

# Designing Play Furniture

## Project Report

by **Tarun Karthick**  
Guide **Prof. Sandesh R**

# Approval

This project report entitled 'Designing Play Furniture' by Tarun Karthick, 18U130011, is approved, in partial fulfilment of the requirements for Bachelors of Design Degree at the IDC School of Design, Indian Institute of Technology Bombay.

Project Guide:

Chairperson:

Internal Examiner:

External Examiner:

# Declaration

I declare that this written document represents my ideas in my own words and where others' ideas or words have been included. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/ data/ fact/ source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Tarun Karthick, 18U130011  
IDC School of Design, IIT Bombay

# Acknowledgments

I would like to thank Prof. Sandesh R for his constant guidance throughout the duration of this project. I also want to thank my jury – Prof. Chakravarthy, Prof. Kums Kumaresan and Prof. Purba Joshi, for all their valuable feedback.



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# Abstract

The aim of the project was to create an object that combined play with furniture for kids of kindergarten age. The object would play an active part in the kids' imaginative play. It would be used independently by the child without the adult having to intervene.



# Introduction

## Motivation behind the project.

I wanted to make a piece of furniture for my P! but chose to work with ceramics instead as we were not certain as to when we'd be back in campus and have access to the studios. With hindsight it would've turned out alright if i'd gone with it as we made it back pretty early on into our P1s. So, I was very much determined to make one for my second project.

## Why Furniture?

As of now the kind of objects that I want to make is the kind that stays with people for a long time. Be it physically or in their memories. And people tend to hold on to their furniture for quite a while.

## Choosing the problem space.

I was browsing the furniture design section at the IDC library over winter not looking for anything in particular. That is where I came across Stanley Selengut's Children's Environment System and I found it real interesting.. It was then I remembered the play house from my childhood and it was something that had stayed with me all these years so I wanted to make something similar.

And so, the working title was combining play with furniture for nurseries.





# Market Study

To see if combining play and furniture was even feasible I did a preliminary market study. I was quite surprised to find out play furniture was a thing and there were quite a lot of them.

## Insights

Most kids' furniture was multifunctional. This is probably because children grow up so fast and it is done to get more value\* out of it. Multifunctional furniture were of two kind-

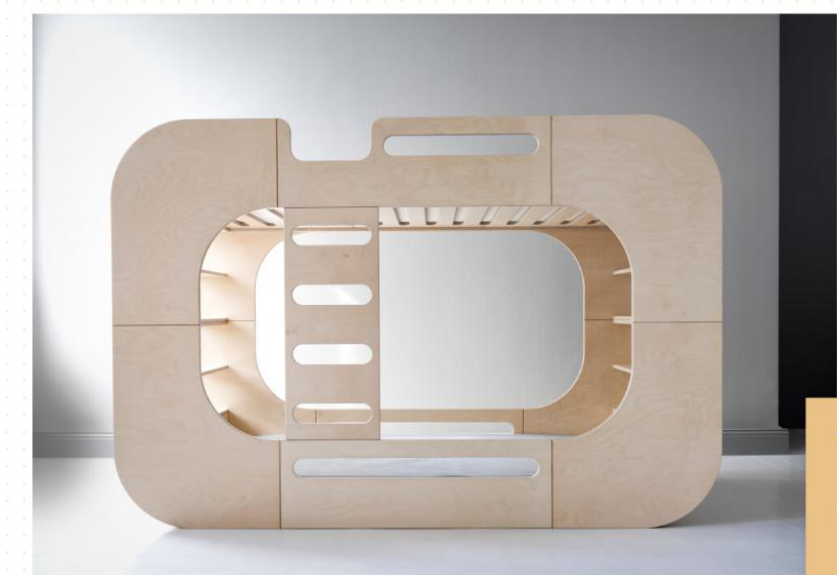
Ones that can morph into a different furniture and can continue to be used even if the child outgrows them.

Torafu Architects

Multi-functional Dice furniture for children and adults



IO Bunk Pod



- multifunctional-can be used in more than one ways
- made of flat pieces

# Market Study

The other was play furniture. The kind that combined play with furniture. Which was exactly what i had set out to do.

Sustainability was a common theme\* in this space. "It makes sense that having sustainable furniture in schools would have a greater impact than just preaching about sustainability"-\*

Rocker by Doshi Levien  
for Richard Lampert



we found that most things of interest to them are not figurative but everyday objects that are not intended for play!

