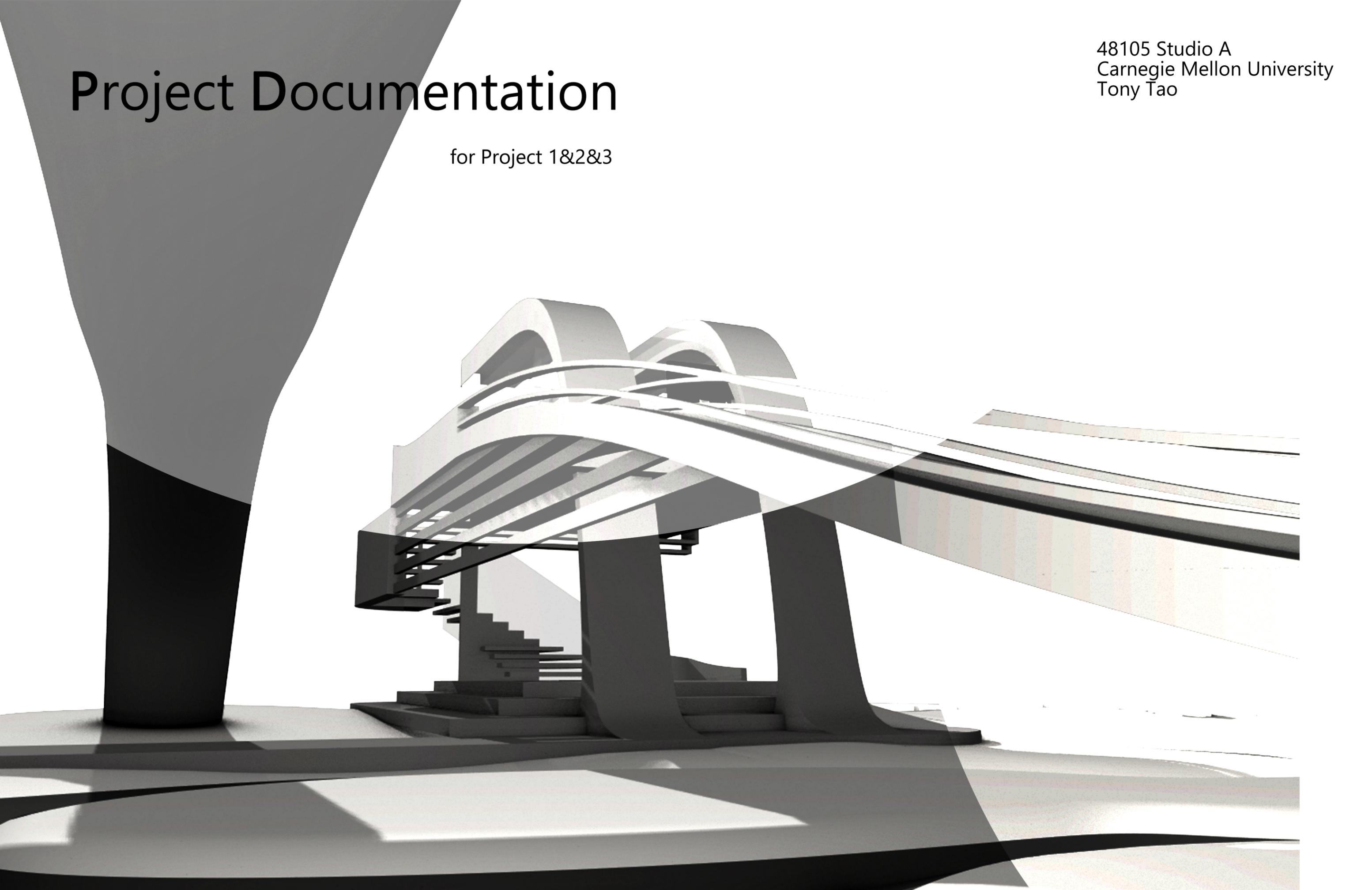


Project Documentation

for Project 1&2&3

48105 Studio A
Carnegie Mellon University
Tony Tao



Studio: Foundation II

48-105 A Spring 2018

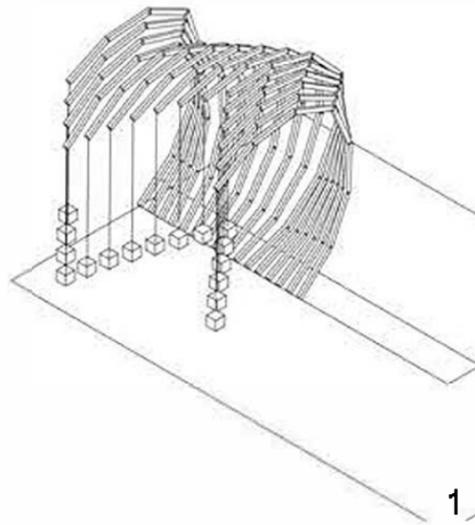
Carnegie Mellon University SoA

TECTONICS(Process, Part I)

Our consideration start from the verb idea in the former assignments(project 2.1, 2.2). We tried to make our models to express the verb “splash”, and some other words like “gravity”, “disarrange”, etc.

The first stage of our work is design separately and incorporate each other’s idea. (Picture 1-4)

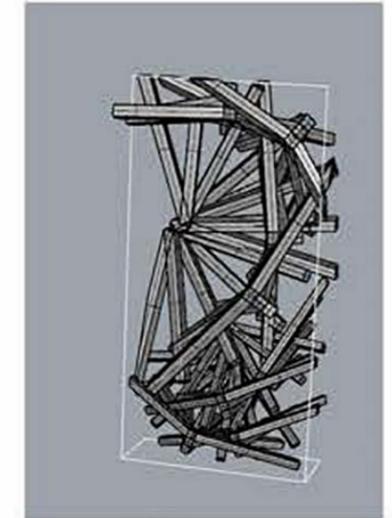
Then we decided to move on Tim’s or Clara’s design, whose subassembly was half-ring and fan. We still try to incorporate splash concept into our model, so there’s some process like pictures shown in 5-8.



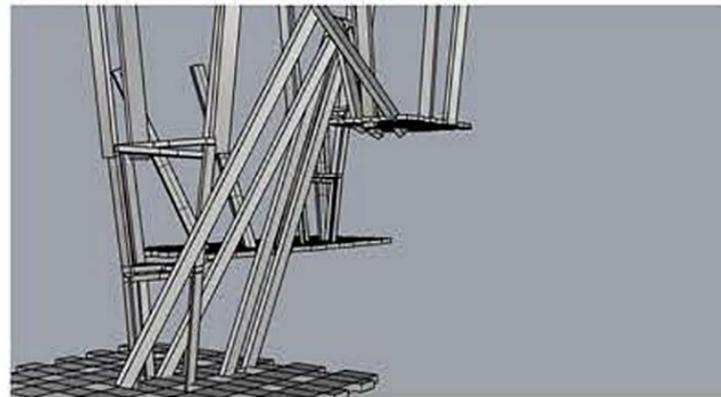
1



2



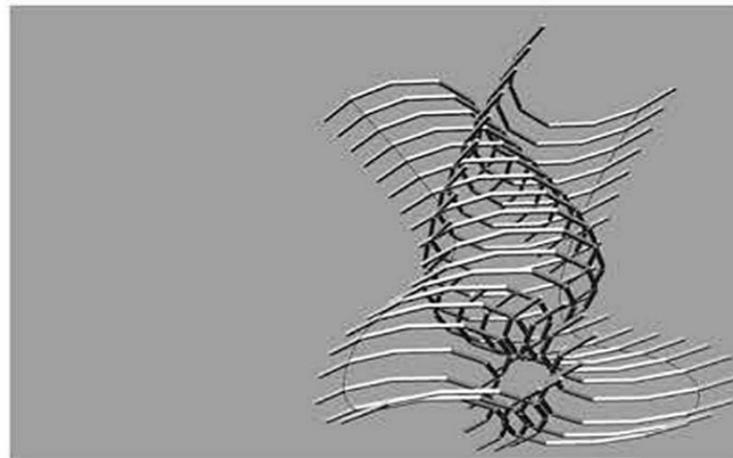
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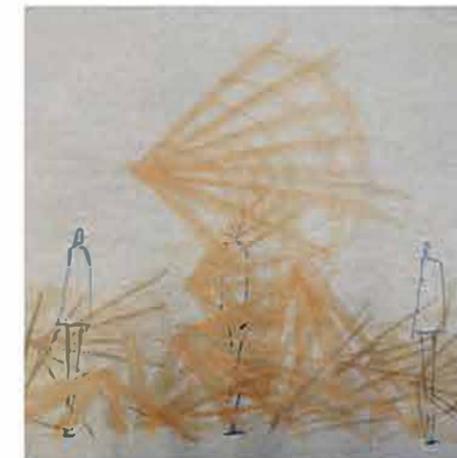
4



5



6



7



8

1

Team member:
Aditi Dhabalia, Clara Zhao
Timothy Nelson-Pyne, Tony Tao

P1 Tim’s first design
P2 Tony’s first design
P3 Clara’s first design
P4 Aditi’s first design

P5 Clara’s second design
P6 Tim’s second design
P7 Clara’s concept drawing
P8 Tony’s concept drawing

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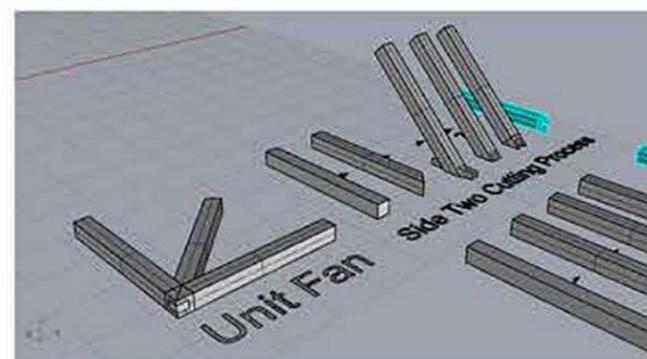
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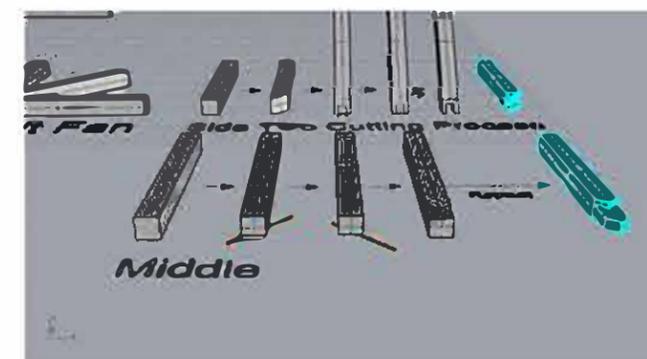
TECTONICS(Process, Part II)

After realizing that Tim's subassembly lacked some complexity and thus less interesting, we kept Clara's fan shape idea as our subassembly. However, the problem became quite obvious when we actually made the subassembly in the woodshop. The 3-Club fans were still okay to us, however, the 4-Club fans were really difficult to make. Therefore, we gave up using 4-club fans in our later stage.

After we decided to give up 4-club fans, we start to think easier joint methods. Talking with Jon, we figured out the easiest way to cut all the sticks.



