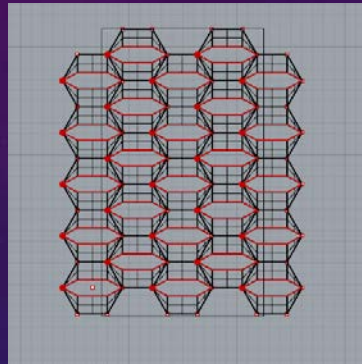


DESIGN DEVELOPMENT MEDIA



Janet Haselden PORTFOLIO

ARCH 4/523 - PROFESSOR NANCY YEN-WEN CHENG WINTER 2017

CREATING A NEW FORM OF LIGHT

Exploration of light, form and color
I am looking back at these iteration



I decided to stick with this iteration and go farther with it. I knew I wanted to make it cyclical so I explored its tension rates and created a rounded form. I want to mix a bit of my screen element into its form to create more edges for the color to bounce off of once this becomes illuminated.



THE PROCESS

Creating a screen with diamond shape perforations

Interaction of Color by Josef Albers he talks about a vibrancy of color and how when certain colors come into close proximity they start to flutter and pop, this is especially true for complementary colors. One of my goals was to try and bring out this deep red with orange highlights, so I added pops of green and yellow to blend the colors together. I really like these colors and how they mesh and vibrated off each other. Even though it no longer has the dragon back form I feel like this new form truly expresses light better.

- Shining light on the situation
- When reading *Dimensional Color by Lois Swirnoff*, I found the following information to be helpful:



Date: 2/2/2017

Topic: Exploration of light and form

THE BUDDING OF A FLOWER

LEARNING OBJECTIVE : Exploration of light, form with color-The Lamp

When reading *Dimensional Color by Lois Swirnoff*, I found the following information to be helpful:

“Color signals a sense of space, or assigns form in perception...” These words stuck with me in the fact that the new pattern produced by my original form is a flower, color became how can I highlight this flower and bring it to life.

>> The flower forms
AUTHOR'S NAME

- First Iteration:



THE FLOWER

LEARNING OBJECTIVE : Exploration of light, form with color- The Lamp

When reading *Dimensional Color by Lois Swirnoff*, I found the following information to be helpful:

“The dimensions of color can be Regarded as a function of Vision itself”

Each color blends and forms a petal. From deep red to a light orange the color blends and illuminates the white surface.

“A Vibration occurs when two hues of the same complementariness and place near each other...the begin to vibrate at their edges.”

Also mentioned in this book is perceptual mixtures where it shows green and orange creating an illusion of a three dimensional space.

Yellow was just kind of picked because in light it can pop any color, and green and yellow = U of O

>> The flower



LOOKING AT THIS LAMP UNDER DARKER CONDITIONS



REFLECTION

- **LEARNING OBJECTIVE:** The study of light and form
- Looking back at this project I not only learned the very, very, basics in grasshopper but learned how form is shaped through folding paper. That it depends not only on the folding but the individual strength of the paper to hold weight and stress. It was also nice to explore color and to find a vibrancy that I truly enjoyed. Over all I learned a lot from this project and came out with a new bed side lamp which I have been showing off to all my non-architecture friends.
- (This page may be kept private)

REFERENCED COLOR



3-33

Experiment 5: Volume|Void

The field is split, one half green and the other red. Two red cubes are placed, so that one is contrasted with the field, the other integrated with the background. A green square, placed between the two cubes, causes a third, convex cube to appear. The boundaries of the red cubes, conditioned by their juxtaposition with the background colors, cause the shape of the red in the red field to appear softened, and less



Interior space, Tina Beebe/Charles Moore



3-45 Luis Barragan, house in Tacubaya, Mexico, DF, 1947

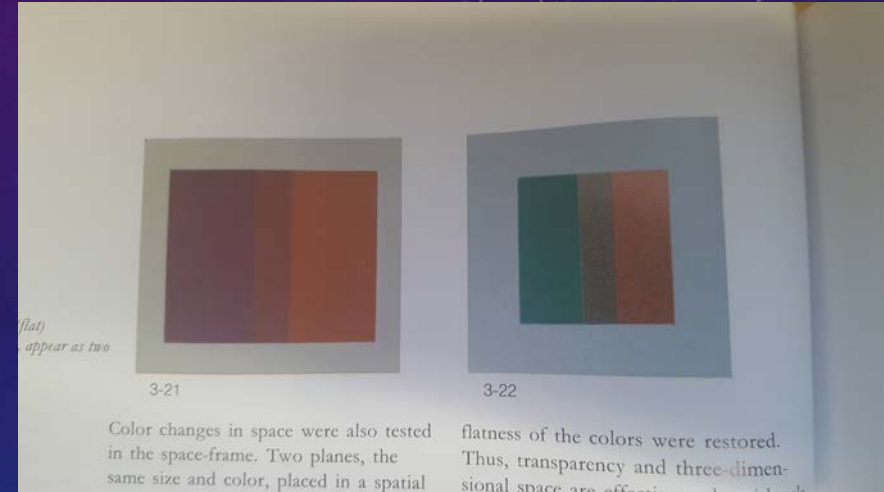
Painting and architecture were closely associated also in the work of Theo van Doesburg. His palette extended to include secondary colors, purple, green, and orange, in seeking the integration of color in architecture. While much of his work remained theoretical, it was



3-28

Experiment 2: Figure|Ground

Contrasting colors in the environment influence the appearance of two red cubes of equal size. Though physically nearer, and consequently larger in the visual field, the red in a red surround tends to dissolve into the background and appear smaller, by comparison with the cube seen contrasted with the black field.⁴⁸



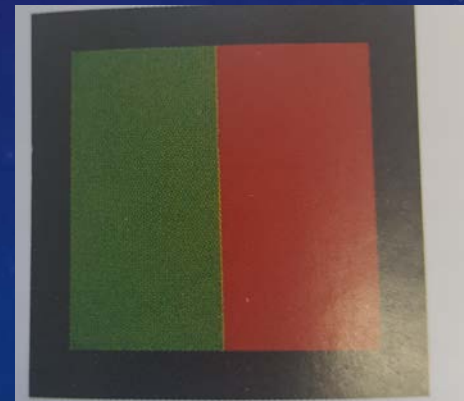
(flat) appear as two

3-21

3-22

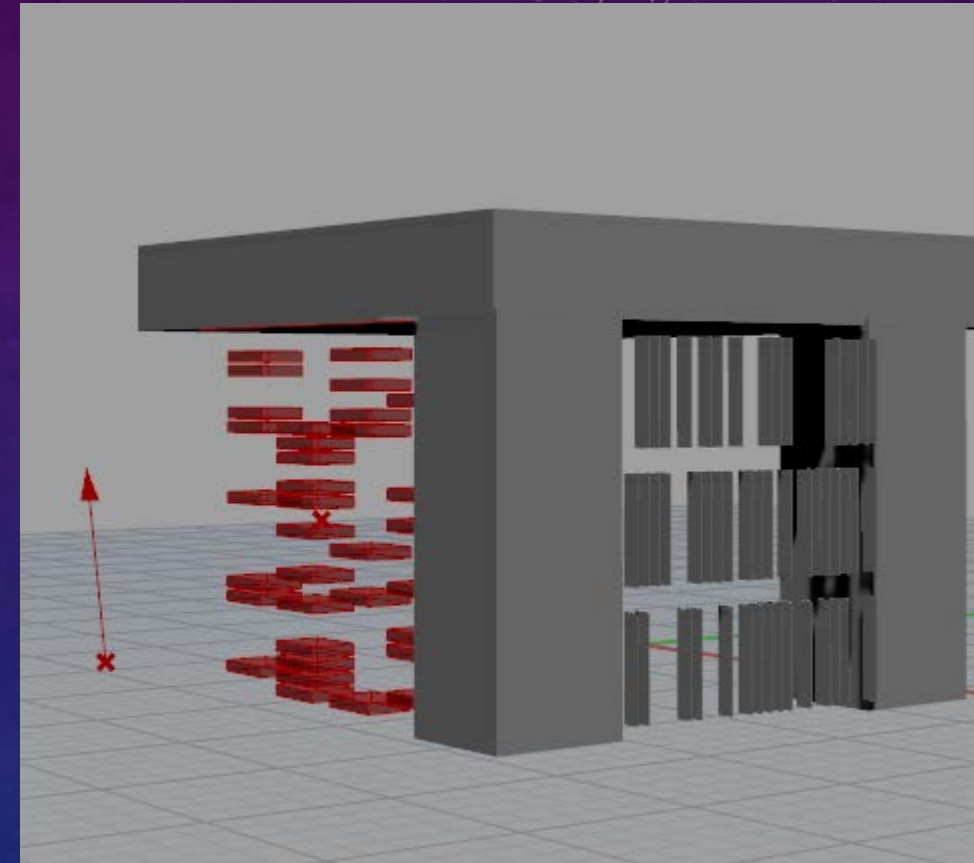
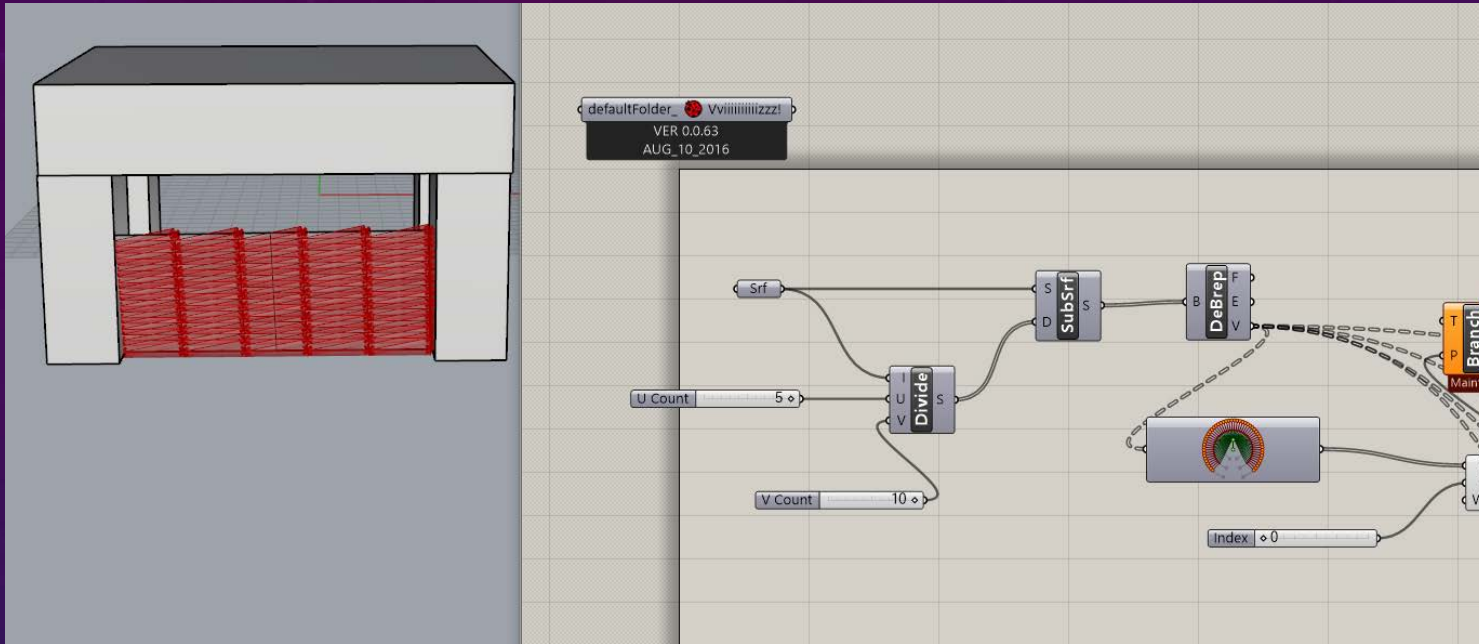
Color changes in space were also tested in the space-frame. Two planes, the same size and color, placed in a spatial

flatness of the colors were restored. Thus, transparency and three-dimensional space are effective in restoring



3-11 Three-dimensional vibration

DESIGN DEVELOPMENT MEDIA



CREATING A PANEL

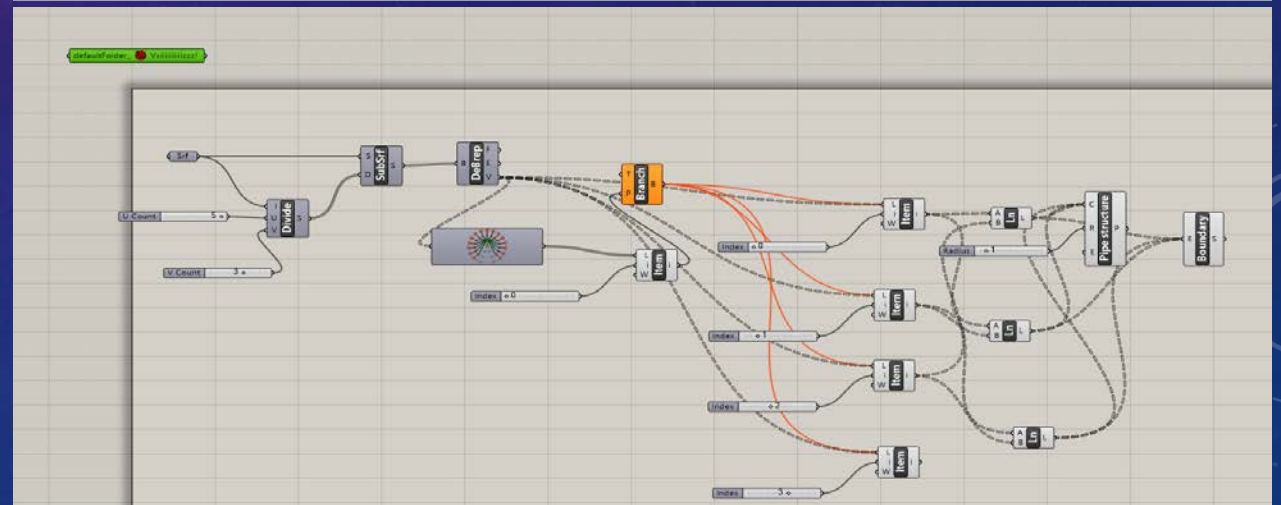
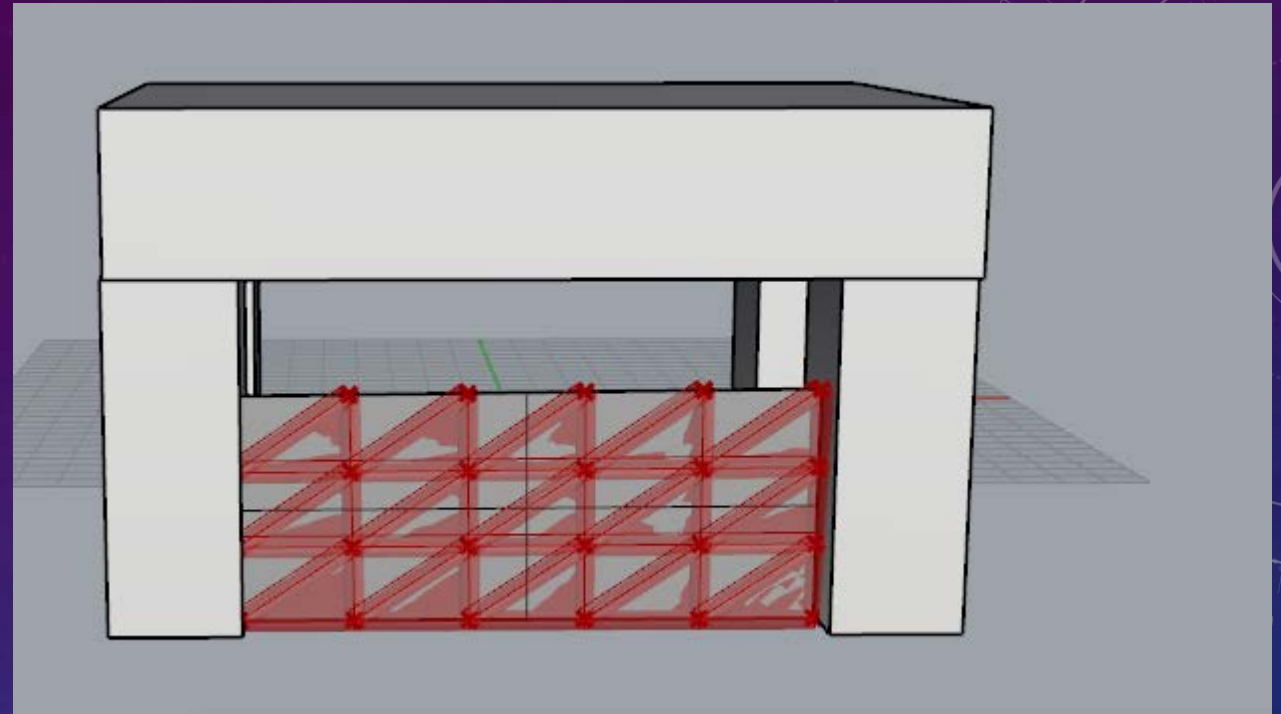
I learned how to make structural members that move when manipulation the numbers. After watching the tutorials I re-created a tree family with branching members to create and operable structure.

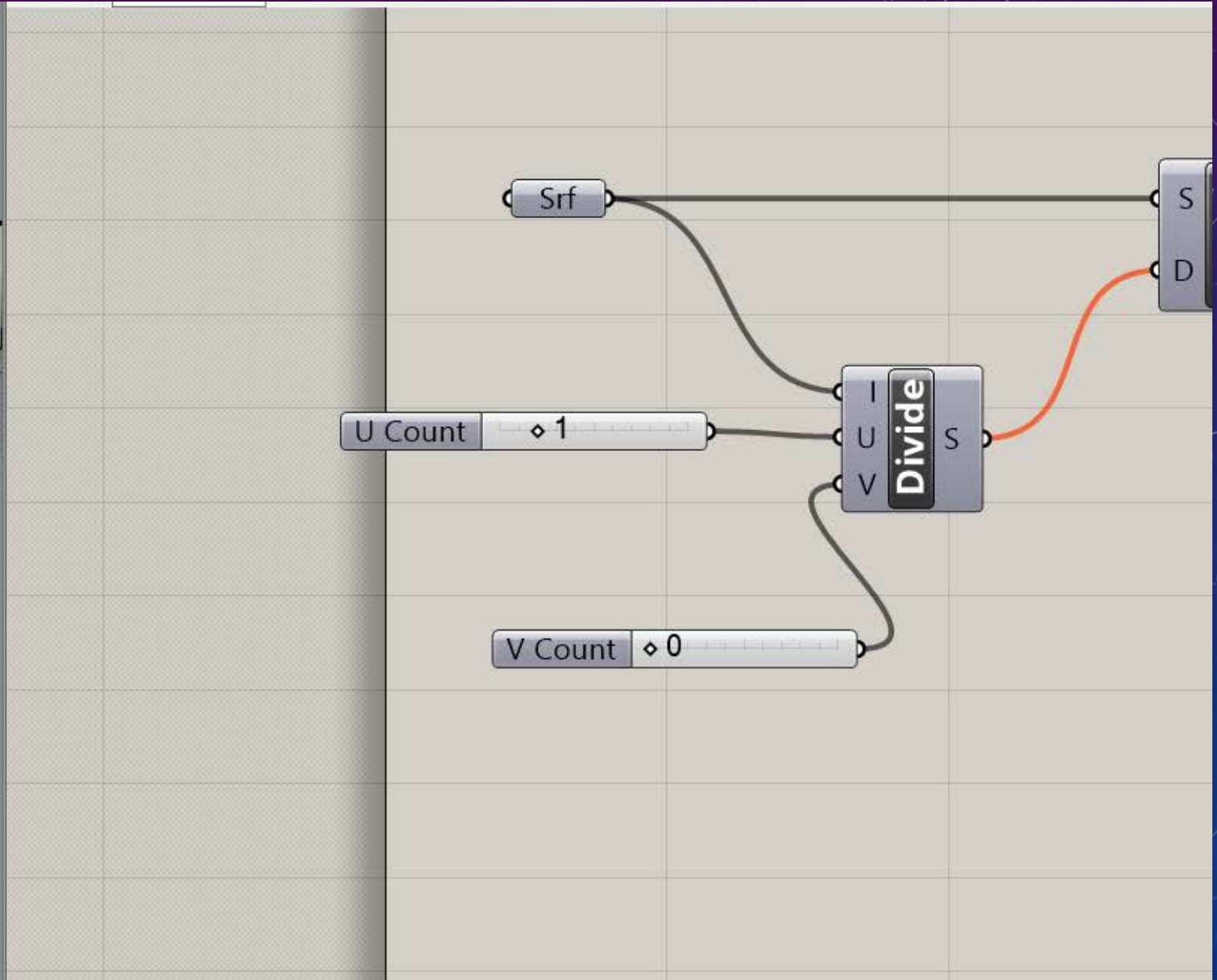
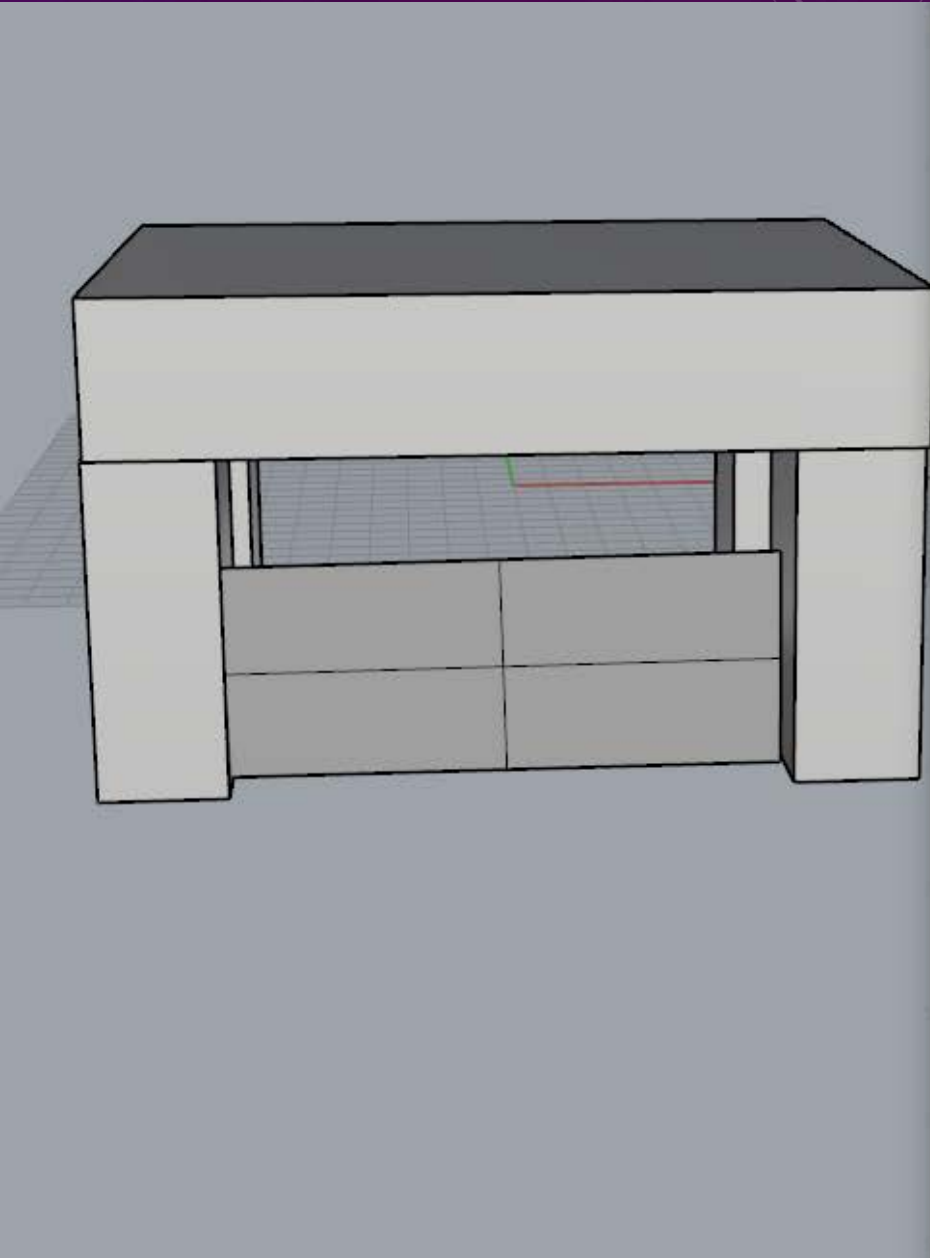
>> YouTube tutorials:

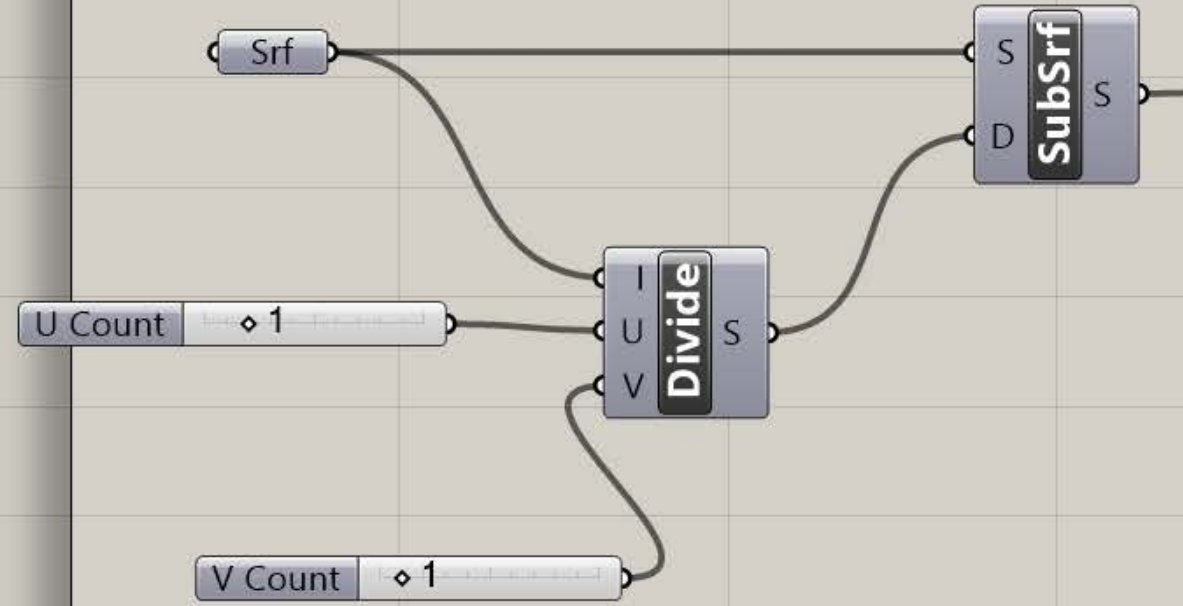
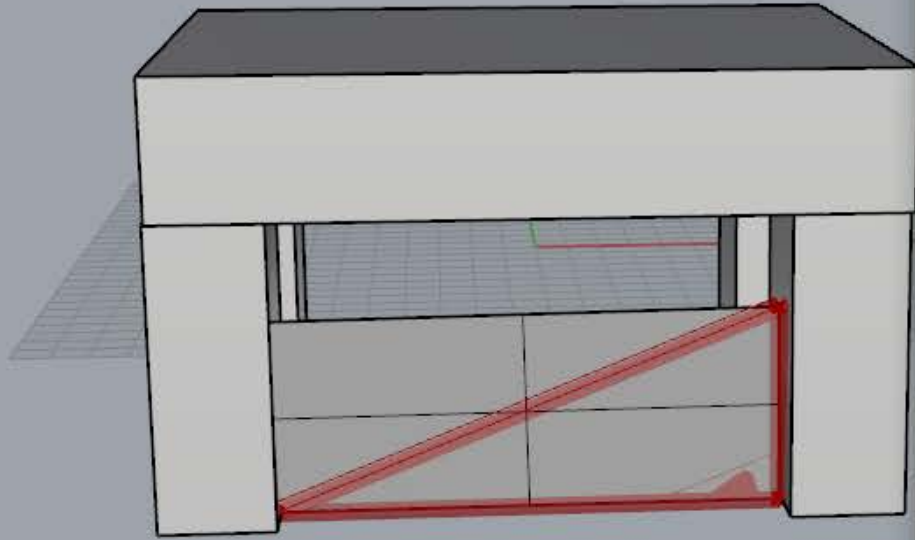
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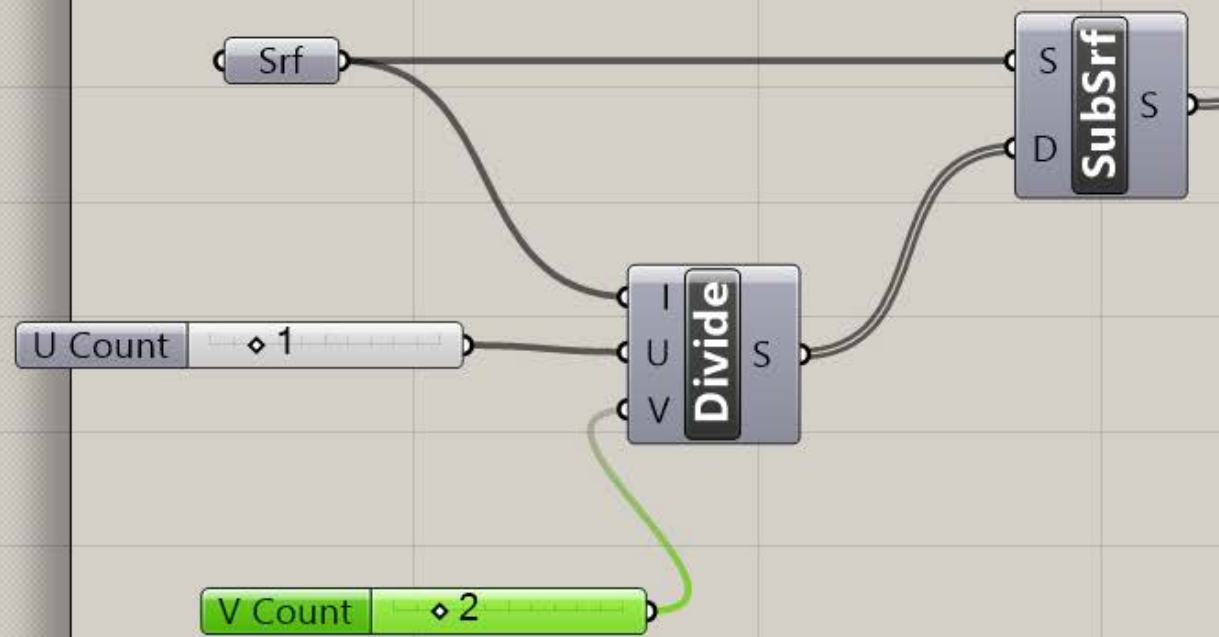
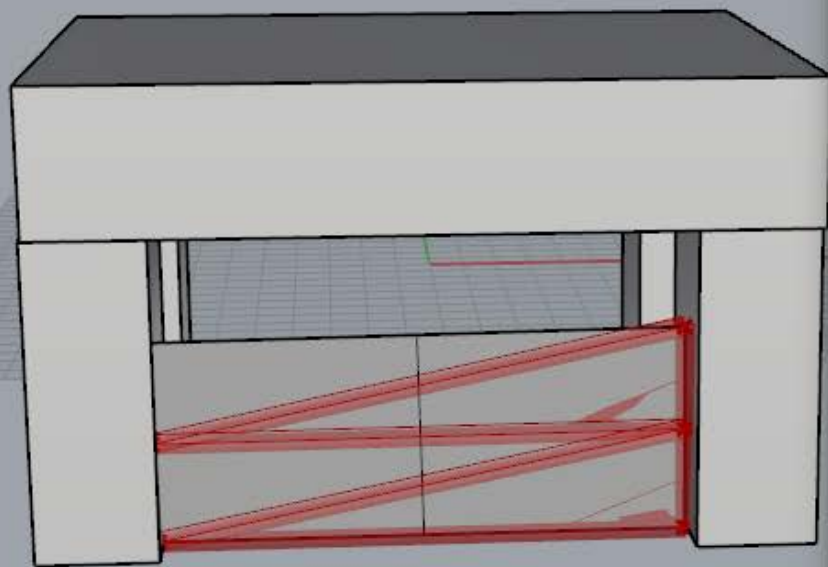
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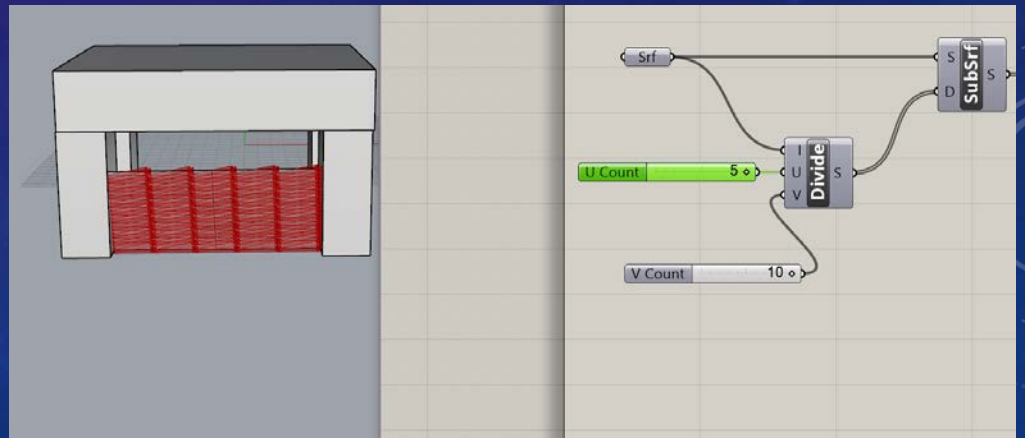
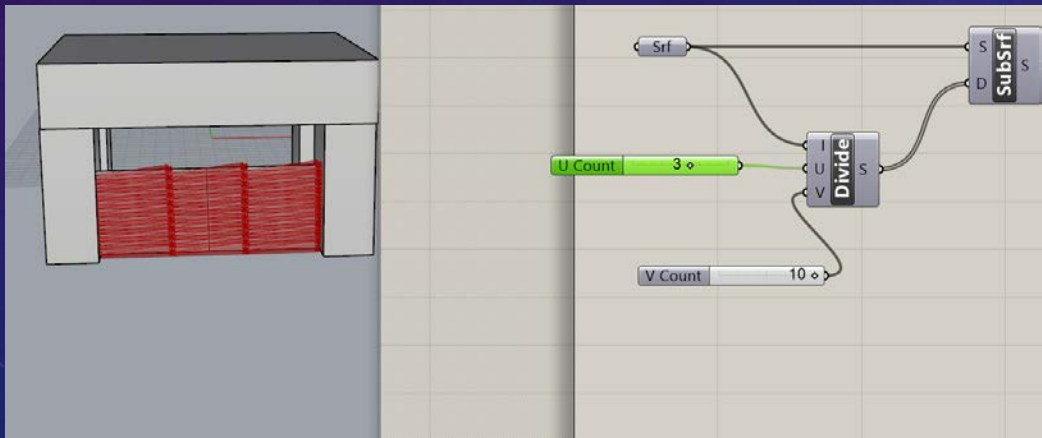
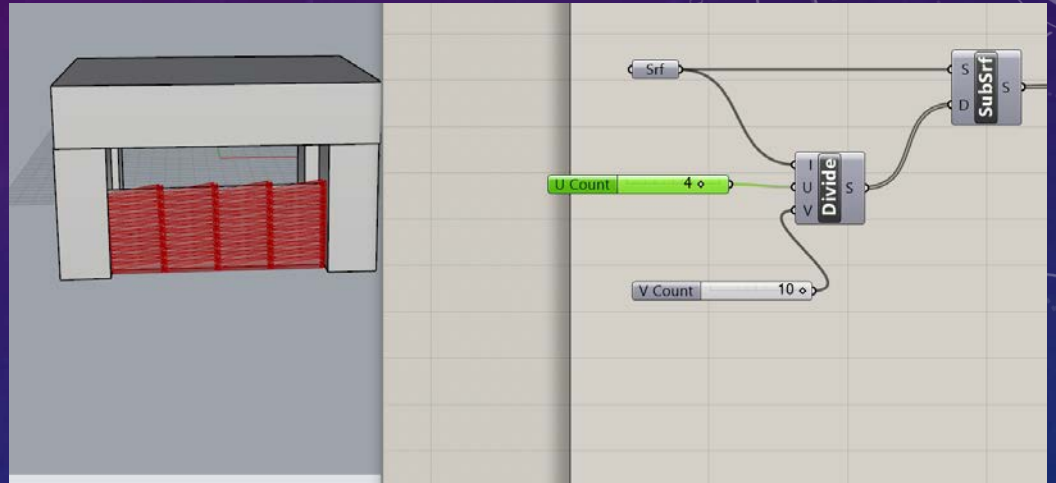
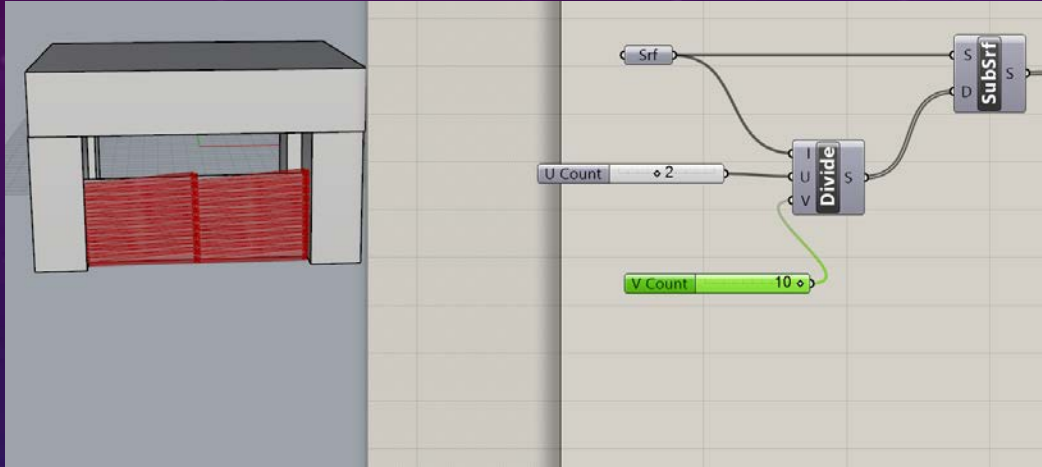
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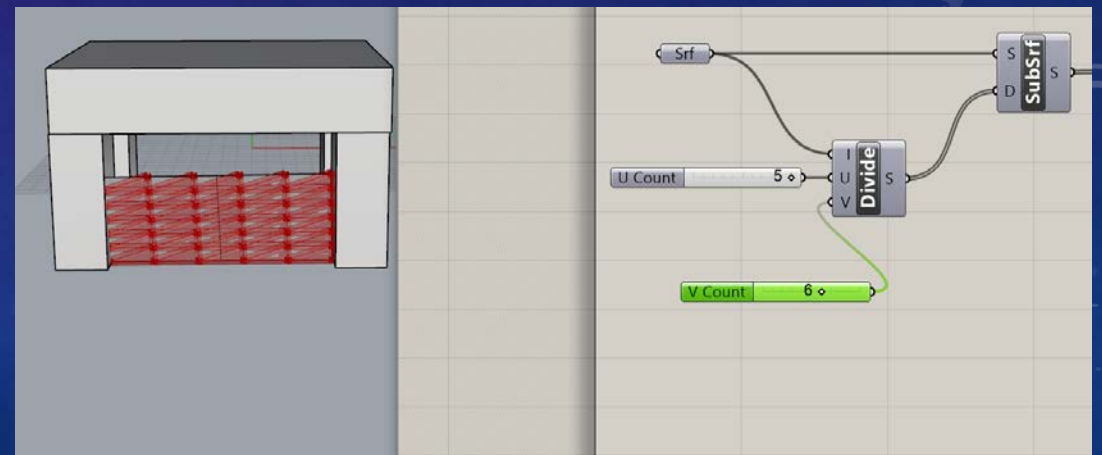
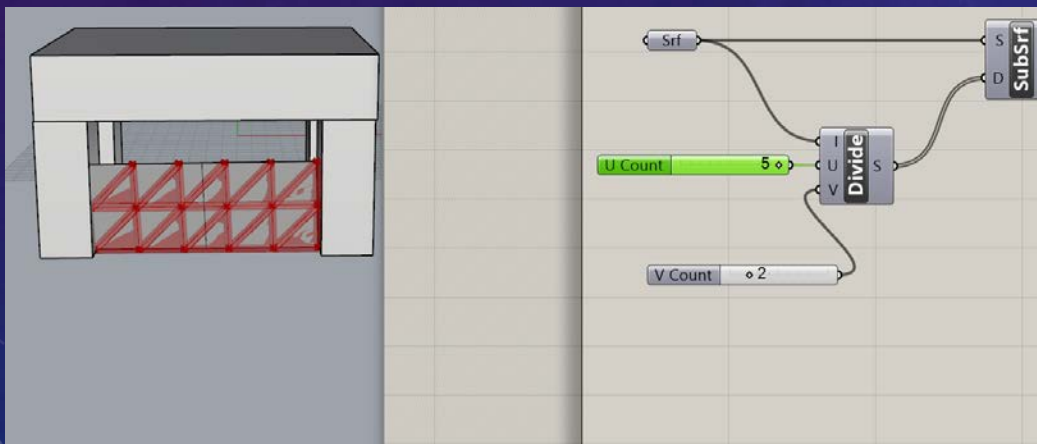
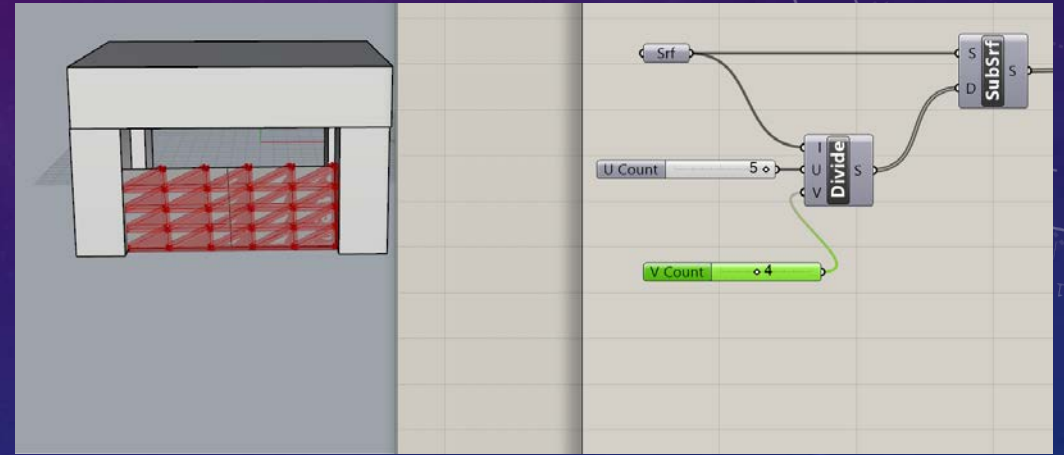
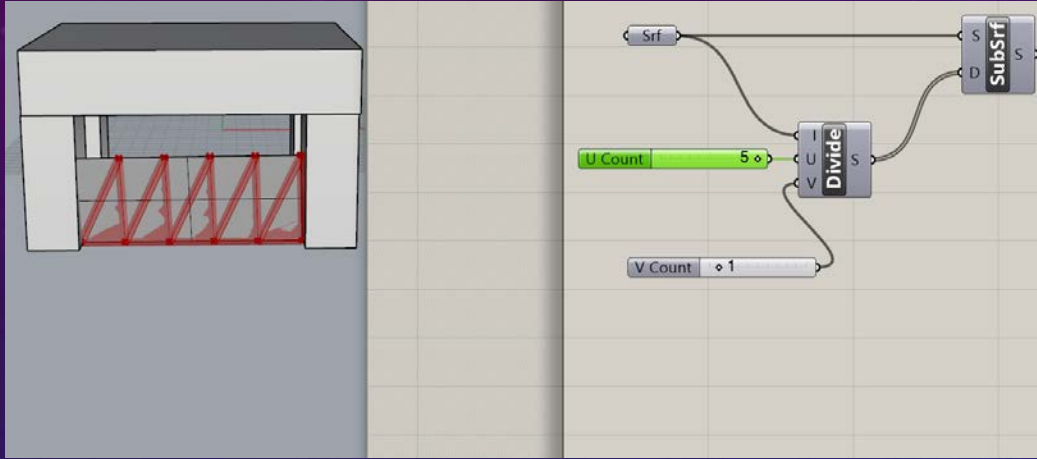