Archipel  
jundado



clear forms create a multifunctional play island

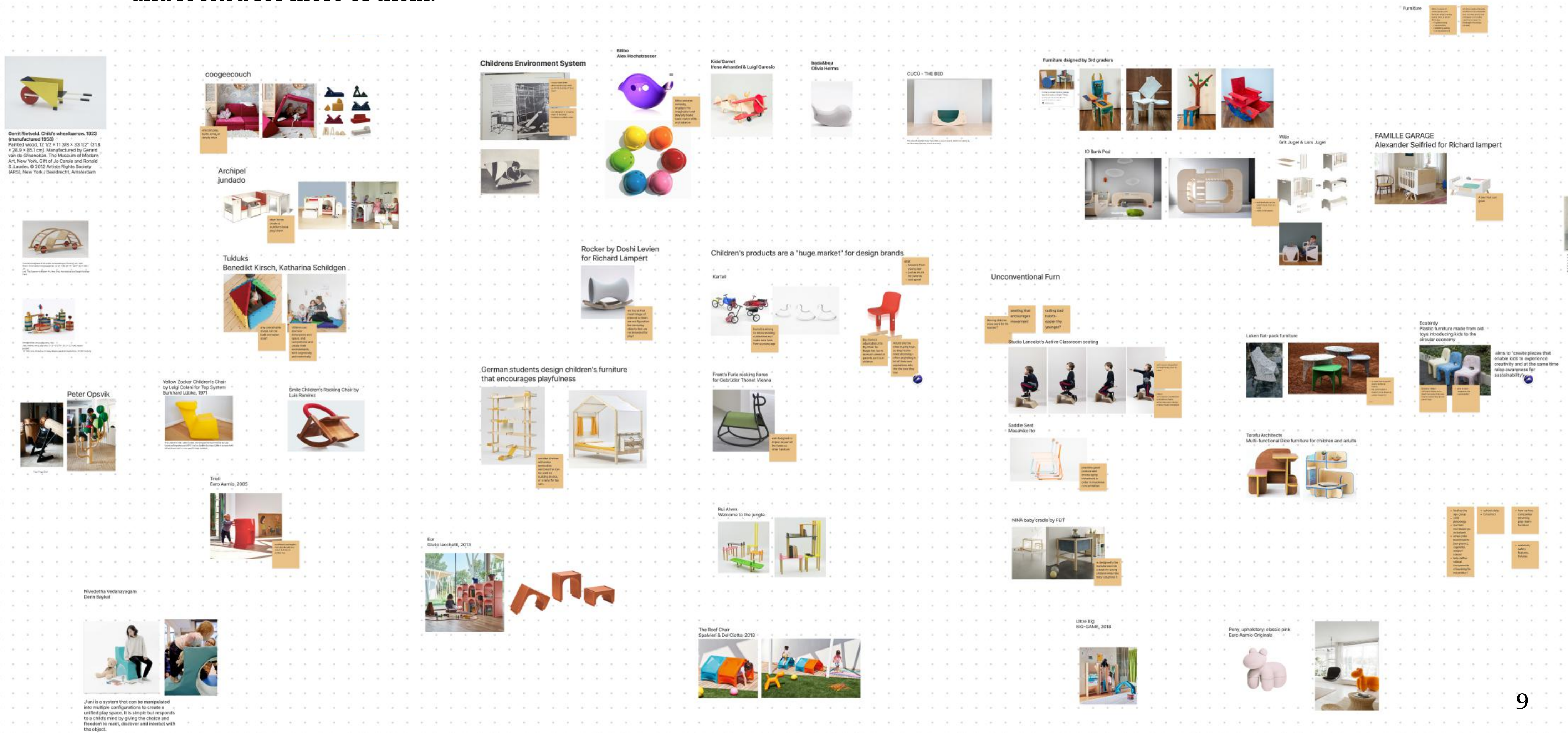




# Market Study

## Looking for more play furniture.

From the preliminary market study it was clear that there was space for play furniture and so I continued my market study and looked for more of them.





# Market Study

Categorizing by visual theme.

## animals/organic



## vehicles



## buildings/geometric



## Rocker by Doshi Levien for Richard Lampert



## coogeeecouch



## Tubdaks Benedikt Kirsch, Katharina Schildgen



# Market Study

## Categorizing by type of play

### Blocks/Puzzle(Arrangement)

Toys with more than one major physical element

Tukluks  
Benedikt Kirsch, Katharina Schildgen



Eur  
Giulio Iacchetti, 2013



Rui Alves  
Welcome to the jungle.



coogeeecouch



### Pretend Play

Toys with just one major physical element

Trioli  
Eero Aarnio, 2005



Pony, upholstery:  
classic pink  
Eero Aarnio Originals



German students design  
children's furniture  
that encourages playfulness



Kartell



Kartell is aiming to attract existing customers and make new fans from a young age

Archipel  
Jundado

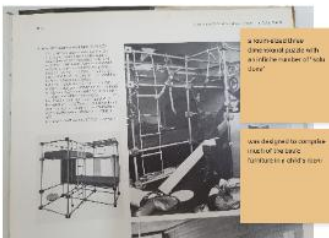


German students design children's furniture  
that encourages playfulness



wooden shelves with built-in removable shelves that can be used as building blocks, or a ramp for toy cars

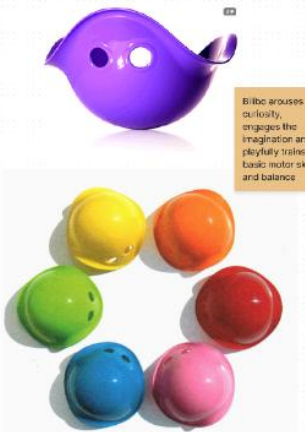
Childrens Environment System



The Roof Chair  
Spativieri & Del Clotto, 2018



Bilibo  
Alex Hochstrasser



Kids'Carret  
Irene Amantini & Luigi Carosio



bada&bou  
Olivia Herms



Front's Furia rocking horse  
for Gebrüder Thonet Vienna



Rocker by Doshi Levien  
for Richard Lampert





# Market Study

## Categorizing by choice of material



# Understanding The User

In an effort to better understand the capabilities and and considerations that have to be taken while designing for children I looked at some of the popular child development theories and pedagogies.

## Jean Piaget's Cognitive Developmental Theory

According to Piaget each child goes through the four stages of development in the same order.

The children for whom the furniture is being made are in the preoperational stage of cognitive development.

Some of the characteristics of this stage are:

- The early preoperational period (ages 2-3) is marked by a dramatic increase in children's use of the symbolic function.
- They begin to think and talk outside of simple experience.
- Are not able to think and reason logically yet
- Children in this stage are considered to be egocentric, Egocentrism refers to the child's inability to see a situation from another person's point of view.

Stage	Age	Goal
Sensorimotor	Birth to 18-24 months	Object permanence
Preoperational	2 to 7 years old	Symbolic thought
Concrete operational	Ages 7 to 11 years	Logical thought
Formal operational	Adolescence to adulthood	Scientific reasoning

# Understanding The User

- During the end of this stage children can mentally represent events and objects (the semiotic function), and engage in symbolic play.
- Pretend (or symbolic) Play-Toddlers often pretend to be people they are not (e.g. superheroes, policemen), and may play these roles with props that symbolize real life objects. Children may also invent an imaginary playmate.
- Animism is the belief that inanimate objects (such as toys and teddy bears) have human feelings and intentions. By animism Piaget (1929) meant that for the preoperational child the world of nature is alive, conscious and has a purpose.
- Centration is the tendency to focus on only one aspect of a situation at one time.
- As the preoperational stage develops egocentrism declines and children begin to enjoy the participation of another child in their games and “lets pretend ” play becomes more important.

# Understanding The User

## Vygotsky's Sociocultural Theory of Cognitive Development

Similar to Piaget he also believed that children learn actively and through hands-on experiences. Through interacting with others, learning becomes integrated into an individual's understanding of the world. He introduced the concept of the zone of proximal development, which is the gap between what a person can do with help and what they can do on their own. The main difference between Piaget's theory he suggests children can at any point if provided with hints or clues for problem

# Understanding The User

## **Rudolf Steiner's methodology of education**

The Waldorf approach to early childhood education is largely experiential and sensory-based. The emphasis is on providing worthwhile practical activities for children to imitate, allowing them to learn through example. Waldorf education encourages the child to create his own toys from materials that happen to be at hand. Using the imagination is the child's most important work, according to the Steiner Method.

# Understanding The User

## Maria Montessori's Methodology of Education

The first plane child is seen as a concrete, sensorial explorer and learner engaged in the developmental work of psychological self-construction and building functional independence. Teachers are considered unobtrusive directors in a Montessori model and follow a curriculum plan to move their students into independent learning.

