



CAVERNOUS INTIMACY

EMMA EDWARDS
PRE - THESIS FINAL

HABITAT

COMFORT

SHELTER

PROJECT DESCRIPTION

Minimum 500 words including a title and citations (see last page for citations.)

FRONTISPIECE

The frontispiece can serve to reflect the theme of the story for which they are included. A frontispiece is supremely important in conveying information and extra details about the treatise itself, the time period in which it was written, the concepts and ideas hidden in, or the subject it explores. The inspiration for my frontispiece that I created stemmed from my beginning research on caverns, caves and also my research more recently, regarding fluid dynamics. On the left-hand side I included a blocky outline of the fluid dynamics of how wildfires start. As your eye moves from the left to the right I created a 3-D rendering in rhino of these fluid dynamic movement lines from the wind to create wildfires. I curved each different line to represent how they come together to form in the middle in this process and create fire. Throughout this jumble of lines, I added a few keywords that have accelerated me throughout my project. These words include habitat which is one of the first words that came to mind when I thought about caves and caverns, shelter and comfort. The last two words embody what I want my structure to give to its occupants. On the right hand side of the 3-D rendering, is a blacked out version of the inside of Luray Caverns. I added this aspect to convey the idea of caves and caverns that I came up with from the beginning.

PROJECT DESCRIPTION

My original inspiration for this project was when I was burning my old architecture models and was intrigued by how each material burned. I started to think about what I could do with that for a project and informed myself of the wildfires happening in California recently. I was inspired to create a shelter space for wildfire victims who have lost their homes due to the fires. I began to think about what the opposite of fire is and what materials cannot burn and are fire resistant. I immediately thought of caverns, because they are dark, cold, and not flammable. The stalactites and stalagmites of limestone caverns interested me in how they formed. Nature's patterns were created from the formation of these caverns, so I studied more into that and how they formed. I chose my site to be Red Bluff, California because it is central to 5 major national parks and a few wildfire complex's. It is also central to Sacramento, California, a major city. My site, however, can be fluid and would be available to be built anywhere needed.

As I studied my precedents, I investigated underground architecture to emulate a cave. I then concluded that it should only be partially underground, with the first floor backing up into the side of the mountain. I decided this because the issue of lighting came up, as well as comfort for the victims. I also looked into the fluid dynamics of wildfires to inspire my form, which is included in my frontispiece. I term cavernous intimacy holds value because I want it to be intimate and comfortable, but also still partially underground.

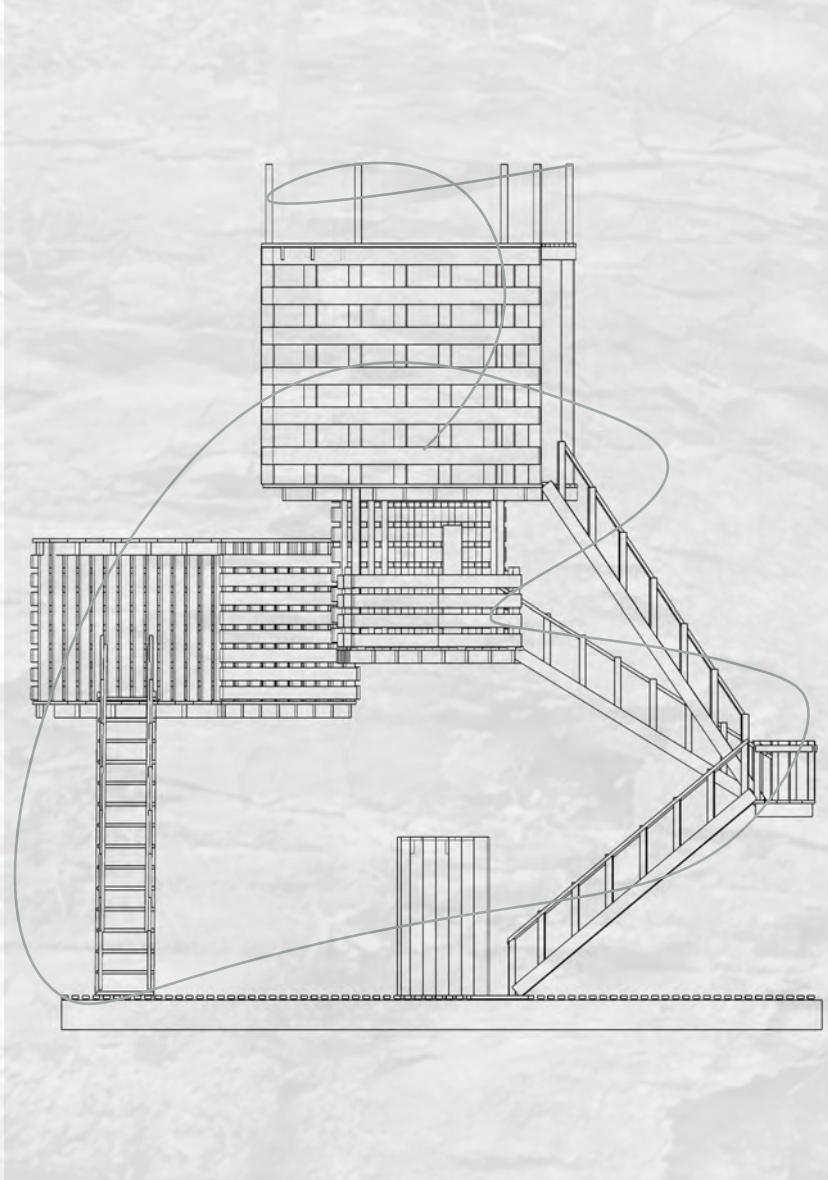
What also inspired my form, is stalactites and stalagmites, then took a turn to less literal and more gestural. I wanted to make it more open and comfortable, incorporating slight curves on the ceiling and softer curved walls, rather than rigid vertical shape.

The programmatic diagrams incorporate the three main floors and sunlight direction coming in. I brainstormed and included the number of shelters it can hold, the bathrooms, the views of the mountains/Sacramento river, the common area vs. living area, as well as the kitchen.

The wall section includes some sketching to understand connections and the relationship between the inside and outside of the building. I created the first and third floor to be cast concrete walls, with a combination of wooden and metal frames. The second floor, which is the lookout floor, includes a large glass wrap around, floor to ceiling window. I also included a green roof on the top of the building.

My final concrete model shows the three floors and encapsulates the idea of cavernous intimacy.

Precedent: Burning Models Emma Edwards



While burning my old studio models, I got inspired but how each material burned and what they formed when bruning.



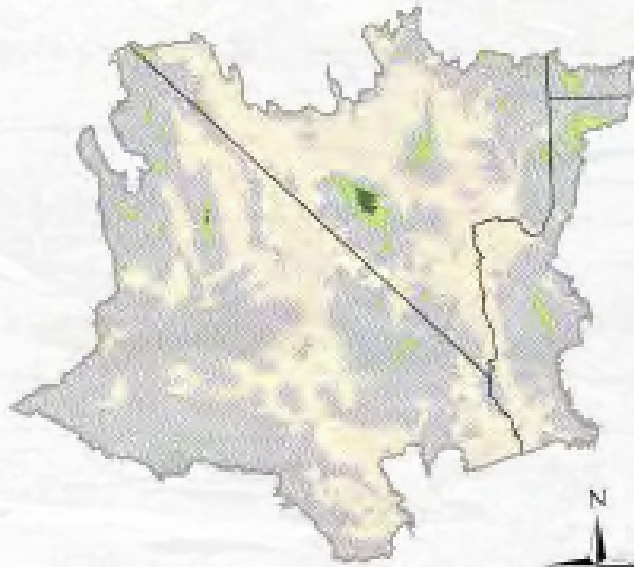
STORYTELLING:
PAGES 2 - 6



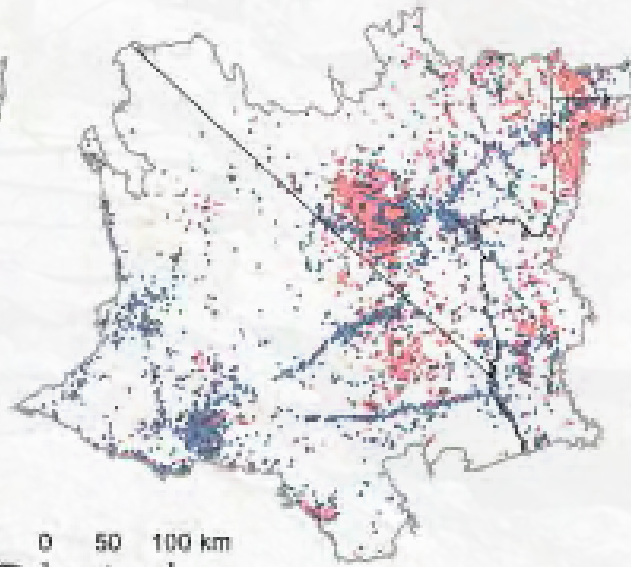
PROJECT OVERVIEW

What is your architectural position? How have you pursued this in the work? What is the "thing?" What is the "question and concern"?

Ecological Zones



Ignition Point Locations



Fires Scaled to Size



Legend

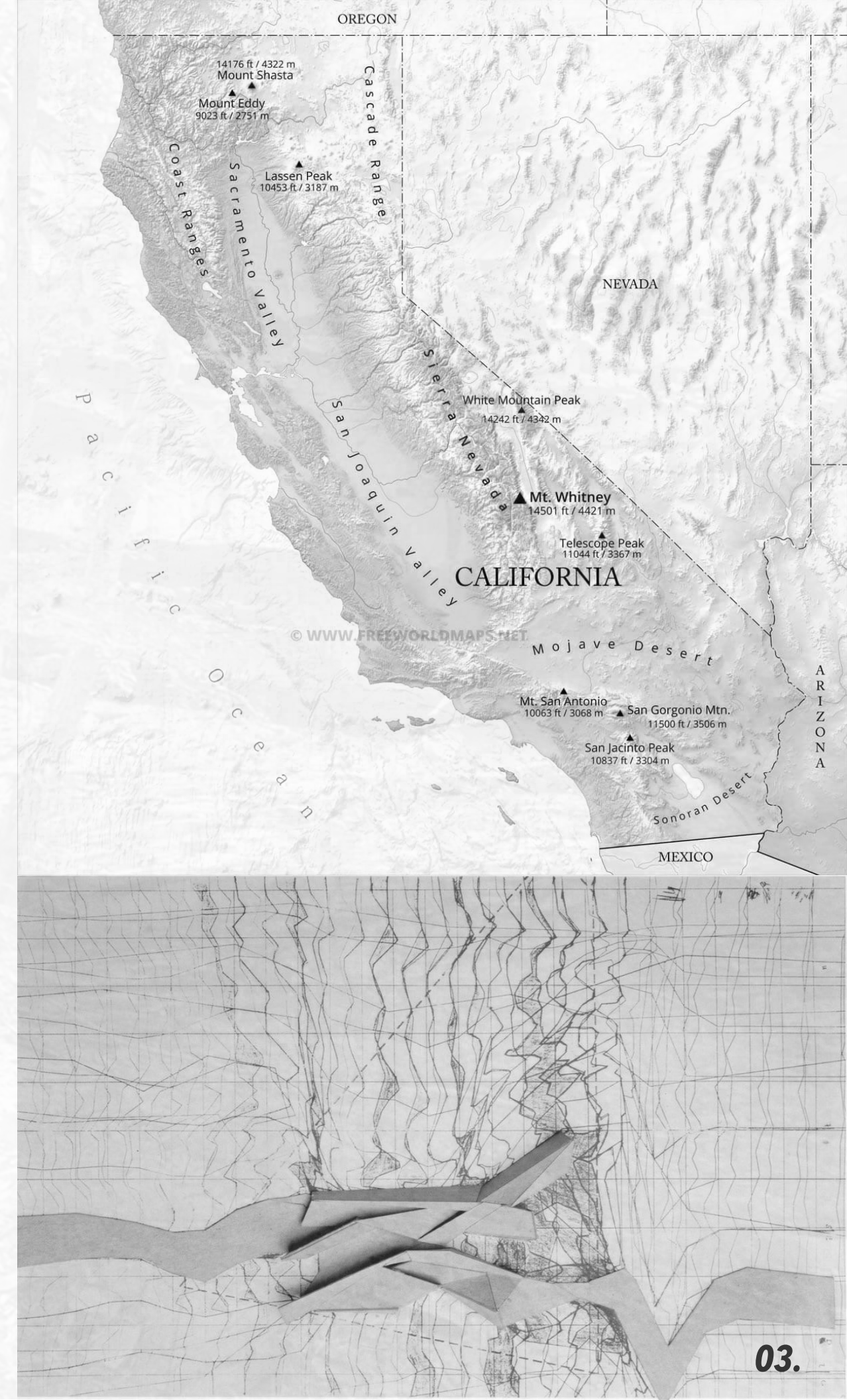
- Mojave Ecoregion Boundary
- State Boundaries
- Ecological Zones**
- Low Elevation Shrub
- Middle Elevation Shrub
- High Elevation Woodland
- Desert Montane
- Fire Cause**
- Lightning
- Human
- Unknown
- 2005 Fire Perimeters



Caverns and rock formations:

Yosemite National Park, Big Basin Redwoods State Park, and Mojave Desert

The **Mojave Desert** has limestone rocks which are able to neutralize acid rain.



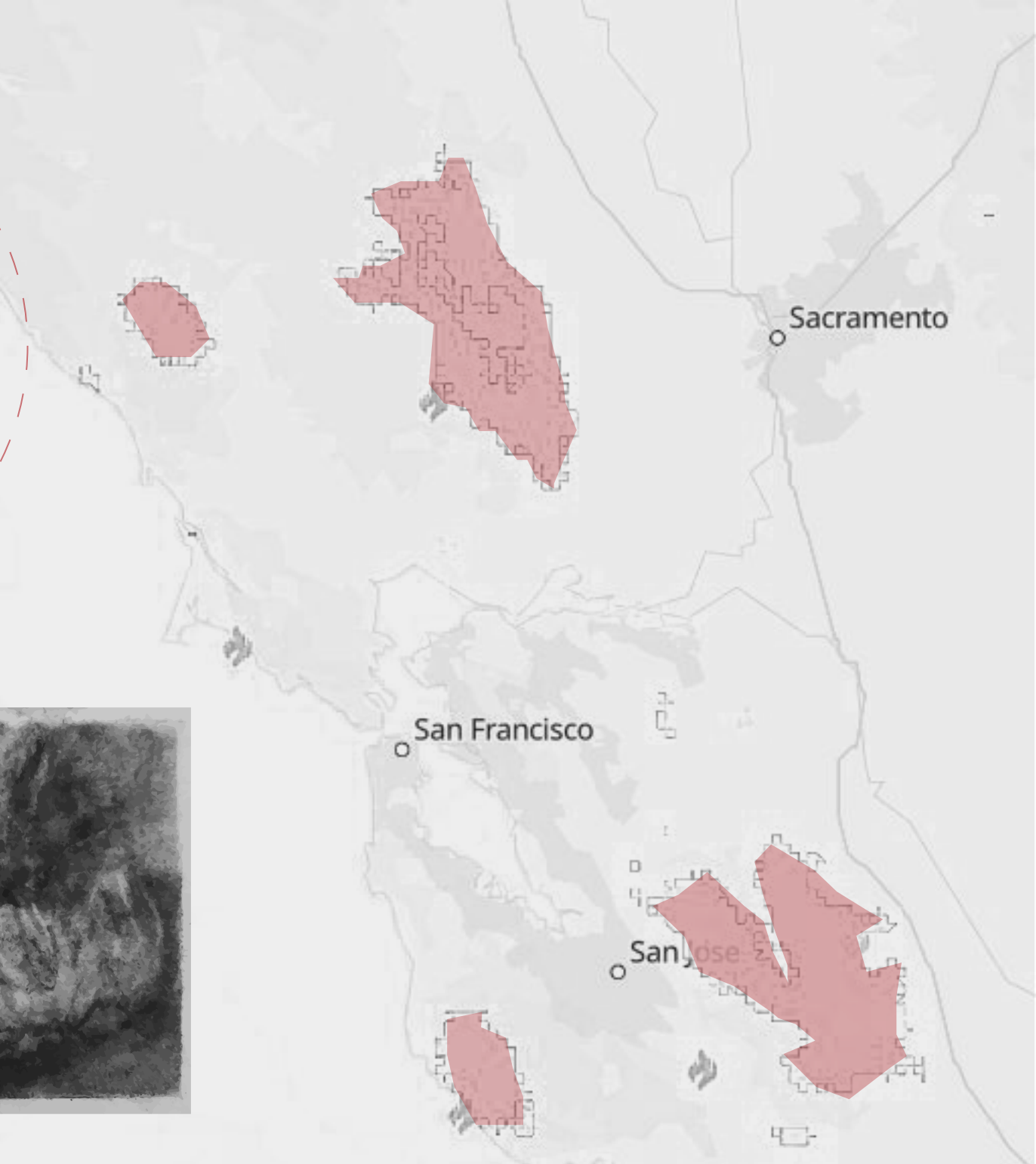
The large wildfires throughout San Diego, San Bernardino, Riverside and Los Angeles counties continue to produce large amounts of dense smoke. The smoke is generally moving to the west and into the Pacific Ocean. The smoke extends over 1000 miles off the California coast. The most dense smoke is seen near the coast just north of San Diego.

