

LEILA RASHIDIAN



SELECTED WORKS

ABOUT ME



The iterative process of building is the highlight of my experience as an architecture graduate. I try to use every design problem as an opportunity to tackle a challenging fabrication method or unfamiliar design solution. This encourages me to develop iteratively to strengthen my argument.

With a diverse background in digital fabrication and involvement in multiple design builds as a student and also as a teaching assistant, I bring precision and flexibility to my work and thrive in collaborative settings where designs are tested, challenged, and improved through material exploration.

I am continually seeking opportunities to collaborate across the design world, where shared expertise and experimentation can open up new directions for making.

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01 HEXA HAVEN

Award - 2nd Place (\$1000)

Tools I Worked with - Miter Saw • Drill

Materials - Timber • Plywood

TimberFever 2024 Design Build Competition

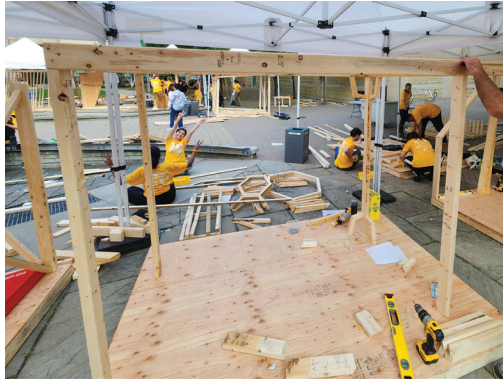
In collaboration with Architecture students Matthew Teixeira, Navitha Saravanan, and Civil Engineering students Mirna Hirmiz, Sean Leung, and Julia Mezzabotta



▲ Bench design by me

Over the course of 3 days, we designed and built a pario for cabin housing, which won **2nd place** out of 16 teams. I focused on designing and building the bench for our structure, aiming to resonate with the space. The hexagon openings allowed a playful relationship with light and shadow, highlighting the dynamic arrangement of the structure. The design is accompanied by a stepped roof to allow water to be directed away from the entrance. Furthermore, the modular units of the patio make it convenient to maximize aesthetics while using minimal time to construct.





02 BINARY BLOCKS

Tools I Worked with - Jointer • Planer • Table Saw
Miter Saw • CNC • Chisels

Materials - Pine (Refurbished from a barn)
ARC465: Advanced Tools for Observation
Instructor Zachary Mollica

For this project I worked with a reclaimed barn beam that was full of wear, nail holes, and surface damage. I 3D scanned the beam and divided it into a 1" x 1" grid on all sides. I designed and built a custom jig so the beam could rotate, allowing me to machine every face on a 3-axis CNC. I wrote the CNC program, set everything up, and ran the machine myself.

The end result is a blocky, pixelated surface where the “good” wood is removed, and only the damaged history of the beam is left visible.



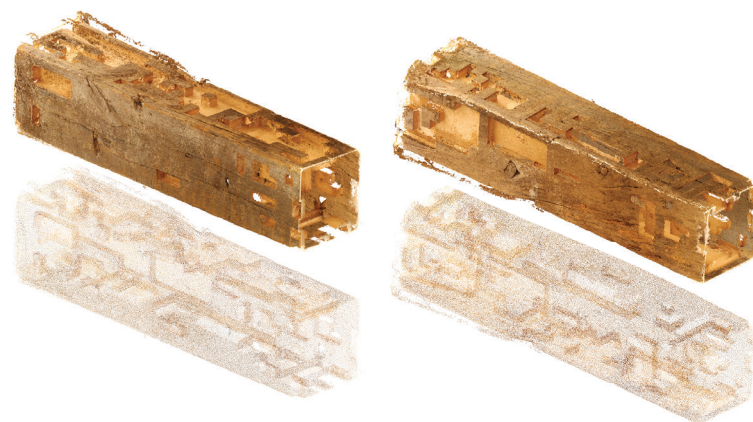
▲ Rounded corners post mill



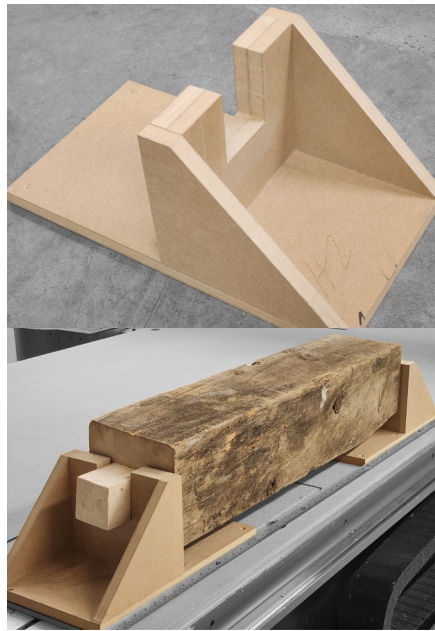
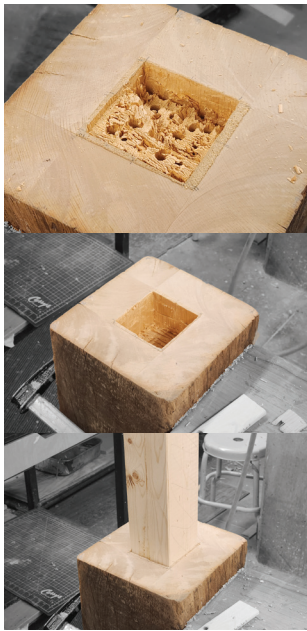
▲ Sharp edges through chiseling



