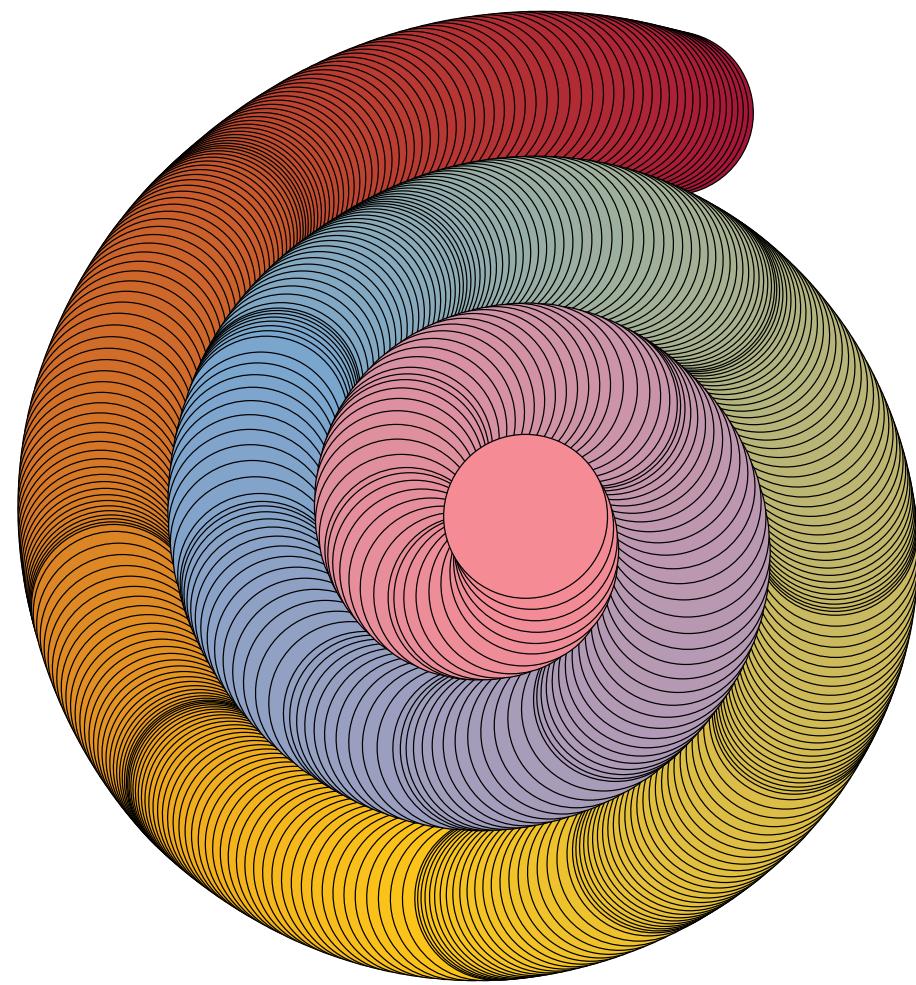


2019
2020



GIZEM OKTAY
DESIGN PORTFOLIO



INFO

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BIO

Gizem Oktay is an interaction designer working in cross-disciplinary ways to weave epistemologies of design and science into each other. She is a graduate of MA Illustration at the Maryland Institute College of Art in Baltimore. Having earned a Bachelor's degree in Nutrition and Dietetics, her background in food science helps her to retain a trans-boundary approach to design. She is interested in using computing as a speculative medium to create beyond-human design artifacts that explore ways of turning ancestral knowledge into the design of the future.

CONTENTS

1. AN ONTOLOGY DINNER

speculative design, installation

2. I BARK IF YOU GET CLOSE

wearable tech

3. SOFT POWERS

interaction design, biology

4. LIMINAL BEINGS

soft robotics, pneumatics, animism

5 PUBLICATIONS

writing

6. ILLUSTRATIONS

illustration, animation

1 – AN ONTOLOGY DINNER

Unravel The Code Class Semester Long
Group Project & UNRVL'19 Exhibition
2019

Tools & Software

- Rhino
- 3D Printing
- Separatory funnels
- Food
- Adobe Illustrator

Process

- Literature Review & Research
- Ideation
- Prototyping iterations
- Production
- Exhibition

Outcomes

- Installation
- Printed zine
- UNRVL'19 Exhibition
- Project Presentation



Research question: How might we interpret our relationship to food to create a reverence for the entanglement of humans and non-humans?

What?

A fivefold food installation designed as nourishment and reverence to nature.

How?

3D printed installation with separatory funnels containing food, complemented with a written publication.

Why?

A motivation for paying reverence to nature and acknowledging the agency and personhood of non-human entities surrounding us.

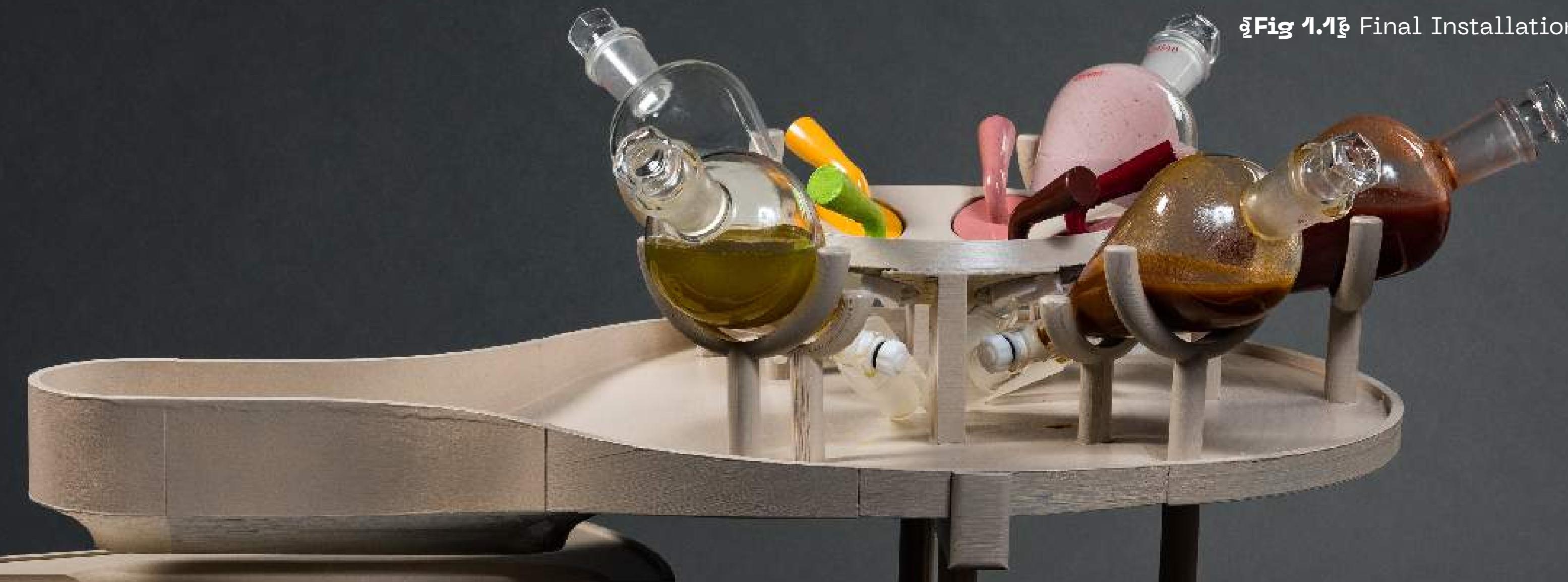


Fig 1.16 Final Installation

Inspiration

When stripped down from external meaning; food is a complex structure of what like every human, non-humans also need: nourishment. Food is reward, as well as reinforcement. It is luxurious, as well as foundational. For this project, seeing food as an ontological narrative provided us with a new lens to look at the world.

Nourishment as something every animate and inanimate being depend on and being composed of the same molecules and elements showed that if our needs are similar, then the way we regard our ontological importance can also be similar.

Process Breakdown

After the ideation and conceptualization process was completed, we 3D printed prototypes and iterated with scale **Fig 1.3**. The first prototype showed the need for a transparent container for food. Later, we decided to use separatory funnels for this purpose **Fig 1.4**.

Fig 1.2 Final model on Rhino

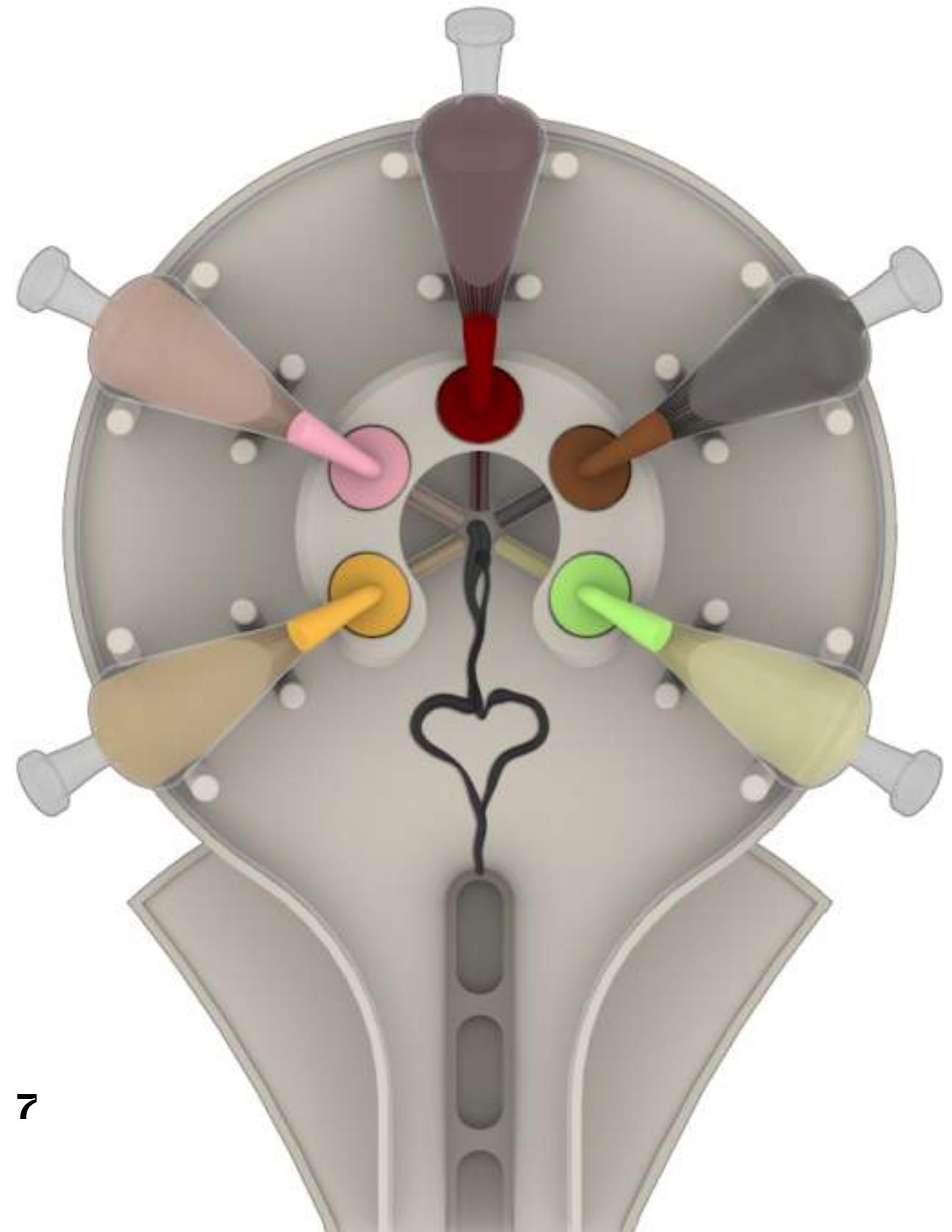


Fig 1.3 First prototype

The model follows several formal decisions made to best display the different types of food metaphors, the multi-layered structure of it represents a mountain-top where all the nourishment flows into soil **Fig 1.4**.



