

INDUSTRIAL DESIGN

Audrey Ji

PORTFOLIO 2023

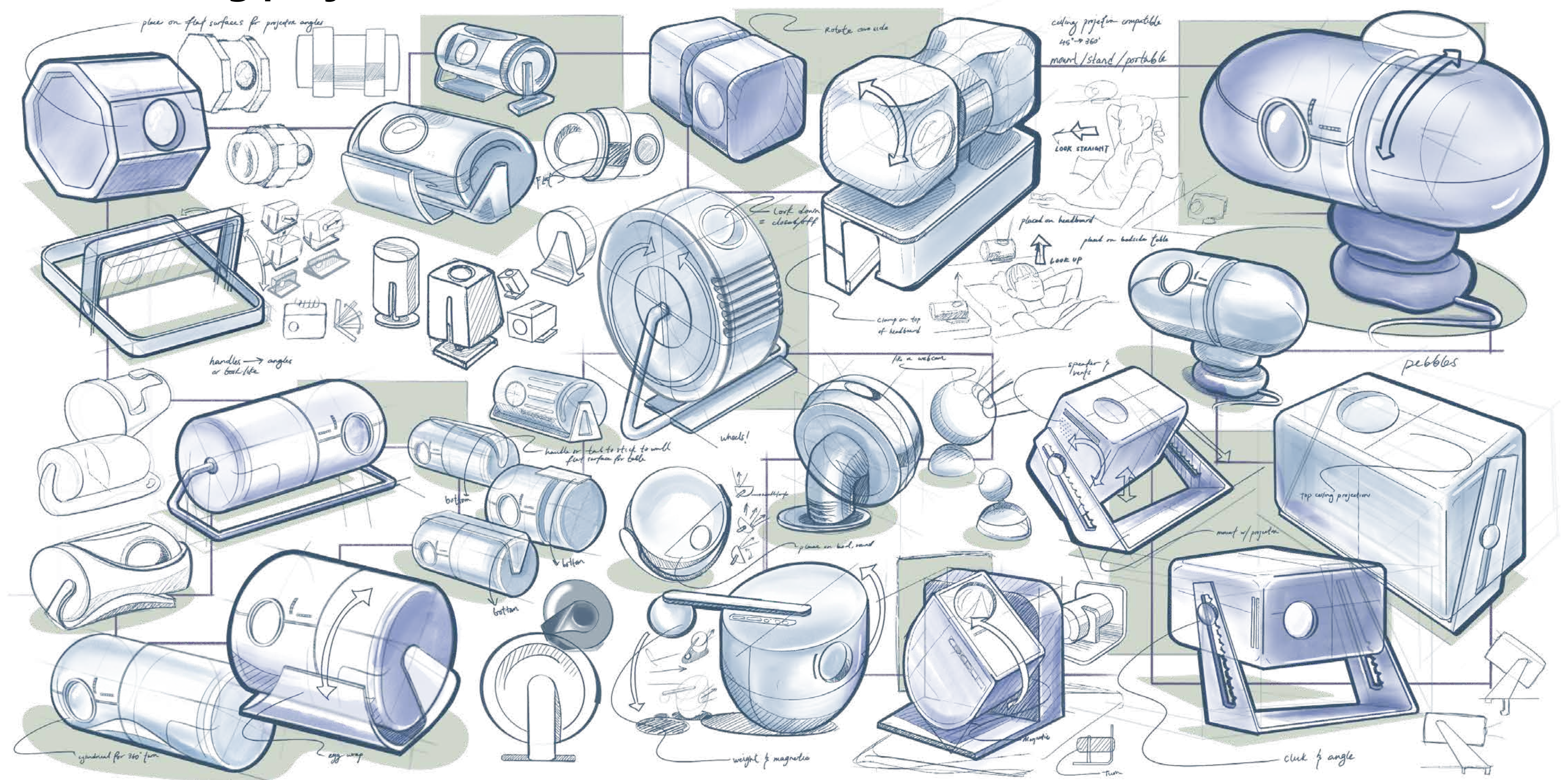
content

projector design-----	03
toy design-----	08
beehive design -----	13
listening devices design -----	18
children’s furniture-----	29
exhibition design-----	33
other work preview -----	38



Lay-Z Projector

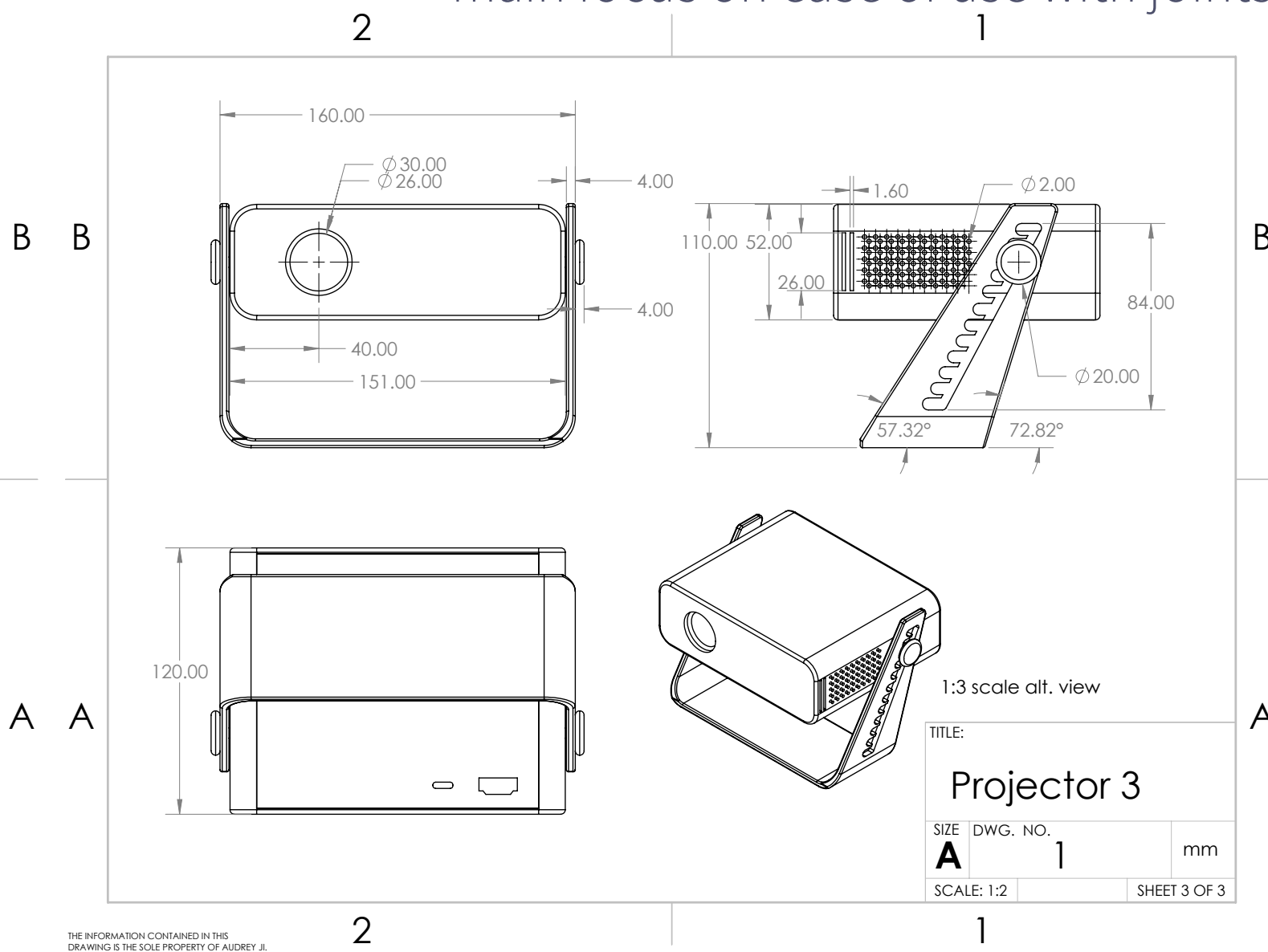
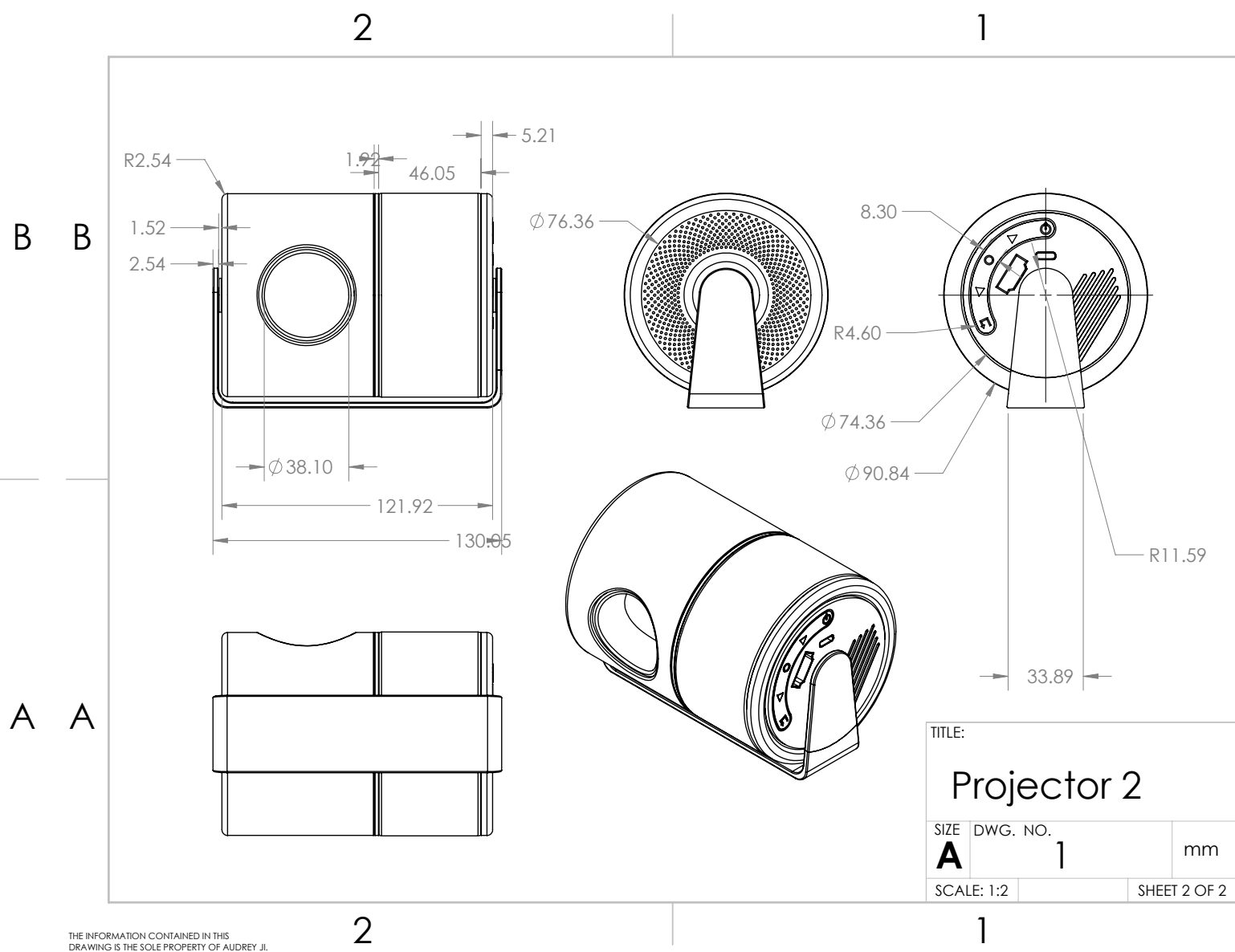
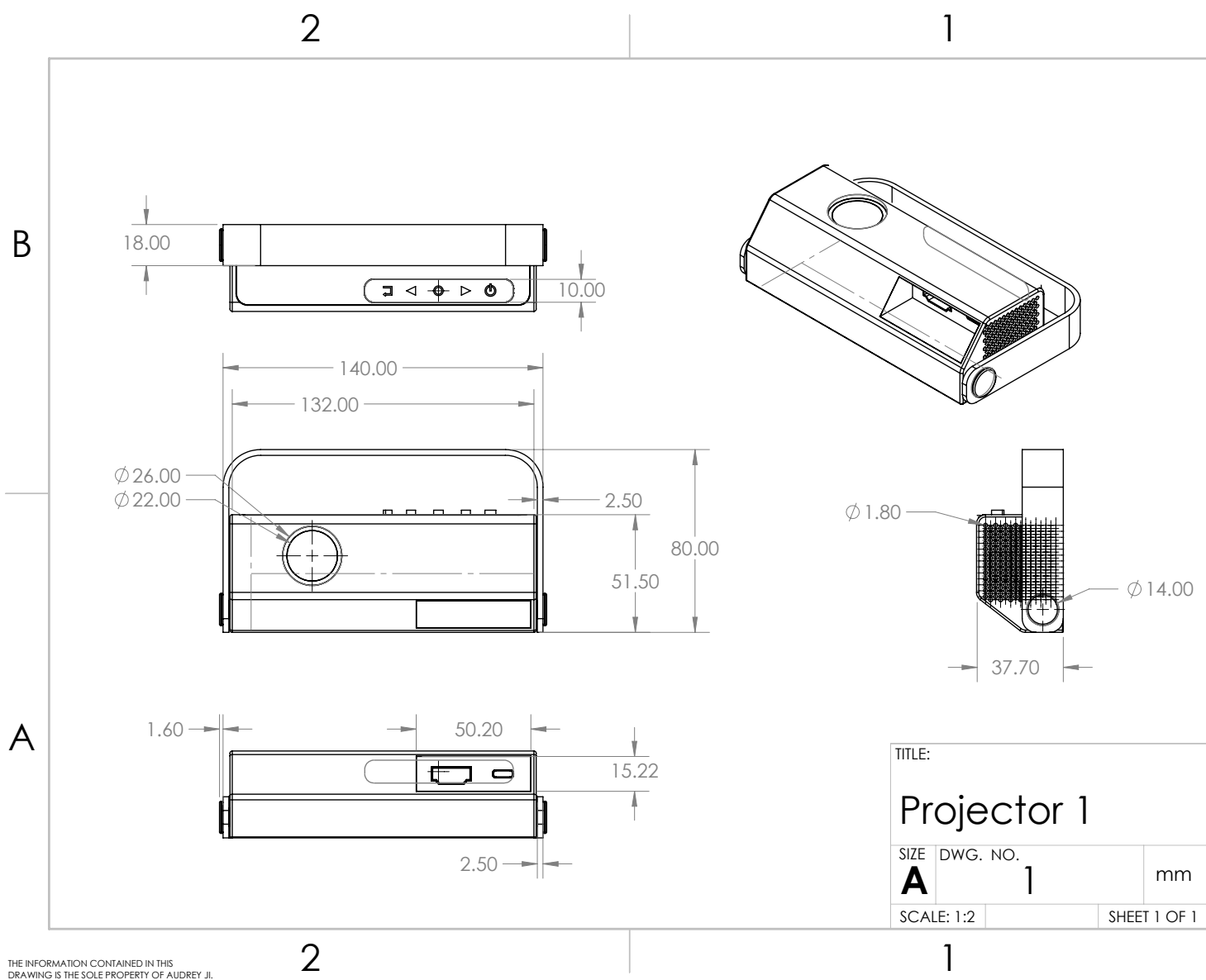
wall and ceiling projector sketches



Portable
Ceiling and Wall Compatible
Any Angle, Height
Mini
Projector



3d-printed models helped determine final projector variations
main focus on ease of use with joints



Projector 2: The cylindrical shape of Projector 2 allows for easy turning for different angles of projection but does not allow for easy storage. It is a more common shape found for projectors. Speaker surrounds the entire right side of speaker and left side.

Projector 1: This variation allows to be easily stored, uses handle to support all angles and can be placed steadily, even on a bed. The flatness leads to a lower quality of projection. The small space allows it to be placed anywhere and can easily be stored in a bag.