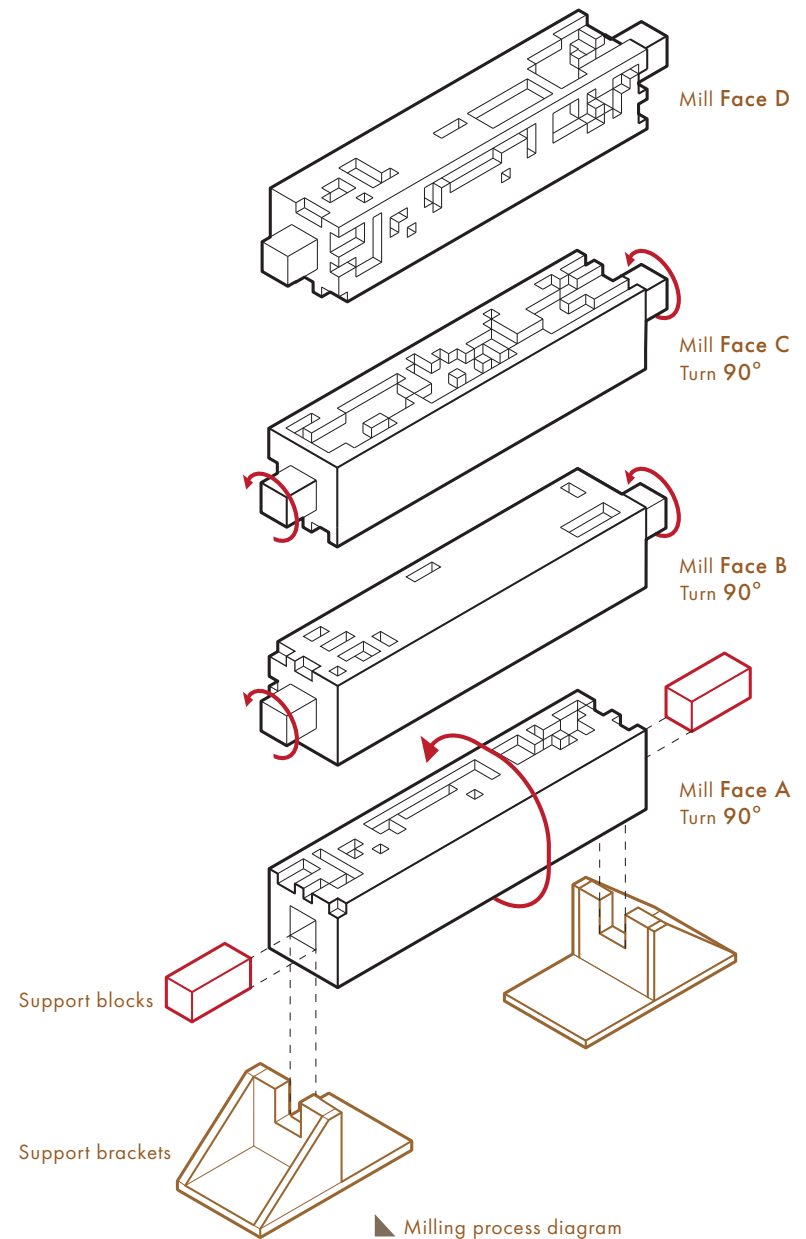
▲ Dense vs. loose point clouds of **original piece**



▲ Dense vs. loose point clouds **after milling**



▲ Flipping the stock after a face finishes milling



03 SERPENTINE PLY

Tools I Worked with - Table Saw • CNC • Dremel • Drill

Materials - Plywood • Oil-based Clear Finish

ARC384: Machine Design Practices

Instructor Nicholas Hoban

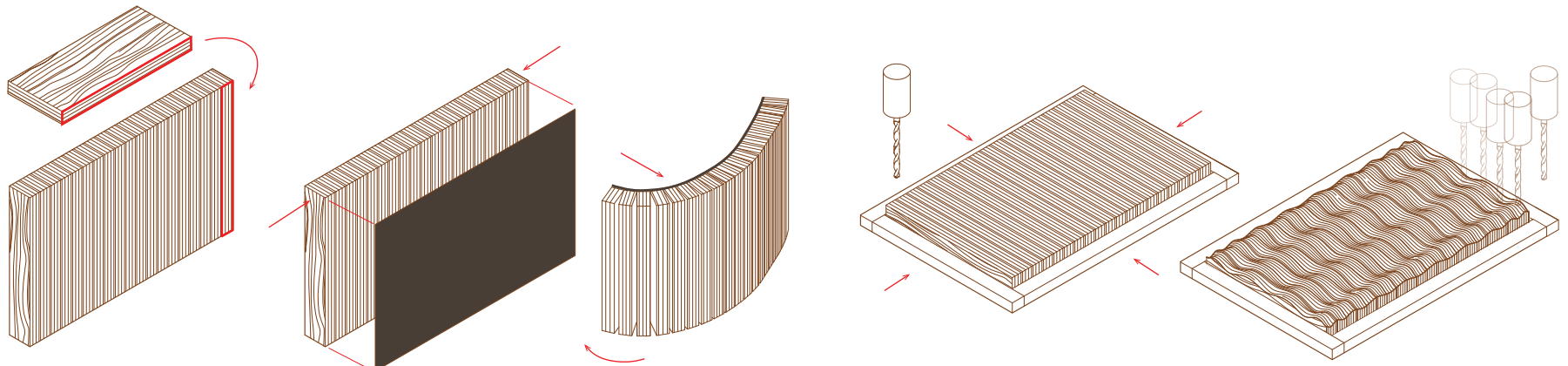
In collaboration with Han Cherry

Inspired by tambour door rolling cabinets, I proposed the design of this project, prepped the plywood stock and a wooden frame in the workshop, organized the 3-axis CNC milling operations, and executed post-processing operations. This project fuses plywood offcuts to form a dense, textured surface. The synthetic leather backing allows for fluid motion, reminiscent of undulating waves which allow a set of scales to sway along. The motion produces an entrancing "breathing" effect—a symphony of movement and sound, evoking the slithering of serpents.



