Britney Lee

THE ART OF BEING HUMAN

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* All work has been designed and crafted by Britney Lee

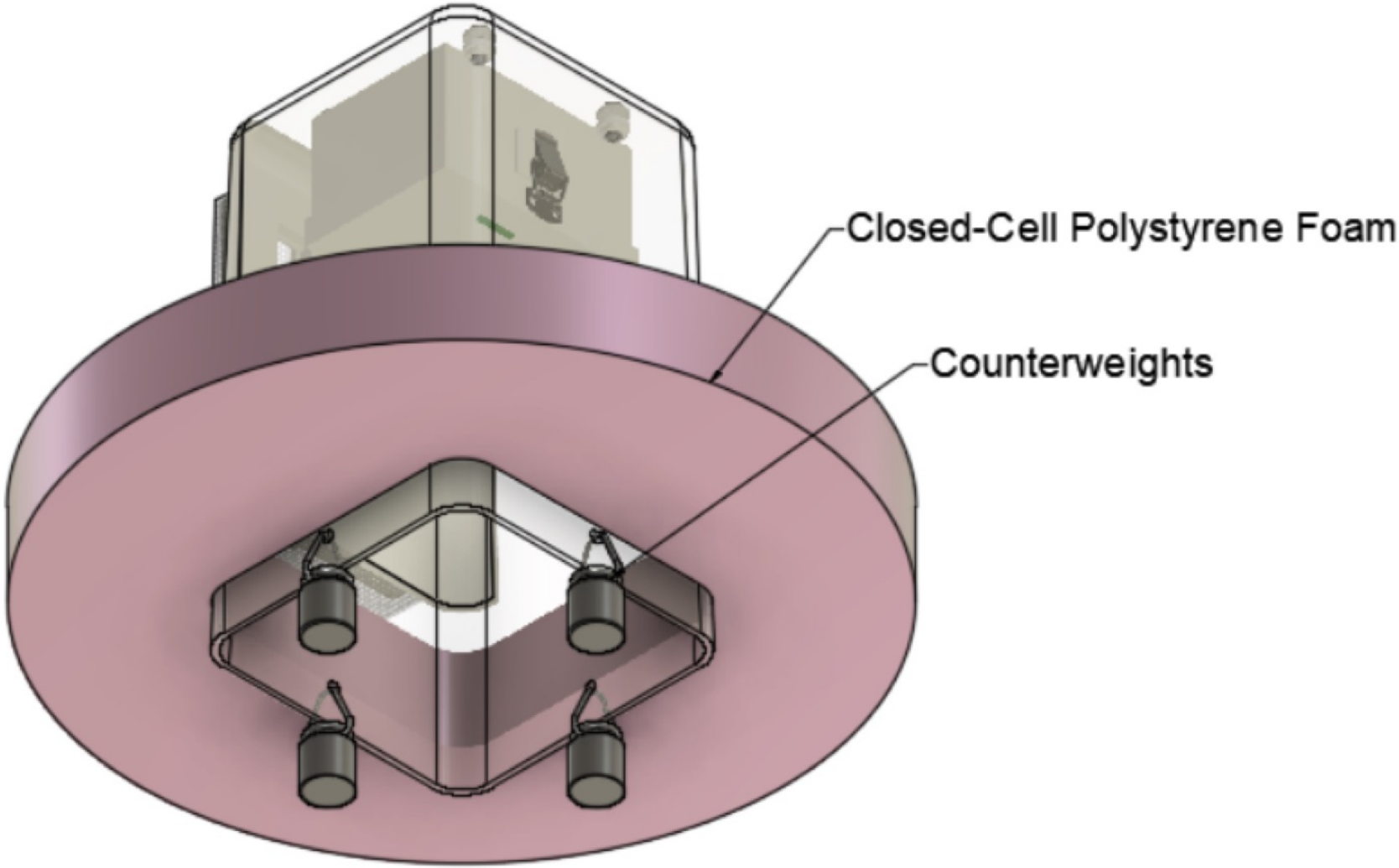
PEAT

Stanford University Mechanical Engineering Research*

In partnership with Precourt Institute for Energy

Peatland Environmental Assessment Tool is a greenhouse gas flux chamber. The automated device sits on top of peatlands and measures the methane and CO2 emissions. PEAT's goal is to aid researches in understanding peatlands' contribution to global warming.

- Zhen, R., Schroeder, O., Quiroz, J., & Lee, B. (1970, January 1). Automatic Flux Chamber for the monitoring of carbon dioxide and methane emissions from peatlands. Stanford Digital Repository. https://doi.org/10.25740/ww703ht1564



Worked as part of a research team to bring this robotic system from concept to product: looking specifically at mechanical systems / dynamics, heat transfer, and fluids.

Full Technical Report and process: https://www.briterin.design/files/ME170B_Final_Report.pdf

Apple

While at Apple, I worked as an advanced operational manufacturing engineer. I specifically spent time on design for manufacturability and manufacturing processes on the new thermal systems for the desktop programs.

I was at apple at a really interesting time when the desktop programs were moving to Apple Silicon, developing new technology for cooling the systems without a fan. I worked directly on these thermal systems, finding new innovative ways to manufacture the units while reducing CapEx costs.

BrewBird

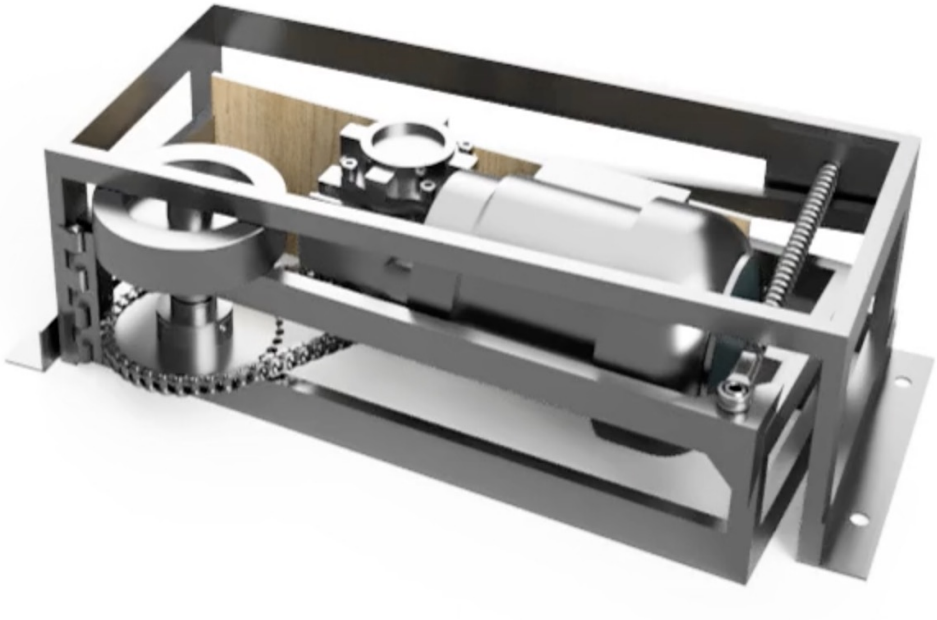
BrewBird is a series-A startup that designs and produces a drip coffee machine. I worked on the fluidics system of the machine, doing validation on a new boiler and increasing the accuracy and energy efficiency of a new flow maps.

I also worked on design engineer roles, helping to iterate on previous machine stands and the coffee pod design so it could be manufactured at a larger scale.

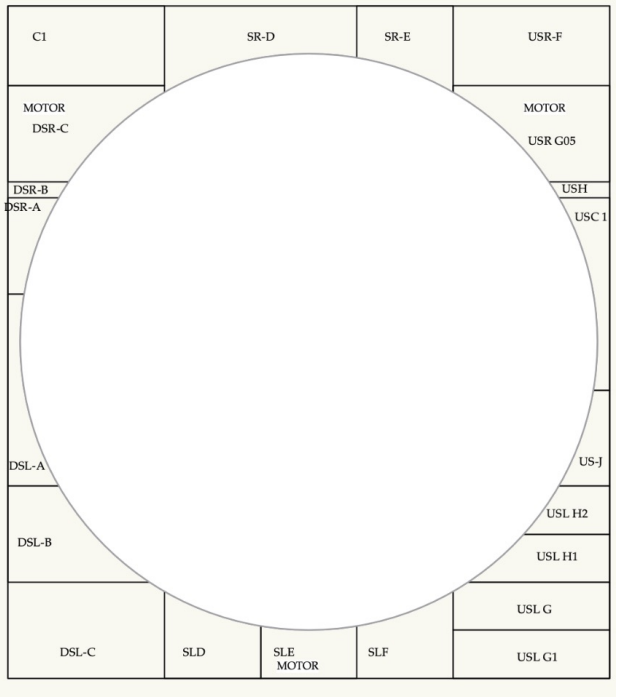
Ceramic Matrix Composites (NDA)