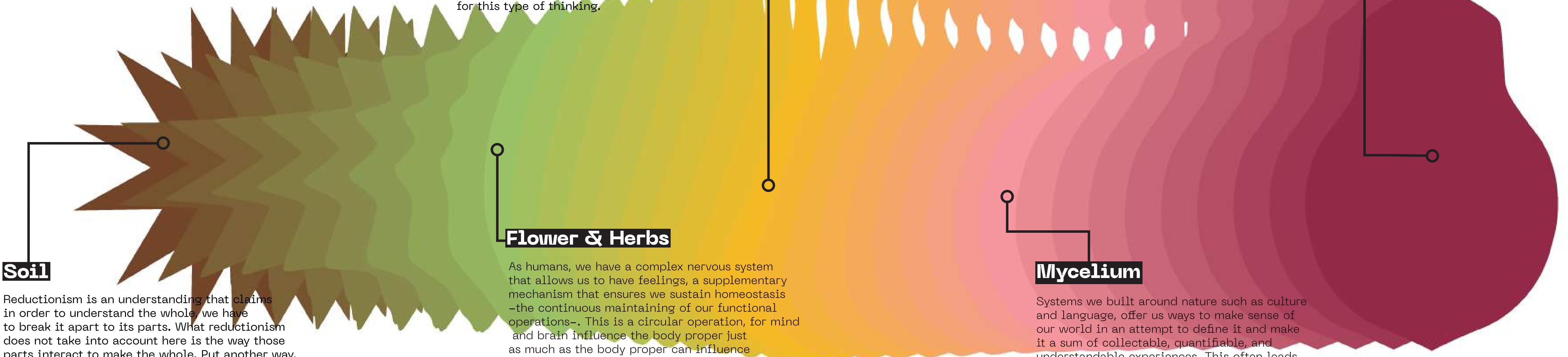
Each color and food symbolizes a metaphor which is part of a shared philosophy of the project group about how we relate to earth and non-human entities.

Excerpts from the written philosophy accompanied the piece as a zine which involves a poster **Fig 1.5**

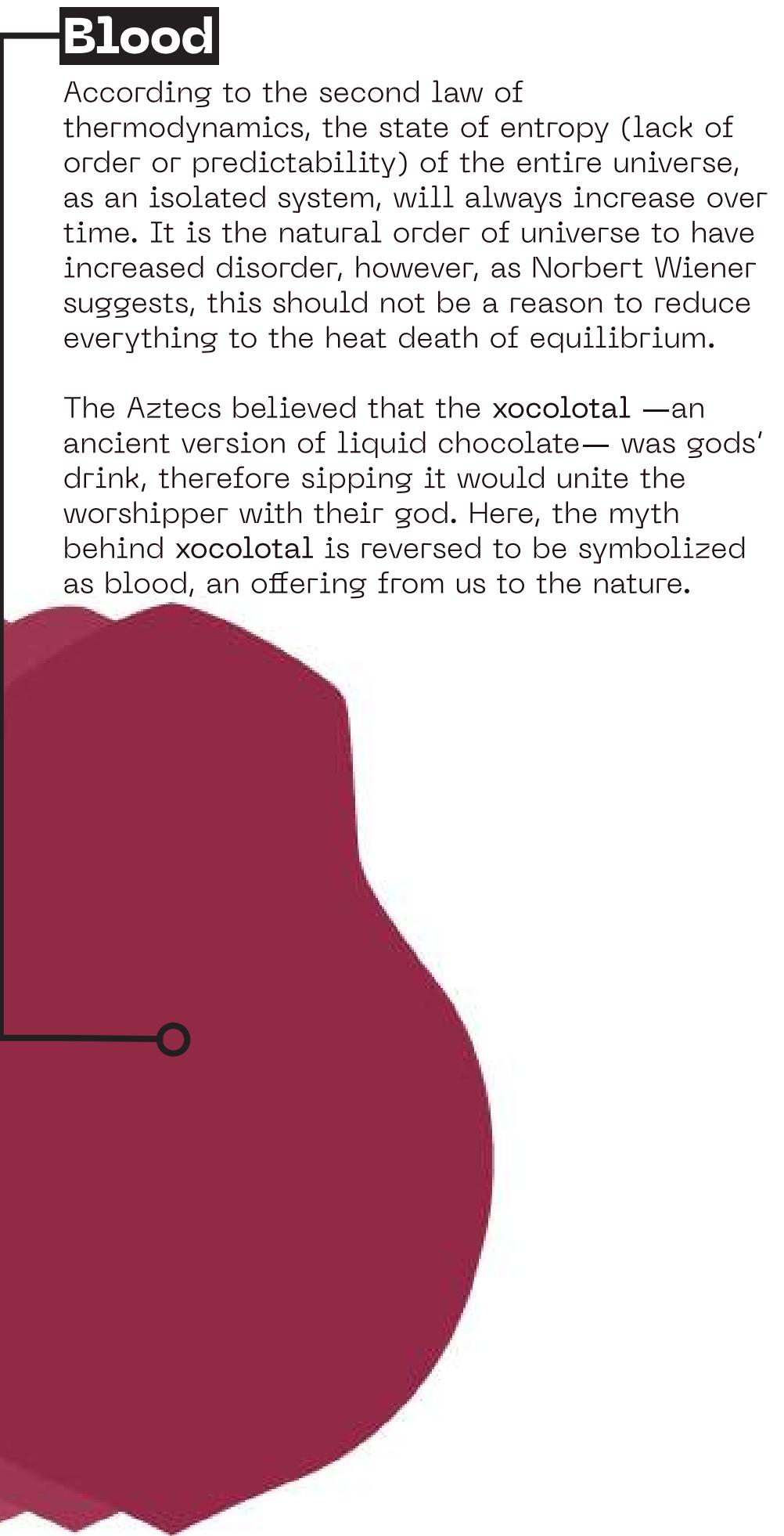


Fig 1.4 Final Installation

THE WAY WE ARE ENTANGLED



Soil is the literal foundation for our physical world and the complex systems built upon it. Its very nature is subject to reductionist thinking; but in contrast to how it is widely understood as singular, soil is a composite entity made of a diverse array of materials. Without recognizing these many different parts that create it, soil would not exist. Non-reductionist thinking recognizes the unknowability or irreducibility of nature and systems to their parts and suggests a humble attitude to study them.



A N ONTO LOGY D I N NER

Fig 1.6 Project Logo



Fig 1.7 Page from publication

Fig 1.8 UNRVL'19 Exhibition



Fig 1.9 the Trio (Hanah Murphy, Gizem Oktay, Tyler Brunner)

[Link to Group's Presentation](#)

2 – I BARK IF YOU GET CLOSE

Part of the “Designing into the Future” residency at the 5th Istanbul Design Biennial 2020

Tools & Software

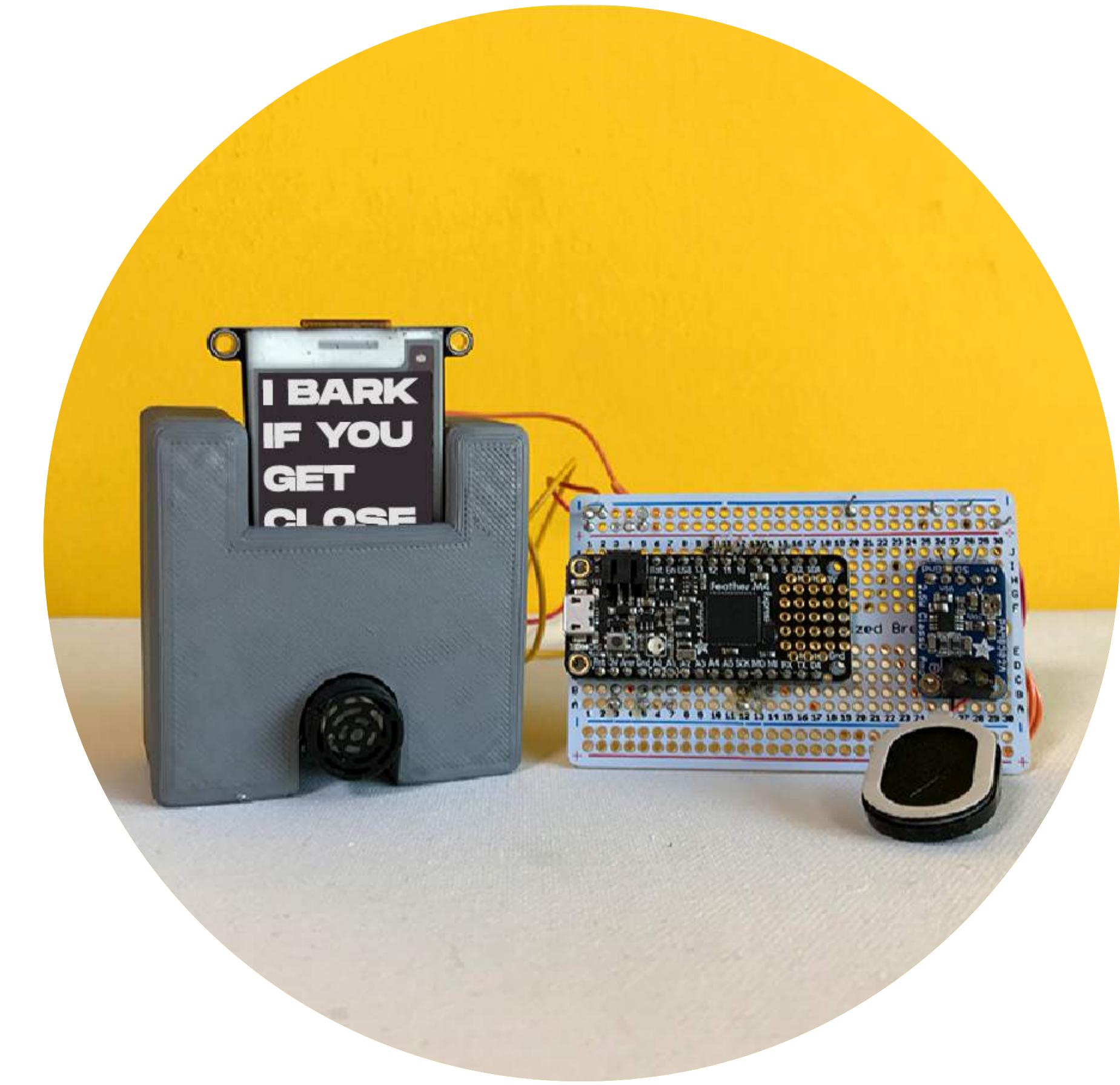
- Circuit Python
- 3D Printing
- Soldering
- After Effects
- Adobe Illustrator
- Sensors & display

Process

- Concept Development
- Ideation & Prototyping
- Production
- Documentation

Outcomes

- Wearable prototype
- Illustrations
- Presentation to the Design Biennial
- Instructables page (in progress)



Research question: How can a speculative design object highlight the importance of social distancing during COVID-19?