Montessori classrooms include carefully chosen toys, books and materials designed to encourage children's independence. Madame Montessori felt that children shouldn't just play but should play with toys that will teach them concepts. Montessori schools use Montessori designed and approved toys

The success of scientific pedagogy, proposed by Maria Montessori, intensified the spread of children's furniture in the period after the 1930s.

# Understanding The User

## **Neuroarchitecture and the importance of independence.**

Neuroarchitecture refers to the different responses produced by the brains of users during their presence in a certain environment. Stimuli different from person to person. Positive stimulation leads to children learning faster and feel more motivated and focused.

# Designing for play

To get a better understanding of what goes into designing a play object I went through the literature on topic.

## Insights

The Act of play involves

observe->

try it out->

analyze->

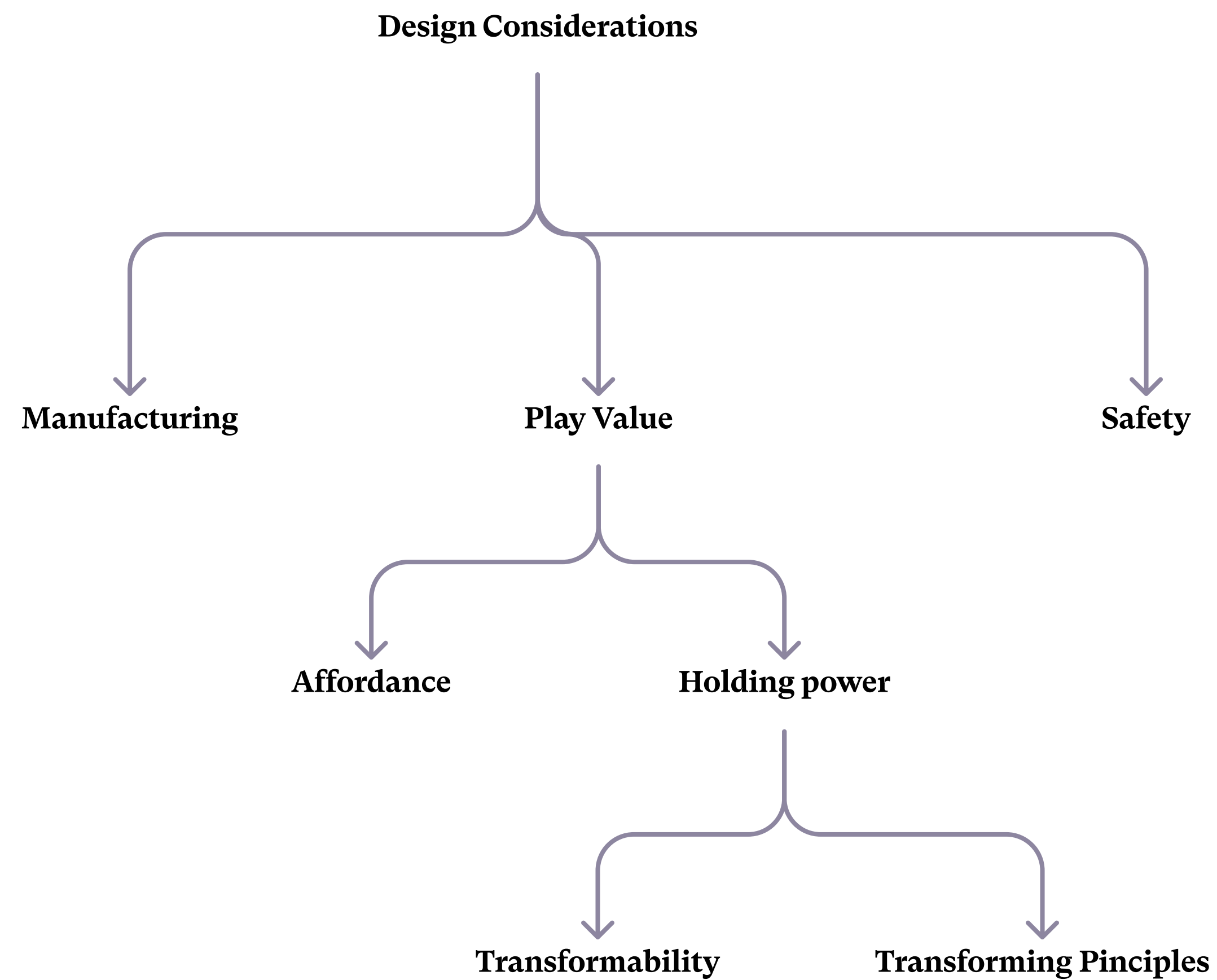
adjust->

repeat



# Designing for play

Design considerations while designing for play.



# Designing for play

## Desirable qualities

Affordance-Makes it immediately draw the interest of children

Holding power-Ability that encourages the child to maintain interest

Flexibility-So that children can follow their own personal imaginative intentions and are not dictated to by overly descriptive imagery

Transparency- How transparent the activity is to the child and the parent/guardian.

# Visiting the Kindergarten

## Insights

Kids were seen playing blocks of wood, shape sorters, beads , stringtwo and four piece puzzles.

Some kids were engaged parallel play.

Less toys meant that they were forced to play together.

Things revolved around the teacher. They nudge children into playing together. They inititate the activity. Kids try and imitate and recreate what the teacher had built.

# Design Brief

Creating a brief. The six Ws.

## **What?**

Playful furniture for kids of age 2 to 6.

Playful for adults, play for kids. The primary activity that the furniture is made for is play. The furniture would play an active part in the kids imaginative play. Not a scaled up toy but a piece of furniture that belongs in a house and not inside the play pen.

## **Why furniture for kids?**

Independence and the human need to feel like part of a physical space.

Children growing up in environments that positively stimulate their brains learn better.

## **Why playful furniture?**

Children outgrow things real quick same with furniture. Therefore, it makes sense that the furniture is multifunctional in order to get more out of it during its short life span. Play plays an very important role in early child development and therefore adds great value.

## **Who?**

Children aged 2-6. Play is learning at this age.

Parents who have an eye for good furniture? Parents who are educated about importance of play and the need for independence? Parents who subscribe to the Montessori pedagogy?

## **Where?**

Urban houses. Soft addiction. Lack of play spaces?

## **How?**

Plastic in combination with wood or metal? A sustainable product at the system level?

## **When?**

Play time and Social Time.

Which kind of furniture?

Seating furniture?