Credit: NOAA

NOAA-18 RGB- CH (3,2,1) 10/23/2007 21:08 UTC

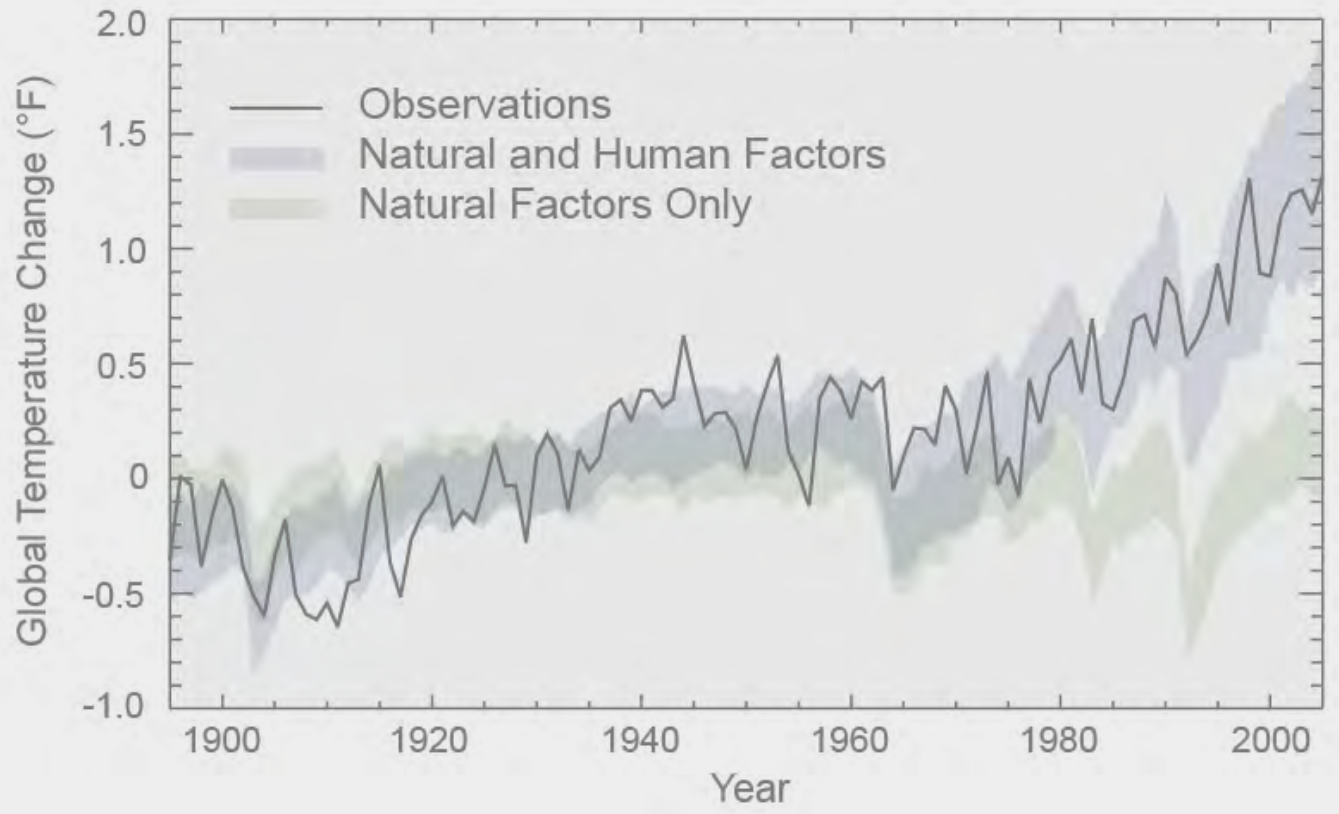


California saw more than 13,000 lightning strikes in August and more than 600 wildfires broke out state-wide. In total, more than 1.2 million acres of land have burned this summer, said Daniel Berlant, assistant deputy director with the fire protection agency known as Cal Fire.



Location:
California
Wildfires

Separating Human and Natural Influences on Climate



California wildfires threaten more than 33 million acres of forestlands every year – killing wildlife, forests and natural habitats, creating smog and polluting our waterways with dangerous runoff. But we can reduce the risk of wildfires with the help of healthy forest management – which includes forest thinning and the removal of excess “fuels” that can feed and increase the size of a fire. Drought, disease, insect infestation and excess forest fuels have combined to create what fire officials call California's new year-round wildfire season.

Habitat & Wildlife

Different animals live in different areas of the cavern depending on how well they have adapted to the living conditions. Because the entrance zone is so close to the surface, it is effected by the outside elements. Since it gets direct sunlight and rain, both plants and animals can easily live here. This area of the cavern is used mostly for shelter. The twilight zone, which may not get direct sunlight, is less hospitable.



	ENTRANCE	TWILIGHT	DARK
CEILING	mosquitoes moths	flies spiders	bats cavern crickets
WALLS	centipedes birds	salamanders millipedes	harvestment millipedes
FLOOR	rats bears	flatworms snails	beetles fish

Trogloxenes (derived from the Greek words - troglos meaning cavern and xenos meaning guest)

These are animals who normally live outside, but use a cavern for temporary shelter.

Troglophiles (derived from the Greek words - troglos meaning cavern and phileo meaning love)

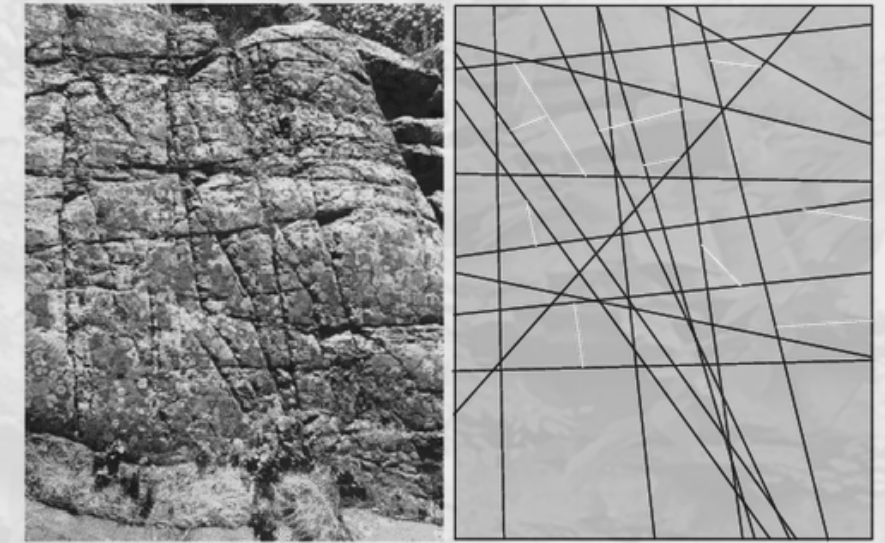
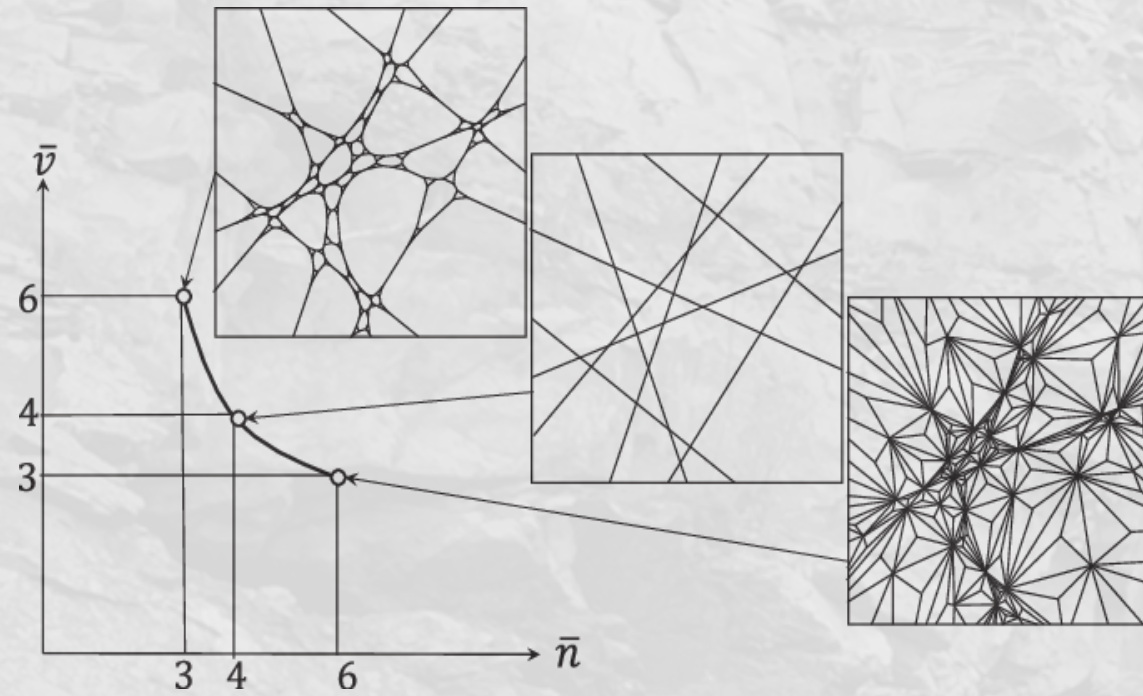
These are animals that can and often do live outside in a similar environment (cool, dark and moist) but can also live in a cavern if they choose. Some of these animals may choose to spend their whole life inside a cavern.

Troglobites (derived from the Greek words - troglos meaning cavern and bios meaning life)

These are animals that live exclusively in the dark zone of caverns. These animals evolved through the millennia from troglaphiles who first entered the cavern and either chose to stay or were trapped and managed to adapt. Through evolution these troglaphiles changed their physical attributes to better adapt to the environment. These are the animals which have little or no skin pigment, no eyes and which exhibit other special adaptations.

Rock study:
Geometry of
 rock formations

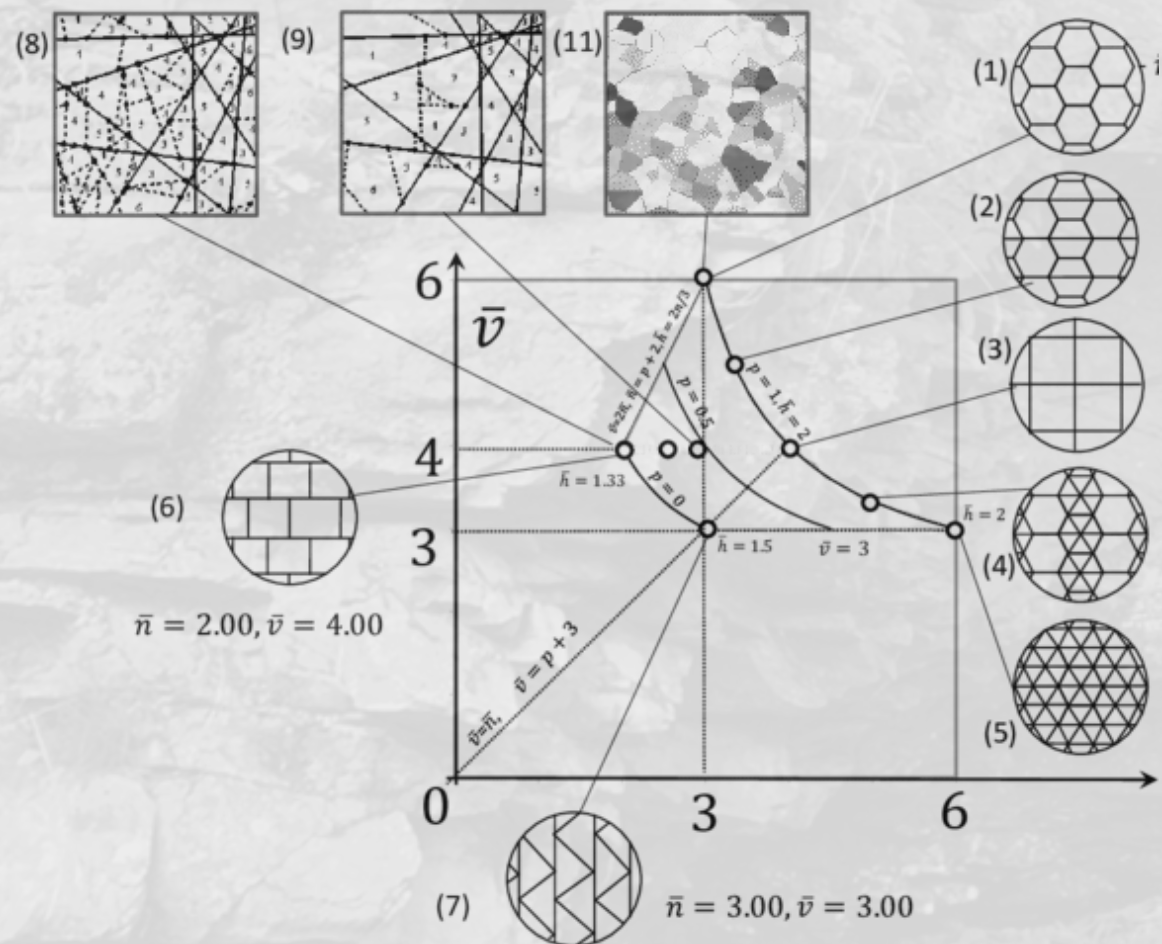
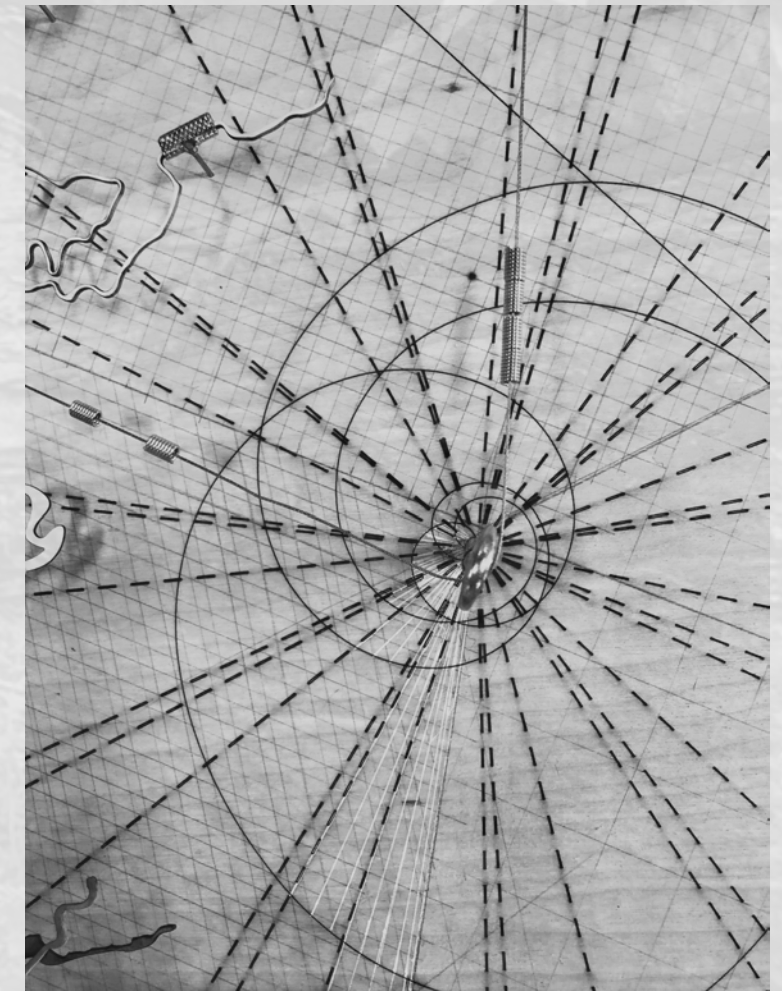
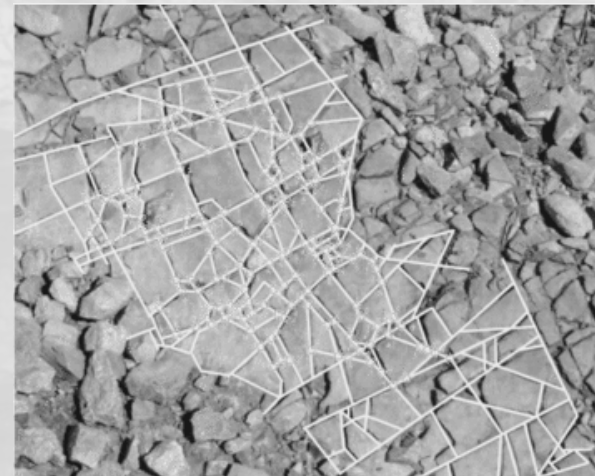
Plato envisioned Earth's building blocks as cubes, a shape rarely found in nature. Domokos created geometry trying to explain the theory.

