

ENP-165 Industrial Design
Final Project
Evelyn Goroza

Easy Daize





Thu, Mar 7 at 9:06 AM

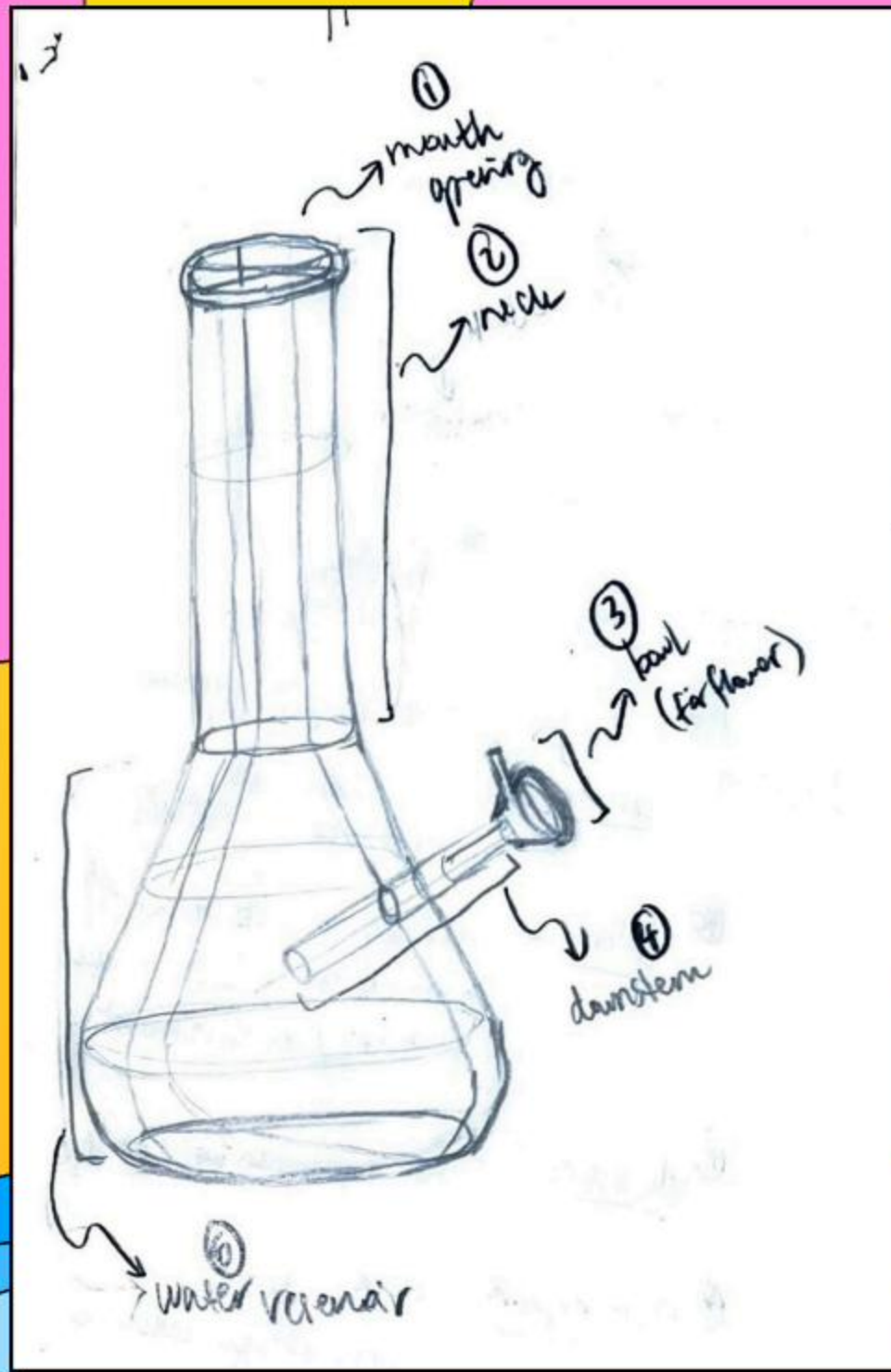
Hey, the whole house
smelled like weed last
night. I got an extreme
headache from it last night
and that is not fair.

Problem Statement



How can we design a product for **smoking cannabis** that effectively **reduces smoke and odor**, while ensuring the device remains **user-friendly** and **easy to maintain**?

What is a water pipe?



A **bong** (also known as a water pipe) is a **filtration device** generally used for **smoking** cannabis, tobacco, or other herbal substances.

The **water** can trap some heavier particles and water-soluble molecules, **preventing** them from entering the smoker's **airways**.

What is a sploof?

A **sploof** is a handheld **smoke filter** that separates particulate matter from **exhaled smoke**, reducing the pungency of its smell.



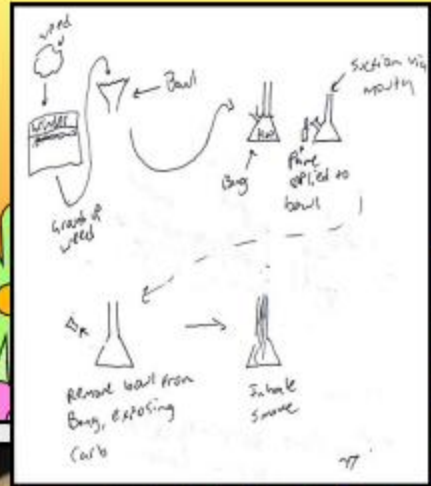
Research Process

User Interview

Conducted a user interview with an experienced cannabis user, whose self-reported usage is at least once per day. User requested anonymity.



INTERVIEWEE



BONG DIAGRAM ILLUSTRATION



USER'S BONG

Store Visit

Visited The Goods Community Cannabis store in Davis Square, Somerville MA to observe and inquire about structure of bongs



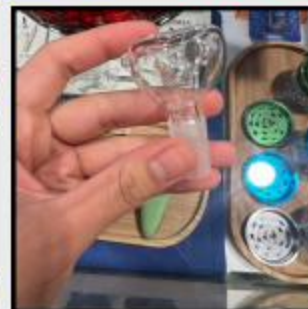
FOOD-GRADE SILICONE AND GLASS BONG



DOWNSTEM AND BOWL REMOVED



REMOVABLE LID



BOWL REMOVED FROM DOWNSTEM



ROTATABLE BOWL



DIAGRAM OF DAB RIG (NOT BONG)

Research Process

1. Process Gratification

The multiple, manual steps involved in smoking (i.e., via bong, bowl, vape, etc.) provide a gratifying experience not found in vapes or edibles. This includes grinding bud, packing the bowl, lighting, watching the gas bubbles, etc.