Lay-Z Projector features

Adjustability:
Rotate 0°-90°
Slot up and down
Tighten in place

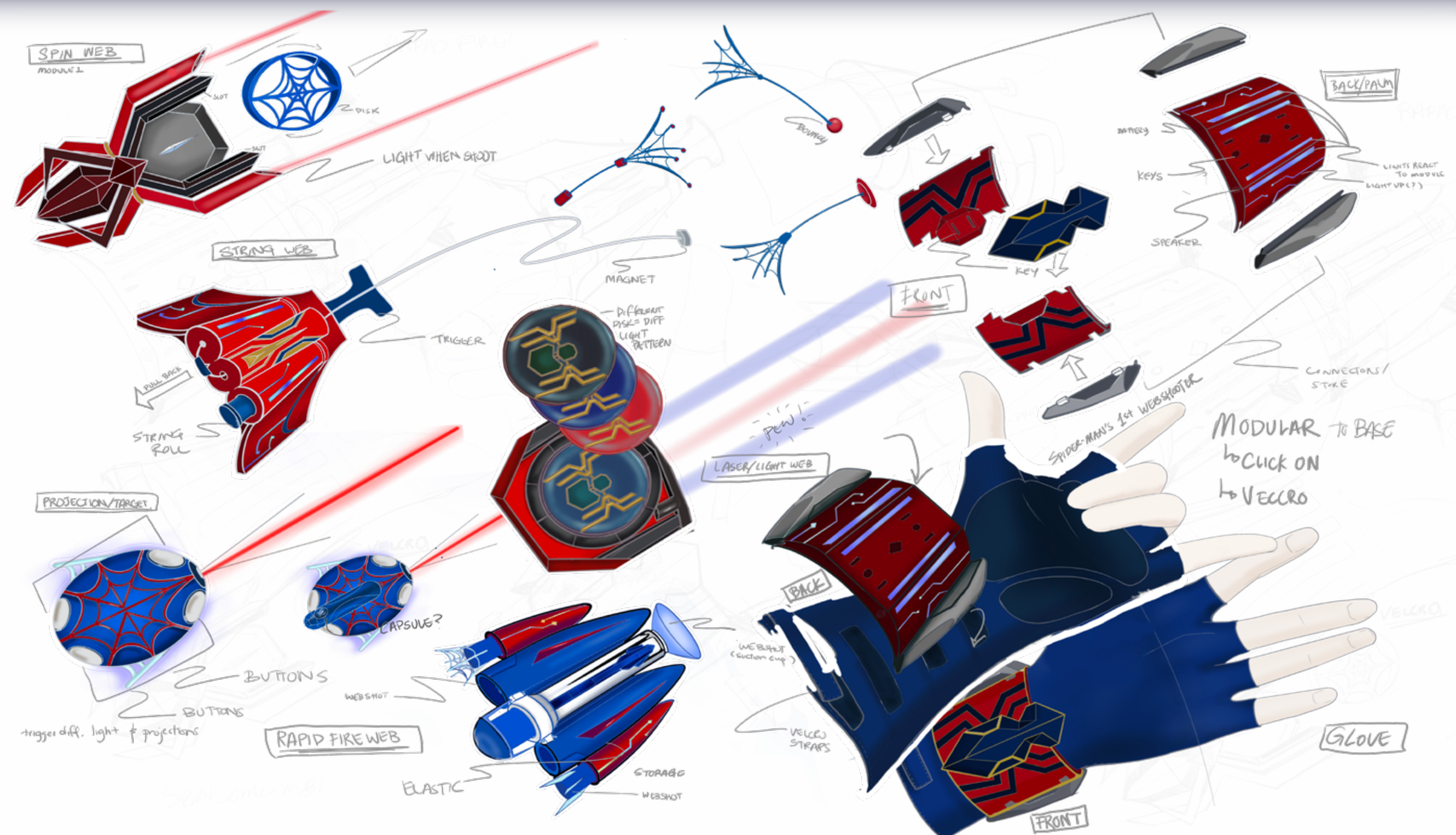
Allows users to stay in bed
to watch TV at any angle

Projector 3: Portable mini-projector, can be made flat for easy storage.
Does not need to be connected to power, charge/battery powered with USB-C
slot and casting or HDMI available. Appropriate internal space for projector lens,
LCDs, battery/power supply, fan, speakers and circuit board, bluetooth chip.



Toy Design



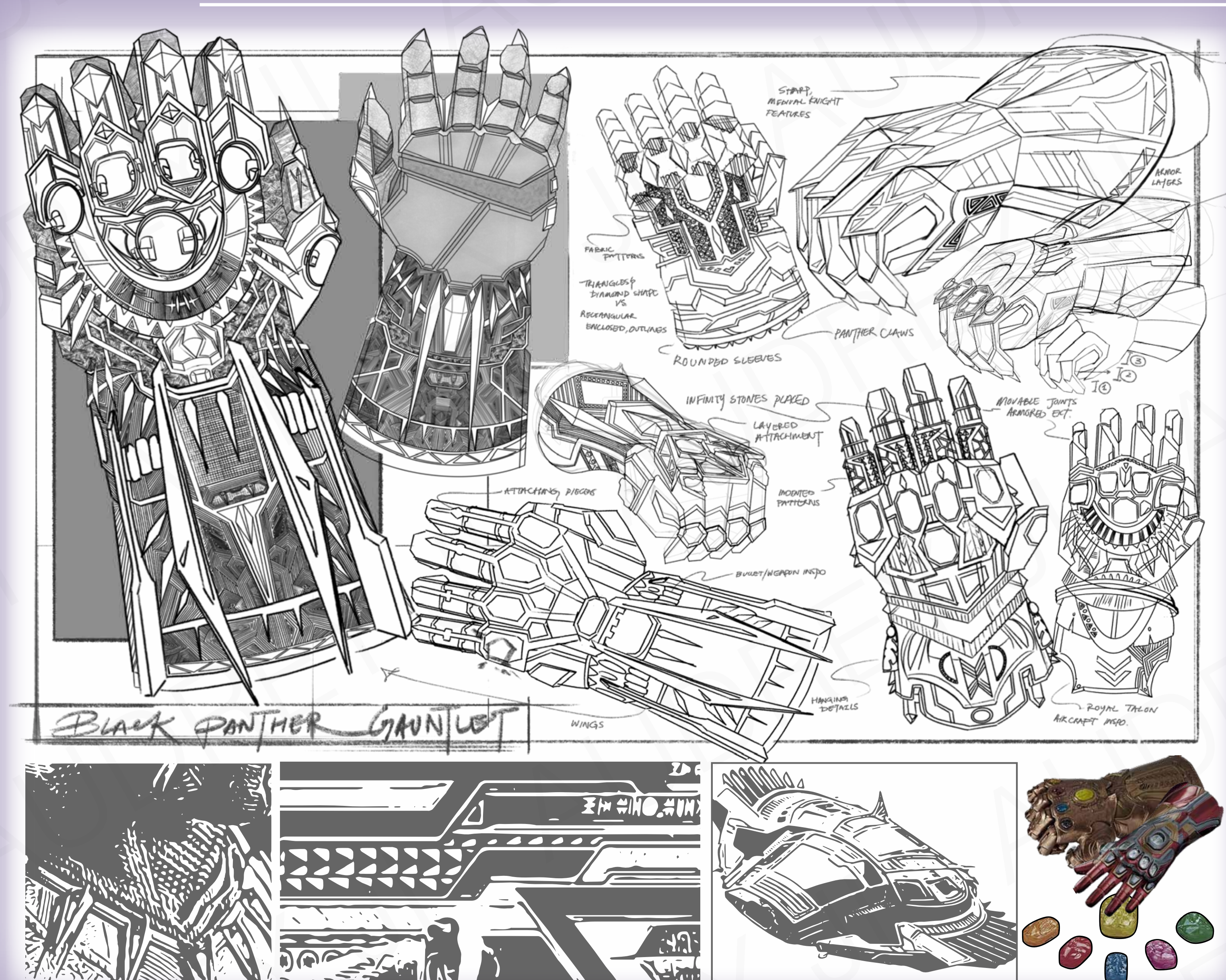


build & play web-shooter

Designed the preliminary design for the Hero-Tech Build & Play Web-Shooter which includes its different modules, base, its buildable aspects, and its likeness to Peter Parker's first experimental web-shooter. Includes light, projectile and sound.

black panther gauntlet

The internship gave the opportunity to design a Black Panther Gauntlet toy based on Marvel's previous success with the Thanos Gauntlet toy. The gauntlet mirror's qualities of the Thanos Gauntlet, including the placement and removable of the Infinity Stones, and articulated fingers. The preliminary designs are inspired the geometric patterns, aircrafts, and the different representations of the Black Panther and his suit as well as knight armor and the animal itself. The designs accumulate to a final design to be based upon in development of the physical toy.



product proposition deck

Gave various directions, summarizing the value of each franchise and exploring the categories they represent and what it could mean in collaboration in creating new products.



marvel toy expansion exploration

Through reimagining current trends in toys, the following expands the possibility of the categories.

Roleplaying Playset- Iron Man Workstation
Sustainable Toys- Wood block Marvel Aircraft Builders
Popular Toy Categories Reimagined- Hero Construction Trucks





Bee-Centre
Mutual-aid Beehive

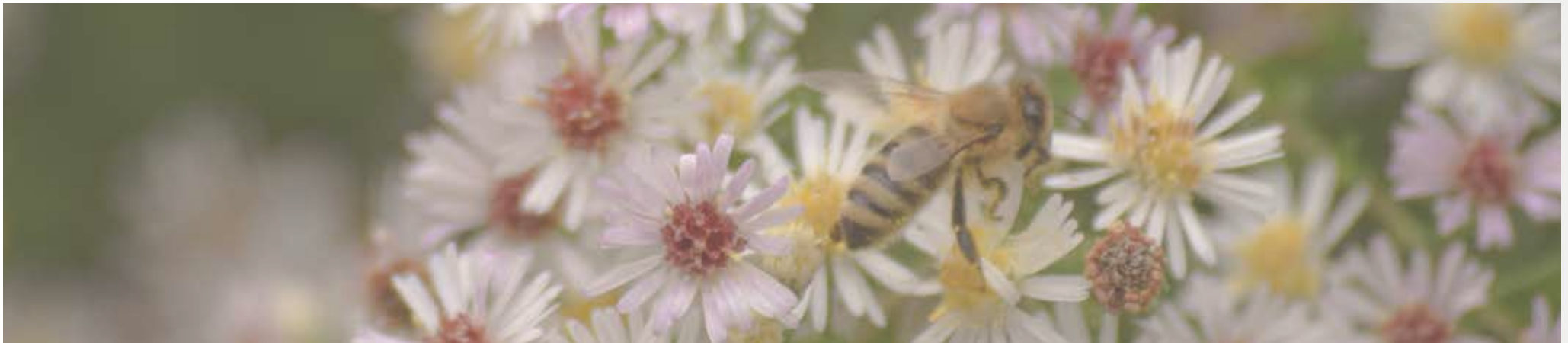
research

design considerations

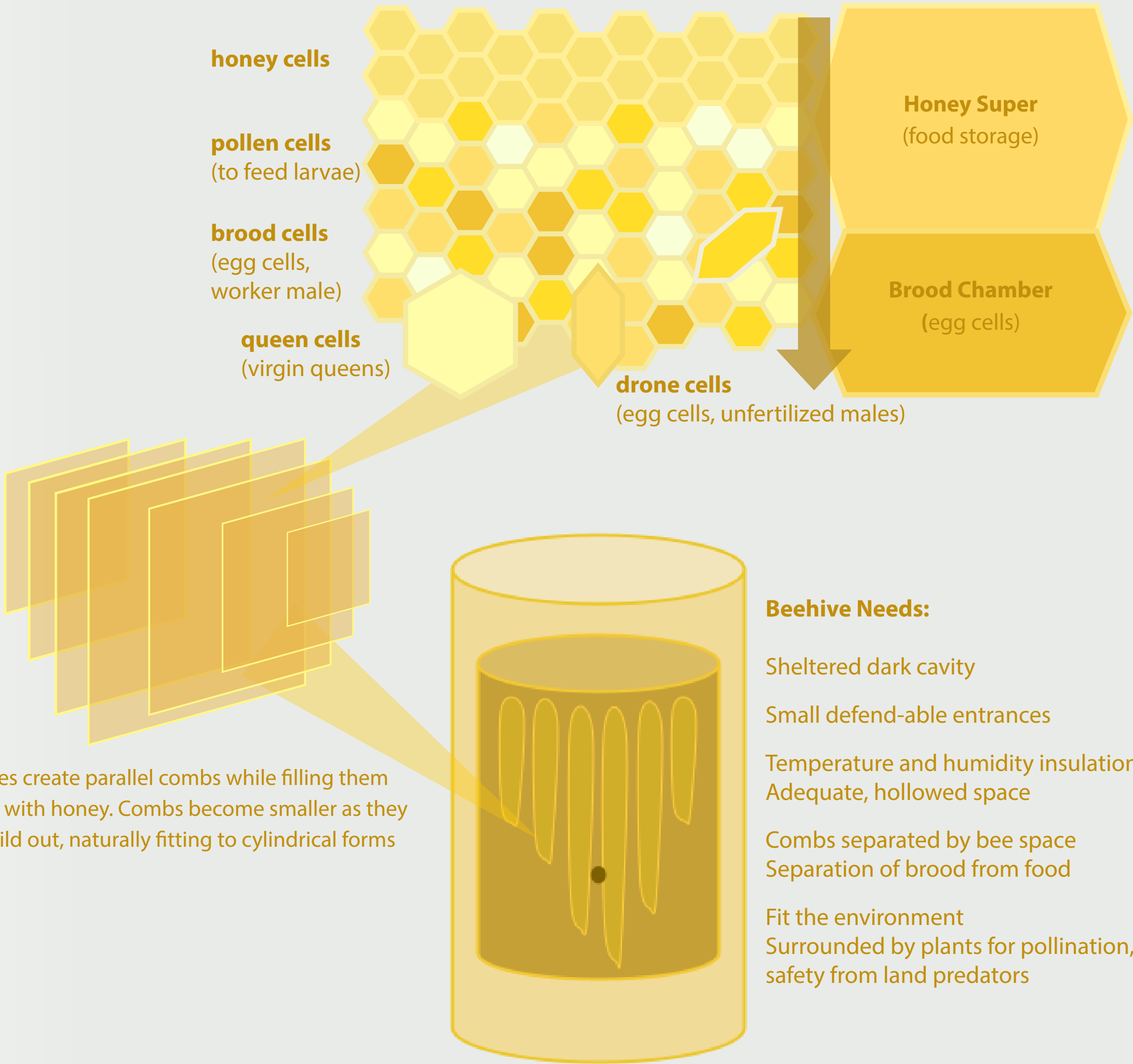
The beehive was designed for the Hattie Carthan Community Garden, a local market where they provide freshly grown foods for the community. The garden can become crowded with people during the days when the market is open. On other days, Farmer Yon takes care of the farm on her own and with volunteers. To create a suitable beehive, we worked with Farmer Yon and spent time at the garden. One of the most important considerations was to have a beehive that did not attract people, keeping the bees and the community members safe.



Hattie Carthan Community Garden, Brooklyn, NY (Locally sourced fresh produce)



Local Honey Bees-Brooklyn, NY



design development

concept, form, material

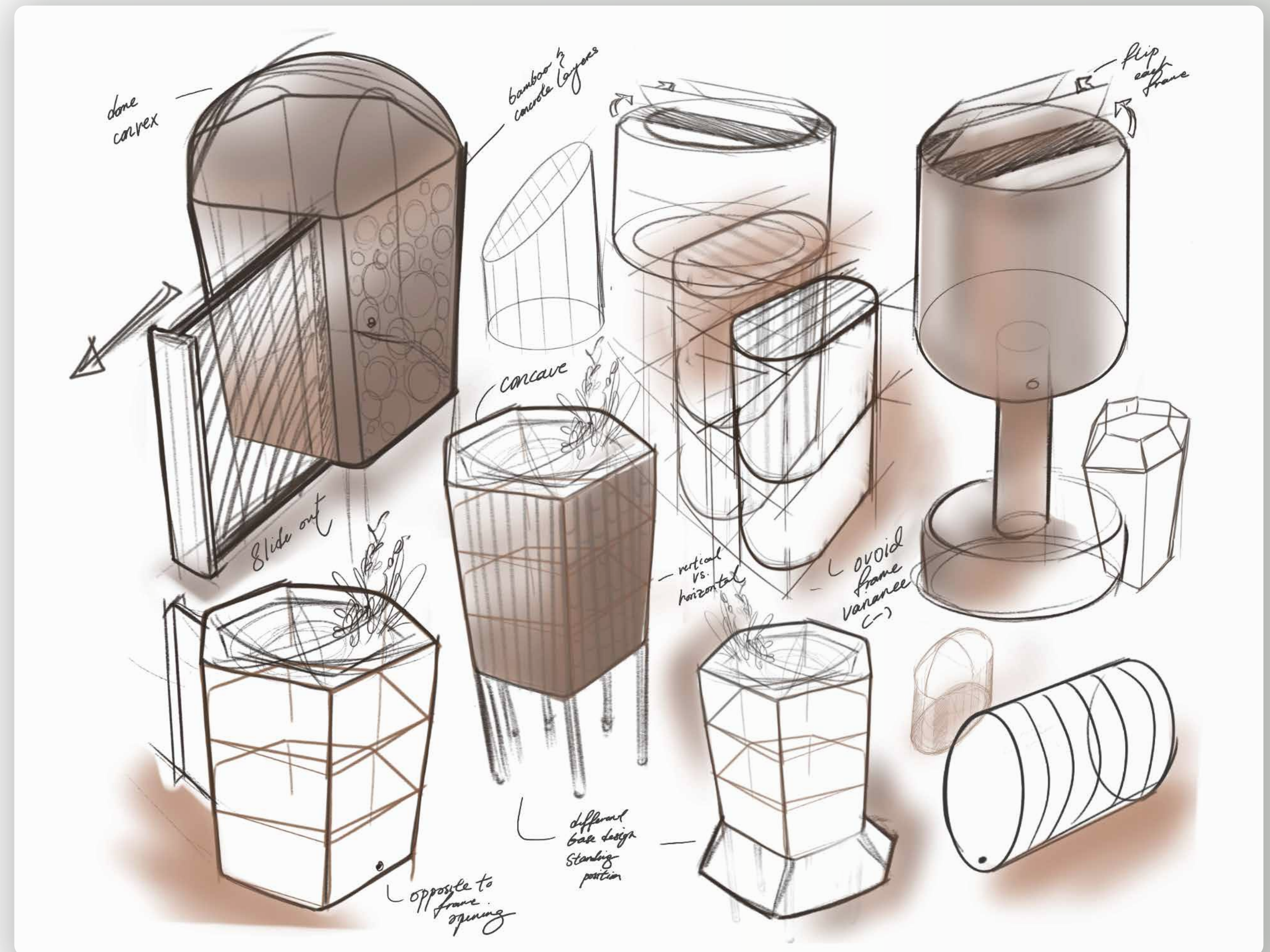
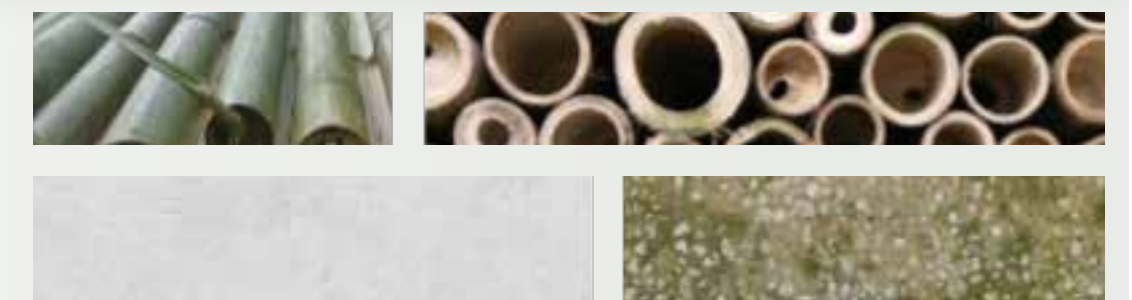


Design considerations:

- Concrete & bamboo for weathering and insulation of heat and humidity
- Fit in with aesthetics of the community garden, ages well
- Solitary, non-interactive
- Shape emulating a tree
- Low and small entry for protection
- Foundationless bee frames for natural growth
- Separated brood box
- Lifted from land predators

Insulation Layer materials:

- Mid Layer- Cut recycled bamboo tubes with air pockets for insulation (through Brooklyn winters)
- Exterior and Interior Layer- Concrete, suitable for weathering, humidity and temperature retainment, resistant to damage and sustainable



design development cont.