▲ Wave progression of topography

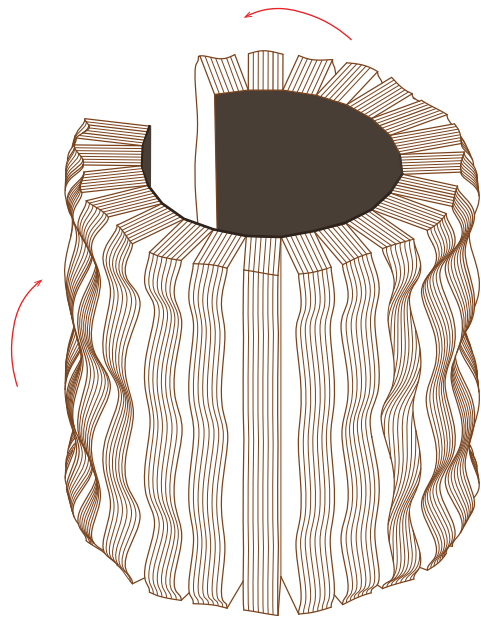
▲ Wave progression of scales



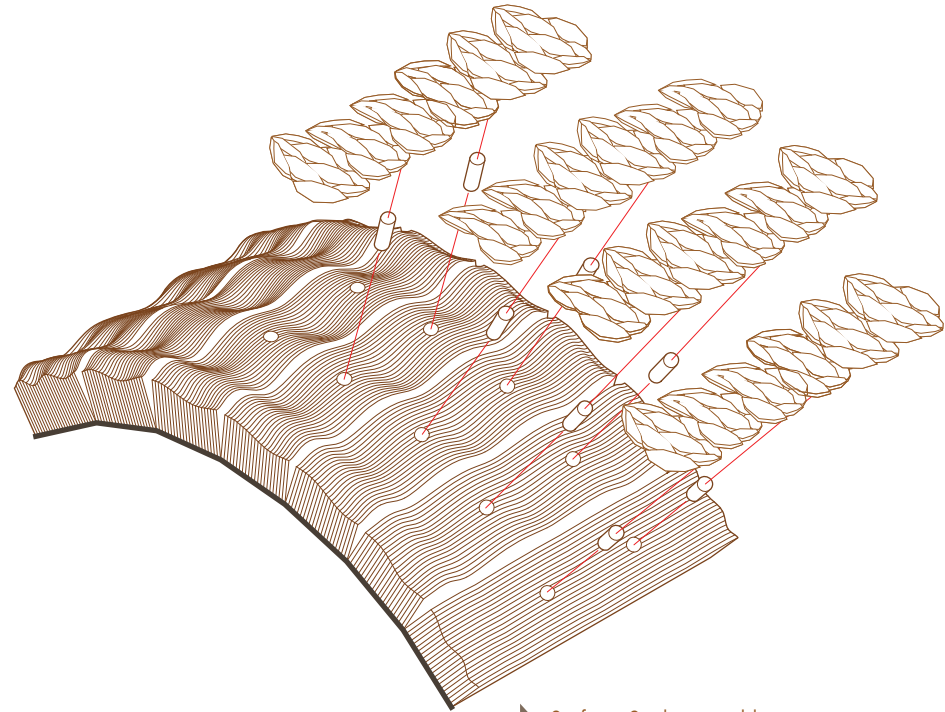
Step 1 - Arrange the end grain

Step 2 - Tightly glue the back side to a sheet of synthetic leather

Step 3 - Create a frame to squeeze the plywood pieces together for milling *



Final topography



Surface-Scale assembly

* According to Fabrication Lab Technicians, by using a frame to hold the plywood pieces tightly, this project became the first of its kind to mill an unlaminated surface in the John H. Daniels Fabrication Lab.

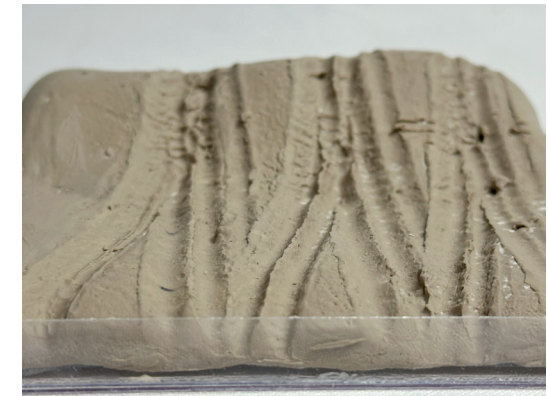
04 EROSION OF CLAY

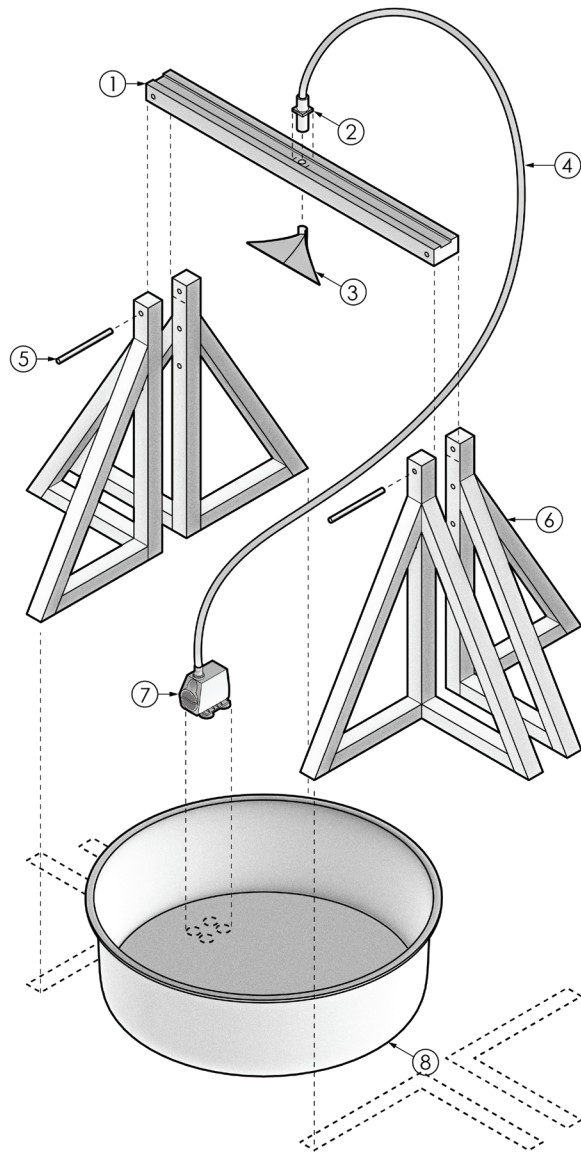
Tools I Worked with - UR10e • Submersible Water Pump
3D Printer • Laser Cutter • Jointer
Planer • Table Saw • Miter Saw
Drill Press

Materials - White Stoneware Clay • Slip • Air Dry Clay
ARC380: Automata: Relatively Self Operating
Instructor Maria Yablonina, Nicholas Hoban
In collaboration with Han Cherry,
Maya Al-Jitan & Nathan Saunders-DeGuire