1



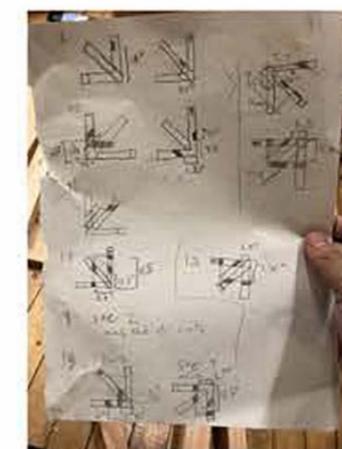
2



3



4



5



6



7



8

2

Teammate:
Aditi Dhabalia, Clara Zhao,
Timothy Nelson-Pyne, Tony Tao

P1-2 Rhino Joinery
Diagrams
P3-4 Cutted wood
and mortises
ready

P5 Tim's genius
engineering diagrams
P6-8 Making the model
from night to morning

Studio: Foundation II

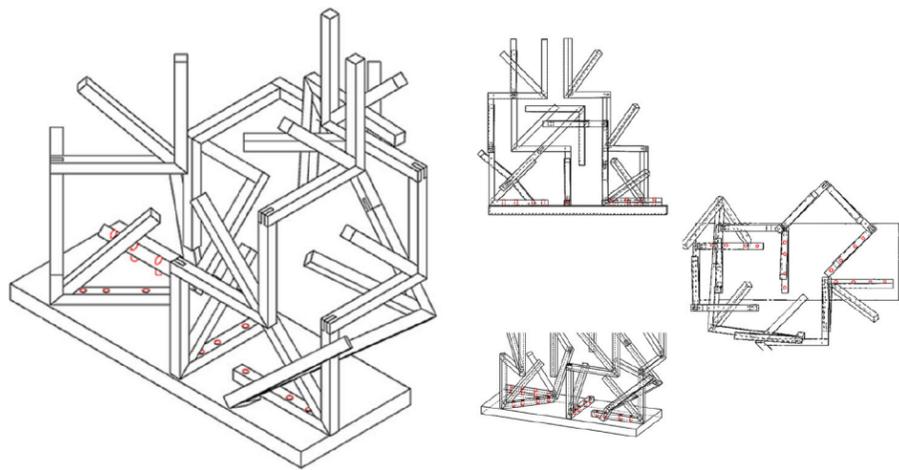
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Teammates:
Aditi Dhabalia, Clara Zhao,
Timothy Nelson-Pyne, Tony Tao

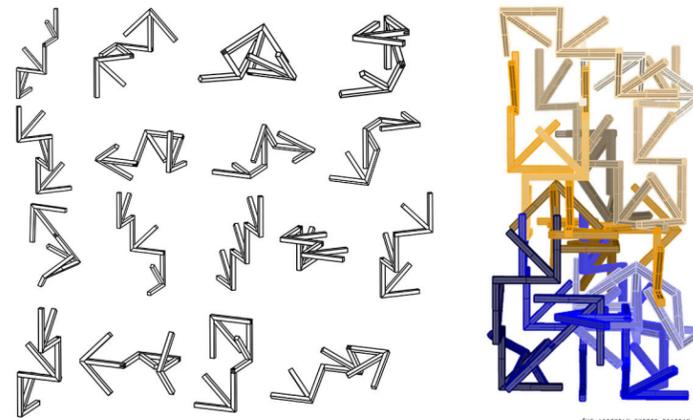
TECTONICS(FInal, Part I, Joinery)

Our final version of model consists of 17 subassemblies, while each of the subassembly are grouped by 3 3-club fans. We try to express a kind of visual transparency and performance through complex composition of sticks.

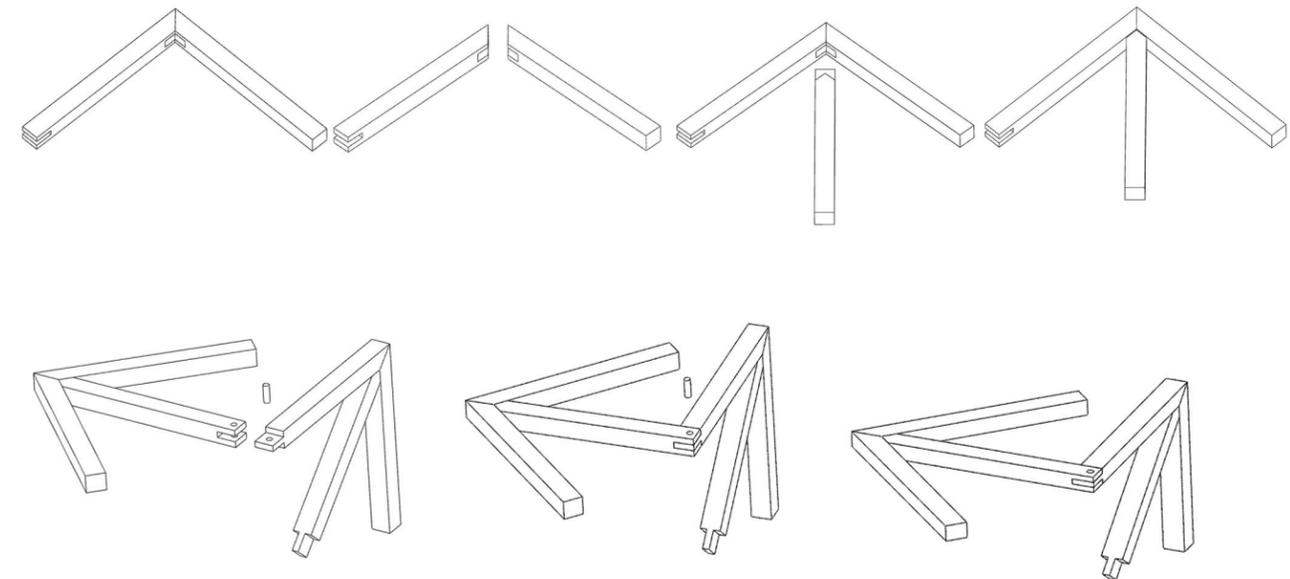
We started from the verb splash but soonly surpass the limit of just showing verbs. The openings shaped by the arrangement of the sticks create interesting light conditions and aperture. The joinery are fulfilled mainly by designed mortise and tenon system and the employment of dowels. In this part, the joinery diagrams are shown.



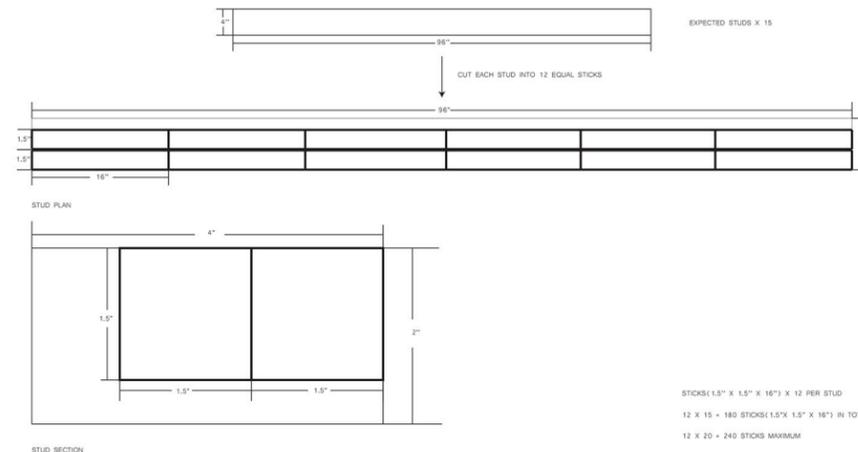
The ground touching joinery(by screws)



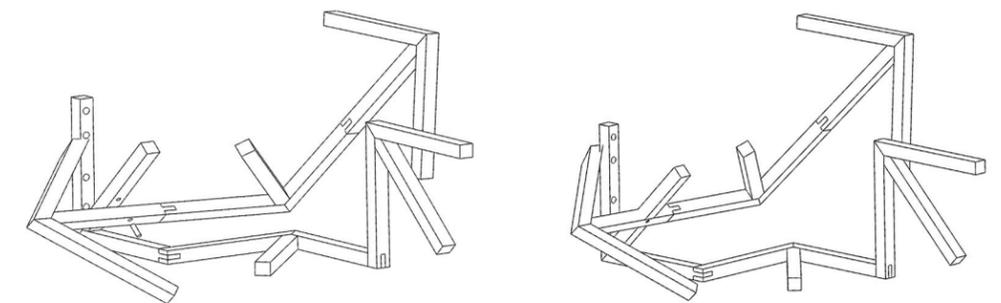
17 subassemblies and the system



ISOMETRIC VIEW JOINTS DIAGRAM



Final Cutting List



Isometric view joints of the subassemblies and fans

*Isometric view done by Timothy

*Final Cutting List done by Tony

*Other diagrams done by Clara and Aditi

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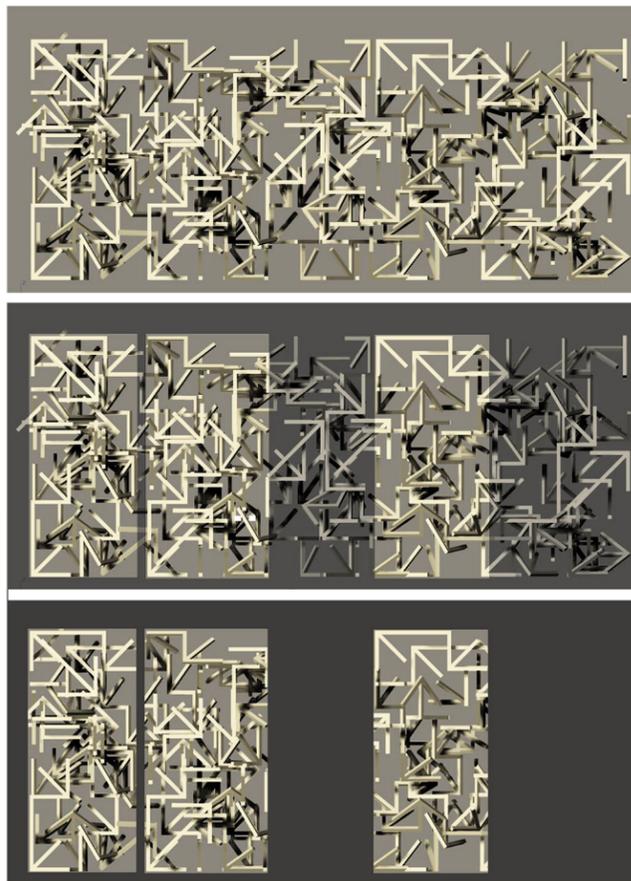
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Teammates:
Aditi Dhabalia, Clara Zhao,
Timothy Nelson-Pyne, Tony Tao

TECTONICS(FInal, Part II, Model)

In this part, the final model construction is documented.

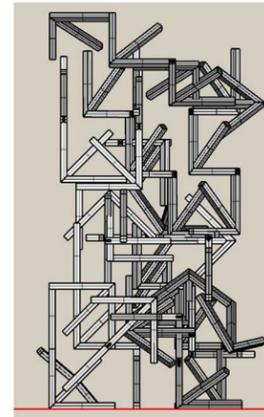
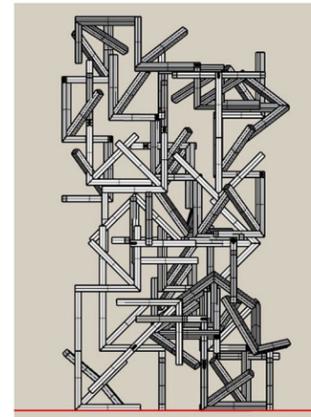
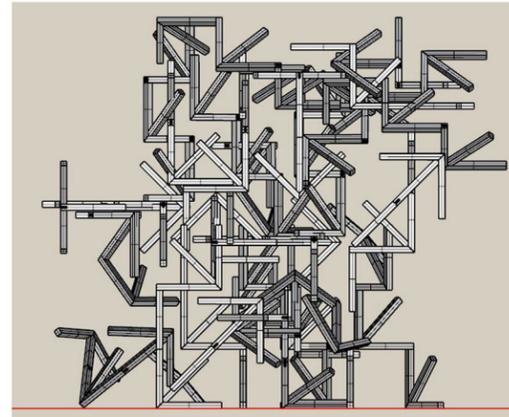
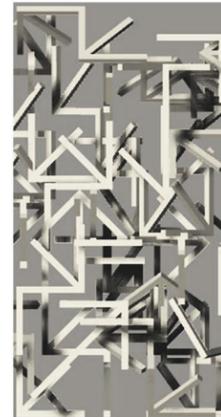
In the final model, due to some adjustment, the model looks a little bit different form the rhino model. However, the joinery and main idea stayed same.