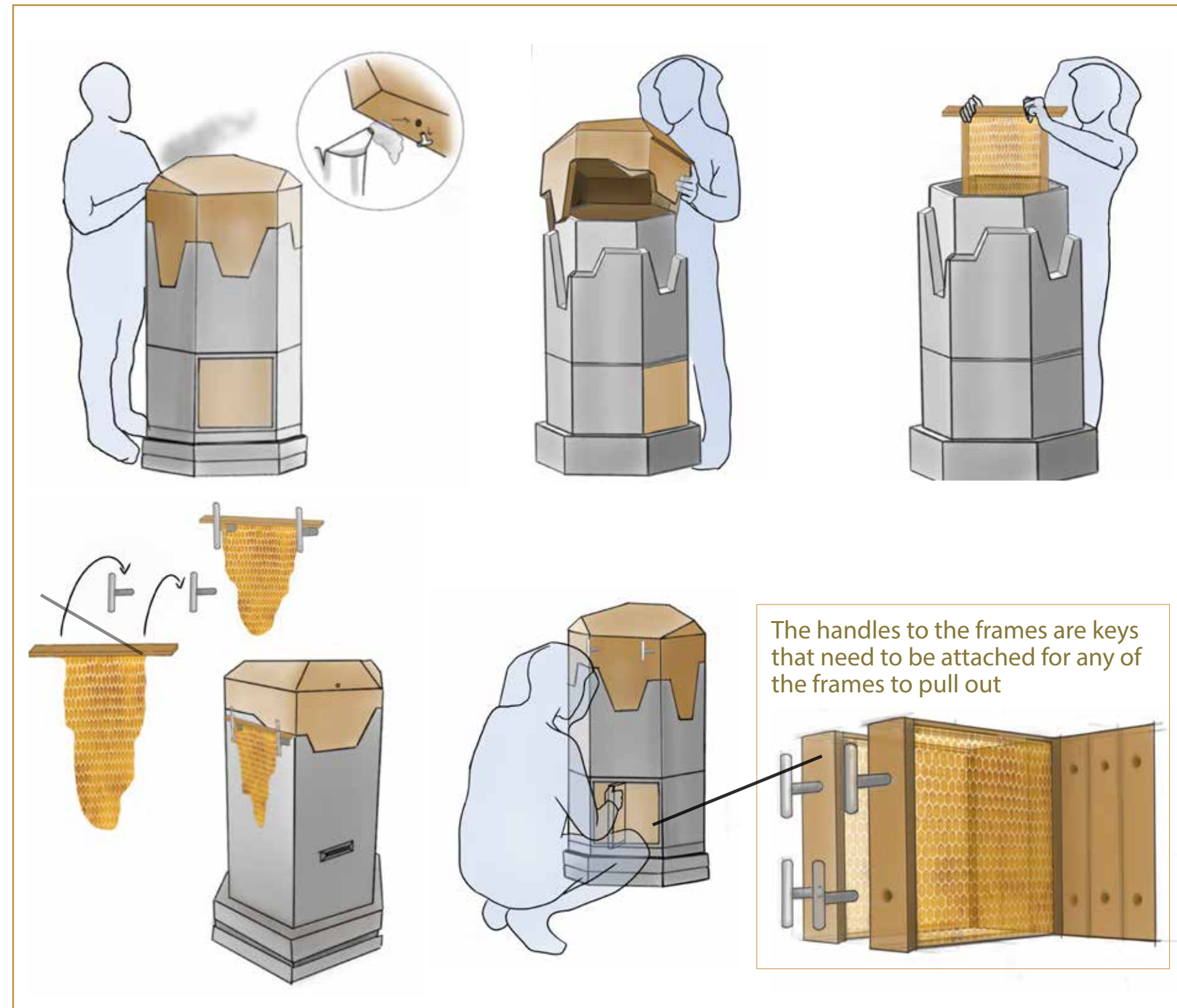
concept, form, material

Mutual aid:

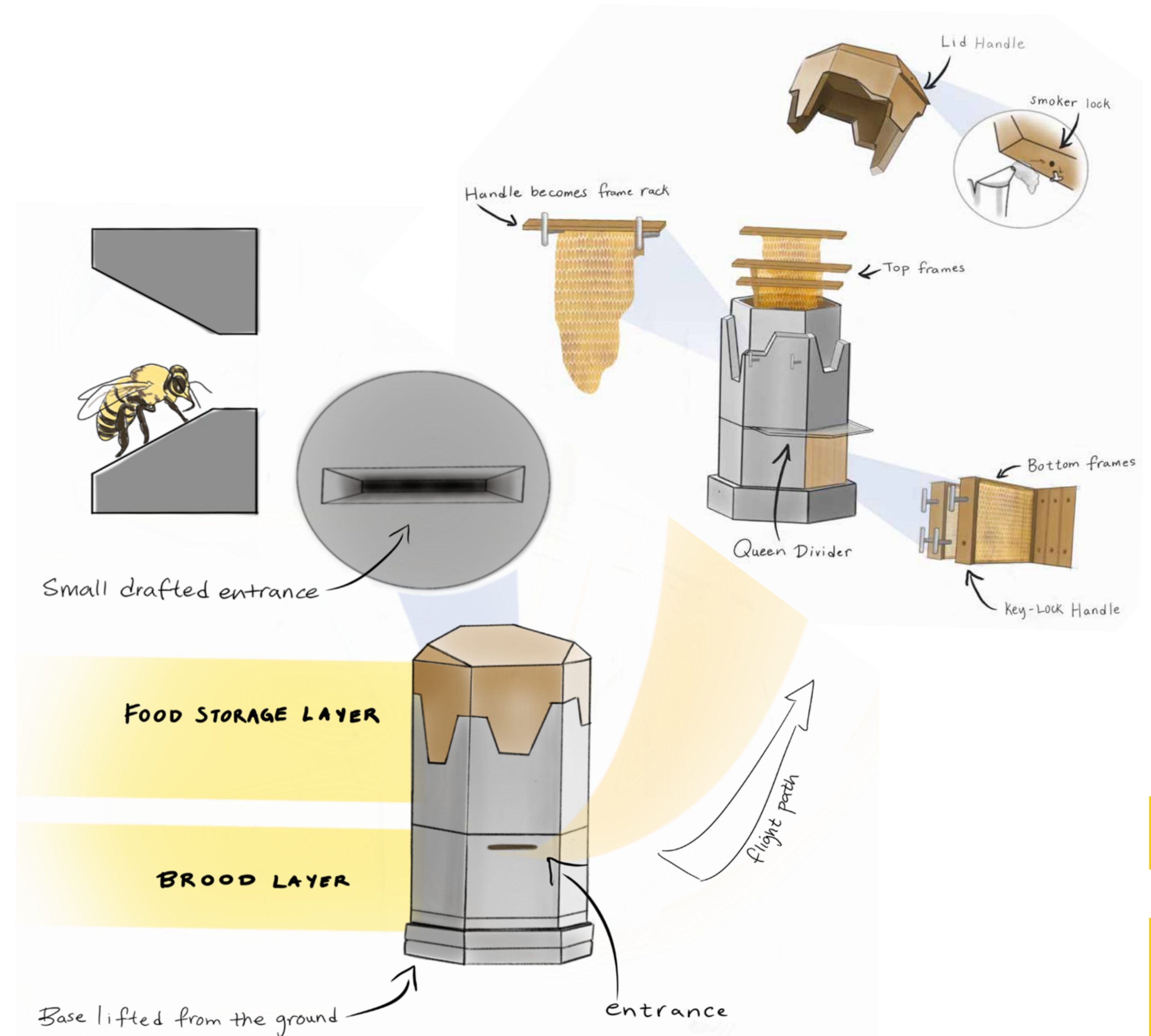
The hive's design focuses on creating a sound hive which camouflages, letting it weather and blend to its surrounding natural environment for the protection of bees, and making means to decrease chances of over harvesting of honey to create a sustainable hive.



design details



To ensure safe usage, the handles act as keys which need to be used at different steps of honey harvesting. This protects the bees and the harvester.



Headphone Design





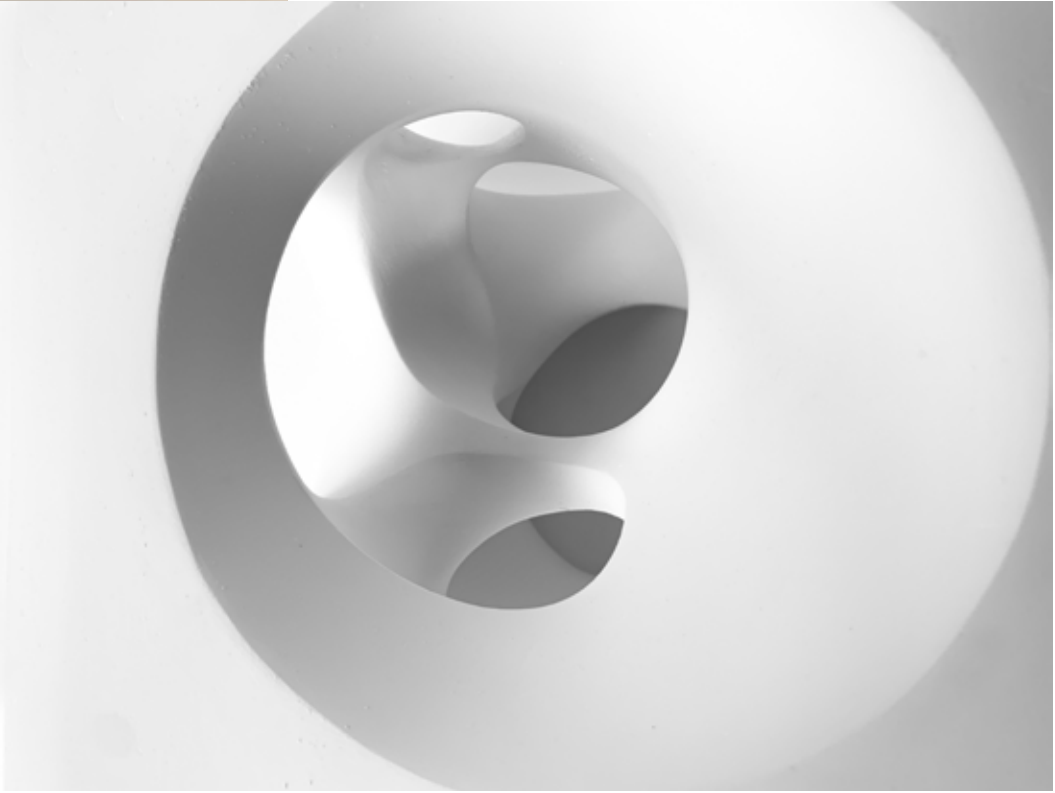
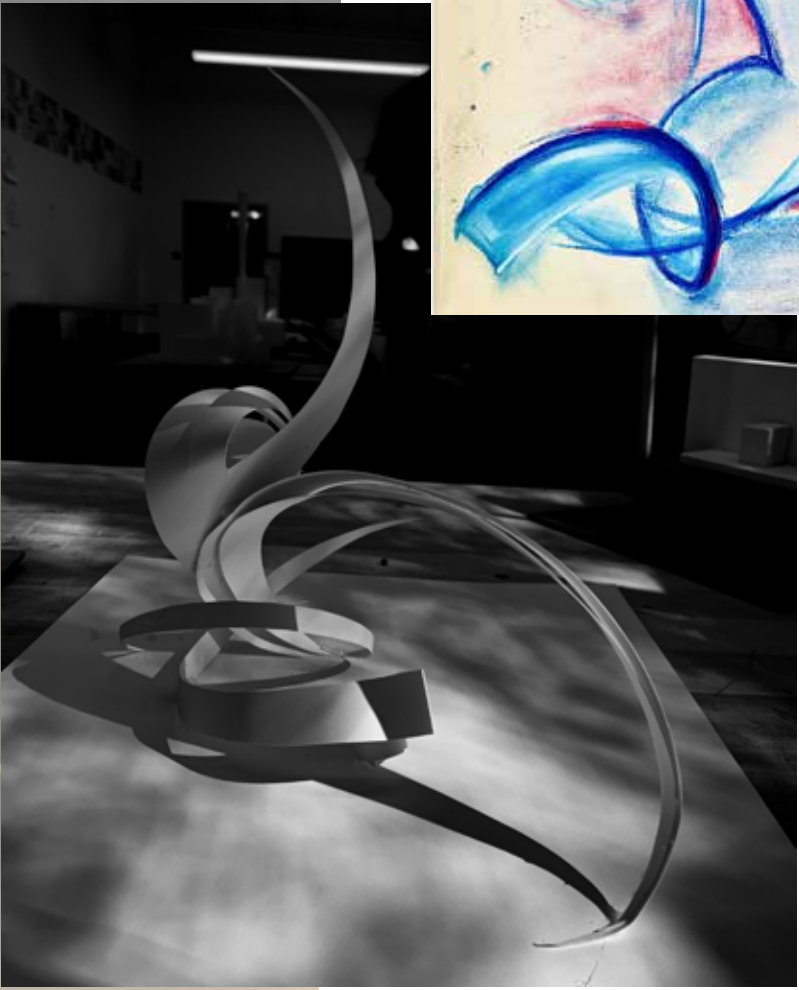
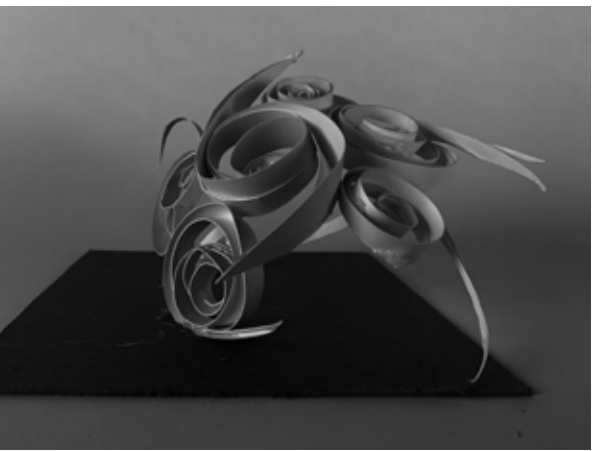
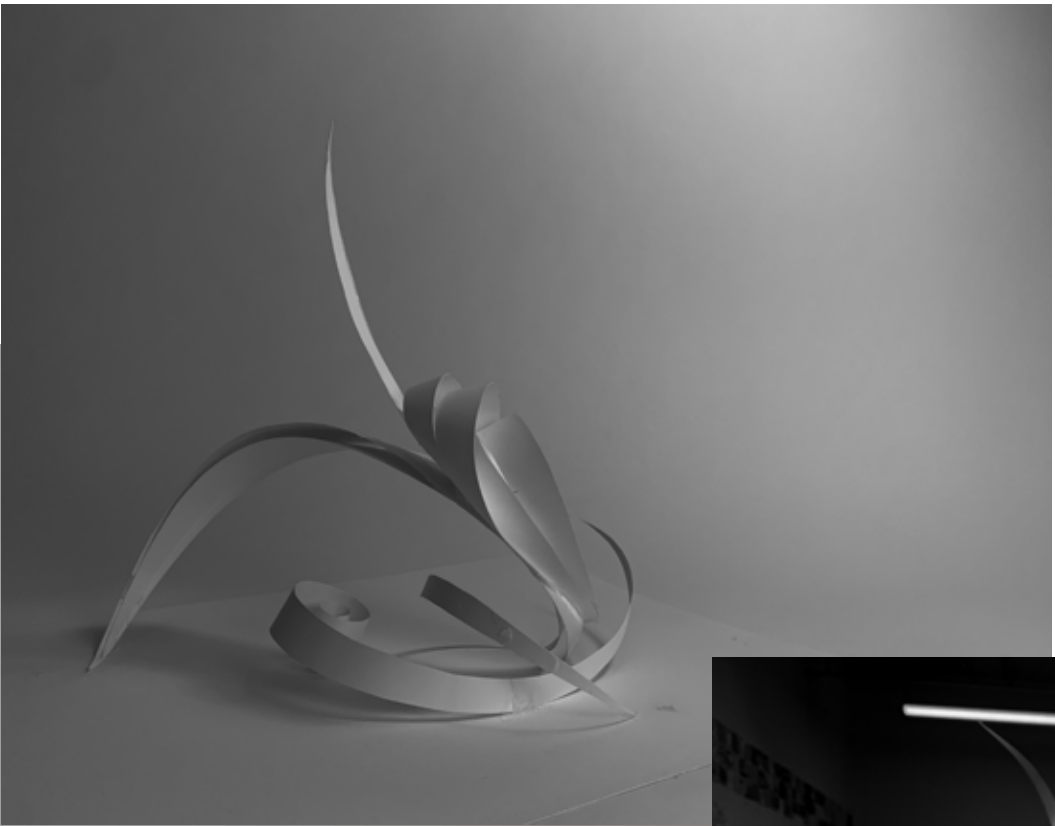
colour & material variations