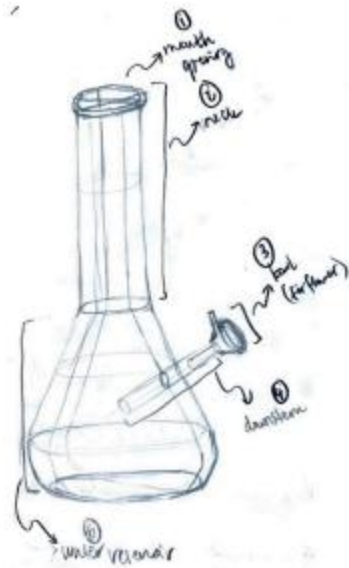
2. Maintenance Ease

The cleaning process is simplified when the material (e.g., glass) is easy to clean, and if there are minimal hard-to-reach nooks and crannies. This can be accomplished with a simplified form.

3. Temperature Control

Optimizing THC vaporization reduces the release of harmful byproducts like tar and carcinogens by controlling combustion through temperature. Glass is the safest material for this purpose, though food-grade silicone and ceramic are viable alternatives.

1. Understanding the basic structure of a bong



cleaning :

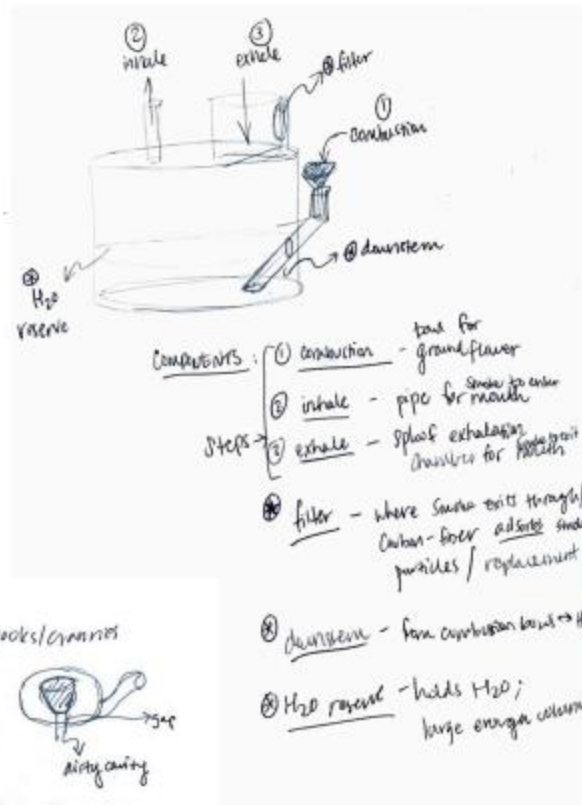
- minimize narrow rocks/crannies

Bowl shapes

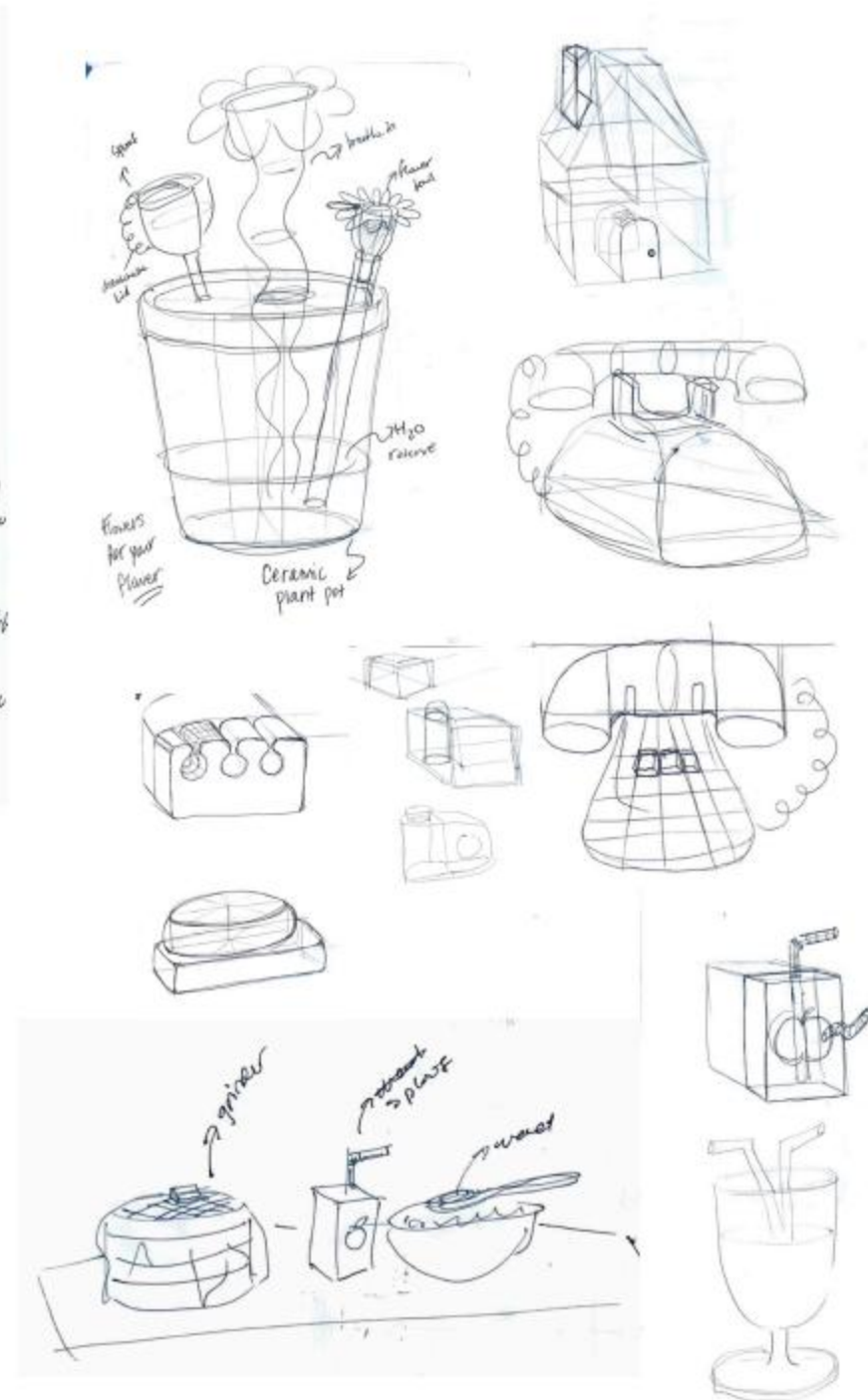


Aesthetics

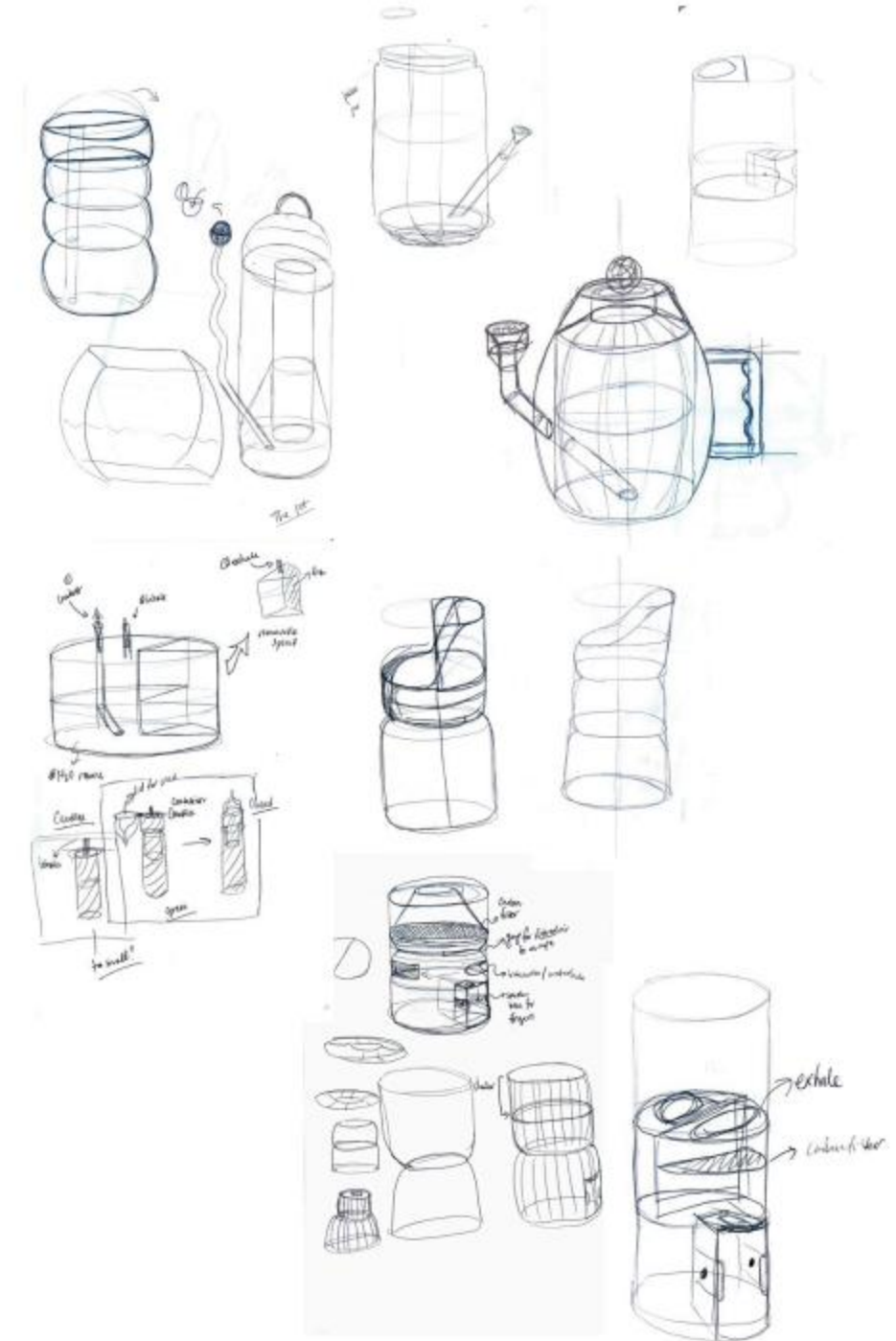
- grungy, grossy
- "unpretentious"
- Ehrenmeyer flask prepared → humorous ironic