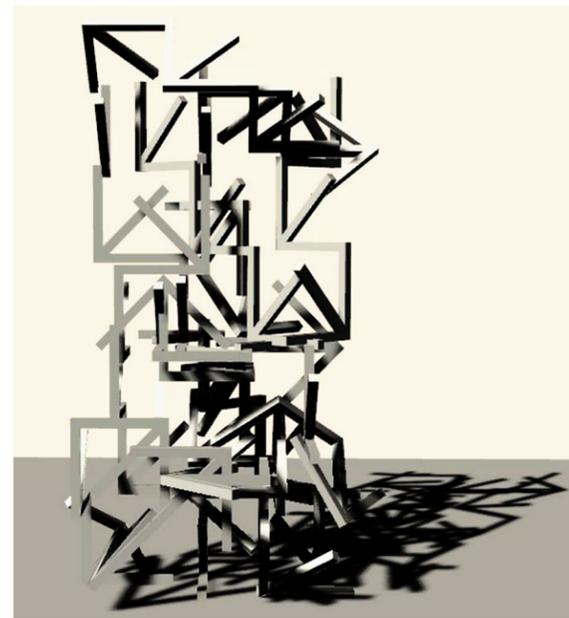
20 feet extension

*Rhino screenshot done by Clara

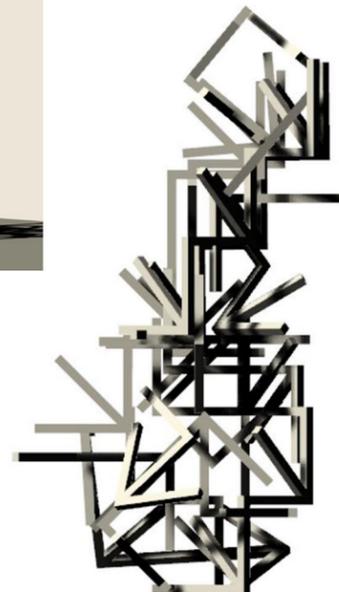
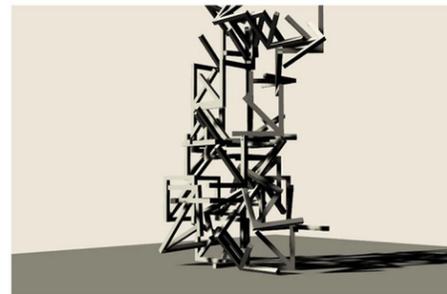
*Photo taken by Tony



Final elevation process



Rhino Render



Final elevation renders



Construction Photo

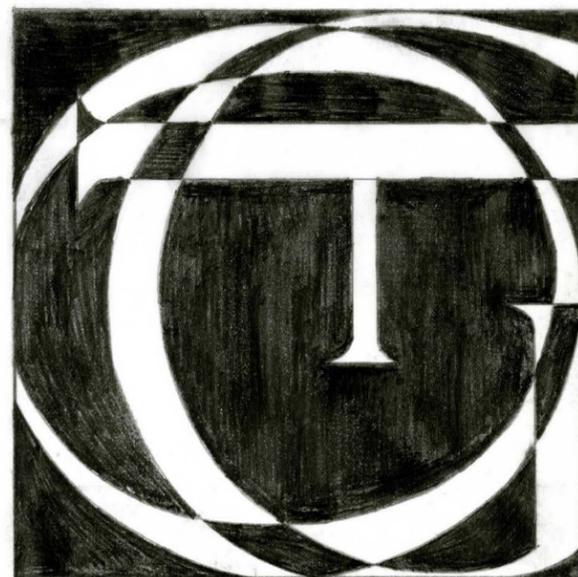
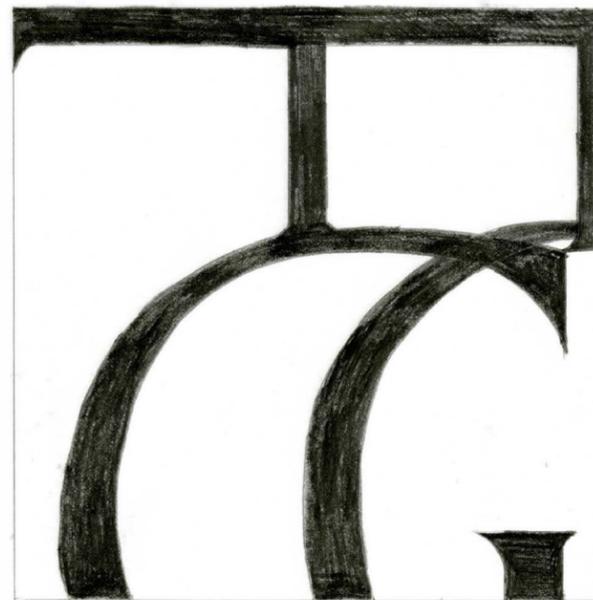
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Tony Tao

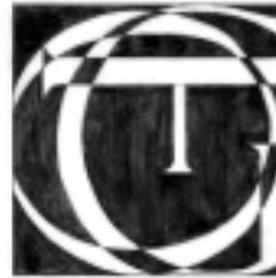
PROJECT 1.1 LETTER FIGURE GROUND (Progress)

In this project, we were asked to design a pattern which is generated from composition of letter shapes.

In my work, I used the letter F, G, and O.



1. Overlapping area to create poche



2. Using the boundary of letters to create poche



3. Using letters themselves to create shapes



PROJECT 1.2 MOVING CHAIRS

Through the process of the design, I developed mainly three ways to balance and define the space create by the black and white part.

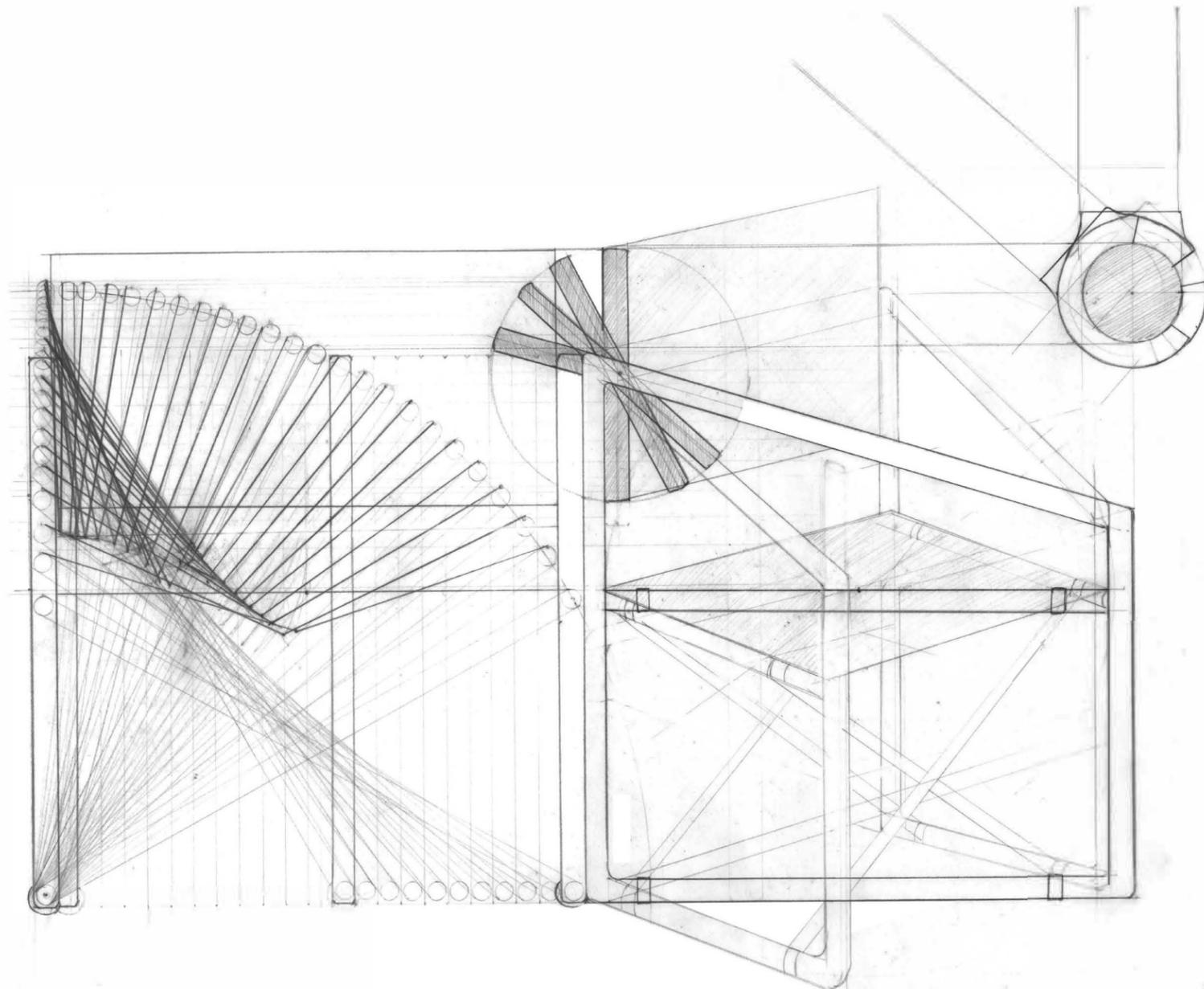
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PROJECT 1.2 MOVING CHAIRS

In this project, we are supposed to study how the chair moves and works by using artistic drawings.

I was mainly focused on the joints of the chair and how the angles change when the chair is folded. By putting those moments on the same view, I tried to create a kind of ambiguity in the picture.



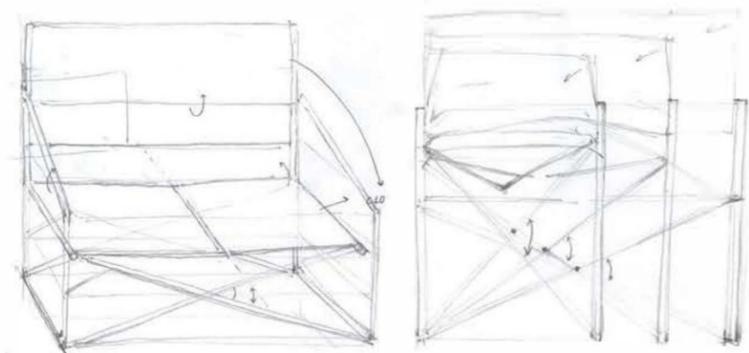
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Tony Tao

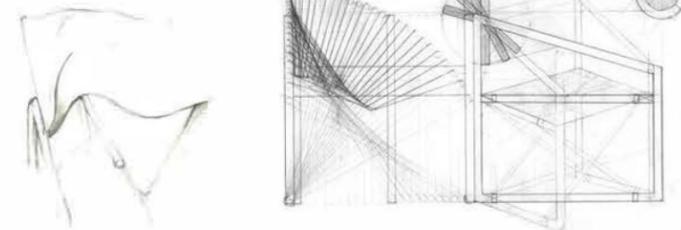
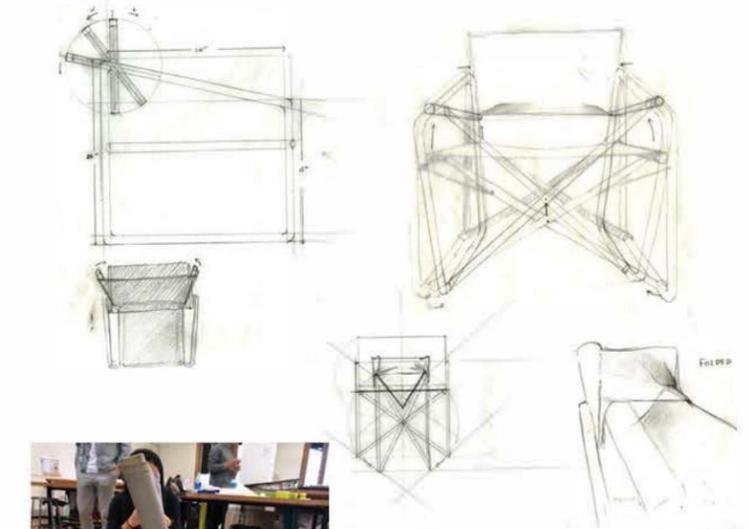
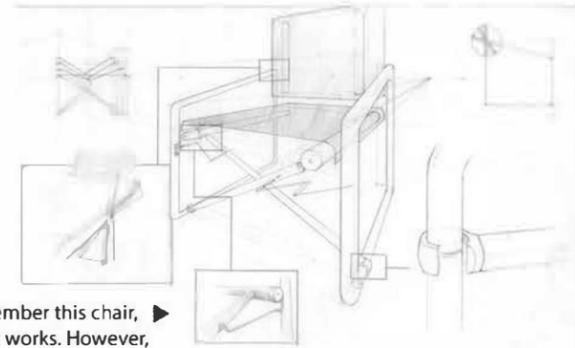
PROJECT 1.2 MOVING CHAIRS (Process)

During the process, I experienced a recognition transition through literal to abstract. Though the final work looks still a little bit literal, but it is much more abstract and dynamic than the first one. The first one looks more like an engineering drawing. When I talked with my professor, he suggested me: all the elements are here. The question is how I compose these.