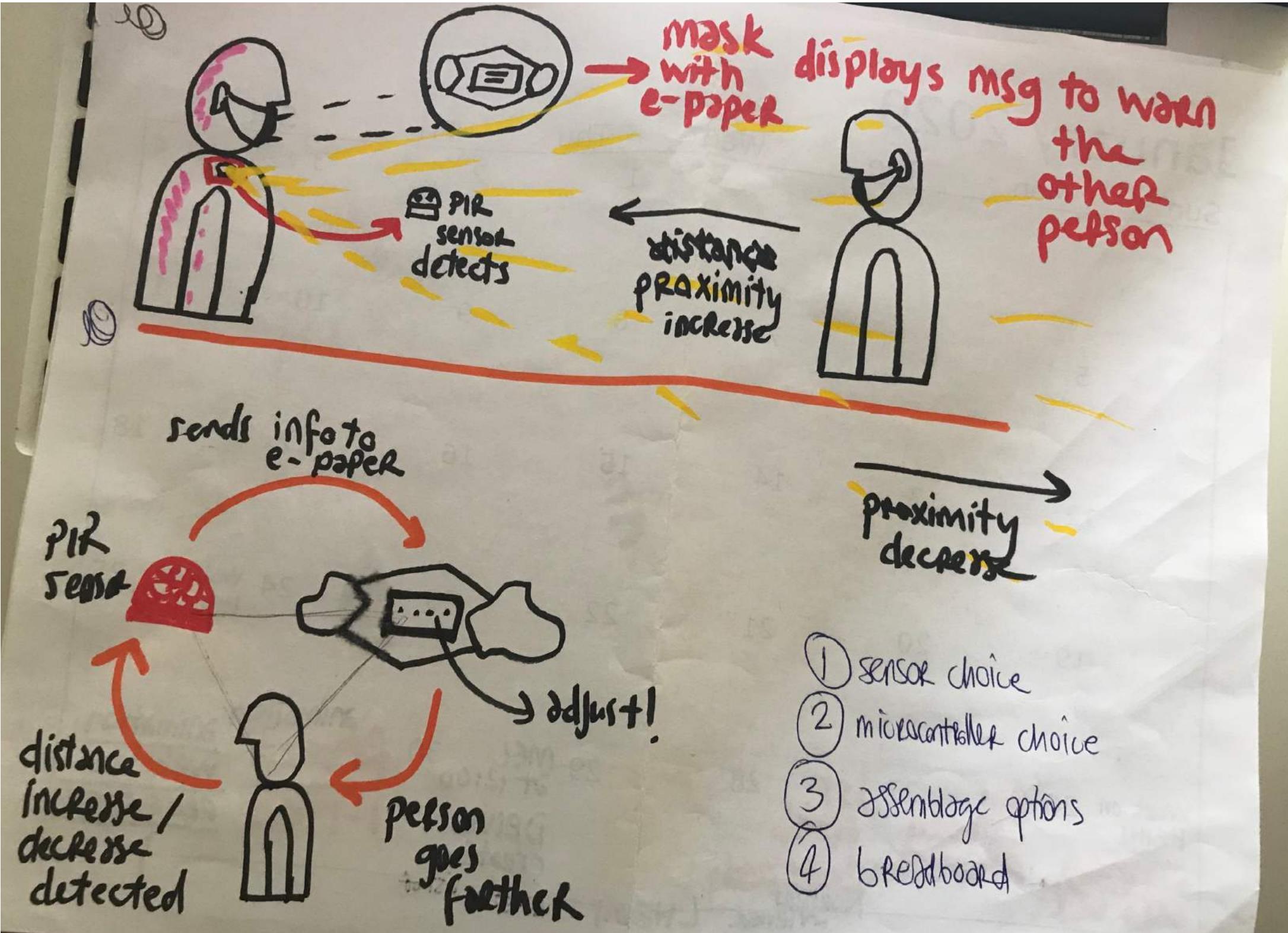


Fig 2.1 Ideation & drawing

What?

A wearable shoulder piece that makes a barking sound if someone approaches to wearer beyond the defined distance threshold.

How?

Consisting of an ultrasonic rangefinder, e-ink display, amplifier and speaker, the code written on CircuitPython and embedded in the system triggers the sound.

Why?

The motivation behind this project was the responsibility I felt as a designer to respond to the life as it became with the pandemic.

Process Breakdown

As seen on **Fig 2.3**, I initially thought of a mask with an e-ink screen on it to display a message to adjust the distance of the approaching person. However, further thinking proved that implementing a screen on the mask was not going to be comfortable for the wearer, and combined with the factor of the inadequate size of the screen, it was not feasible.

