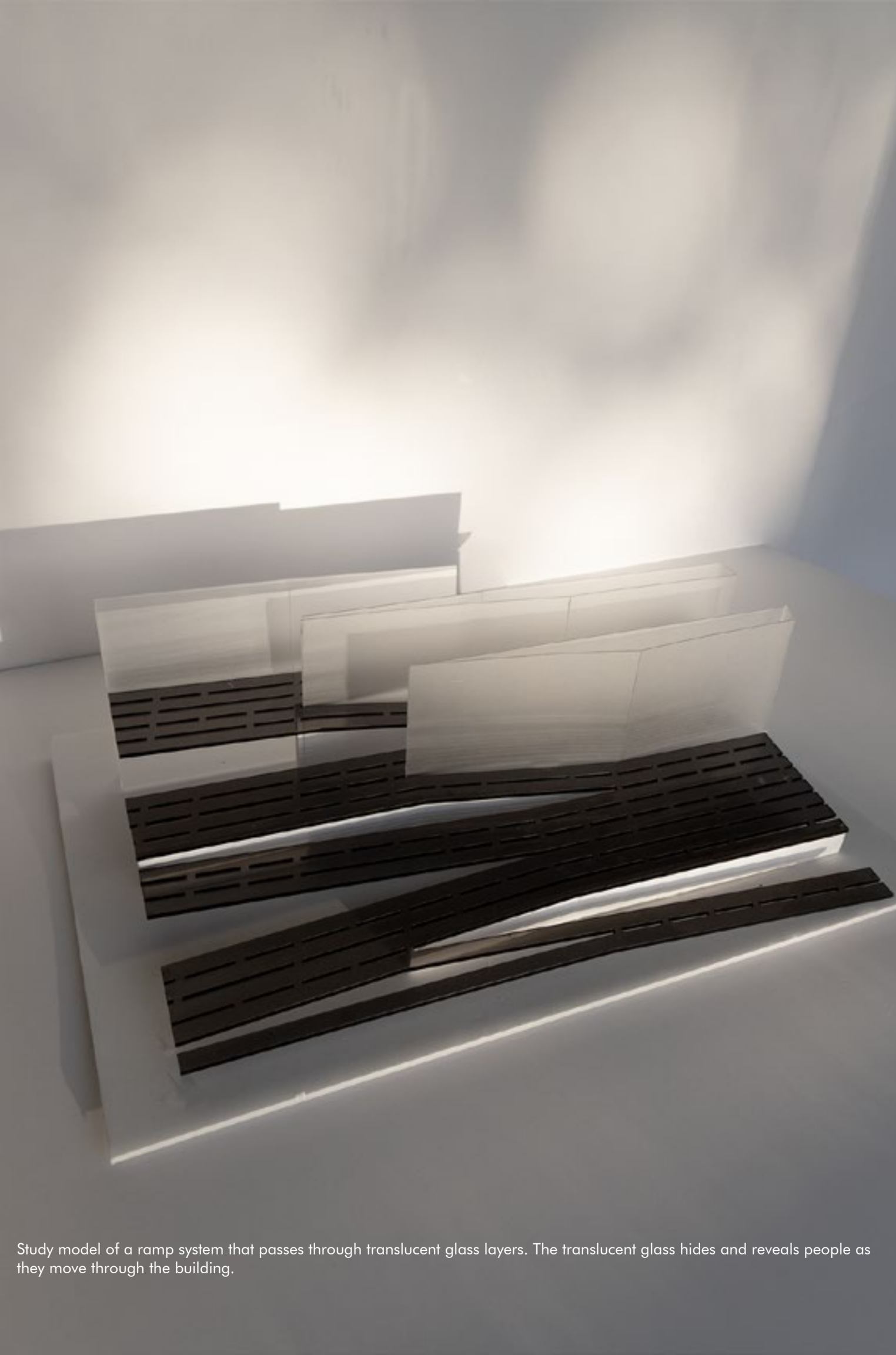


### Object in wood and brass.

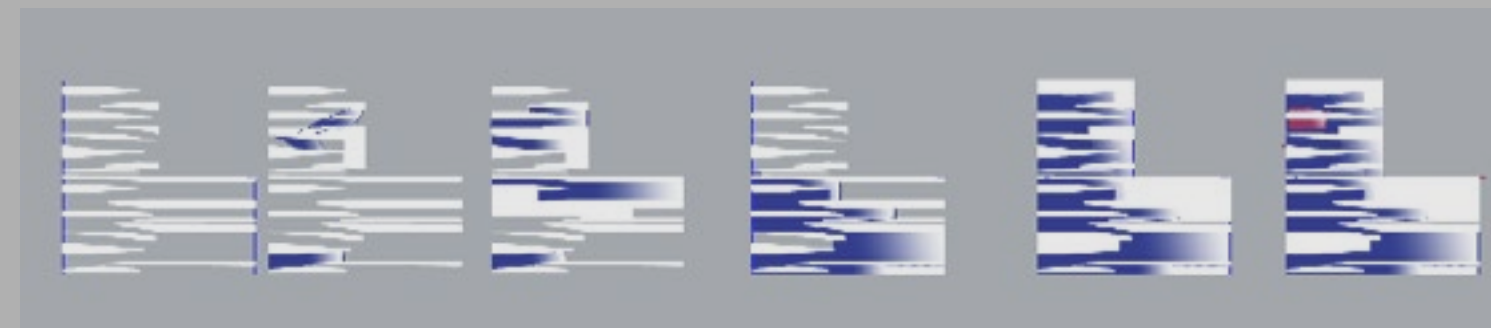
This object is a study into the creation of an interlocking system where the lines between powerful ornamentation and utilitarian joints get blurred.







The drawing above shows the primary circulation path in the building.



Process drawings in search of the form of the path system in the building.

Study model of a ramp system that passes through translucent glass layers. The translucent glass hides and reveals people as they move through the building.





## *A perfumers distilation closet*

*Instructor: Zachary Mulitauaopele*

*Designed with Maria Berger*

*A perfumers distilation closet made in sapele wood. The object is designed as a louvered vent that has a perfumers distilation apparatus inside. The louvers open to let the fragrance of the perfume out of the box. They also let the light of the fire shine through the gaps. Cavities are carved into the louvers to show views of the glass apparatus.*



!:1 Drawing exercise. The drawing is made with a collage of tape and paper.