I think I still need to understand this sentence. But I can see the little progress in the transition.



Then I tried to dismember this chair, ▶
to see how exactly it works. However,
the final work looks too much like
engineering work and make no sense
on how it works dynamically.



◀ Throughout sketching drafts and touching
the chairs, I understood the mechanics of
this chair. In my sketch, I pay more attention
to those joints and how they work. In order
to understand how it moves as it's being
folded, I overlapped several chairs and
especially detailed the cloth part and joints
part.

▲ Then I refined my work,
and drew this one.
By overlapping the folding
chair and put section of
another direction right
beside the chair, it makes
more sense.



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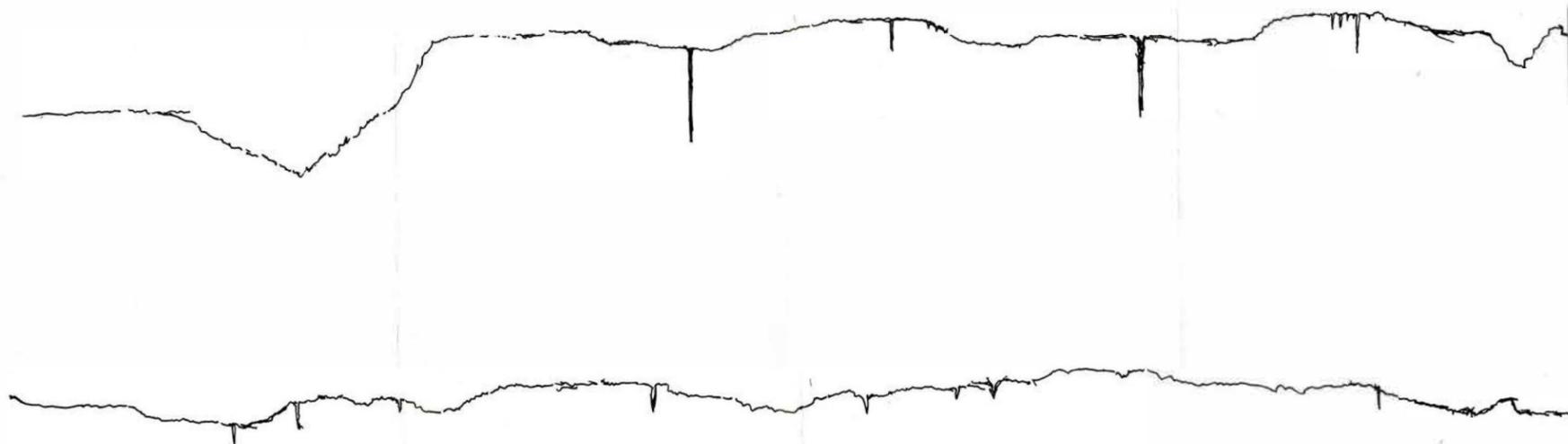
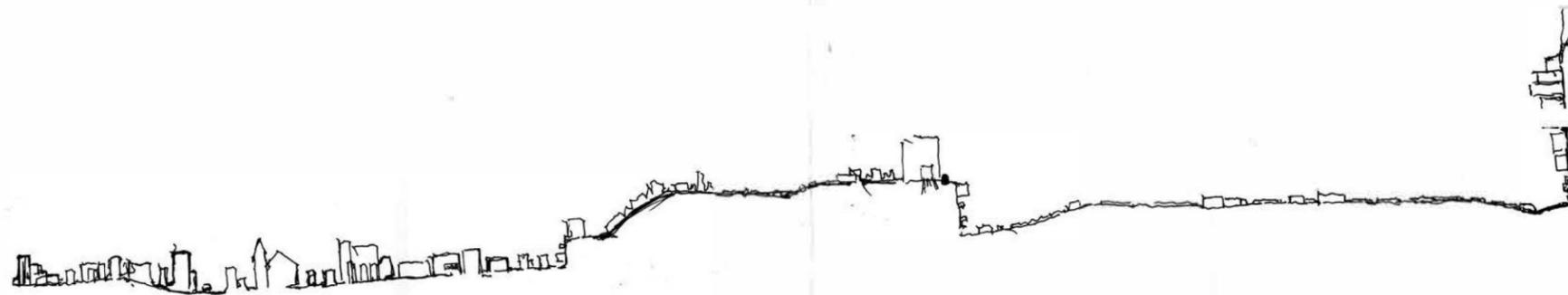
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Tony Tao

PROJECT 1.3 Mapping the City, Part I

In this project, we are supposed to map the city in an abstract way, to show one or more specific features of Pittsburgh through the bus view.

In my drawing, I focused mainly on the traffic and topography. The size of the building on the map reflects the traffic condition. When the traffic is getting heavier, I drew a bigger house.

On the second itinerary, I chose to draw the light condition through the diagram. We can see those sudden drops because there's a crossing or a path so that the light drops suddenly.



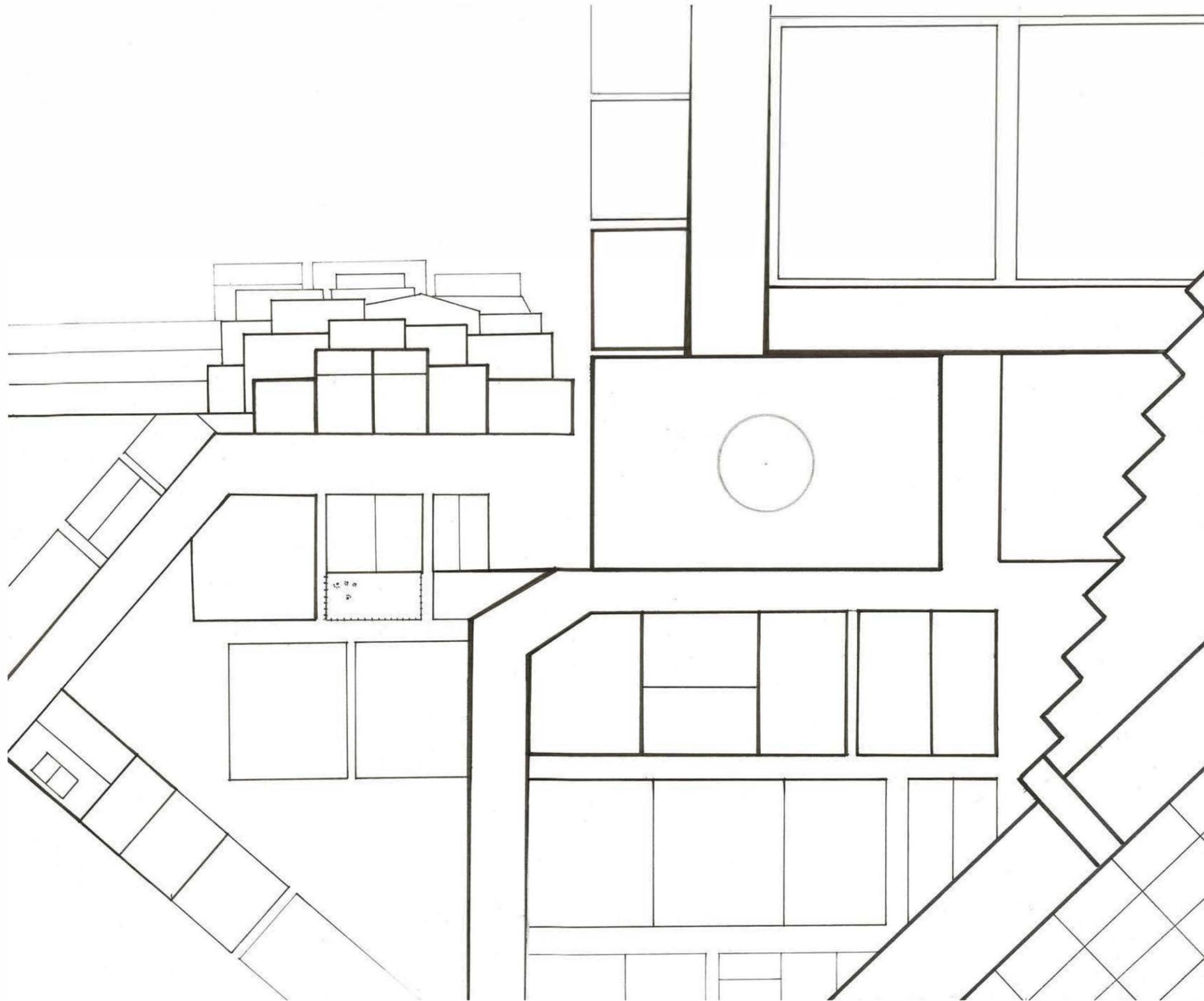
Studio: Foundation II

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Tony Tao

PROJECT 1.3 Mapping the City, Part II

In this project, we are supposed to map the city in an abstract way, to show one or more specific features of Pittsburgh through the field visit.

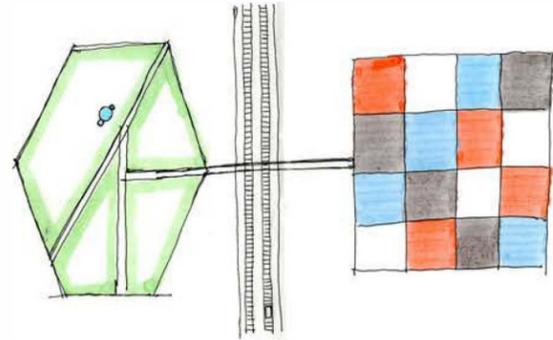
In my drawing, I mainly used the lineweights to express the height of the house on the right part of the drawing. Also, the rectangles create an ambiguity between windows/AC of residence and plan of the block. On the left part, I also employ this kind of ambiguity on the ramp. It could be read as a ramp, but could also be recognized as a plan for a street.



PROJECT 1.3 Mapping the City, Part II (Process)

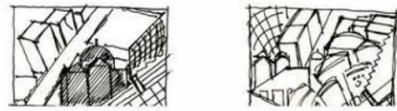
In this project, I also experienced a transition in the recognition of abstraction. The first iteration is too abstract and conveys little information. The second and third iteration became a little bit pictorial in convey my idea.

After the changes, the final iteration became a lot more abstract compared with second and third, and became more informative compared with the first.



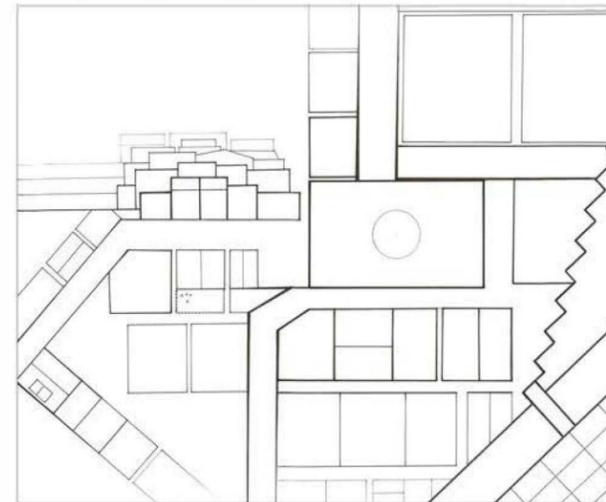
The first iteration ▲

In this version, I use the square to represent the residence on the otherside of the bridge and the hexagon to represent the more countryside part. The regular forms and the irregular, arbitrary building distribution pattern is what I focused on. However, the overall looks too simple and arbitrary, and fails at expressing any other deeper information.



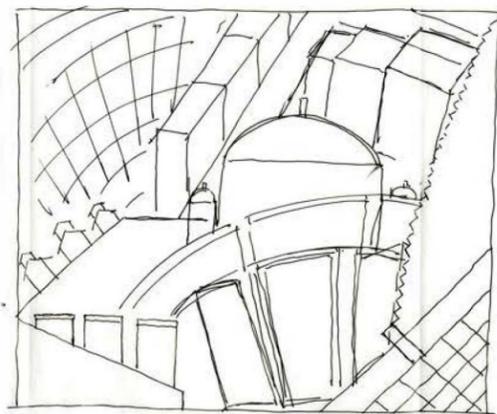
The second iteration(draft) ◀

Then I tried to move the boundary(the bridge-and-rail-representing rectangles) to the right bottom corner, to reduce their percentage on the canvas; I'd like to use different perspectives to show the height differences in the field--because there're lots of ramps, so we can see houses from different direction and get different perspectives. I think I am on the correct start, but if this one is finished, it would look too pictorial.