2. Exploring preliminary themes and forms

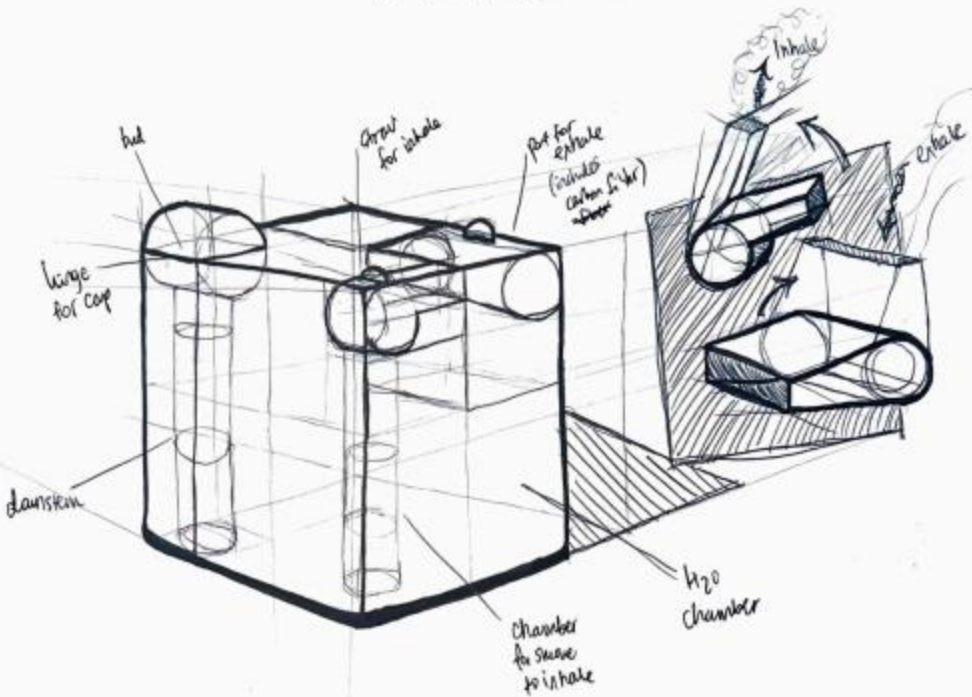
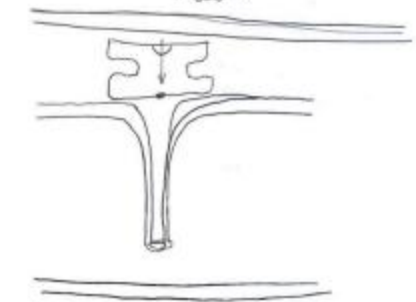
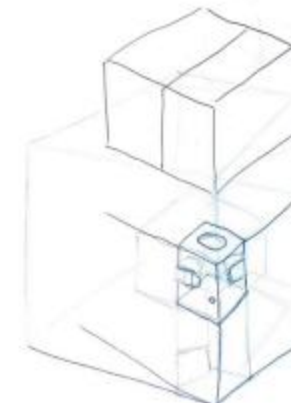
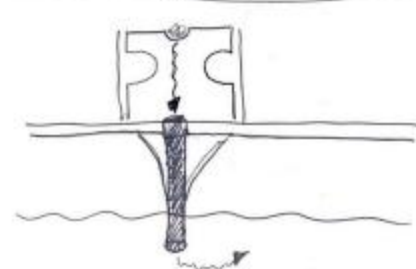
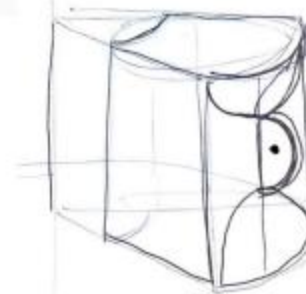
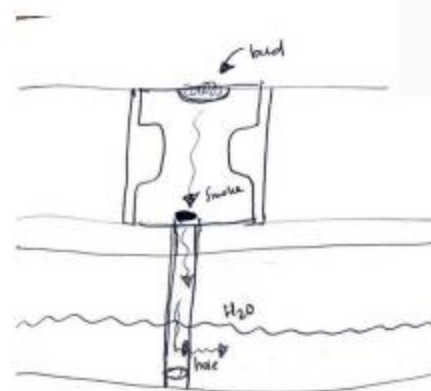
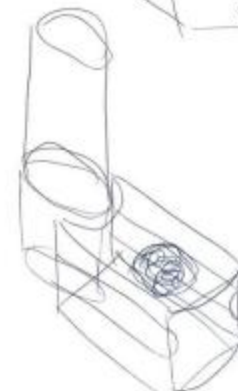
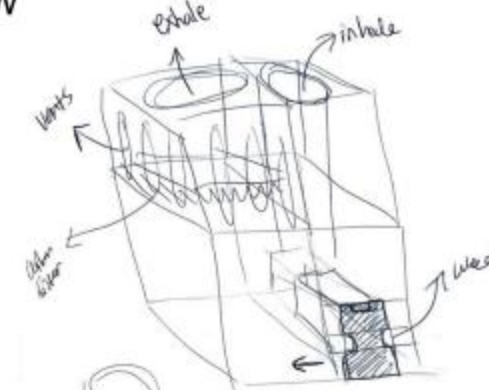
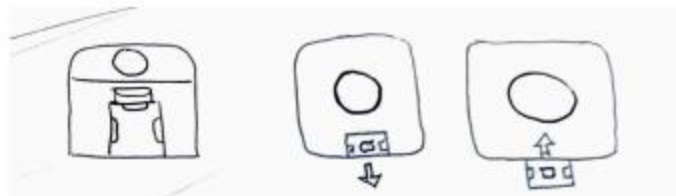
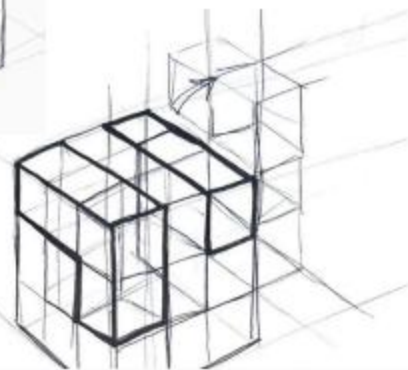