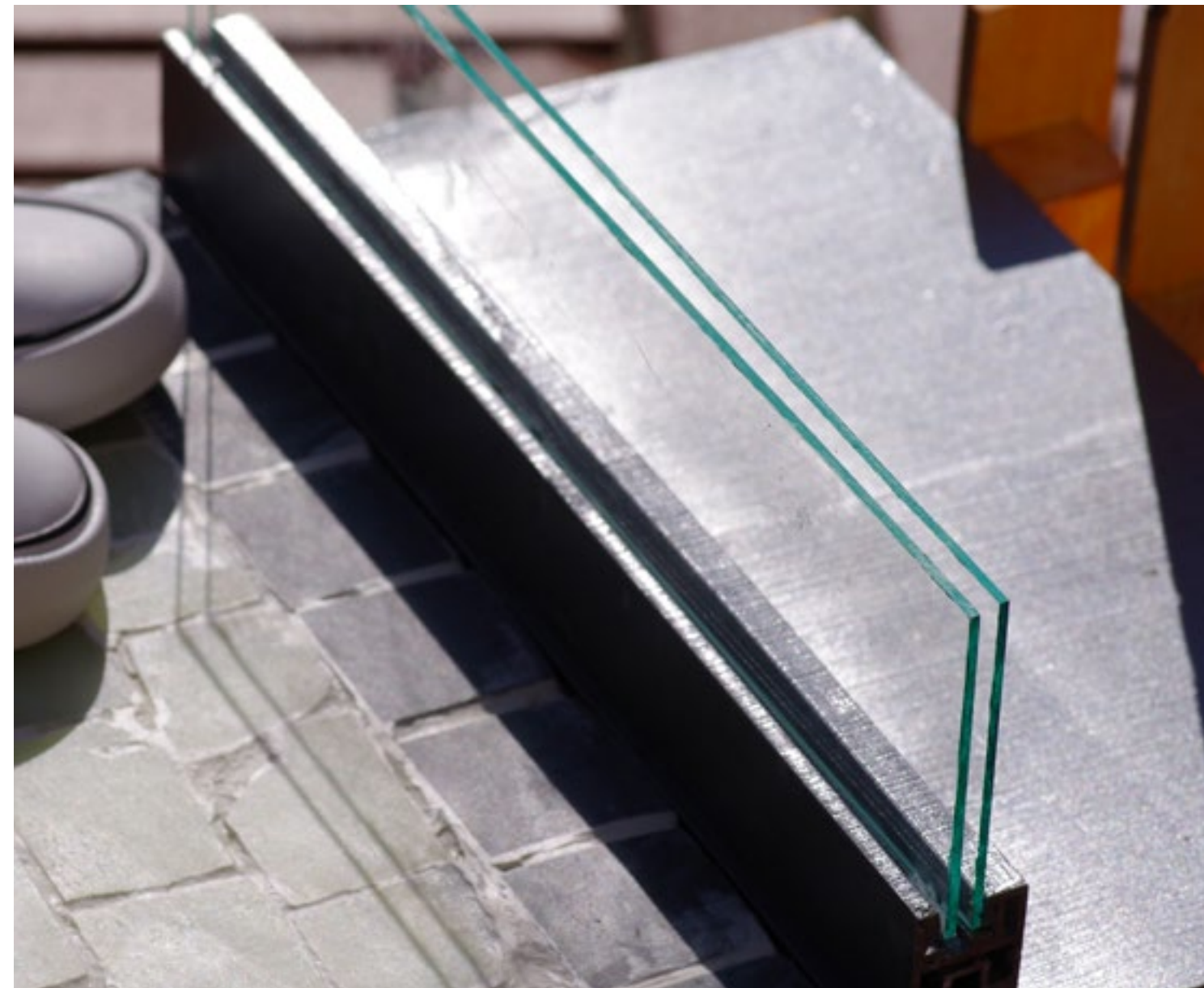