The final iteration ▲

In this final version, I eliminate all the perspectives in my work, showing only the roofs of the buildings. By using different lineweights, the houses' hierarchy is clearer; Those with a larger lineweights represent they are at a bigger height, while smaller indicates lower. I also make the street plan serve as the ground line for those facades; I chose not to color my work, because color will distract the lineweigh. Now, the map looks ionic and clear.



The third iteration(draft) ◀

Then, I was trying to use fewer perspectives, and use more facades and elevation, using their sizes to express the distance relationships. It looks less pictorial, but too childish. I think maybe I could eliminate all the perspectives in my work, using only lines to show their height.

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PRECEDENT STUDY(PART I)

In the third project, we were asked to build a pavilion in the assigned park in Pittsburgh. Before actually design, we were also supposed to study some precedent work from famous architects.

Here, I studied the Landscape Formation One from Zaha Hadid, and drew some study diagrams to further understand the architect's idea.

In this part, I documented some drawings for the original building.

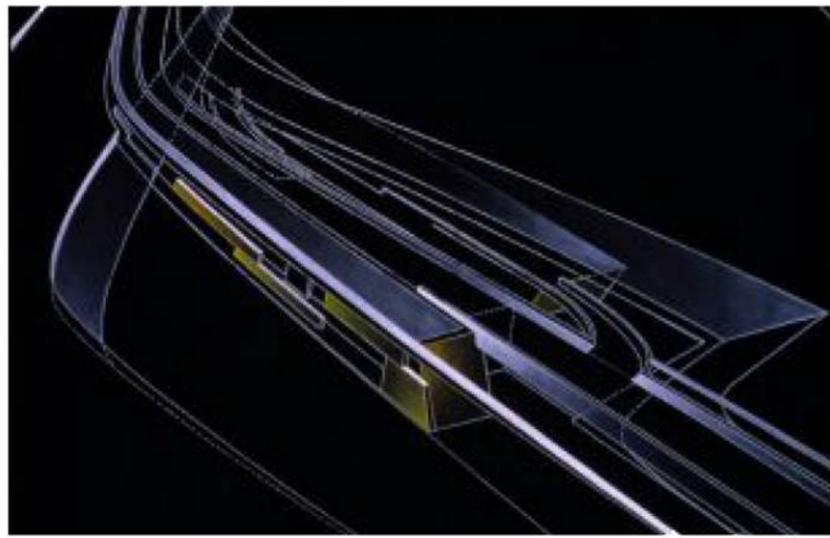
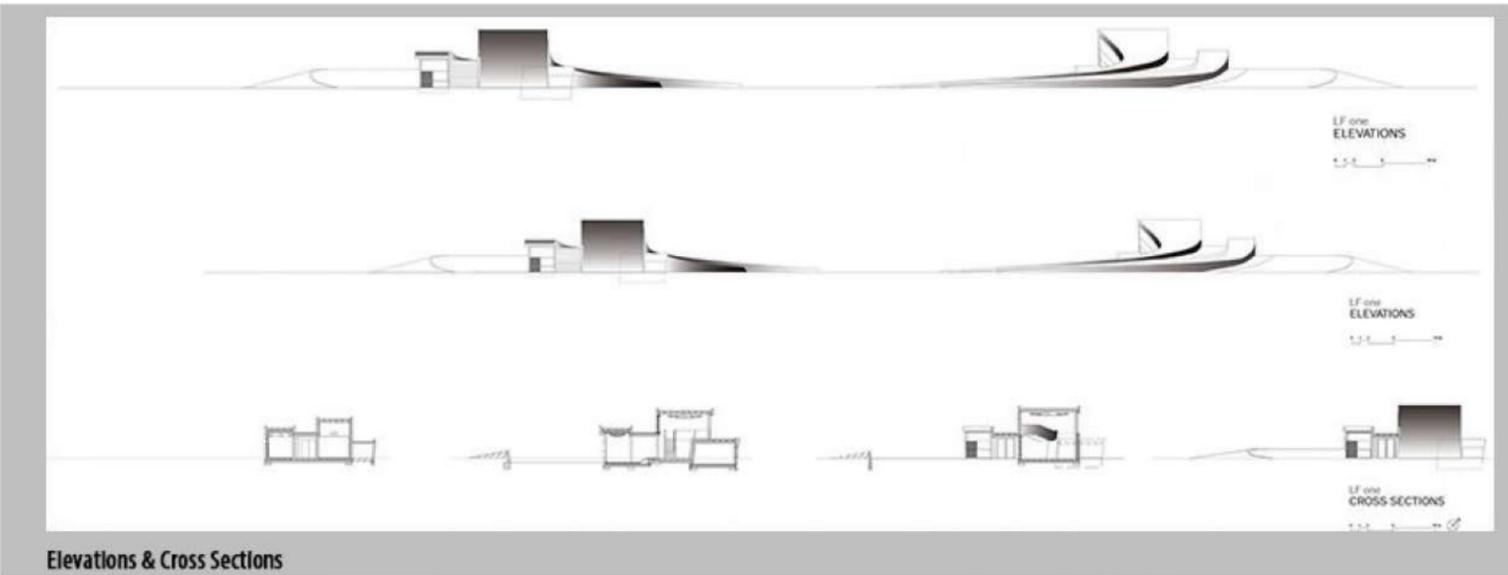
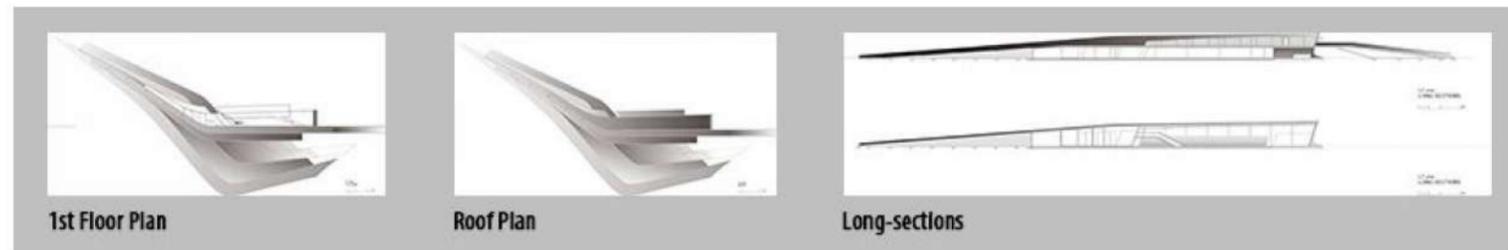


Photo by Helene Binet

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PRECEDENT STUDY(PART II)

Here are the study diagrams for the building. I studied the building from five aspects:

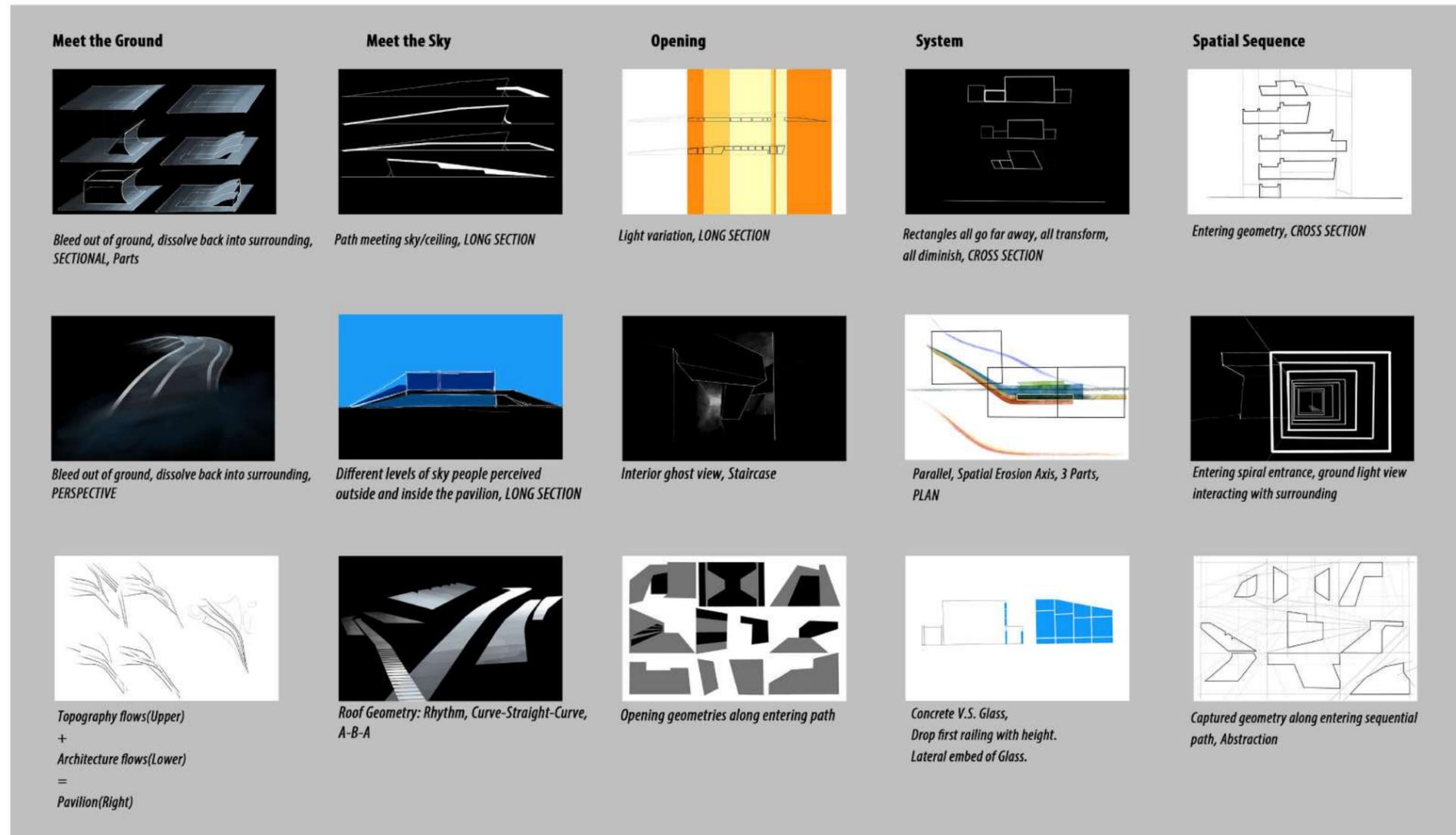
-how the building MEET THE GROUND;

-how the building MEET THE SKY;

-what is the SYSTEM of the building;

-what is considered as the expected SPATIAL SEQUENCE;

-how the OPENINGS in the building were designed.



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SITE ANALYSIS(STAIRCASE)

The next step of this project was to analyse the park site, and choose an area that could be used to build a pavilion. Of course, the pavilion was supposed to serve for some specific function;

There, I choose three sites at first.

In this part, I analyzed two sites that is closed to the staircase beside one of the entrance of the park.

I rhino-modeled the topography, and sketched some potential parts to build the pavilion.