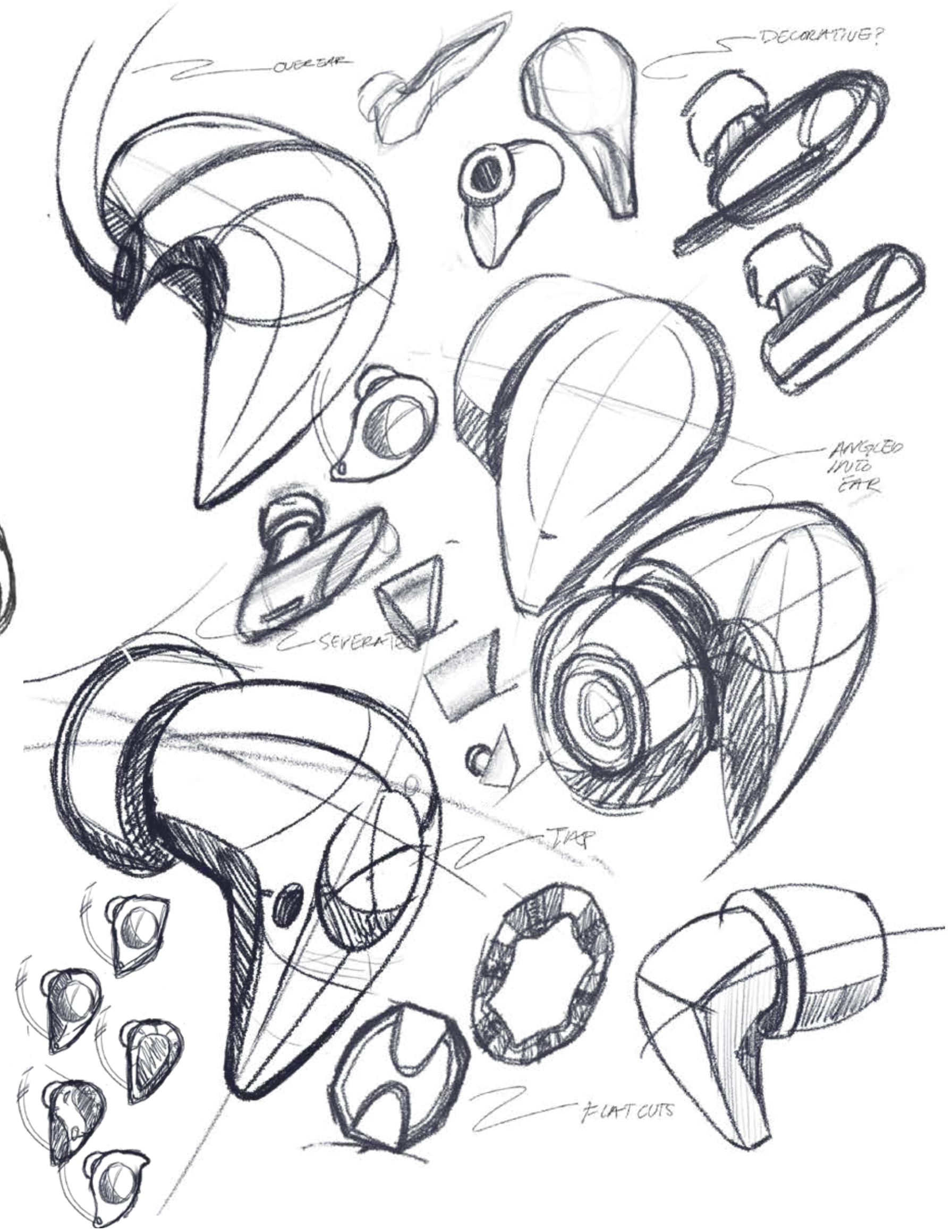
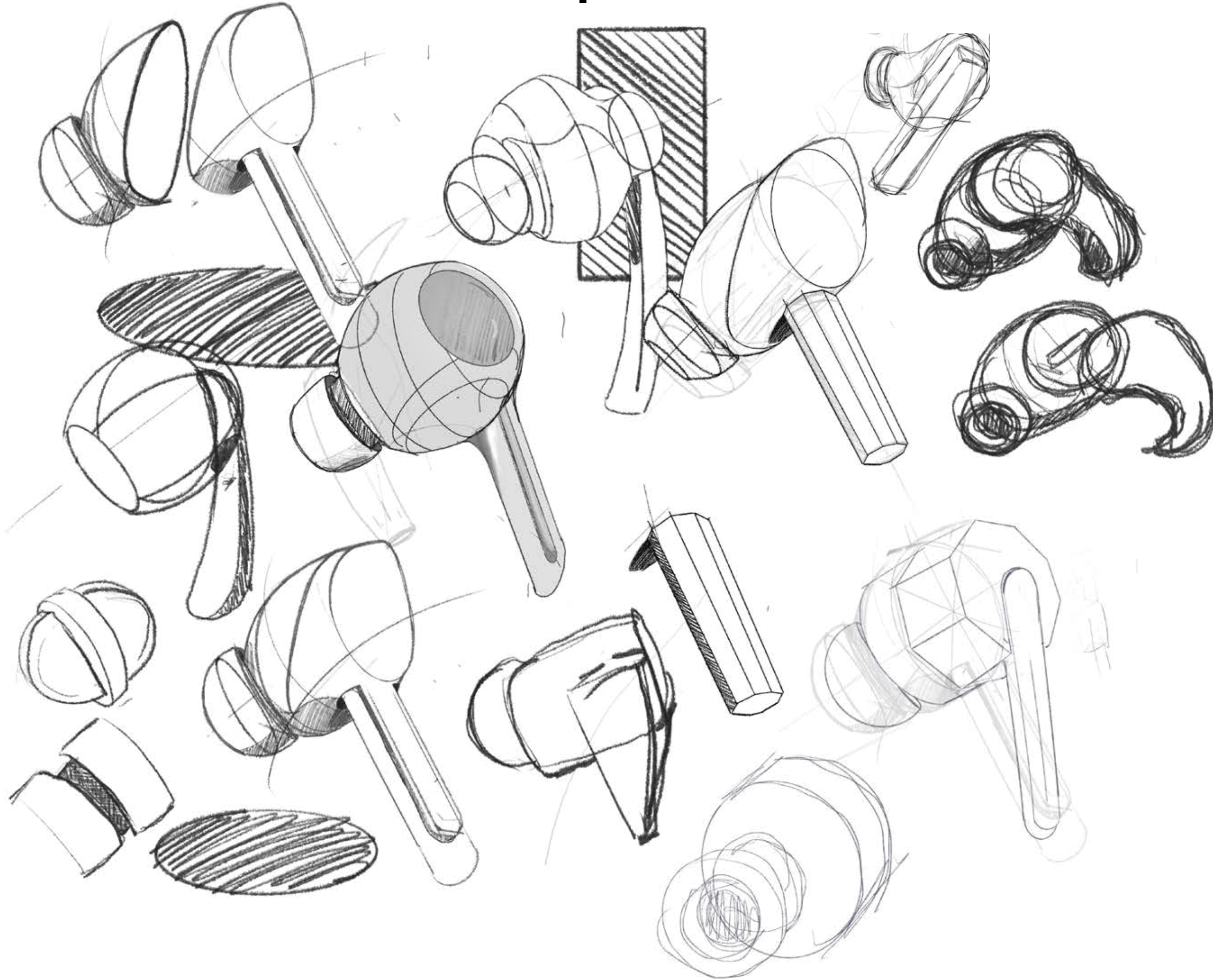
headphone iteration sketches



ear conceptual exploration



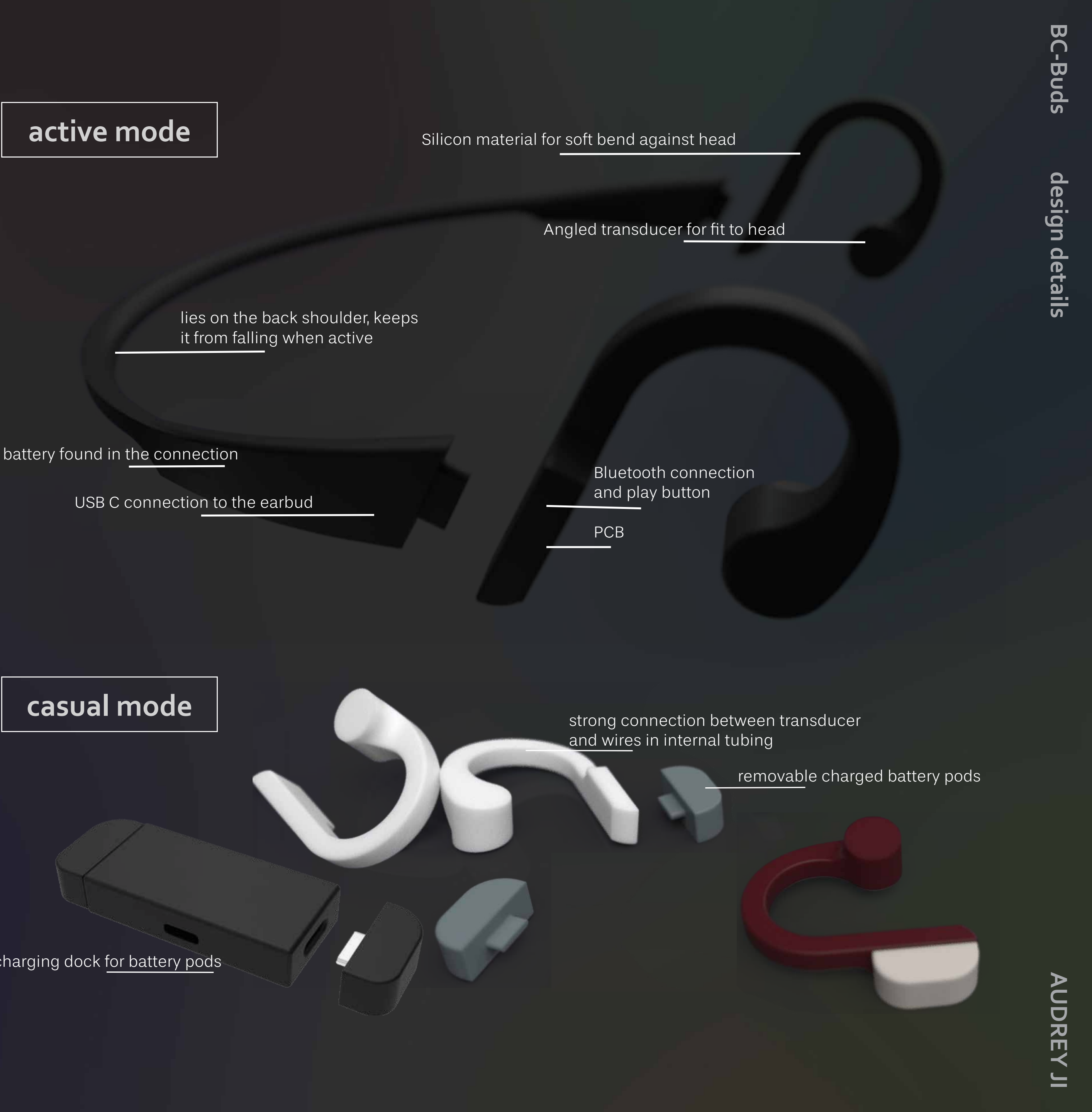
pre-research earbud explorations



BC-buds



BC-buds are designed to be manufacturable and take into consideration precedent internal parts. They are a pair of headphones with 2 modes. These separate modes allow for extra battery pods to be charged to allow energy intensive headphones to be switched out.



research

air vs. bone conduction headphone/earbud

Research says:

Headphones and ear buds can **damage your hearing** if you use them too long or play music loudly.

Having the source of sound in your ear canal increases sound volumes, enough to cause serious problems.

Many reports made of death or injury of pedestrians having **accidents** while wearing headphones.

Bone conduction headphones can allow those who are deaf or hearing impaired from a damaged outer ear or frequency limitations.

Bone conduction causes less ear damage than headphones and earbuds and are the better option for children.



market research

Classic bone-conduction headphone, high sound quality, not adjustable



Plug-in bone-conduction headphone, high sound quality, loose fit, soft



Gentle Monster, bone-conduction sunglasses



BOSE, open ear buds, singular buds



user research

41-53 users age 18-26 university students said: **walking, working, exercising, alone, always**

When do you put on your headphones/earbuds?

thyanczon

all the time girl

Reply

jassy_9345

When walking in the street, working in studio or lab or lib, working out

Reply

ivanawirawan

runs, work

Reply

_danielle_wilson_

When there are other people around unless we're all listening/watching together

Reply

soulbunny_

when I'm working, exercising, biking, walking (sometimes)