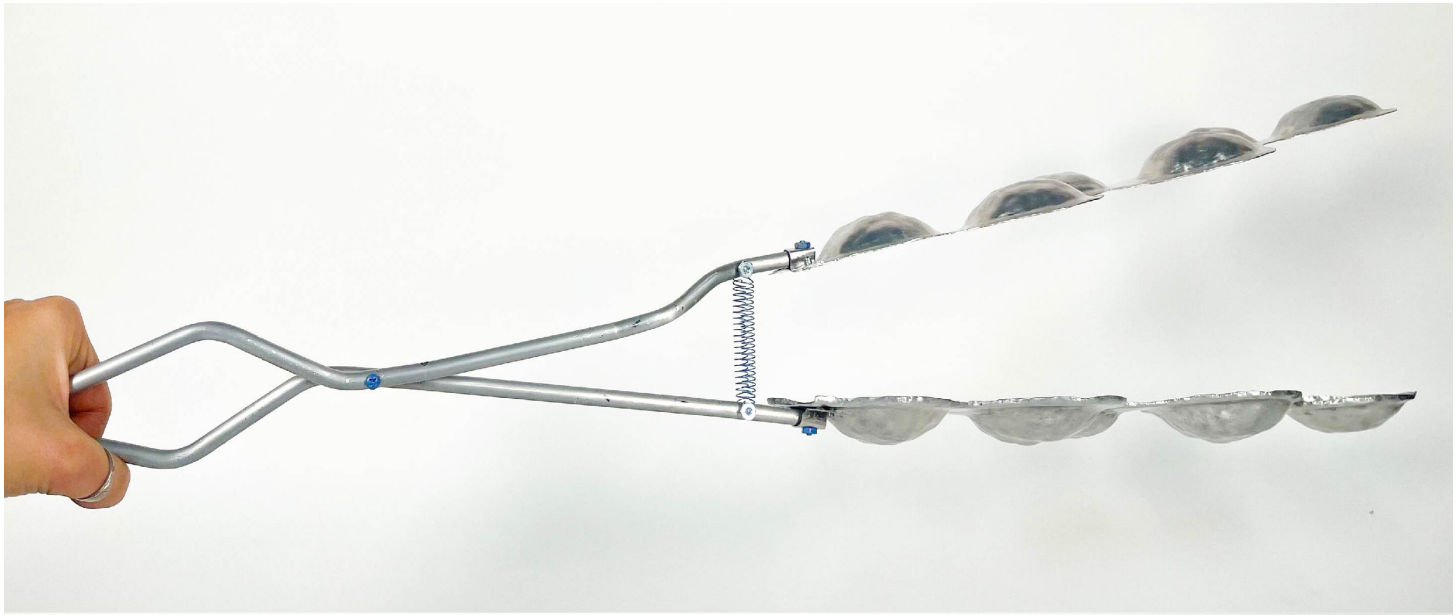
I was able to work as a research engineer at the University of Oxford under the Material Science Department and in collaboration with Cross Manufacturing. I worked to design and fabricate a composite pre-preg machine, in which the materials created were used to test for viability in aerospace applications.

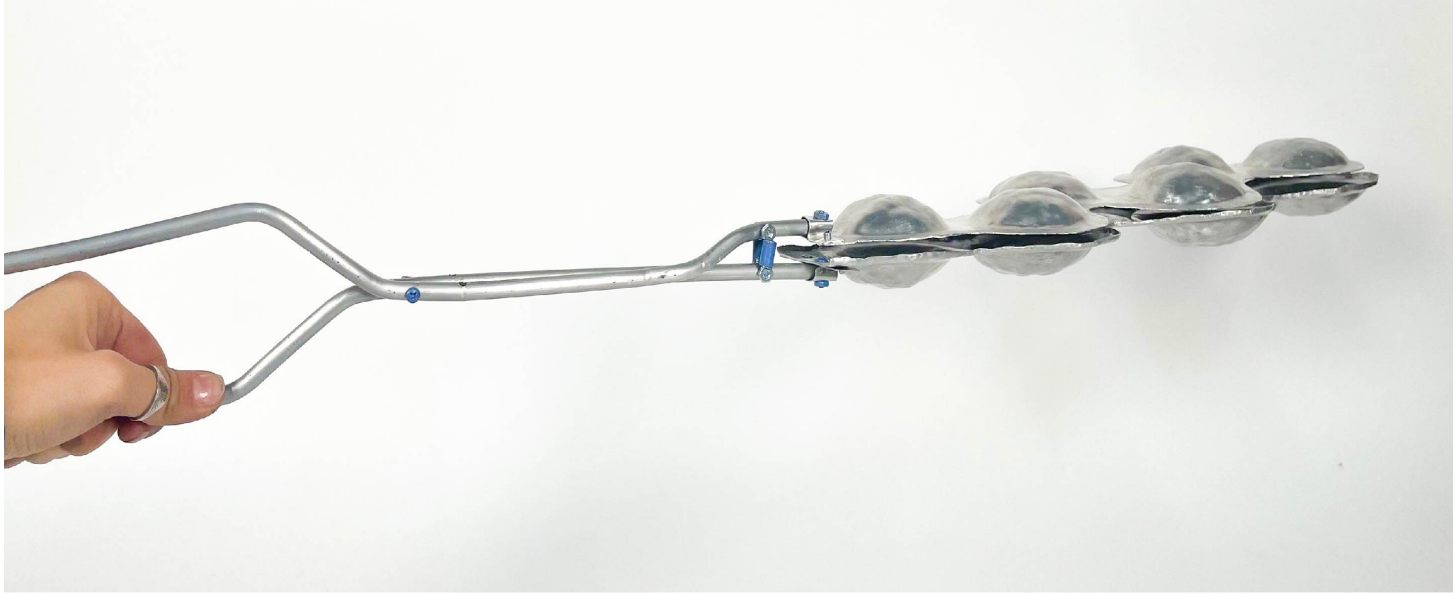
Turntable Motor



Within the Stanford Theater, Arts, and Performance Department, I used random parts to design a fabricate a turntable motor for a production.







Reinventing "chestnuts roasting on an open fire"

Overall:
39" l x 1.5" w x 7" h

Materials:

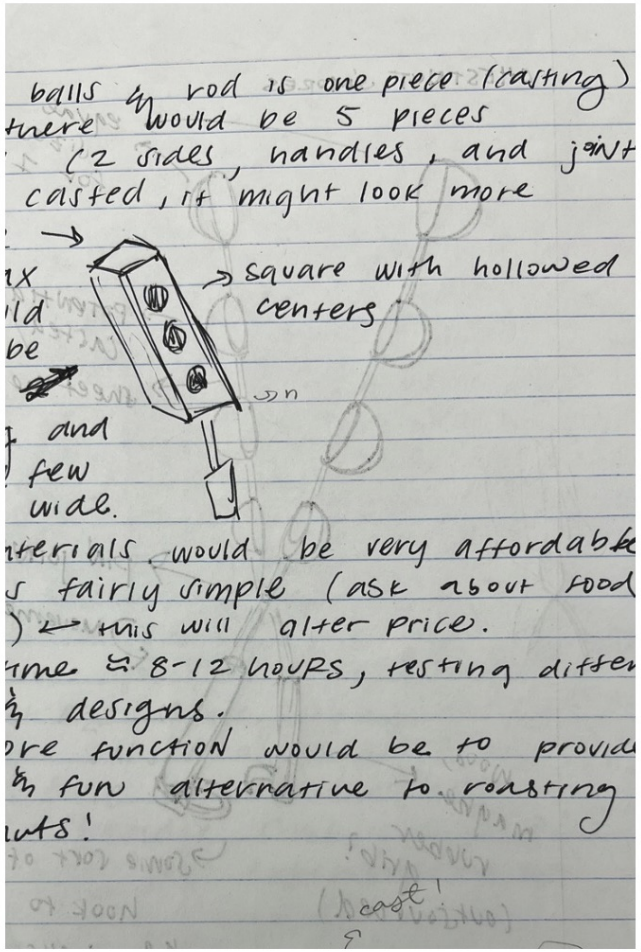
- Aluminum Sheet Metal
- Aluminum Poles
- Tension Spring
- Bolt, Nuts

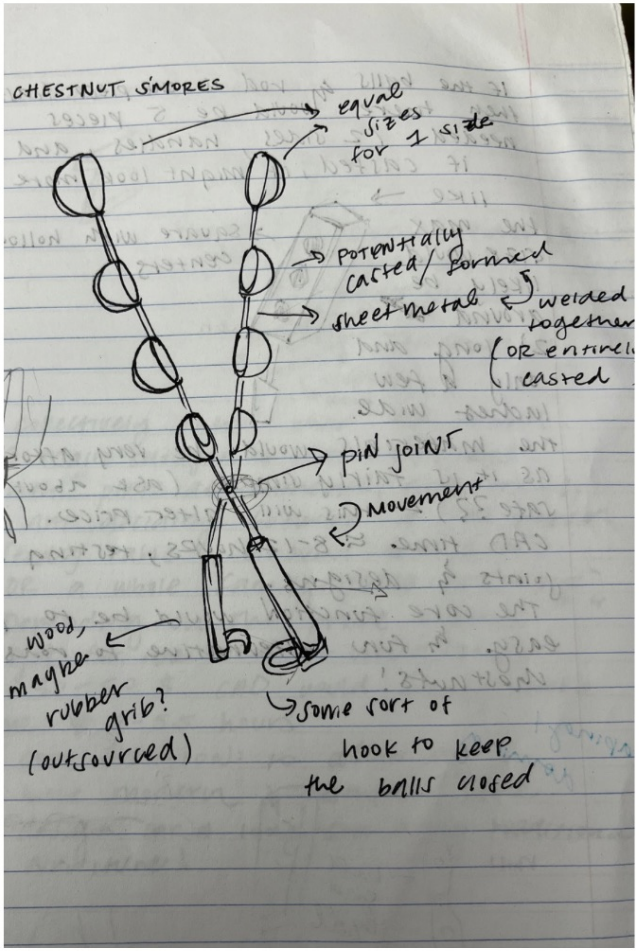
Methods:

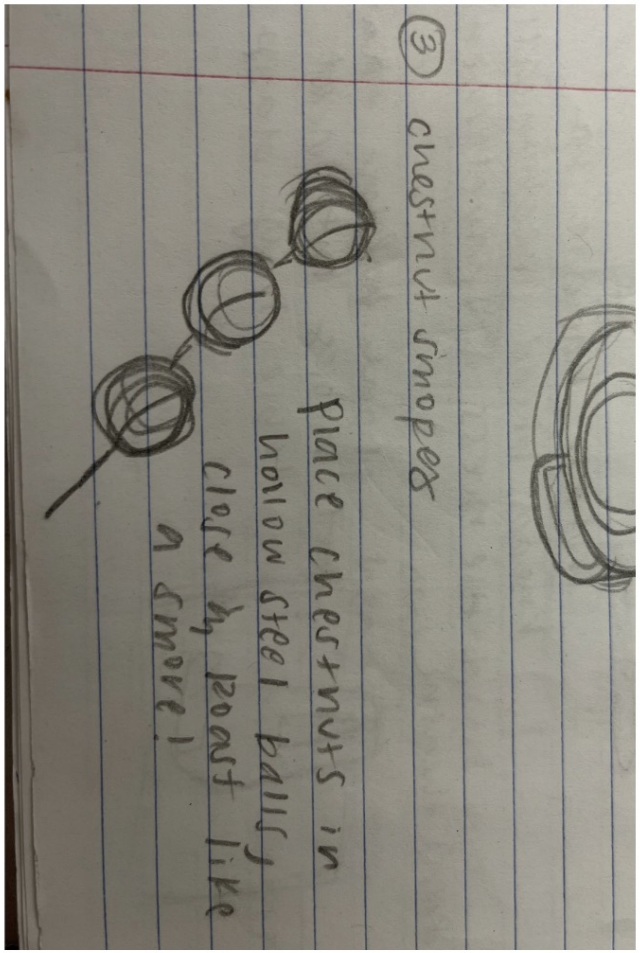
- Sheet cutting and forming
- Chopsaw
- Drill Press

Roasted chestnuts have always been a winter treat my family looks forward to. However, I have been acutely aware that there isn't really a way to roast chestnuts in a way as dreamy as they make it out to be in the song, "chestnuts roasting on an open fire...". I sought to make a really fun, easy, and human-centered way to roast chestnuts.

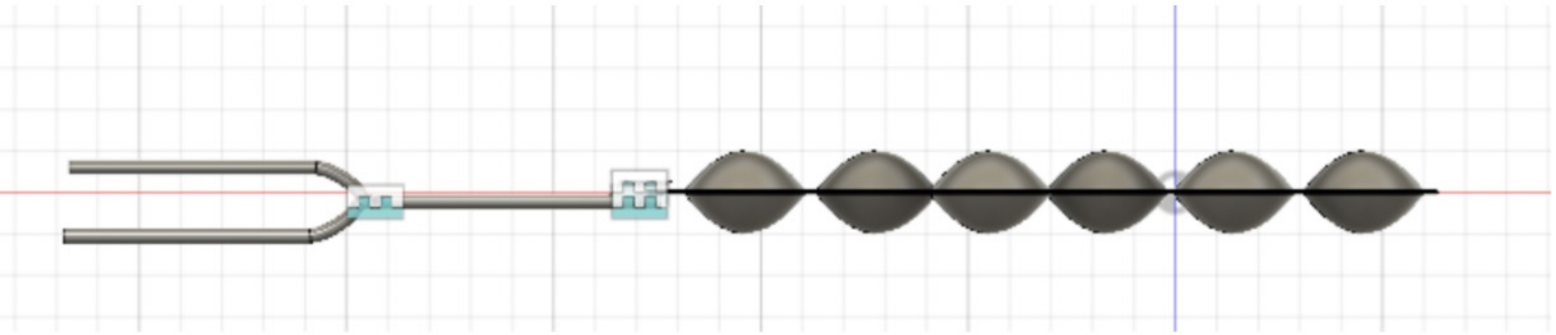
Inspired by the act of roasting a marshmallow, I wanted to create a product that would allow you to roast chestnuts over an open fire. Something that fostered relationship building through a communal act.