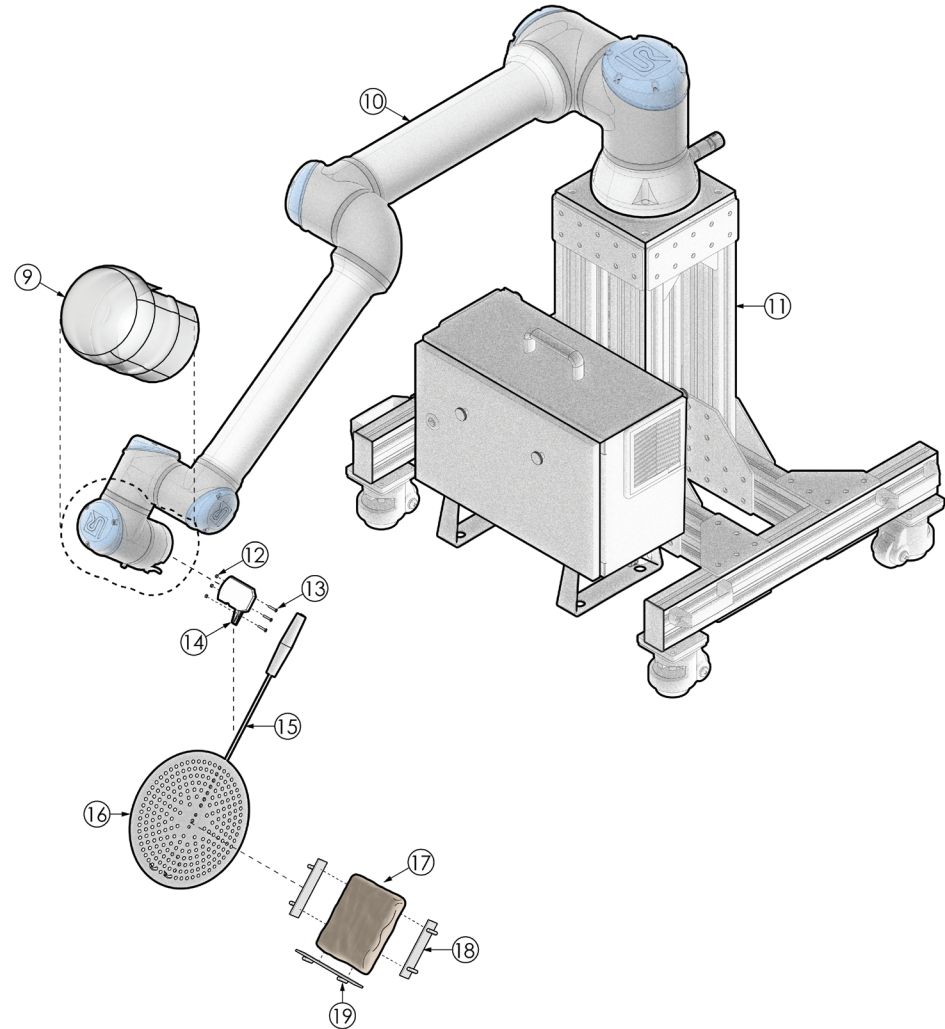
In this project, our team set out to explore the behavior of erosion within a much shorter scale of time. I was the primary facilitator of this project with 100+ hours spent working on learning and creating molds, nozzles, and many iterations of the set up of our experiment.

I designed all variations of our robot attachment, cast all the plaster molds for the slip to dry fast, designed and 3d printed 5 different water nozzles along with the adjustable brace to hold the nozzle at different heights.





- 1. Nozzle Support Beam
- 2. Waterfall Nozzle Input
- 3. Waterfall Nozzle Output
- 4. Plastic Tube
- 5. Support Dowel
- 6. Wood Frame
- 7. Submersible Pump
- 8. Wash Basin



- 9. Robot Plastic Cover
- 10. UR10e Robotic Arm
- 11. Robot Base
- 12. Nuts
- 13. Screws
- 14. Robot Attachment
- 15. Cook Fork
- 16. Strainer
- 17. White Stoneware Clay
- 18. Clay Support Dowels
- 19. Acrylic Support Frames

05 PUMP & DRAW

Tools I Worked with - Arduino UNO • AxiDraw V3
12V DC Peristaltic Pump

Materials - Acrylic Paint • Vinyl Tubing • Acrylic Tube
Acrylic Sheets • Magnets

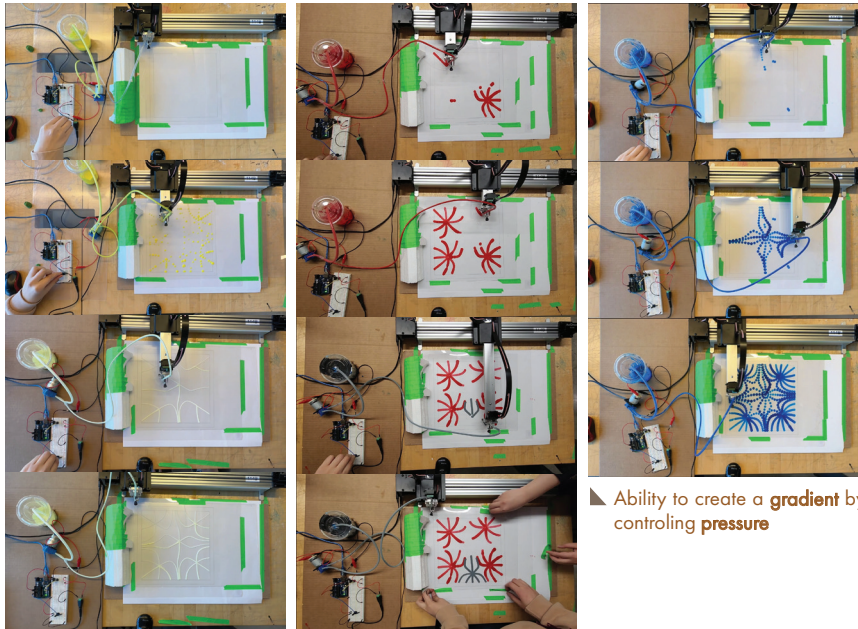
ARC384: Machine Design Practices

Instructor Nicholas Hoban

In collaboration with Han Cherry

This project demonstrates my first use of the arduino where I figure out how to control the pressure of a persistaltic pump with a potentiometer to pump acrylic paint through a tube. The tube is then attached to an AxiDraw to paint on acrylic sheets. These sheets are then layered on top of each other to give the illusion of depth.

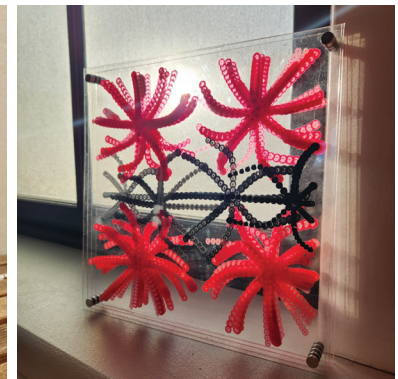
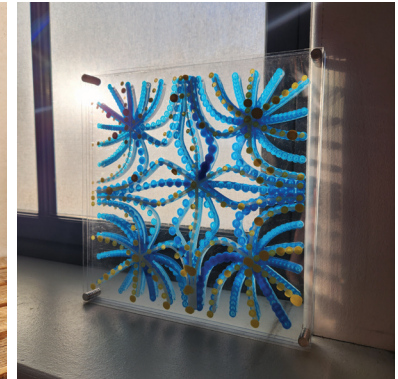
The images below demonstrate the **successes in this project**.