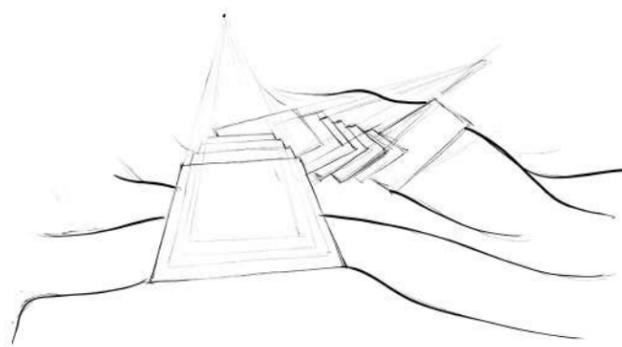
Site Section Render 1



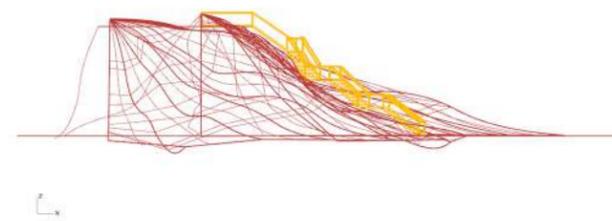
Site Section Render 2



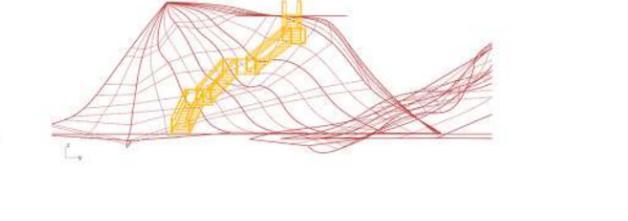
Site Section Render 3



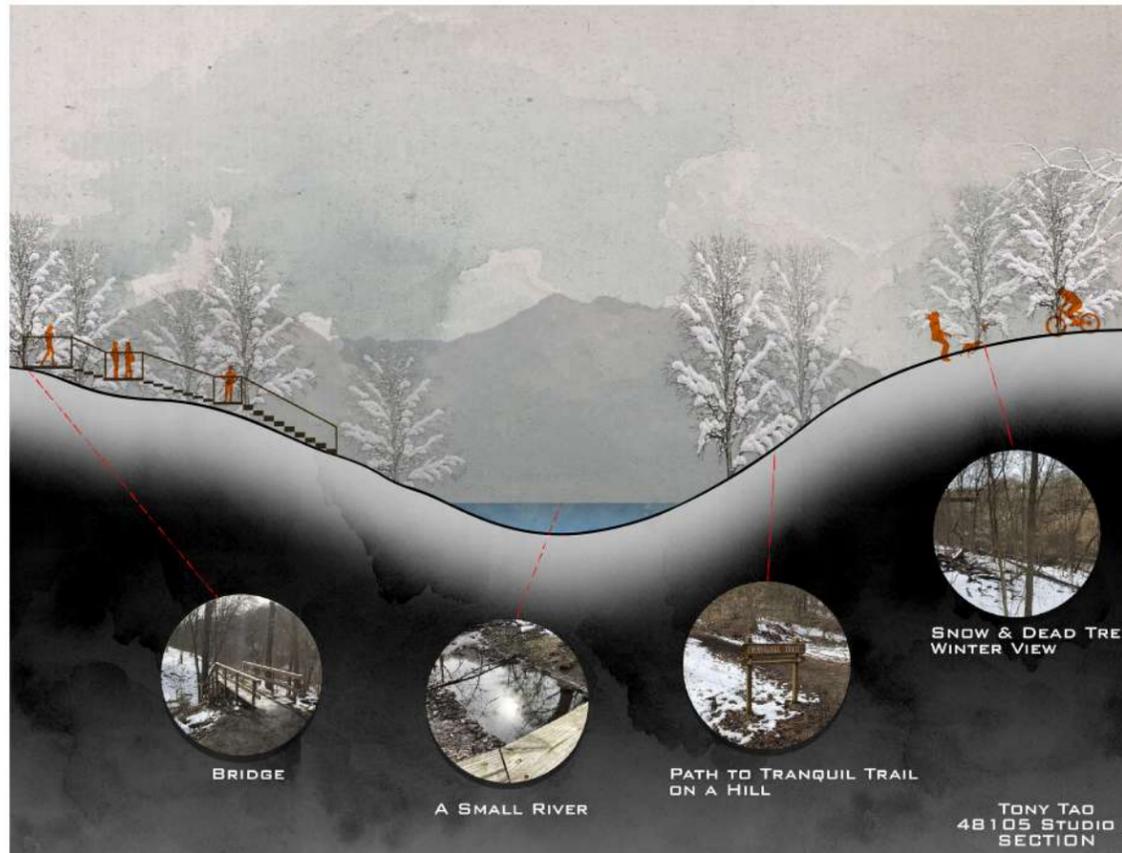
Site Topography Sketch



Site Section Rhino Drawing 1



Site Section Rhino Drawing 2



Site Overall Condition Section Analysis

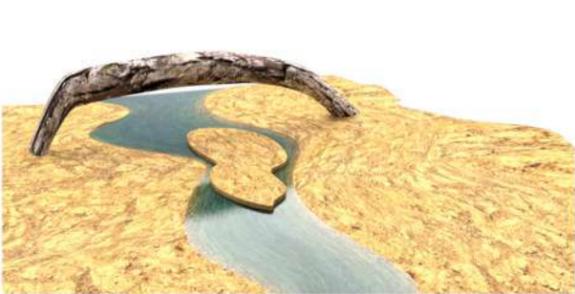
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SITE ANALYSIS(STREAM)

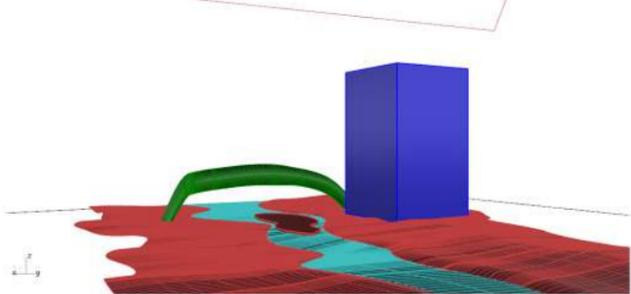
The third site I chose was near the stream. I chose the site here for two reasons: rich biodiversity here as you can find leaves, water, insects, etc; complex spatial quality here, as the space is decided by the tree lying there, the river, the delta.



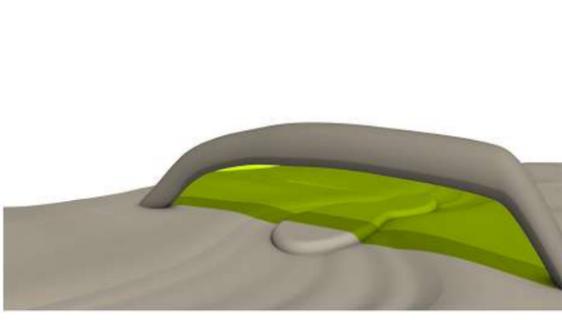
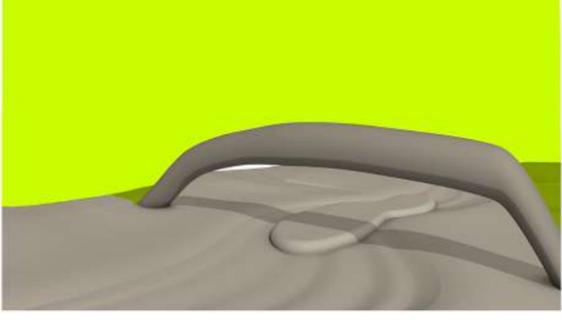
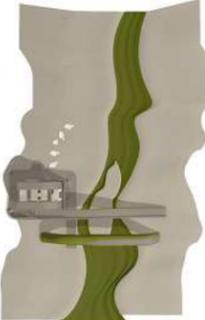
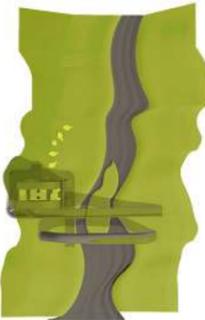
Site Condition Rhino Model



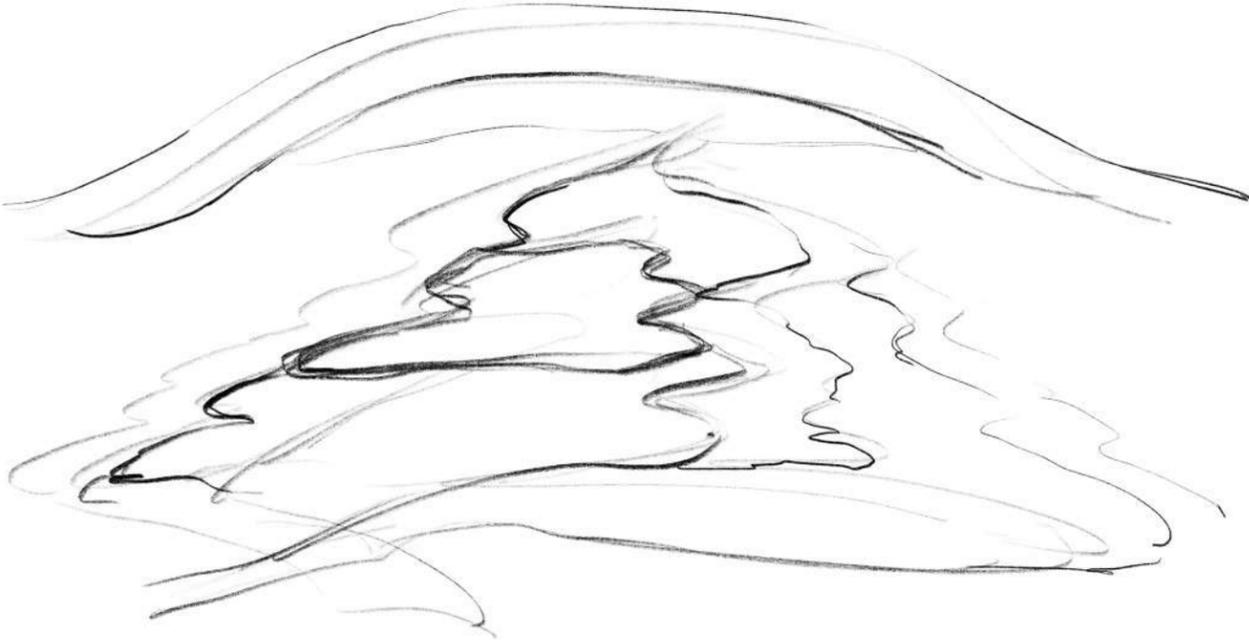
The Unique Tree separated the space



Potential pavilion position represented by the cube



Complex voids created by objects



Site Topography Sketch

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DESIGN PROPOSAL I (Discarded)

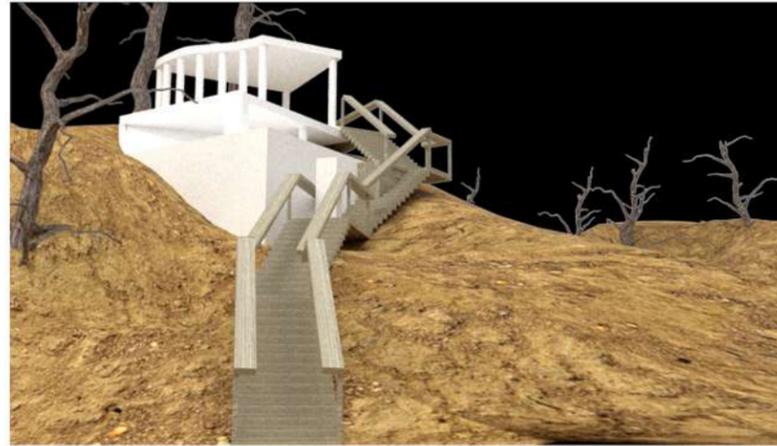
The first proposal is to build a children's playground near the staircase.

The site of the staircase is interesting for its topography. The height different create more possibility in vertical spaces.

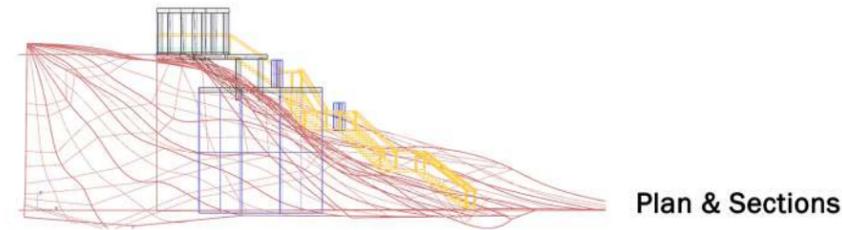
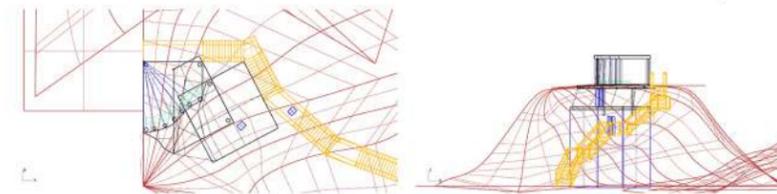
However, because the ramp is too steep for building a actual pavilion. how to meet the ground became a too tough problem. This proposal was finally discarded.