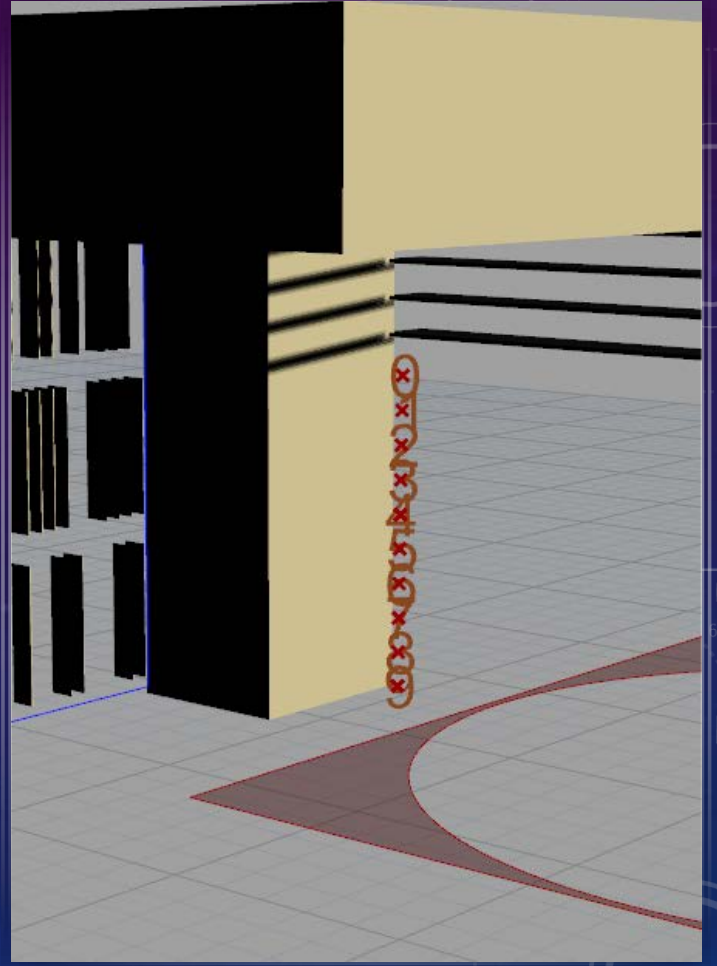
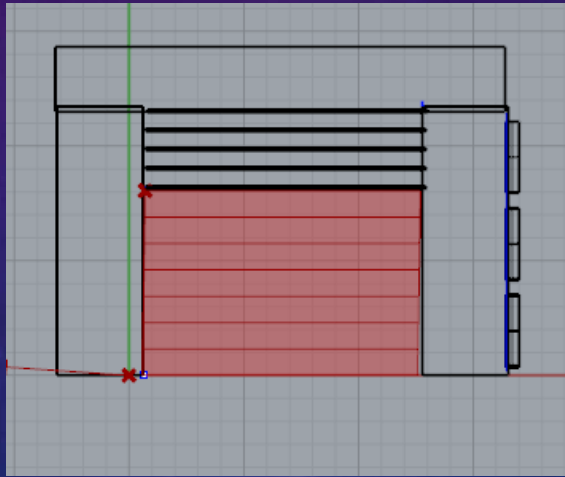
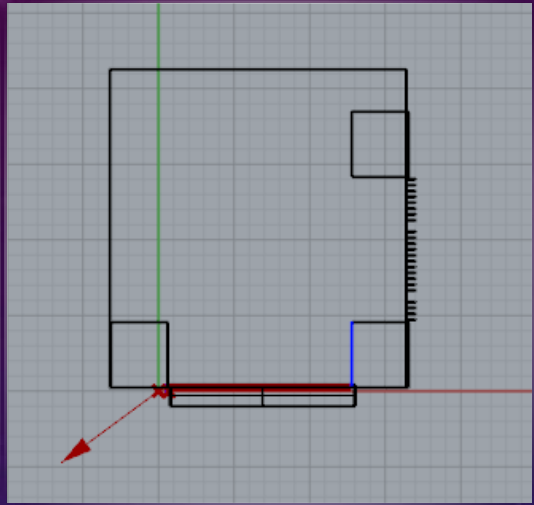
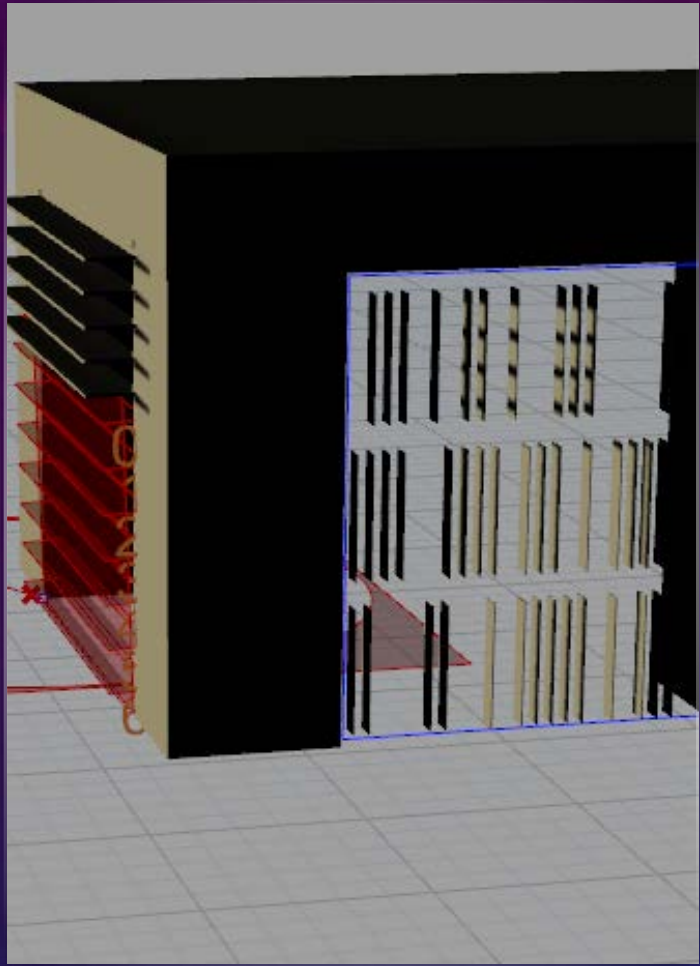




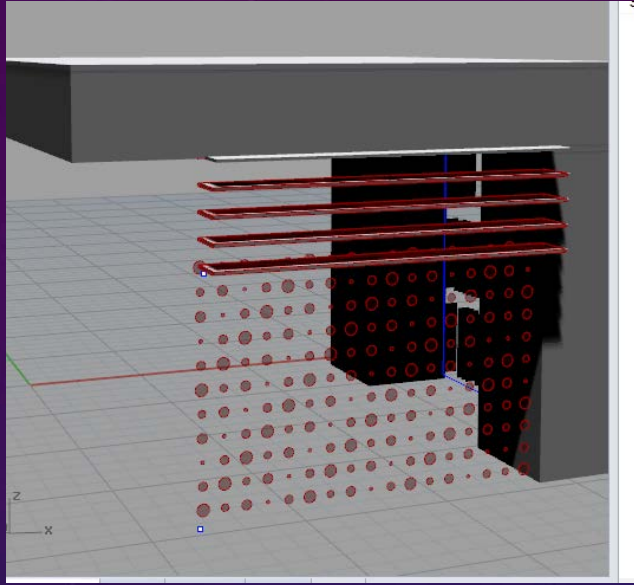




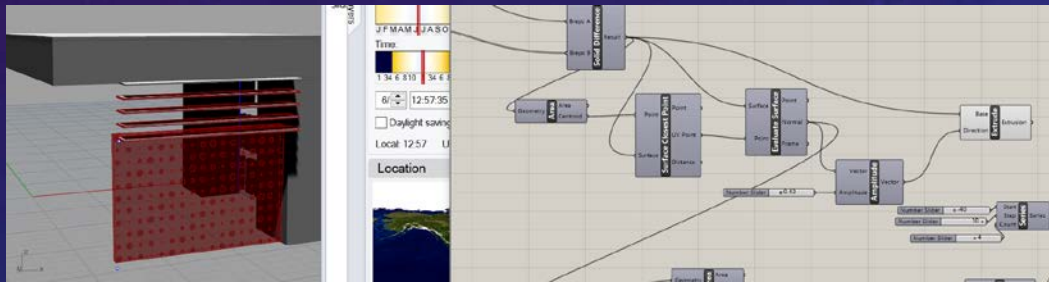




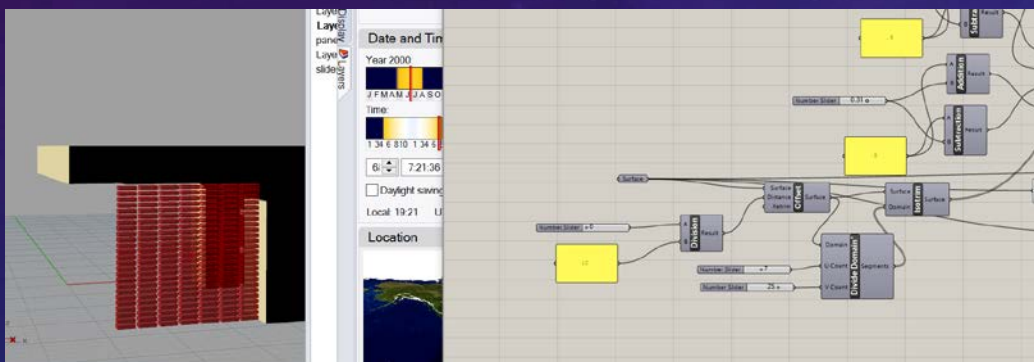
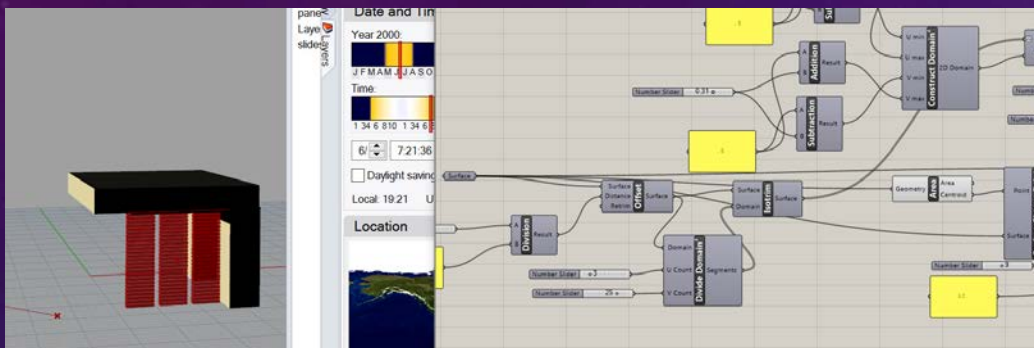
ITERATION NUMBER ONE



- I tried to make a perforated panel but when ever I imputed the Solid difference it cut out the plane instead of the circle... I was however able to make and adjustable randomized patter with the circles so that was a success.

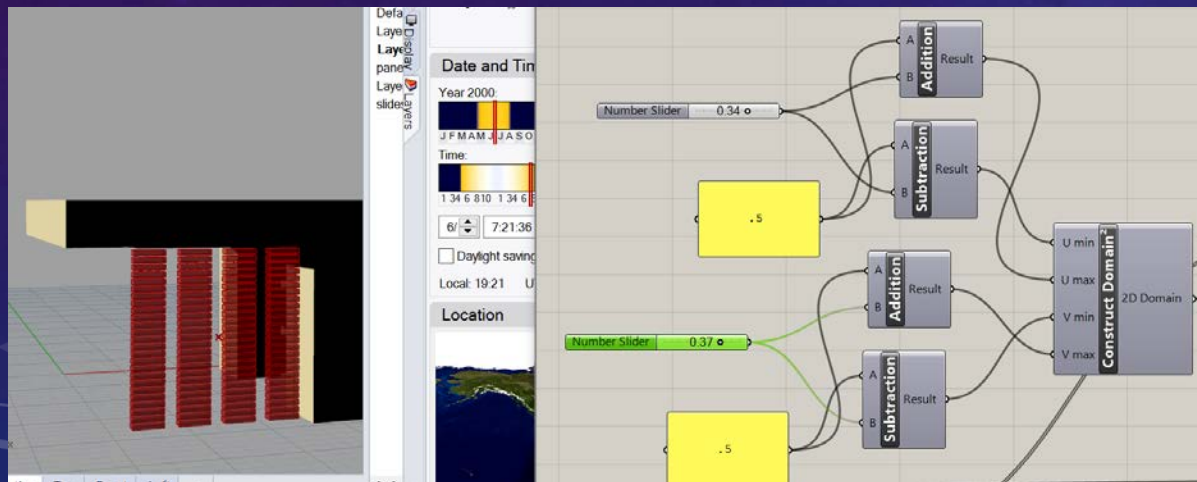
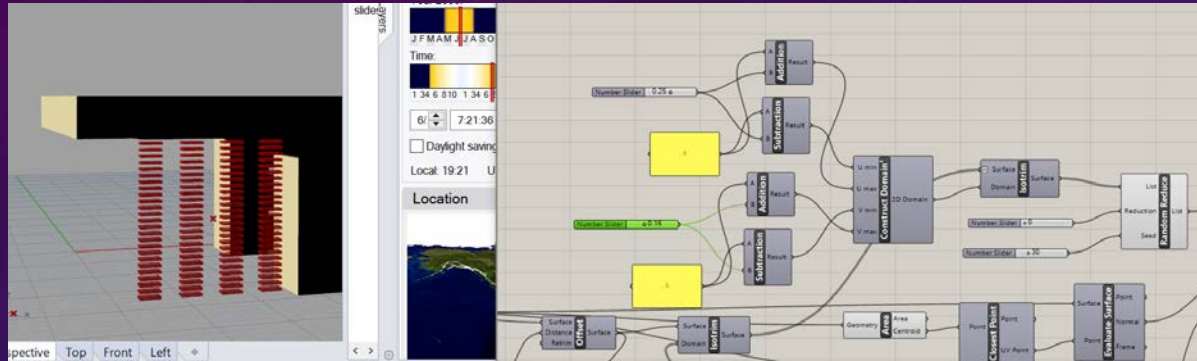


OTHER ITERATIONS



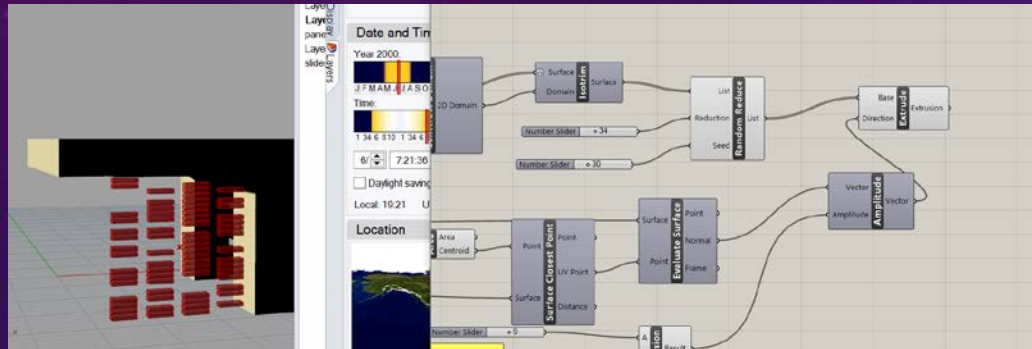
- I made a adjustable louver system that can also be morphed into creating light filtration screens.
- The U and V Sliders control the quantity of panels and the rows

- The addition and subtraction scripts control the spacing and thickness of the panels

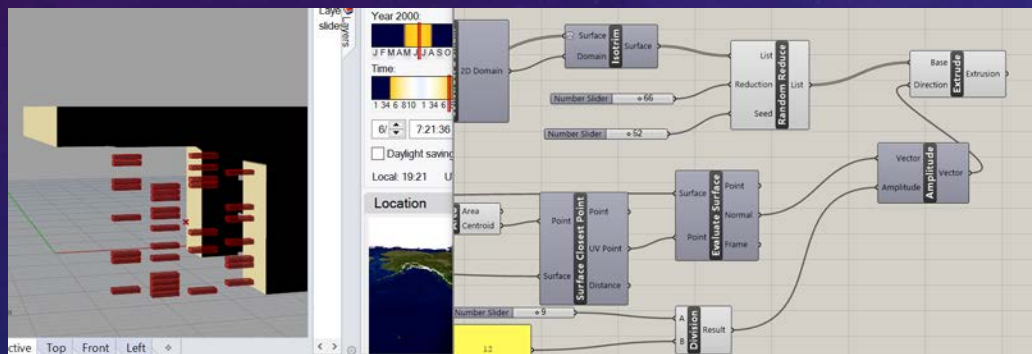
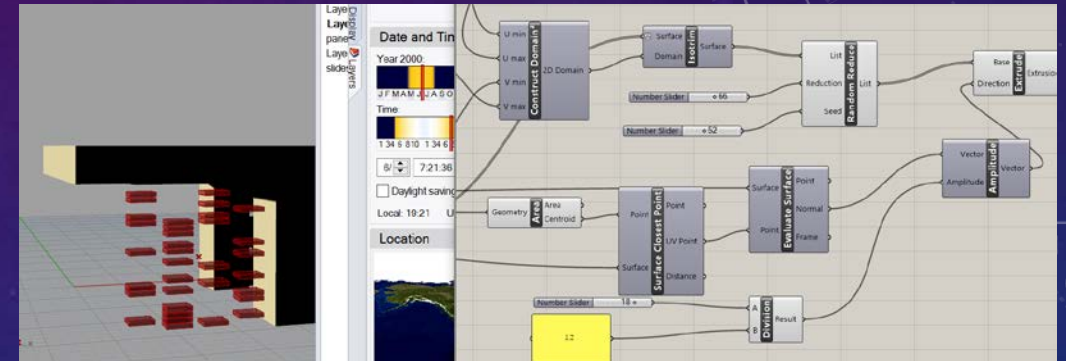


Daylighting, natural ventilation, and solar control are integrated at multiple scales, from the building massing and section to the envelope details.

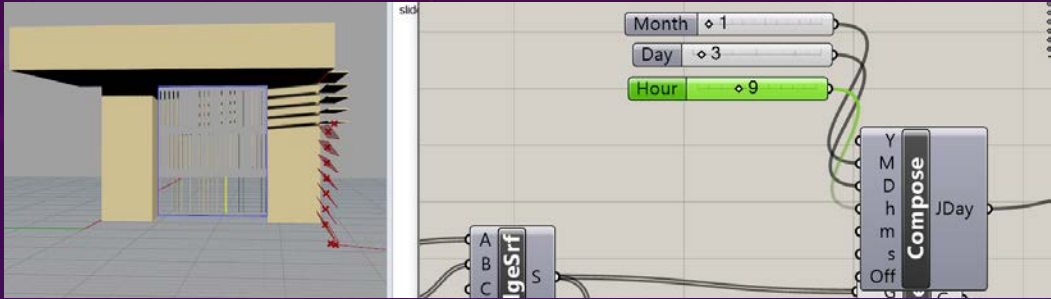
- The Random Reduction control allows for me to create off set patterns and control the spacing based of patterning



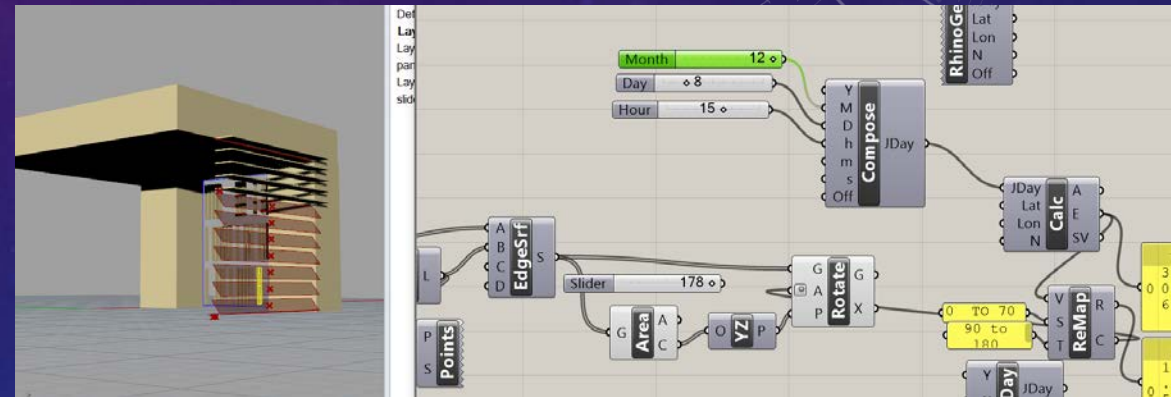
- Finally the last slider controls the length of the louver and how far it extends



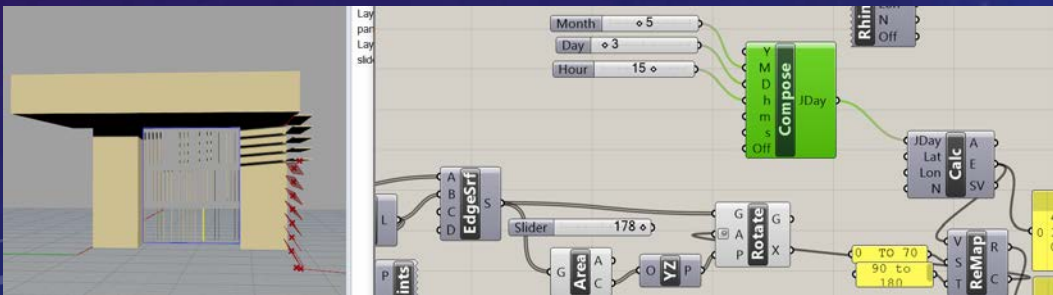
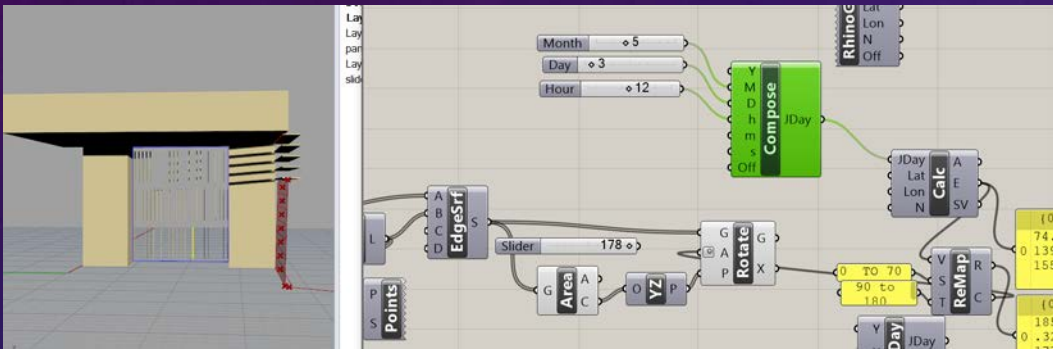
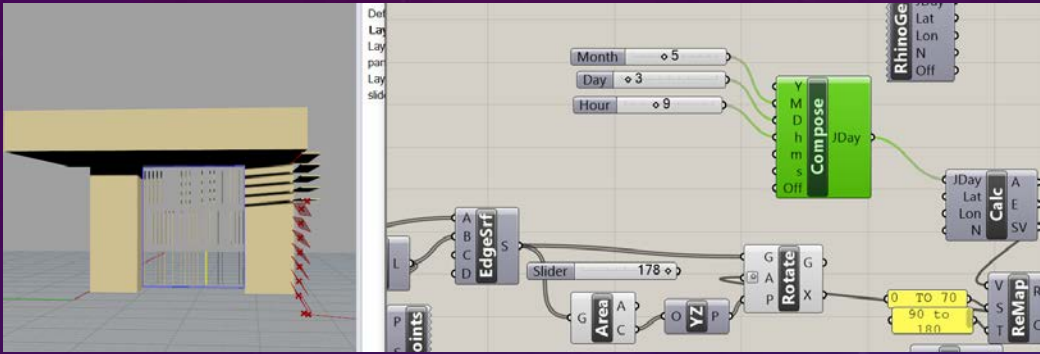
WINTER



During the day the louvers should be open but for some reason when running the heliotrope script it did not change



SUMMER



- During the summer the louvers close during mid day when sun is at it's peak point.