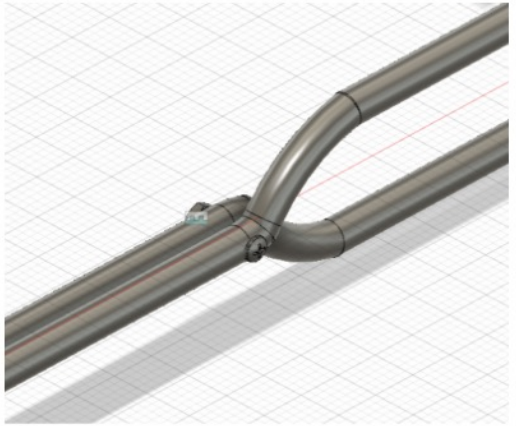


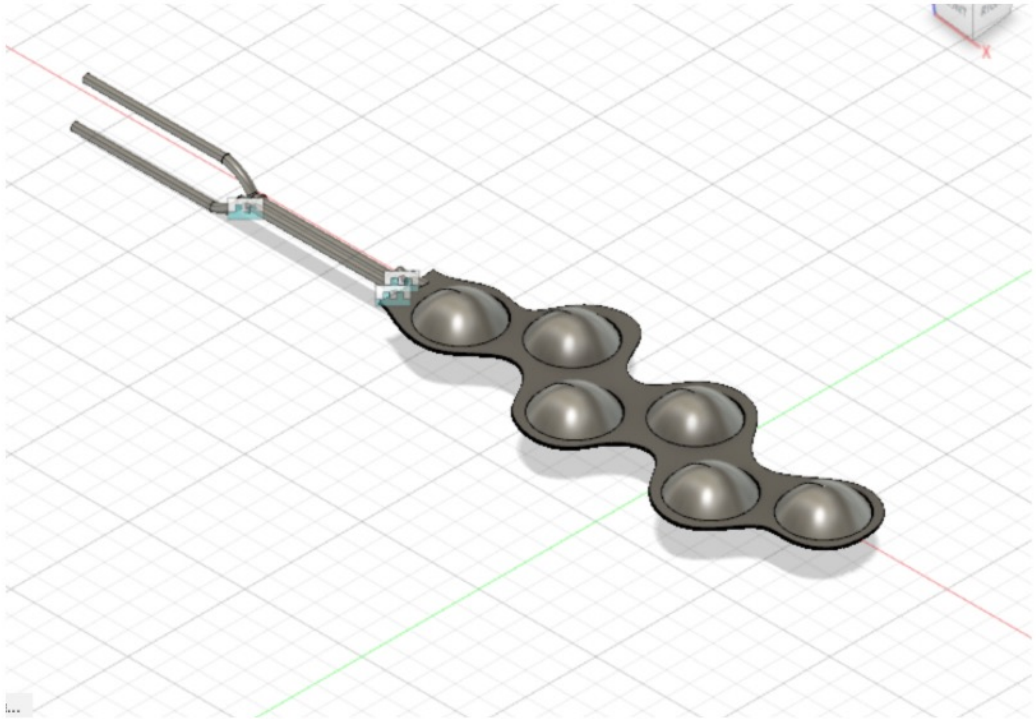


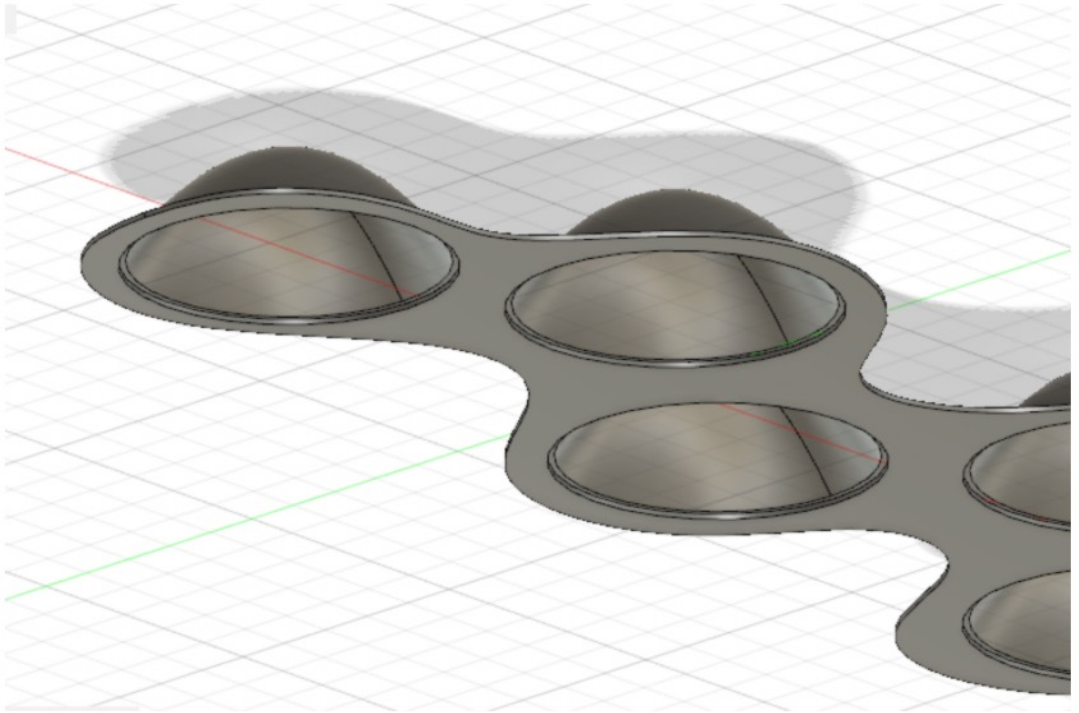


CAD









Redefine what a maze is

Materials:

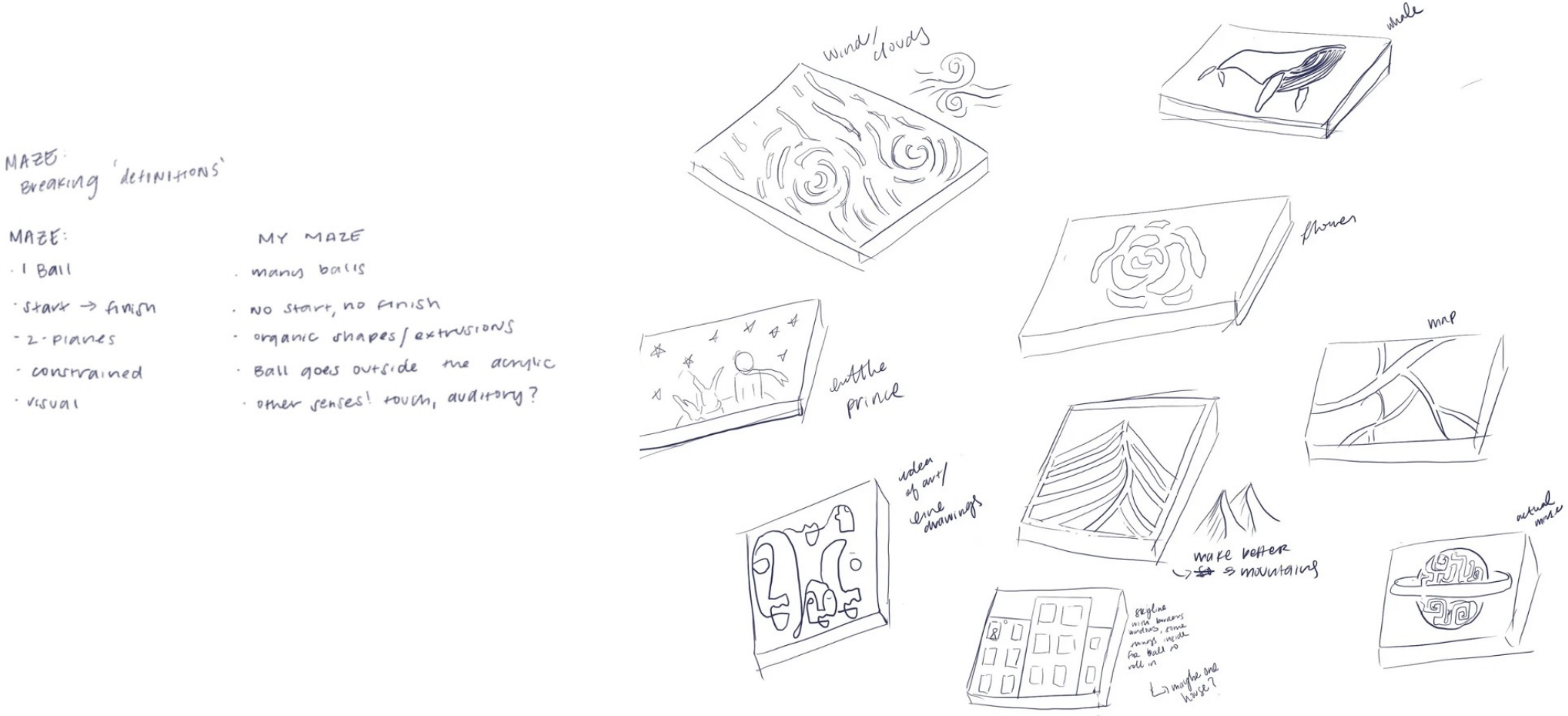
- Aluminum
- Acrylic
- Bolts

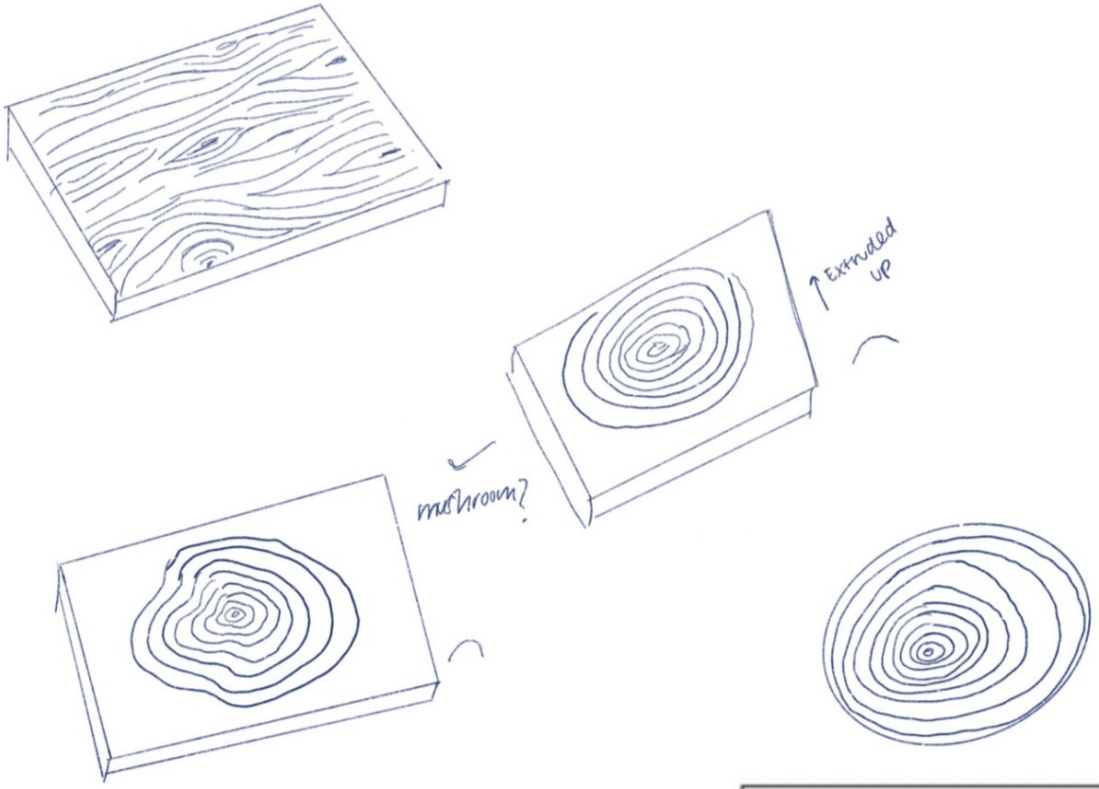
Overall:
3.5" l x 3.5" w x 0.5" h

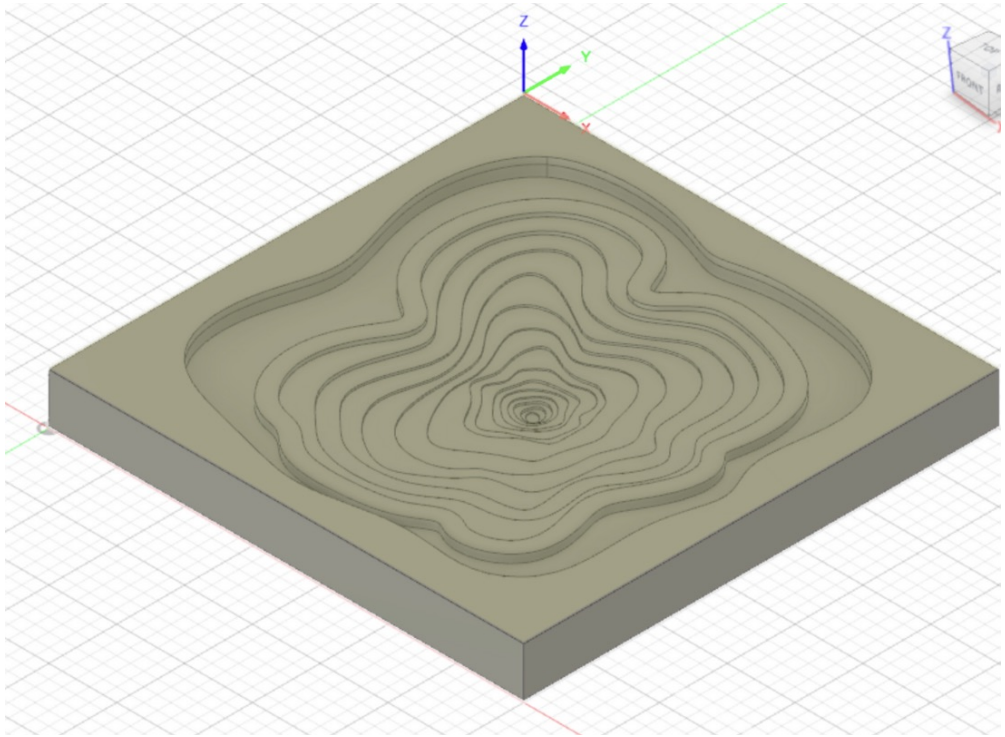
Methods:
CAD, CAM, CNC

I sought to redefine what a maze was. An object that is so notoriously known for one certain function and design reimagined. I wondered how I could take the basic components of a maze and redesign it.

I wanted my maze to have no start and no finish. I sought to make the ‘game’ less logical and more tactile / emotional. I ultimately settled on organic rings that would allow you to *physically feel the rings of the wood* through the clicks of the ball moving on them; bringing nature back into the playroom.





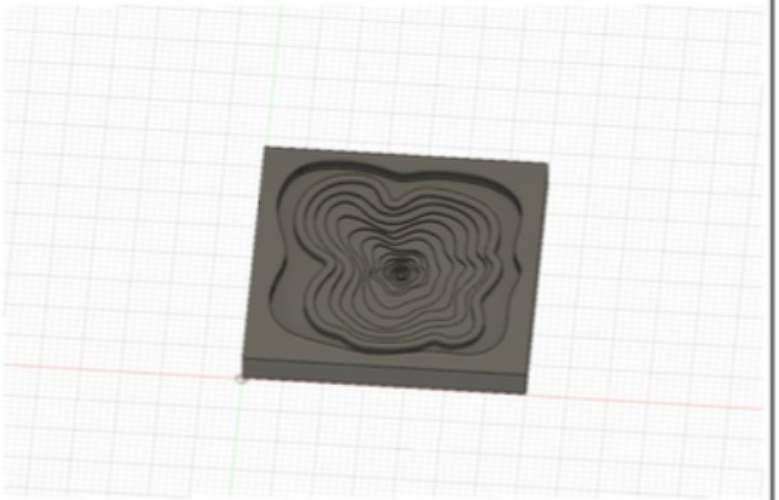


Summary

Program comment:
Design document:
Maze inverted v13
Product version:
Fusion 360 CAM 2.0.12670
Created:
04/26/2022 07:49:56
Number of setups: 1

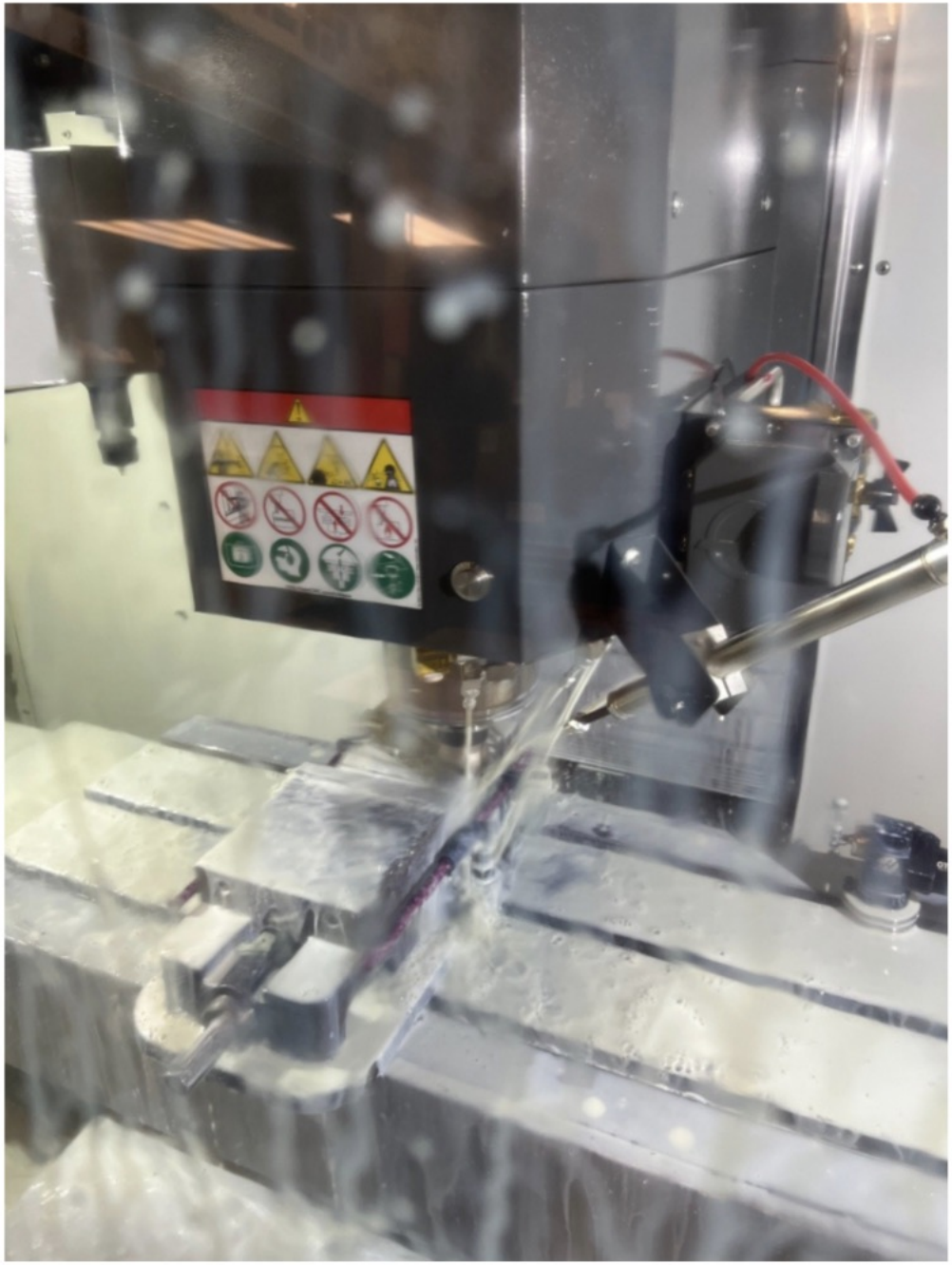
Number of operations: 7
Number of tools: 7
Tools:
T1 T2 T3 T4 T5 T6 T7
Maximum Z: 0.6 in
Minimum Z: -0.295 in