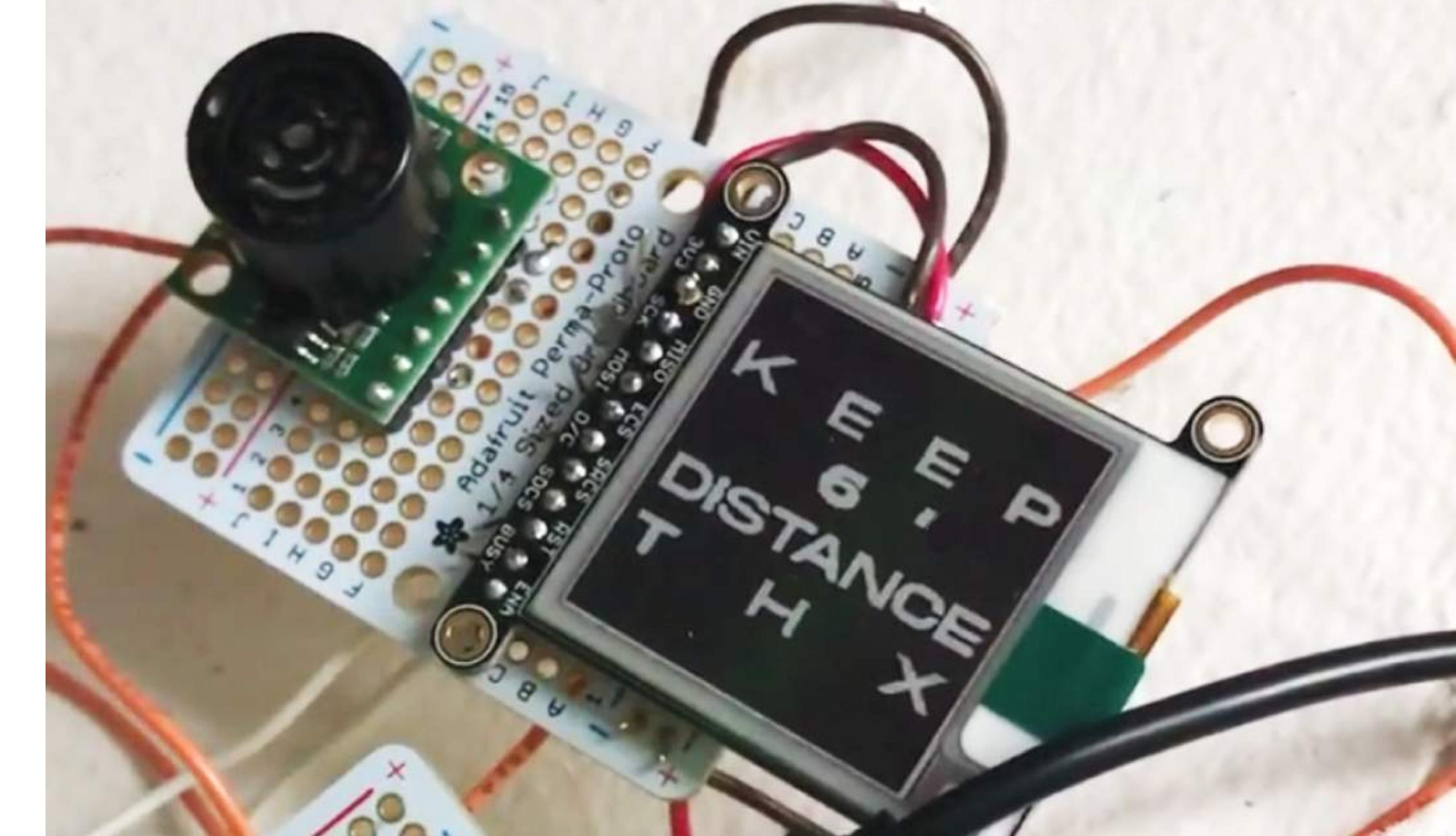


Fig 2.2 Screen display tryout

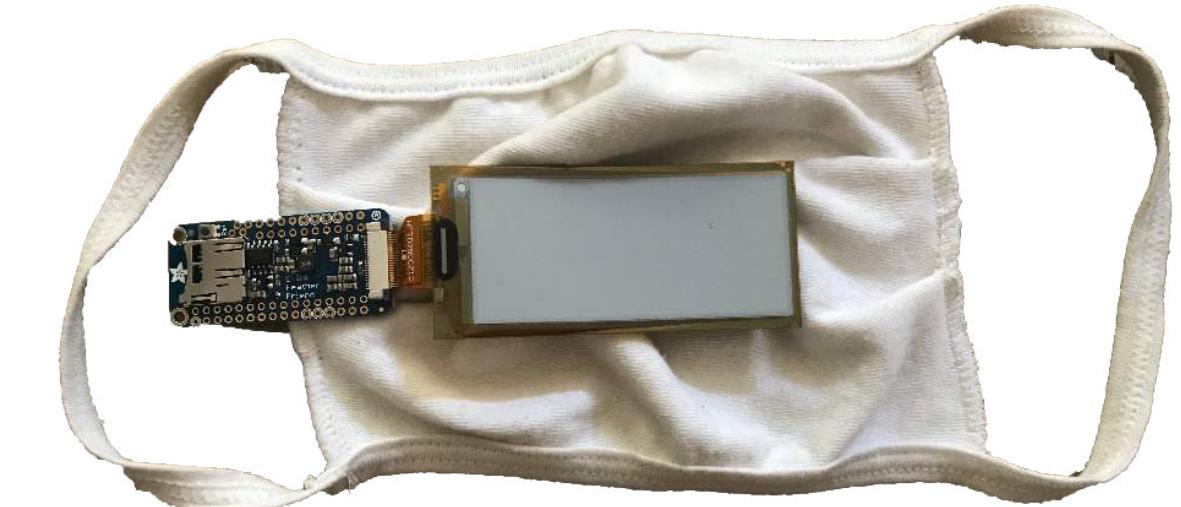


Fig 2.3 Rapid prototype

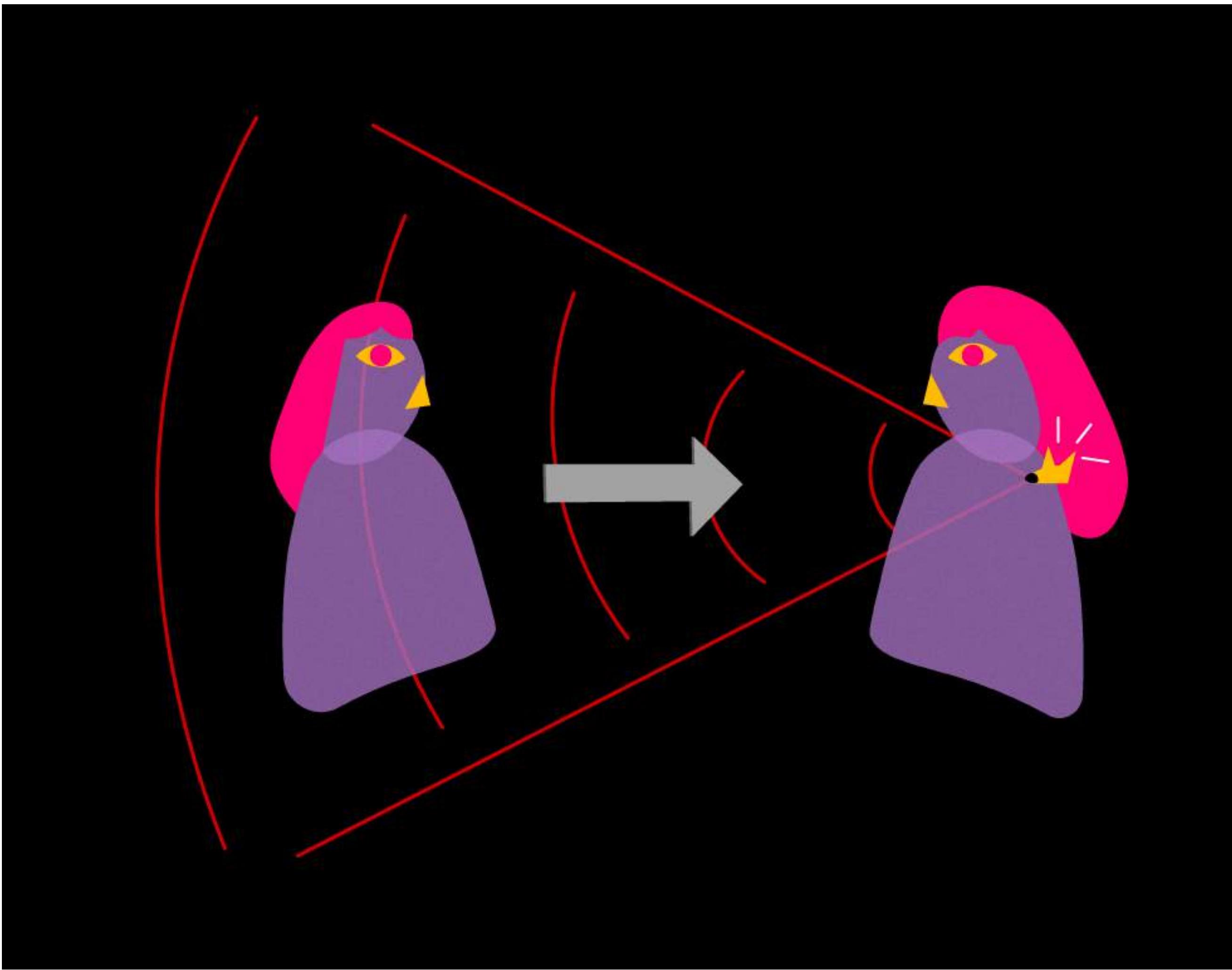


Fig 2.4 Illustration showing how the system works

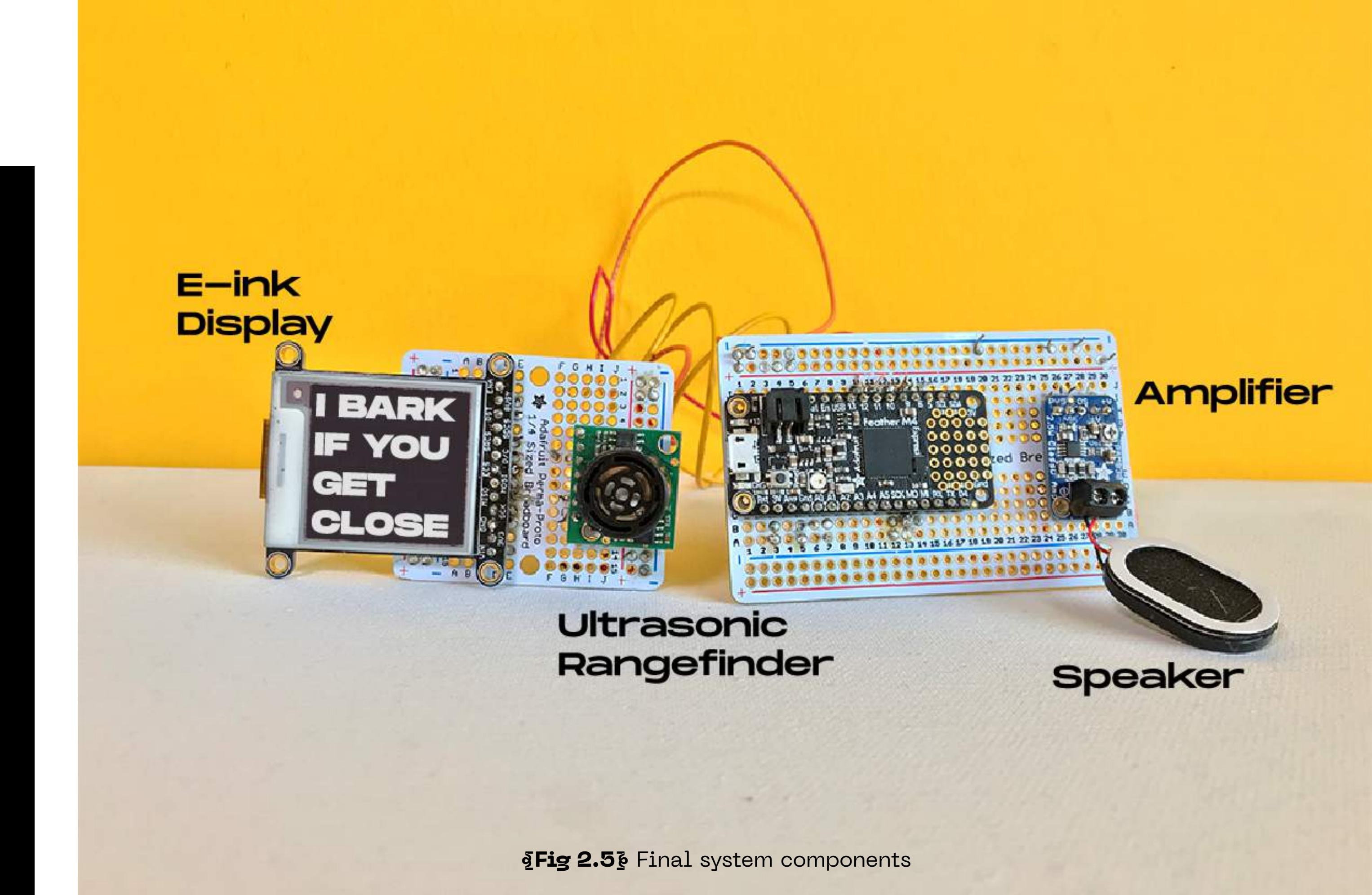


Fig 2.5 Final system components

Process Breakdown (continued)

After deciding the inefficiency of the screen alone, I decided to introduce a sound component and added an amplifier and speaker to the system for the second prototype, while using the screen as a 'label' for the product. **Fig 2.5**

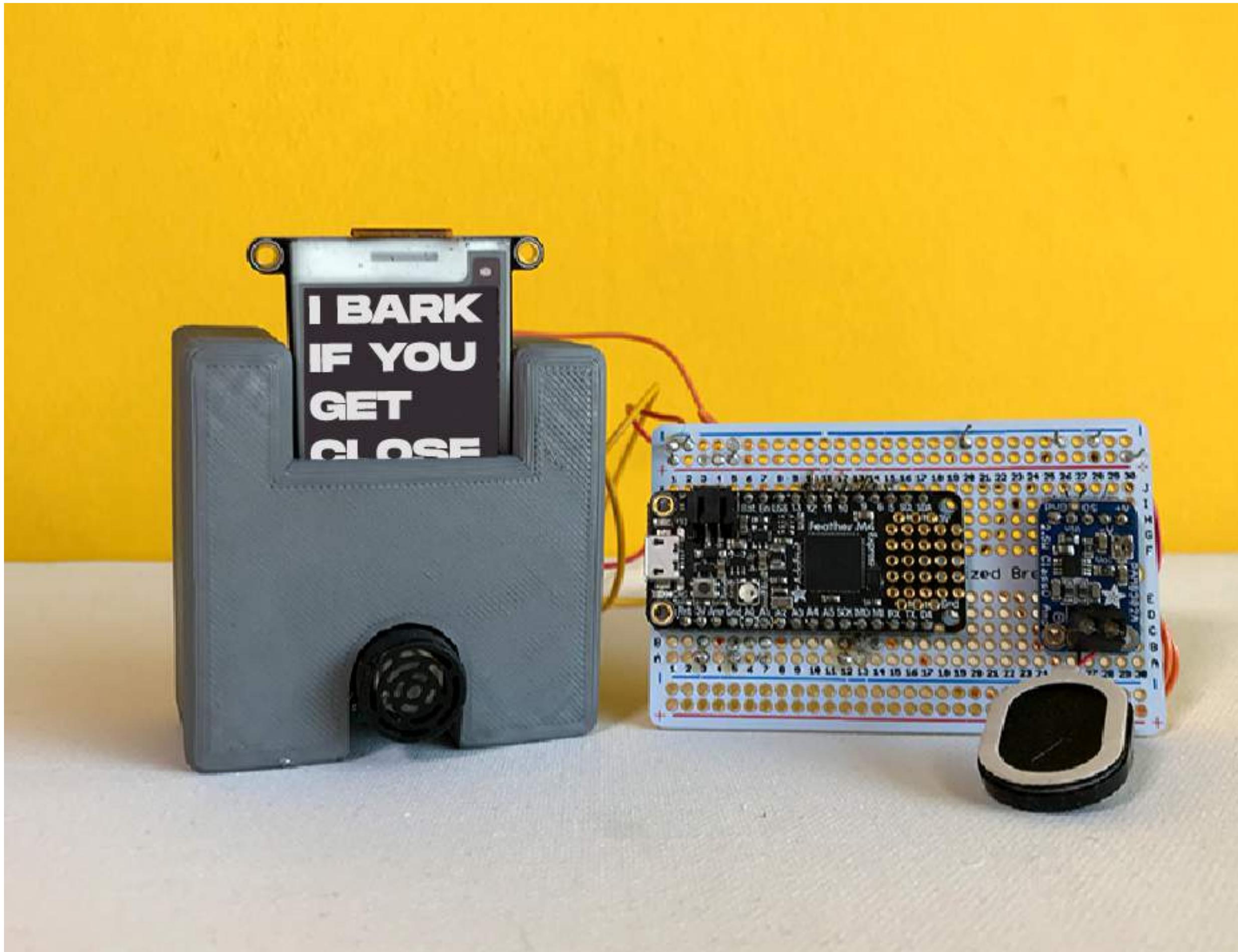


Fig 2.6 Second prototype with a 3D-printed case



Fig 2.7 Second prototype on wearer

During the development of the system, I presented the idea and the concept at the virtual design residency organized by the 5th Istanbul Design Biennial. Through the residency, I was awarded a production budget for the completion of the prototype.

3 – SOFT POWERS

MICA & Willem de Kooning Academy
International Collab 3-Day Workshop
2019

Tools & Software

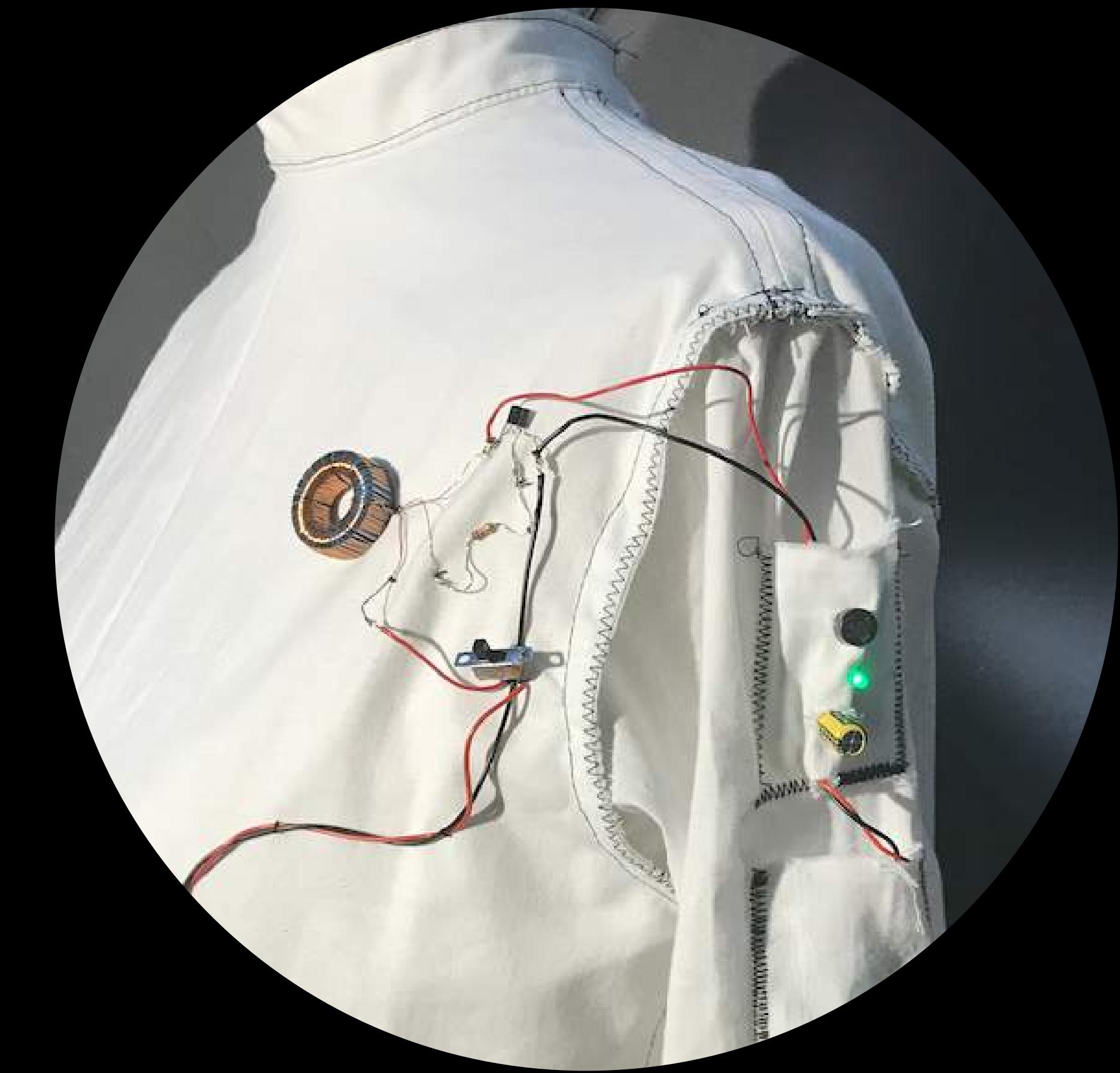
- Sewing
- Electronics
- Origami
- Circuitry
- Adobe Illustrator

Process

- Joule Thief Workshop
- Ideation & Prototyping
- Production
- Exhibition

Outcomes

- Exhibition Poster
- Pop-Up Exhibition
- Project Presentation
- Garments



Are there similarities between the way humans and non-humans connect? Can the enzyme-substrate complex be an inspiration for communication?