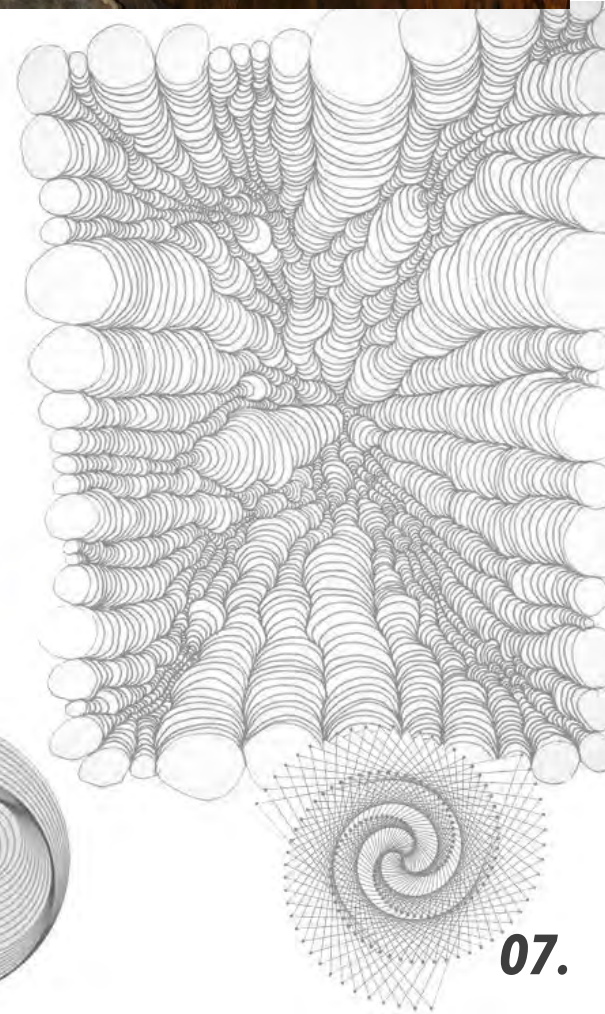
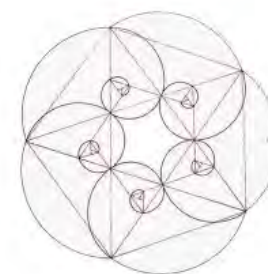


(b1)

(b2)

Study of Geometry of an oyster shell from last semesterr

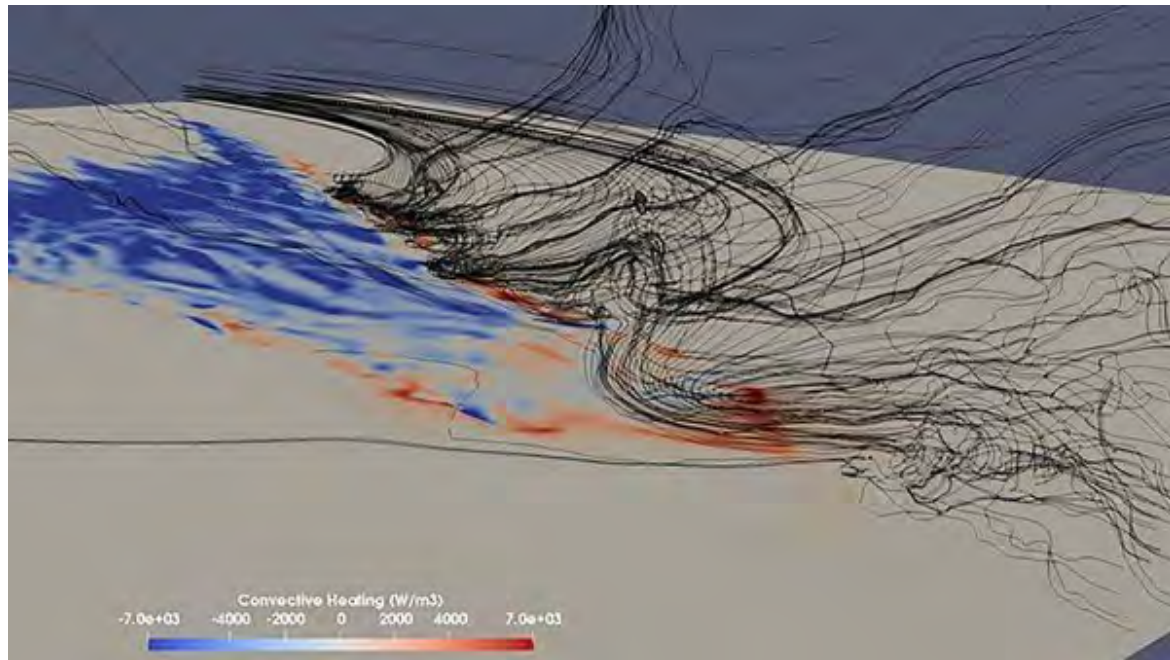




CONCEPTUAL STUDIES
Discuss/show the conceptual underpinnings of
your work? What did you study? How? Why?
What is your
concern? What do you want to reach out?

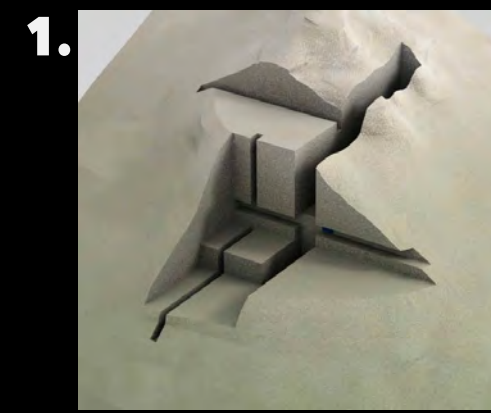
PRECEDENT RESEARCH

Discuss/show examples of projects that you studied and the lessons you learned.

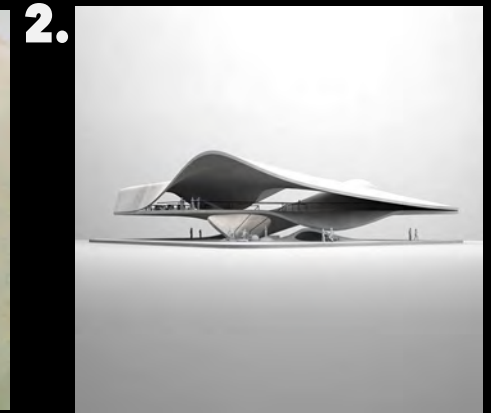


WILDFIRE FLUID DYNAMICS

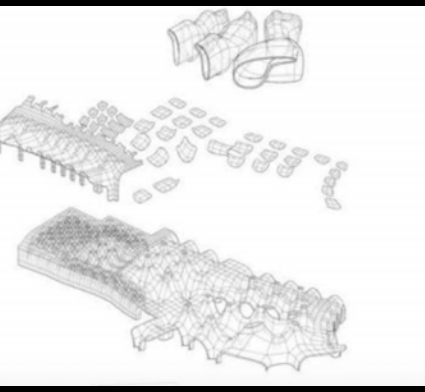
**PRECEDENT INSPO
SHELTERS/SUBTARRANEAN
ARCHITECTURE**



RISING FROM THE ASHES - Iago Novoa Pérez



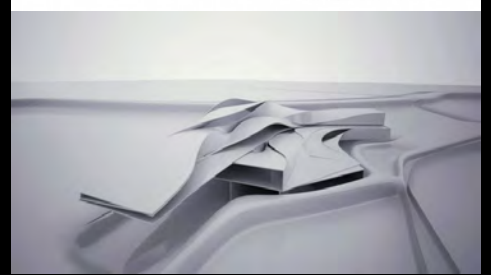
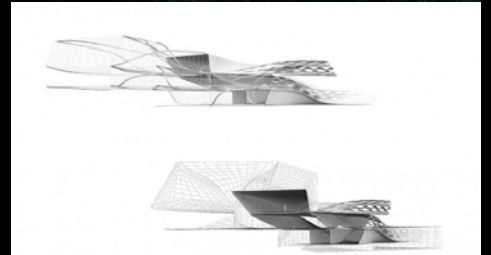
Surface delamination as part of first term topological case studies exercise



ANDREA GIORDANO - HOTEL ARGANOIL HAMMAM CAPSULE



SHELTERS: INDIVIDUAL SPACES INSIDE LARGER SPACE



Sin-Cos-villa (2010) Monir Karimi, Mi Na Bae, Romina Hafner, studiohadid - WIND STUDIES

extras



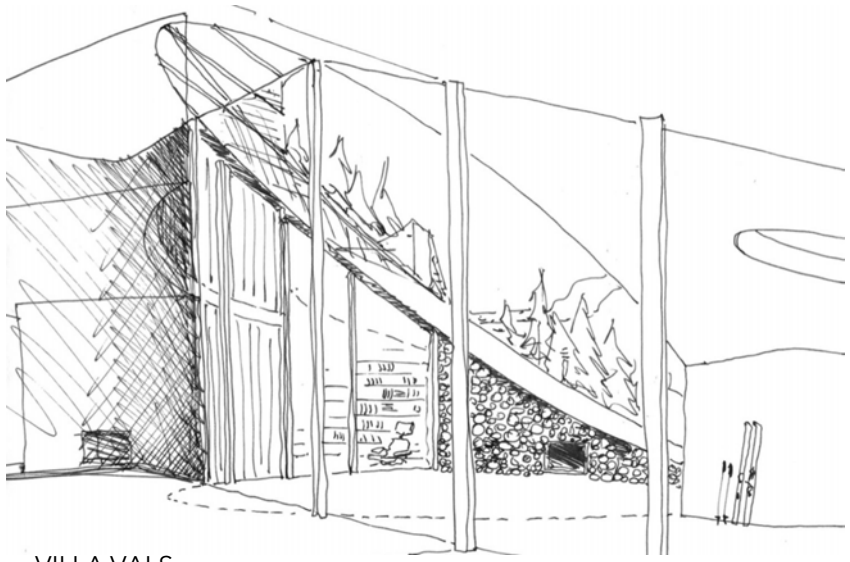
Xian Horticultural Masterplan



The Exchange / Oyster Wu Collaborative

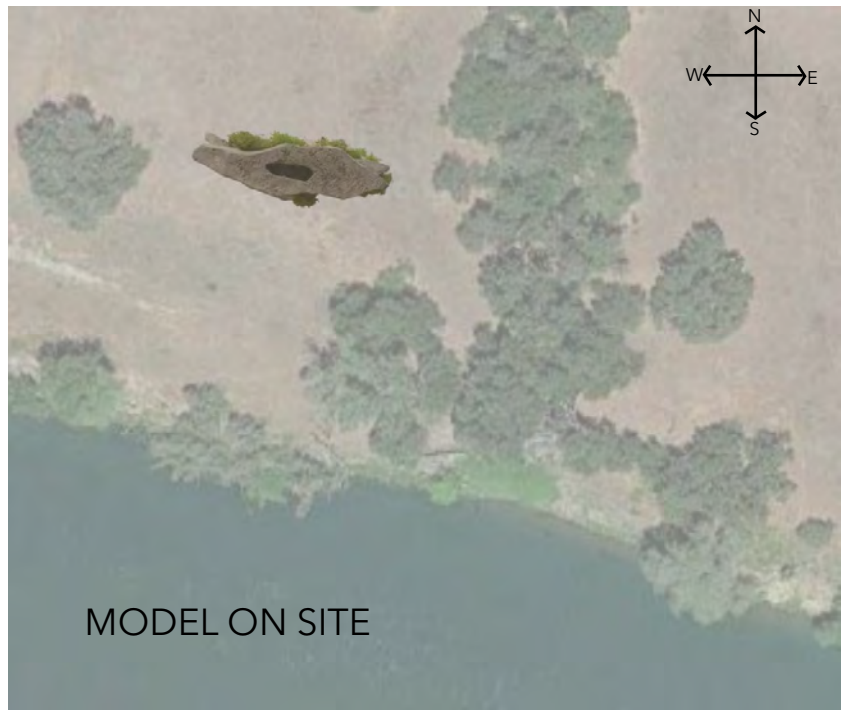


Morphosis Architects | Staircase Core - Sectional Schematic Model

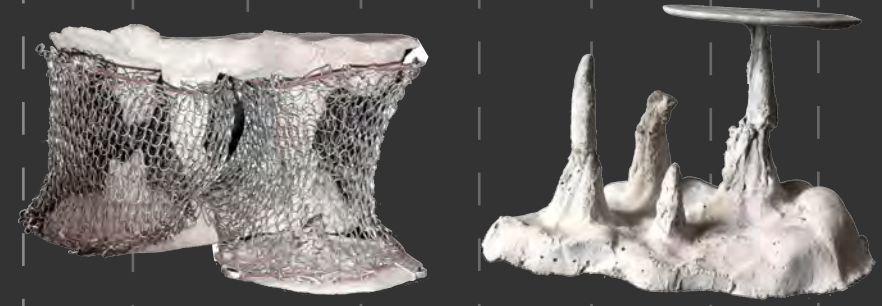
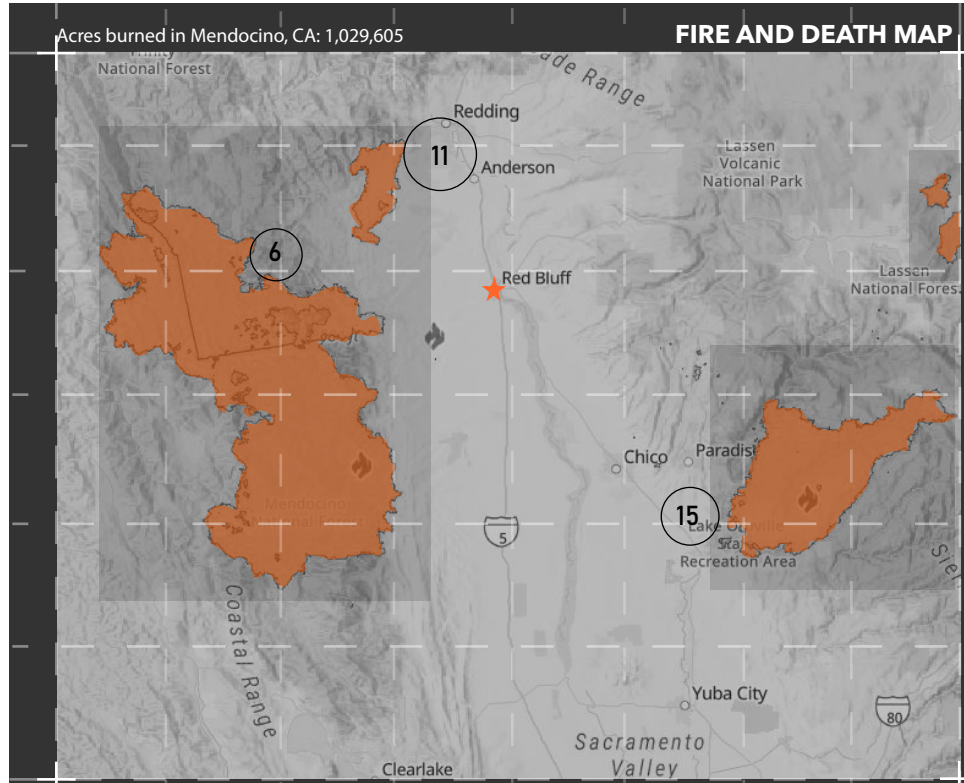
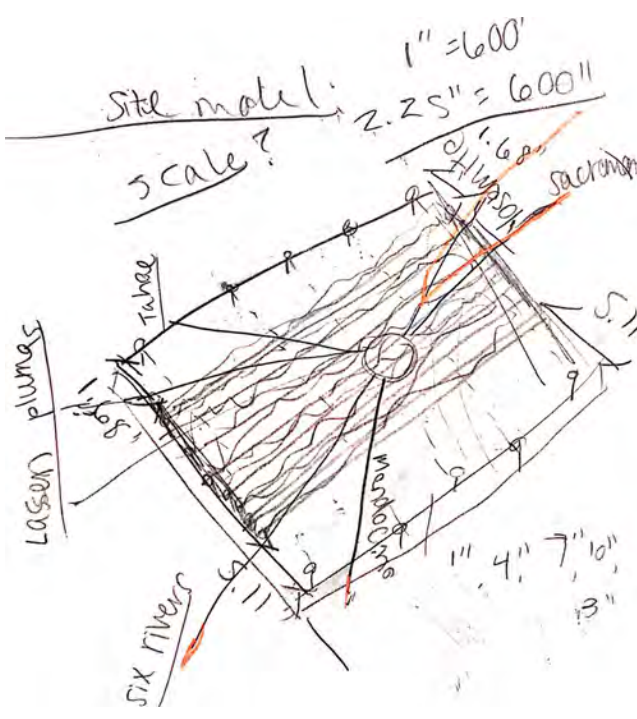
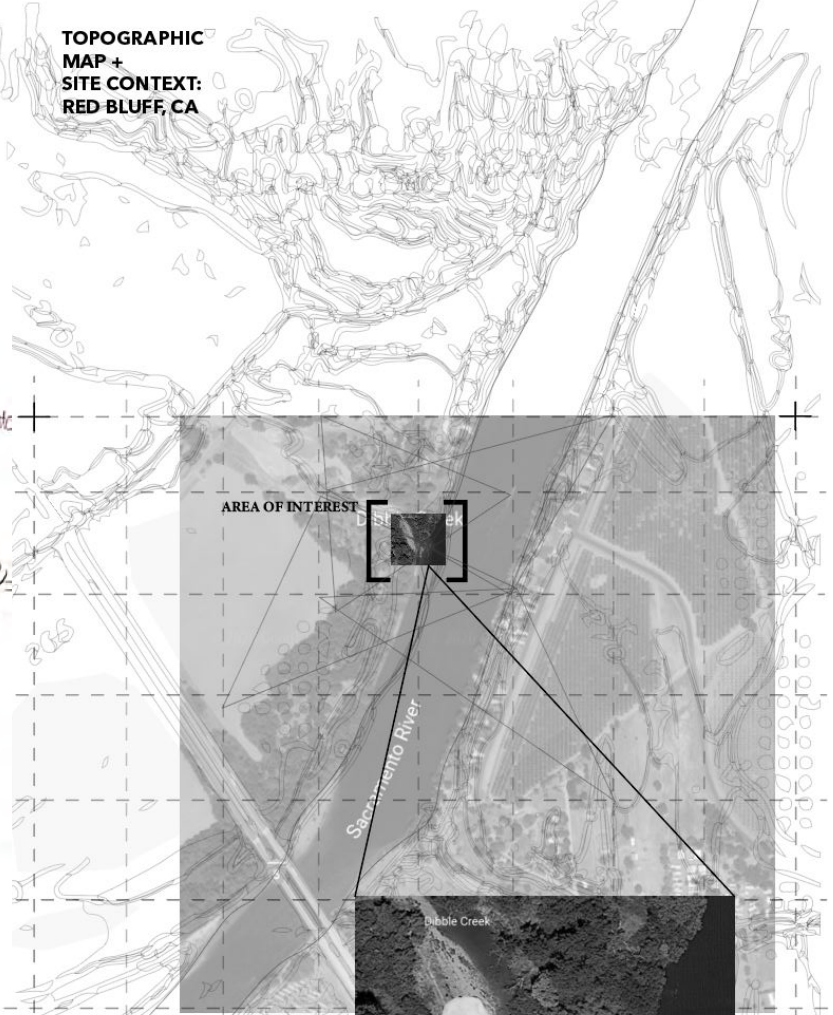


VILLA VALS

SITE PLAN/ CONTEXT
 Including surrounding building and streets, a chance to highlight important connections, views, urban contributions, urban elements, landscape, public accessibility, etc. North arrows, legends and street names.