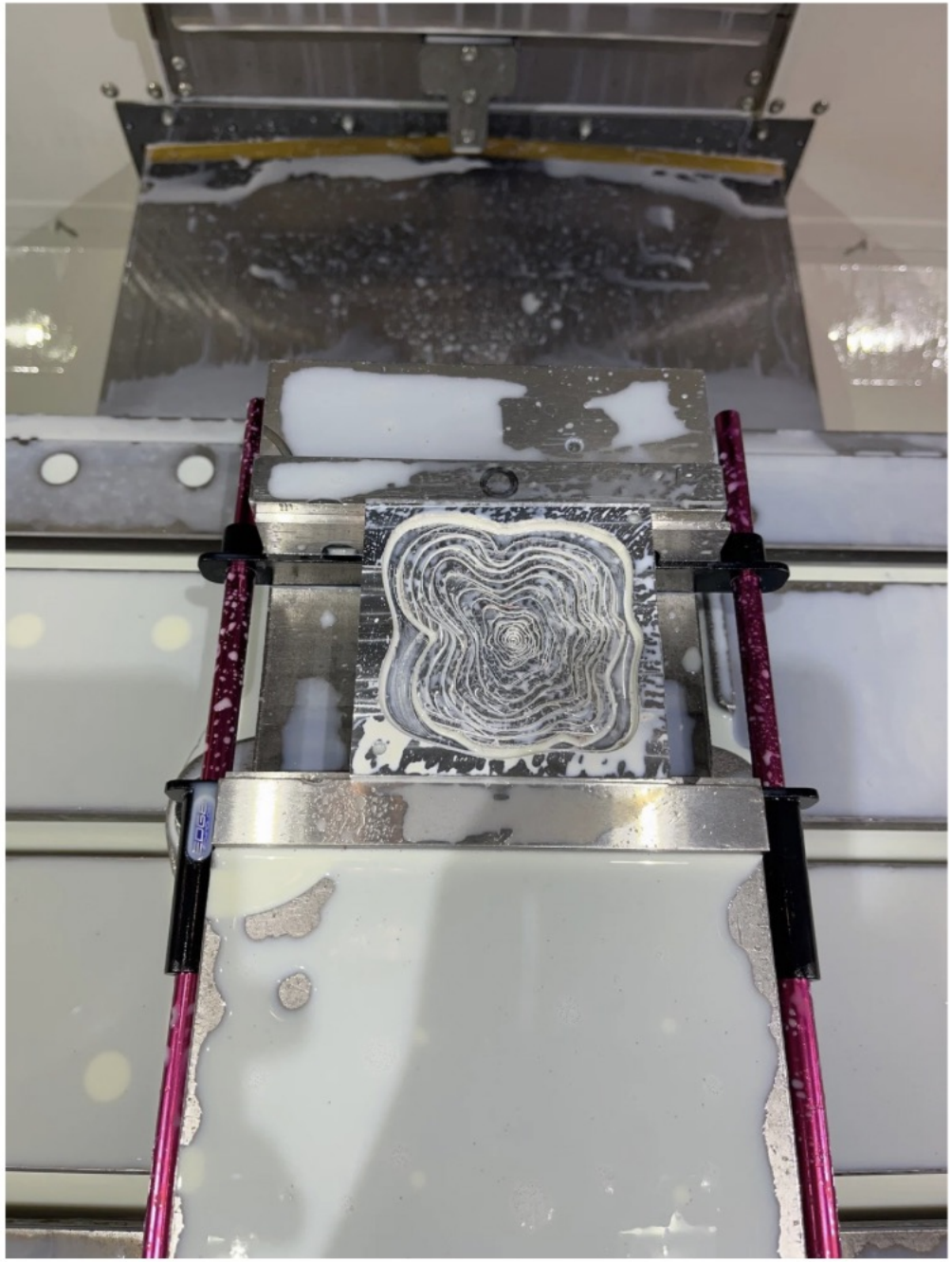
Maximum feedrate: 46.88 in/min
Maximum spindle speed: 7334 rpm
Cutting distance: 1668.0912 in
Rapid distance: 606.4597 in
Estimated cycle time: 2h 58m 21s



CAD and CAM

CNC





Taking traditional brutalist wood furniture to its extreme.

Overall:
14" l x 45" w x 16" h

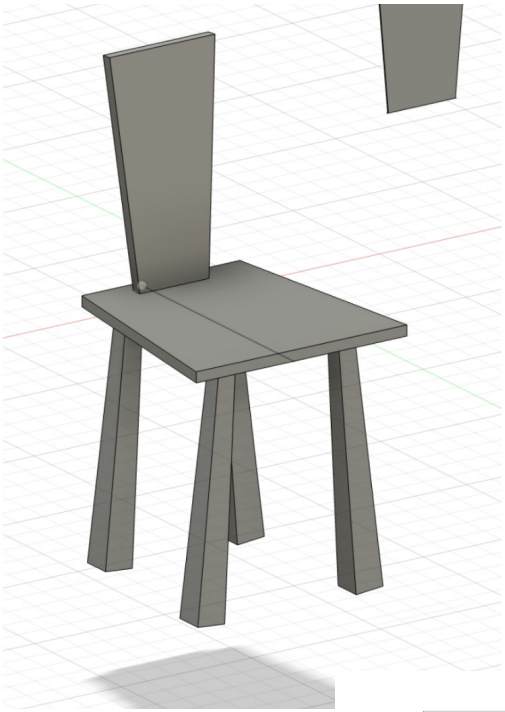
Materials:
- Stainless Steel

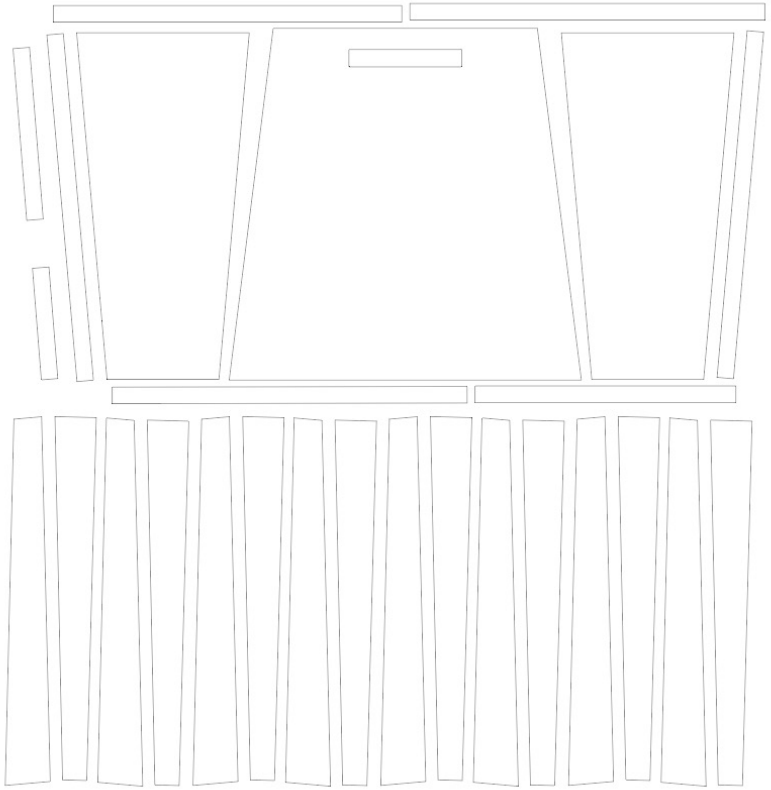
Methods:
- TIG welding
- CAD
- Metal laser cutting
- Angle grinding
- Sanding, Drum roll finishing

Goals:

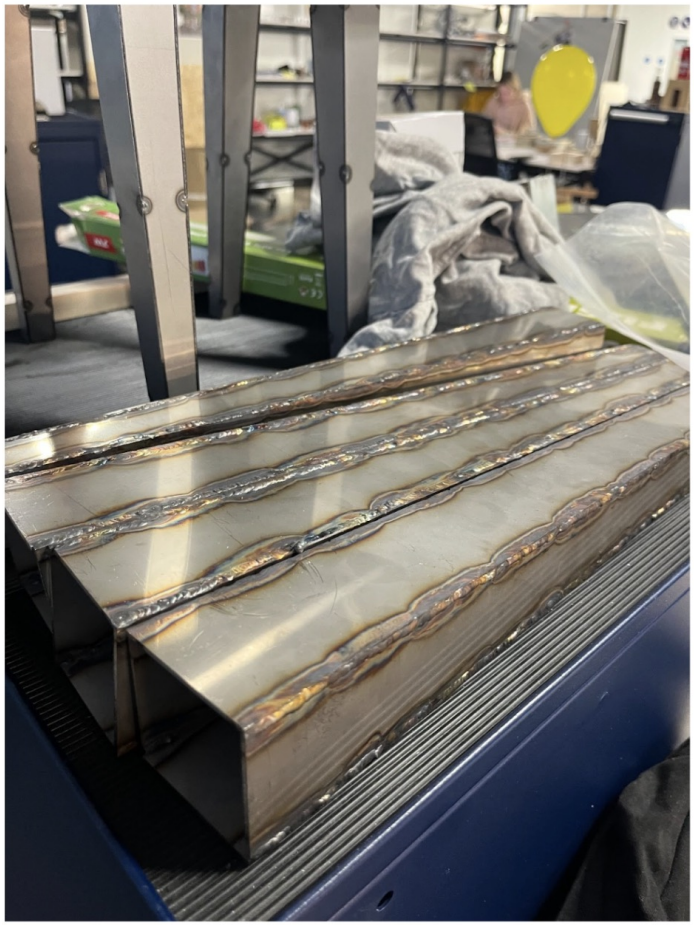
1. Explore and gain a deeper understanding of how materials influence the language and perception of design.
2. Learn TIG and MIG Welding