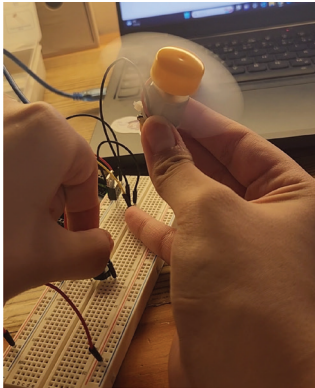
▲ Ability to draw **points & curves**

▲ Ability to use **different colors**
on **one canvas**

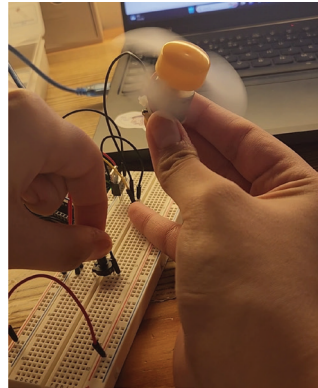
▲ Ability to create a **gradient** by
controlling **pressure**



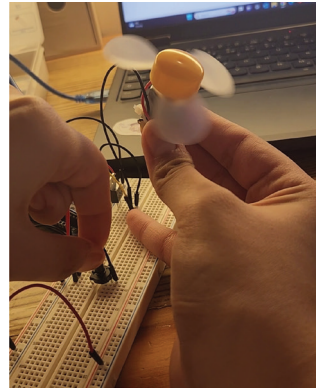
PROOF OF CONCEPT



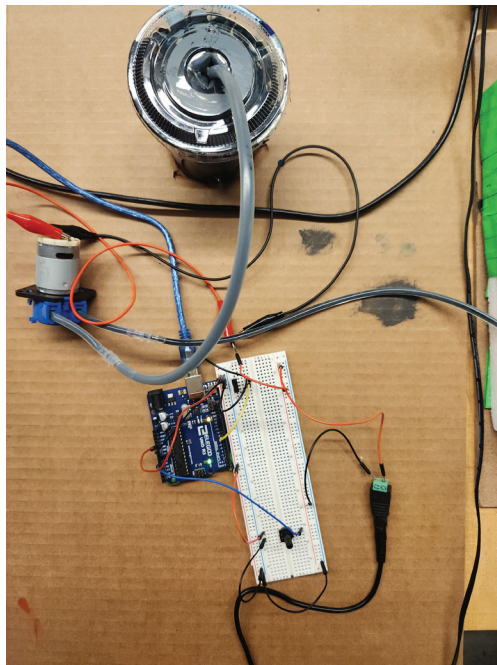
Low resistance



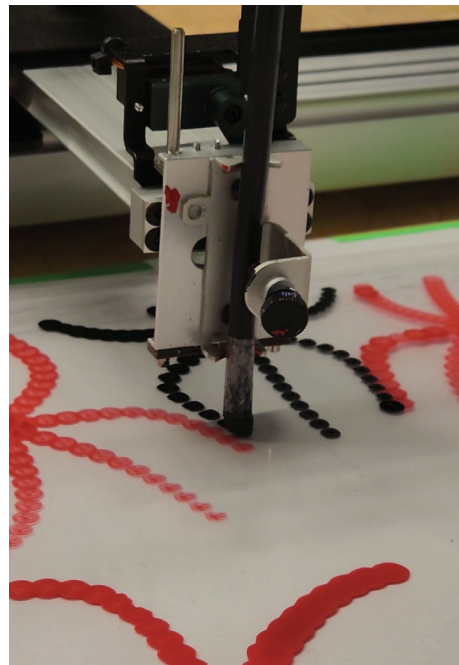
Medium resistance



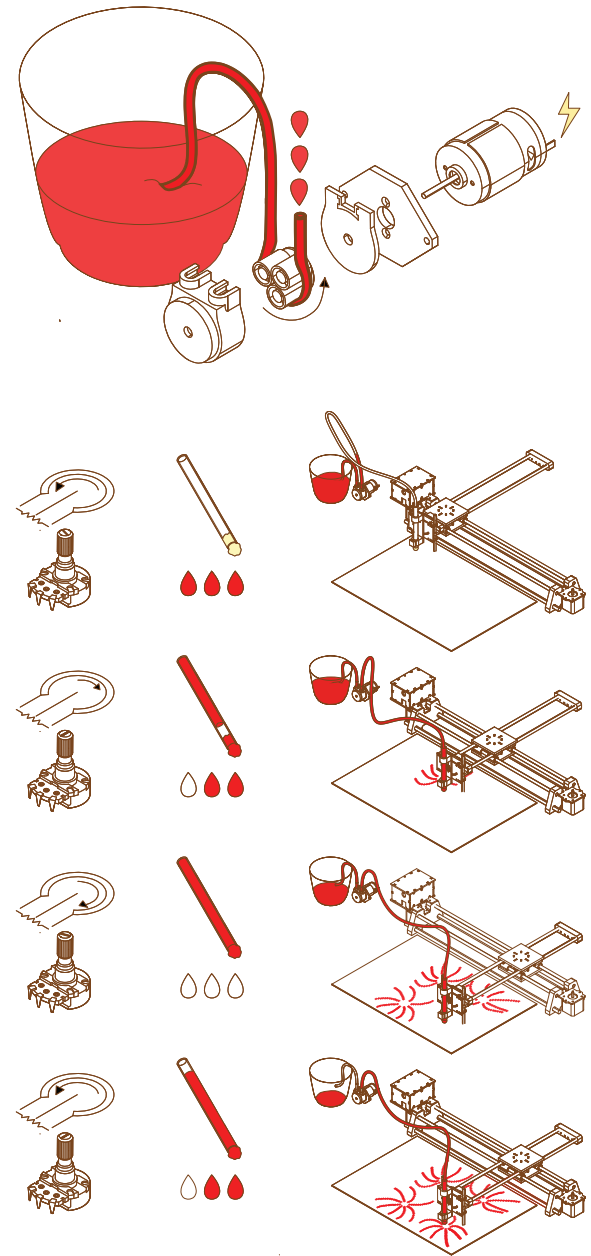
High resistance



Arduino and pump setup



Close-up of the tube and DIY "brush" drawing



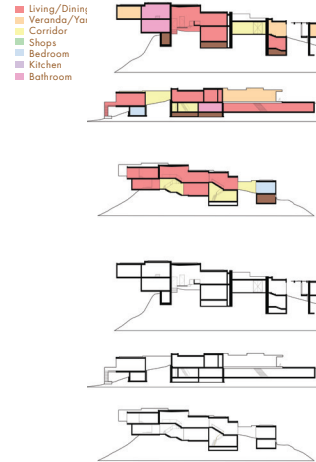
06 PRODUCTIVE MISUNDERSTANDINGS

Tools I Worked with - EDEN Ai • Miter Saw
Table Saw • CNC

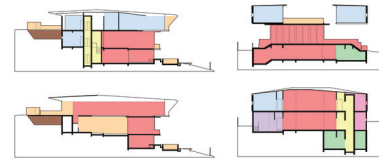
Materials - Plywood • Walnut • Resin
ARC381: Machine Learning from Las Vegas
Instructor Paul Howard Harrison
In collaboration with Anna Geng & Jack Simon