3. Exploring cylindrical forms



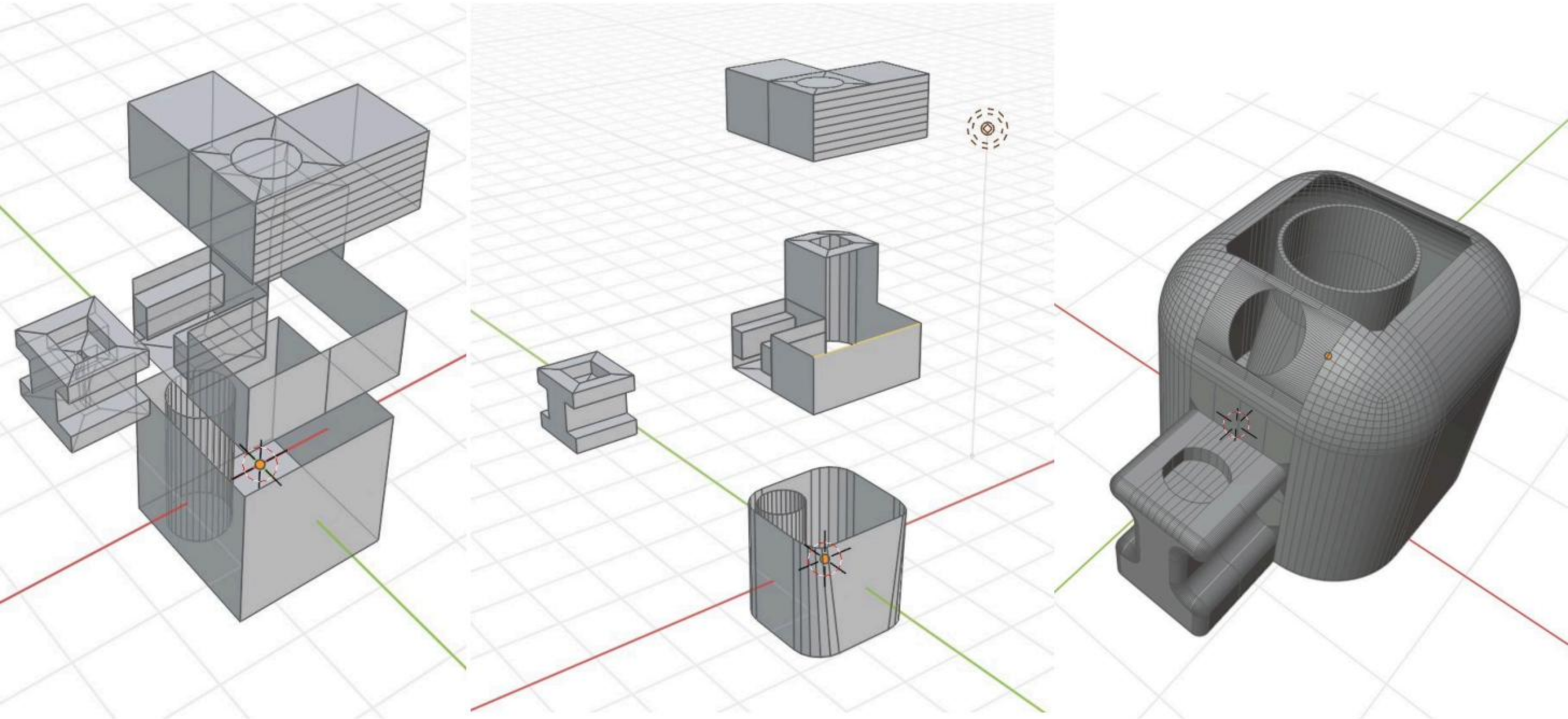
4. Transitioning to a cube-based form

5. Investigating the mechanical structures of the body, pipe, & air flow



3d Ideation: Blender

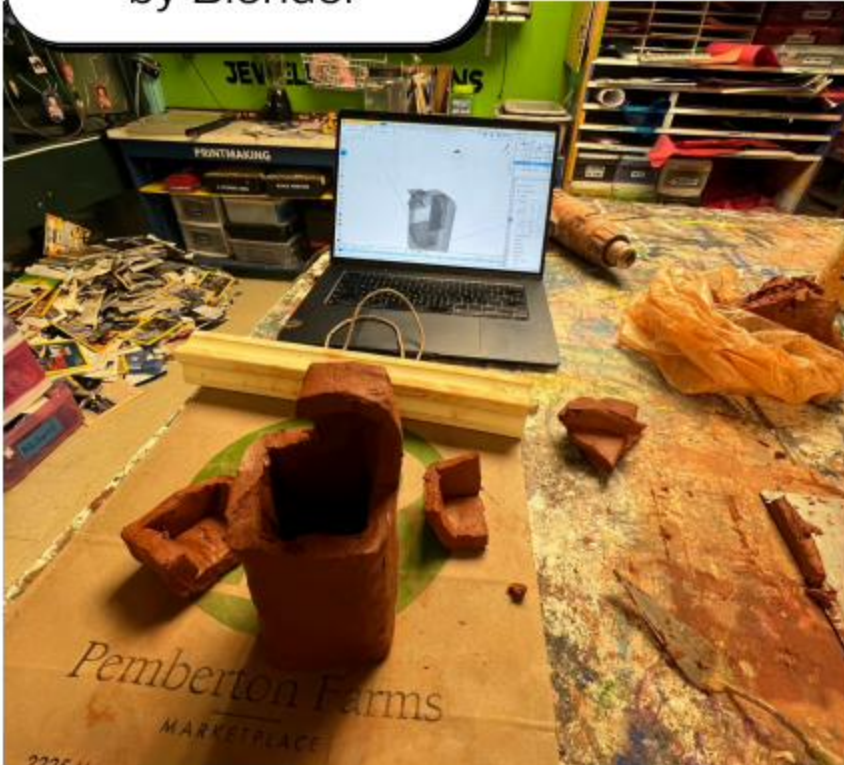
Sketching 2d forms was not sufficient to understand the complex form, so I used Blender to do “3d sketching” ideation. This was very helpful to understand the gaps in my design in terms of functionality.



Prototyping: Ceramics

Another way to understand the 3d form was by modeling it using ceramic clay (which inevitably I am planning to use).

modeling guided
by Blender



carbon filter/exhale
sploof (detachable)