Reply

tzsl_xrx

before sleeping I will put on my earbuds

Reply

claireslittleuniverse

Listening to music or when watching something/calling someone

Reply

__sarahkerr

when I need to focus on schoolwork, when i'm traveling anywhere, when I workout

Reply

irinaught

Only when I'm walking outside or with people, never when I'm indoors alone

Reply

lanyuin

anytime except bed time and class time

Reply

muffinxpuffin

When I'm walking

Reply

loa.ny

Going outside, walking, being alone

Reply

ejunechoi

On my way to campus, whenever I have passing time, while doing work

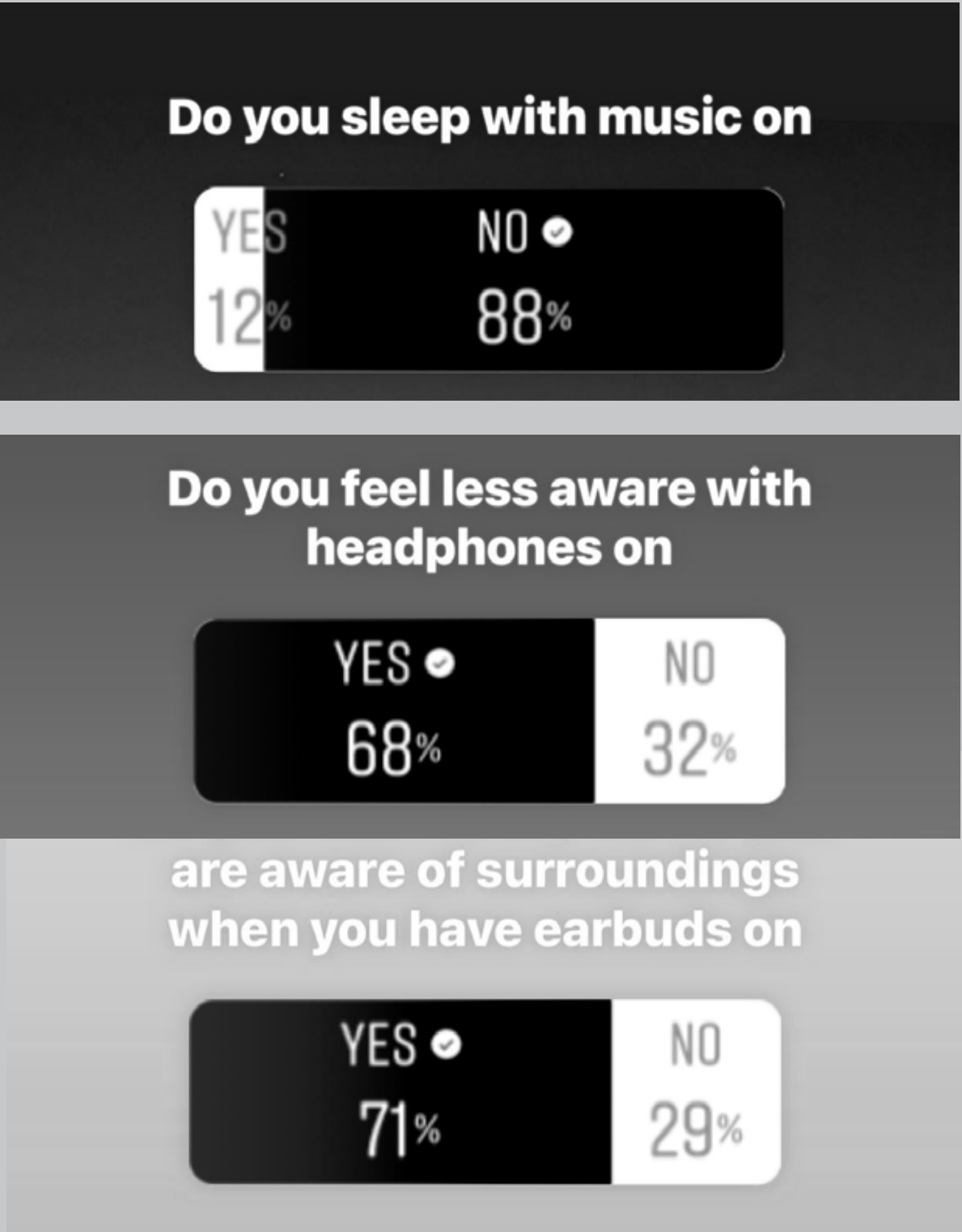
Reply

solojayjay666

by myself

Reply

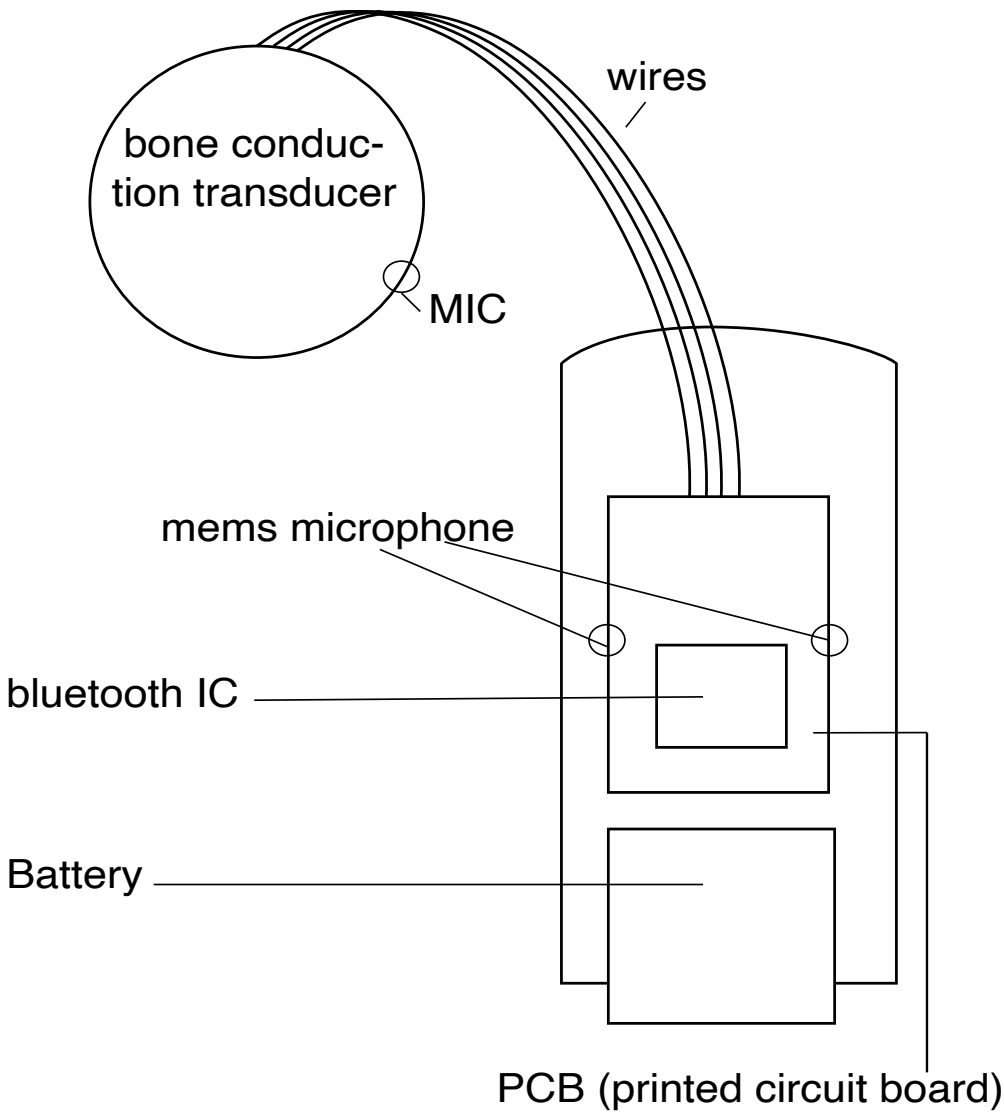
Here is what **50** people concluded:



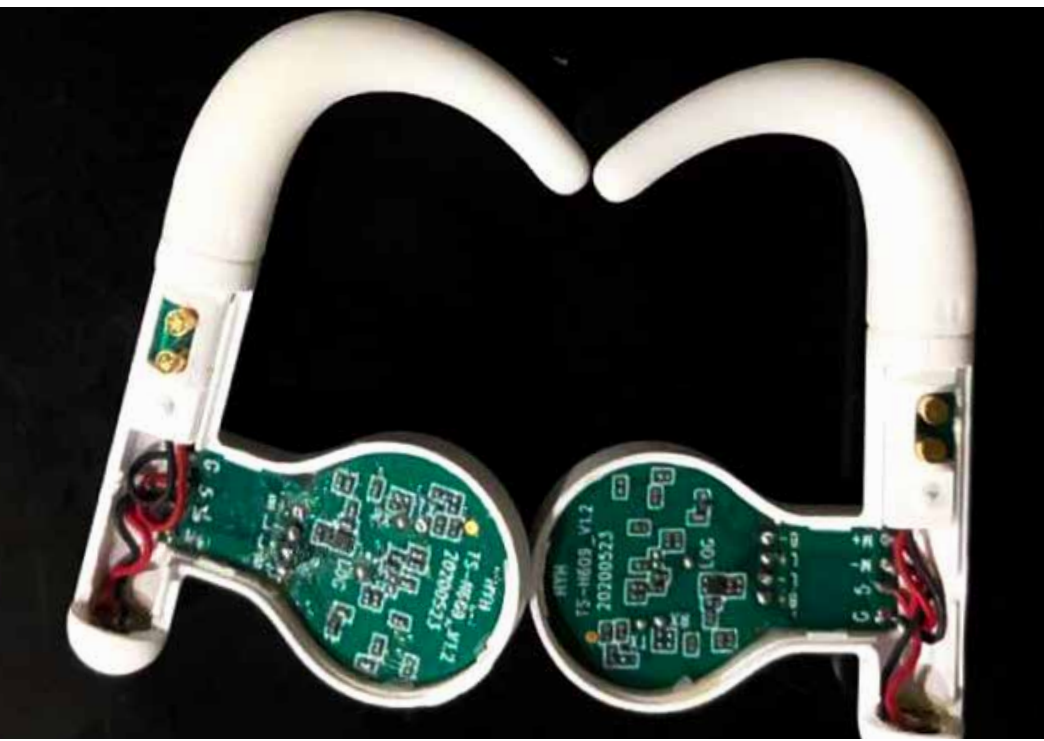
What does this mean?
Most **want to be aware** but aren't while wearing earbuds or headphones, but are often wearing them.
"I can't hear the alarm if I have earbuds on while I sleep, it's also uncomfortable."

bone-conduction headphones

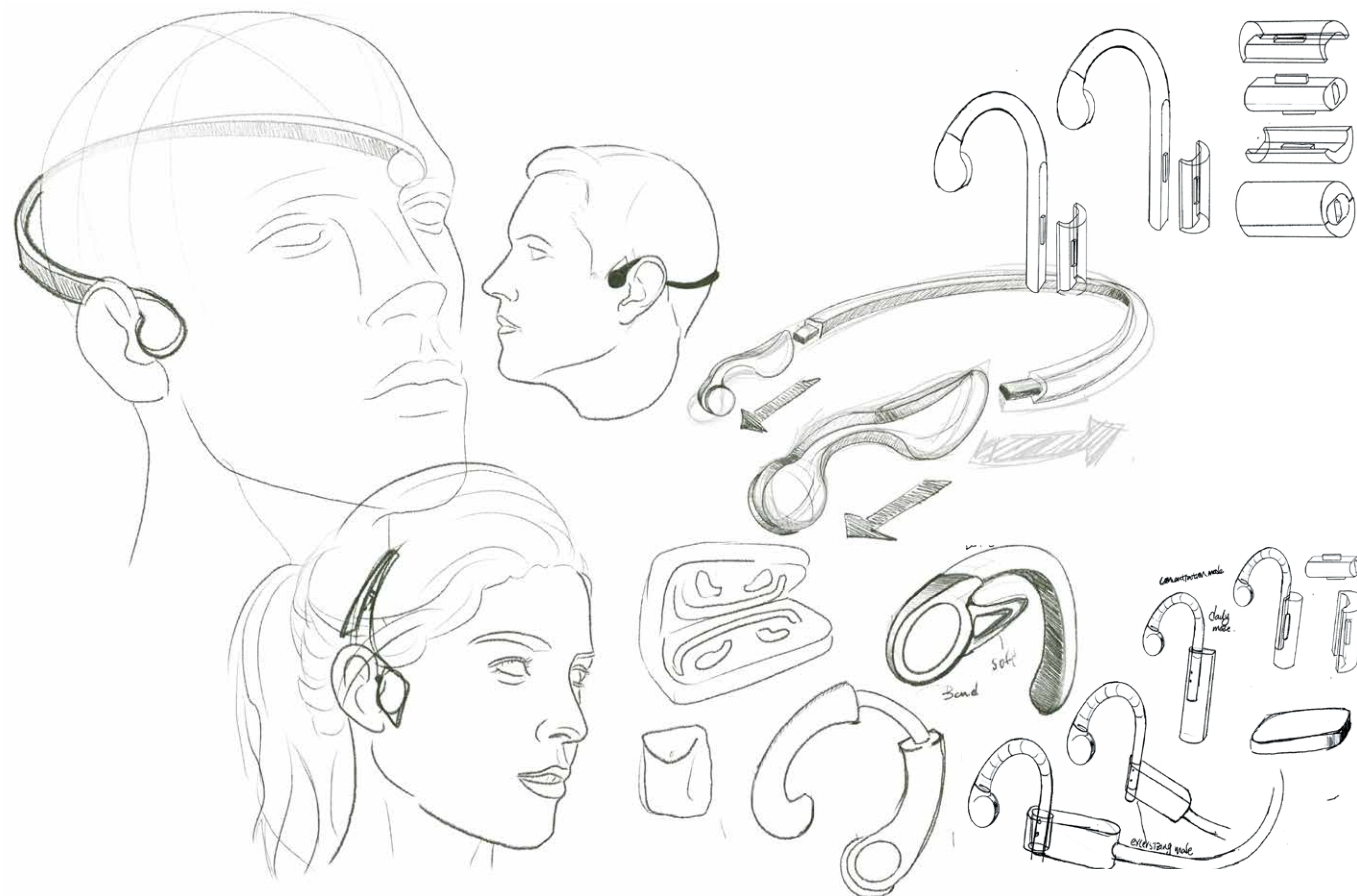
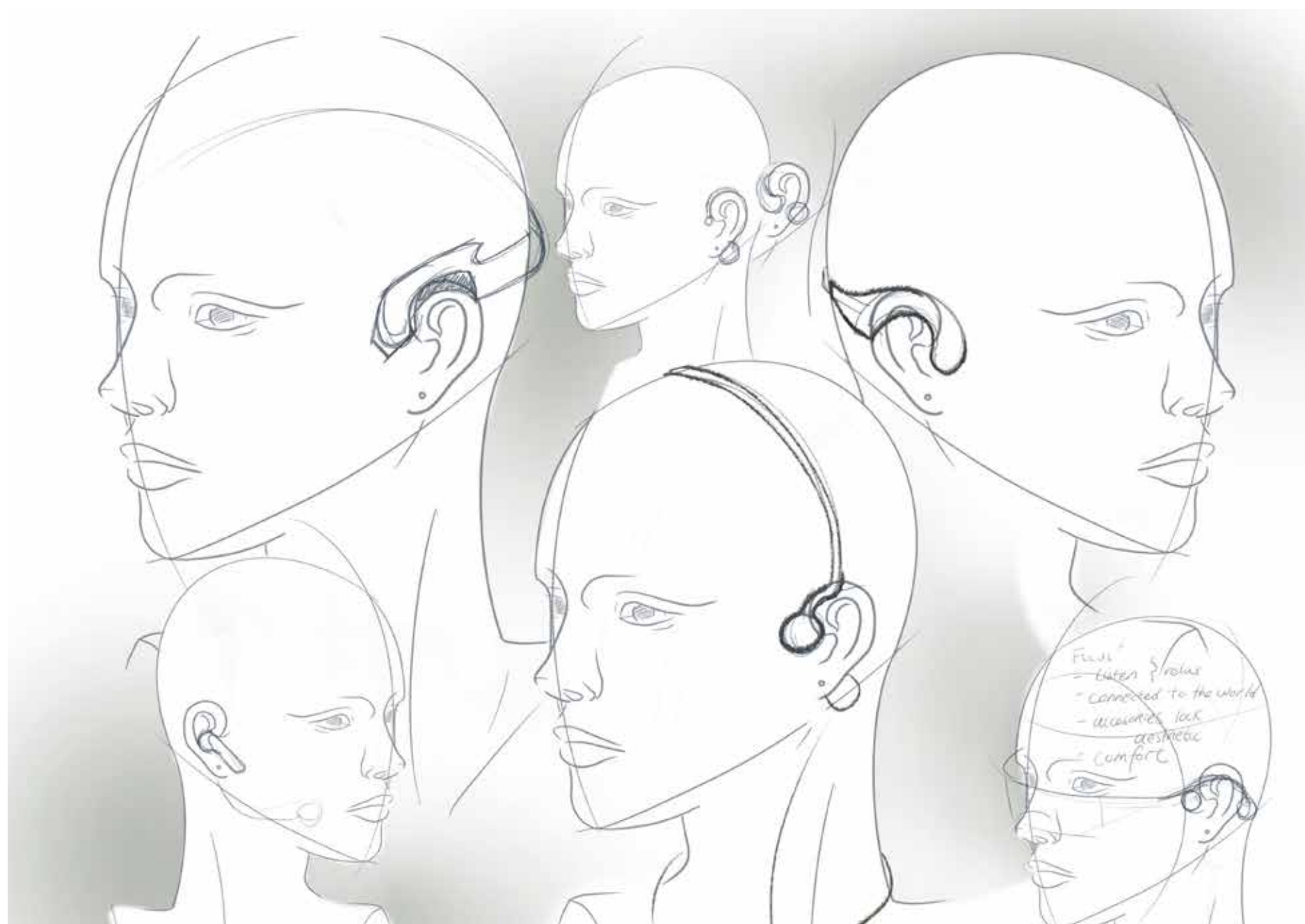
Internal parts for connected and separated buds



Bone conduction headphones need a transducer, circuit board, batteries and wiring space, on the inside. Singular BC headphones also need a bluetooth PCB and IC, have a battery that needs to be charged more often.



design development



In preliminary phases, a variety of designs were considered in terms of form and how it would sit on the head and around the ears. Multiple people tested the various comfort levels of the prototypes