What?

A set of connecting garments that light up when contacted to each other

How?

Utilizing the Joule Thief, a minimalist self-oscillating voltage booster, one of the garments work as a switch that completes the circuit.

Why?

The garments are represented as a metaphor to visualize the enzyme-substrate complex, a temporary molecule formed when an enzyme comes into perfect contact with its substrate.



Inspiration

Inspired by Ortega y Gasset's article on metaphor and its theatrical qualities, we wanted to use enzyme-substrate complex as a metaphor for reciprocity and connection.

Enzyme-substrate complex uses as low energy as possible to operate, same goes for Joule Thief, a voltage oscillator that is capable of 'stealing' power even from dead batteries. These two concepts share a connection, and connecting garments became a visual representation for the connection.



Fig 3.2 Joule thief circuit

Process Breakdown

As part of MICA & WdKA workshop, we first received a workshop on how to build a joule thief **Fig 3.2**. After understanding how the circuit works, we built a concept around the joule thief to use it as part of our rapid prototype.

We used the enzyme-substrate complex as a concept for garments. The cut of garments were made in a way to resemble the key-lock analogy used in describing the enzyme-substrate complex, first developed by Emil Fischer in 1894 **Fig 3.4**.

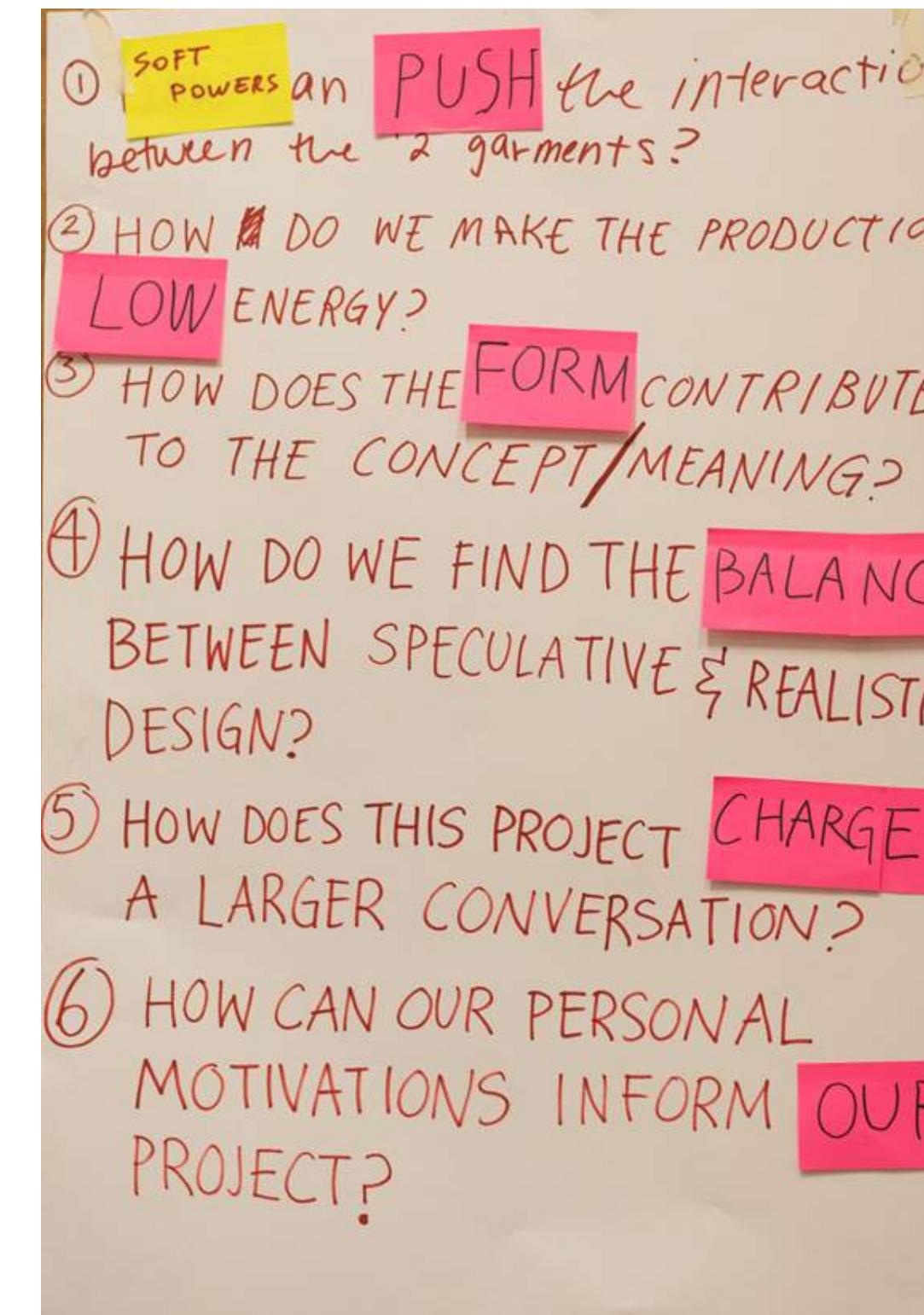


Fig 3.3 Concept building & ideation

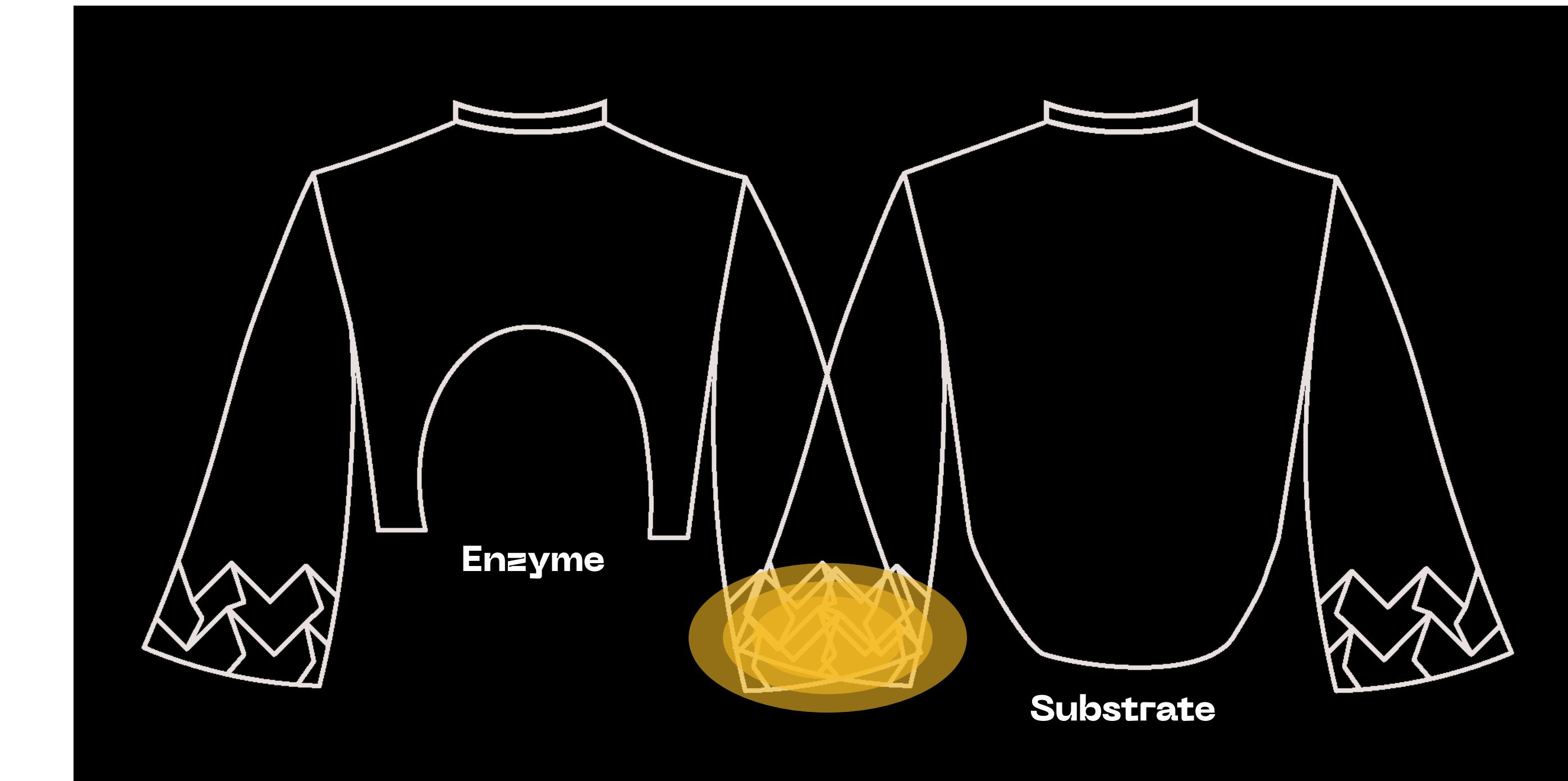


Fig 3.4 Enzyme-substrate complex in garment cut



Fig 3.5 Lights turning on in contact

One of the garments was designed to be the substrate, and the other to be the enzyme, so when they connected together, a reaction would occur. In this project, the reaction was the lights embedded in the garment turning on.

Fig 3.5



At the end of the three-day project, we made the connecting garments, a video to explain how the garments connect, a poster to announce the pop-up exhibition, and a presentation to introduce the concept to the audience.



4 – LIMINAL BEINGS

MICA'20 Thesis Project

Soft robotics, electro-pneumatics, animation

2020

Tools & Software

- Rhino
- Arduino
- Casting/Molding
- Circuitry
- Adobe Illustrator
- Adobe After Effects

Process

- Research & Literature Review
- Modeling on Rhino
- 3D Printing
- Casting/Molding
- Circuit board assembly
- Arduino code
- System assembly
- Documentation & animation

Outcomes

- Animations
- Essay on Liminality
- MICA GRAD SHOW
- Light Grey Art Labs Senior Show
- 5th Istanbul Design Biennial presentation



Research Question: If the face value of animacy is breathing, can a breathing object be considered animate?

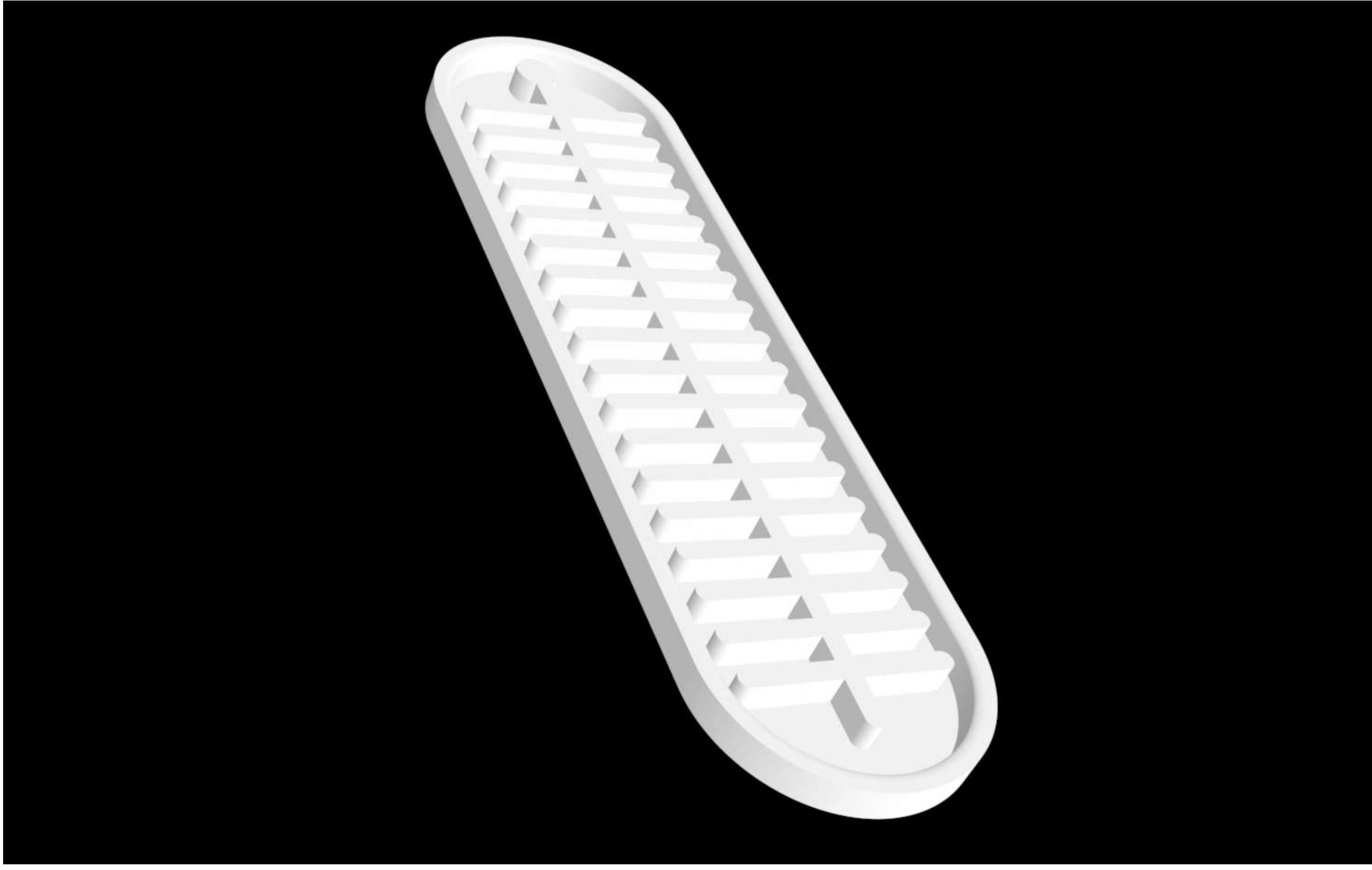


Fig 4.1 Single leg mold modeled on Rhino

What?