body, sploof, & pipe



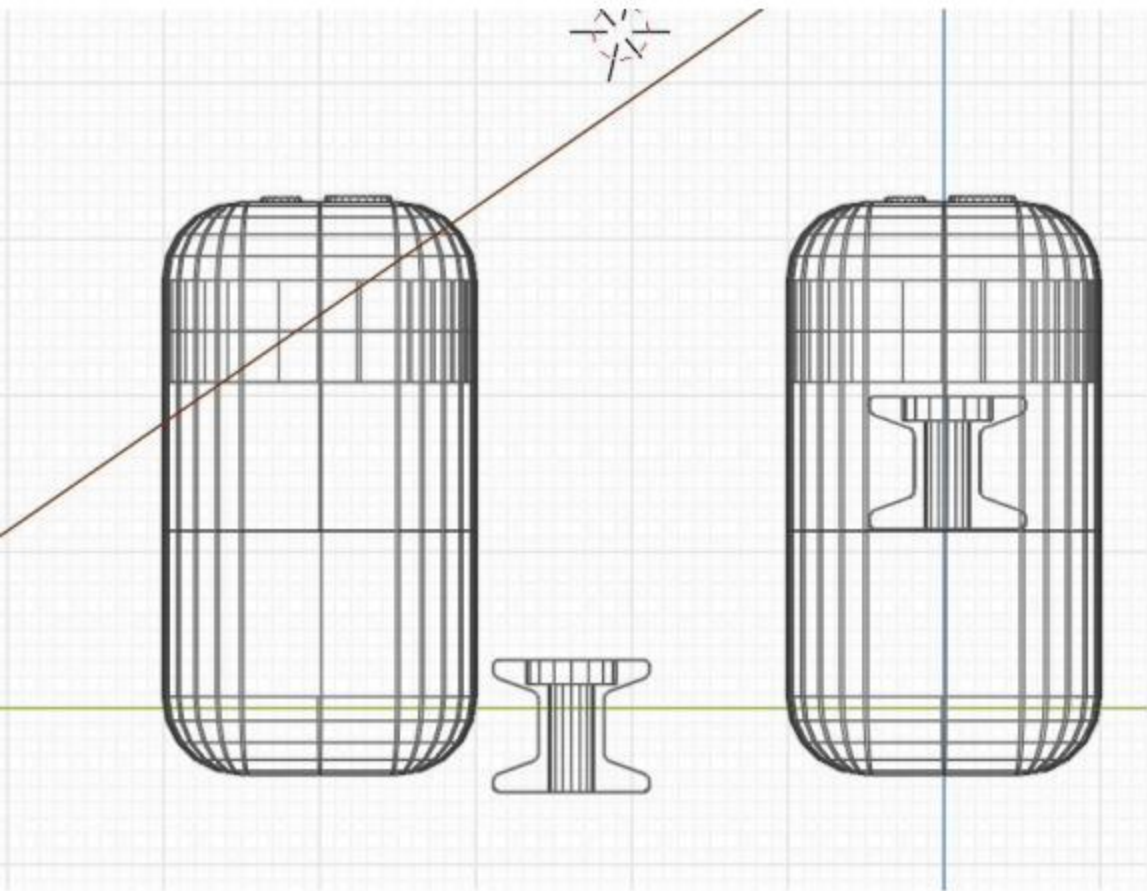
Using ceramic clay and tools at the Tufts Crafts Center, I modeled the final forms on Blender (see following slides for finals).

Unfortunately, the firing schedule is low fire on Wednesday 4/24, and after this I will glaze with food-safe glaze and high fire it to set the clay, so that it is safe for the high temperatures of combustion.

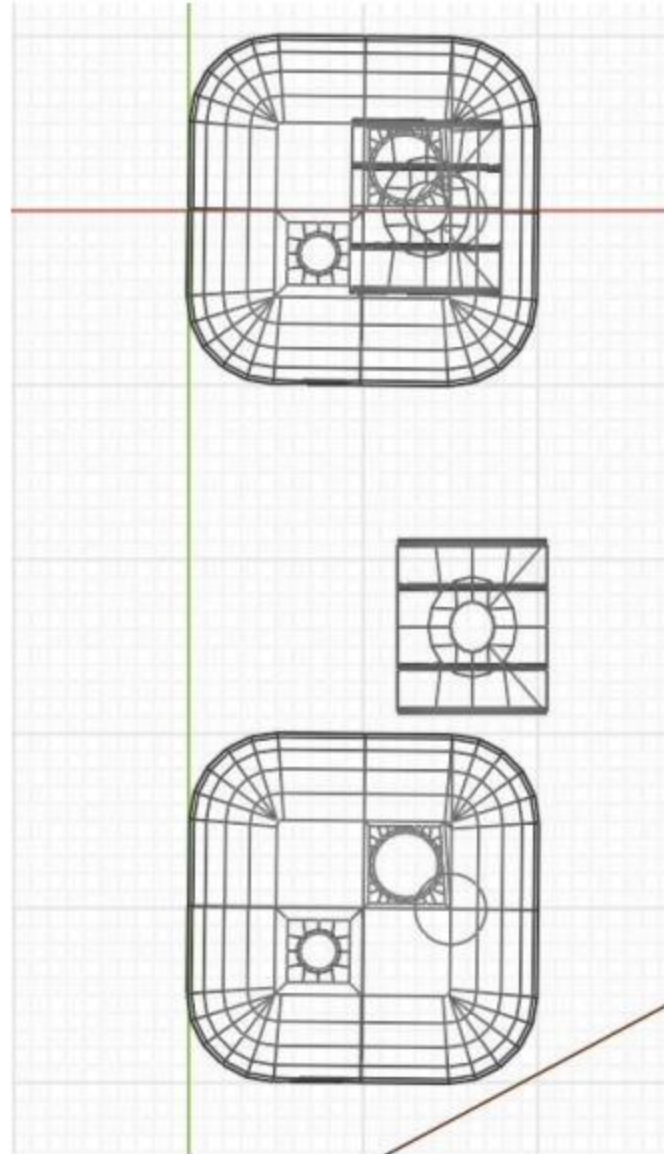
pipe (detachable)