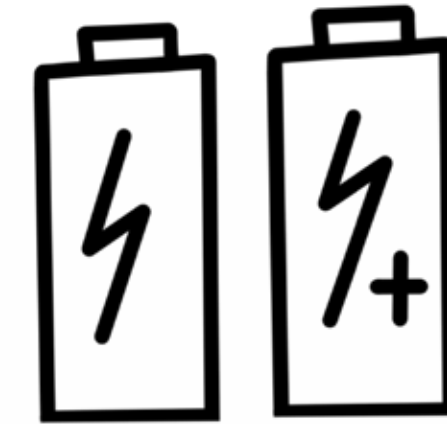
BC-bud solutions



Modes for
every situation



Stay aware of
surroundings



Easily replaced
chargeable batteries



Light, easily
stored



Wear as you
sleep



Silicon, bendable
to fit to ear



Less damage
than earbuds



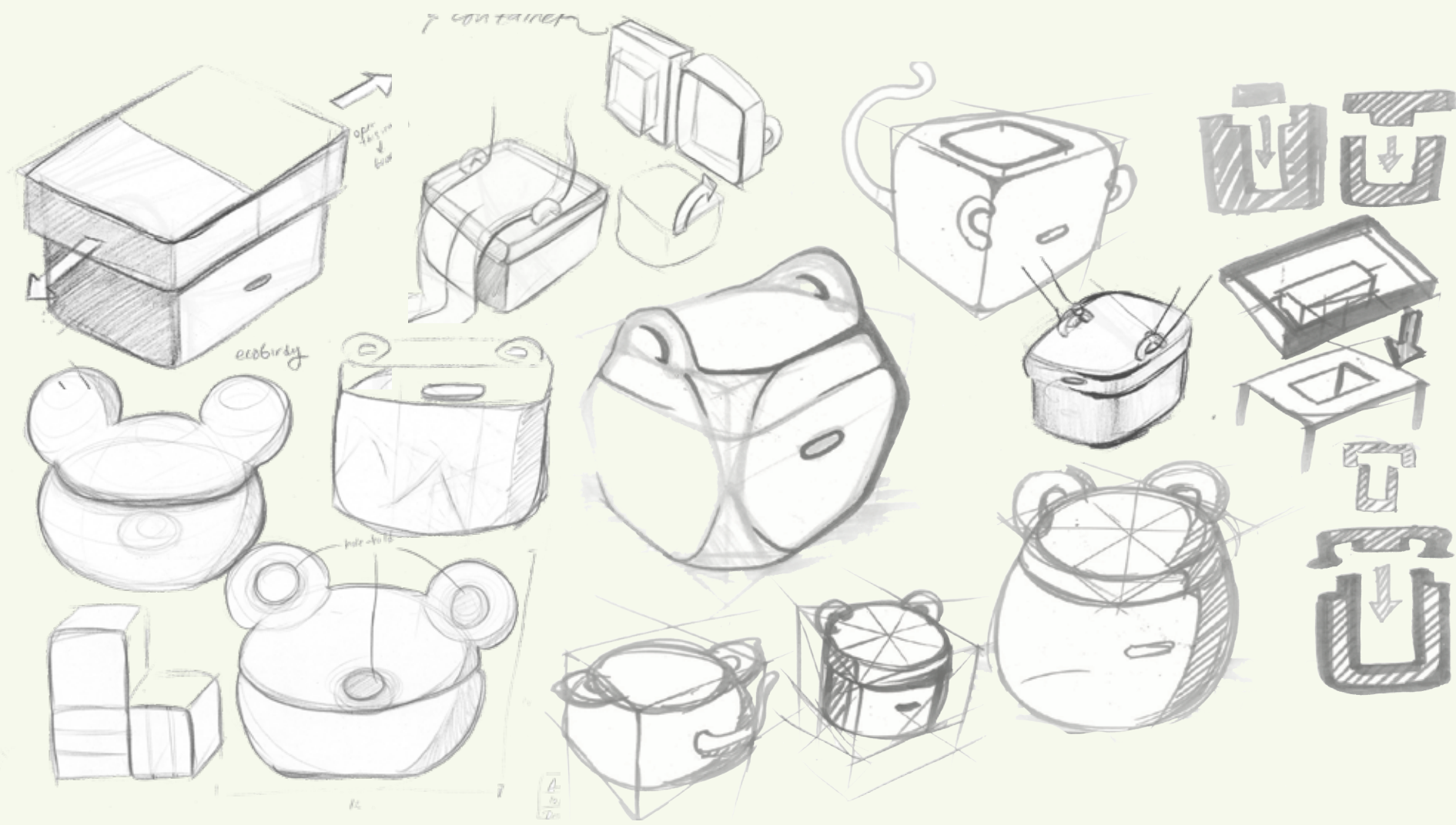
No tangling
cables

*Wear them as you like,
when ever, where ever*

Bear Ottoman

Children's furniture and storage





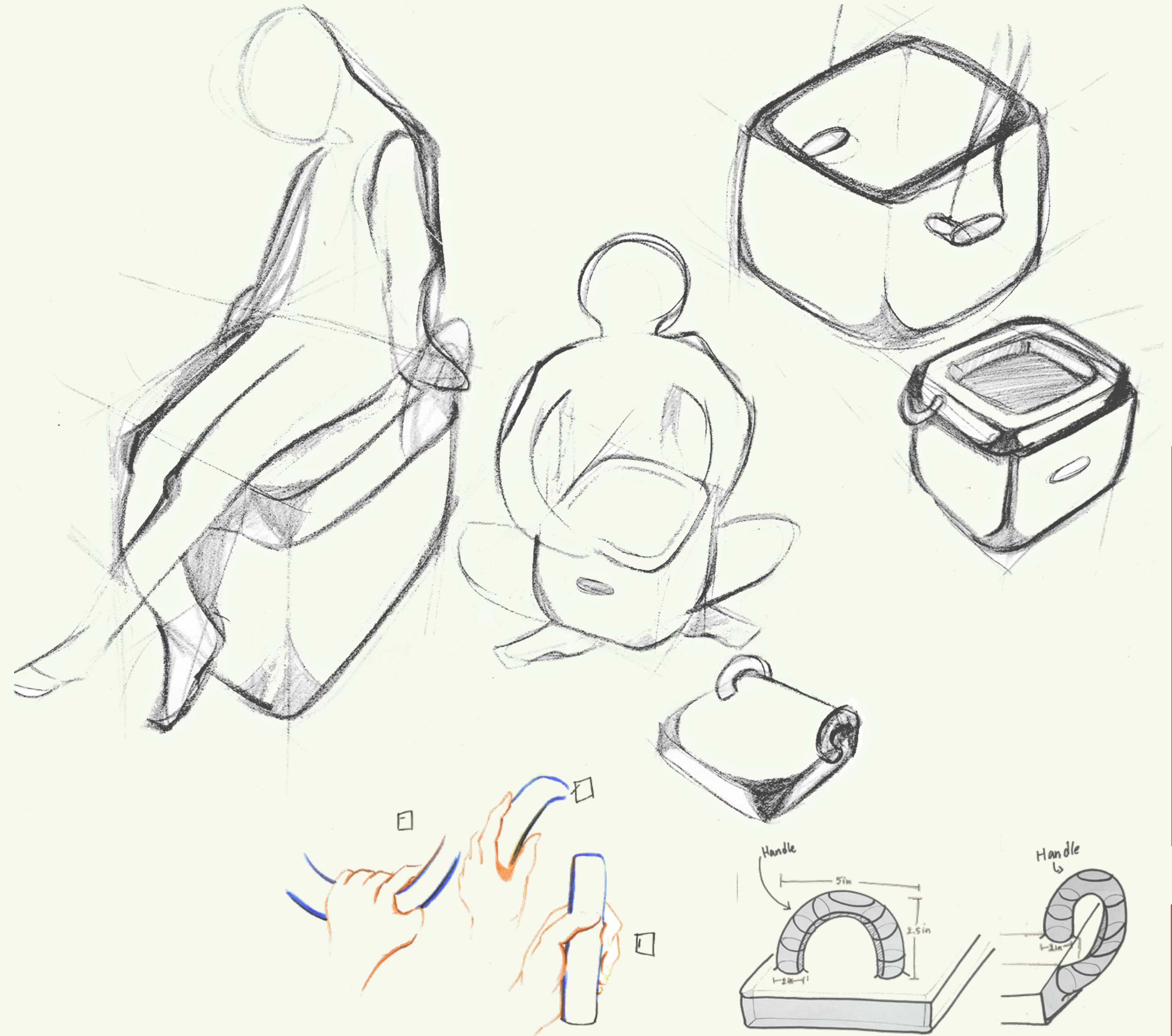
design development

form and function sketches and user testing

The company of focus, ecobirdy, designs children's furniture using recycled plastics and brings awareness by representing endangered animals through their products. For my design, I designed with the form of a bear.

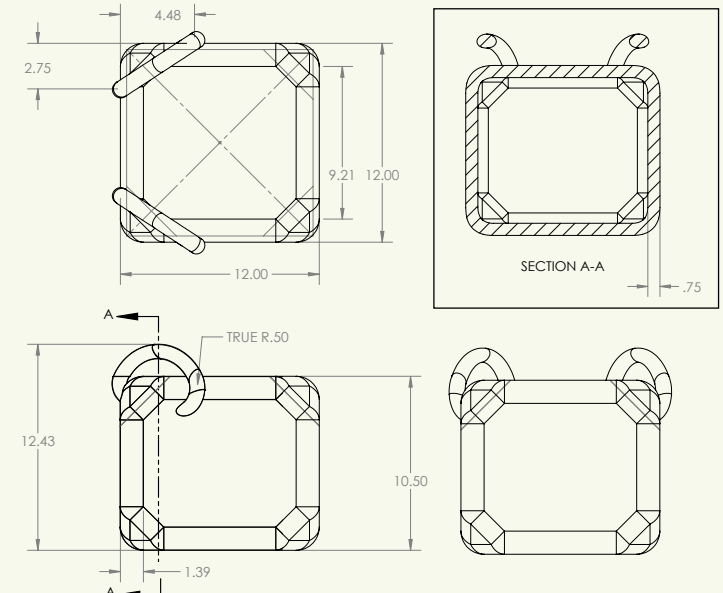
User testing:

The handle was tested to match hand grip and back comfort for children and parents. Seat size for children, weight, ease of closing, ease of taking of the lid were also tested

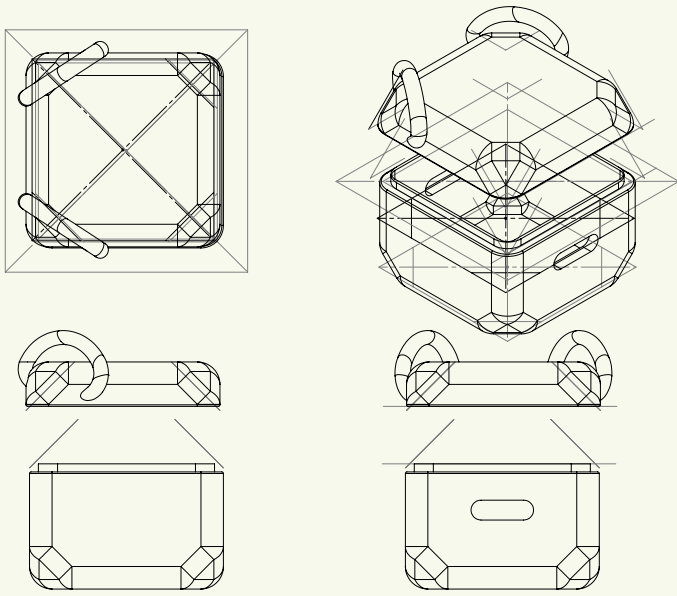


sustainable manufacturing

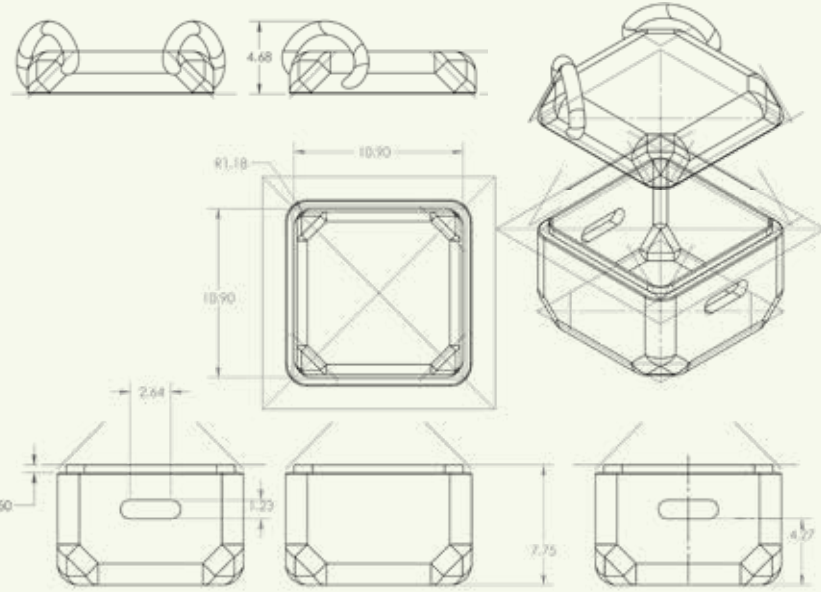
minimizing steps in manufacturing and material research
through the ecobirdy company



1 piece made through rotational molding, 3 part mold



cut in half with a CNC, rims of two parts trimmed with CNC into 2 pieces, efficient manufacturing process



the hollow inside from the rotational molding becomes the storage, which is the inside of the ottoman



b e a r o t t o m a n

ecothylene® stool and toy storage for kids 18 months to 7 years of age



Around the Play-scape

Exhibition Design

<https://drive.google.com/file/d/1G0d0KKvrvhPVzyQfApw6nDh3gbuCNNS/view>

the play-scape

Technological advancements are our main source of communication, especially in time of social isolation. We look at our phones for hours without the urge to look up to communicate with the world around us. The Playscape is a space which encourages people to get to know each other in community events, activities and social spaces for people to enjoy and share. The Playscape is a social space experience with the goal of increasing connection between people.



design development

personas, scenarios, concept development



Jess
Age: 22
Work: Graduate student
Goals: Wants to find something new to do, maybe meet some new people.
Likes to play video games and watch TV. Doesn't leave the house much and spends most time figuring out what to do.
Personality: Confident, smart, gets easily bored, doesn't mind being alone.
Skills: Likes lo-fi music, knows a lot of good music and knows a

lot of TV programs and dramas.
Day in the life: Wakes up, makes breakfast, dark coffee, reads a book, turns on computer to watch some TV shows alone, chats with friends on imessages, makes linner, watches more TV, eats at midnight and snacks cause why not.
Pain points: Every day is the same when there is no work. Just moved to a different place for graduate school, doesn't have friends close by. Doesn't know what to do and where to go meet people and find things to do. Wants something to do without having to try too hard.



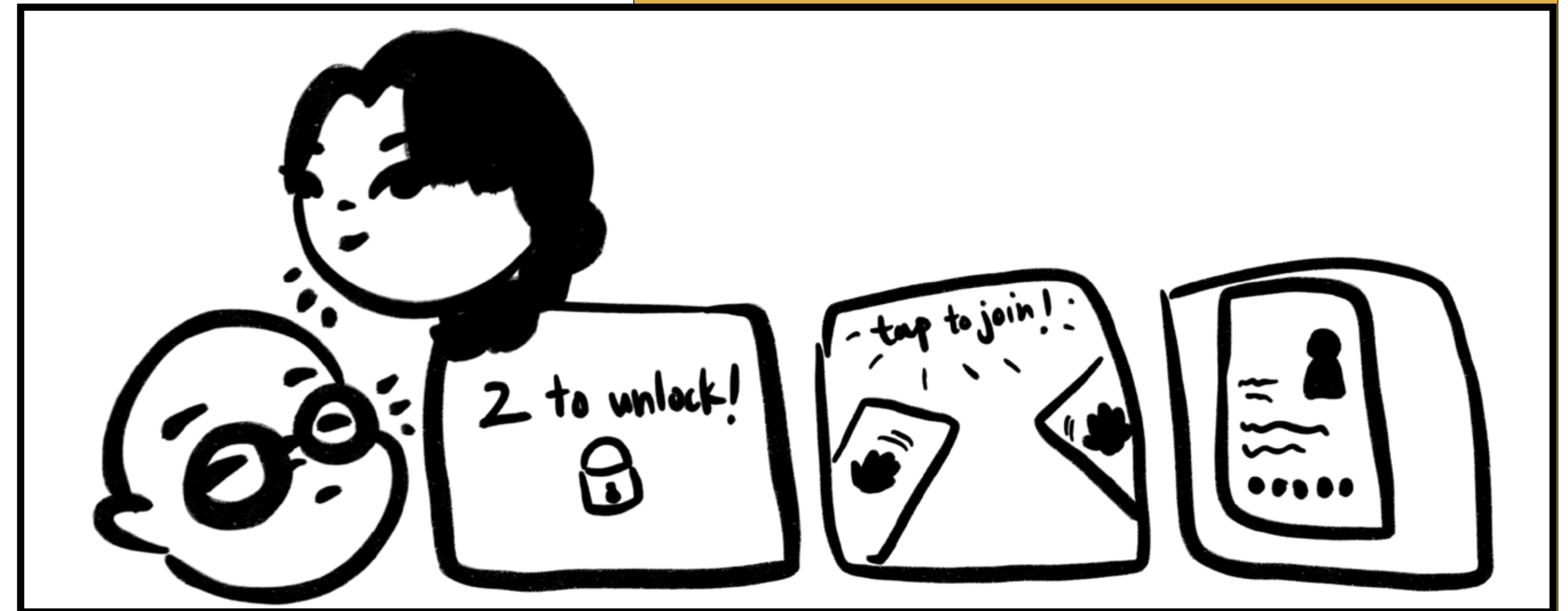
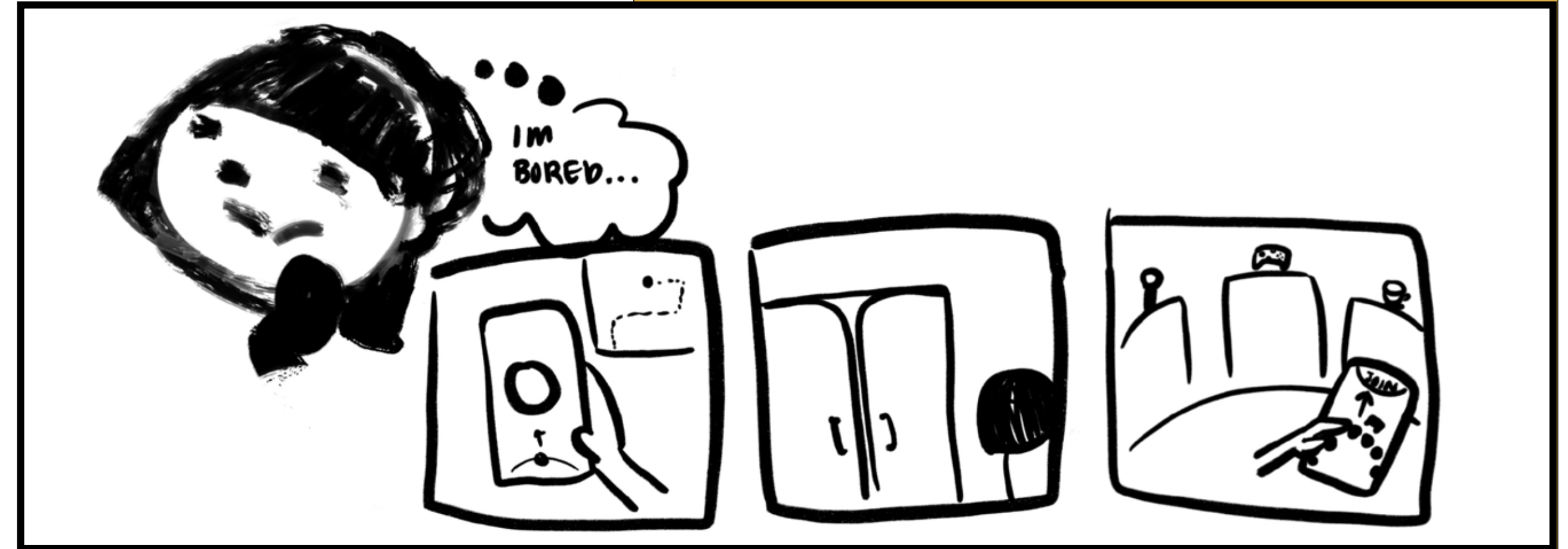
Don
Age: 23
Work: Coder
Goals: Retire before 30.
Personality: Timid, shy, smart
Skills: Keyboard speed is very fast, advanced gamer, likes puzzles and still has a fidget spinner
Goals: Meet people who are like him, leave his home more, has been told by family that he needs to go out more.