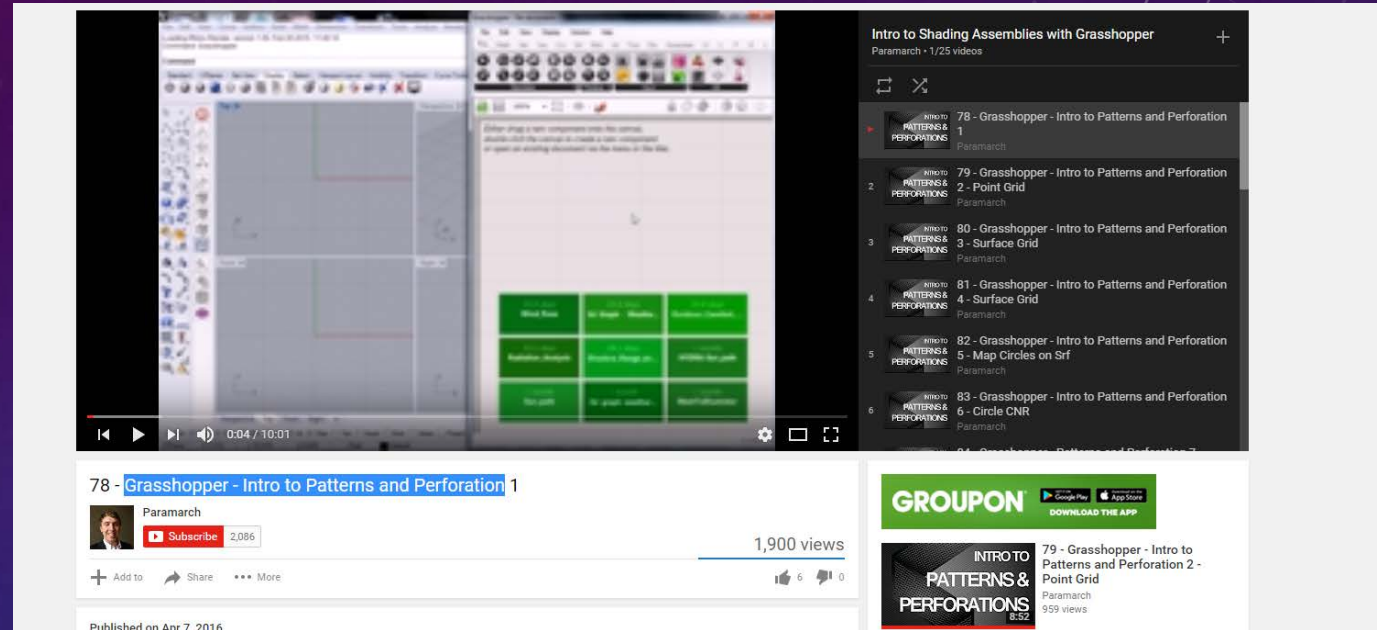
REFLECTION

It was fun to watch tutorials online and really learn these scripts and what they do, I hope to learn how to reconnect baked objects back to grasshopper and make them move. I saw that there was an online session for that and I am interested in learning more about it.

I highly recommend these YouTube tutorials:

Grasshopper - Intro to Patterns and Perforation:
<https://www.youtube.com/watch?v=UgC5k3UoxkY&list=PLiL17ZqRLQ4XXMXrbmi4j7KpgxjOUmibL&index=1>

He takes you through a step by step process with his class on how to set up the form and manipulate it.

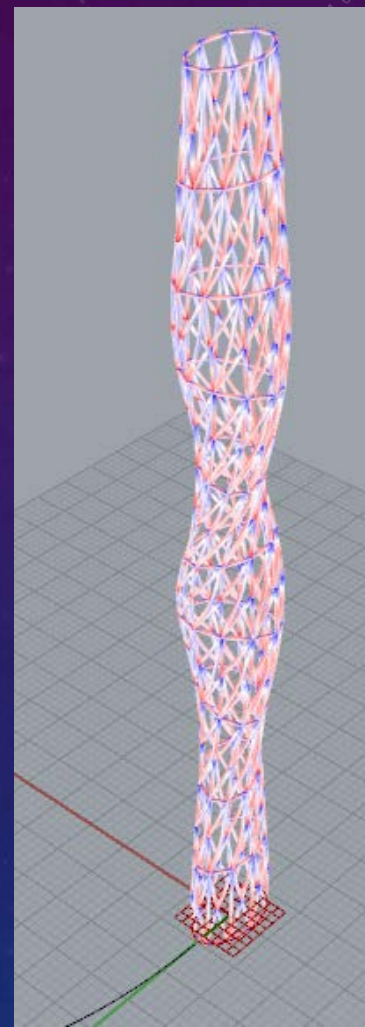
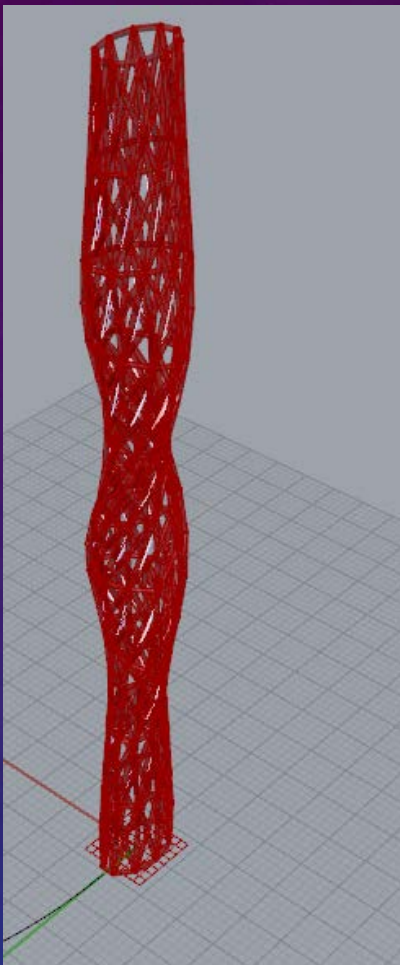
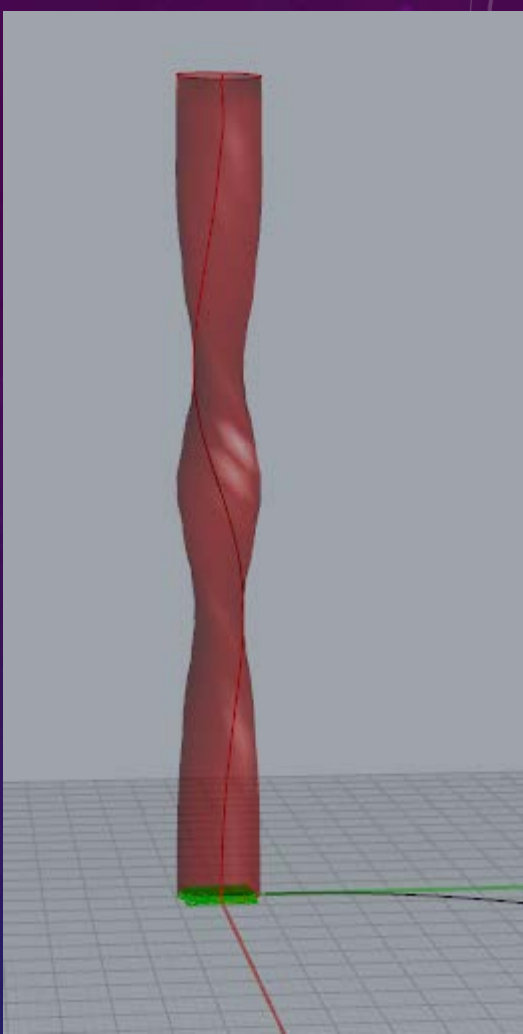


The screenshot displays a YouTube video player for a tutorial titled "78 - Grasshopper - Intro to Patterns and Perforation 1" by the channel "Paramarch". The video player shows a 3D model of a building facade with a grid pattern. The video player interface includes a play button, progress bar (0:04 / 10:01), and a list of related videos on the right side of the player. The related videos list includes:

- 78 - Grasshopper - Intro to Patterns and Perforation 1
- 79 - Grasshopper - Intro to Patterns and Perforation 2 - Point Grid
- 80 - Grasshopper - Intro to Patterns and Perforation 3 - Surface Grid
- 81 - Grasshopper - Intro to Patterns and Perforation 4 - Surface Grid
- 82 - Grasshopper - Intro to Patterns and Perforation 5 - Map Circles on Srf
- 83 - Grasshopper - Intro to Patterns and Perforation 6 - Circle CNR

REFLECTION OF READING

- It is always a good idea to look on how your design can use renewable resources and transform into something new. We should look at daylighting as an opportunity and not “electric lighting systems, controls, and mechanical systems, being used over natural light which is still too often utilized as the secondary”. For the greatest chance at carbon reduction we need to look at sunlight becoming our new primary source. The integration of Daylighting needs to also focus on climate control, hence why using Heliotrope to experience day lighting and the sun command in Rhino are so important to learn and study.
- I was especially interested in the portion of this reading where it talks about how “Architecture it’s self needs to Harvest Energy” What if these louvers I have had solar panels on them so that way as they are blocking light they could be collecting energy. When reading this it reminded me of the function of a Heat pump, a energy saving heating system that is utilized to reduce the out-put of the Furnace. Thats what Daylighting needs to be, a way to save energy and decreases the out-put of mechanical lighting.



DESIGN DEVELOPMENT MEDIA

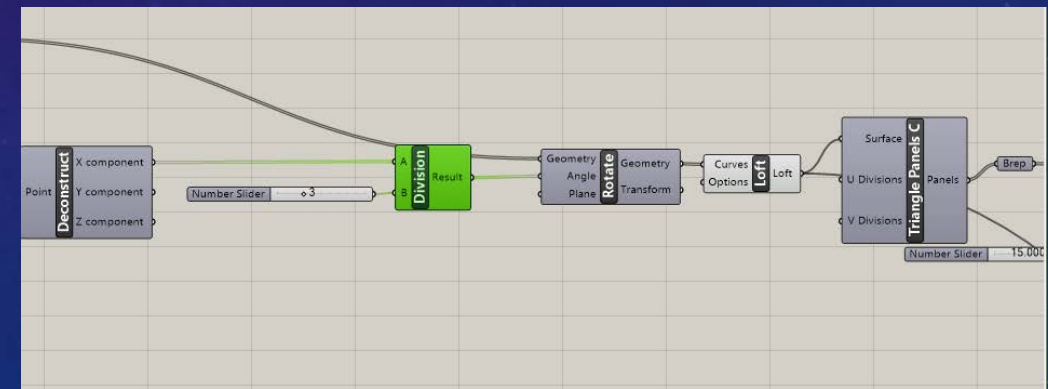
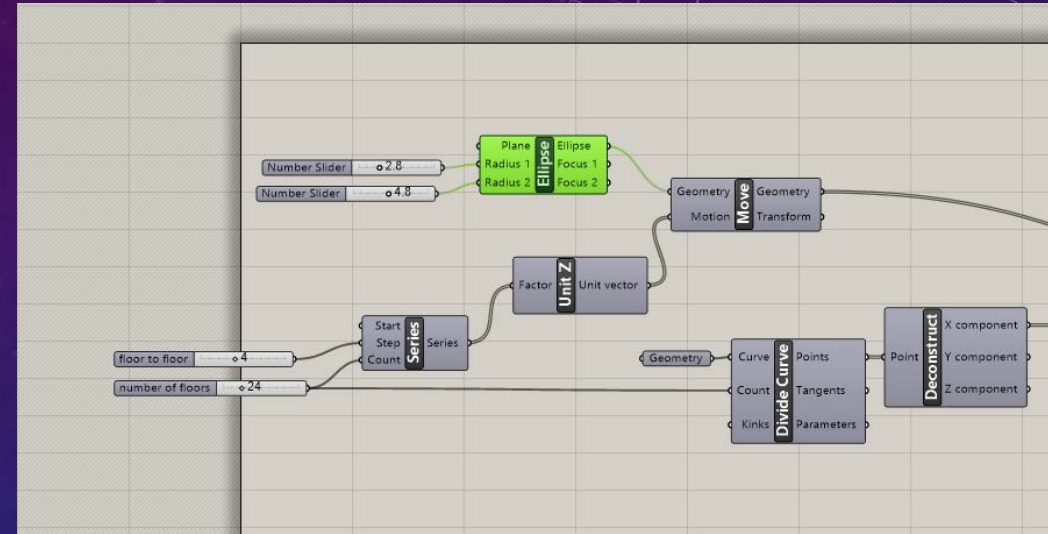
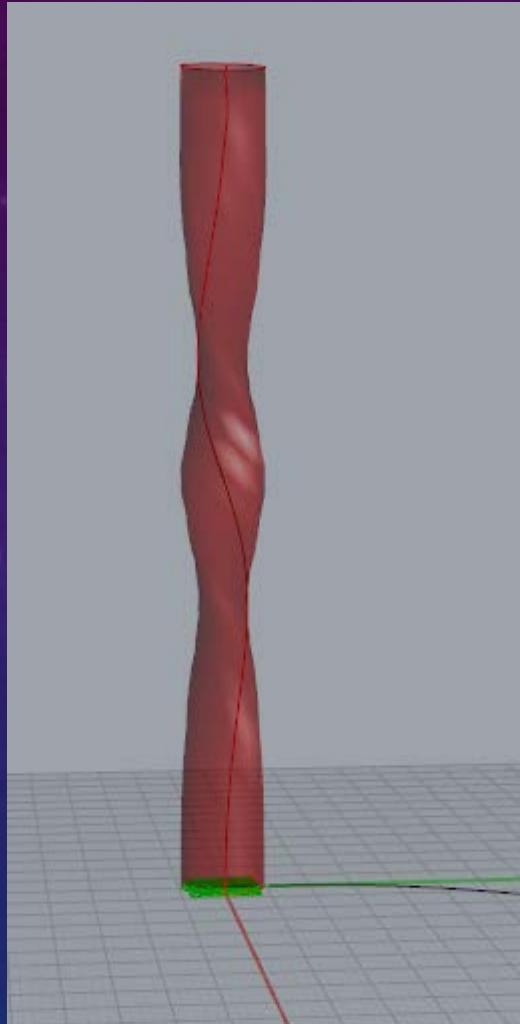
Janet Haselden PORTFOLIO

ARCH 4/523 - PROFESSOR NANCY YEN-WEN CHENG WINTER 2017

THE TWISTING TOWER

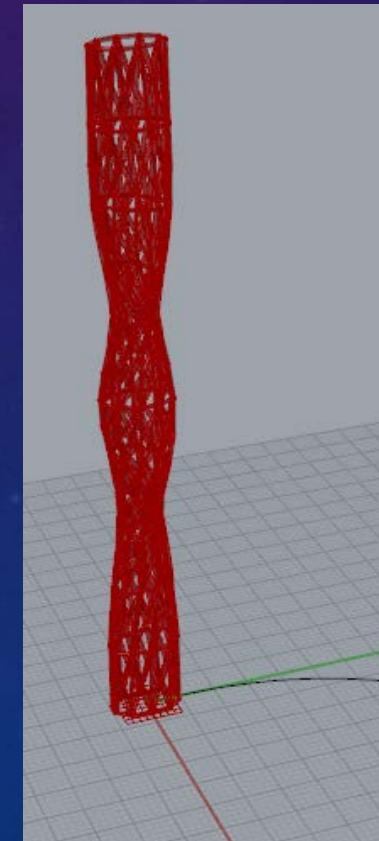
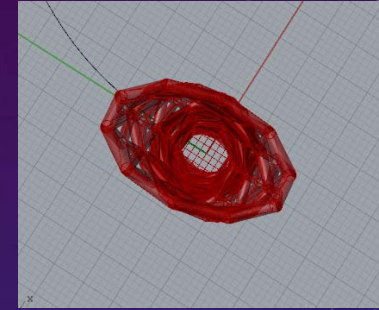
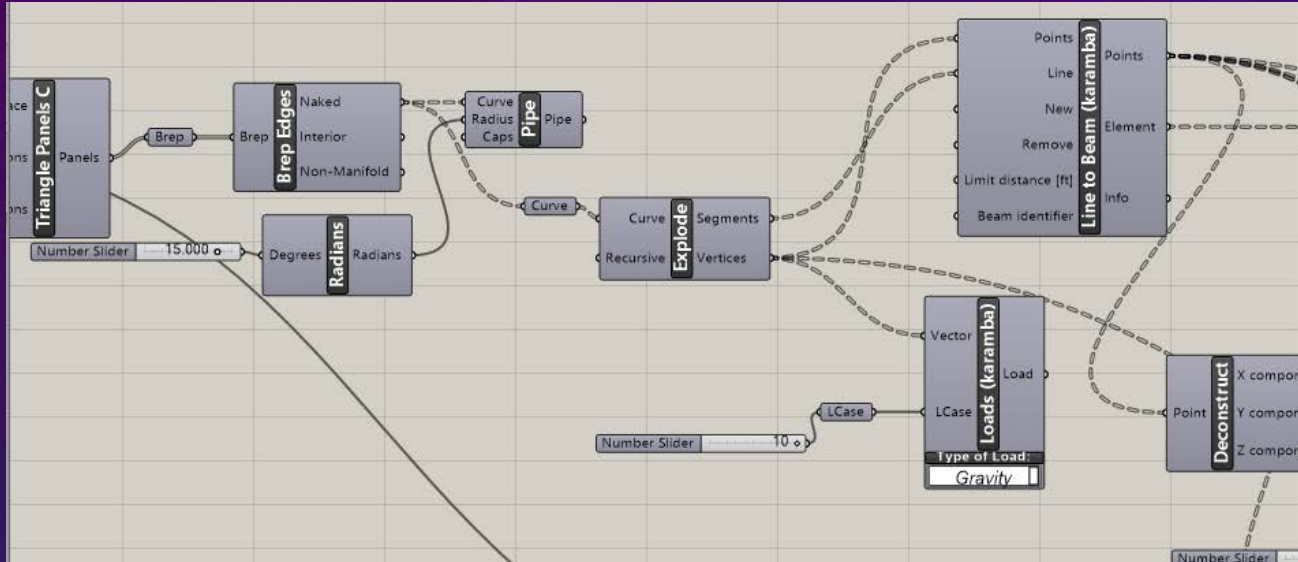
I constructed this tower by using the ellipse tool then lofting its form up. I could then manipulated its form by adding a series to my Z vector and adding it to my move command. I also added a rotate that allowed me to twist the structure.

I took this tower into Karamba to do initial experimentations of what Grasshopper can do.