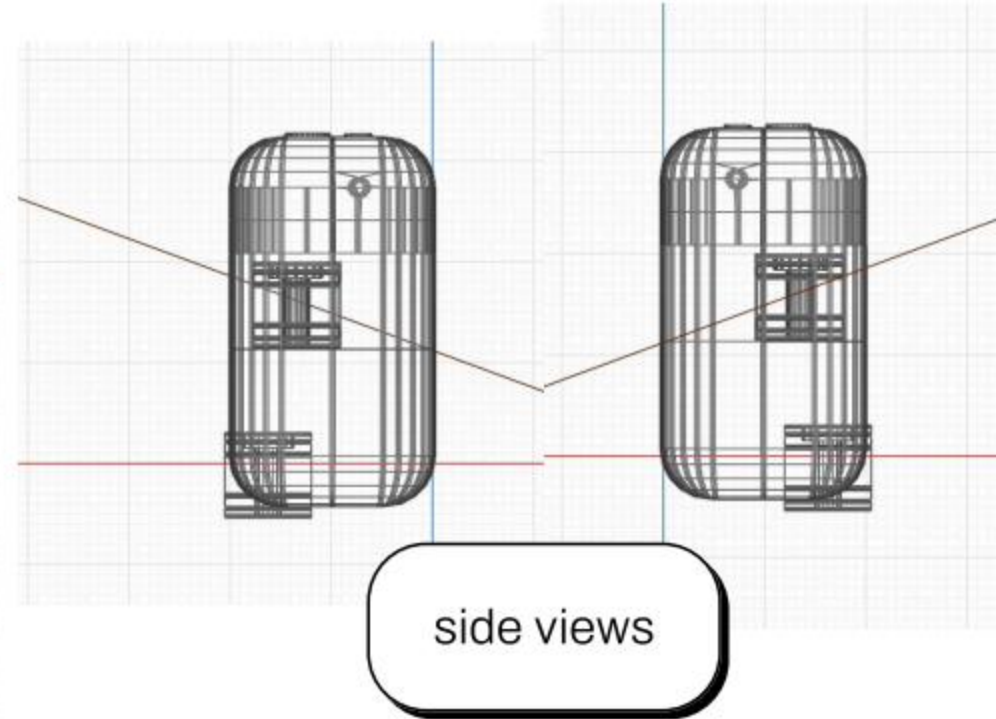
3d Prototype: Blender



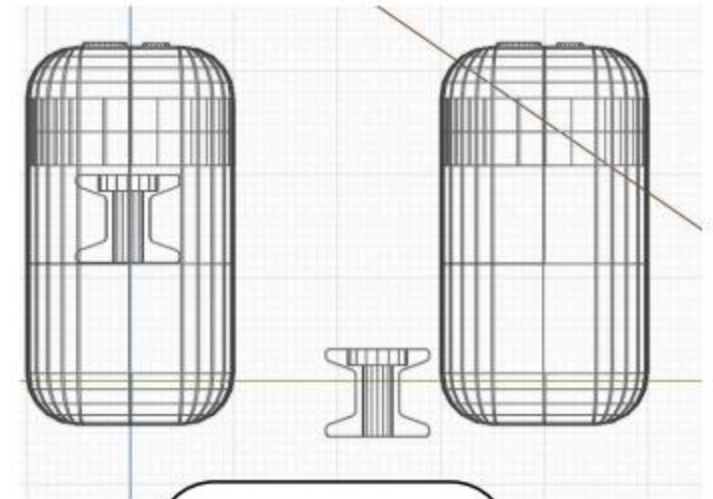
front views - pipe
removed and inserted



top views



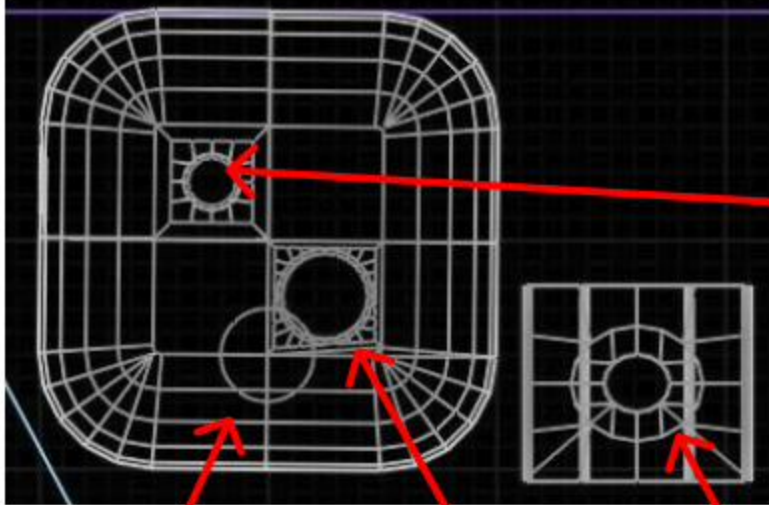
side views



back views

A closer look at form...

top view - pipe removed



hole for pipe smoke
to pass into H2O

exhale

pipe

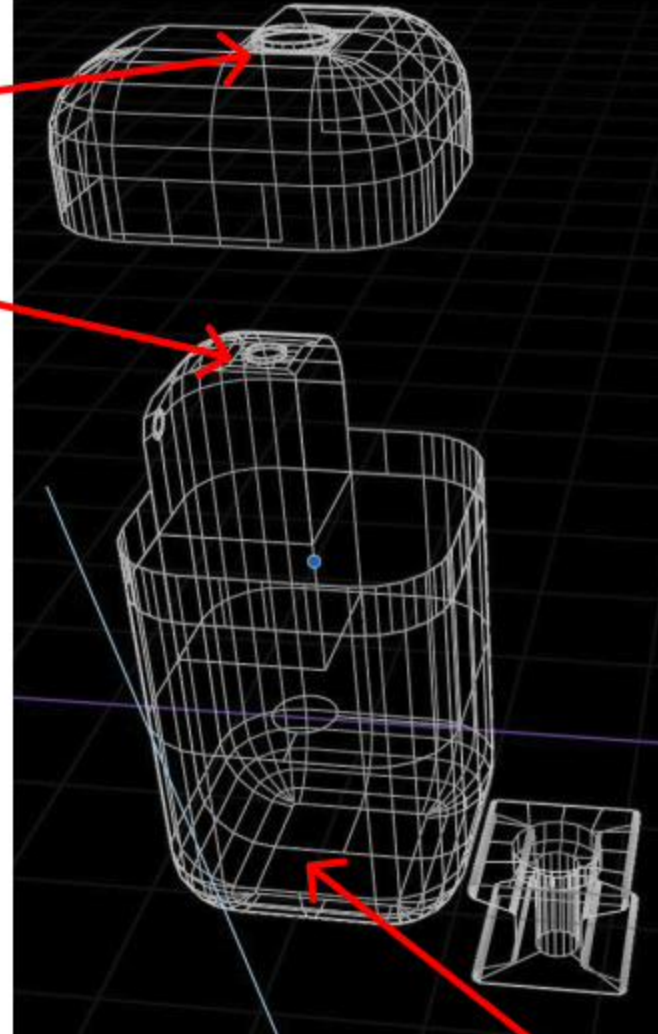
The primary goal of retaining as much smoke as possible in a simple form is exemplified through the strategic placement of each element, especially pertaining to the holes, because the air flow of a pipe is crucial for functionality.