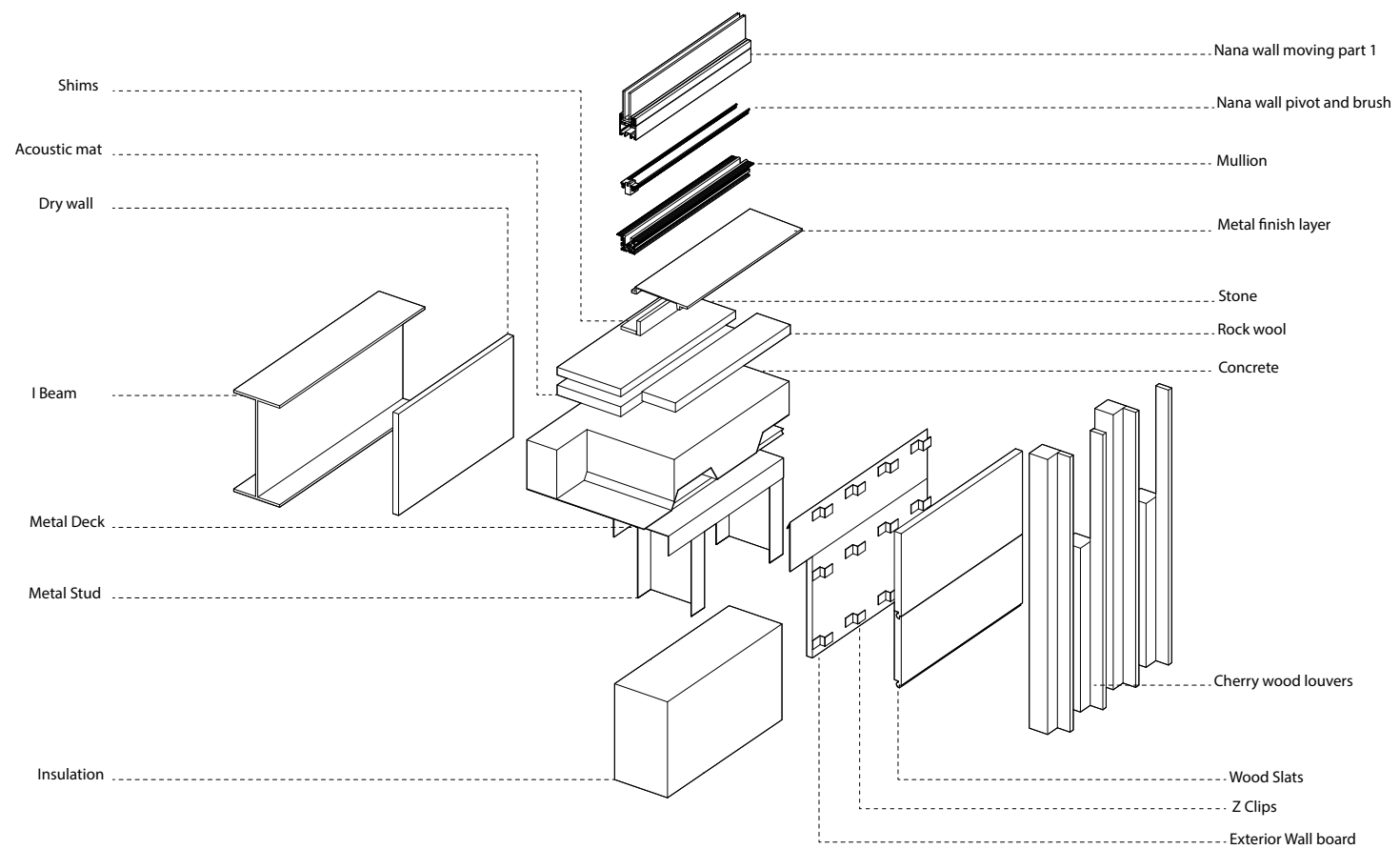
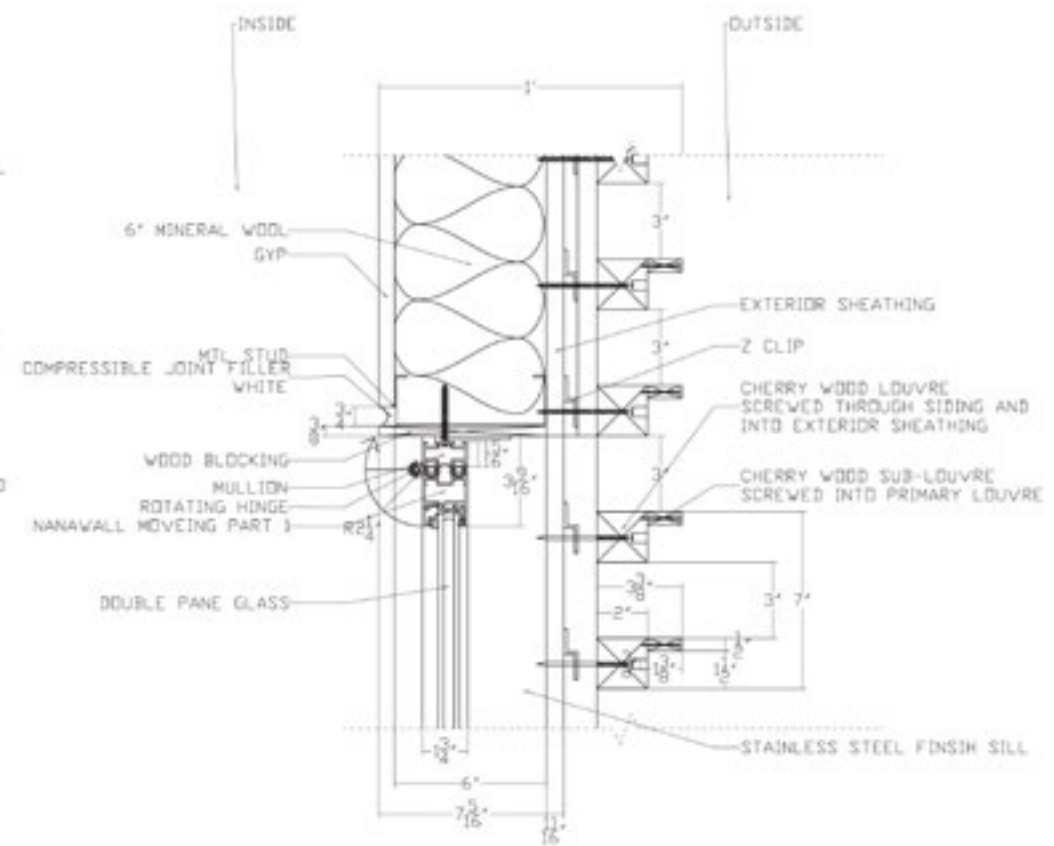