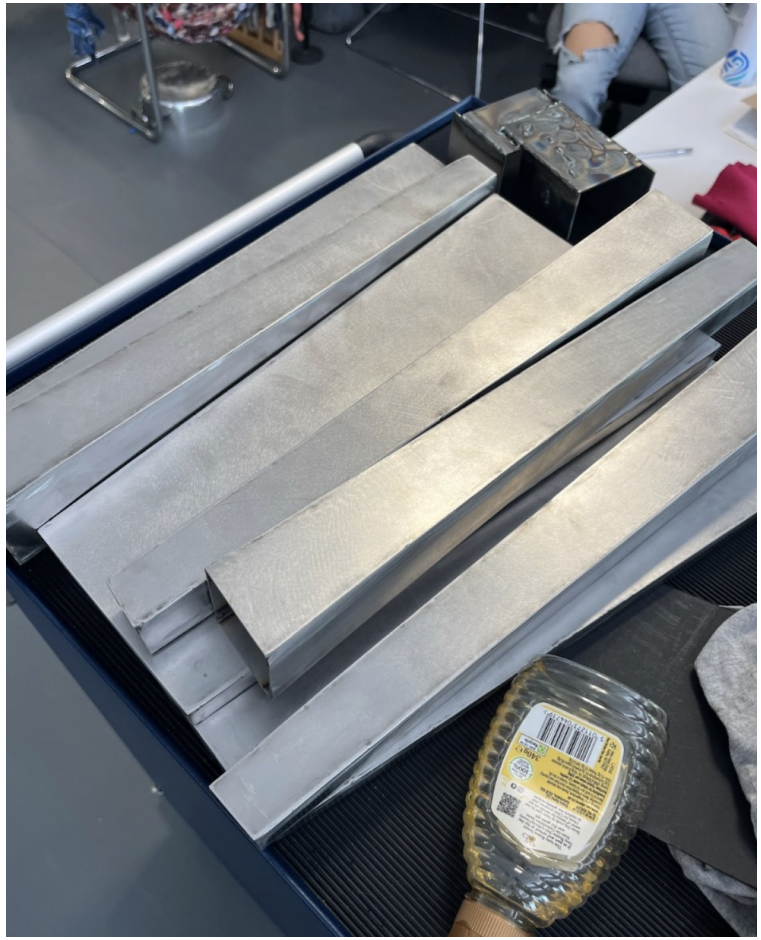
I have a fairly deep understanding of working with wood, but I wanted to explore and gain more experience with metal as a material and the specific processes of building a product with metal. I designed a simple chair in CAD, one that would typically be stylized with wood during the Brutalist era. How would changing the material, but keeping a traditional design, change how people perceive the chair? What subtle details about the nature of welding and metal can I utilize to play into the Brutalist designs.





Welding and angle grinding





Small scale prototype with heat finishing

Overall:
9.75" l x 9.5" w x 19" h

Materials:
- Mild Steel

Methods:
- TIG welding
- Metal laser cutting
- CAD
- Heat treatment/ torching

The next two works represents a year-long exploration of materiality, primarily using metal and wood. When working with each material independently, I allowed the process to be guided by what the material naturally wanted to do, leaning into its innate properties. Metal, with its industrial origins and standardized form, is made to be manipulated, while wood remains inherently unpredictable.

My practice began to center around the question: how one might combine metal with wood in furniture, ultimately aiming to create space for natural forms and processes within the industrial framework, rather than controlling every aspect of a design.

This led me to develop a technique I call Gem Setting. The method allows me to shape and structure the metal while holding space for the irregular beauty of the wood to remain intact. This approach even allows for the embrace of materials often unable to be used in furniture, such as burrowed or decayed wood, highlighting their features rather than altering or discarding them.

This created a visual and structural language reminiscent of how precious metals are used to hold and elevate gemstones, giving both protection and reverence. In a time of accelerating deforestation, this felt especially important—to treat wood not as a means, but as a material as unique, precious, and finite as a diamond.

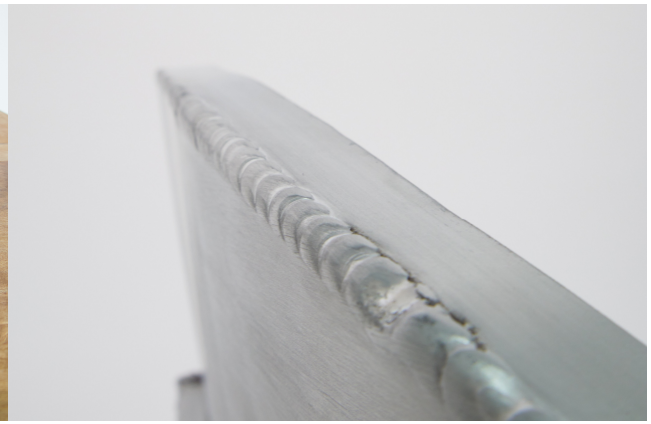
Gem Set

Fallen wood wrapped in aluminum sheets. Using the same technique as a diamond is set for a gold ring.

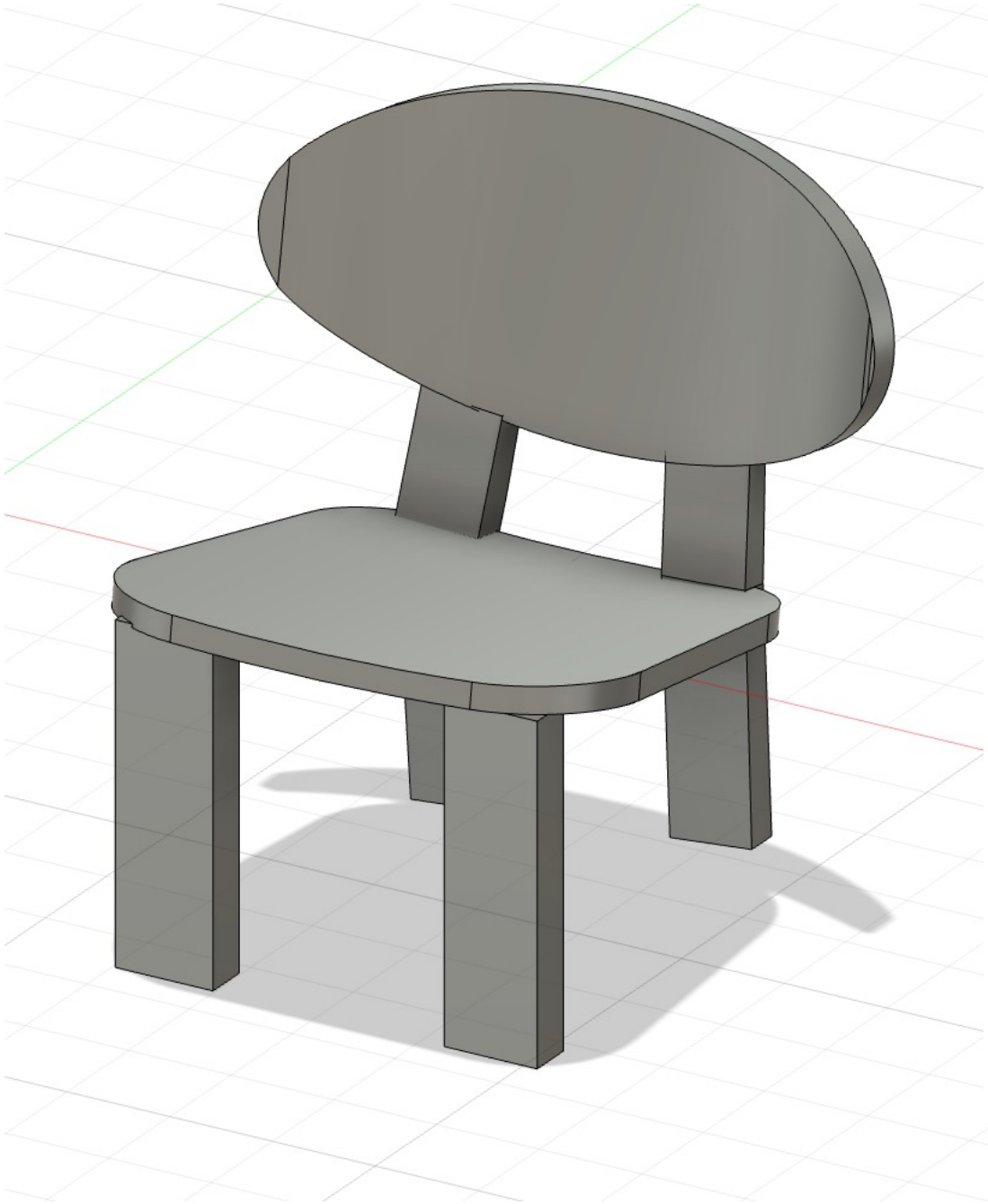
Overall:
15" l x 30" w x 14" h

Materials:

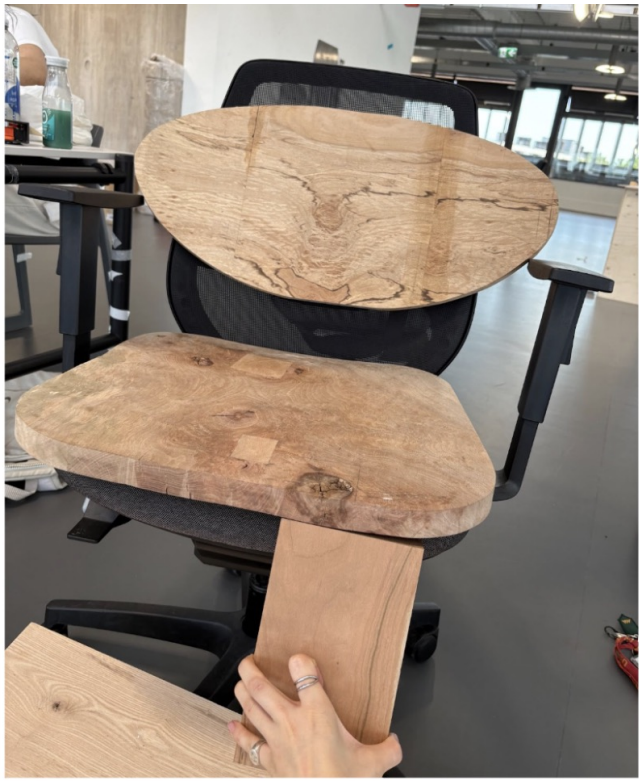
- Aluminum
- London Plane

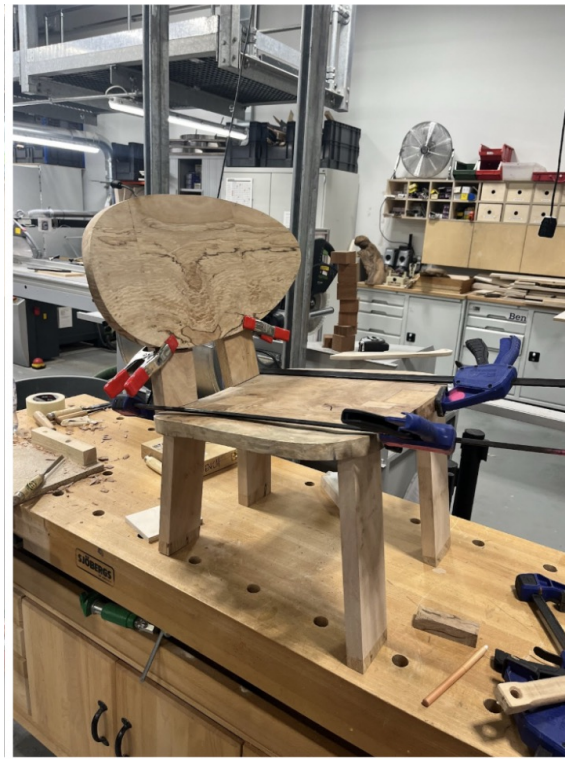


CAD and Laser cutting files



Wood and Metal work





How can metal create a sense of reverence and value to fallen wood?

Materials:

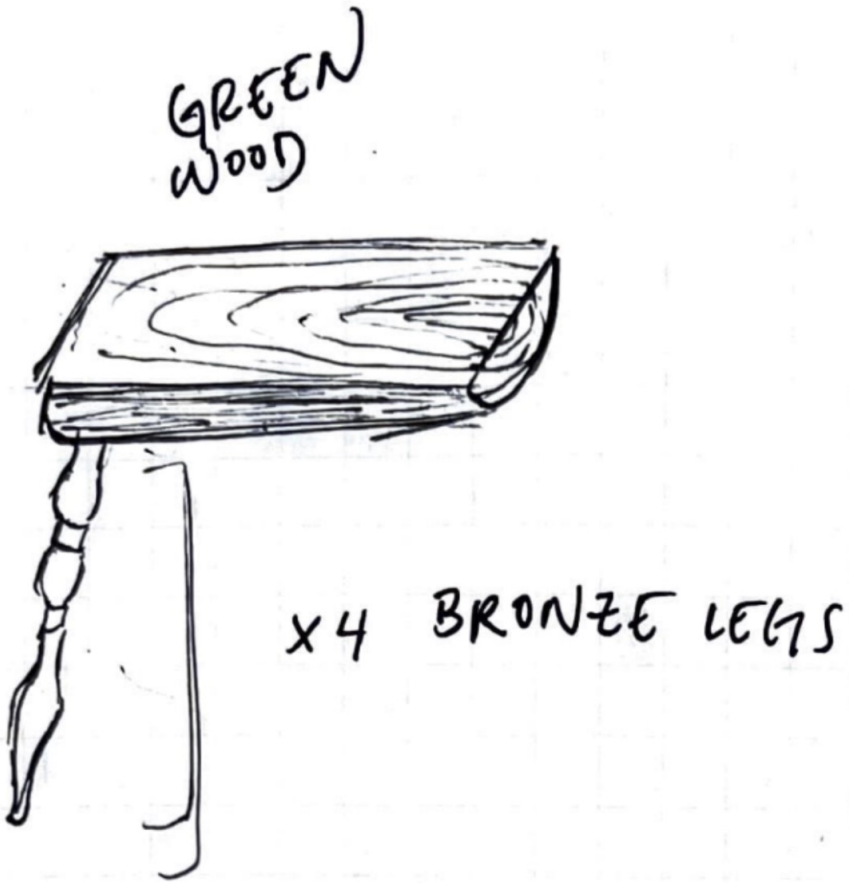
- Olive Wood
- Bronze
- Stainless Steel

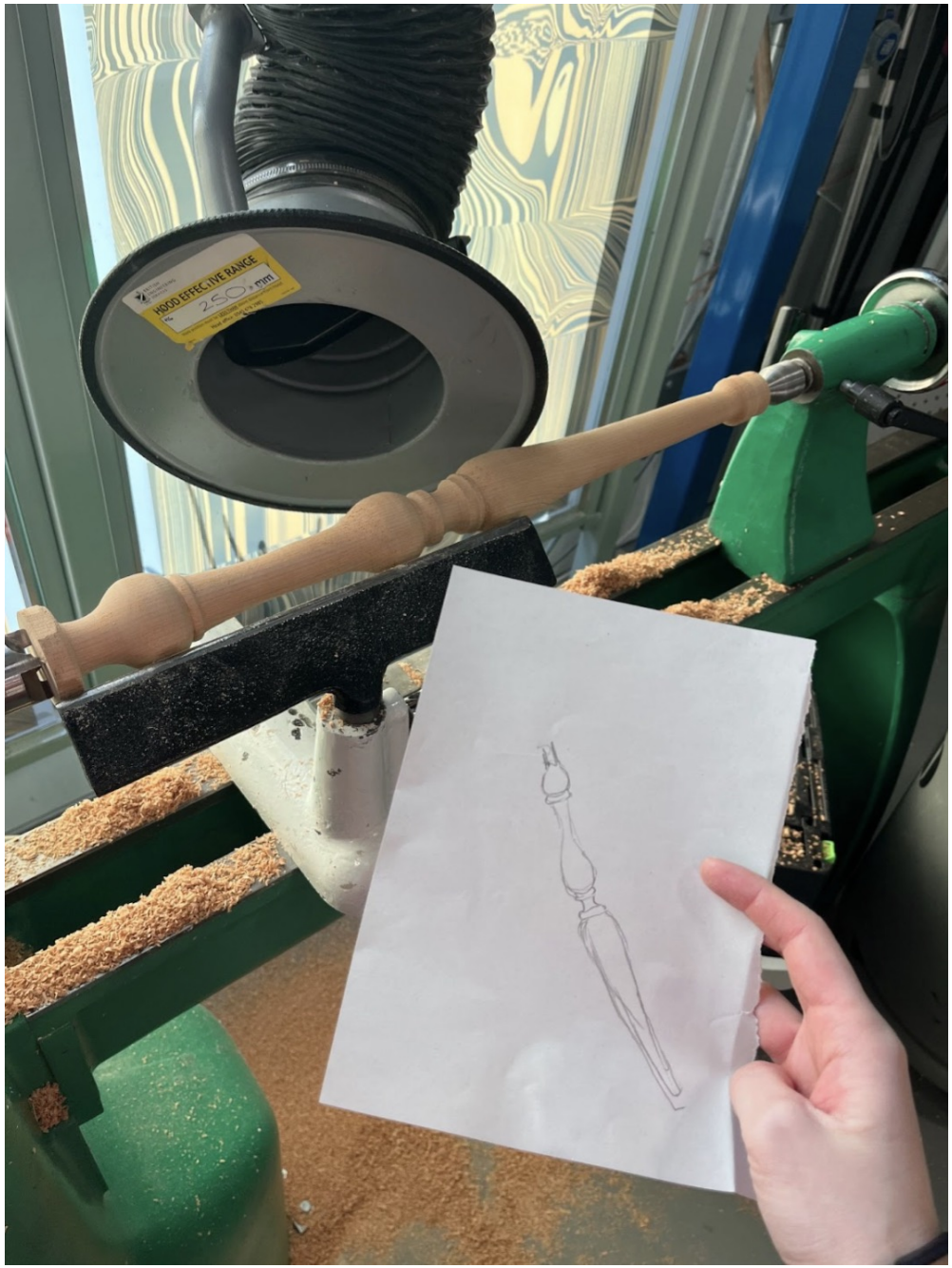
Methods:

- Planing
- Wood turning
- TIG Welding
- Jesmonite Mold making
- Wax casting
- Bronze finishing

Mold Making &
Wax Work

Initial Concept





Casting and Metal Work