Series of soft robotics actuated with an electro-pneumatic system

How?

Cast silicone exo-skeleton actuators connected to a system, air input/output controlled with Arduino code.

Why?

A motivation to create visual metaphors for a liminal being, something that sways in between human and non-human.



Fig 4.2 Gripper mold



Fig 4.3 Single-leg mold

Inspiration

Inspired by readings of animism, object-oriented ontology, and anthropology, I wanted to create metaphors that discover liminality, a state of betwixt and between defined by anthropologist David Turner.

Combined with ideas of Animist beliefs, I wanted to visualize if it would be possible to give agency to an object by giving it animate qualities, such as breathing.

Process Breakdown

After modeling a set of molds on Rhino Fig 4.1, I 3D printed them using PLA filament. I cast actuators using silicone. Each actuator is composed of two parts; one part being the skeleton, the other serving as a cover to make sure the skeleton has no air coming in.



33

Fig 4.4 Inflated soft robot



Fig 4.5 Various prototypes

34

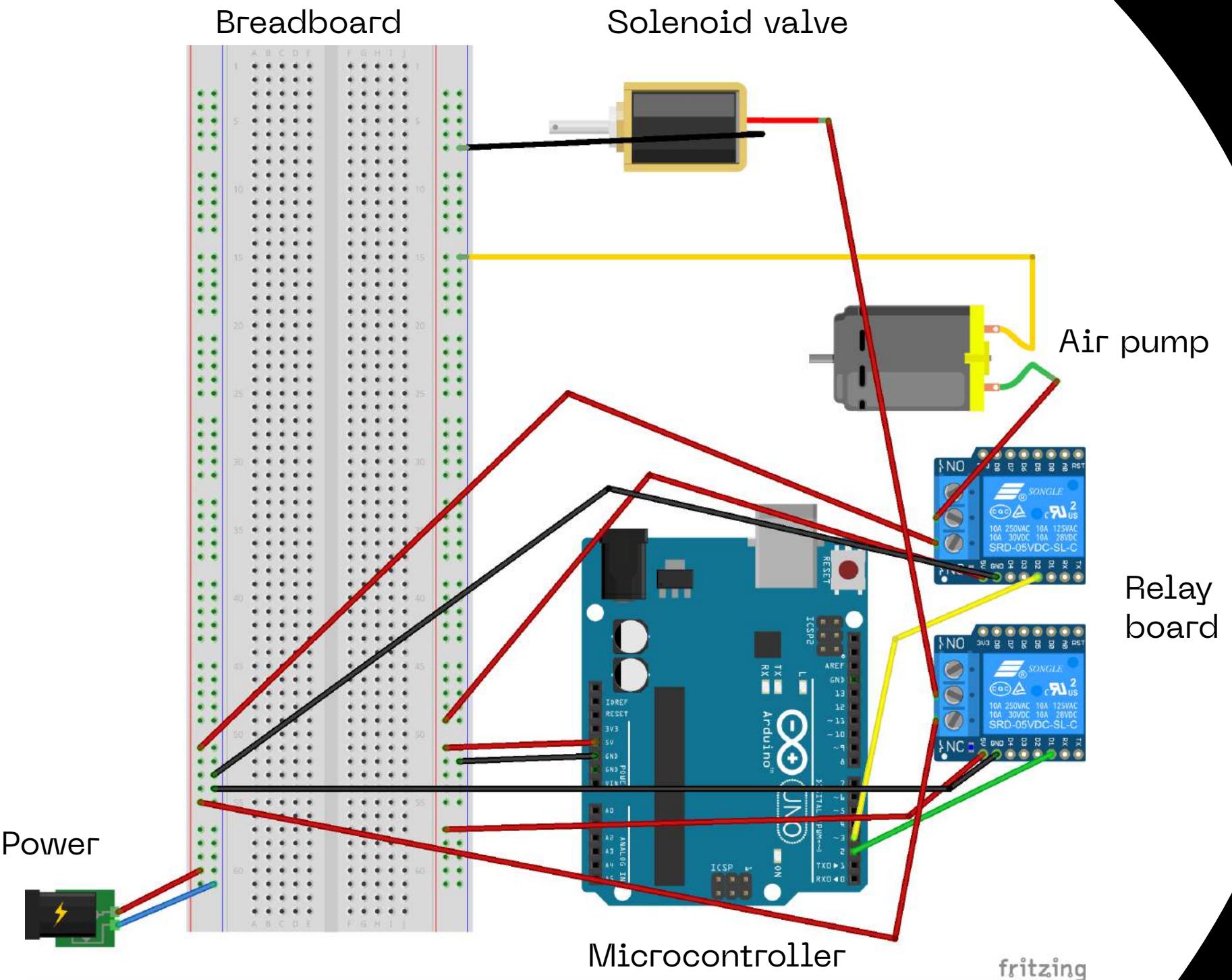


Fig 4.6 Fritzing scheme of system

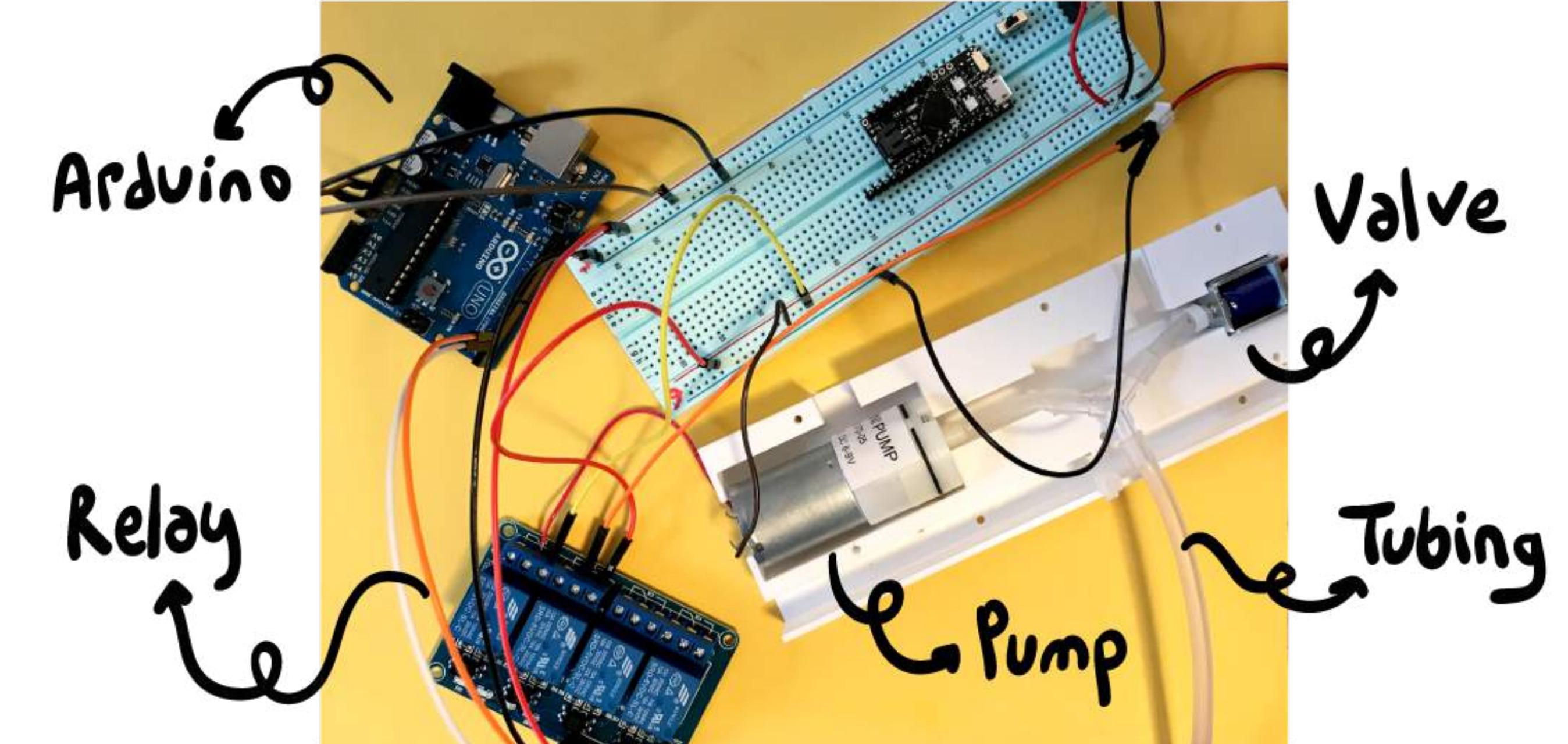


Fig 4.7 Complete system

I connected joined actuators to a tubing connected to the electro-pneumatic system. The system is composed of an air pump, solenoid valve, relay board, microcontroller, breadboard, and power adaptor **Fig 4.6**. The control board is stabilized via custom 3D printed case **Fig 4.7**.

The system is a reinterpretation of a version made by Harvard's Soft Robotics Toolkit, which uses transistors and a voltage regulator. This system uses a relay to replace those components.