Also notable: the pipe is placed underneath the sploof, which is designed to hold a carbon fiber filter, which will filter out the exhaled smoke. **Therefore, smoke from both the inside (from residual flower combustion) and the outside (from the user's exhalation) are able to pass through the filter, despite originating from opposite directions.**

sploof + pipe removed

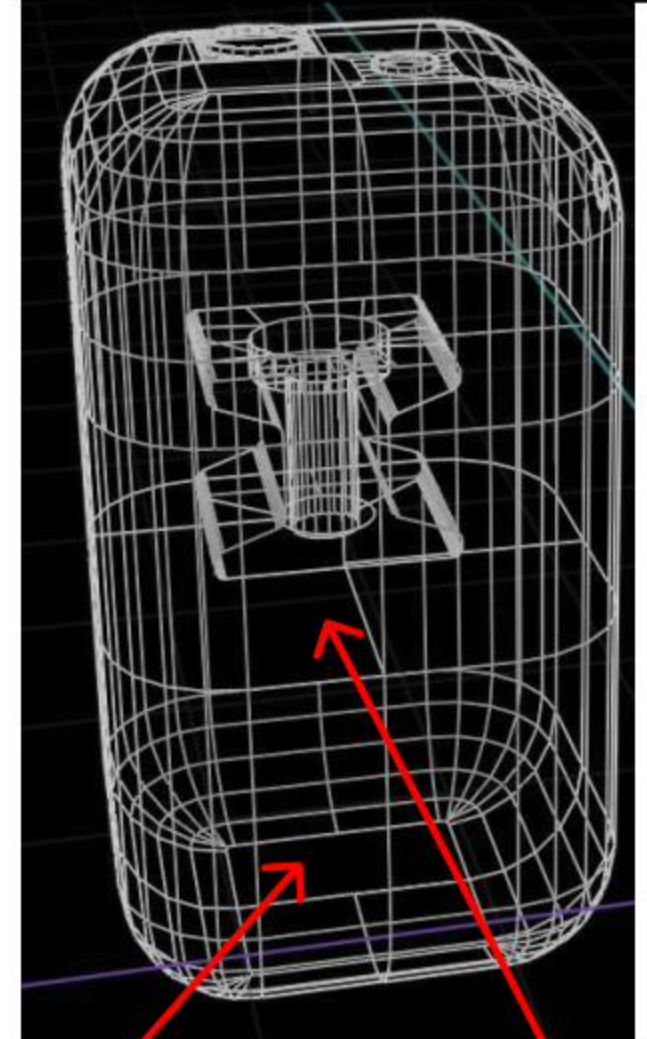
exhale

inhale



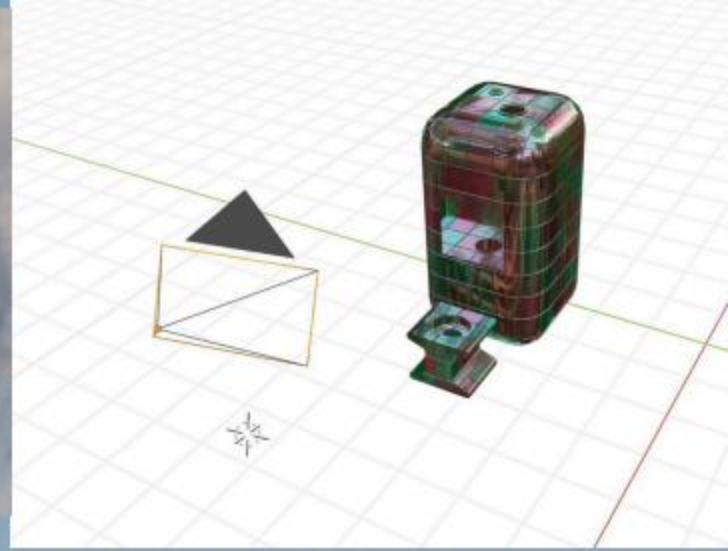
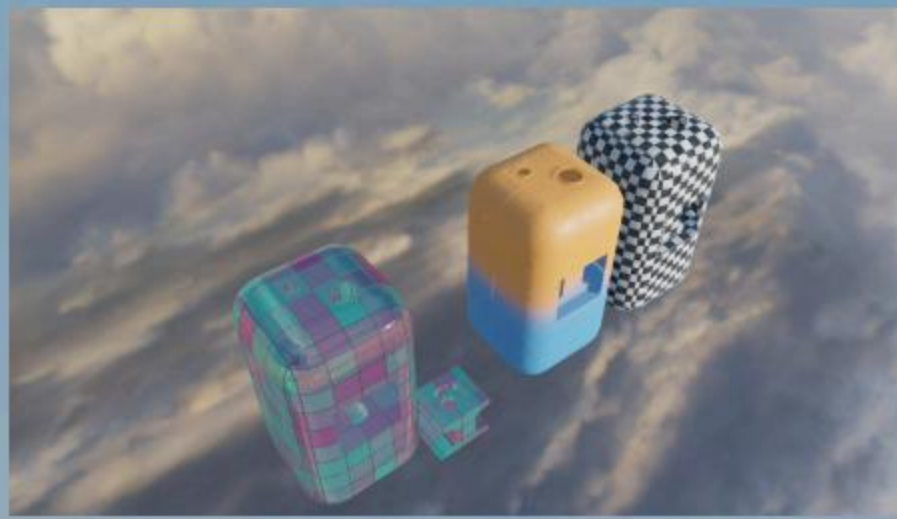
H2O
chamber

back view - pipe inserted



surface to rest
pipe (with hole
for smoke)

Final Form: Blender



glass



ceramic



marble

Final Form: Blender

Lighting requires plugging hole on side and removal of sploof cover, which should be replaced immediately after a hit to minimize smoke diffusal



closeup



Next Step:
User Testing :)