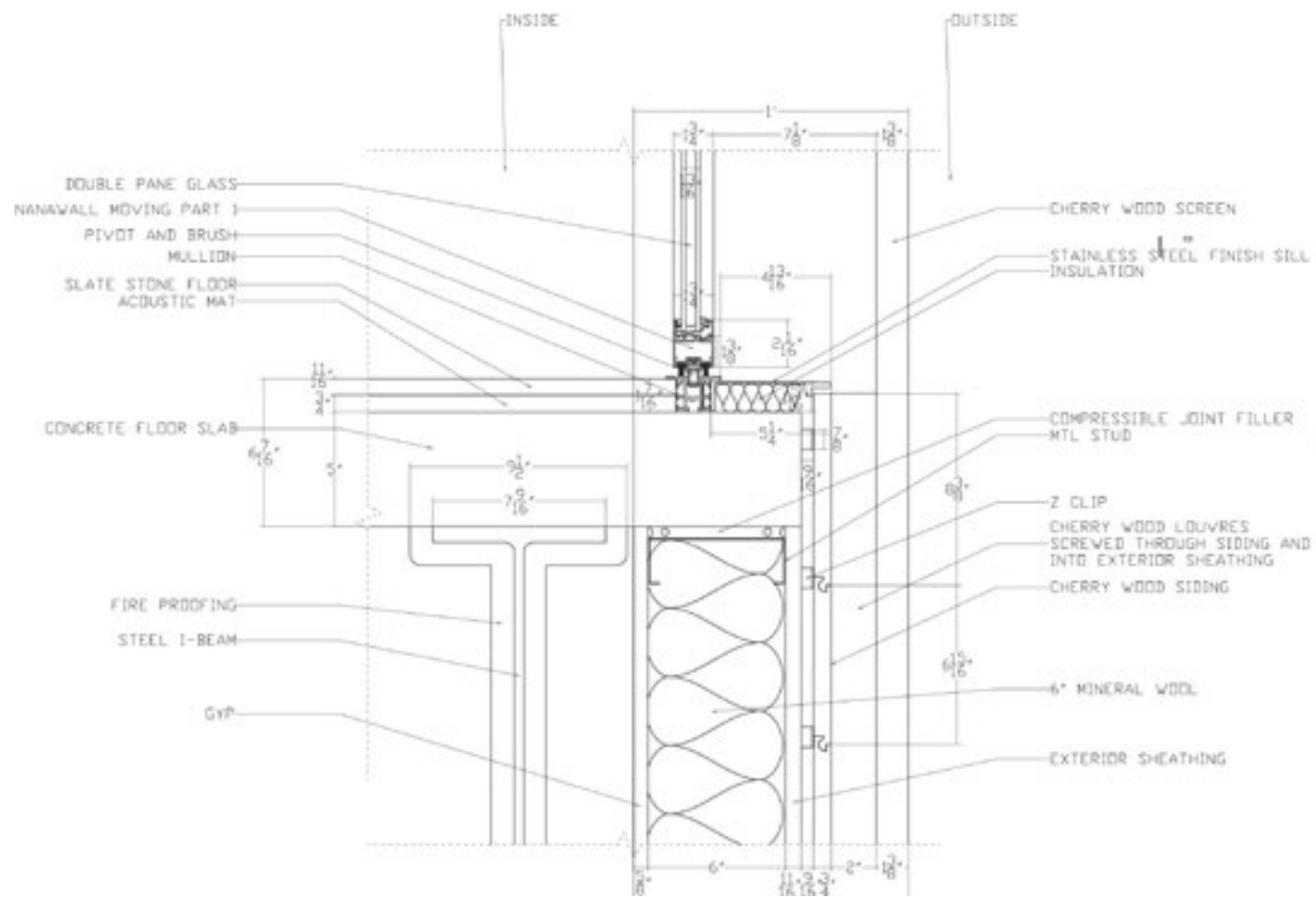