Situated atop Glen Stewart Ravine, this mixed-use housing unit was designed based on a machine learning model of floorplans and elevations. Our team proposed an anti-thesis to the top-down AI training approach, using our best judgement to create the form of the units. This form was used to train the AI, and successful sections were merged into a collage of spaces.

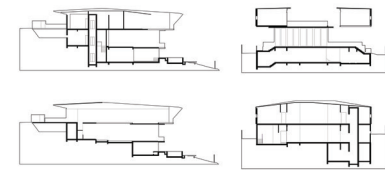
Program



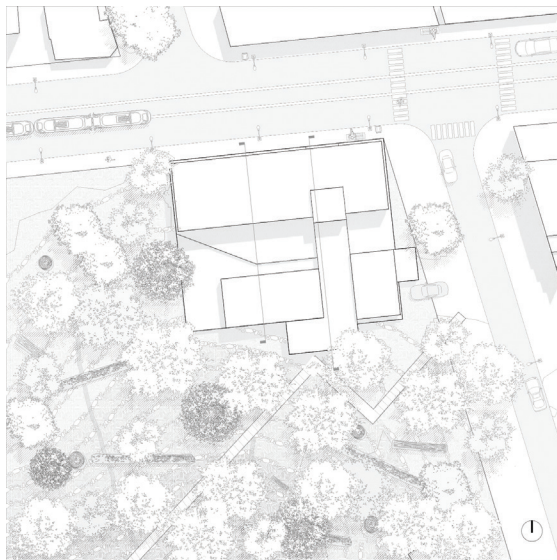
Programming



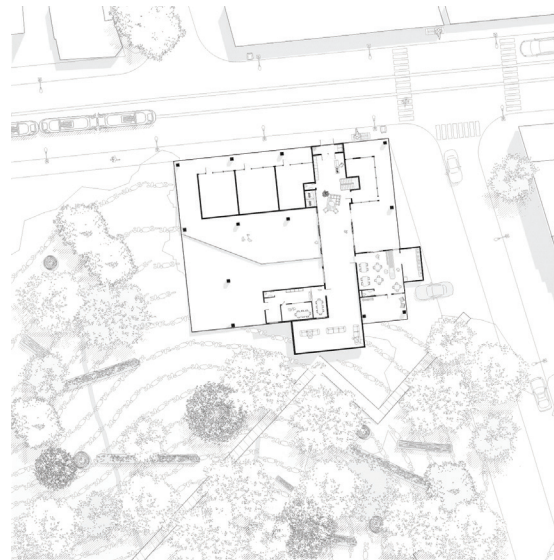
Sections



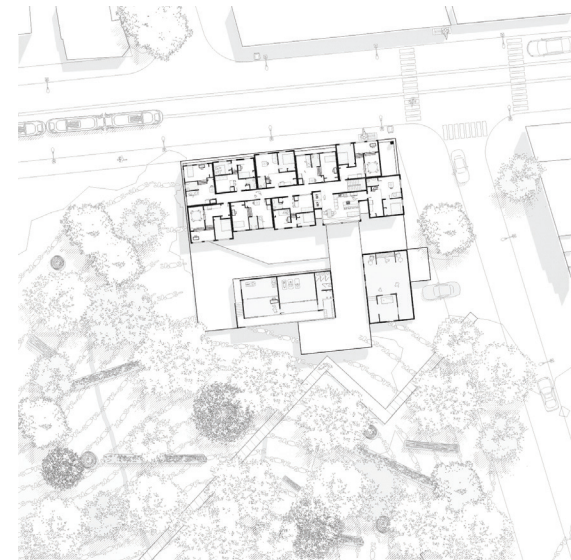
Same AI training data - Hillside Housing



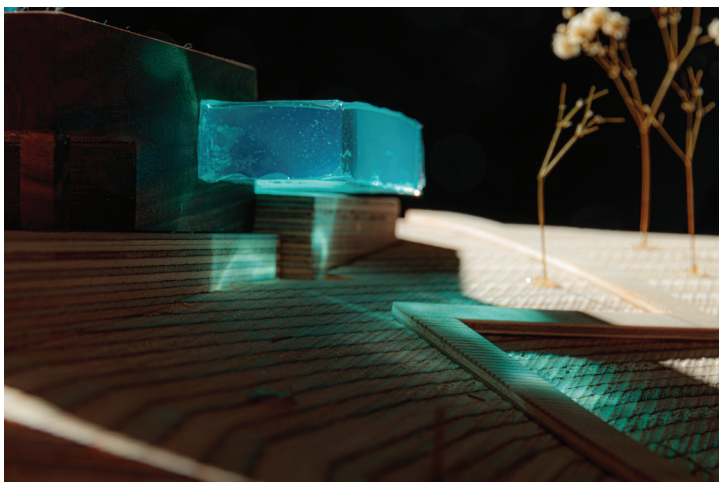
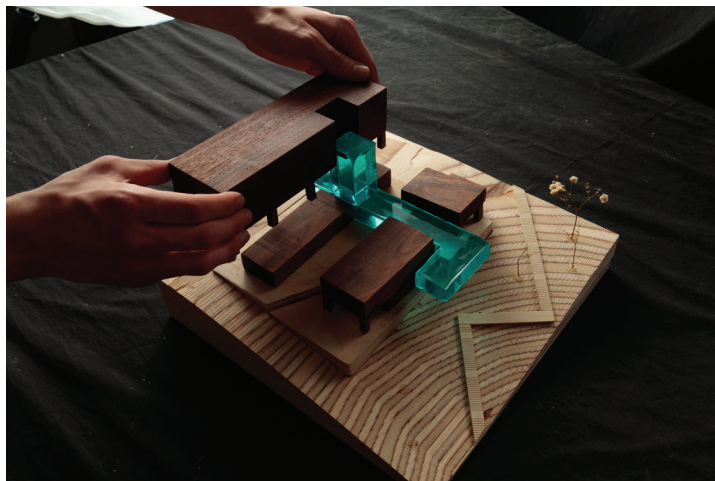
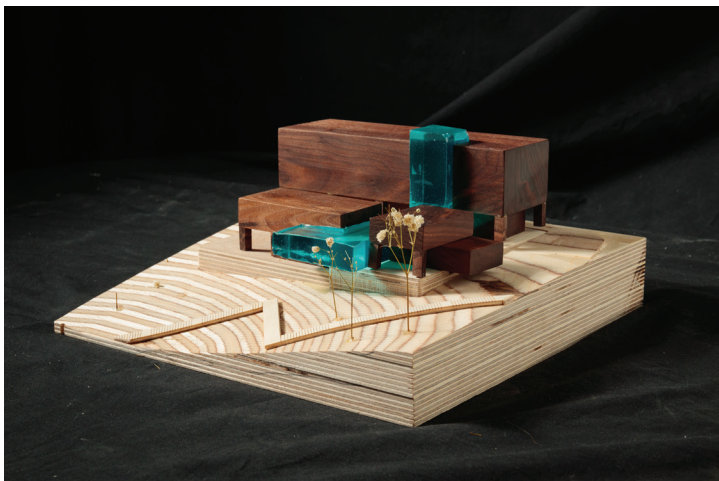
Site plan