# Design Brief

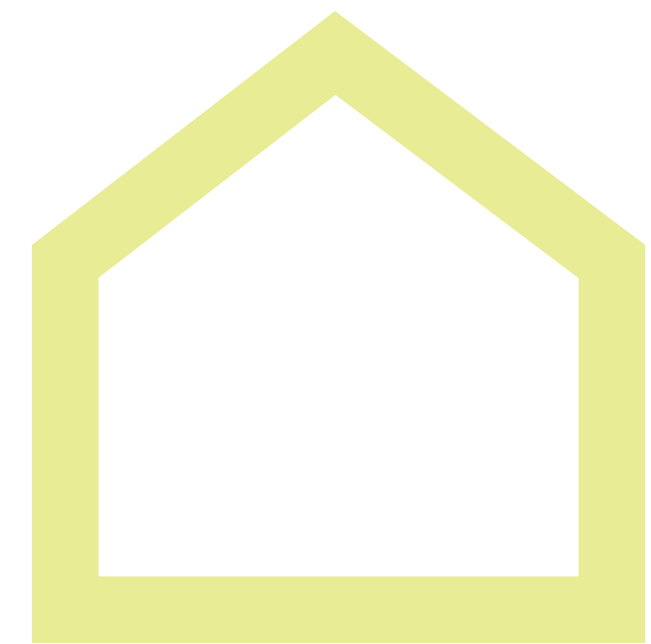
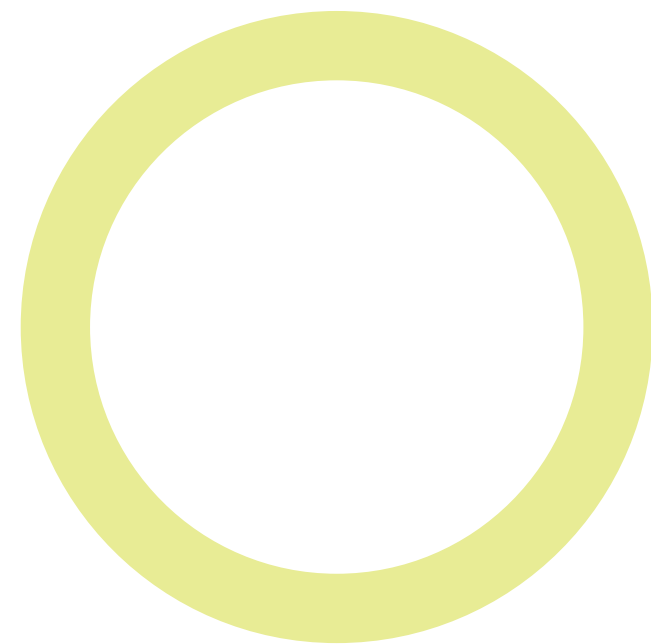
**To design playful kids furniture for shared spaces .**

## Product Requirements

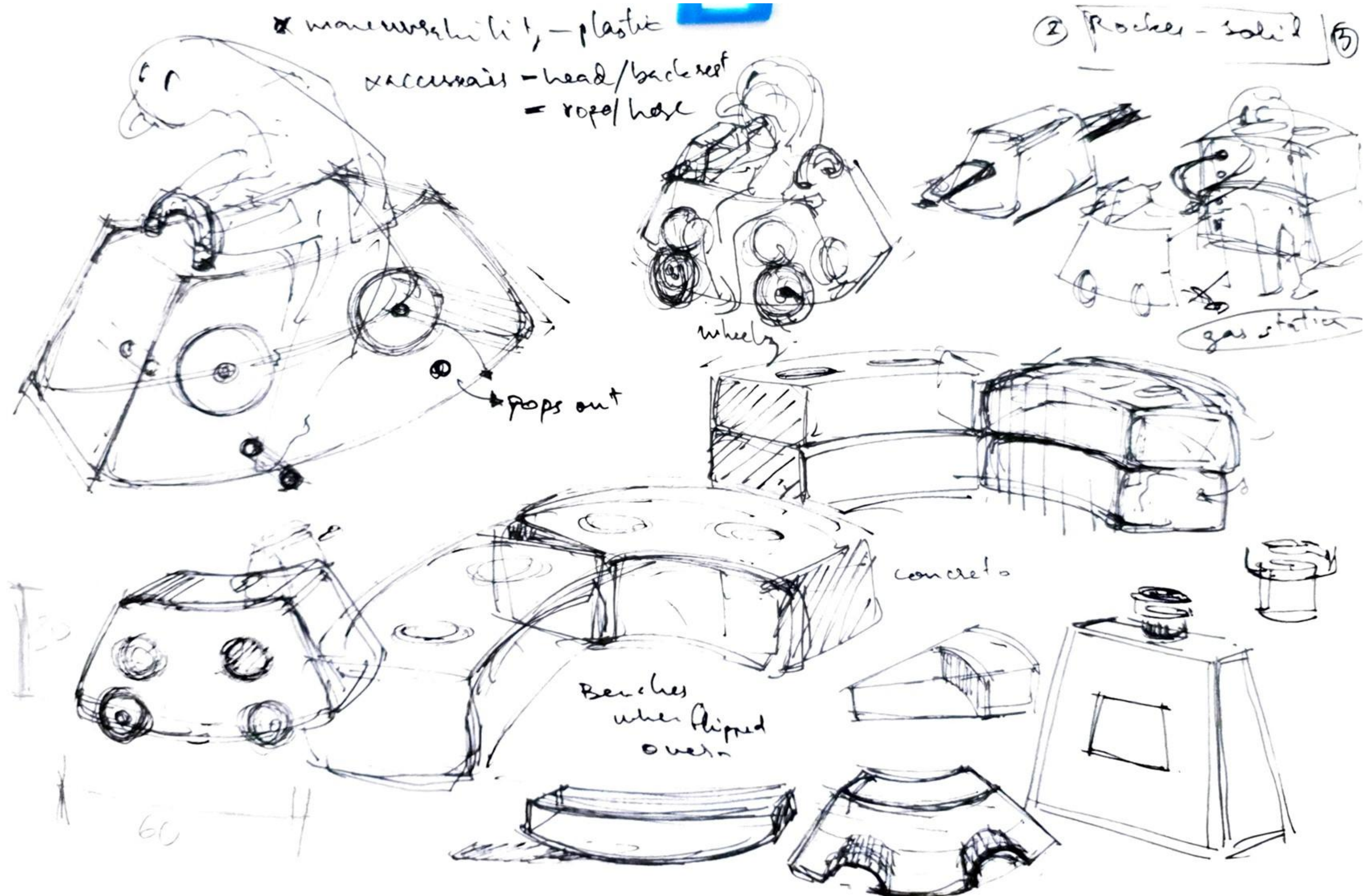
- The design must suitable for children between 3 and 5 years of age.
- The object should play an active part in the kids imaginative play
- Kids should be able to interact with the object independently
- The design should serve as an avenue for interaction between children.