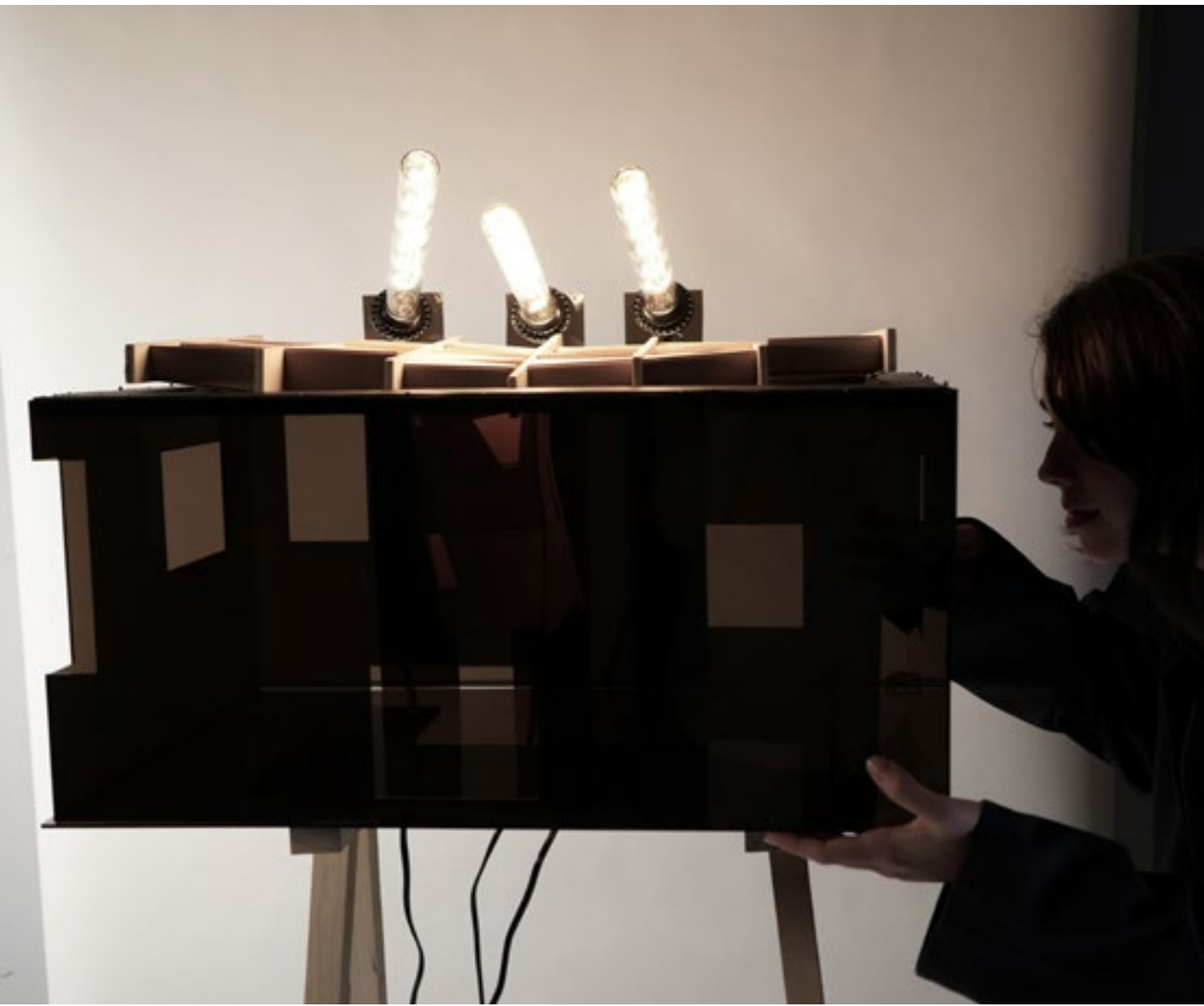
## Wall Assembly

Instructor: Lola Ben-Alon

Designed with Key Aiken and Genevieve Jones

*This wall assembly for a school, uses cherrywood as the exterior expression of the building and a stone mosaic tile that is the interior expression of the building. The assembly of the materials in between help create an overall experience by controlling temperature as well as holding the structure in place.*





## *The Atmosphere Box*

*Instructor: Zachary White*

*The Atmosphere Box is an apparatus to study a building. The precedent study here is the MSD by John Wardle + NADAAA. It creates an exterior condition where the model of the building is placed inside. It helps one study the lighting and atmosphere of the building.*