1st Floor plan



2nd Floor plan



07 COALESCE

Role - TEACHING ASSISTANT

Tools I Worked with - 3D Printer • CNC • Palm Sander

Materials - PETG Filament • Baltic Birch Plywood

IAAC Global Summer School 2025

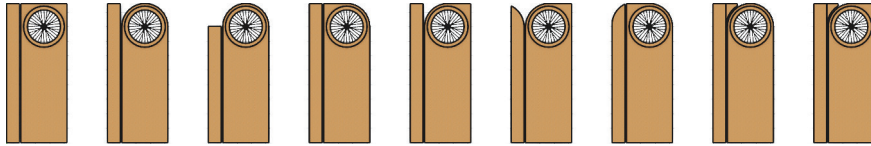
Instructor Mark Francis

As Teaching Assistant, I facilitated the design-build workflow by managing eight Bambu P-Series printers and troubleshooting extensive Rhino and Grasshopper challenges throughout the two-week studio.

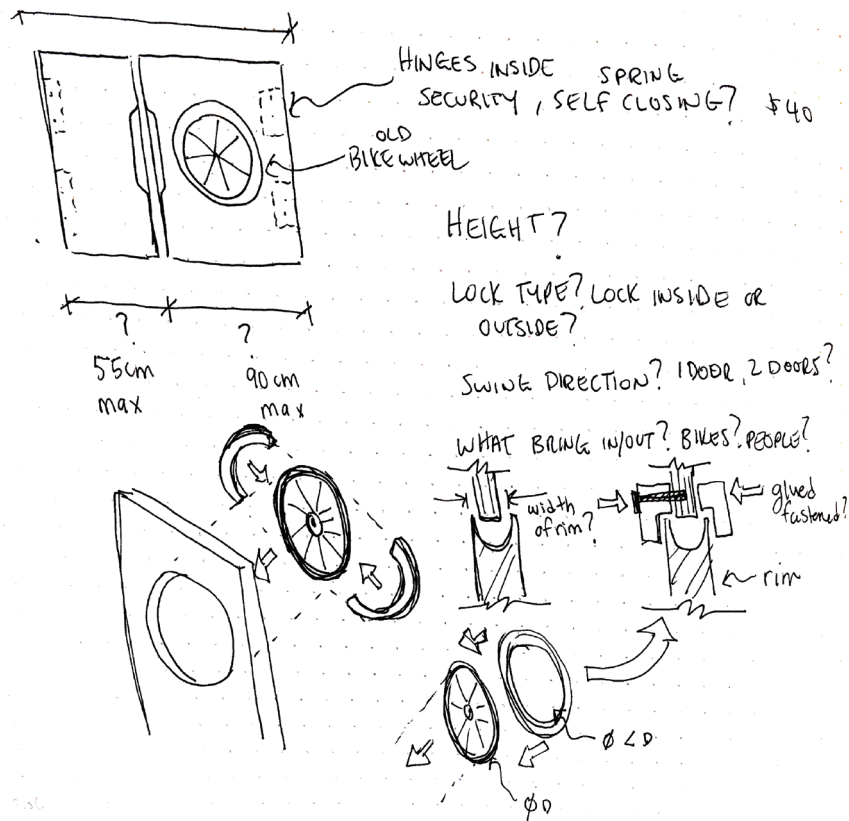
Alongside this support role, I co-designed and detailed the pavilion's main entry door, contributing to both the digital and physical realization of the installation.



DOOR



Door variations considered



Kailey Allan: Sketch of bike wheel attachment solutions



Design inspiration



Interior side



Bike wheel locked inside door viewer

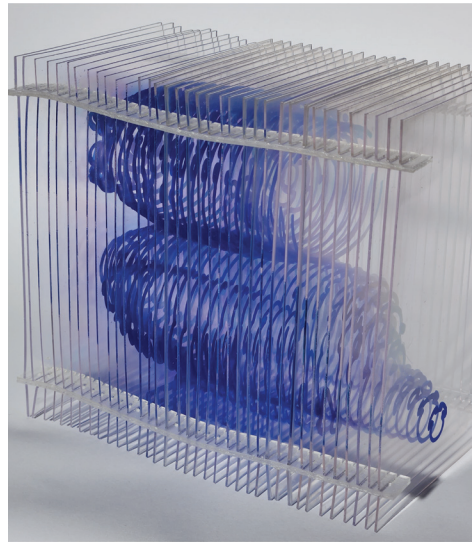
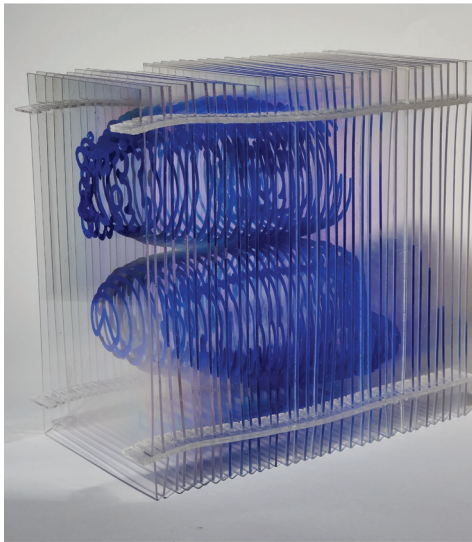
08 WISE WATCHER