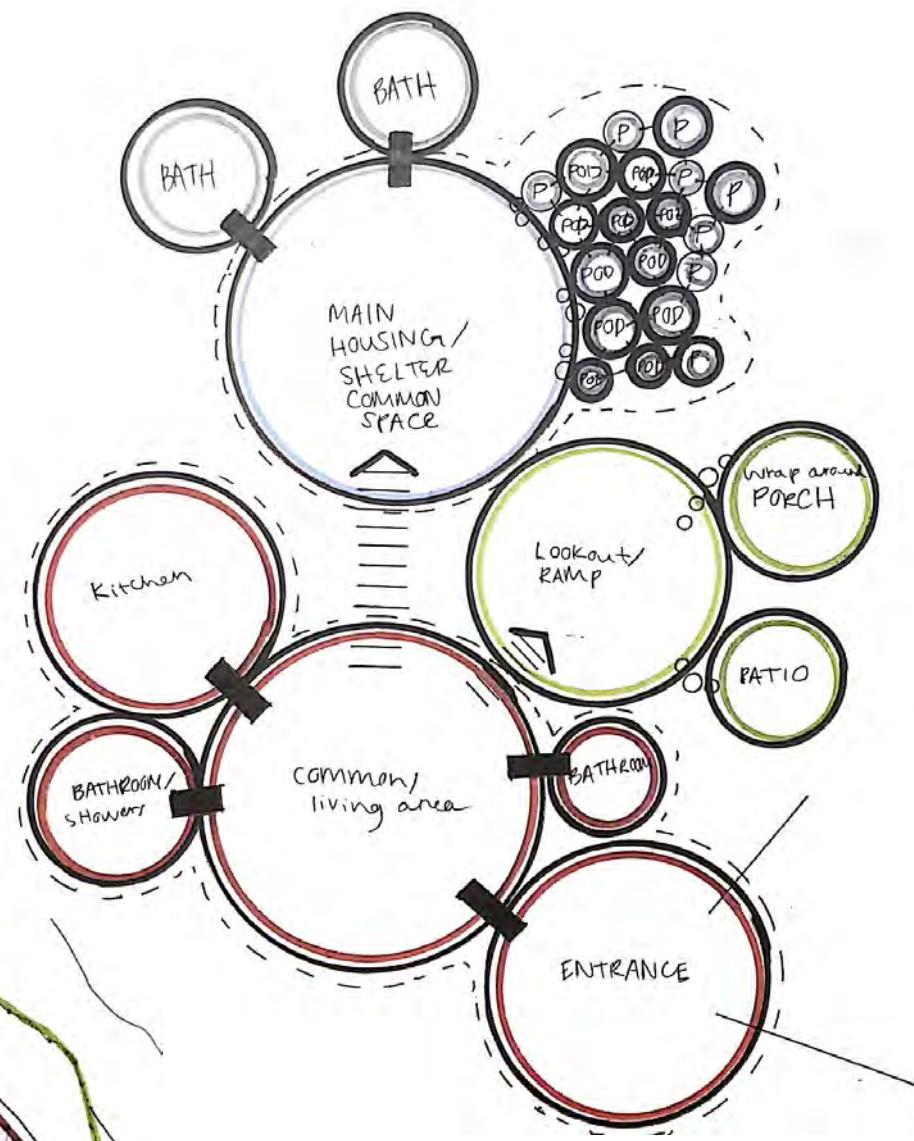
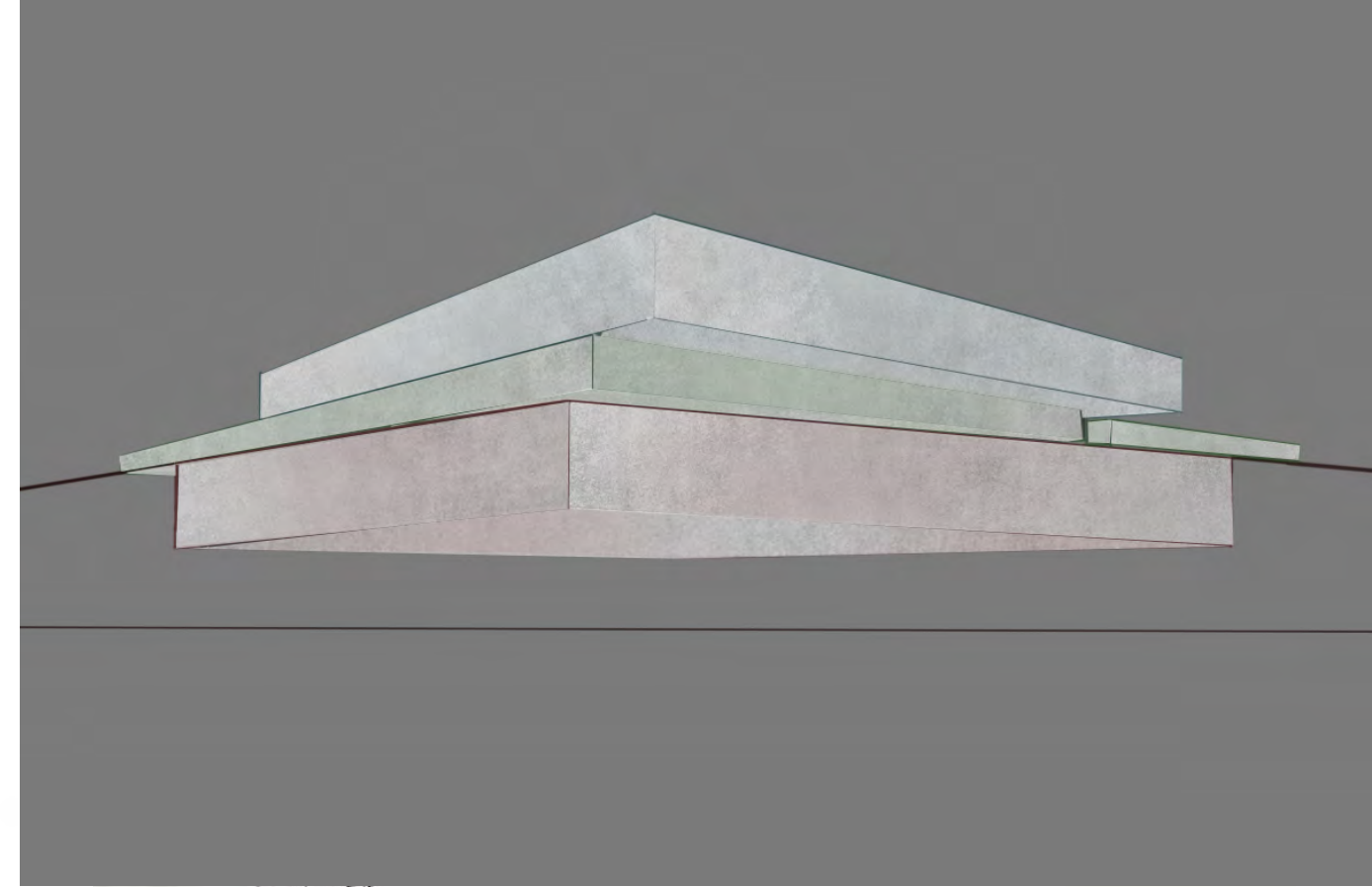
TOPOGRAPHY MODEL



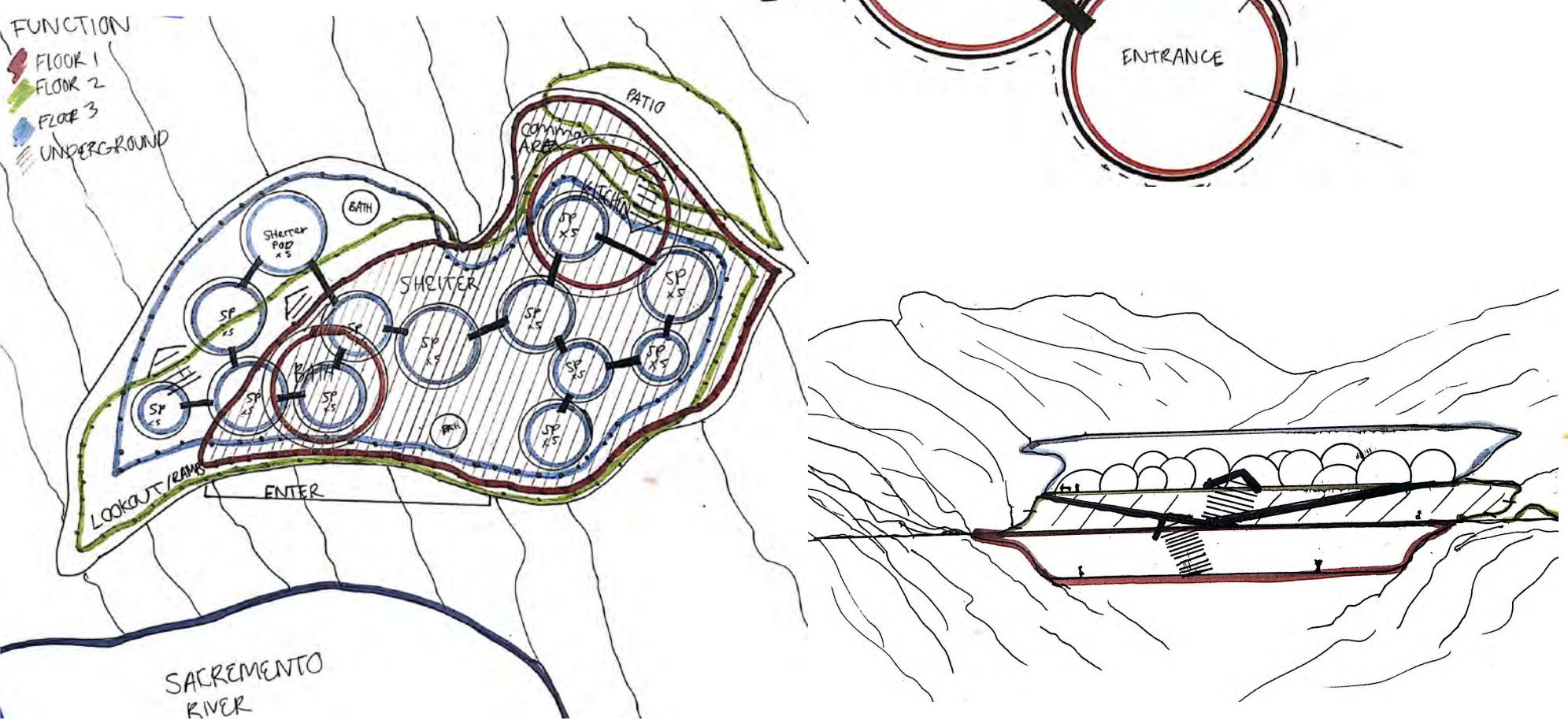
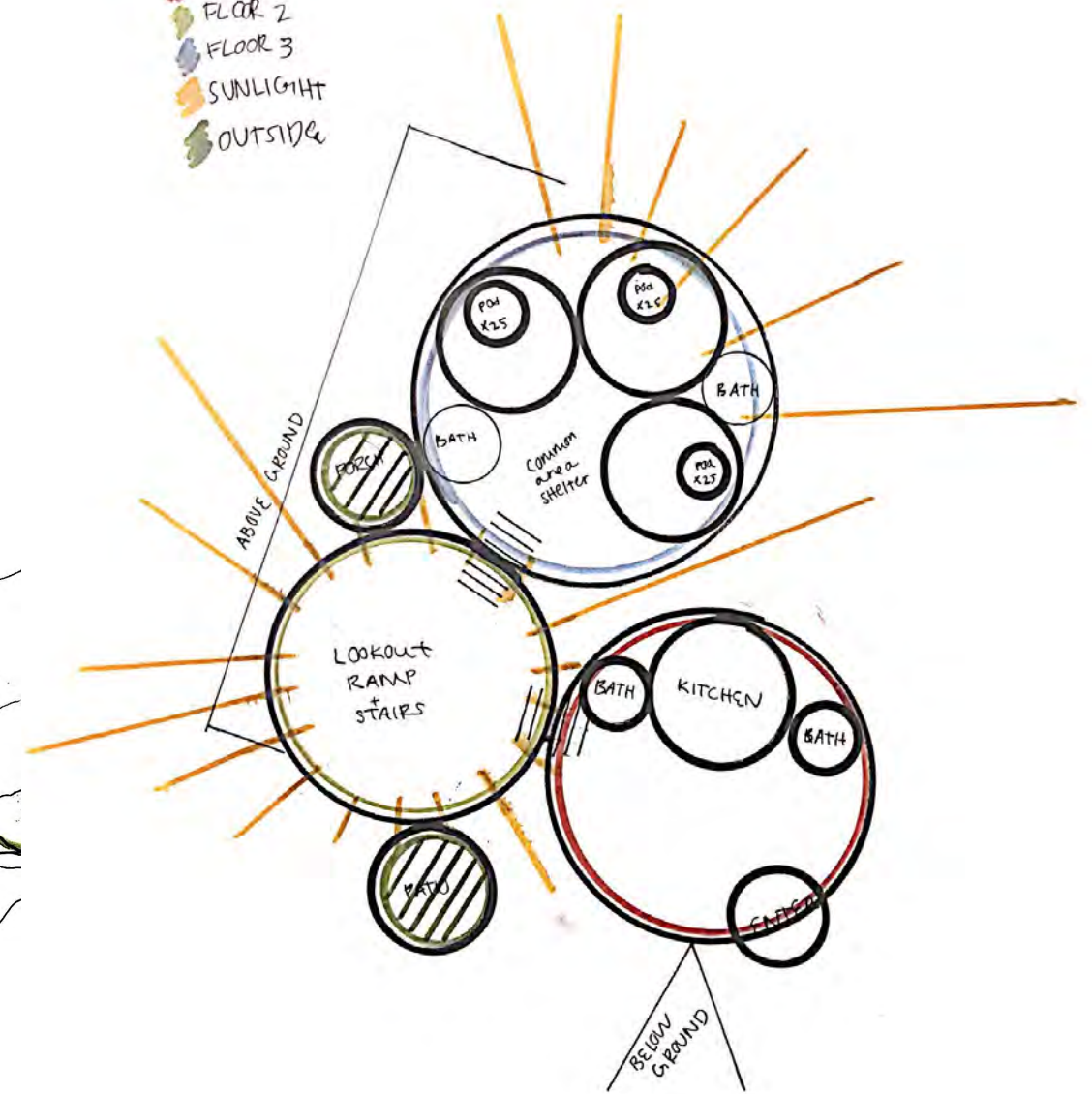
BUBBLE
 FLOOR 1
 FLOOR 2
 FLOOR 3

EXPERIENTIAL
 Use your models, sketches, graphics, diagrams, renderings, photos, to show/discuss how all of these things above come together to define the qualitative and experiential characteristics of your architecture.