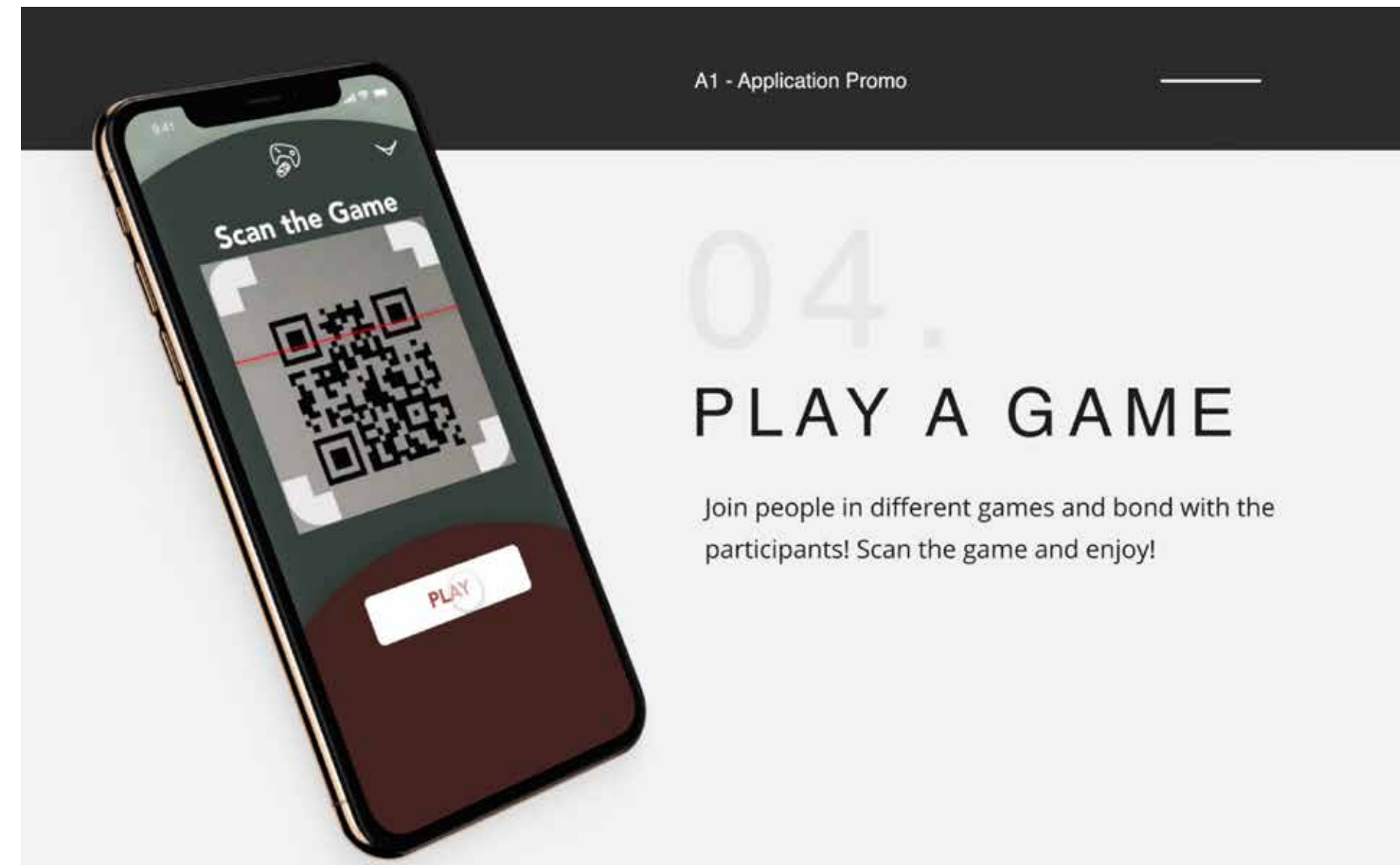
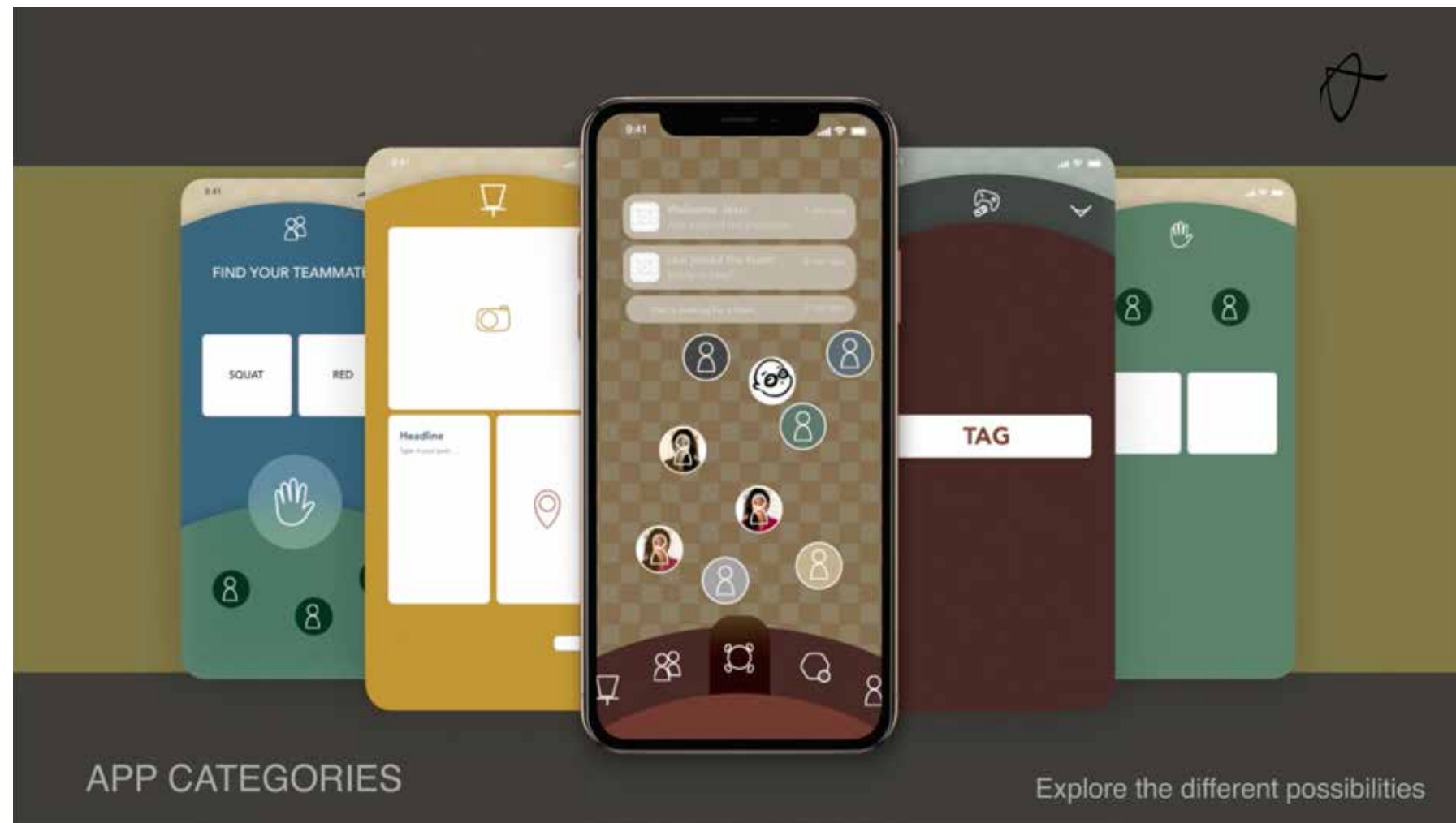
Day in the life: Wakes up at 12, finishes his work around 5, eats, naps, gets ready to play games on his computer, plays till 5 in the morning.
Pain points: Family has started to nag him about secluding himself too much, parents think that at 23 he should have more going on in his life. Doesn't know what is so great about the outside world.



Lexi
Age: 25
Work: Marketing department employee
Goals: Be able to hold a party every week
Personality: Loves to talk and bring people together,
Skills: is a great cook and skilled at everything she gets her hands on, always has people to talk to.
Goals: Find a suitable, new place for her to bring her friends to hang out. Would like to go to new places

Day in the life: After work, she will call up a few friends for a meal, go shopping and hang out, she will travel when ever she has the chance. Likes a cup of tea in the morning.
Pain points: Doesn't the place to be too crowded, too loud but wants to be doing more than just eating and talking. Hates that she has to clean her home when she has people over.

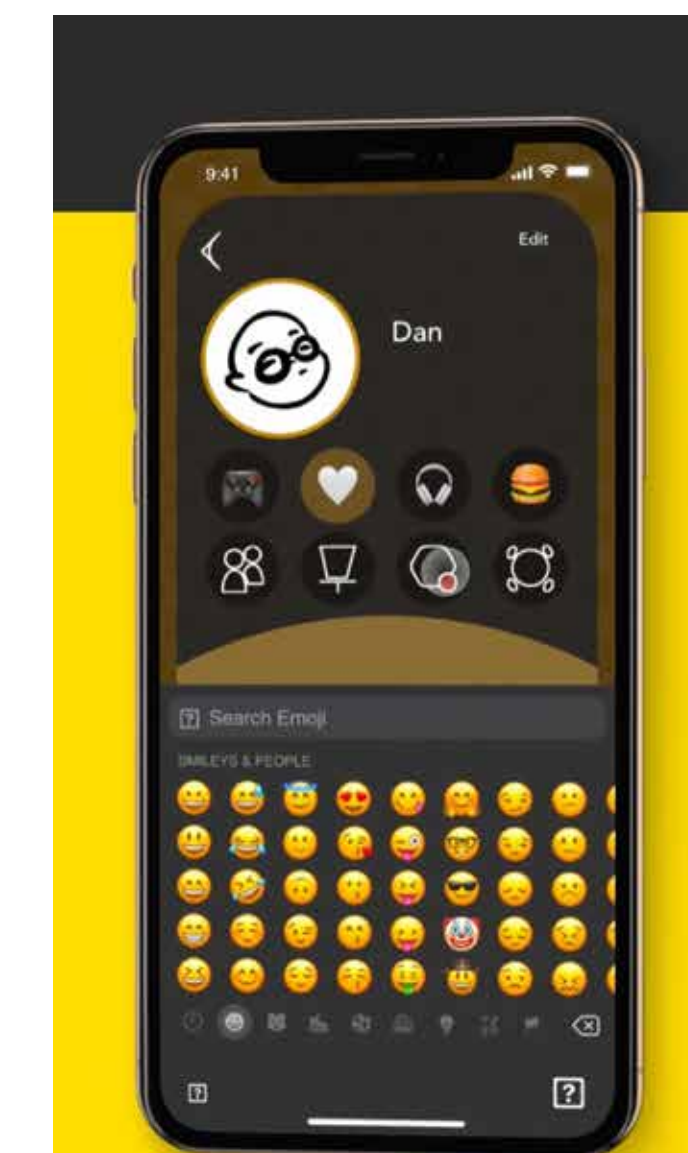
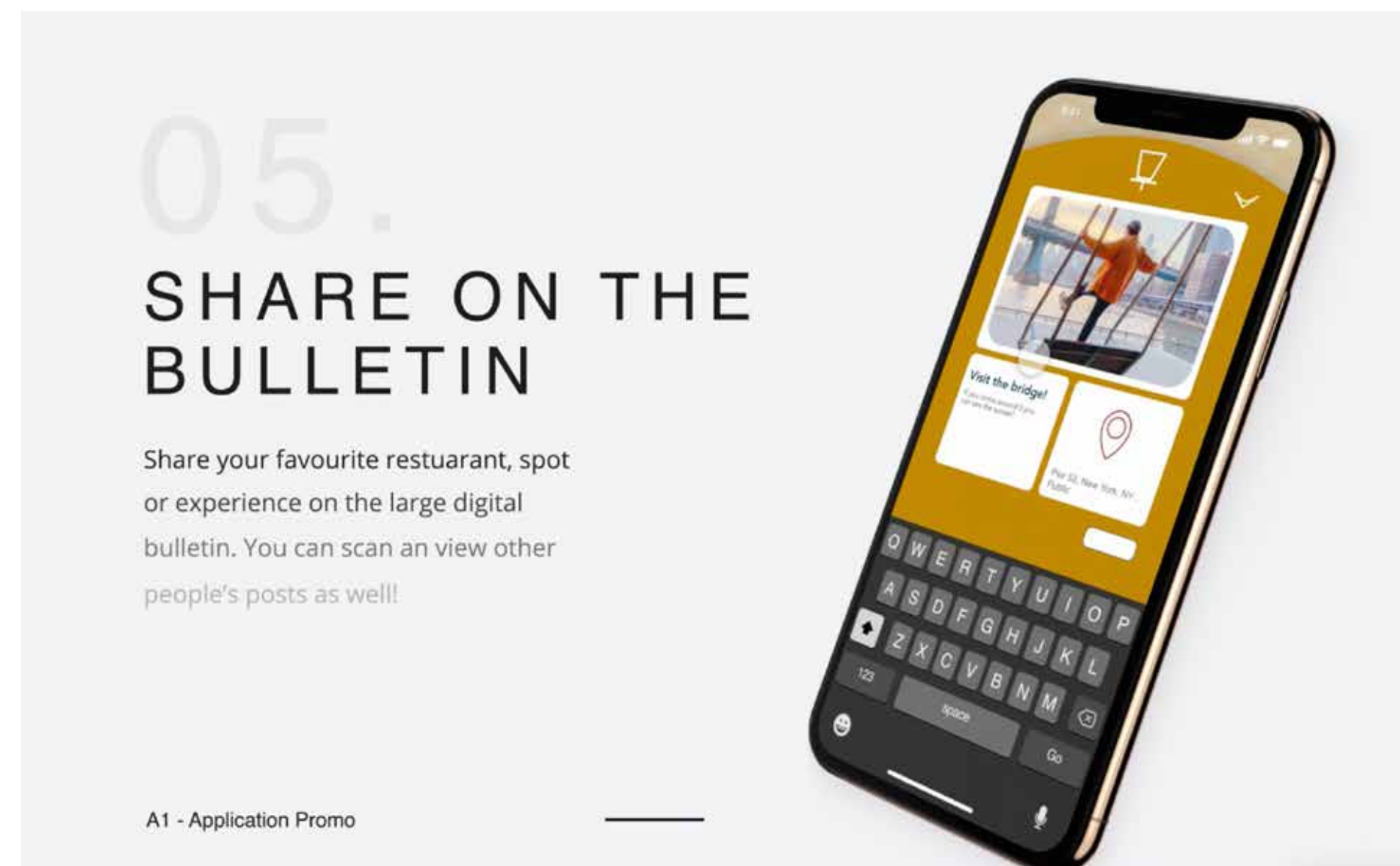


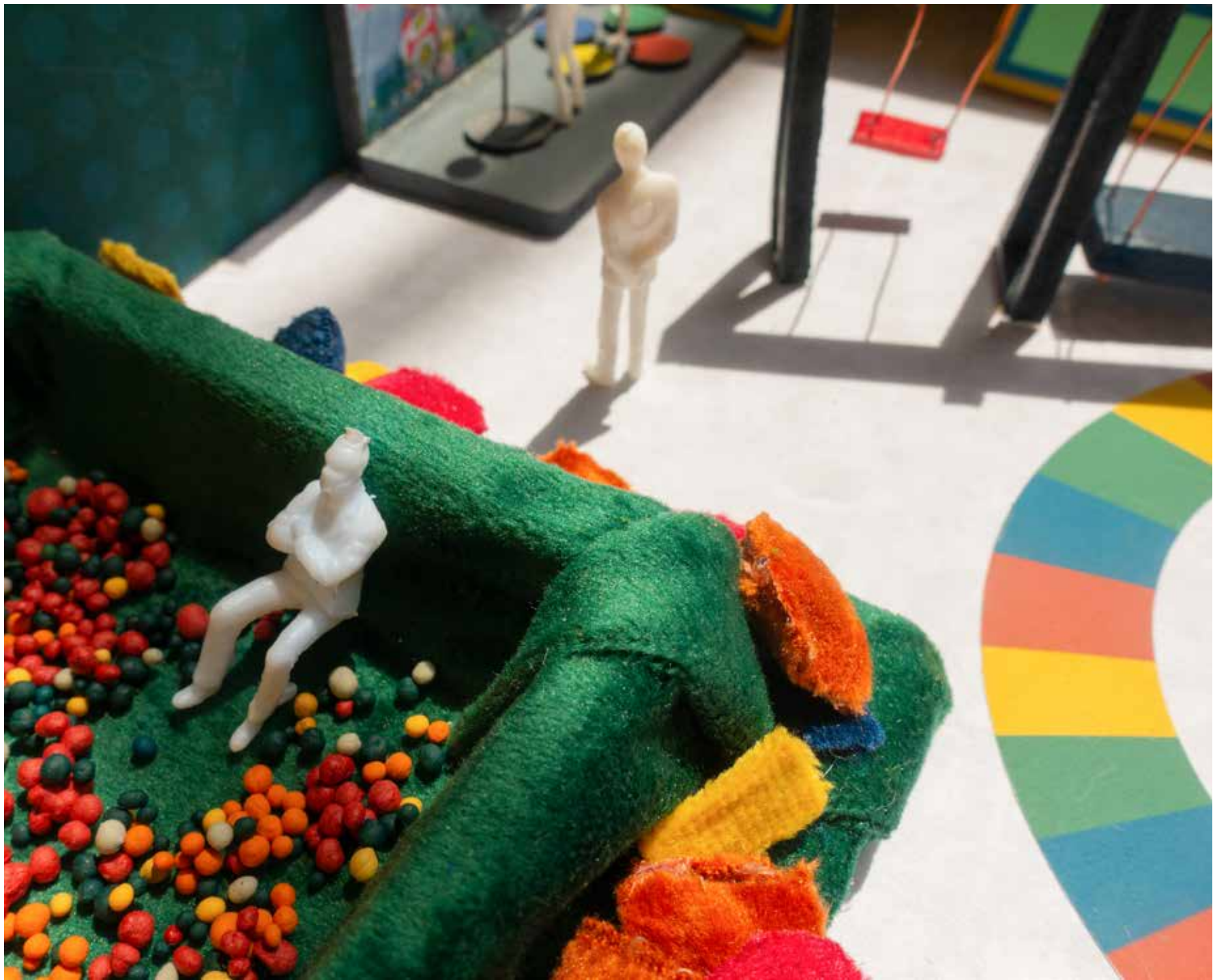


app experience

concept, form, material

The space embraces the use of an app, a common and current use of technology to integrate technology in a way that encourages direct person to person engagement. The app connects people through social interactions in the Playscape. It connects you to other people, teams etc. in the space and asks you to complete tasks together to earn points which allow you to access more unique experiences in the space. It allows you to post to the digital bulletin wall, see who is in a certain area or activity, allowing you to interact with them or to find how long they will be in the area before you can participate in the activity and to see what events or activities that are happening or will be happening so you don't miss the event.