# Ideation

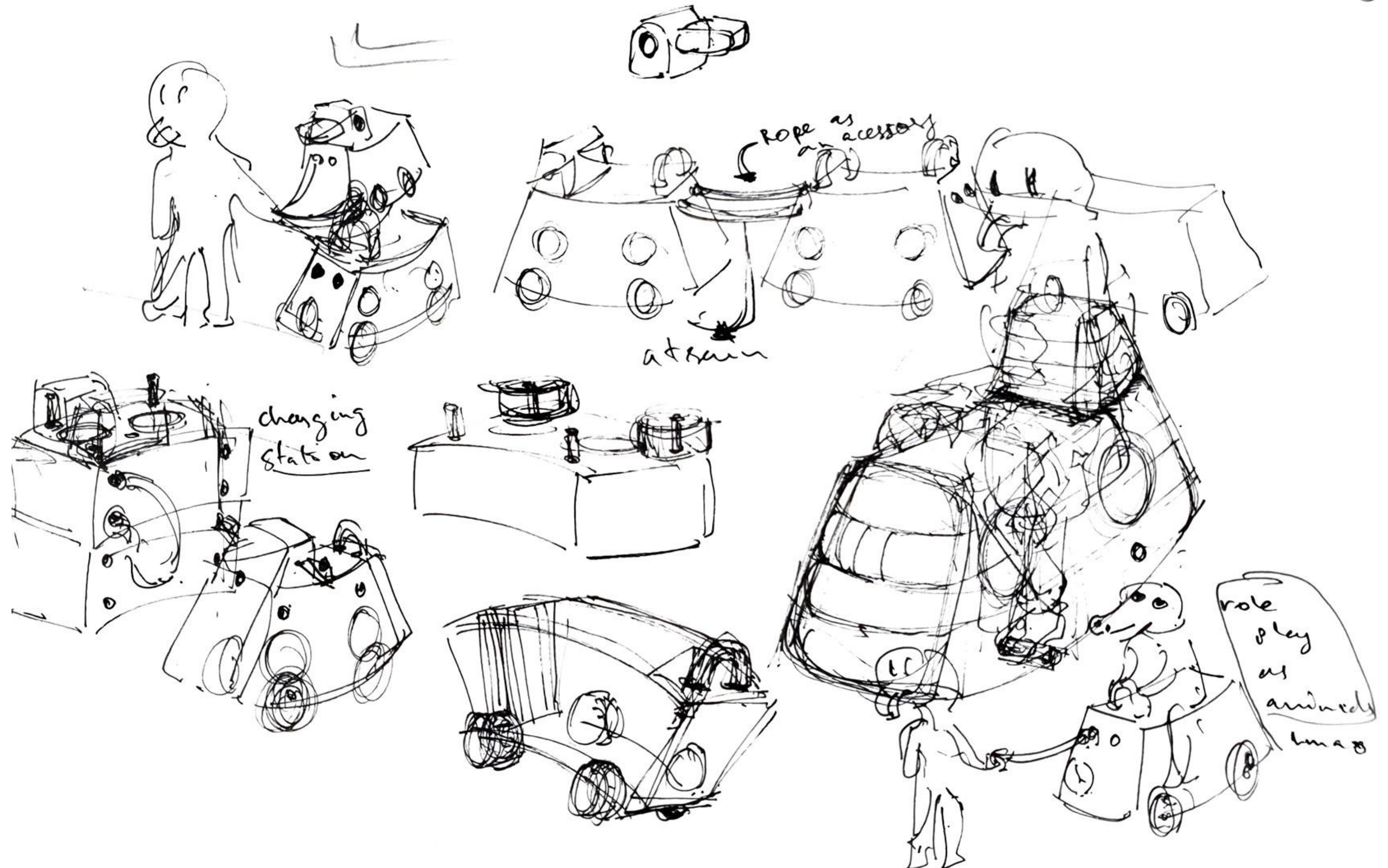
Ideas were generated for two design directions that were derived out of the design brief. The first direction focused on the independance of the child. The second more like a structure that helps with getting children to play together. The first represented by a wheel the seconf by a house. And formally the finds itself rocker in between the two.