Fig 4.8 Soft robot animation
(Click the image)

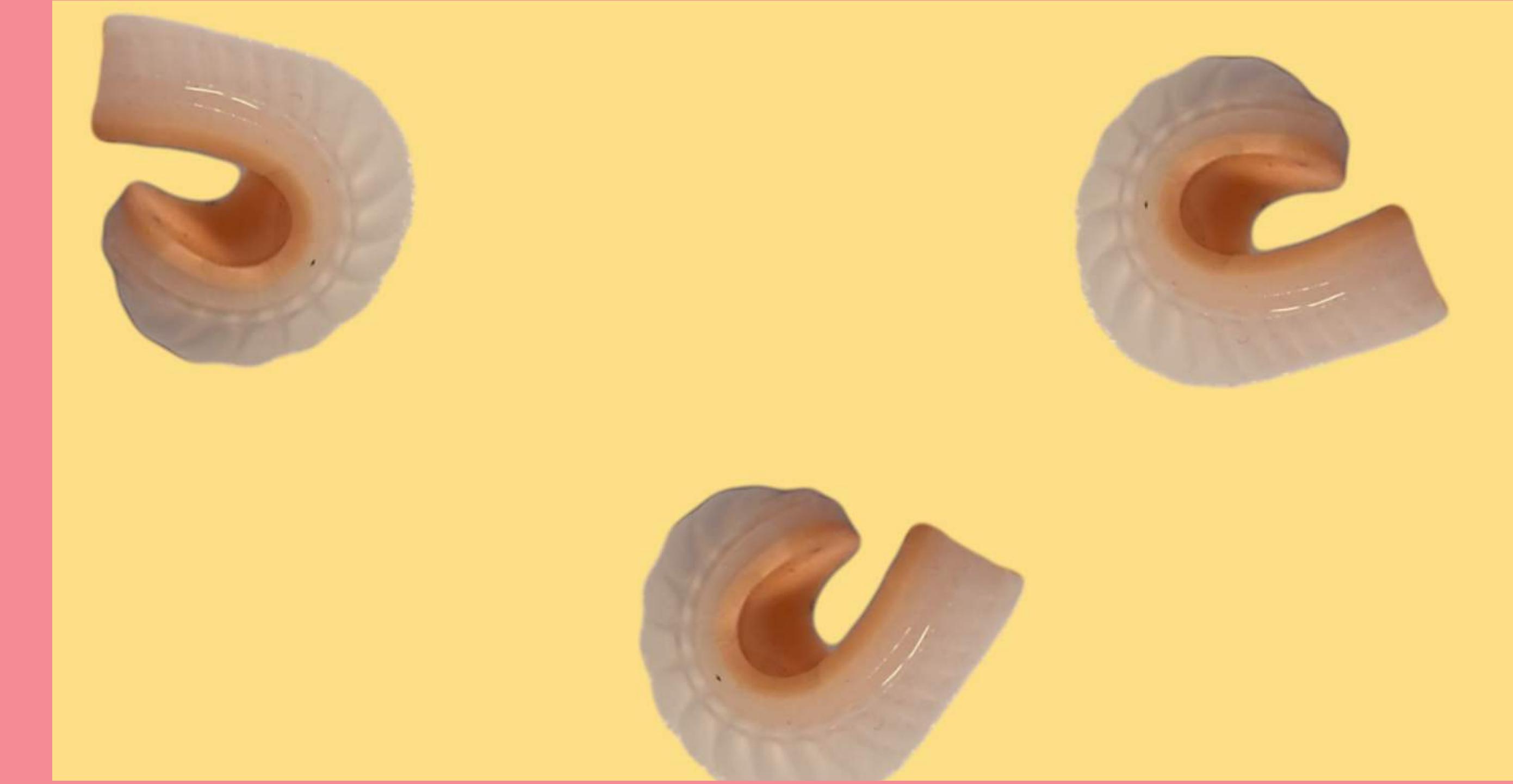


Fig 4.9 Soft robot animation
(Click the image)

I turned the documentation of the movement of the prototypes into a series of animations using After Effects **Fig 4.8, 4.9**. The intention for the animations was to demonstrate the performative character of the objects.

5 – PUBLICATIONS

Essays published on anthropology,
design theory, and philosophy

2020

**University of Pennsylvania
Weitzman School of Design's
The McHarg Center's blog
"In the Process of a Relational Becoming"**

In an attempt to explore the phenomenon of liminality as a design framework, I penned an article on McHarg Center's blog about how quantum physics, animism and liminality relate to each other in converging mind and matter, human and nonhuman, and nature and technology. I proposed physics as a 'good place to start' to explore the mind and matter convergence via quantum theory, and showed similar thinking patterns in Animist beliefs about how relationality works on a systems level.

[Link to article](#)

The advent of quantum theory brought about a new understanding of how the world works. The convergence of mind and matter on the microscopic level indicates a reciprocity between the two, thus challenging the position of mind over matter. In the realm of scientific discovery, this is groundbreaking news. However, similar ways of thinking are observable in the Aboriginal peoples worldview which long precedes scientific methodologies.

In the Animist belief system, mind is not superior to matter and the personhood of animate and inanimate agencies are recognized. This understanding allows a non-dualist lens into the world where the division of human and non-human is dissolved into an entangled state of relational becoming.

...This form of thinking is in line with many thinkers and academics who call for a multi-species kinship, and amongst them is the biologist and philosopher Donna J. Haraway. She writes: "A close look at human skins, guts, and genomes reveal that human beings are a consortium of sorts, a medley of microbial becomings."

The multi-species kinship achieved in the Animist belief also reflects itself in the design practices of the Maori. The design of wharenui (the big house) is the result of relating the structure to the Ancestor. In wharenui, the porch is termed the roro (brain), the door is the kuwhaha (mouth), and the window is the matapihi (eye).

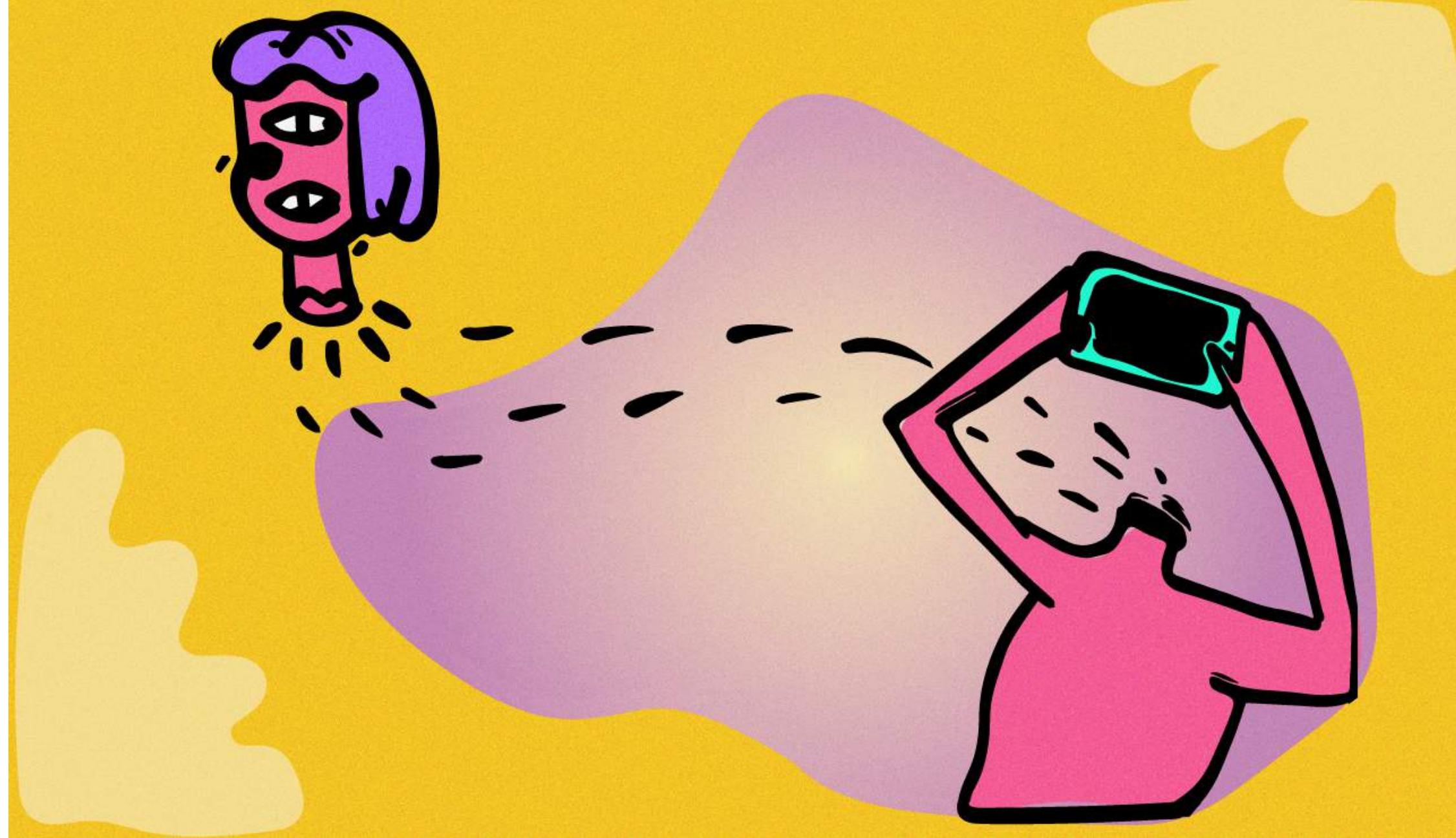


Fig 5.1 Cover illustration

Liminality: A Metacognitive Tool

This essay considers the phenomenon of liminality as a space between dualities like nature and technology, mind and body, art and science, human and non-human. The article claims that one thing dualities do not take into account is the role of "interface" and the agency it has like the membrane of a cell wall. I wrote how liminality can be a tool to rethink the dualities surrounding our thinking. The essay accompanied my thesis projects "Liminal Beings", and was published on Medium.

[Link to article](#)

On the right: Excerpts from the essay

The story between humans, nature, and machines became simpler than it should be. It became reductionist in a way that it does not take into account different actors in an entangled, complex network where there are countless unknowables to human awareness and therefore fatalist descriptions cannot be our go-to solution to explain the complexities around us.

If domination is practiced in a hierarchical and reductionist way, then one way of infiltration could be eliminating reductionism. As vague as it may sound, discovering non-reductionism is found in equally vague places: places of ambiguity, places where opposites merge, and in states of in-betweenness.

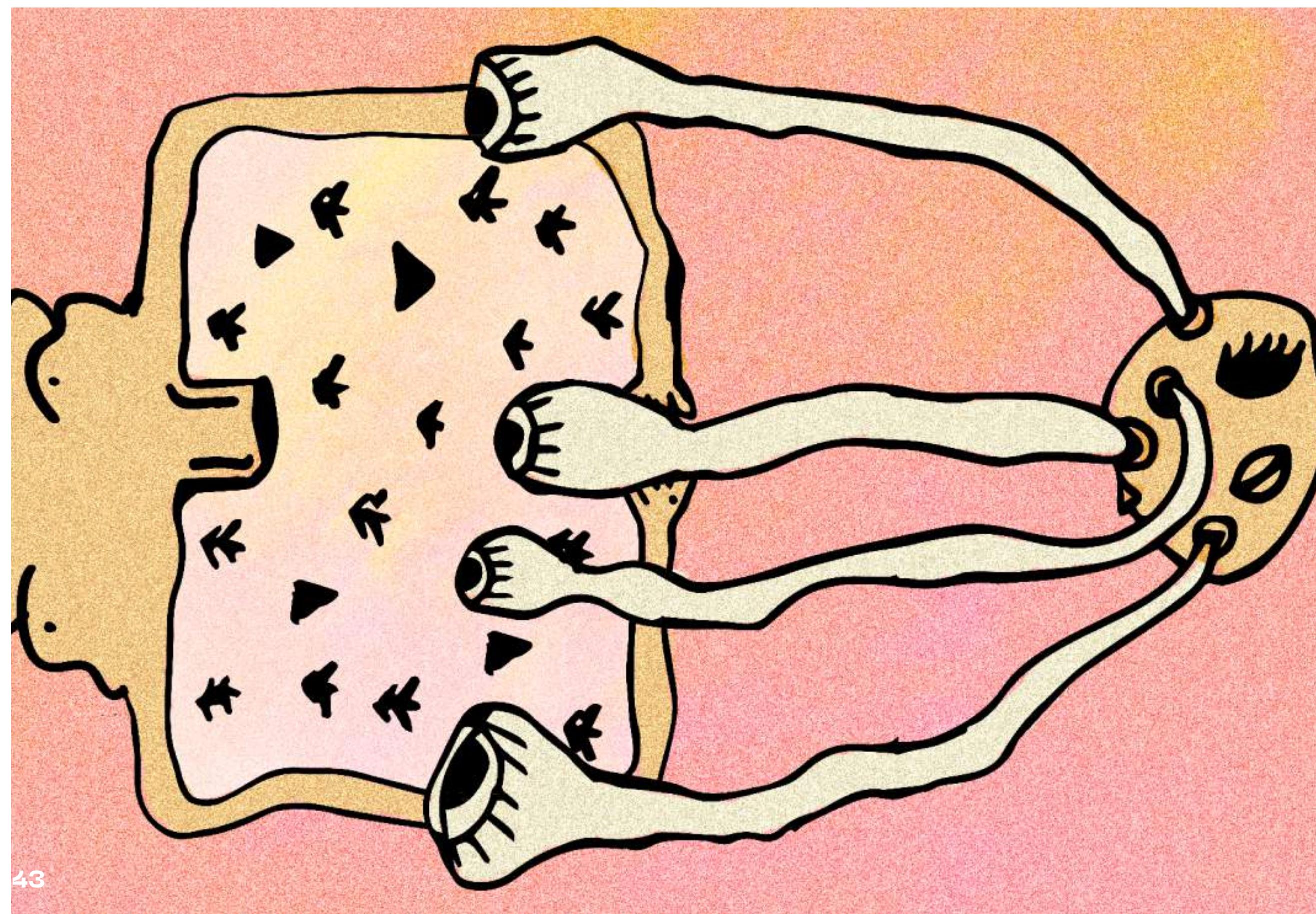
We need to reconsider certain dualities such as mind/body, interior/exterior, subject/object, nature/technology, human/non-human, and unravel these by freeing them from reductionist approaches.