22-24- Couched Ball Pit, Swings, Large Scale Arcade Game

design details

concept, form, material

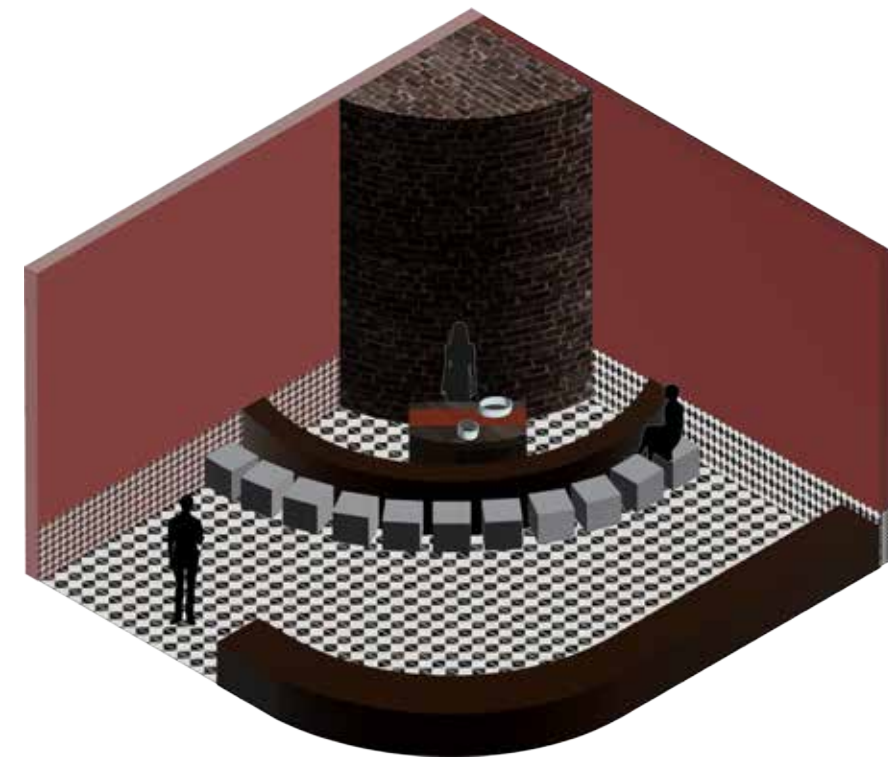
Different areas encourage different kinds of social interactions, prompted by the technology, colours, environment and interactivity of the spaces. Th space sets the stage by enlightening the feel of isolation and brings you in towards a center of social interaction. This includes social spaces like studios, cafes, game centers, workshops and play centers.



F- Active Playscape

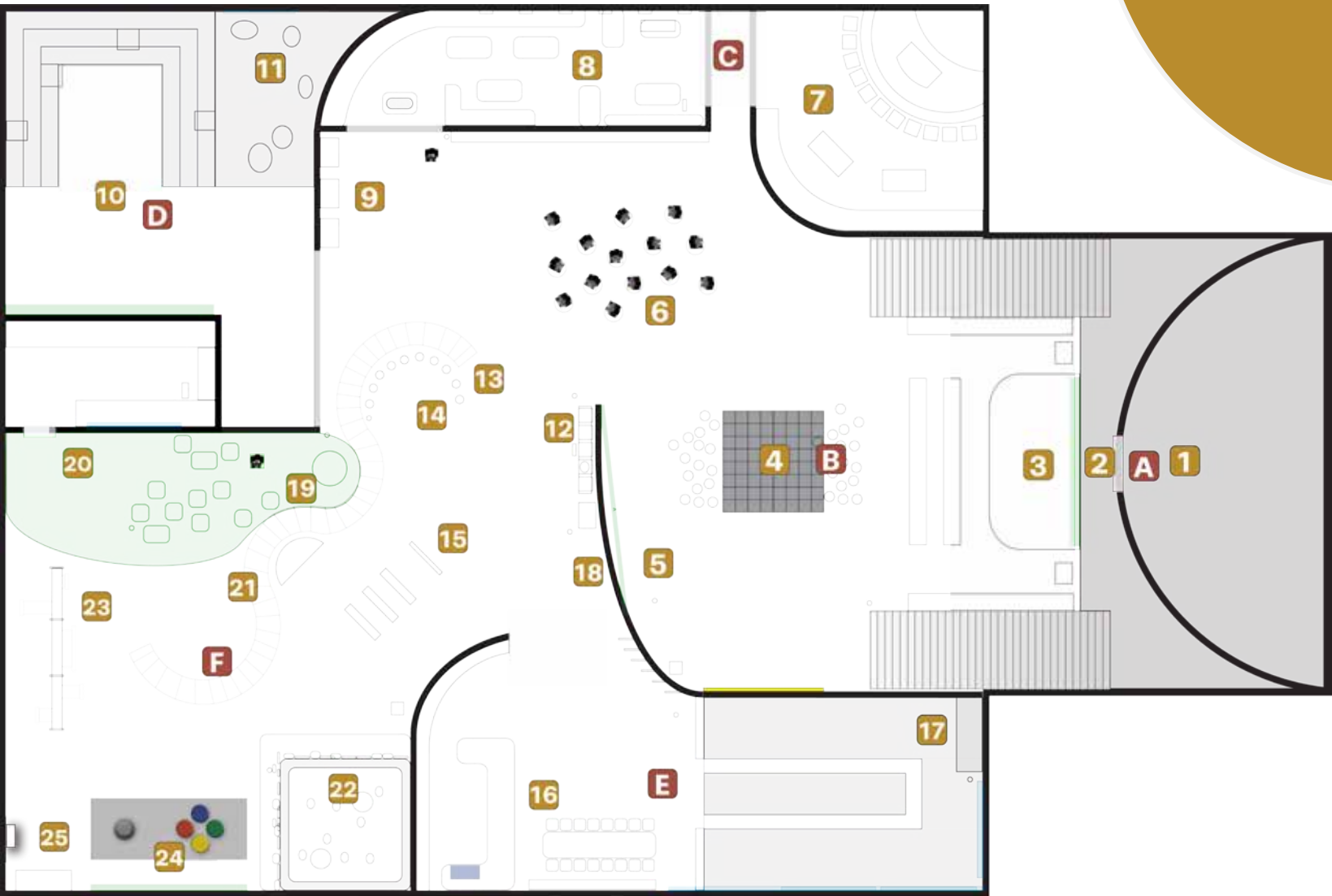


D-Games Lounge



C-Workshop Space

Floor Plan



- | | | | | | |
|---|---------------------------|----|--|----|---|
| A | Introduction to isolation | 1 | Semi-Isolation | 13 | Board Game Panels and Dice |
| B | Stage/Visual Sharing | 2 | Entrance Upper Level 1 view | 14 | Light Tap Game |
| C | Gift Store and Workshops | 3 | Event Stage | 15 | Photo Arch |
| D | Games Lounge | 4 | Large Scale Game Board | 16 | Bar/Counter |
| E | Morning Cafe, Night Bar | 5 | Digital Bulletin Wall | 17 | Elevated Community |
| F | Active Playscape | 6 | Who Are They Mannequin Crowd Installation | | Seating with Books and Board Games |
| | | 7 | Workshop Events | 18 | Info Light Game |
| | | 8 | Gift Store | 19 | Sharing Globe |
| | | 9 | Mystery Game Box and Music Vending Machines | 20 | Broadcast/Radio Audience |
| | | 10 | Seating Levels | | Mobile Seating |
| | | 11 | Beanbag Lounge and Photo Wall | 21 | 5 Player Air Hockey Table and Game Semi |
| | | 12 | Bench with Personalized Mannequin Installation | 22 | Couched Ball Pit |
| | | | | 23 | Swings |
| | | | | 24 | Large Scale Classic Games |



1-Semi-Isolation

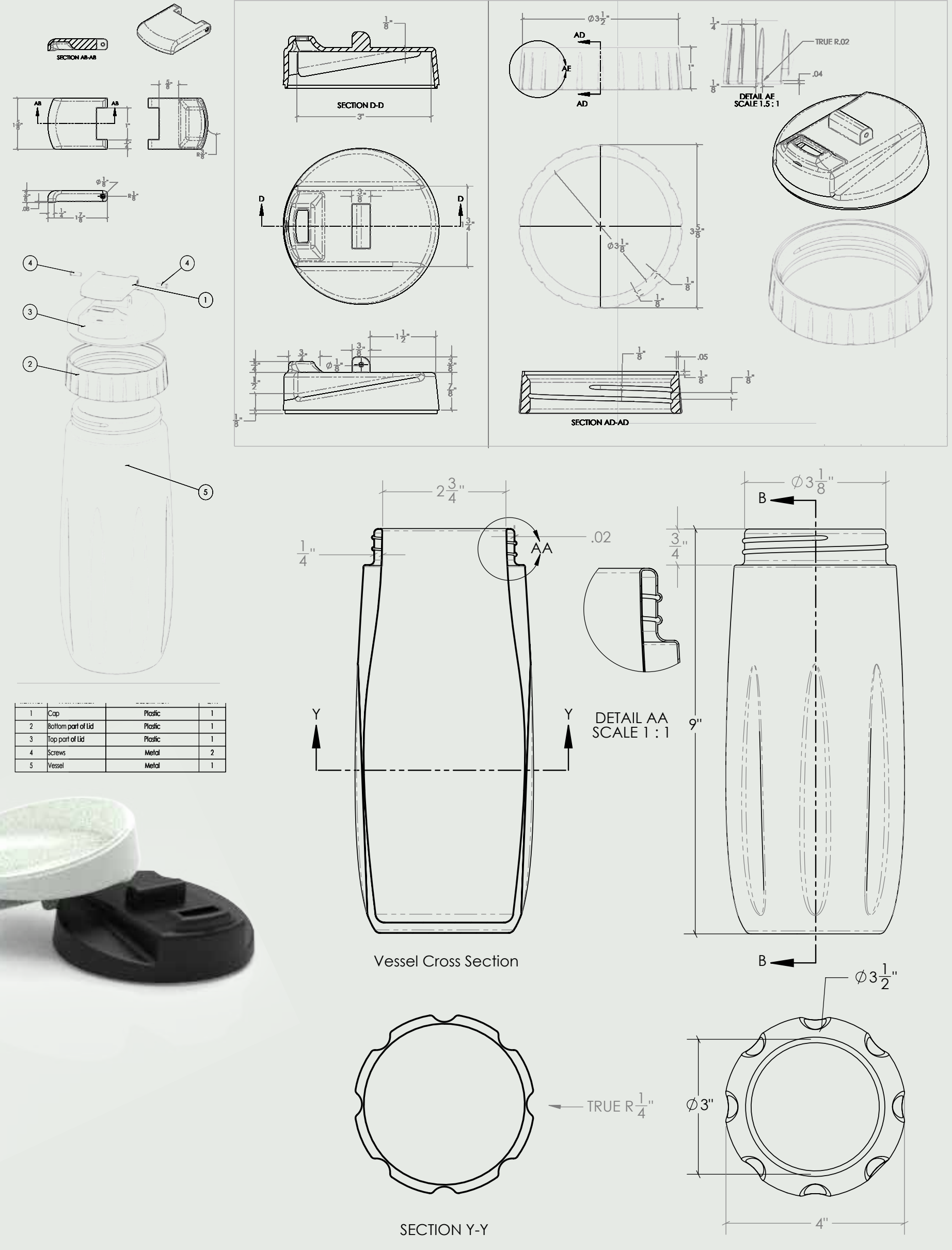


4-Large Scale Game Board



19-21-Game, Interactive Experience, Mobile Seating

water bottle design



1	Cap	Plastic	1
2	Bottom part of lid	Plastic	1
3	Top part of lid	Plastic	1
4	Screws	Metal	2
5	Vessel	Metal	1

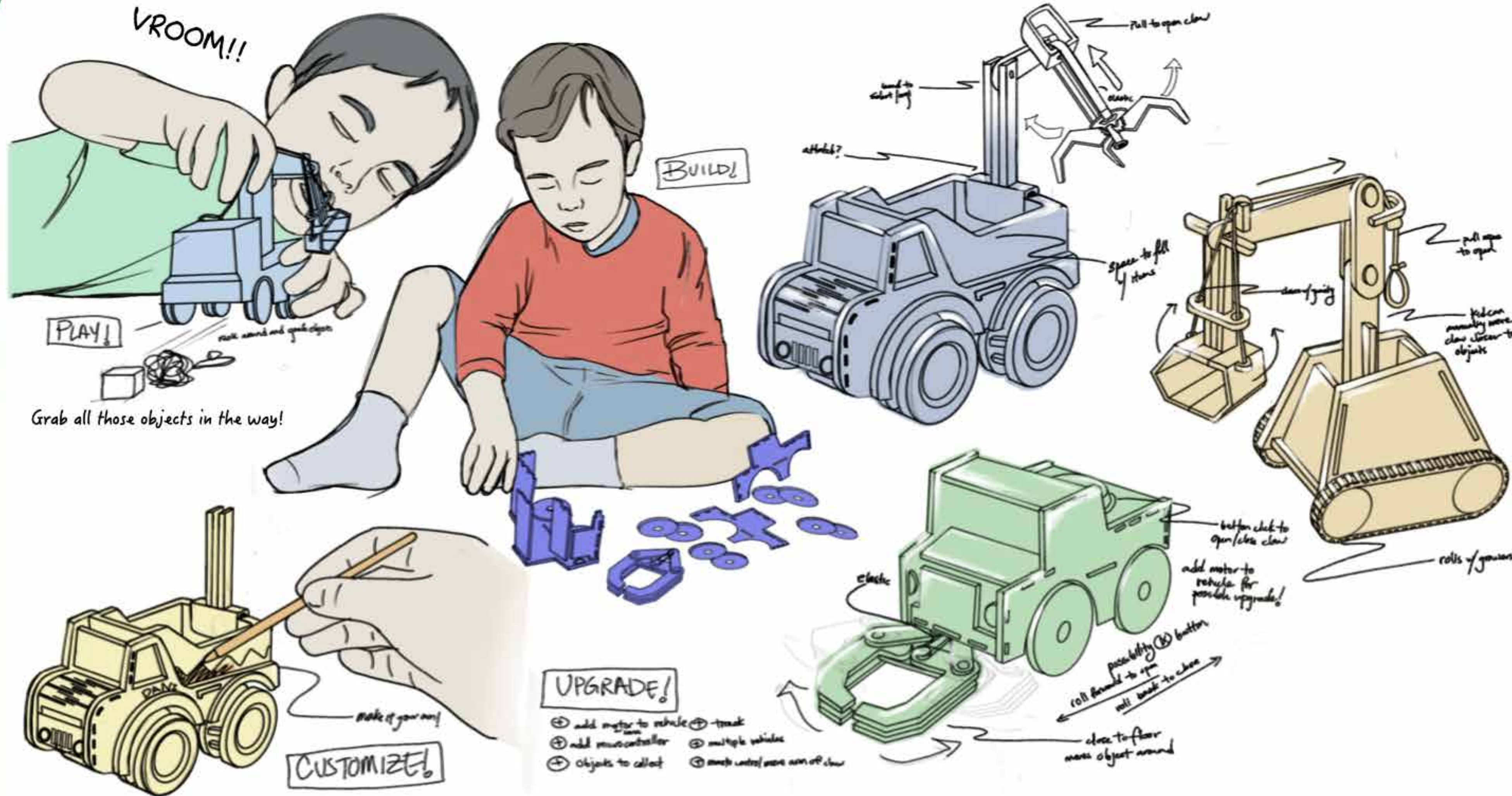
Sketch idea 1: claw construction trucks



Sketch models 5-9



- 1- Build!
- 2- Customize!
- 3- Play!
- 4- Upgrades!





THANK YOU!

Audrey Ji's Design Portfolio 2022

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