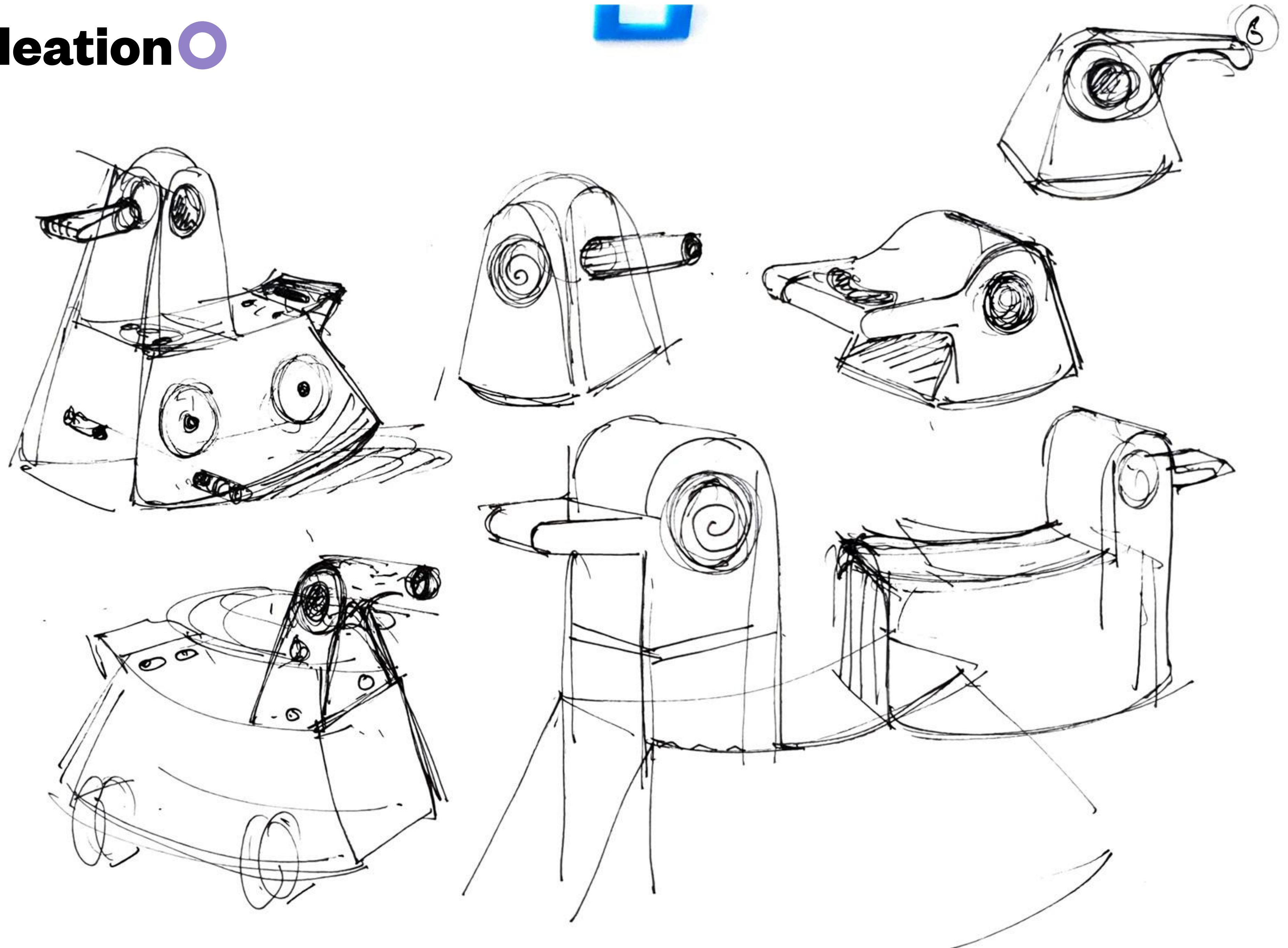










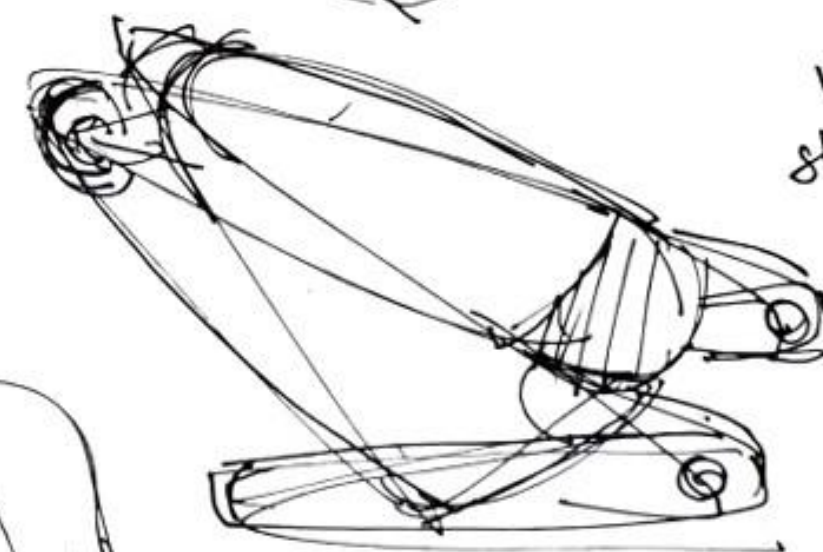
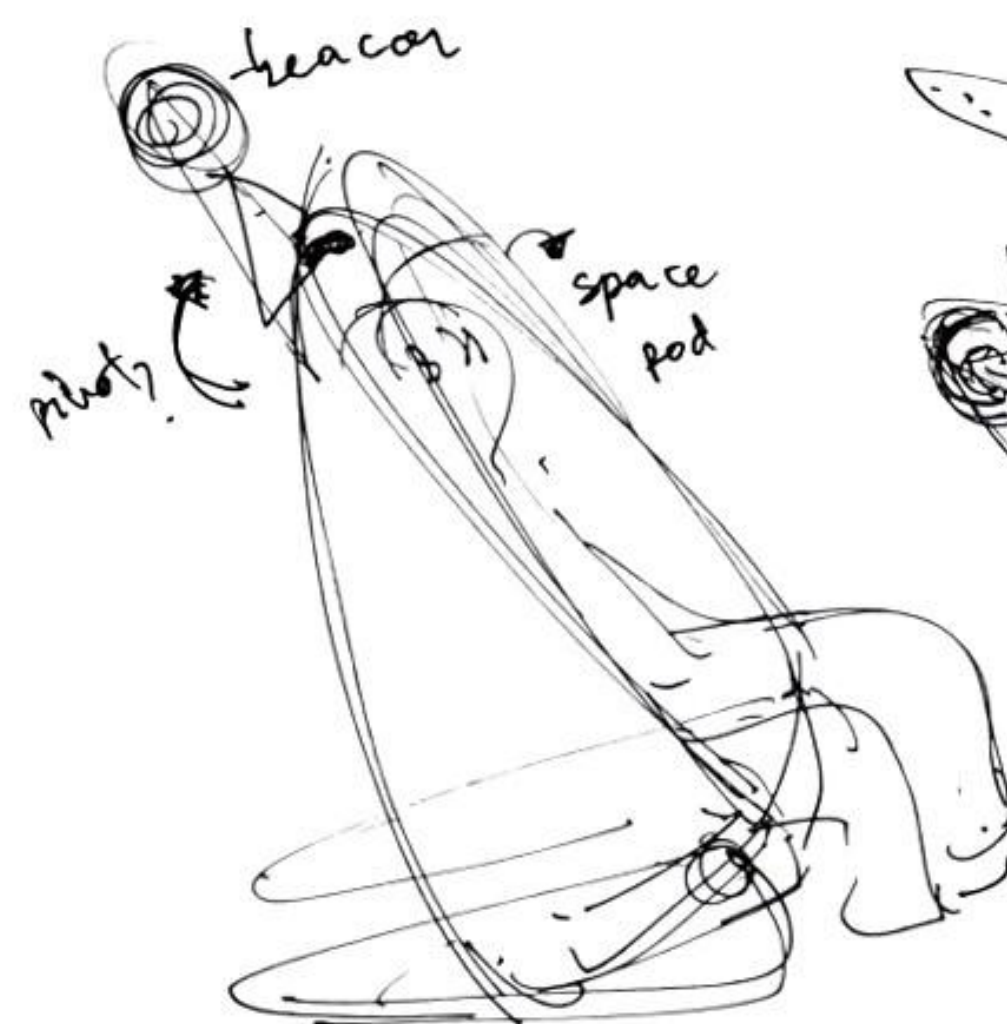