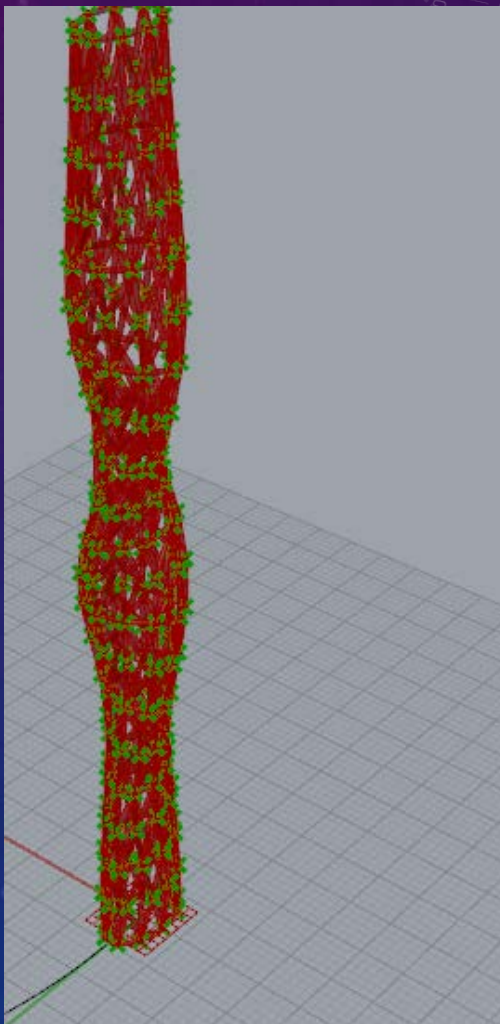
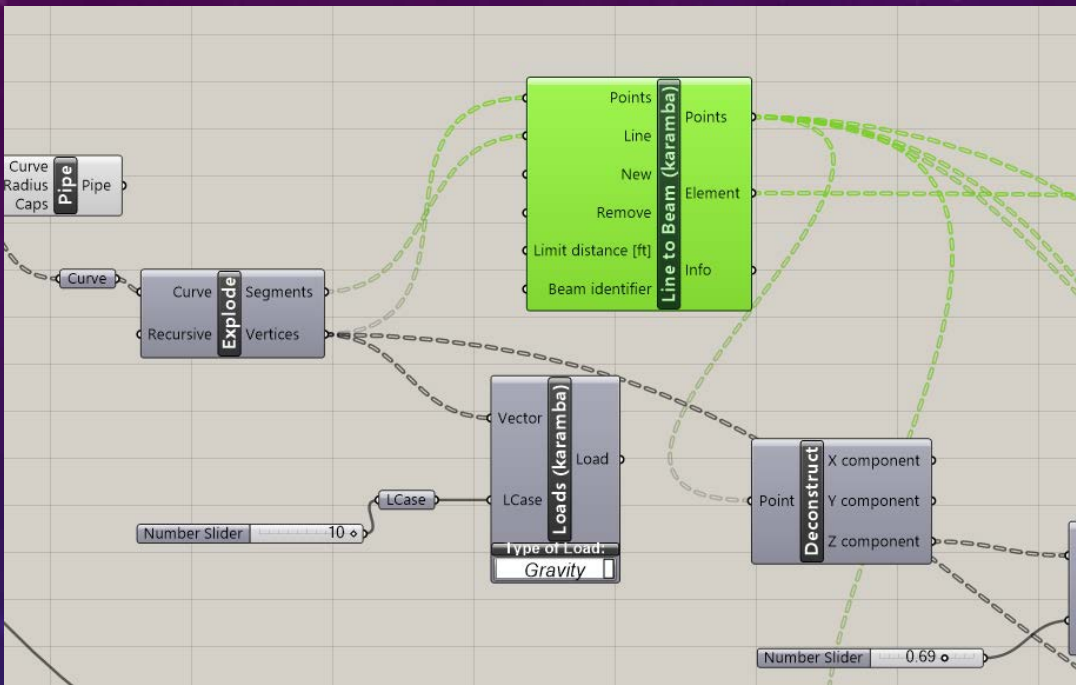


PIPED TWISTING TOWER

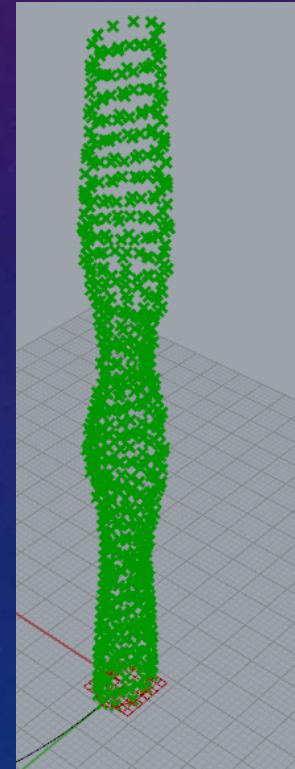
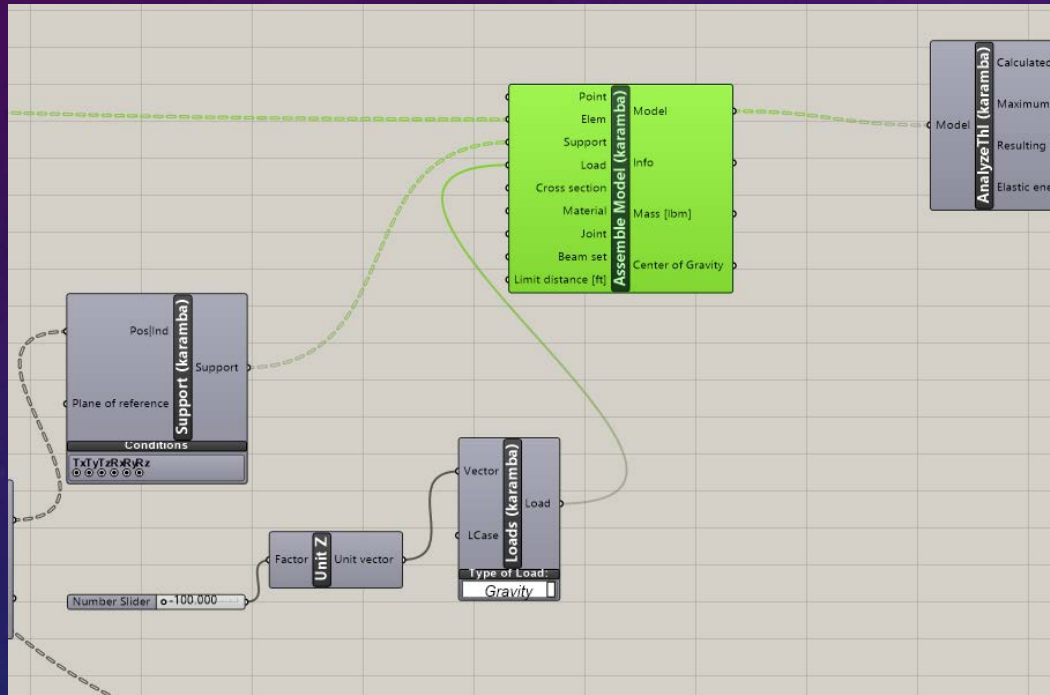
I turn the structure (With Addison's help) to a brep and began making the piping structure. Once the Pipe was formed it was exploded then entered into the line to beam Kramaba command so that Kramaba can read its components.



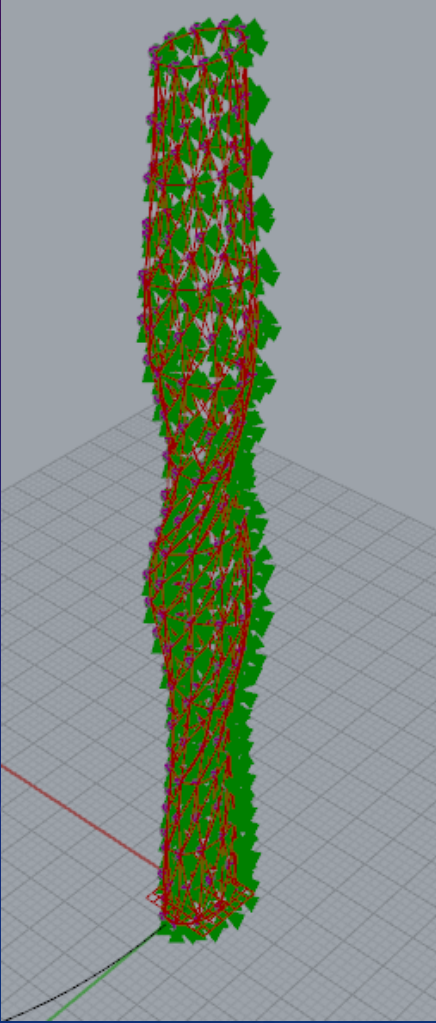
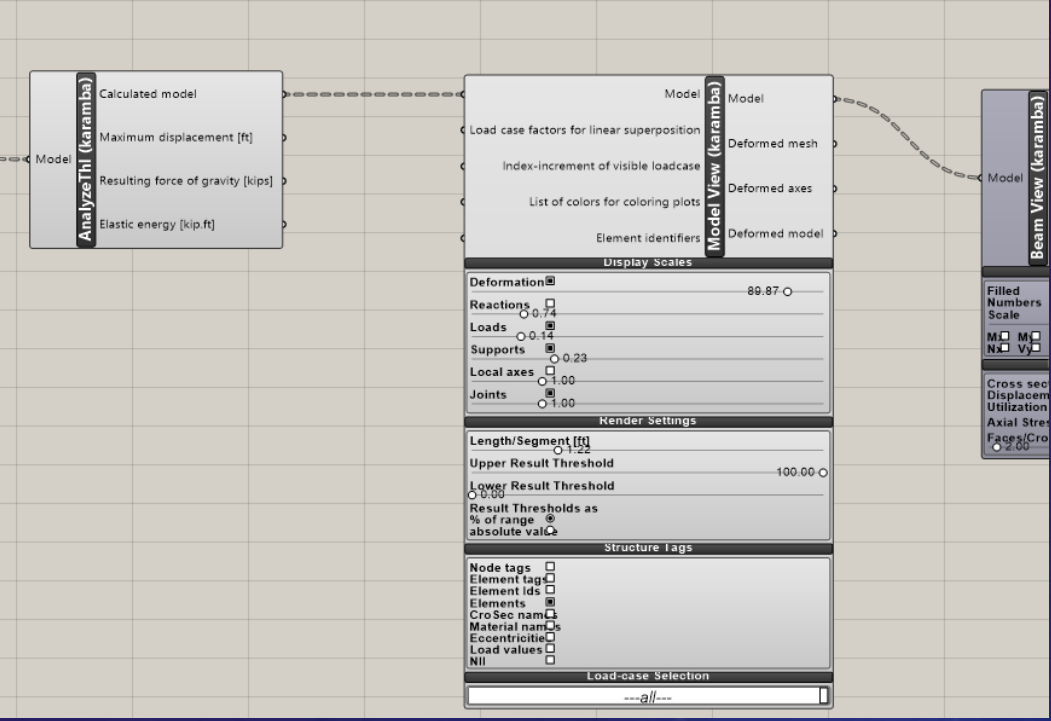
MANIPULATING IT WITH KARAMBA



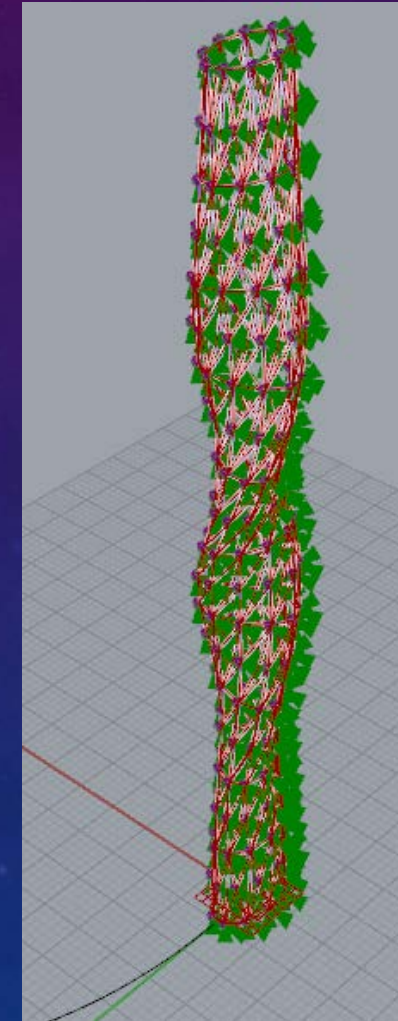
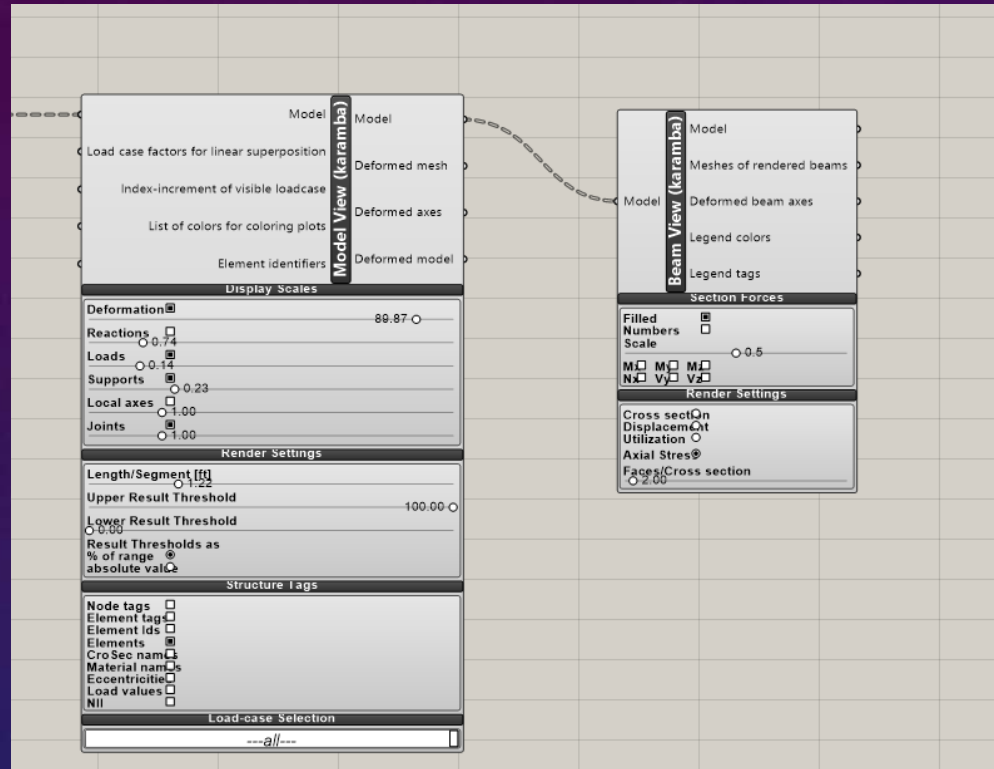
MANIPULATING IT WITH KARAMBA

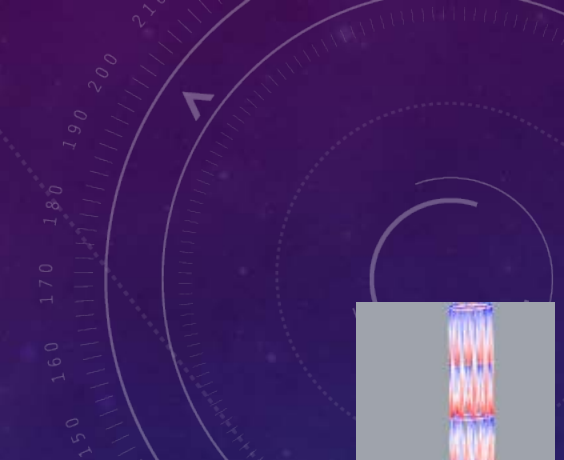
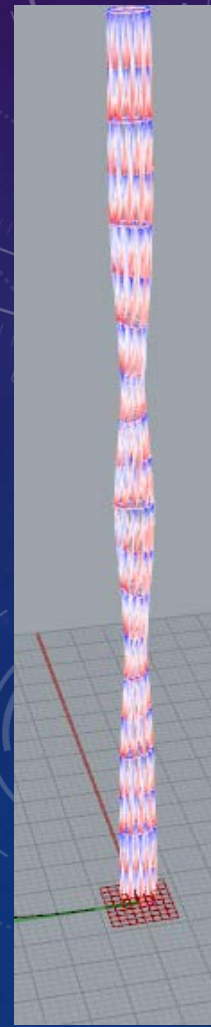
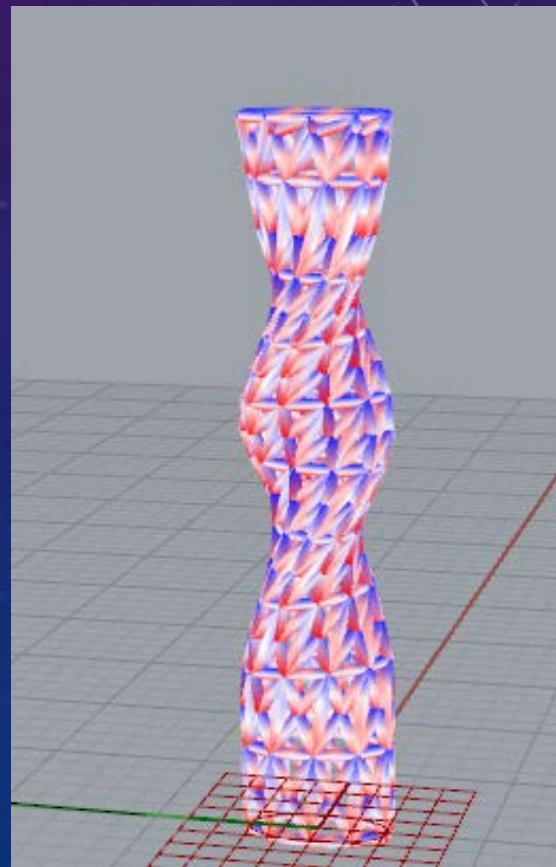
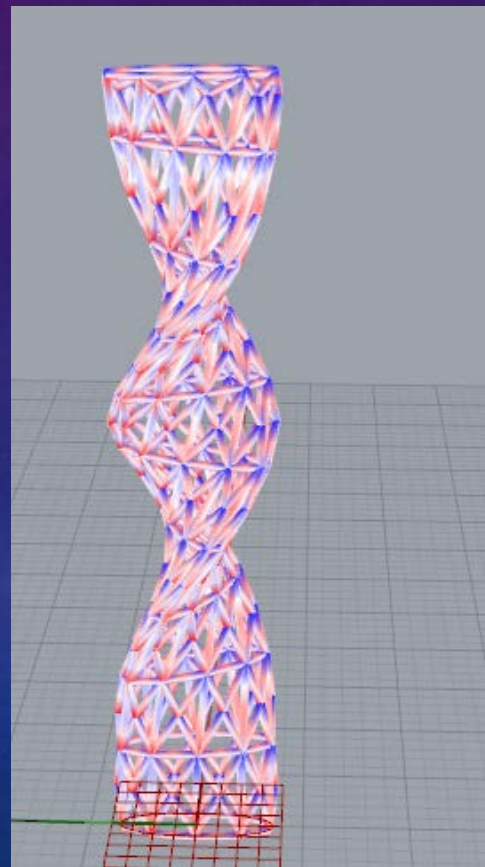
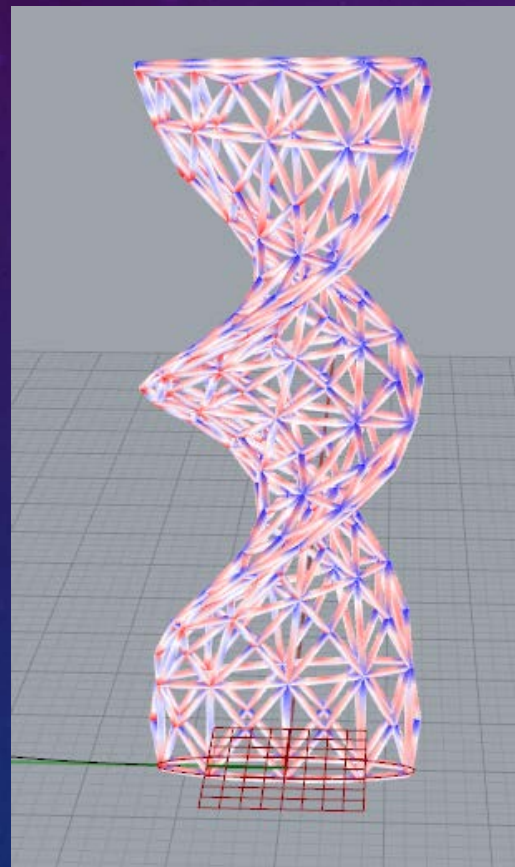
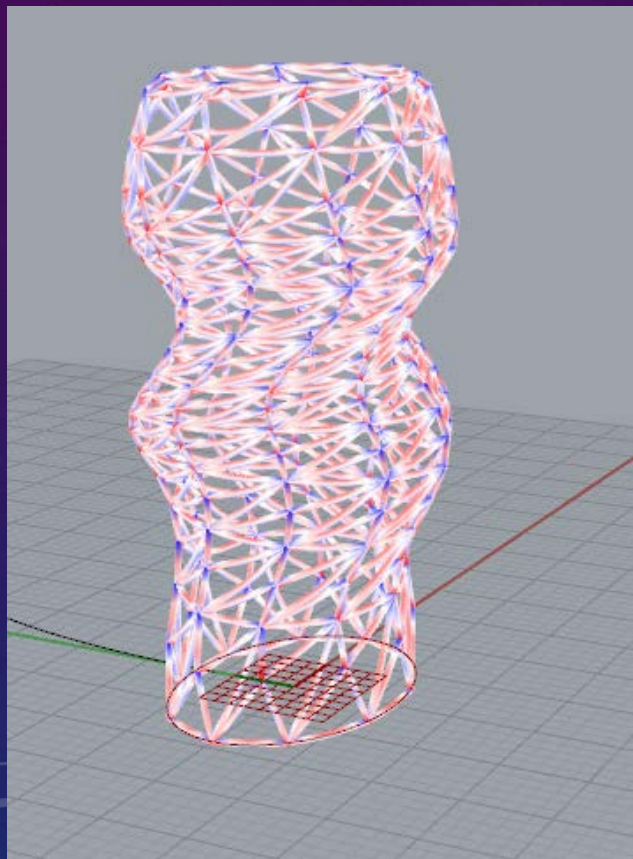