Proposal 1

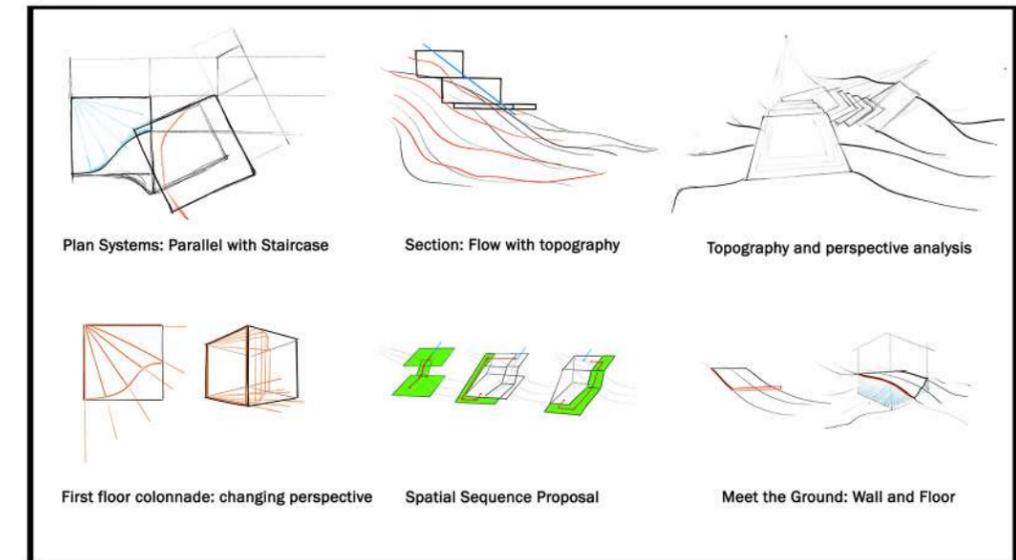
Along the Staircase



Rhino Rendered Proposal



Diagrams



Section Render

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DESIGN PROPOSAL II(Discarded)

The second proposal is to build the pavilion at the lower part of the staircase, so that the pavilion could be more stable and easier to construct compared to the first proposal.

Here, I wanted to use the staircase itself to go through the pavilion to serve as a site-specific spatial sequence.

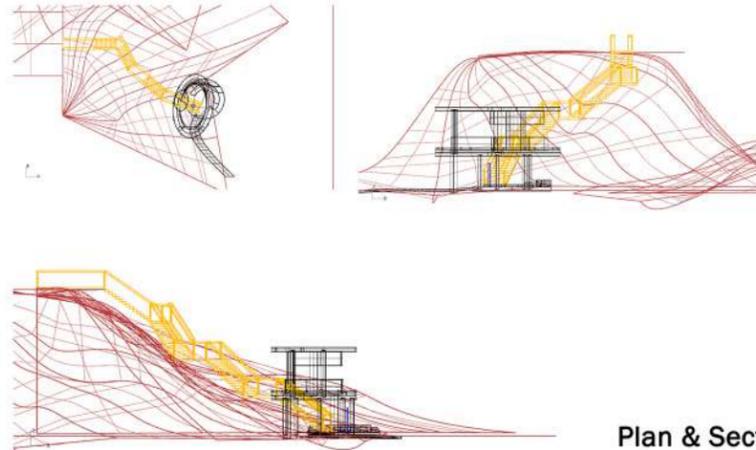
However, the spatial connection by the staircase is way too normal than I expected, so therefore I discarded this proposal as well.

Proposal 2

Over the Staircase

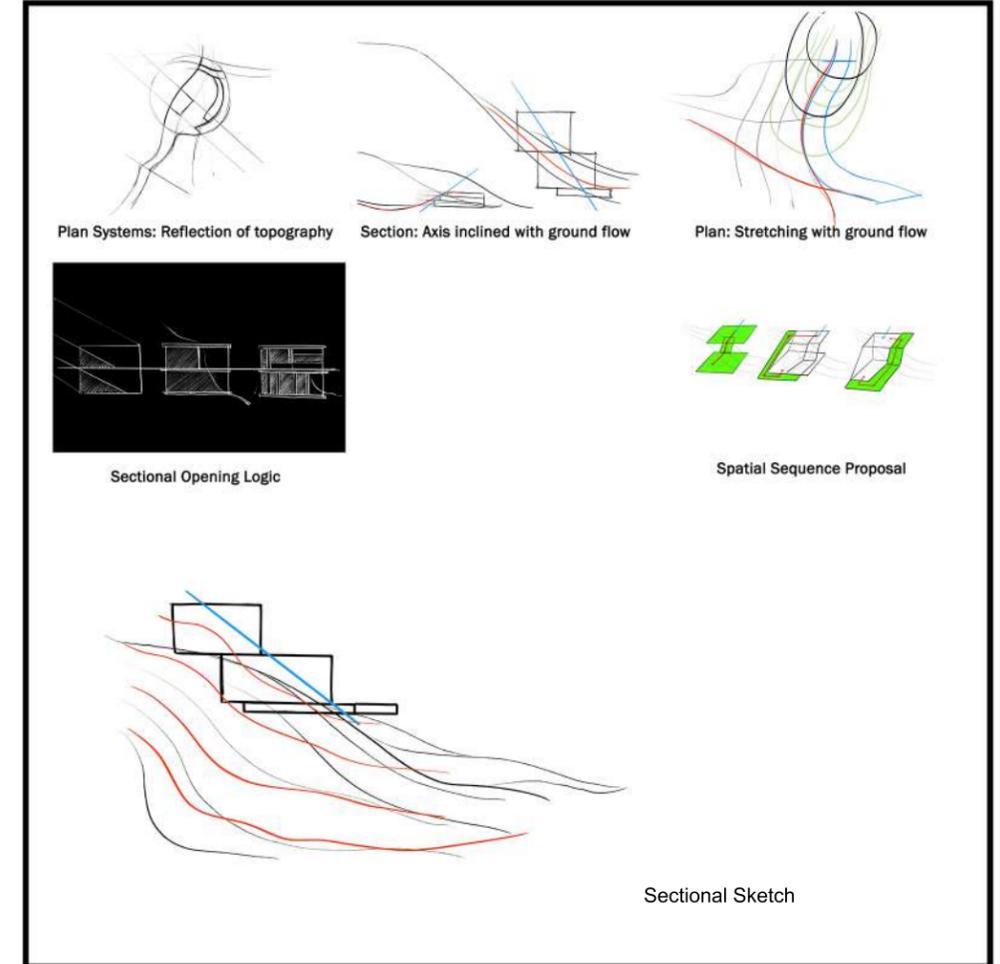


Rhino Rendered Proposal



Plan & Sections

Diagrams



Section Render

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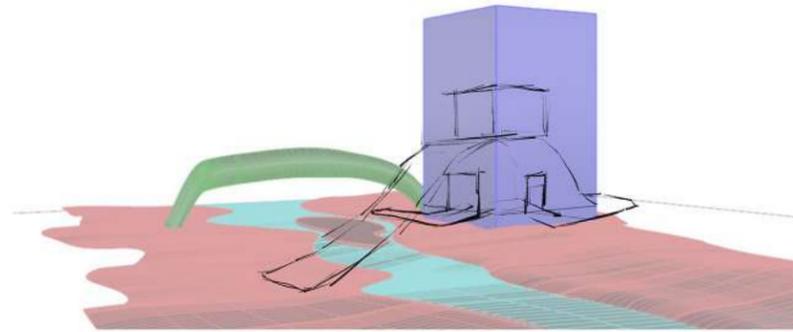
DESIGN PROPOSAL III (APPROVED)

The final proposal, which is the approved one, is to build a pavilion near the stream. As said before, this site caught my eye for its rich biodiversity and complex spatial quality.

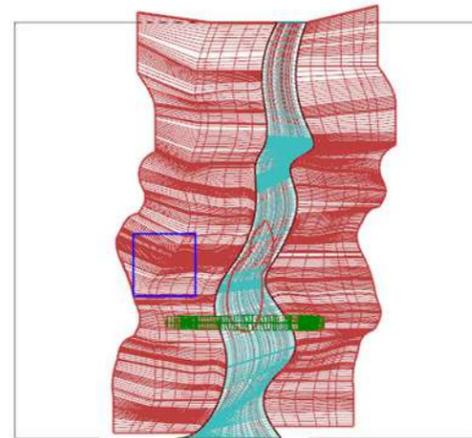
Therefore, learning from the precedent Zaha Hadid's LF one, I want to use my pavilion to serve as a systematic connection of the spaces, and the function of the pavilion is to become an outdoor lab for the kids who take ecology and biology classes in the environmental center there.

Proposal 3

Near the Stream

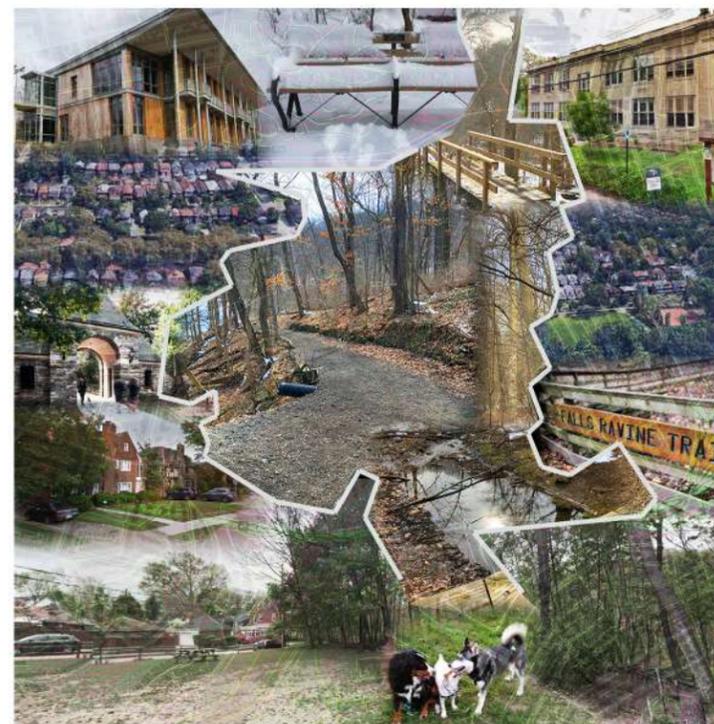
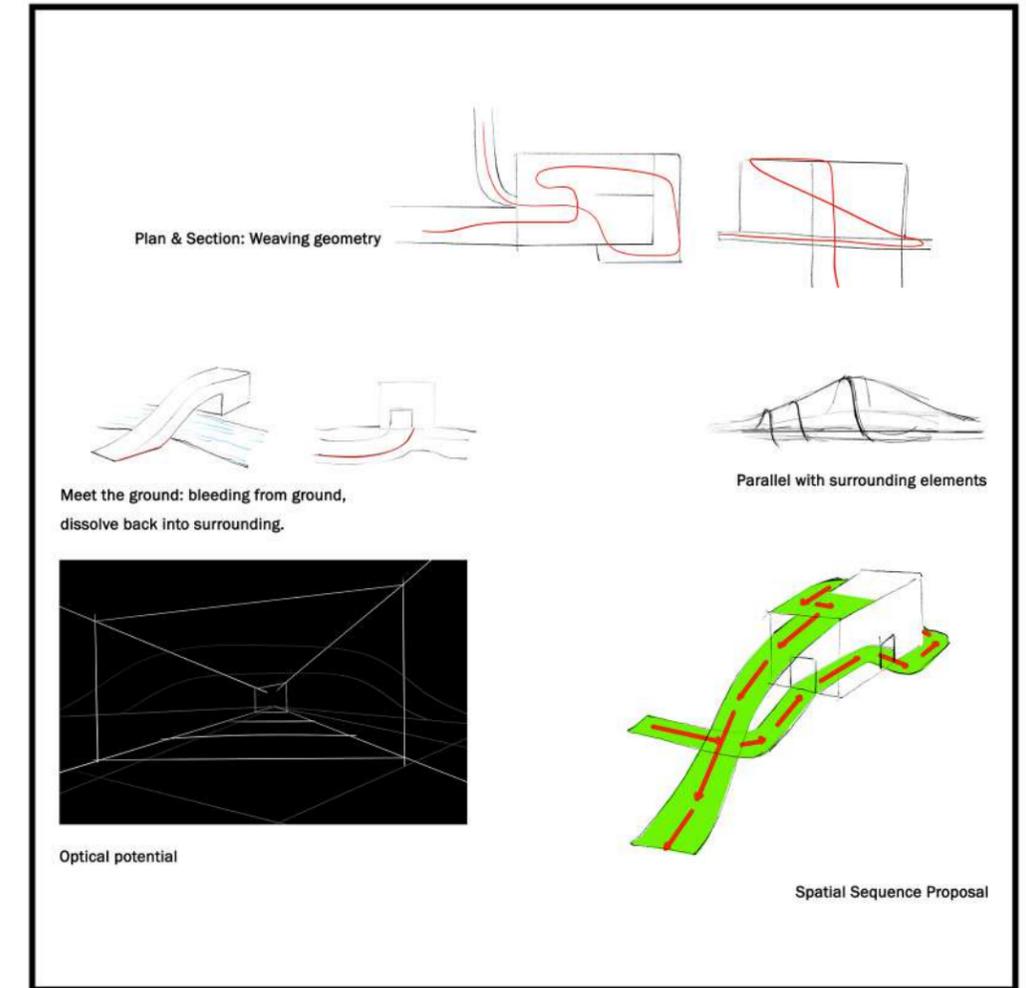