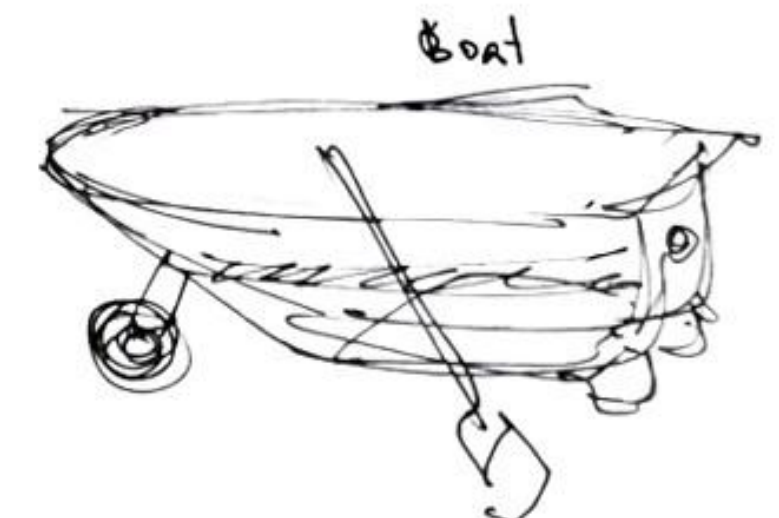
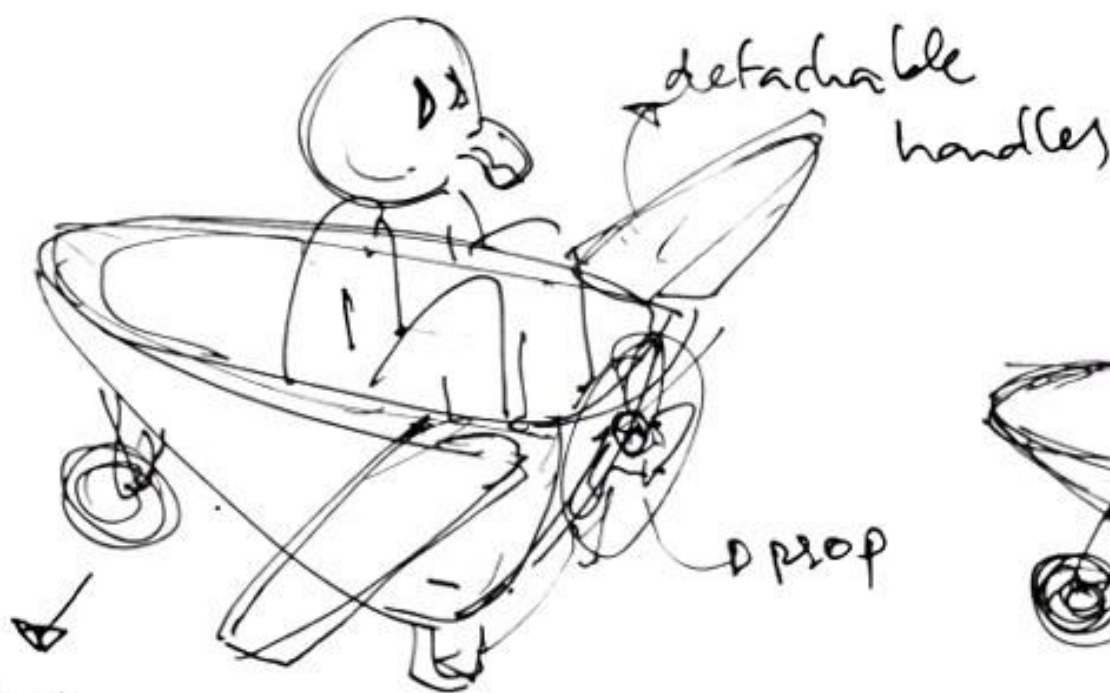
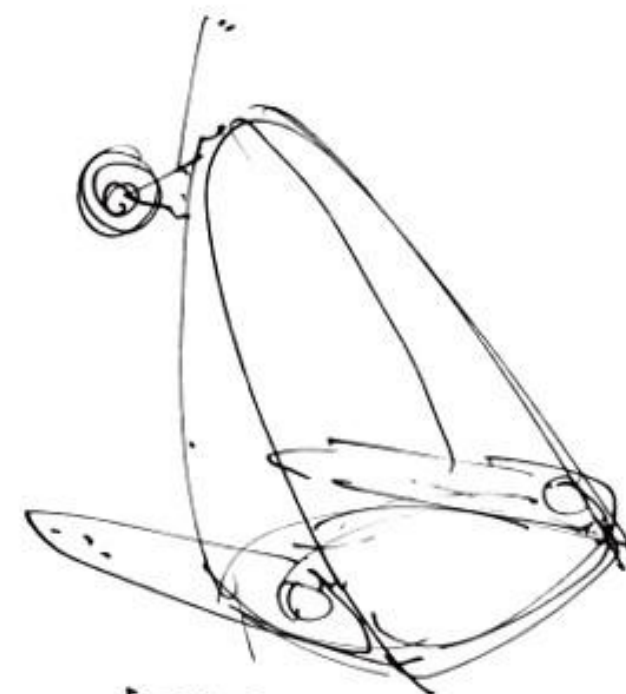
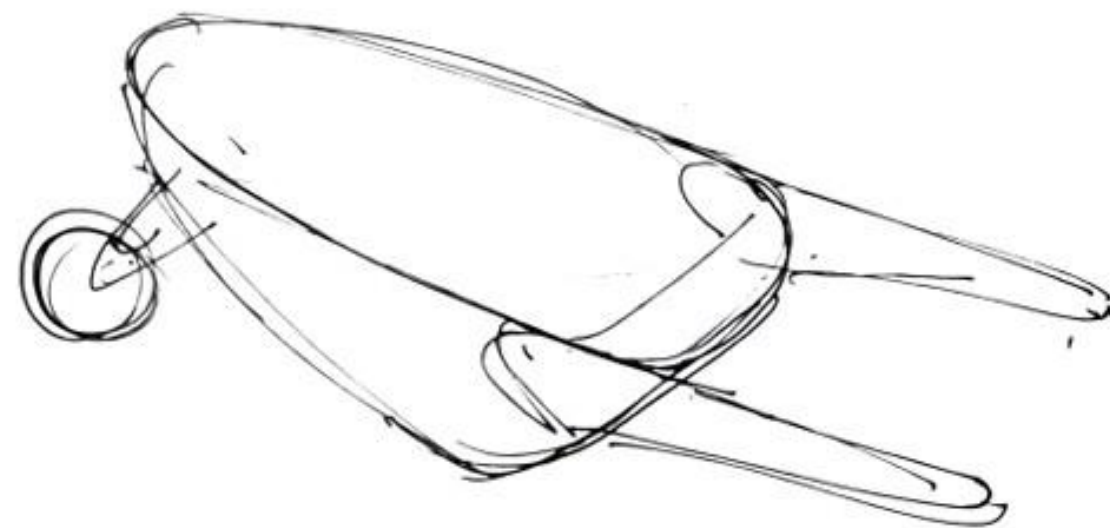