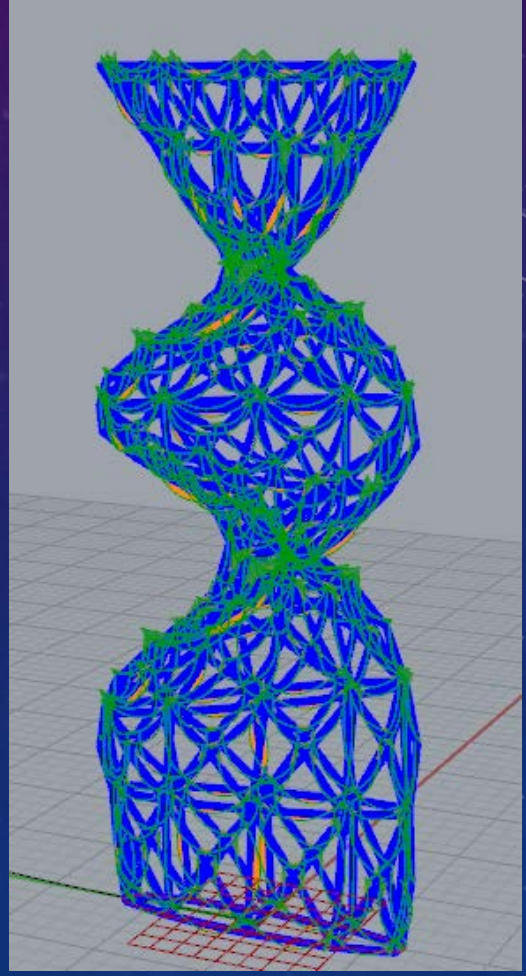
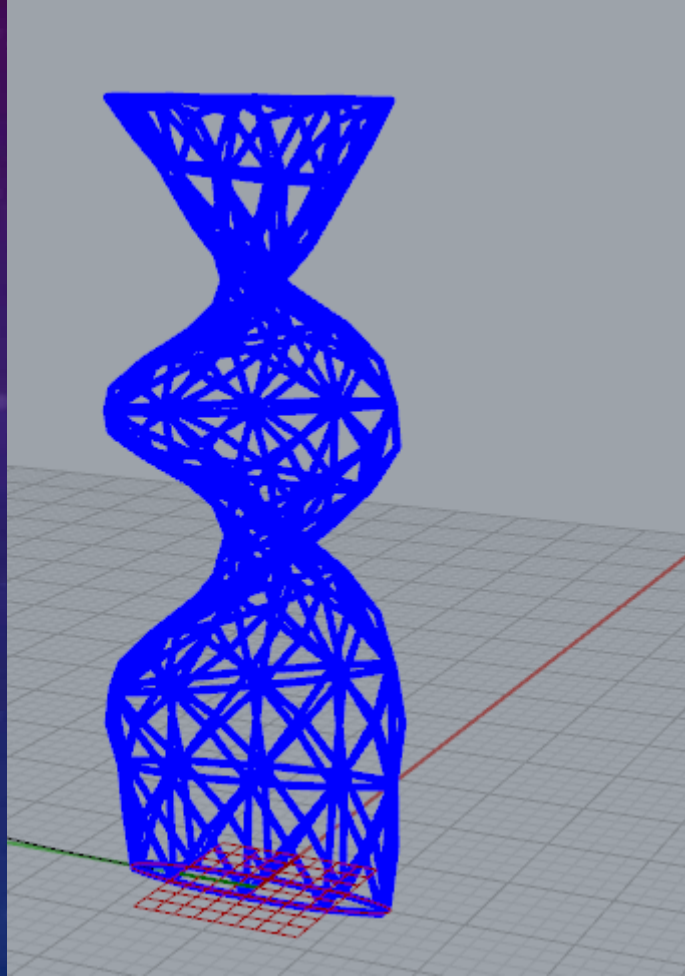
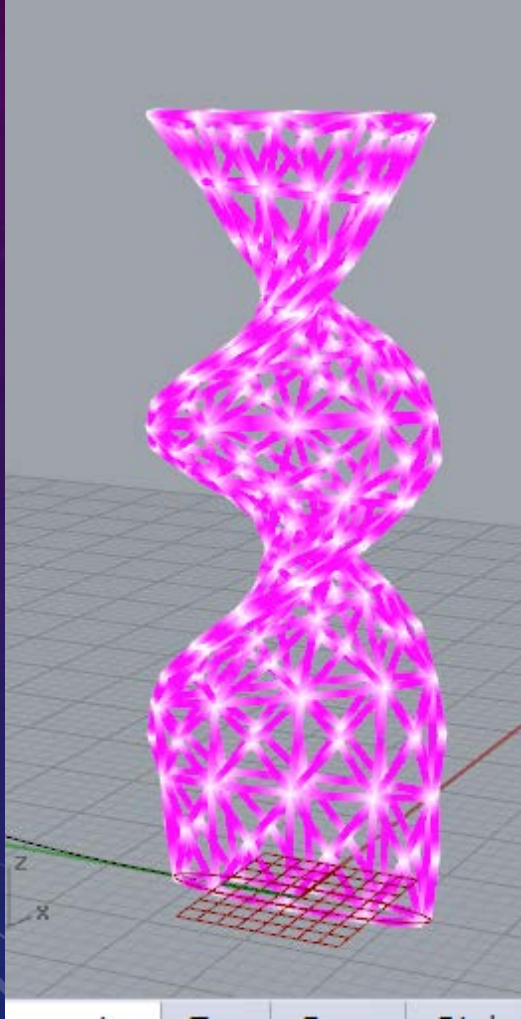
MANIPULATING IT WITH KARAMBA

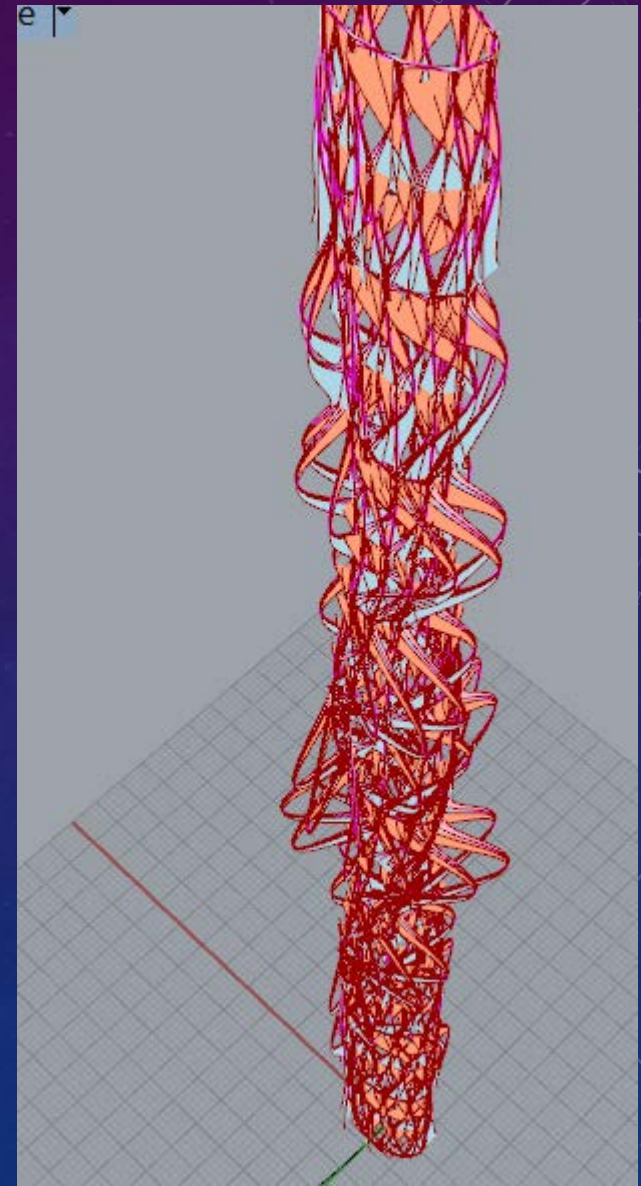
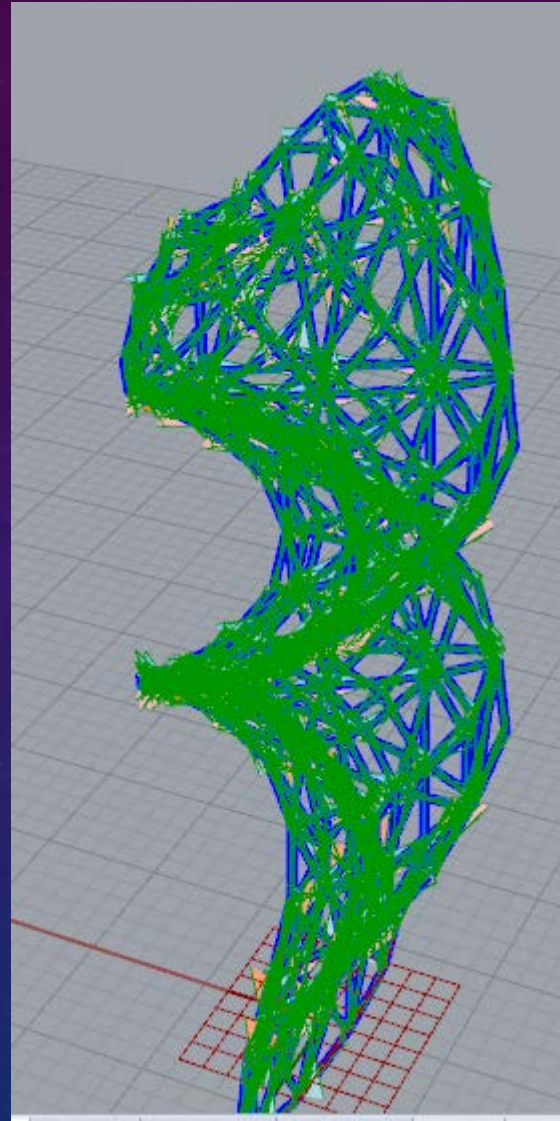


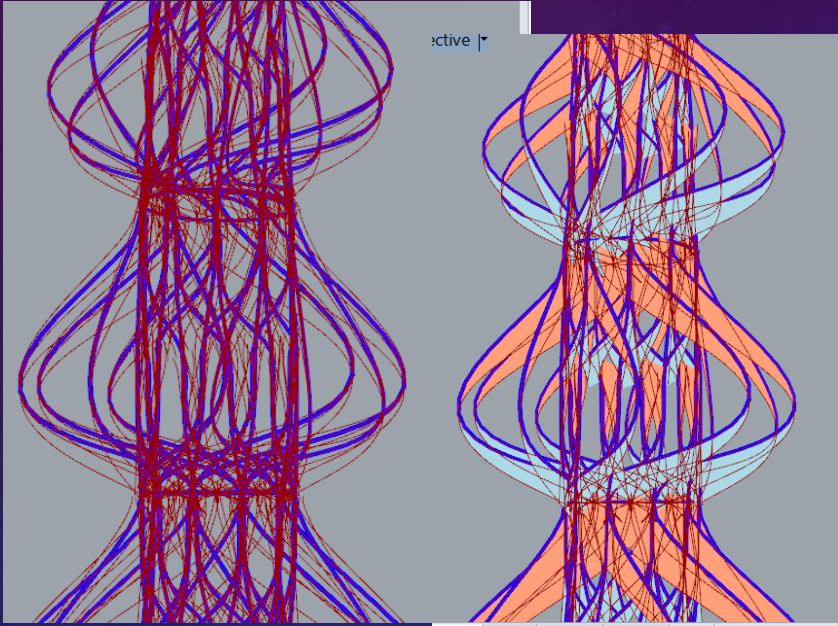
MANIPULATING IT WITH KARAMBA



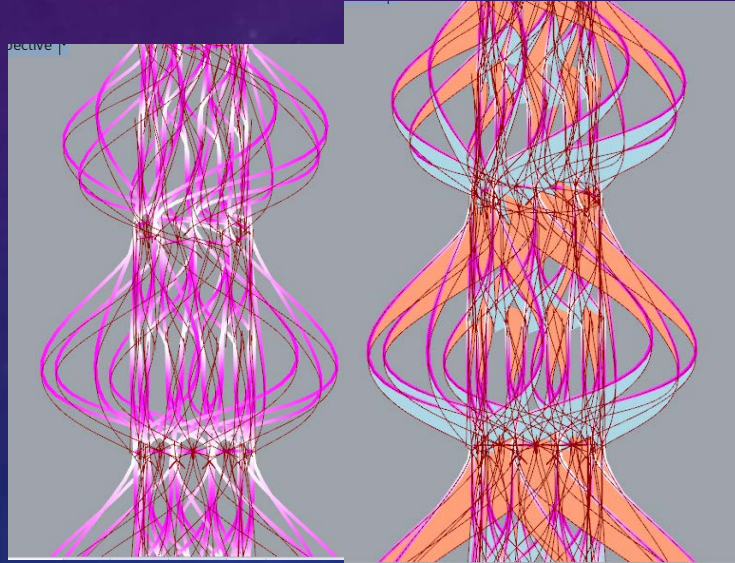




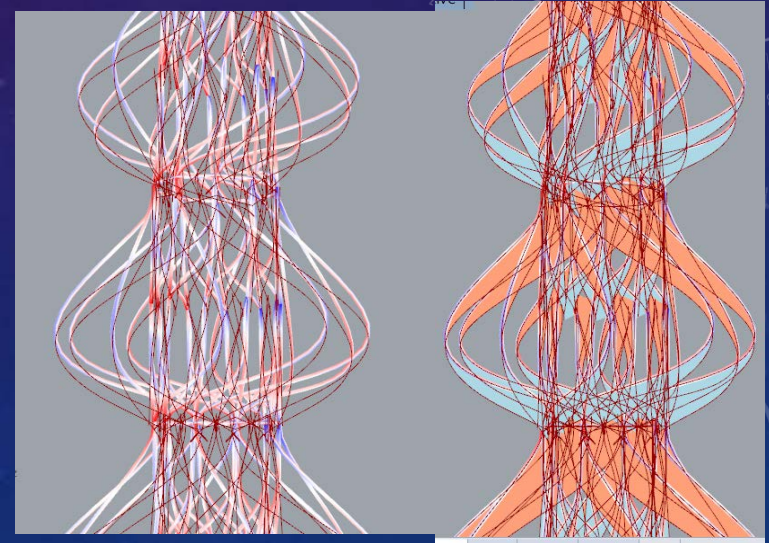




Cross Section

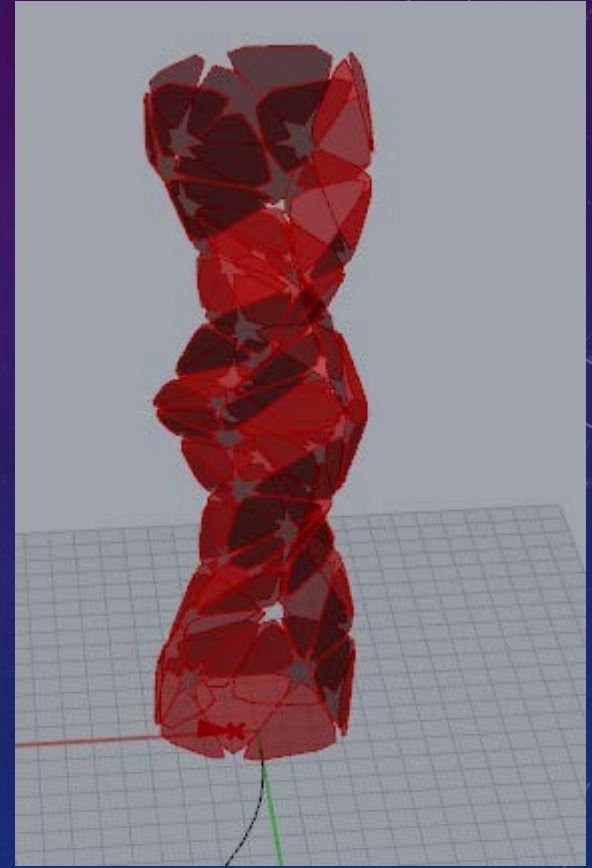
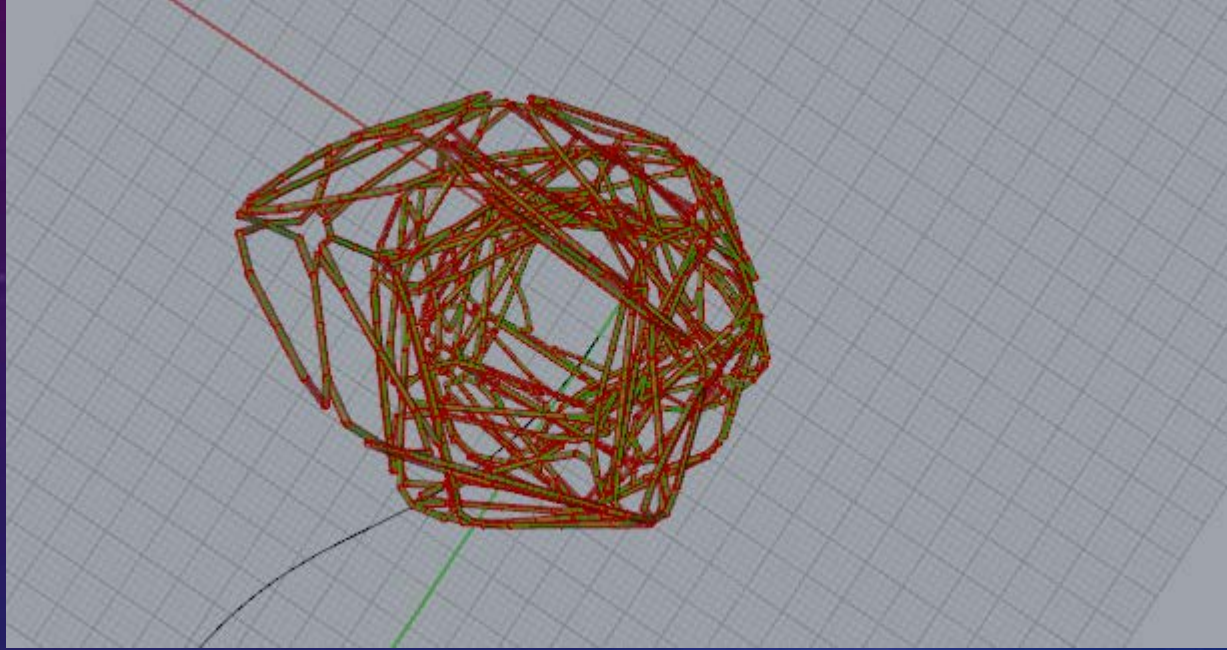


Displacement

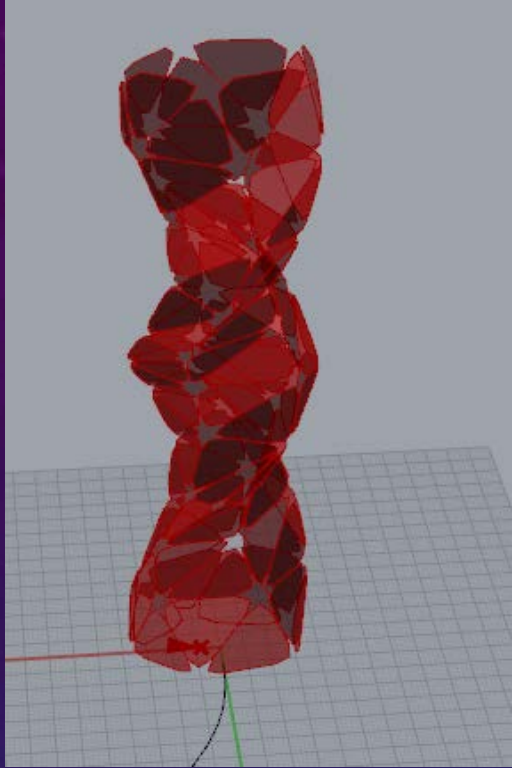


Utilization

Final Project Version One



LIGHTING ANALYSIS OF VERSION ONE



9am in January

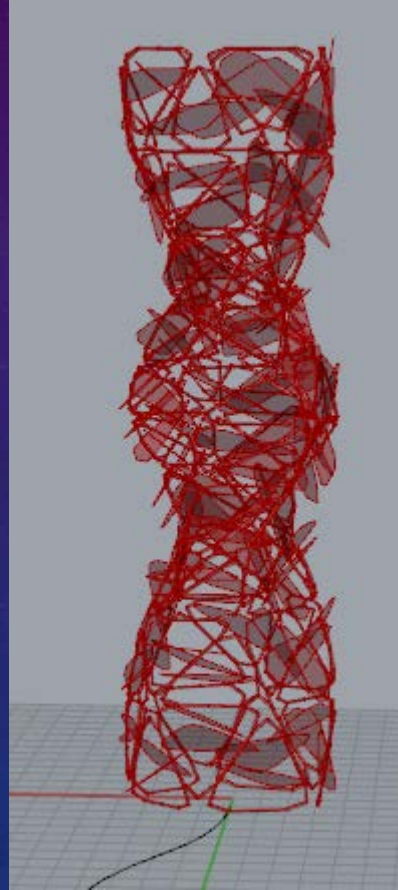
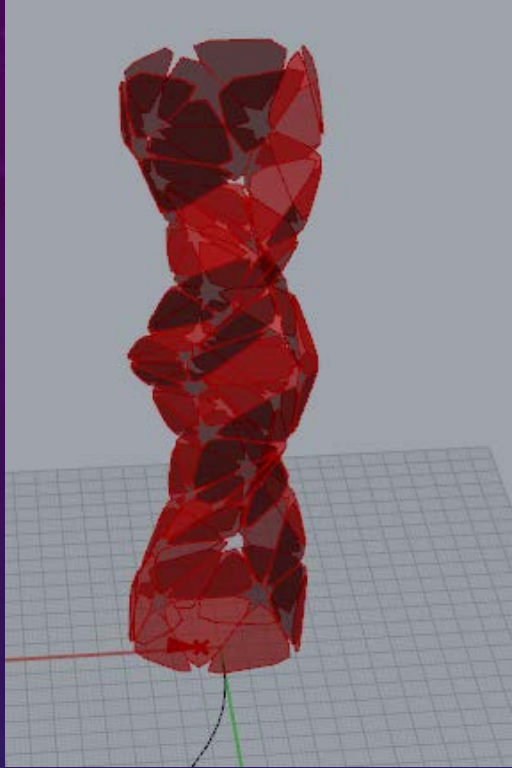