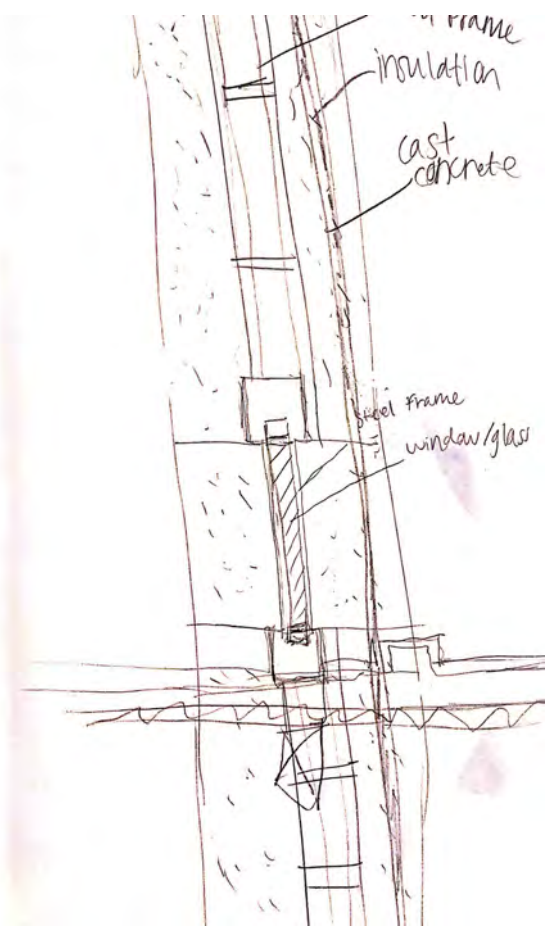
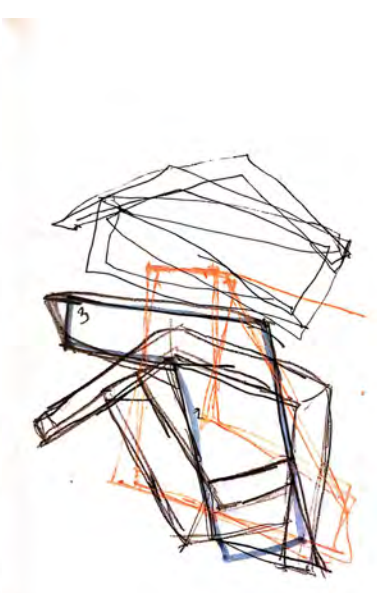
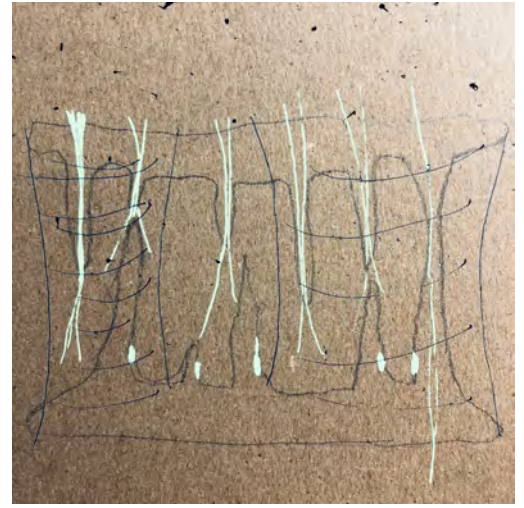
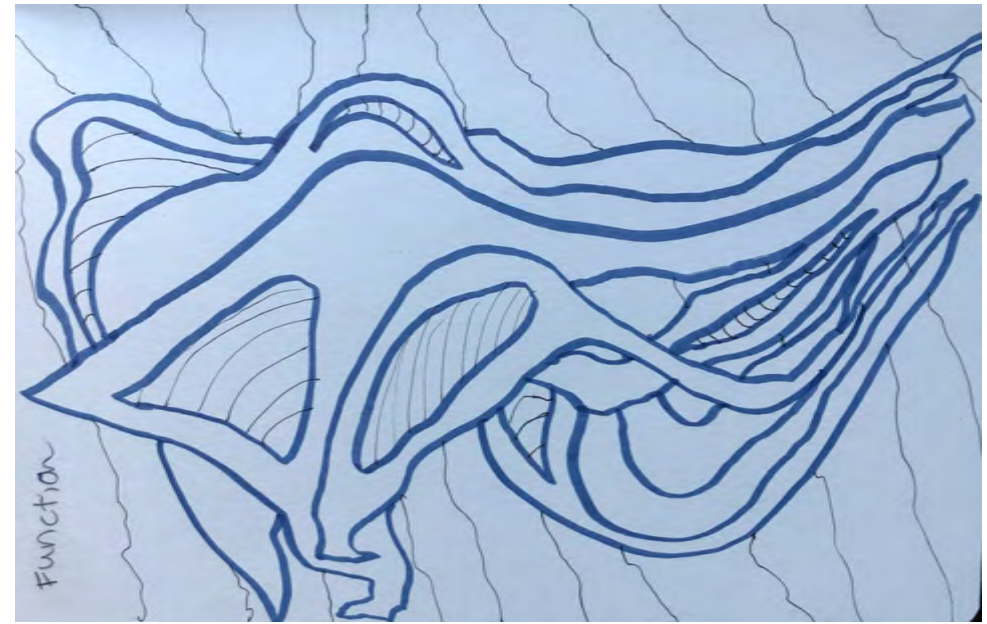
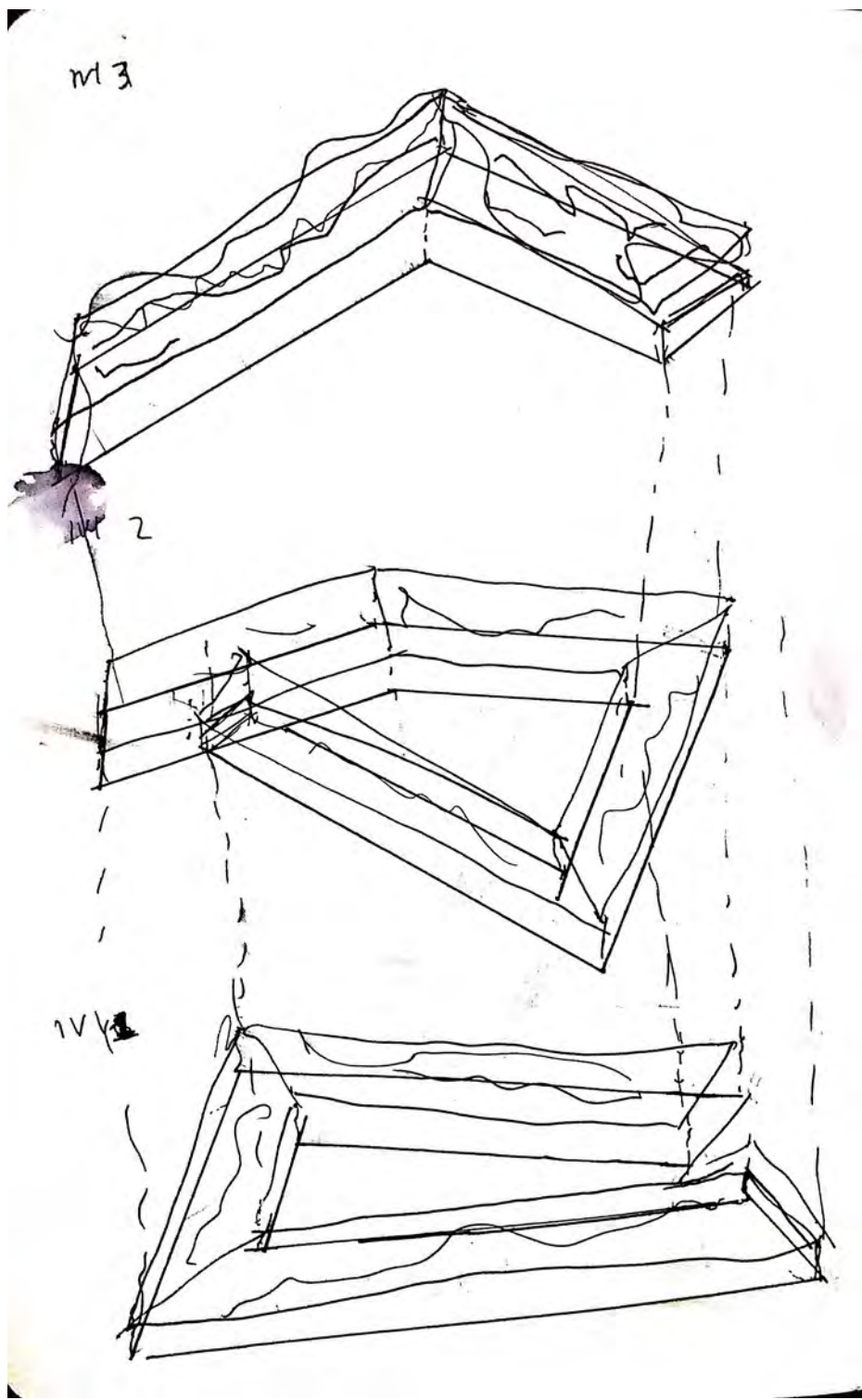
ARCHITECTURAL PROGRAM
 Discuss/illustrate your approach to organizing the program and outline the types of spaces, SF, and note any particular technical considerations you dealt with. (i.e. acoustics)



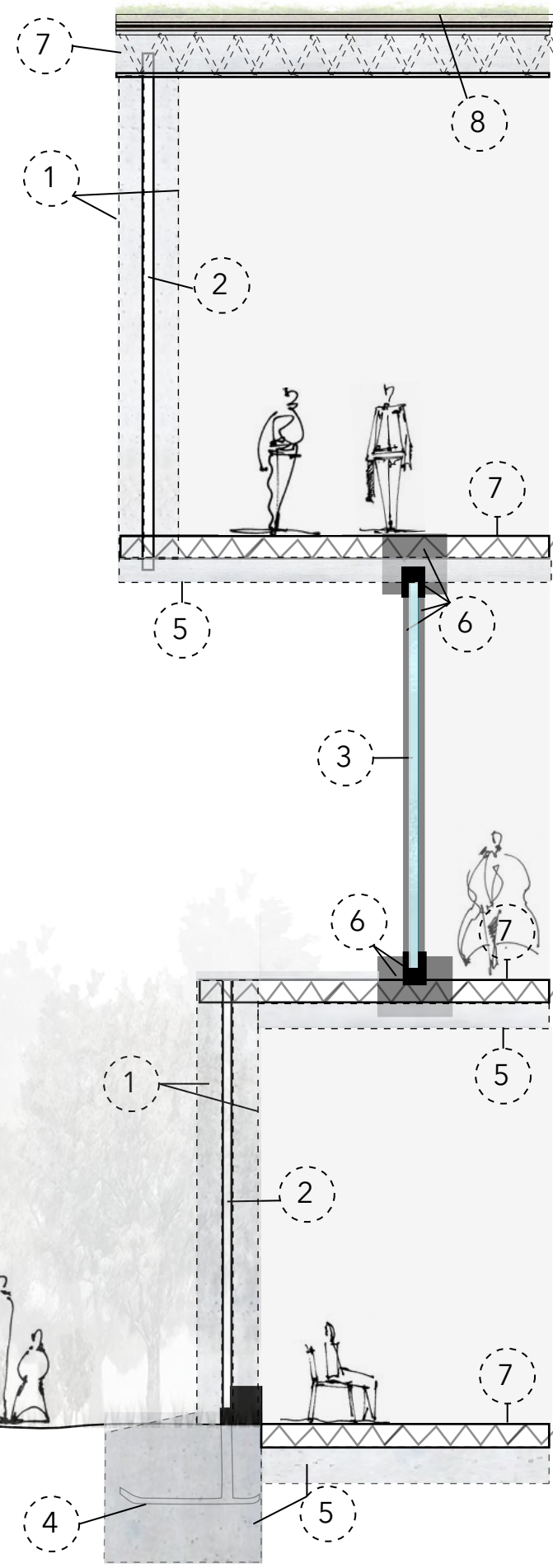
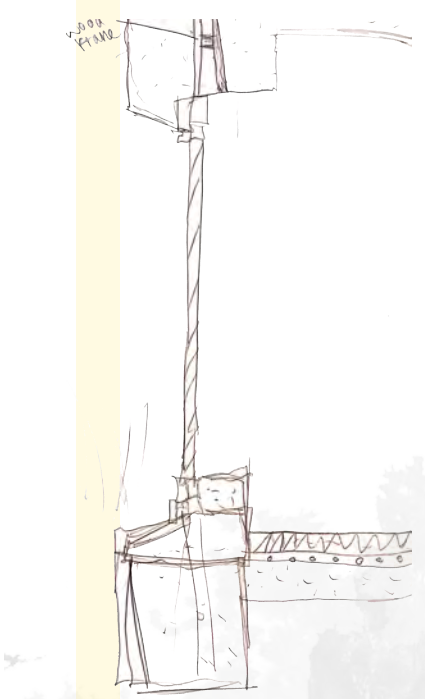
CLUSTER
 FLOOR 1
 FLOOR 2
 FLOOR 3
 SUNLIGHT
 OUTSIDE



ASSEMBLY/ DETAIL
 Using wall sections, blow-up details, axons, etc. highlight important questions of how the building is put together and how the details support your idea.

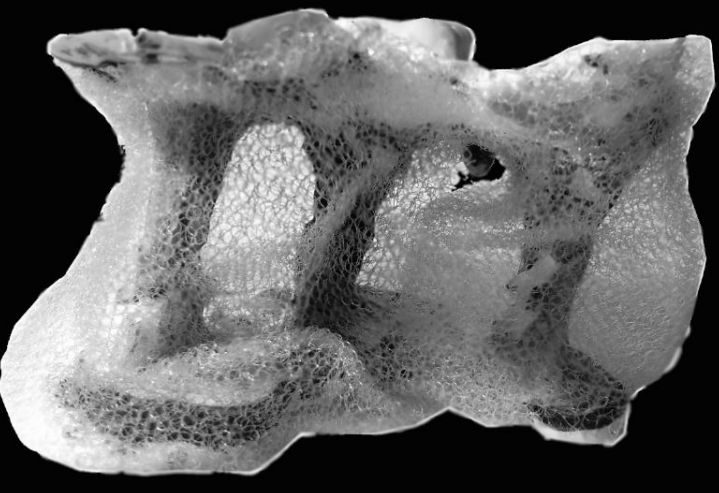
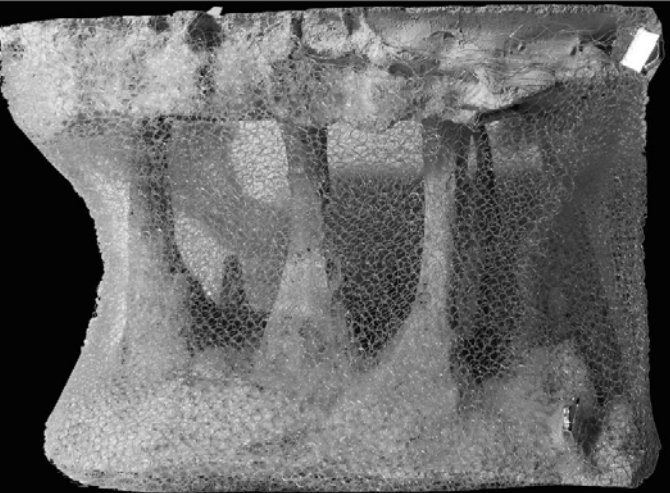


- SCALE:
1/4"
- (1) Cast concrete
 - (2) Wooden frame
 - (3) Glass window panel
 - (4) Steel beam
 - (5) Concrete floor slab
 - (6) Steel Frame
 - (7) Rigid Insulation
 - (8) Green Roof

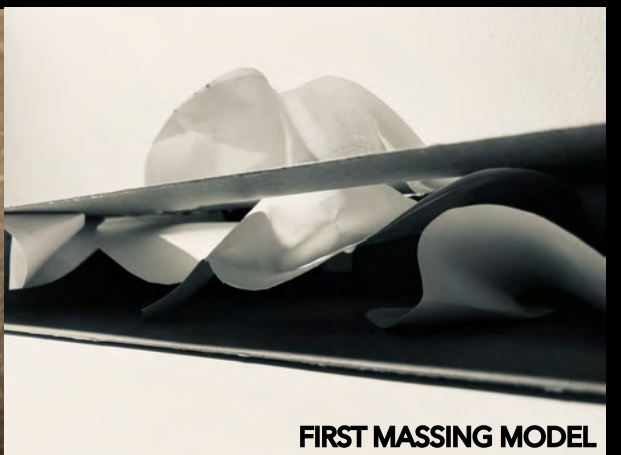


ENVIRONMENTAL/ ENERGY
 Use your plans/sections/elevations/energy models to discuss ways that you considered environmental questions. E.g. solar shading, ventilation, daylighting, etc.

MODELS
Latest version and updated model(s)



CONCRETE



FIRST MASSING MODEL

MODELS
Latest version and updated model(s)



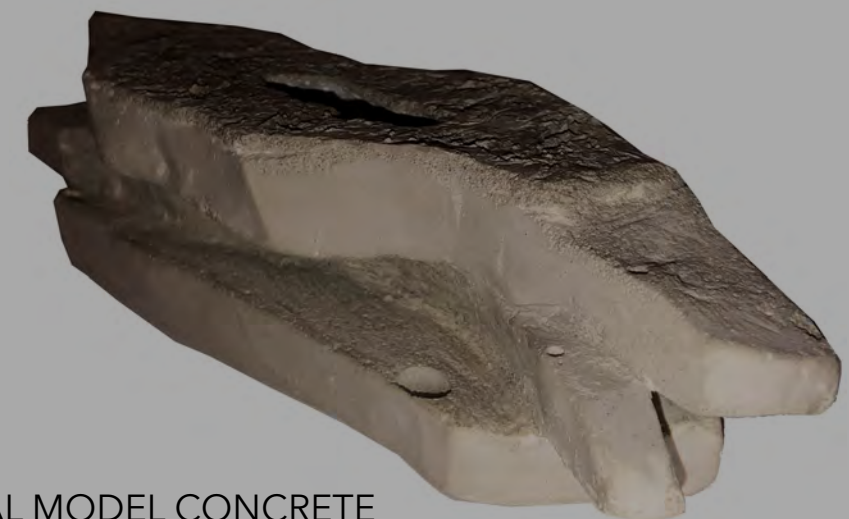
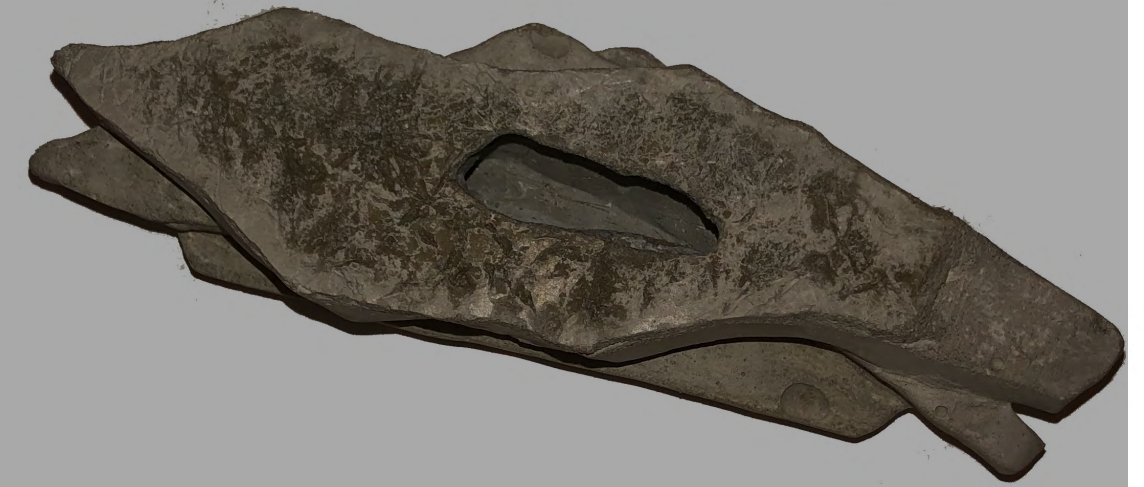
MASSING MODEL



FIRST PASS AT CONCRETE FINAL MODEL



CLAY MOLD FOR CONCRETE MODEL



FINAL MODEL CONCRETE

CITATIONS

American Institute of Physics, Science X. "Fluid Dynamics Provides Insight into Wildfire Behavior." Phys.org. Phys.org, November 13, 2019. <https://phys.org/news/2019-11-fluid-dynamics-insight-wildfire-behavior.html>.