Rhino Rendered Proposal



Site Location (Constructing)

Diagrams



Site Plan Collage

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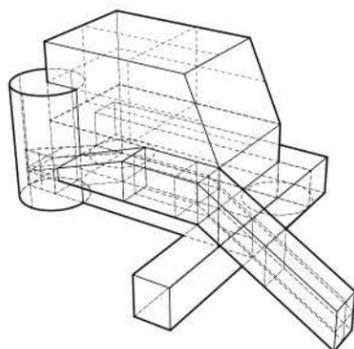
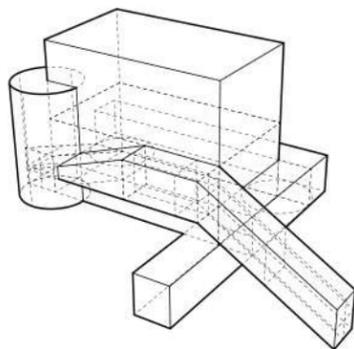
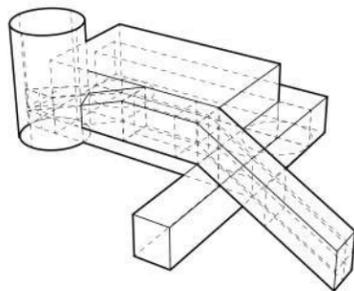
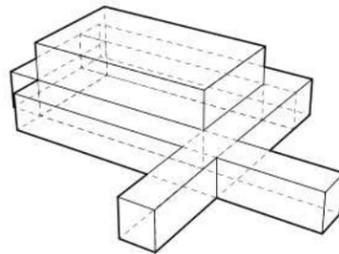
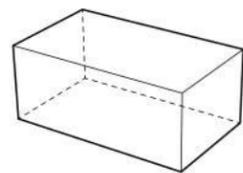
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DESIGN PROPOSAL III(APPROVED)[Cont.]

After deciding to build near the stream, I started to think about the overall shape of the building.

The building should be able to connect spaces, to reflect some topography, and also to serve as a good place for students to collect samples and do experiments.

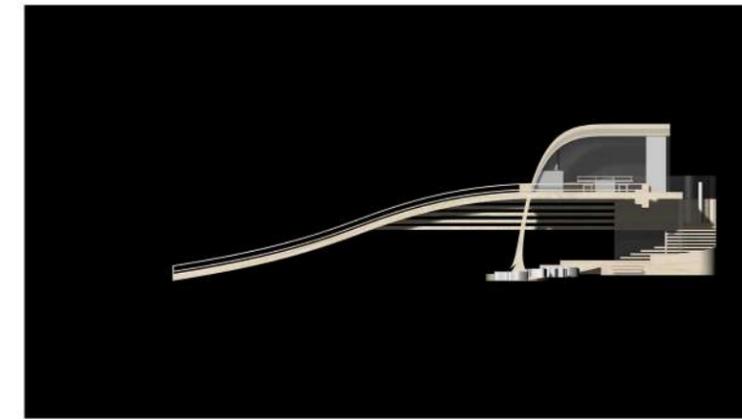
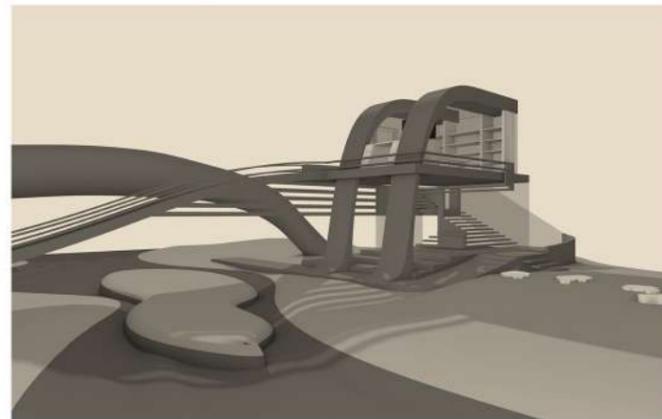
In this part, I thought about the massing of the building, and finally extend to the final design.



Massing Development



Very first design of huge mass of timbers and short ramp



Final version of elongated ramp, more use of glass to reduce weight

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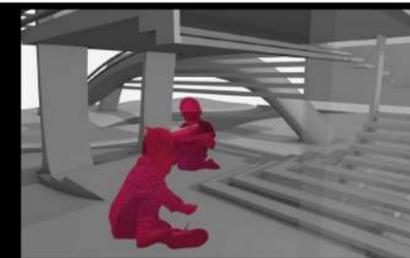
DESIGN PROPOSAL III(APPROVED)[Cont.]

When decided the design, I also considered the construction of the two curved pillar. I searched some construction methods, and after instructor's advice, I chose LVL as my construction method.

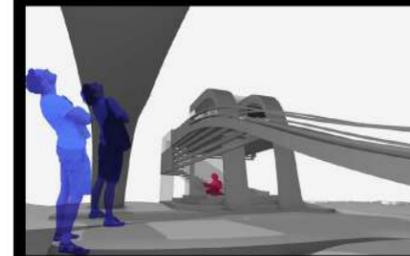
In this part, some other details of the design are documented.



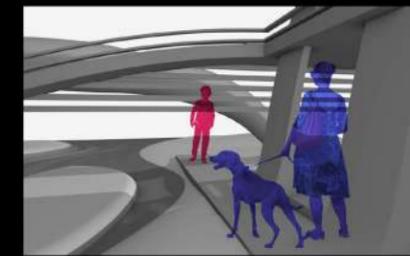
Second Floor Lab



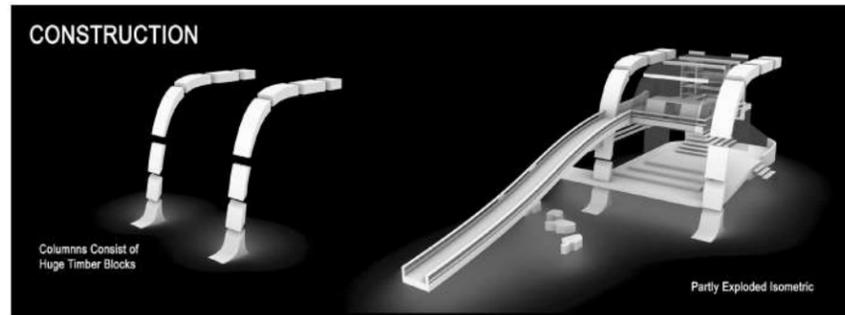
First Floor Sitting Place



Ramp



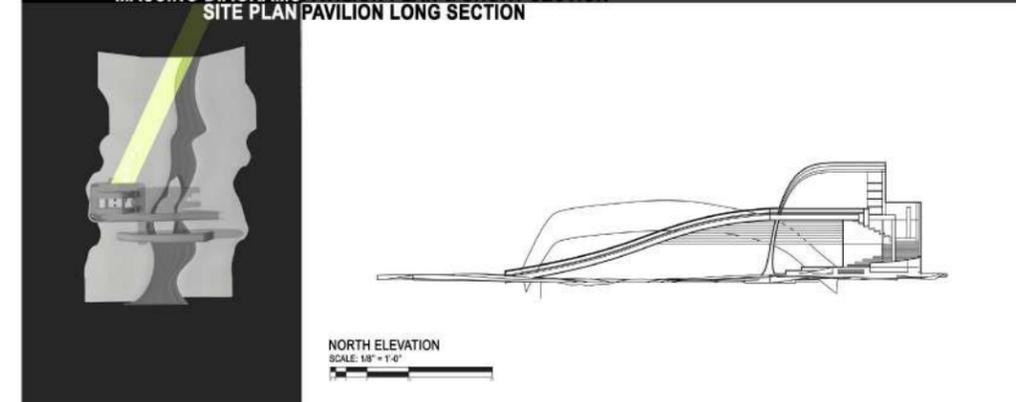
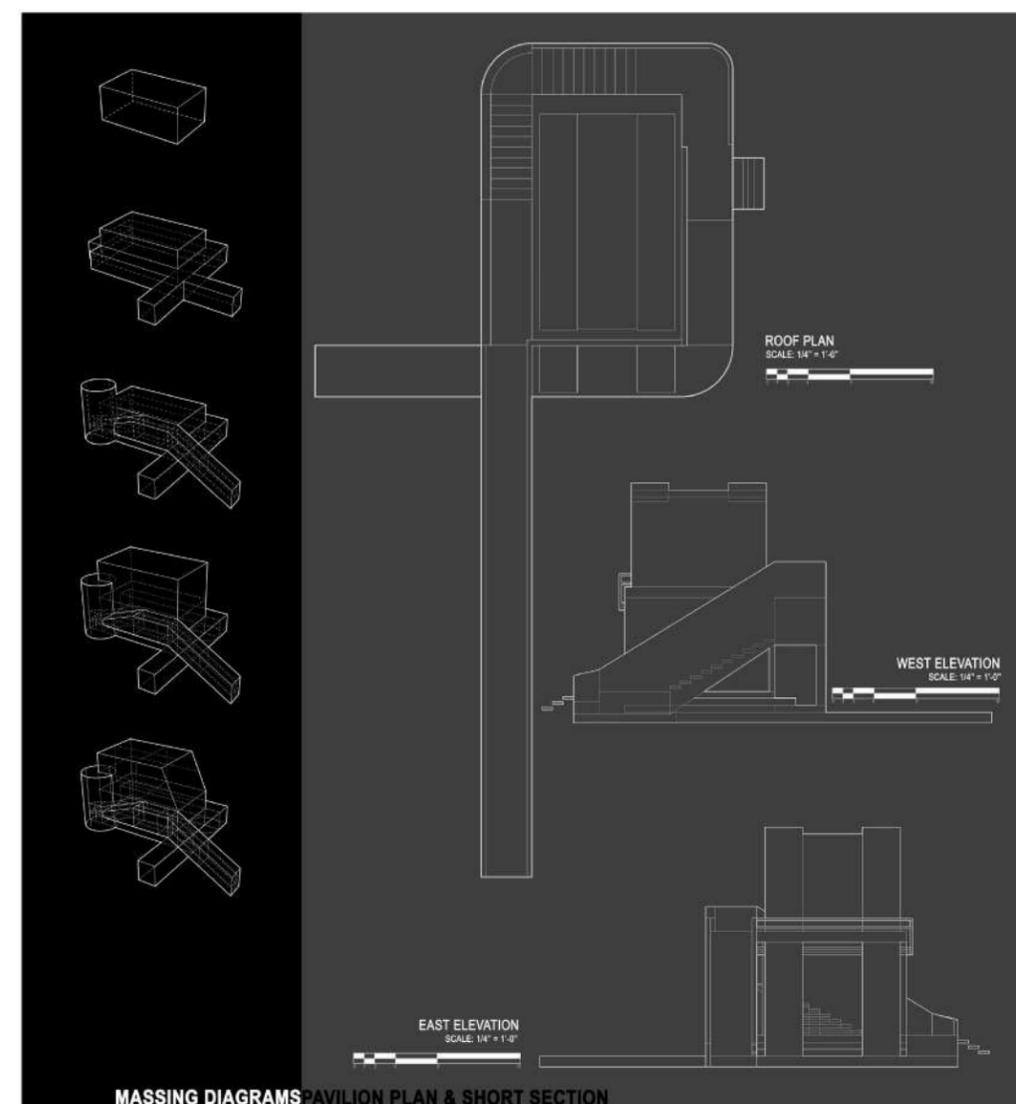
Extension path under the tree



Extension path into Space under the tree

Ramp going over Spaces on banks and delta

Ramp weaving 2 Spaces divided by the river



Model Photos