5pm in January

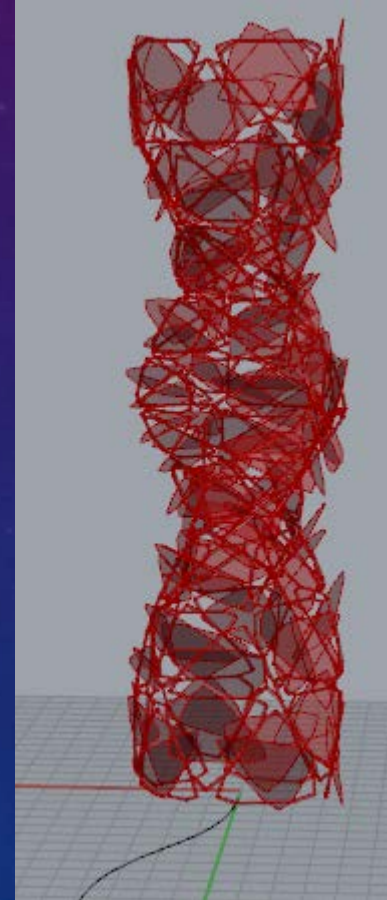


8pm in January

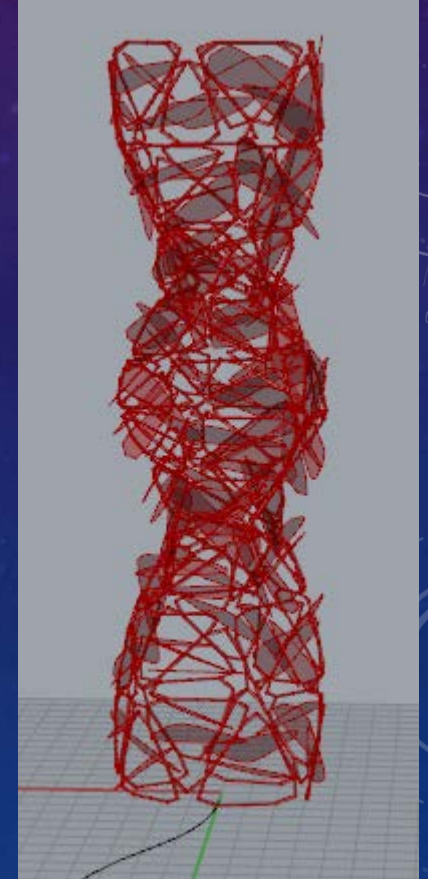
LIGHTING ANALYSIS OF VERSION ONE



9am in June

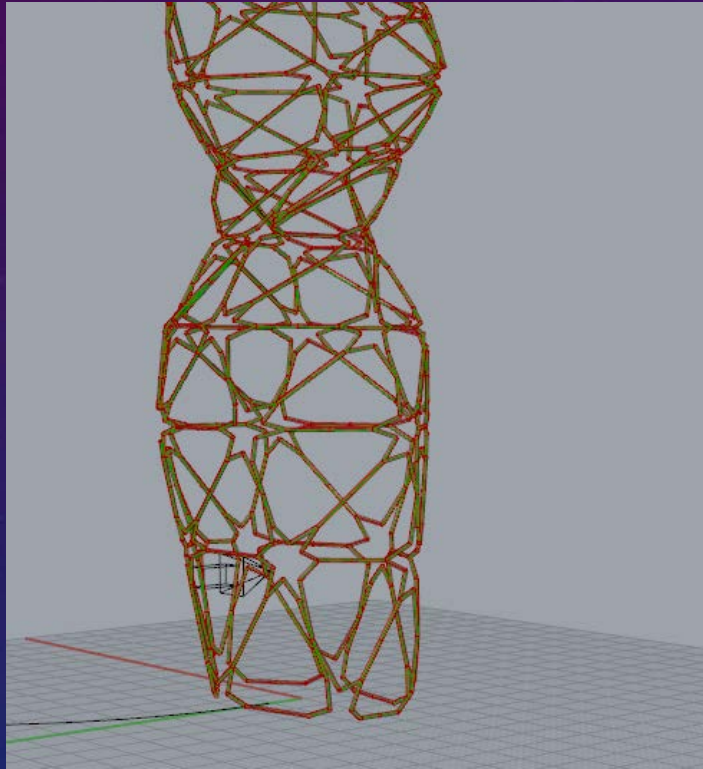


5pm in June



8pm in June

KARAMBA



Model View (karamba)

Model
Deformed mesh
Deformed axes
Deformed model

Load case factors for linear superposition
Index-increment of visible loadcase
List of colors for coloring plots
Element identifiers

Display Scales

Deformation 73.79
Reactions 3.25
Loads 0.02
Supports 0.76
Local axes 1.00
Joints 1.00

Render Settings

Length/Segment [ft] 2.35
Upper Result Threshold 100.00
Lower Result Threshold 0.00
Result Thresholds as % of range absolute value

Structure Tags

Node tags
Element tag
Element Ids
Elements
Cro Sec name
Material name
Eccentricities
Load values
Nil

Load-case Selection

---all---

Beam View (karamba)

Model
Meshes of rendered beams
Deformed beam axes
Legend colors
Legend tags

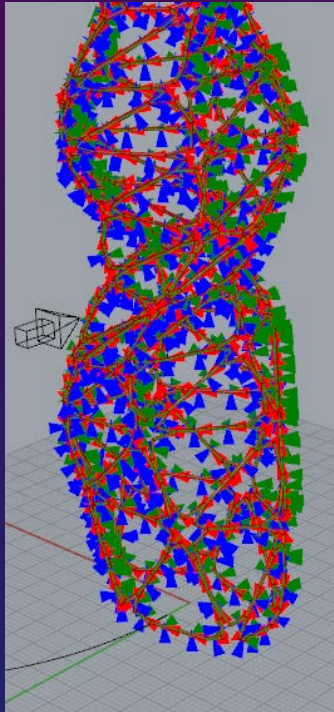
Section Forces

Filled Numbers
Scale 0.2
Mx My Mz
Nx Vy Vz

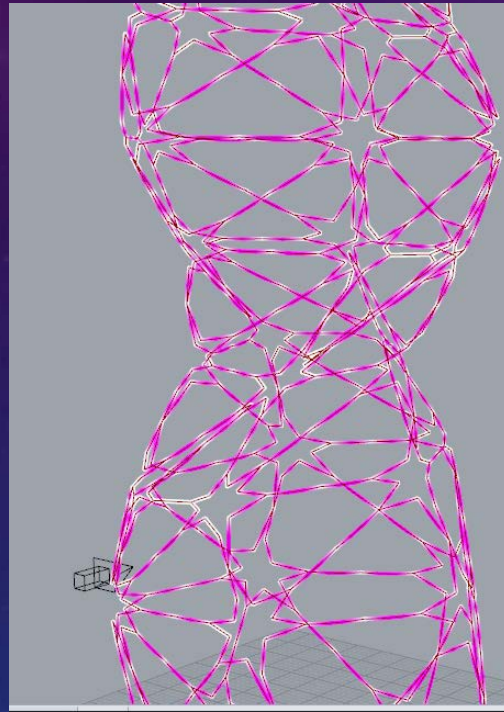
Render Settings

Cross section
Displacement
Utilization
Axial Stress
Faces
Cross section 2.00

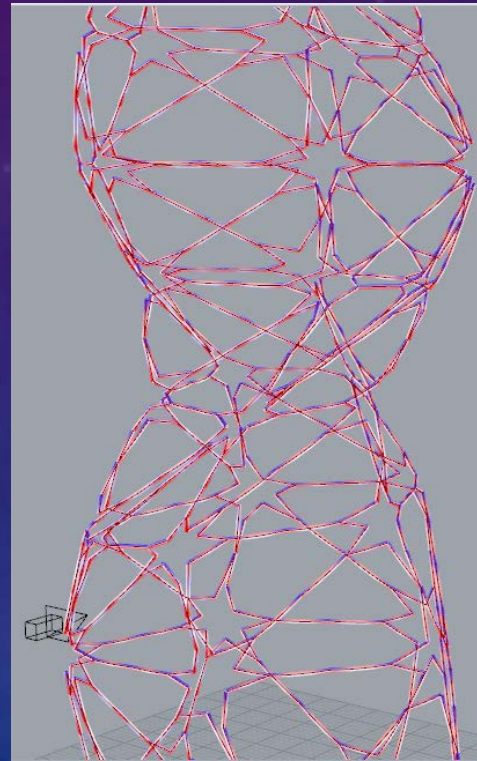
STRUCTURAL ANALYSIS OF VERSION ONE



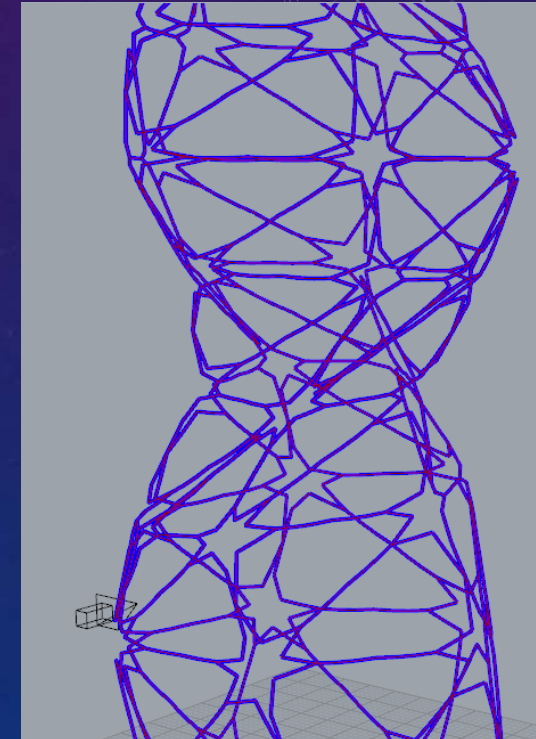
Local Axis



Displacement

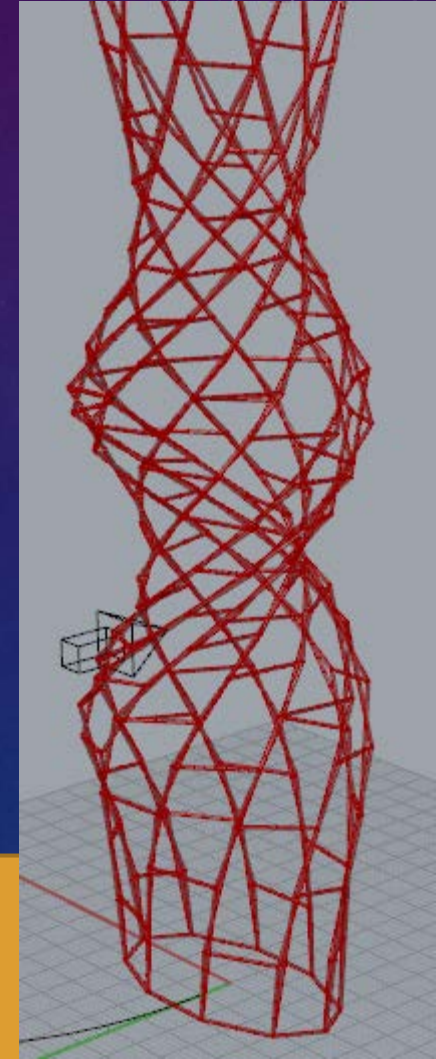
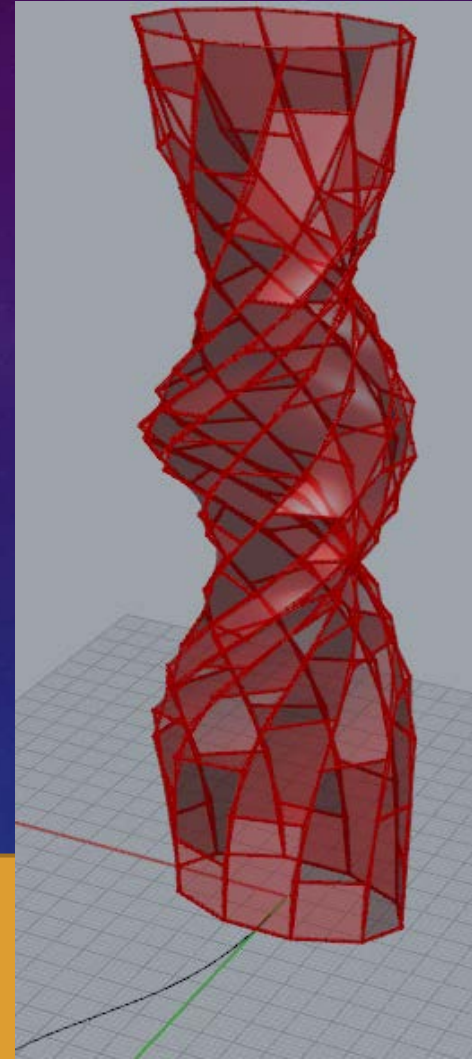
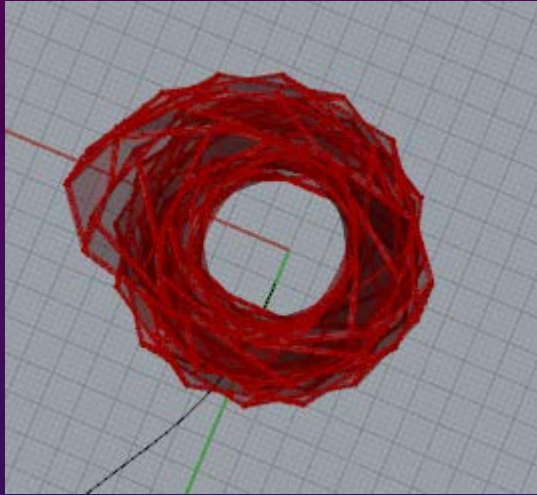


Axis Stress



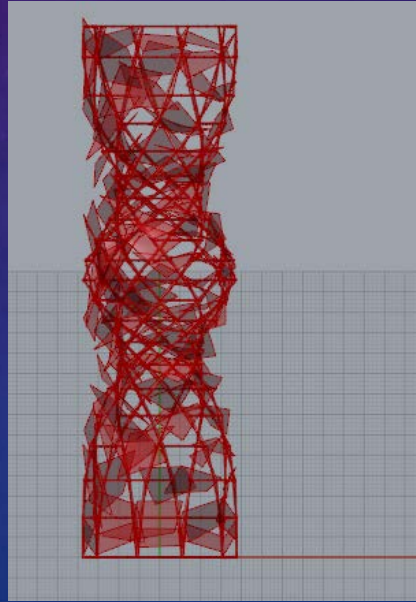
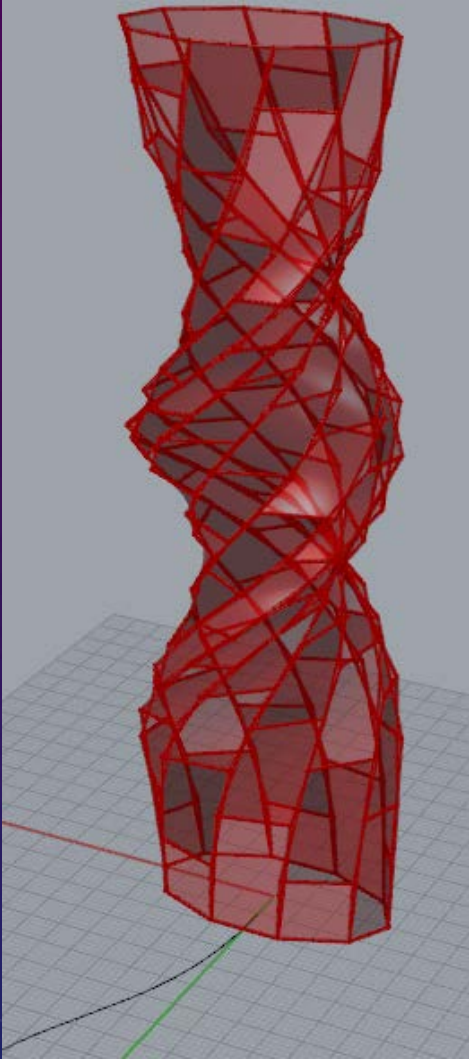
Cross Section

Final Project Version Two

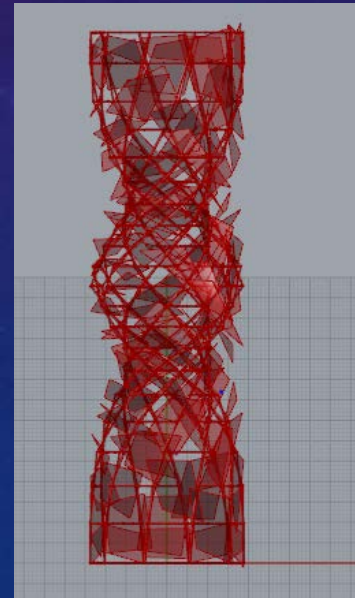


Using Weaverbird's Split Polygons Subdivion and Staggered quad Panels

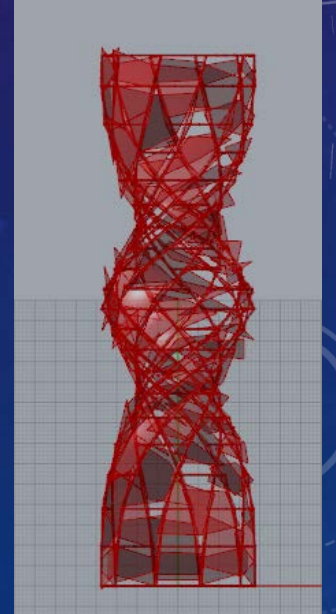
LIGHTING ANALYSIS OF VERSION TWO



9am in January

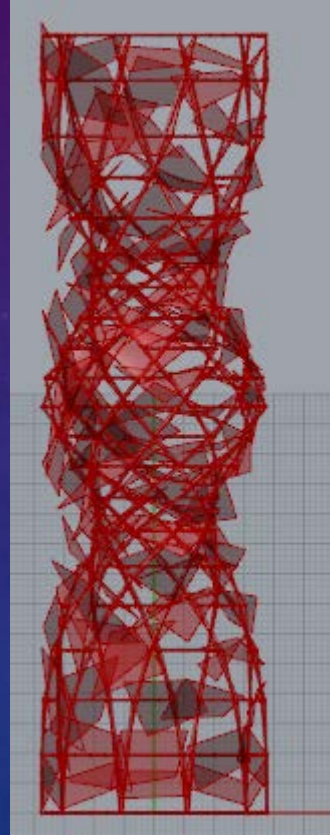
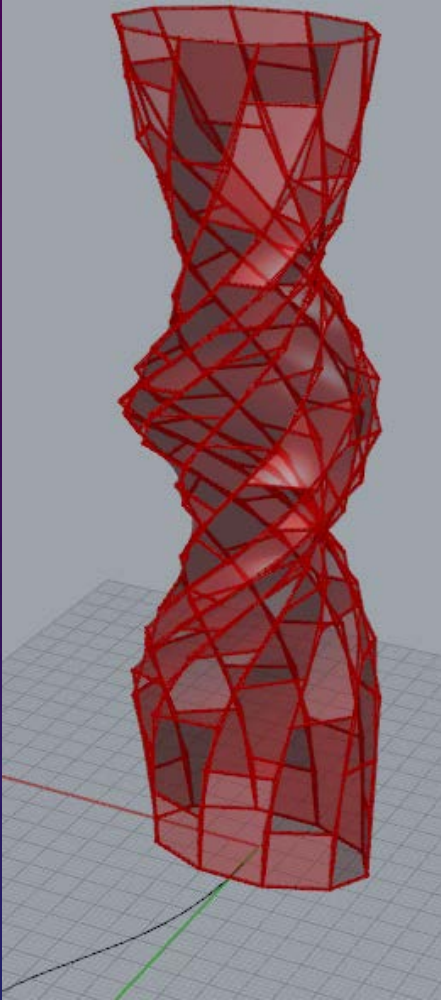