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bloch, Isaïe. "Nexttoparchitects Unit6 Autonomous Non Standard Space. Surface Delamination as Part of First Term Topological Case Studies Exercise. Work by: Unit6 Student Michael On @mik3yon Instructors: Isaïe Bloch @Eragatory & Jakub Klaska @Jaaqub : @uel_architecture Unit6 Autonomous Non Standard Space. Surface Delamination as Part of First Term Topological Case Studies Exercise. ." nexttoparchitects, December 21, 2017. <https://nexttoparchitects.org/post/168758930371/unit6-autonomous-non-standard-space-surface>.

Galkin, Eduard. "Architectural Sketches Ideas." Behance, September 14, 2015. <https://www.behance.net/gallery/29503419/Architectural-sketches-ideas>.

Giordano, Andrea. "The Bartlett Book 2013." Issuu, November 16, 2014. https://issuu.com/bartlettarchucl/docs/bb_2013_issuu/202.

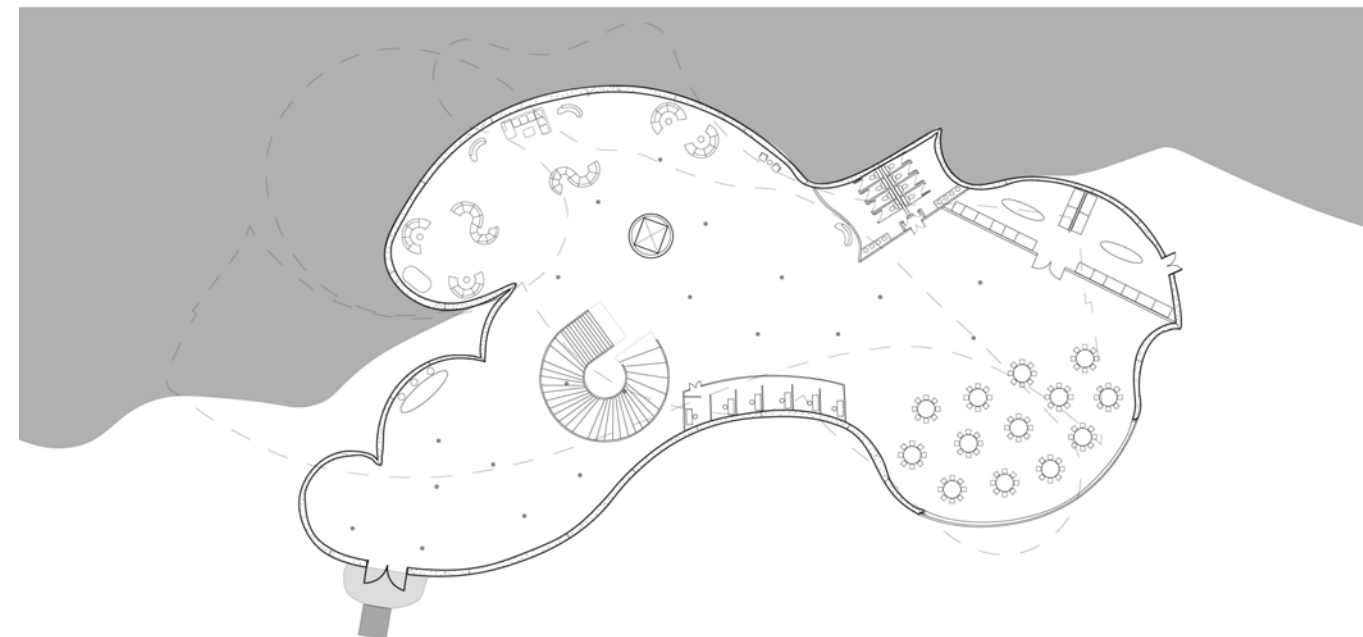
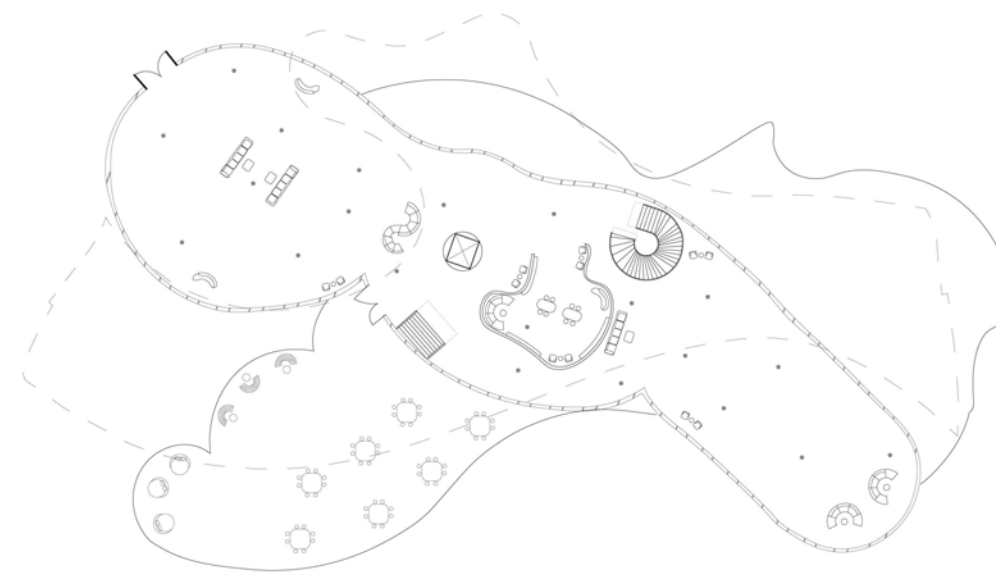
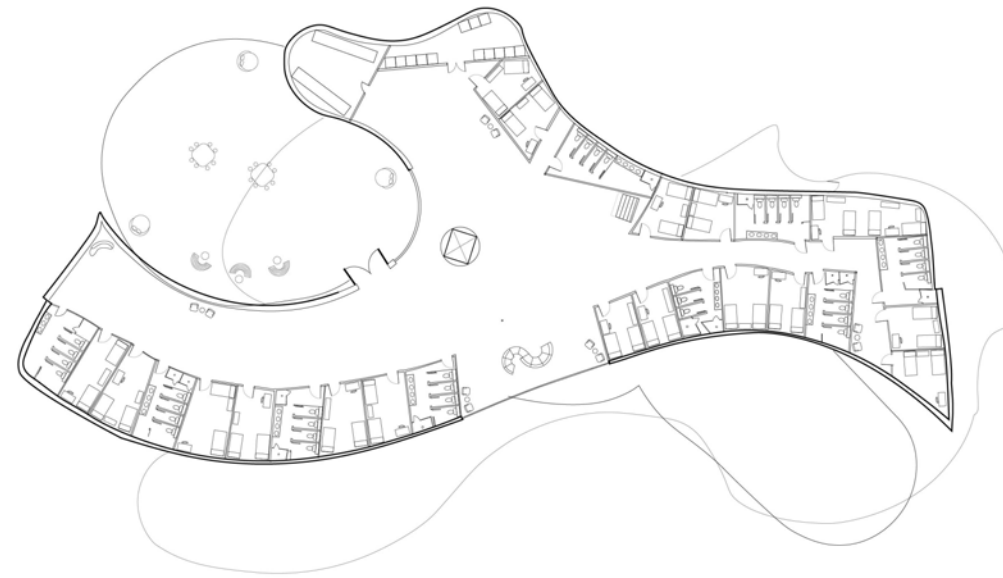
Nexttoparchitects, hafez. "Morphosis Architects | Staircase Core - Sectional Schematic Model." nexttoparchitects, June 10, 2015. <https://nexttoparchitects.org/post/121169288191/by-hafez-nexttoparchitects-more-love-from-my>.

Pérez, Iago Nóvoa. "Architecture-Sketchbook, a Pool of Architecture Drawings, Models and Ideas - #Model Source: Link." archisketchbook, December 11, 2015. <https://archisketchbook.com/post/134979555624/model-source-link>.

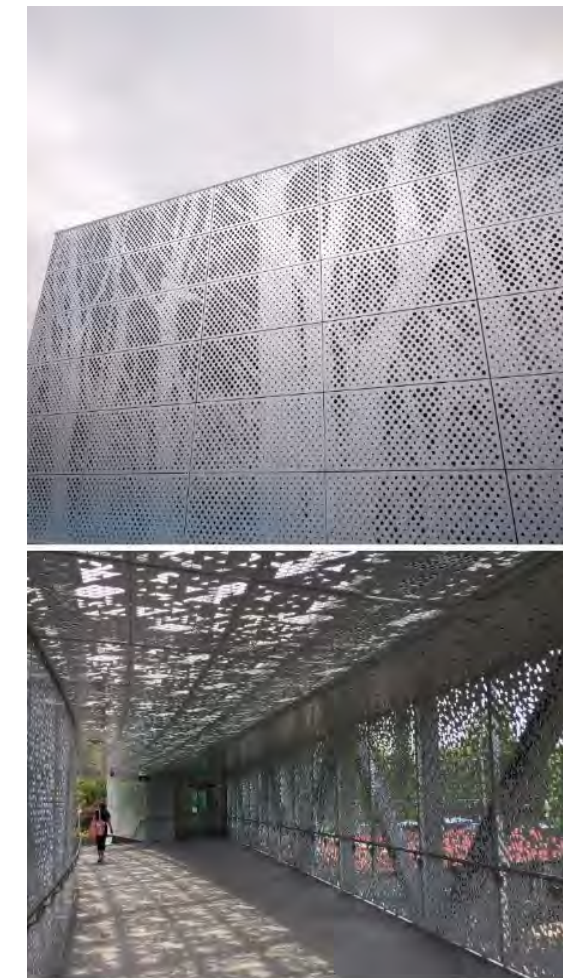
Soroko, Oleg. "Latency of Dynamics." Behance, March 1, 2013. <https://www.behance.net/gallery/23102751/Latency-of-dynamics>.

Emma Edwards Final Booklet Studio 402

PRE-MIDTERM SPRING SEM



Precedent
The Cloud of Luster Chapel is a wedding ceremony hall located in Himeji, Hyōgo Prefecture, Japan.



Material Precedents

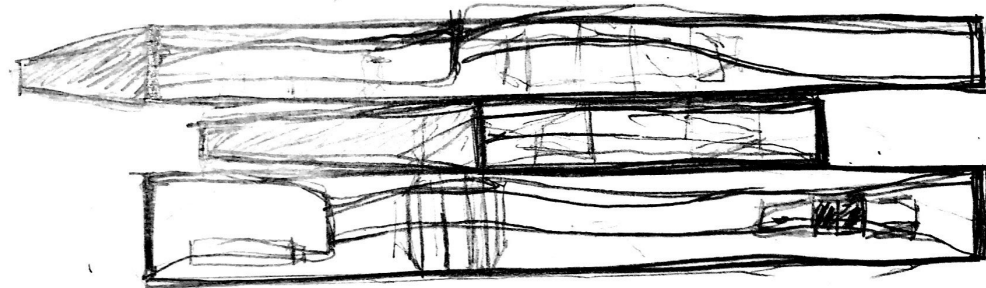


Longitudinal Section Perspective



Vertical Section Perspective

Section perspective





Front Elevation



Left Elevation



Right Elevation

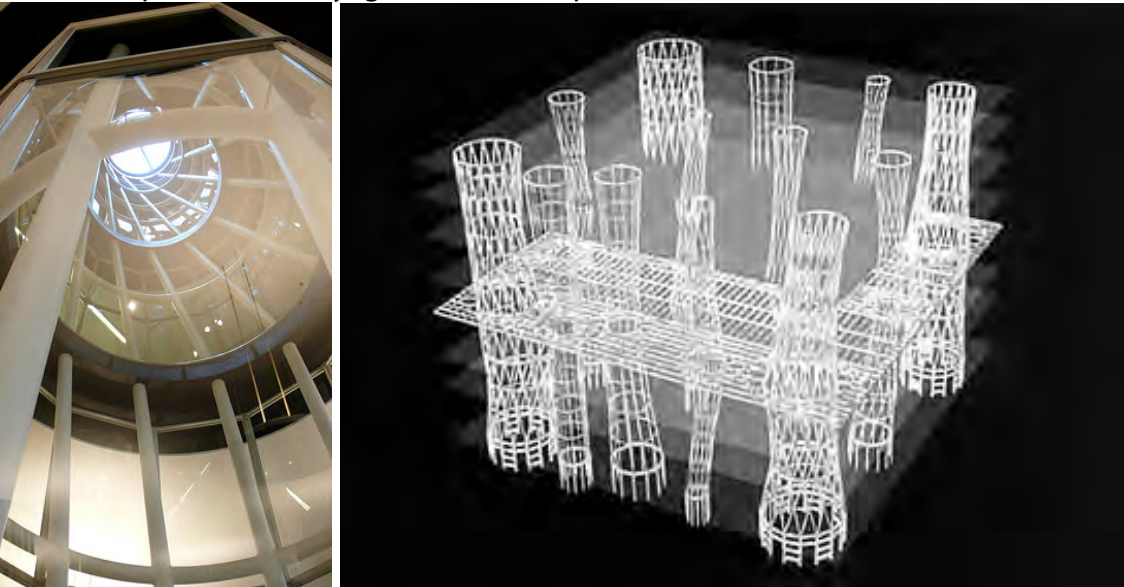


Back Elevation

Site Placement
Red Bluff, CA; along Sacramento River



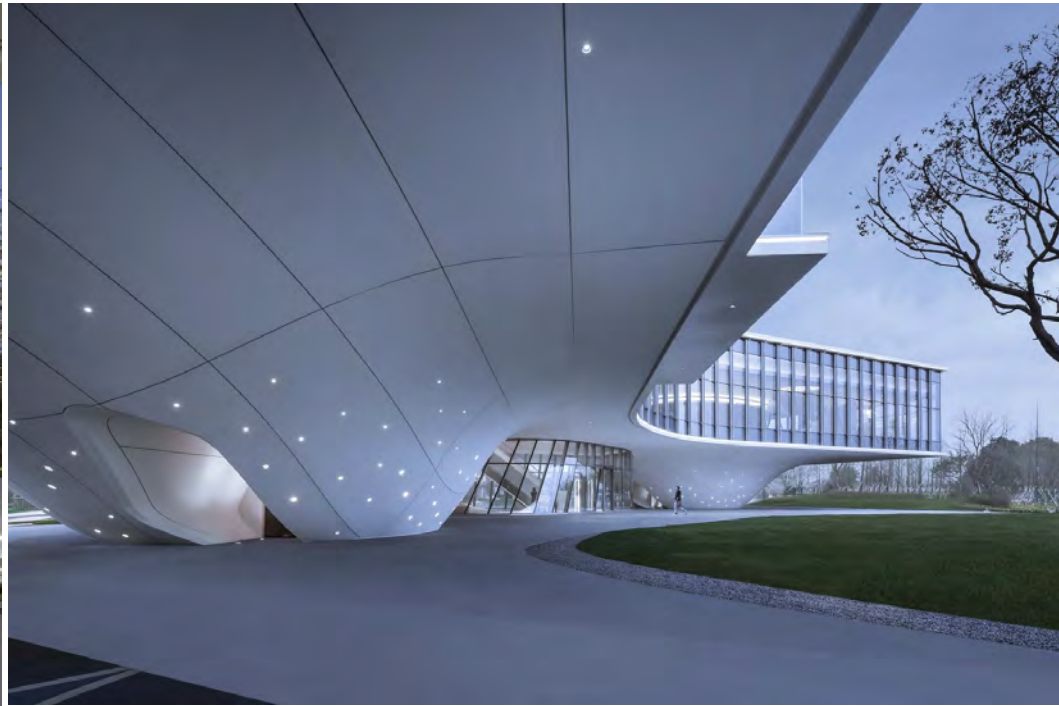
Toyo Ito & Associates, Architects
Mediatheque, Sendai, Miyagi Prefecture, Japan