As the mind-body duality dissolves itself into elongations of corporeality and consciousness, we are becoming liminality as we live entangled lives on both virtual and corporeal realms. It requires no effort to understand that our daily life experiences are predominantly metaphysical and in that sense it transcends the dichotomy of sacred and profane, work and play, real and virtual.

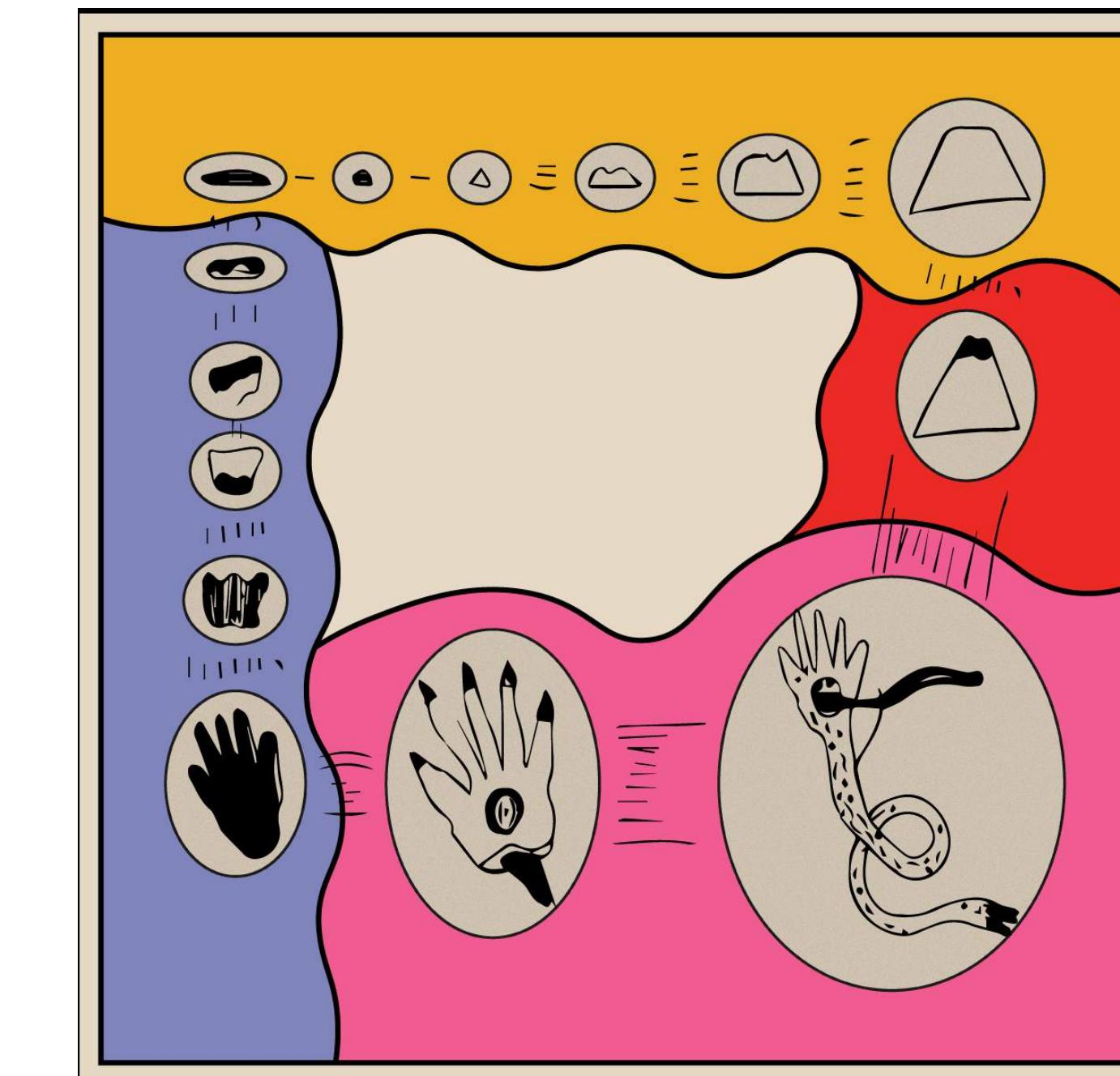
6 – ILLUSTRATIONS

Various illustrations and animations depicting topics like embodiment, cyclicality, mythology

2020



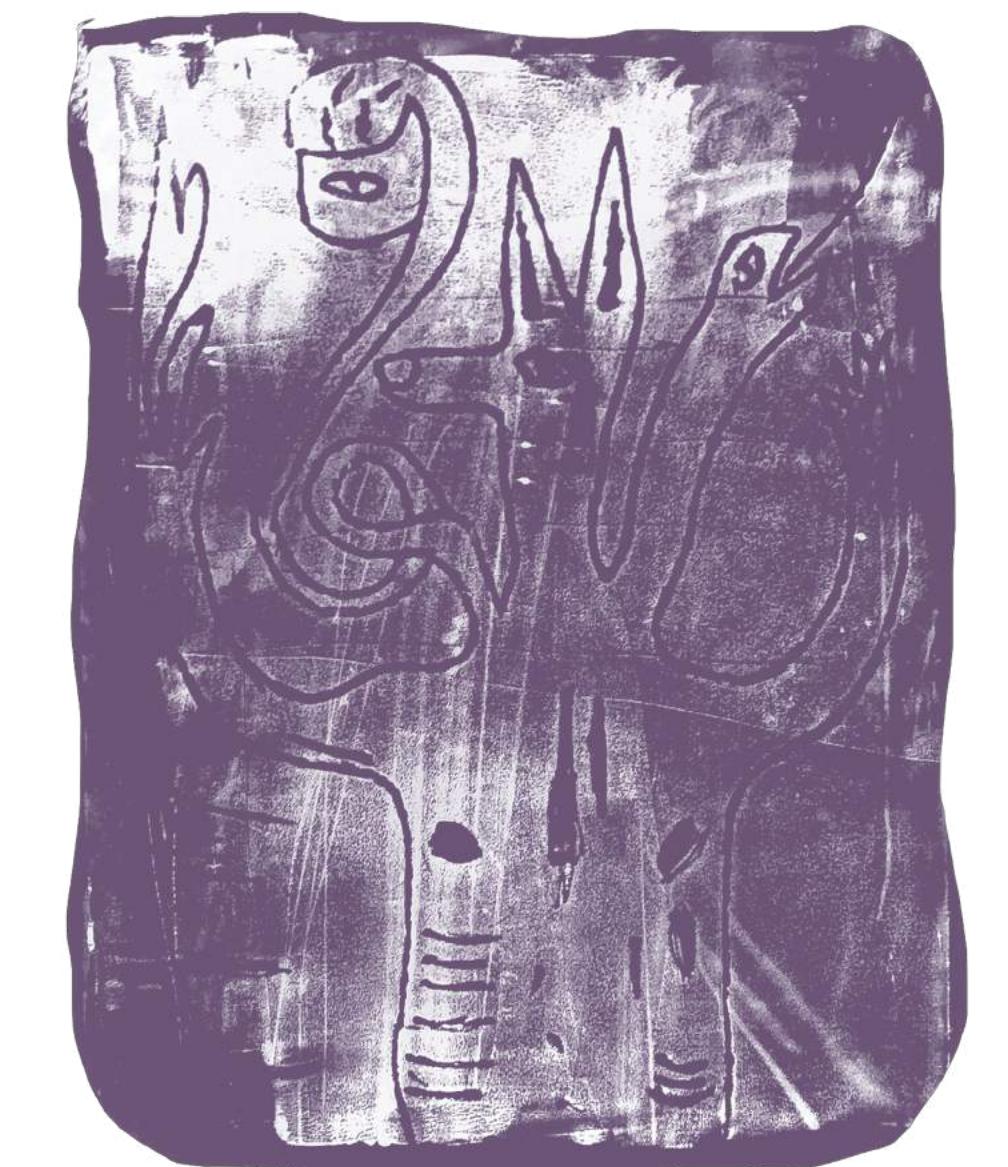
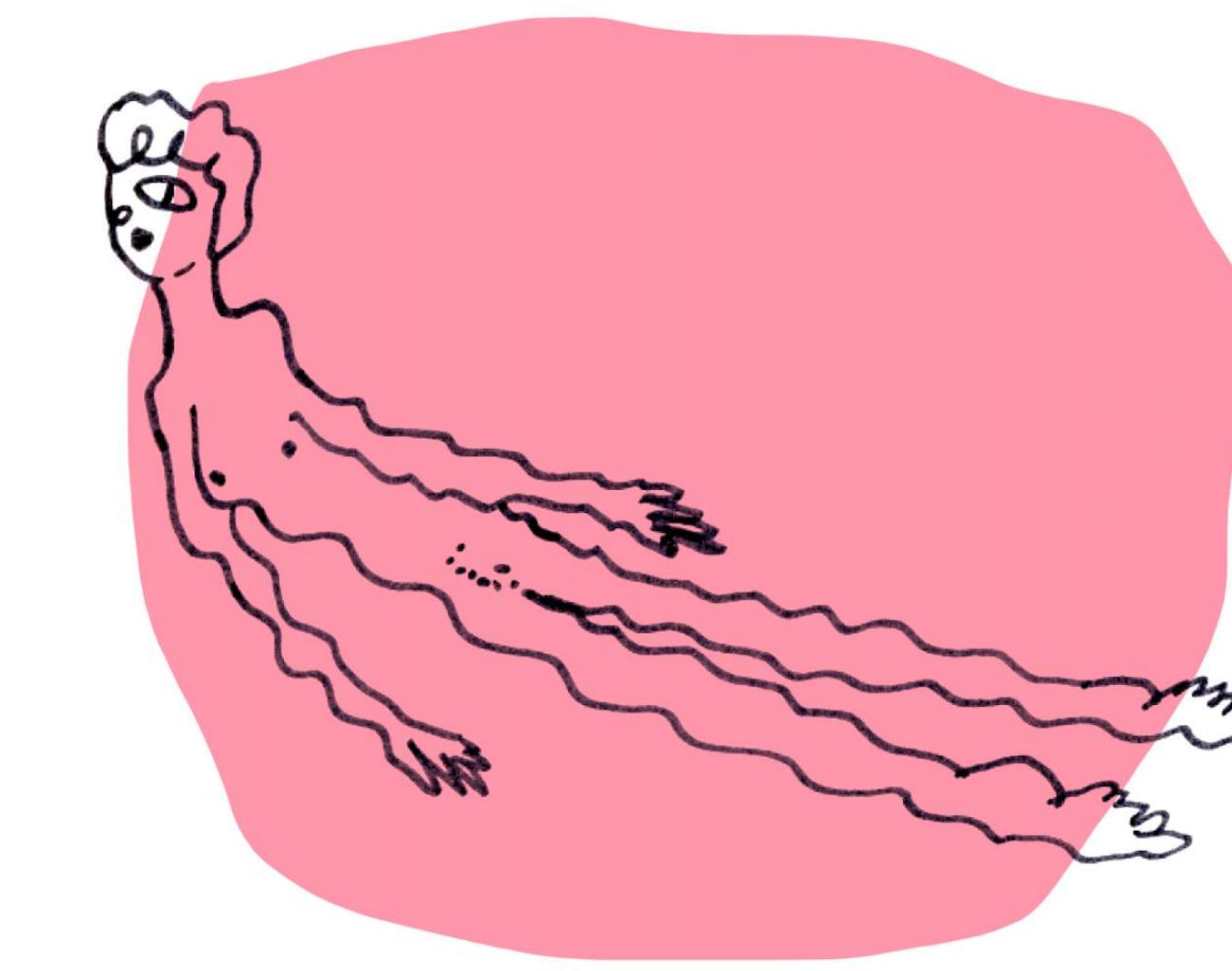
43



Animation | [Click the image](#)



Animation | [Click the image](#)



44