5pm in January

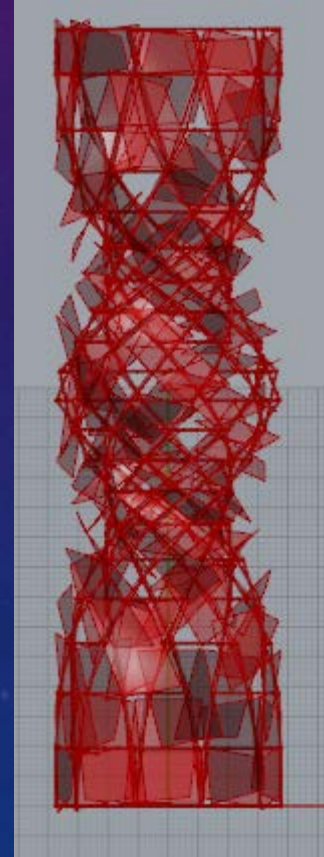


8pm in January

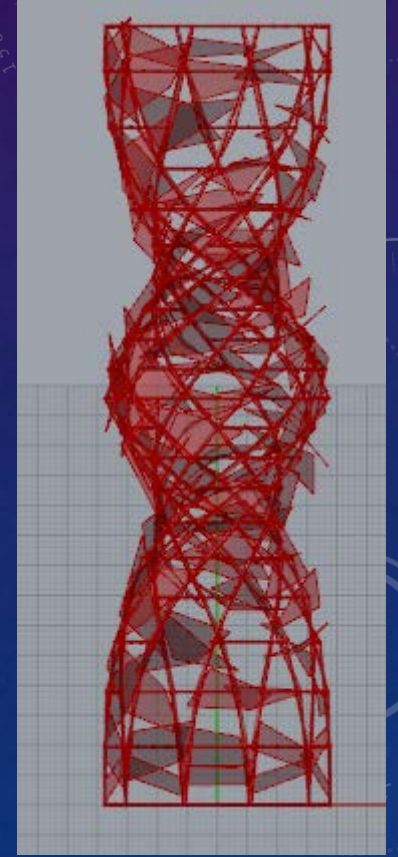
LIGHTING ANALYSIS OF VERSION TWO



9am in June

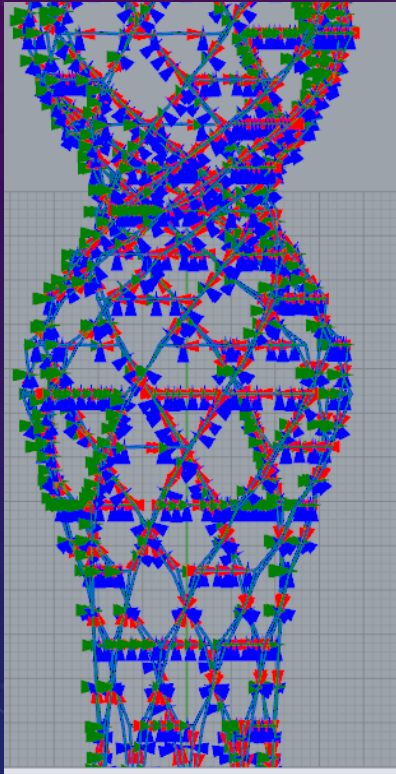


5pm in June

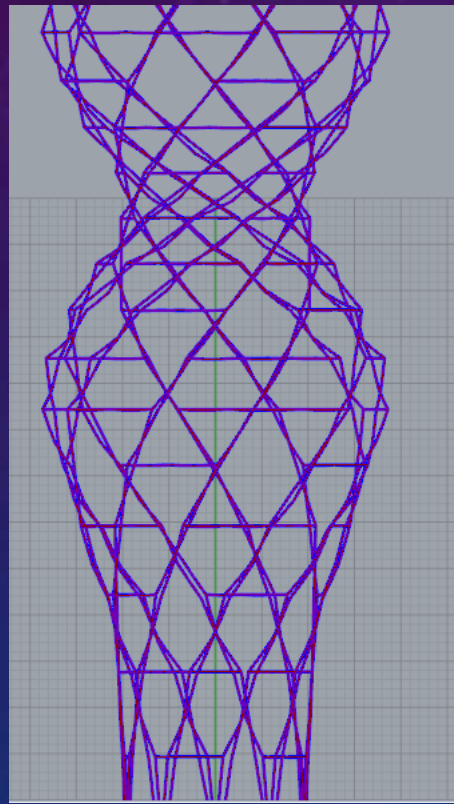


8pm in June

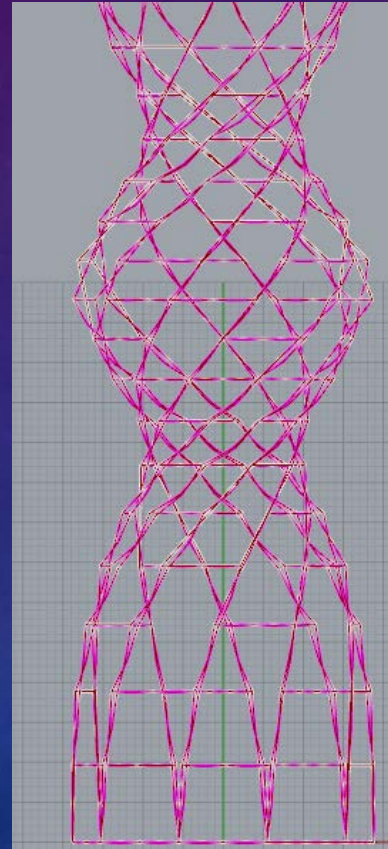
STRUCTURAL ANALYSIS OF VERSION TWO



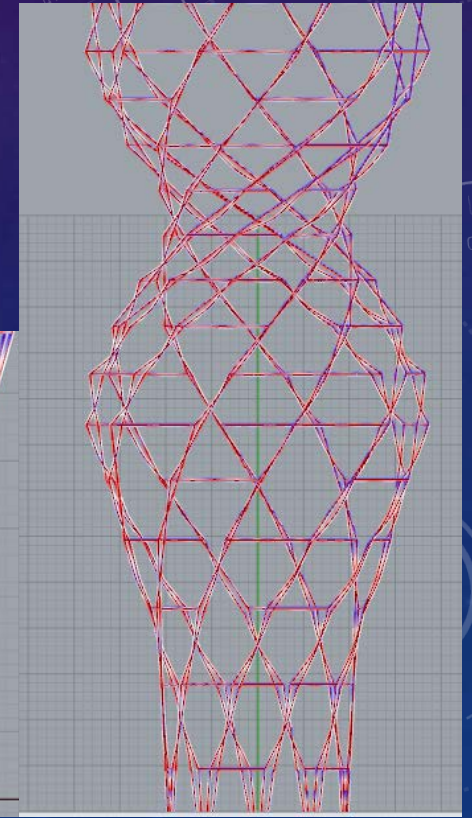
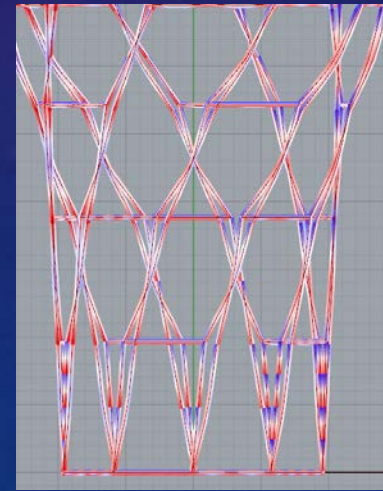
Local Axis



Cross Section

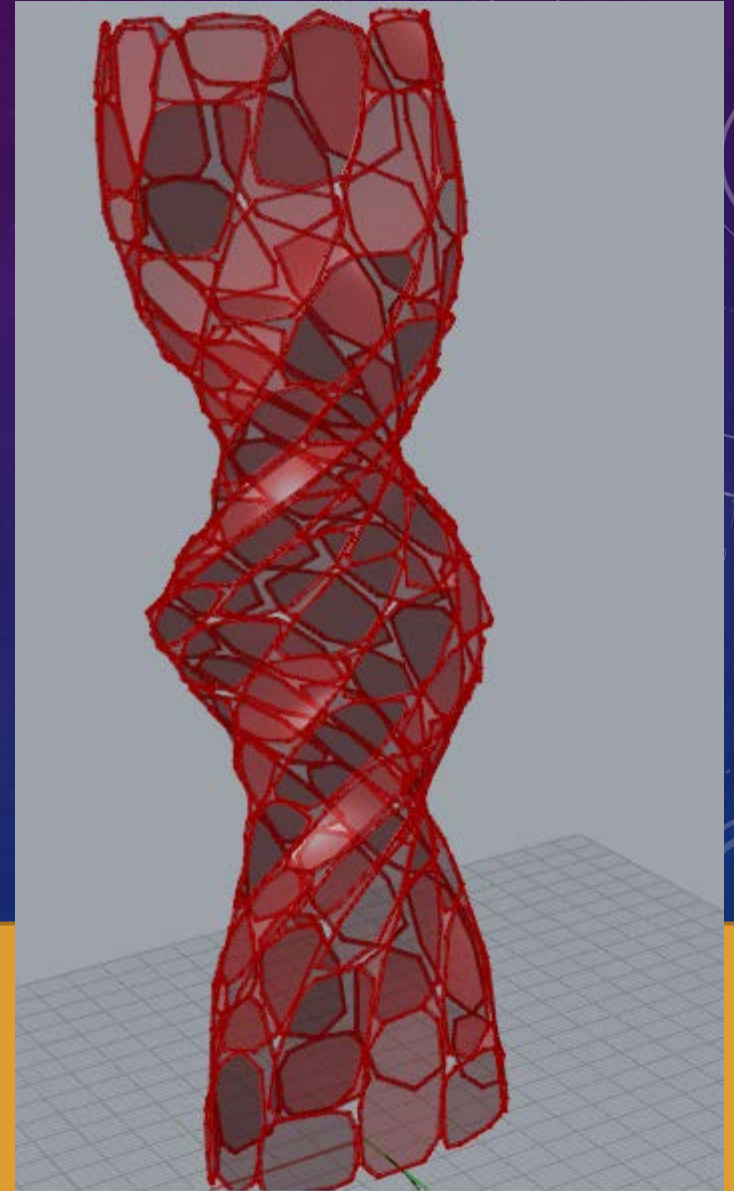
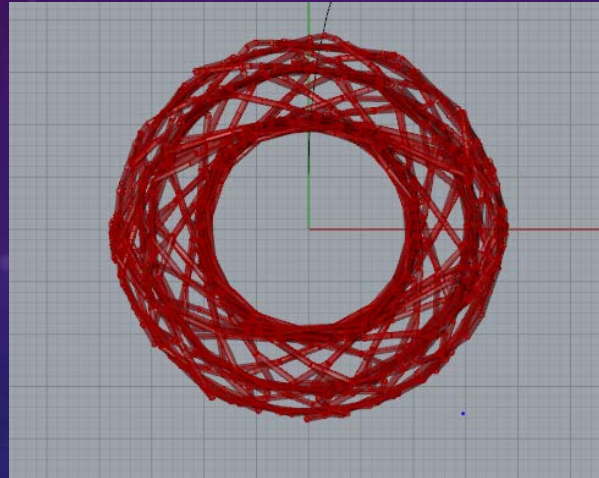
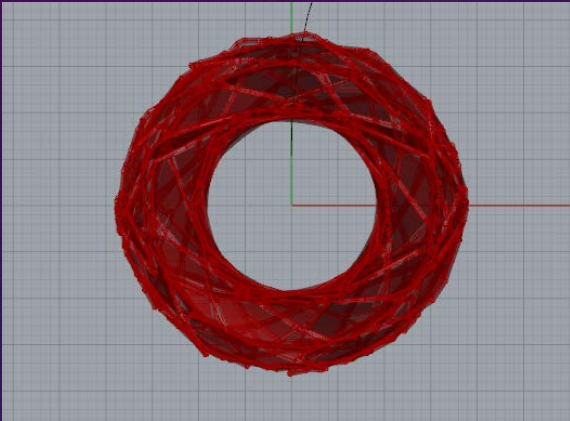


Displacement



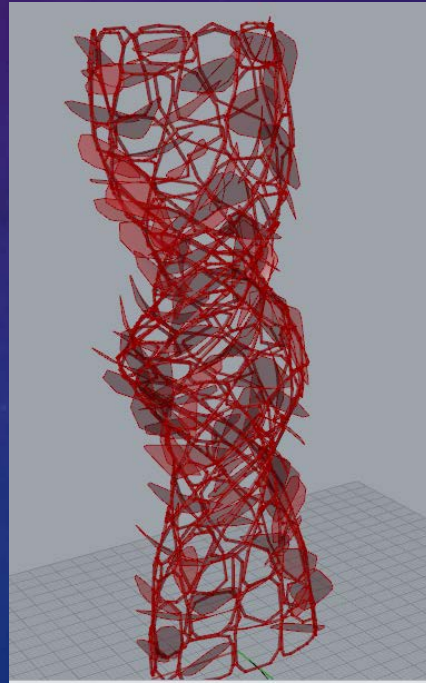
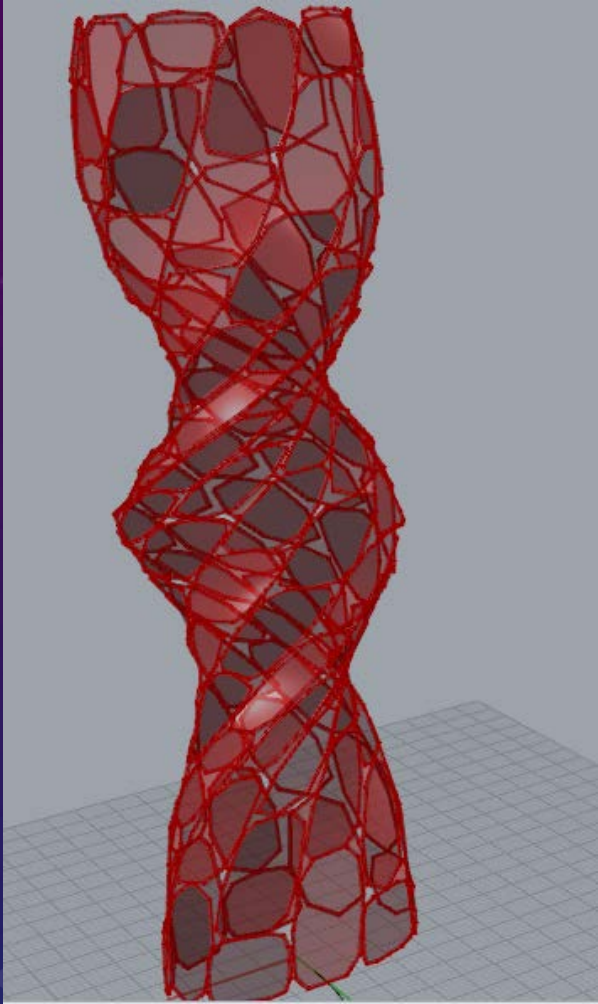
Axis Stress

Final Project Version Three

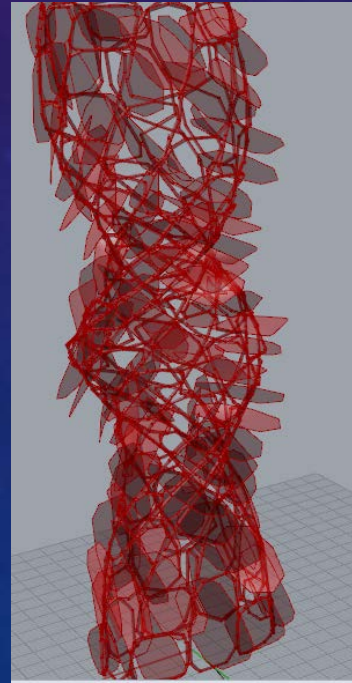


Using Weaverbird's Split Polygons Subdivion and Weaverbirds split triangles subdivisions and Staggered quad Panels

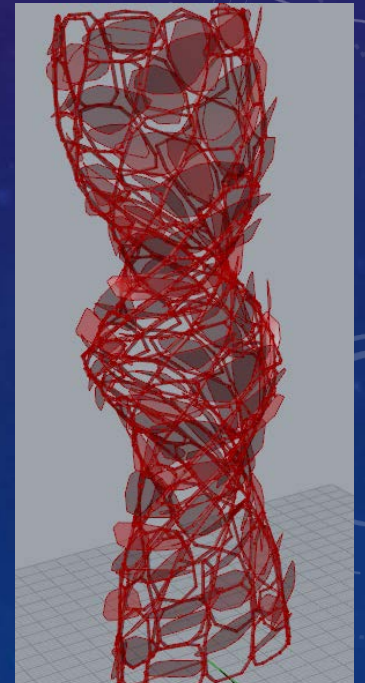
LIGHTING ANALYSIS OF VERSION TWO



9am in January

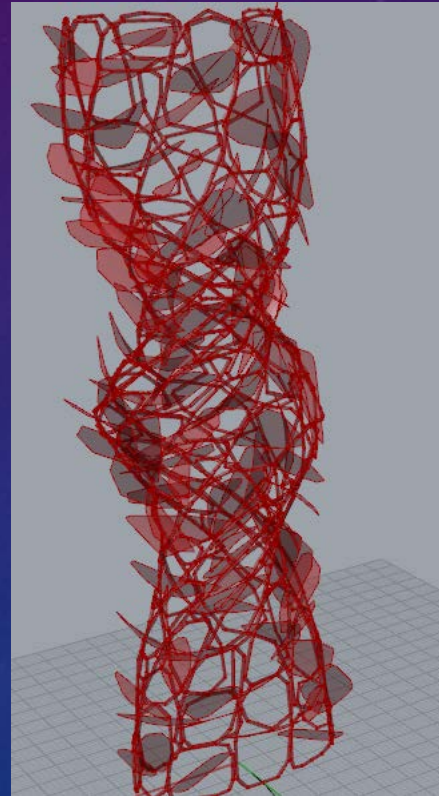
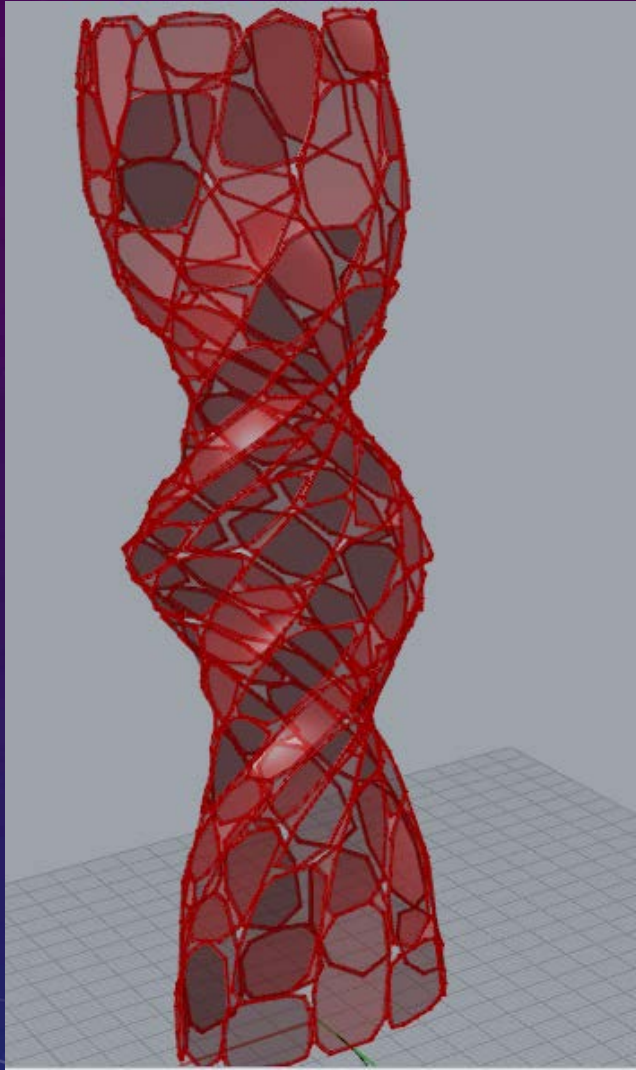


5pm in January

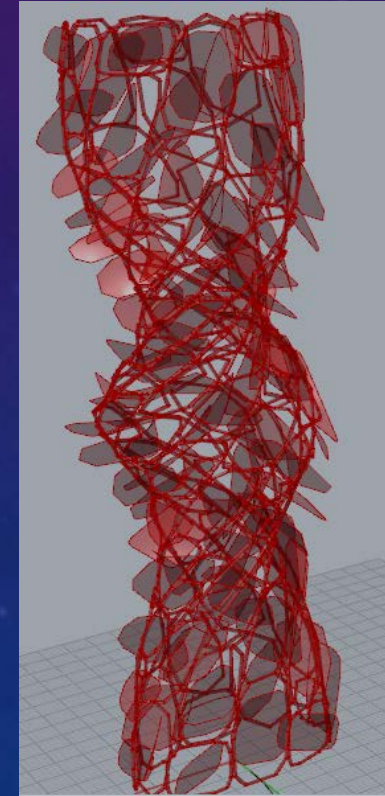


8pm in January

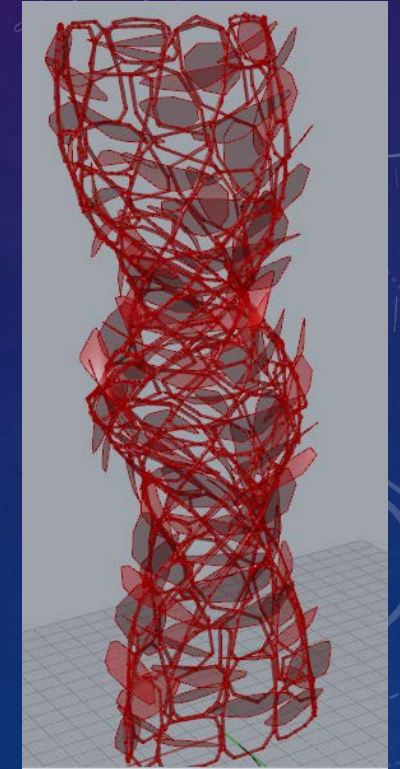
LIGHTING ANALYSIS OF VERSION TWO



9am in June

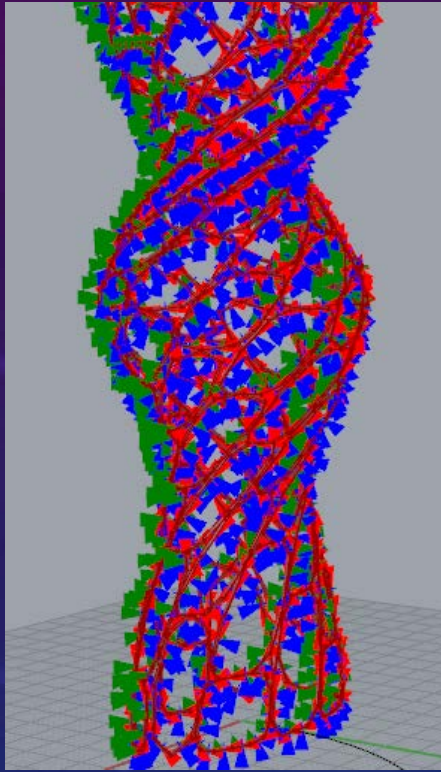


5pm in June

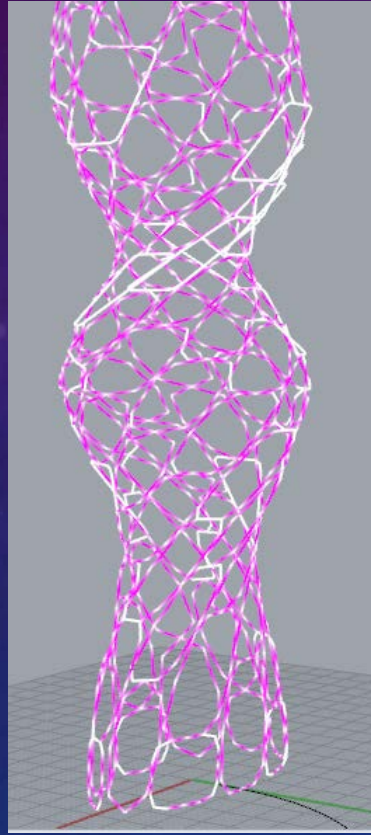


8pm in June

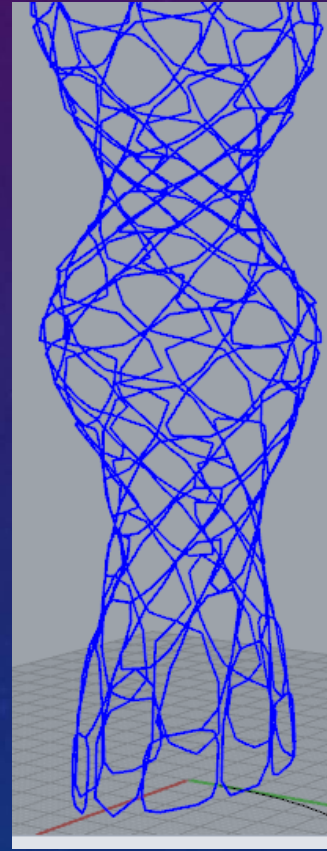
STRUCTURAL ANALYSIS OF VERSION TWO



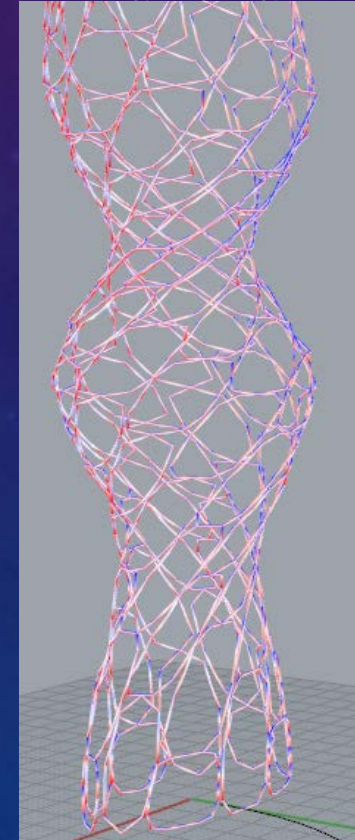
Local Axis



Displacement



Cross Section



Axis Stress