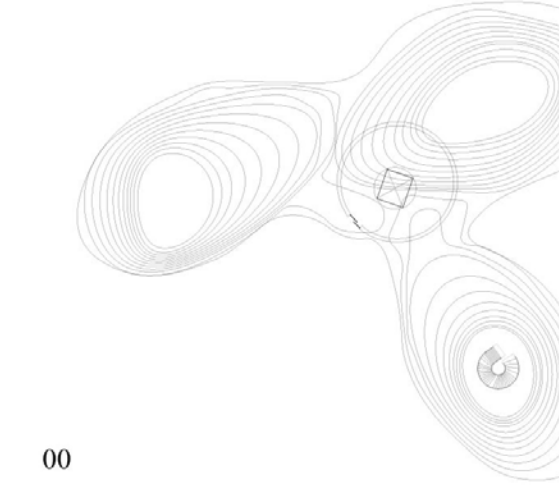
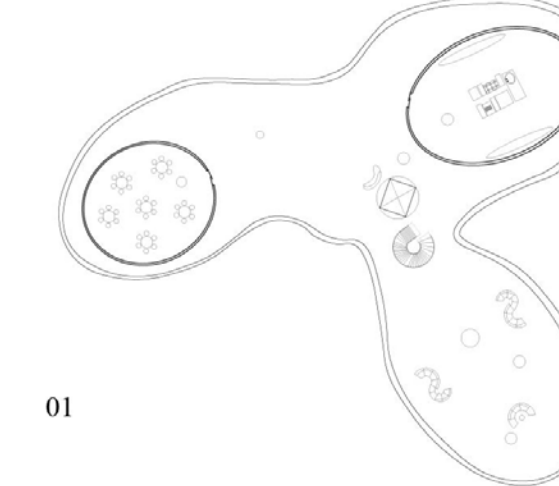
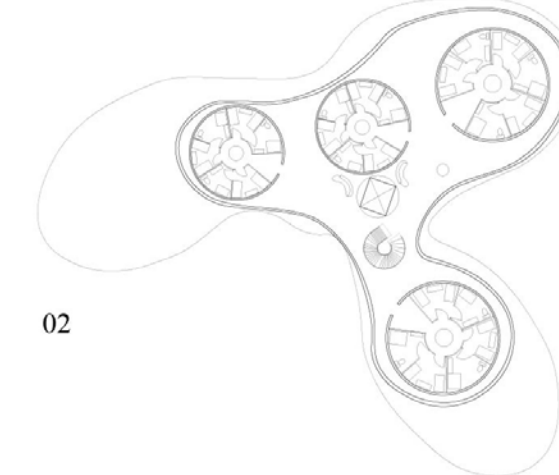
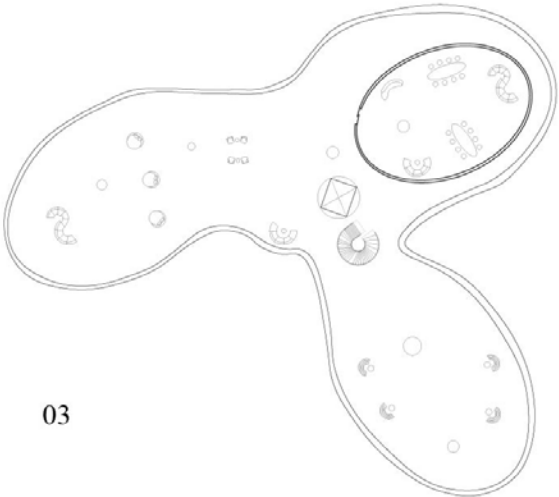


grace farms / sanaa

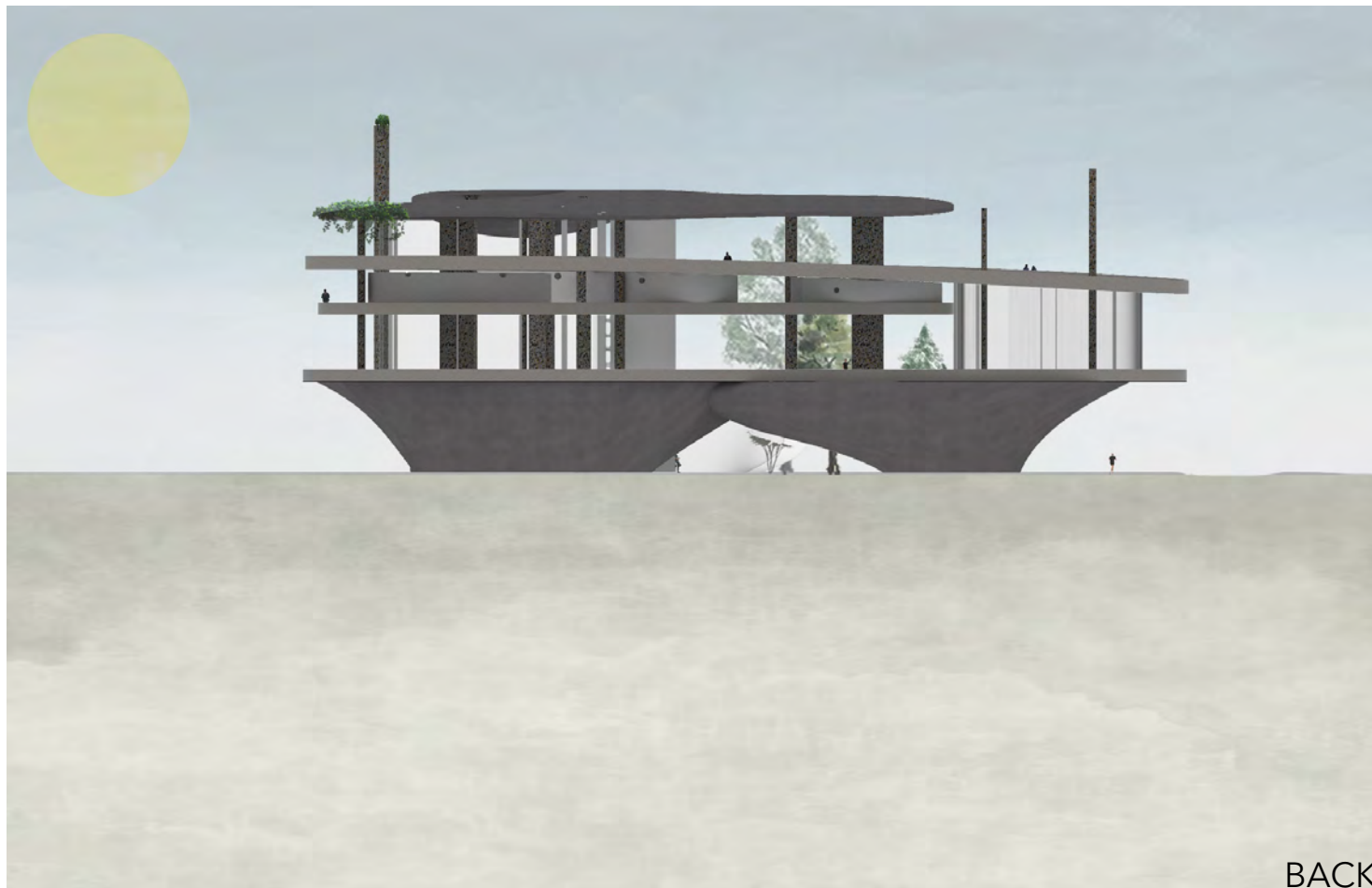
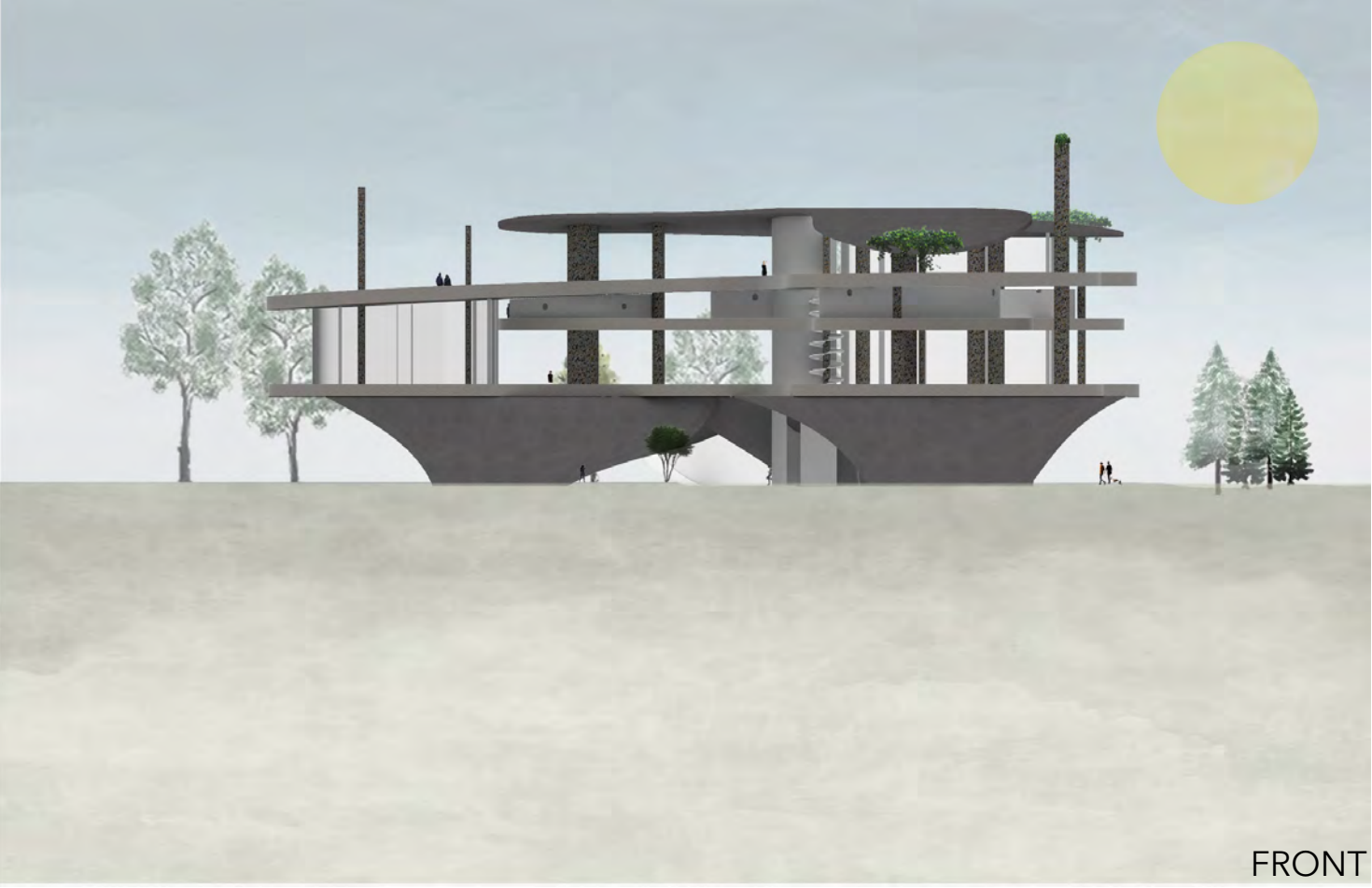