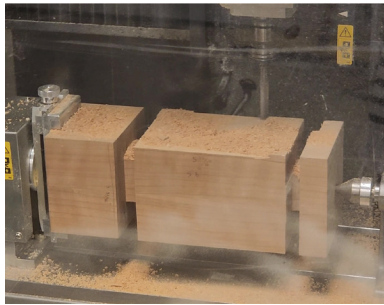
Tools I Worked with - Jointer • Planer • Table Saw
Miter Saw • CNC • Dremel

Materials - Cherry Wood • Wood Stain • Clear Varnish
ARC384: Machine Design Practices
Instructor Nicholas Hoban
In collaboration with Han Cherry

A component of an exquisite corpse, this owl sculpture demonstrates the capabilities of 4-Axis CNC technology, using a 0.5" flat bit and 0.375" ball bit to achieve intricate design details. Inspired by the sculpture of Van Gogh titled "Van Gogh Observes," the negative of the owl's expression is carved out of the back. I designed the 3D model, organized the milling operations, and prepared the stock and its dual-sided carving. The statue mirrors the perpetual observation of an owl, capturing its characteristic ability to rotate its head 180 degrees.

I proposed and designed the representation of the parallel finishing at 0° and 180° rotation of the stock using stacked acrylic sheets and paint.

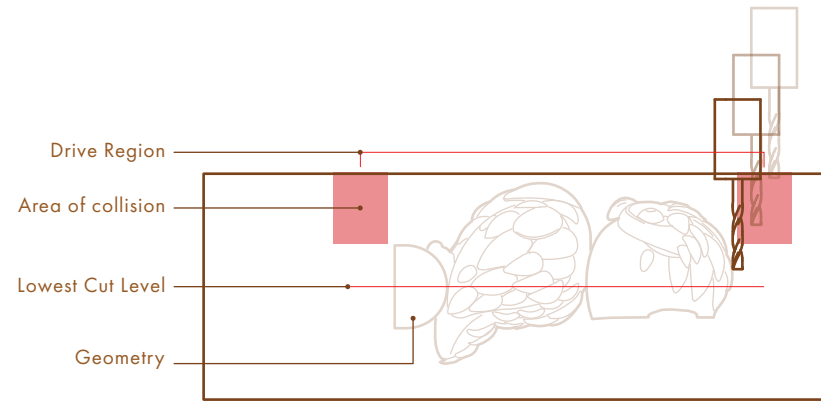




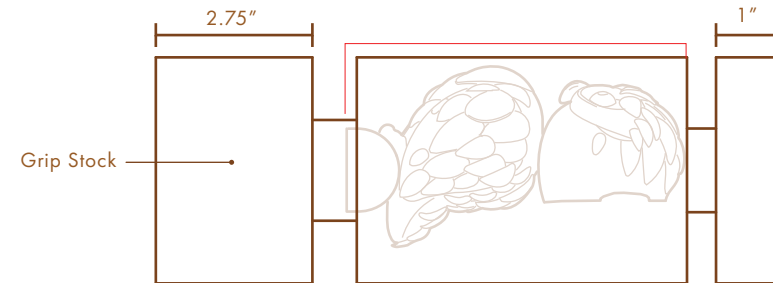
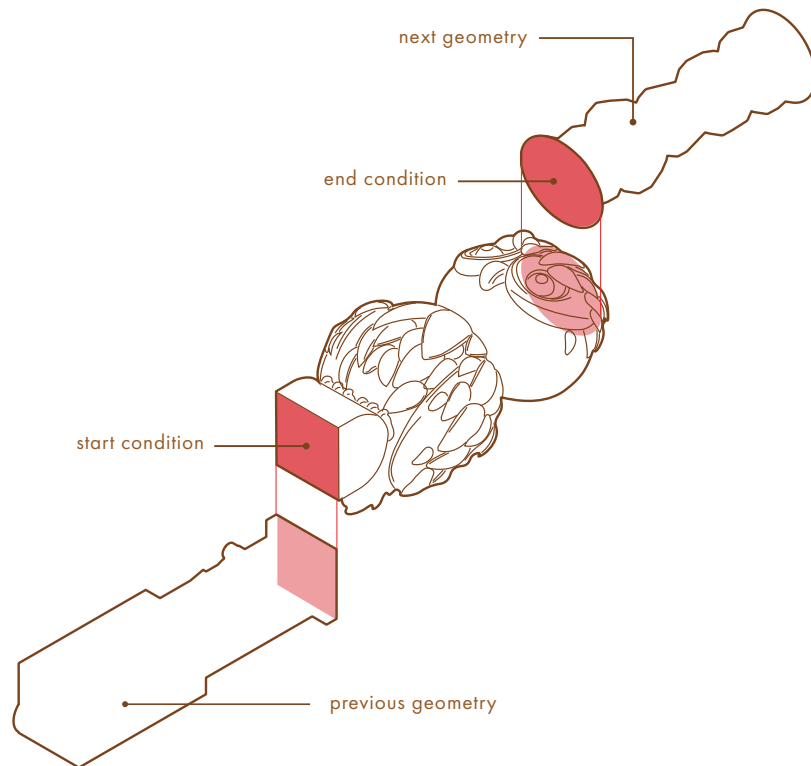
▲ Stock at the start of milling



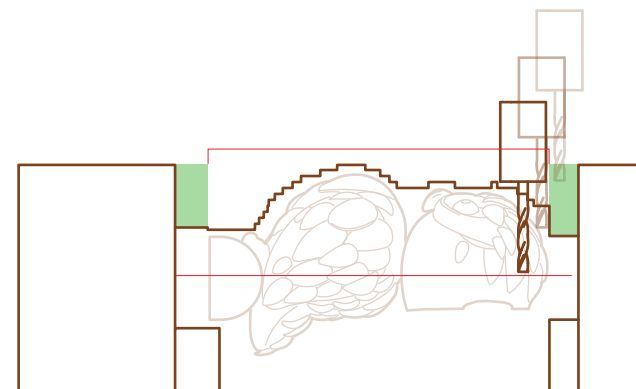
▲ Parallel finishing texture



▲ Simulation shows collision with solid block of wood



▲ Using dado blades, create space between drive region and grip stock



▲ Space allows milling bit to avoid collision with the stock