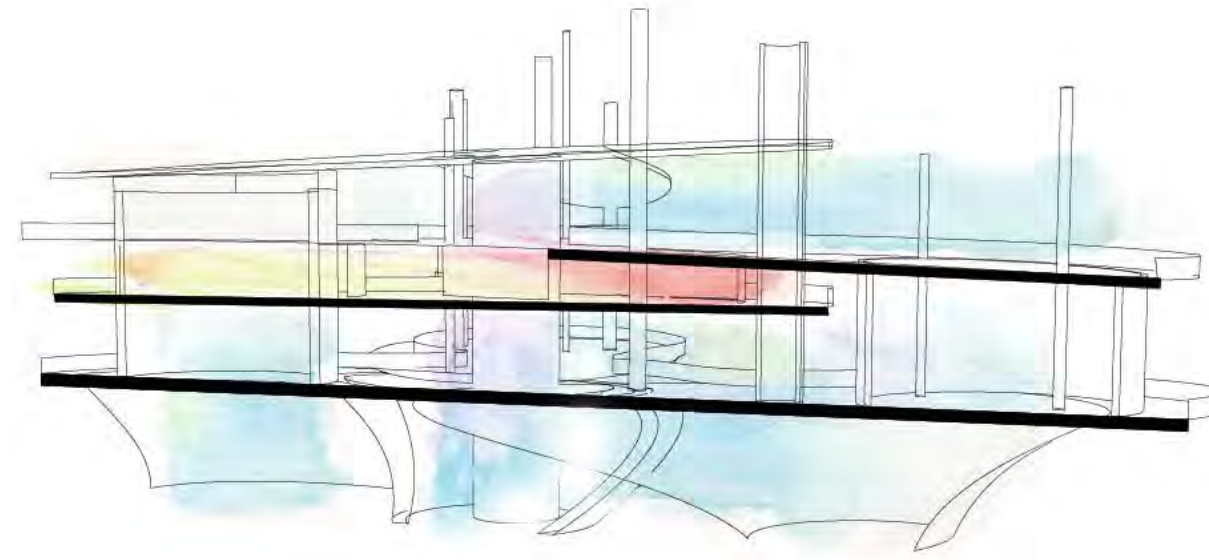
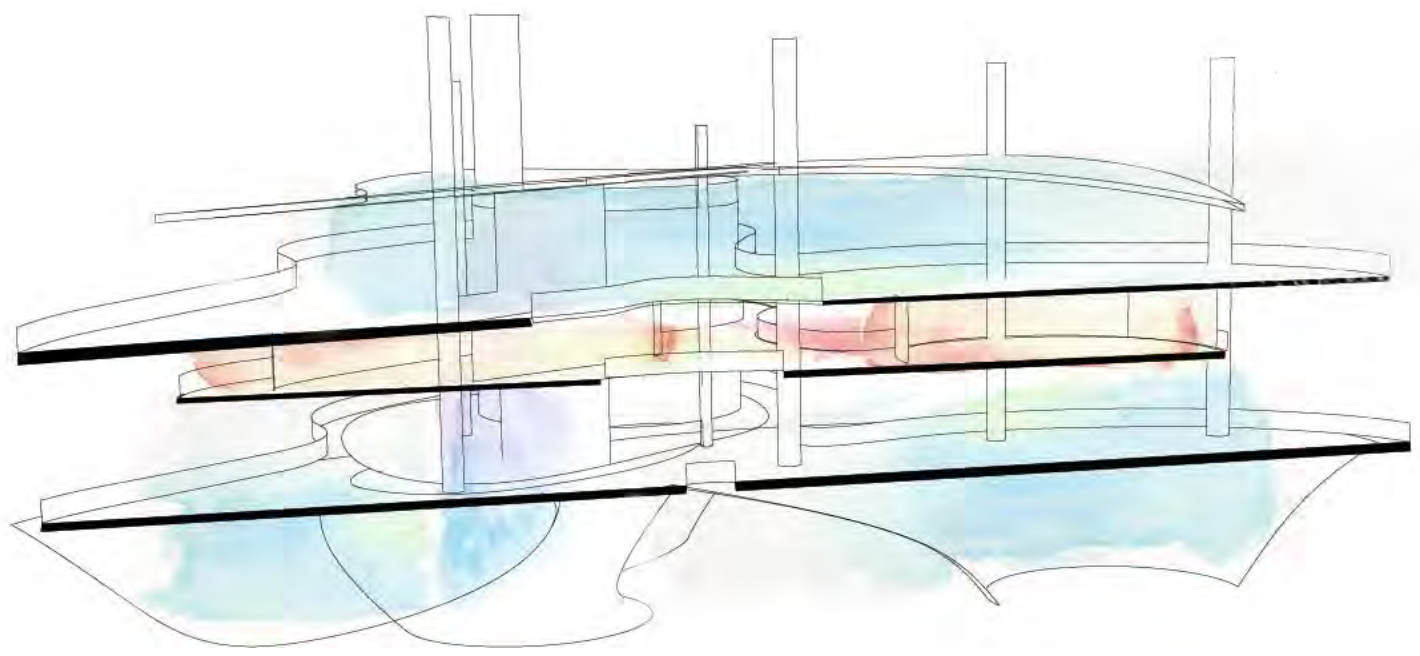
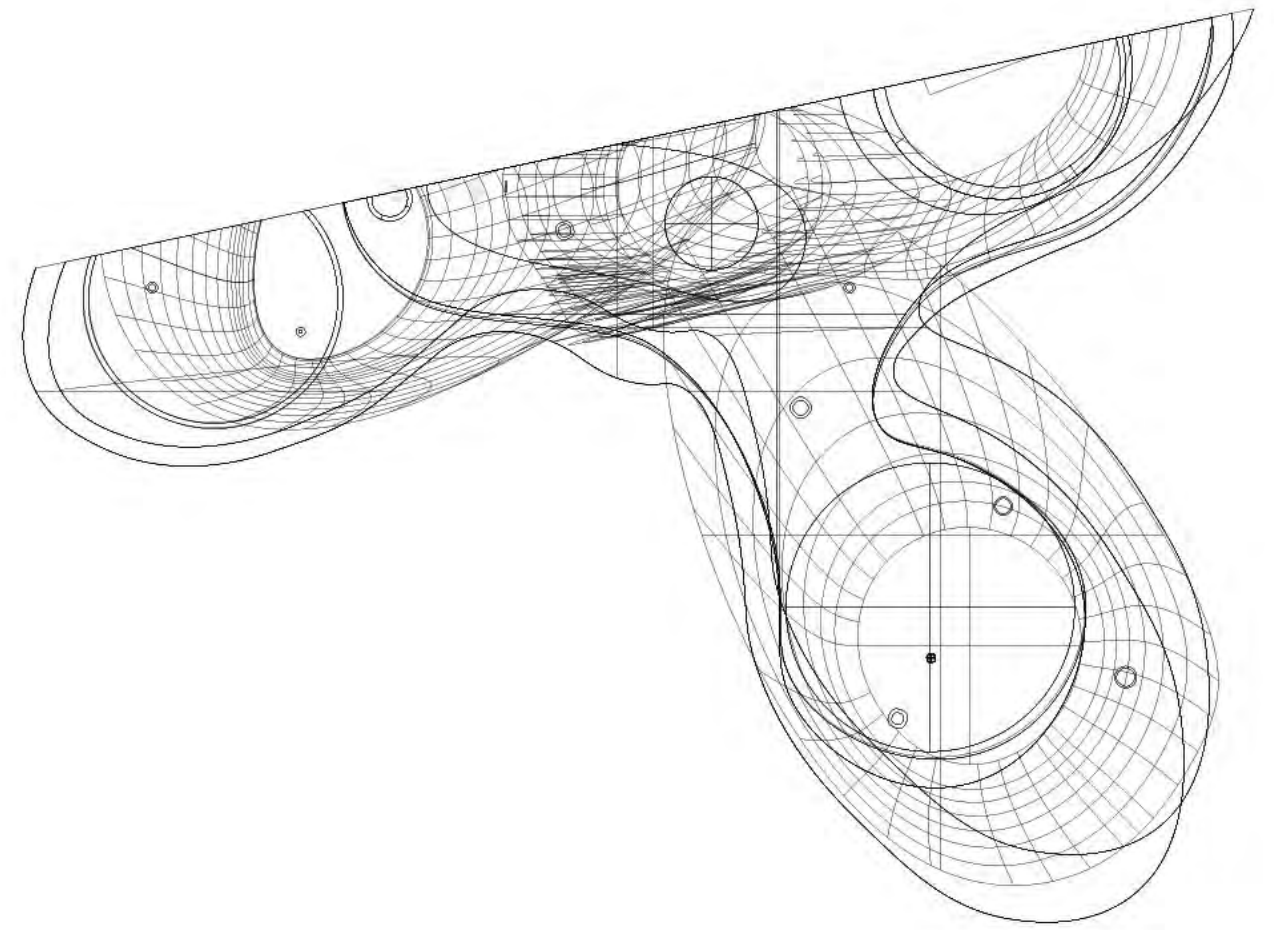
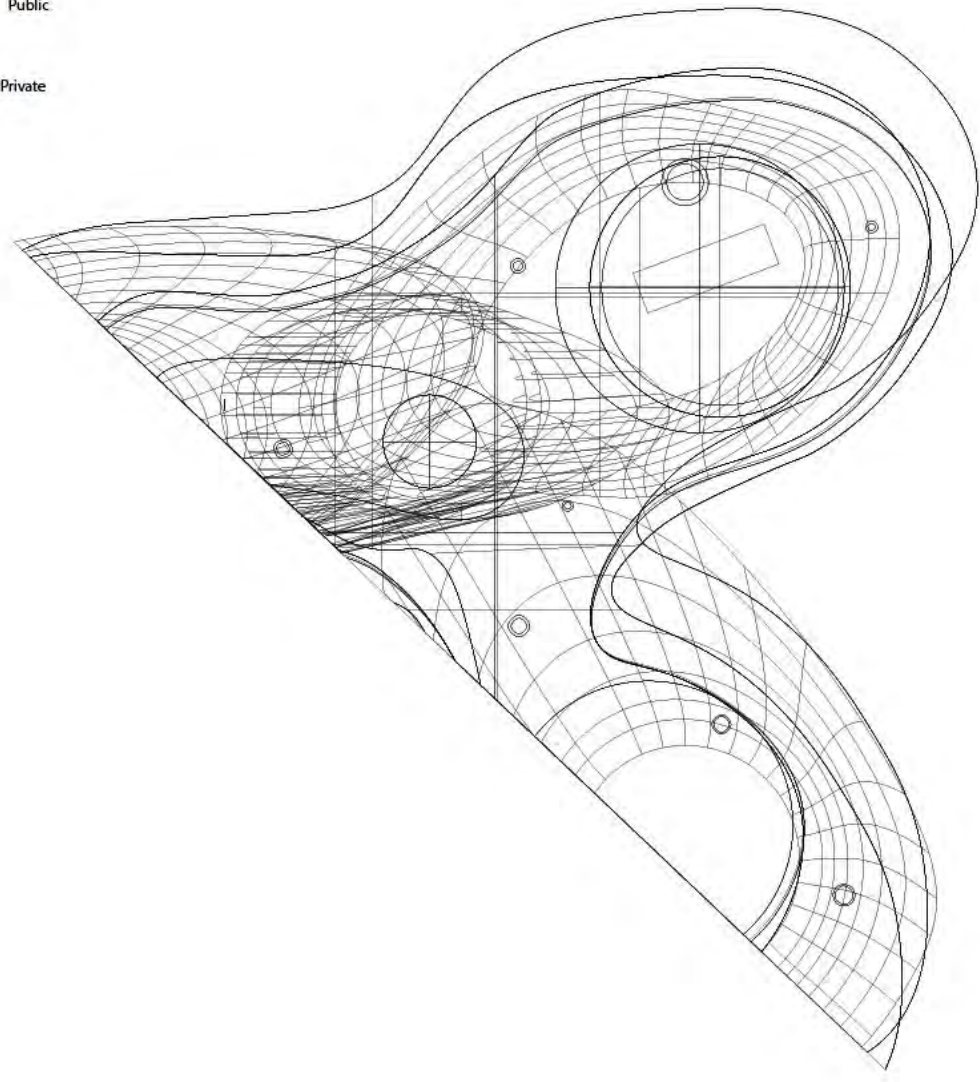
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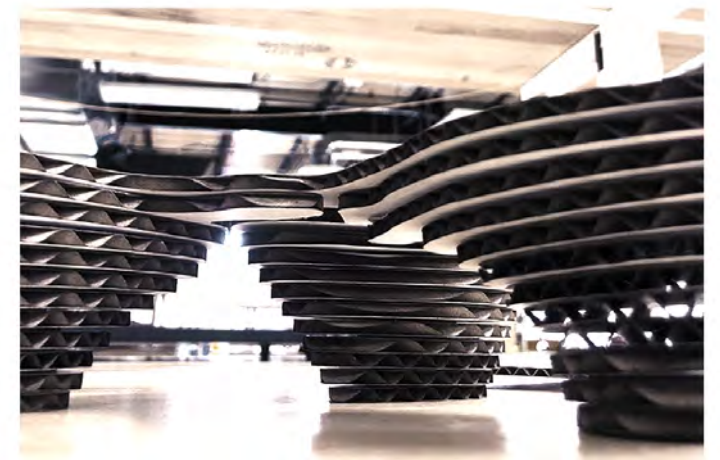
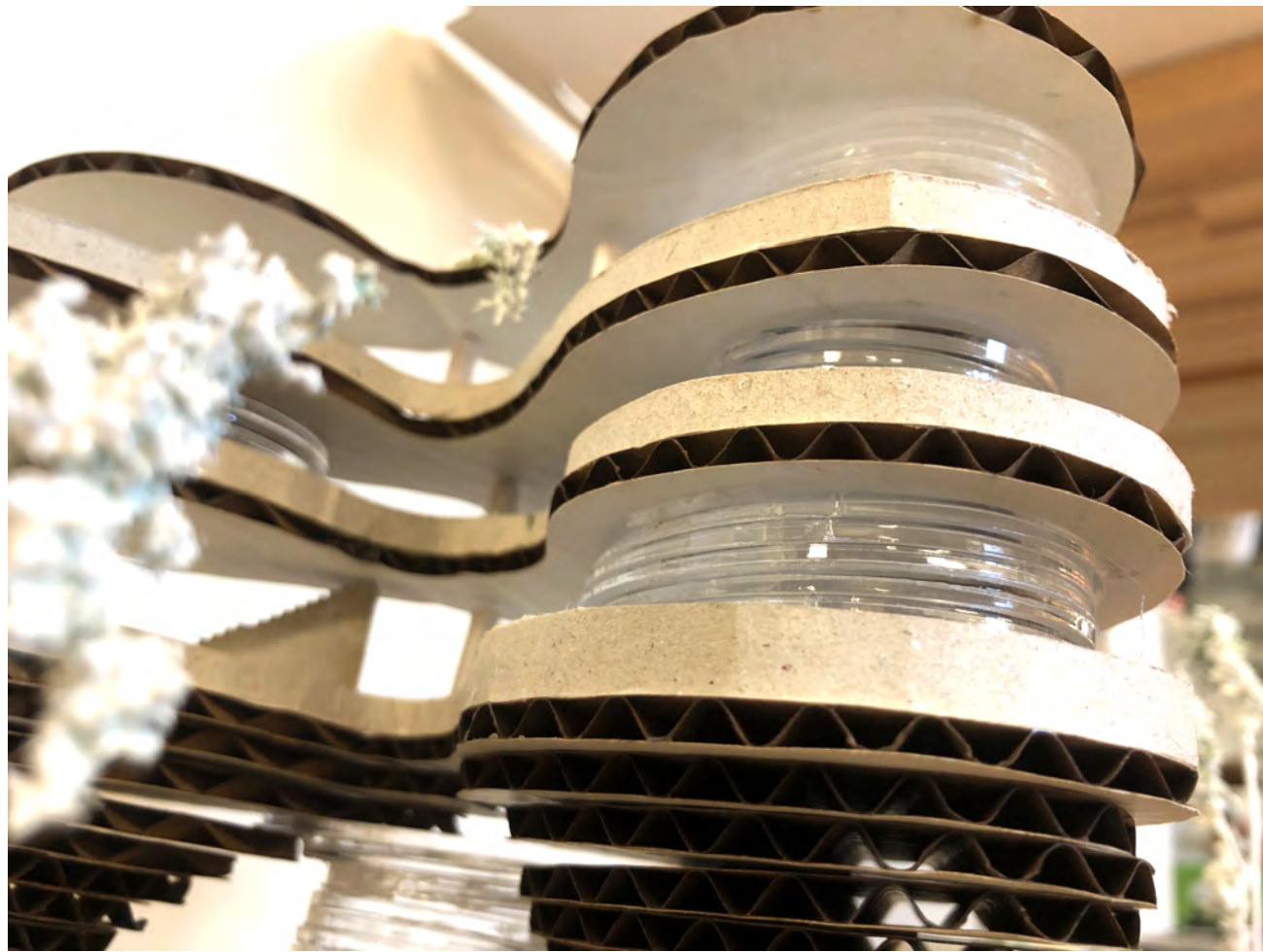




ELEVATIONS

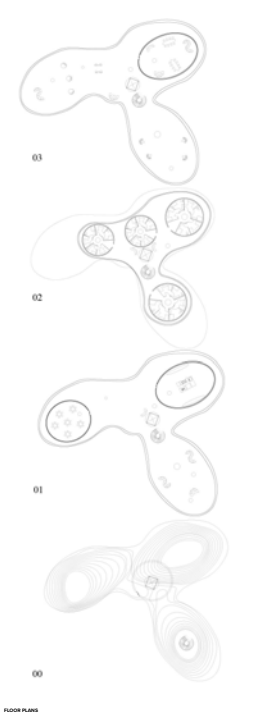
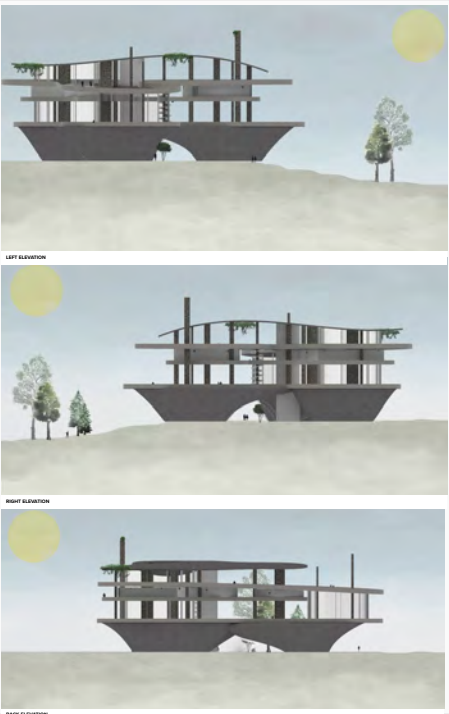
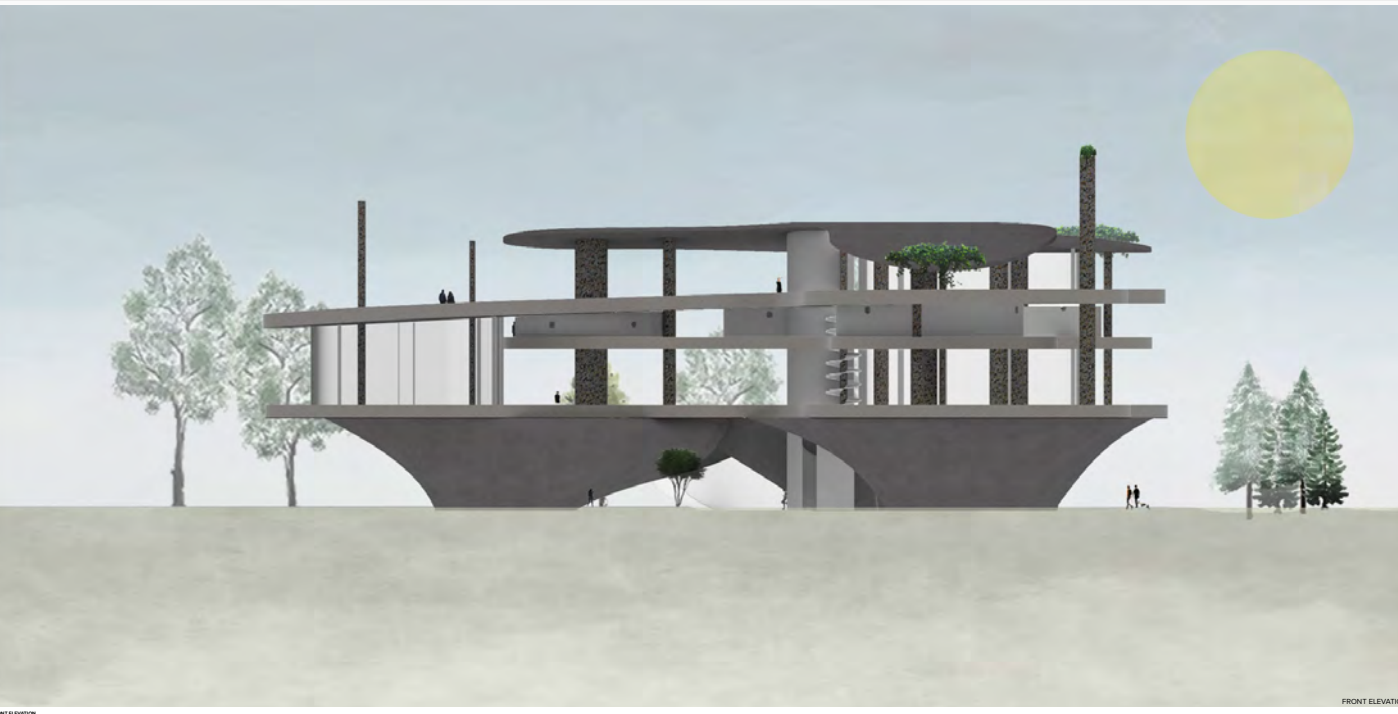
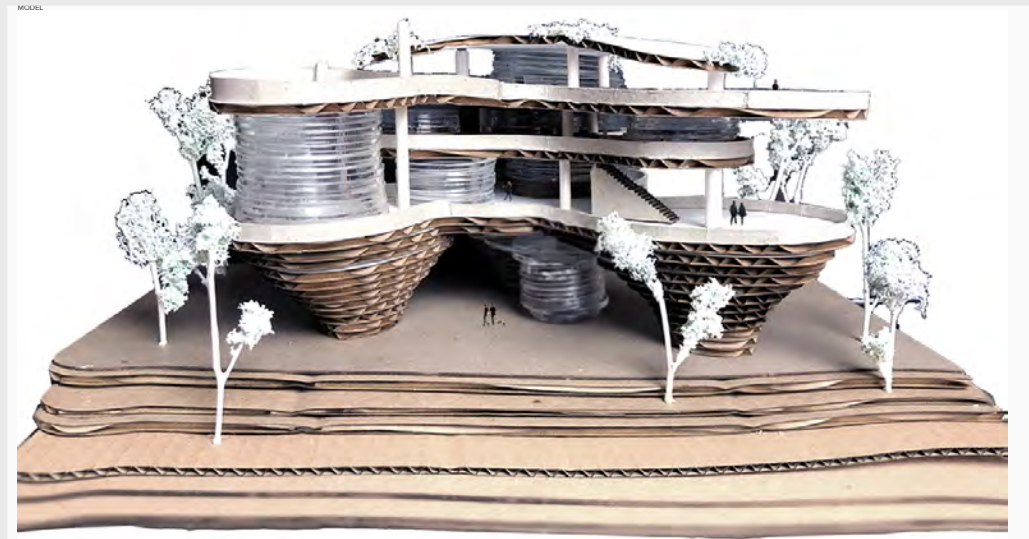
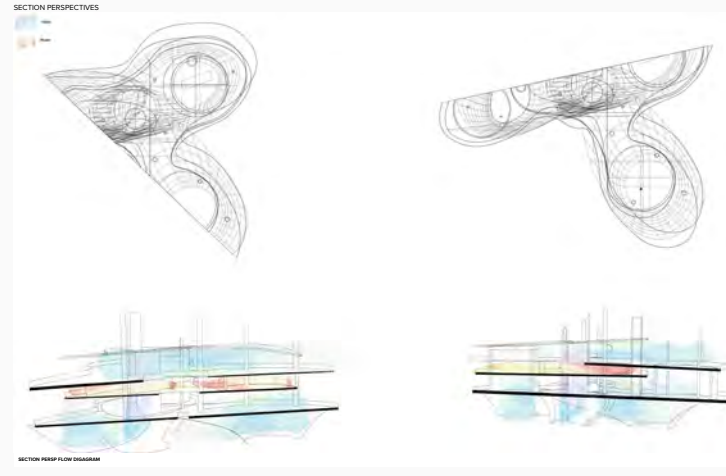
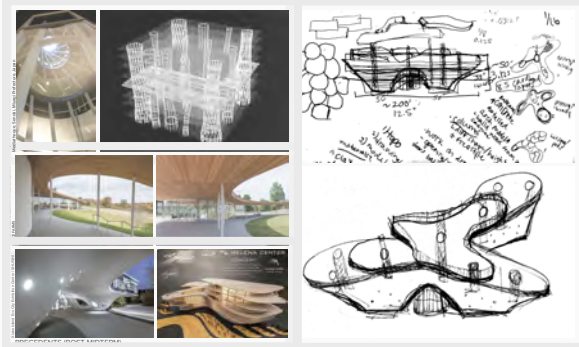
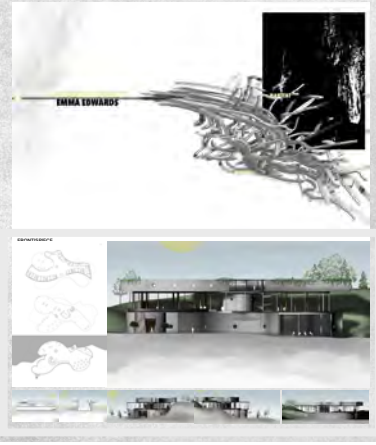






Cavernous Intimacy

Emma Edwards
Thesis Final



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