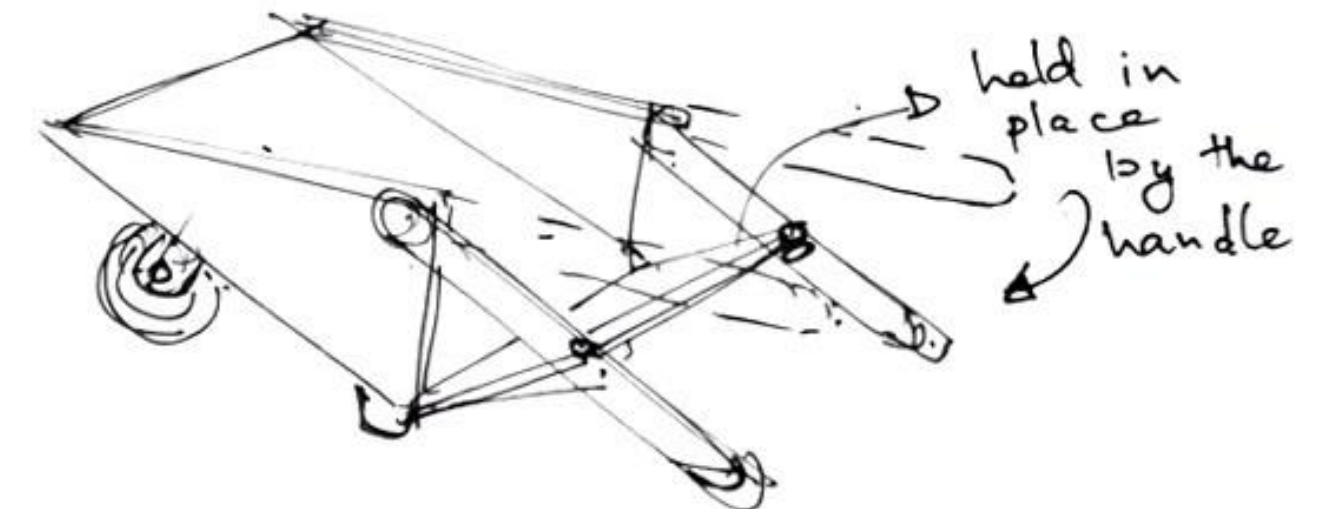
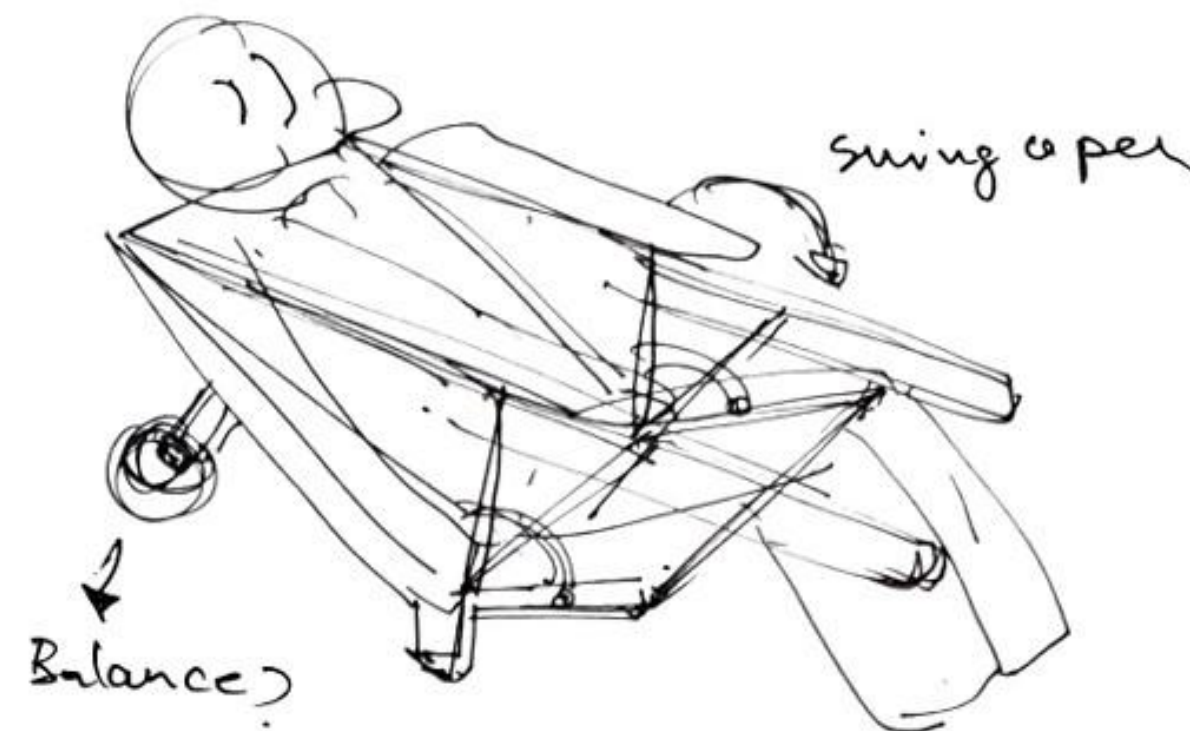
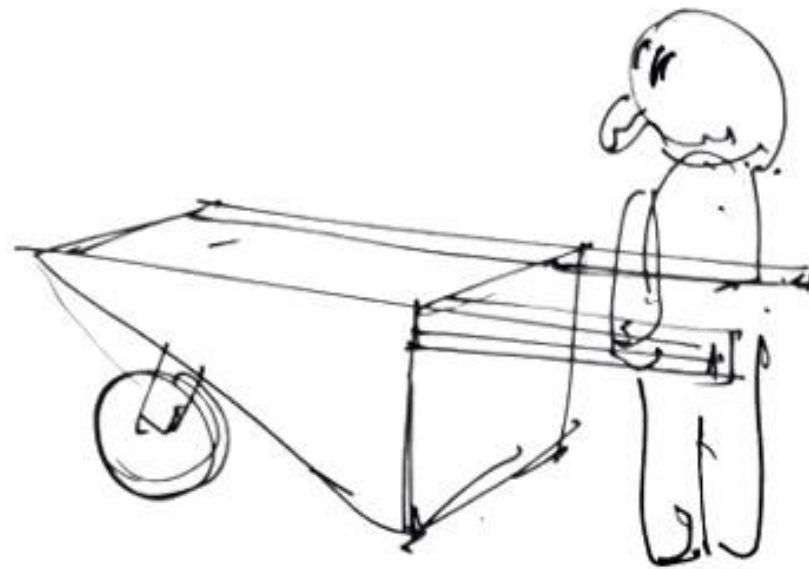




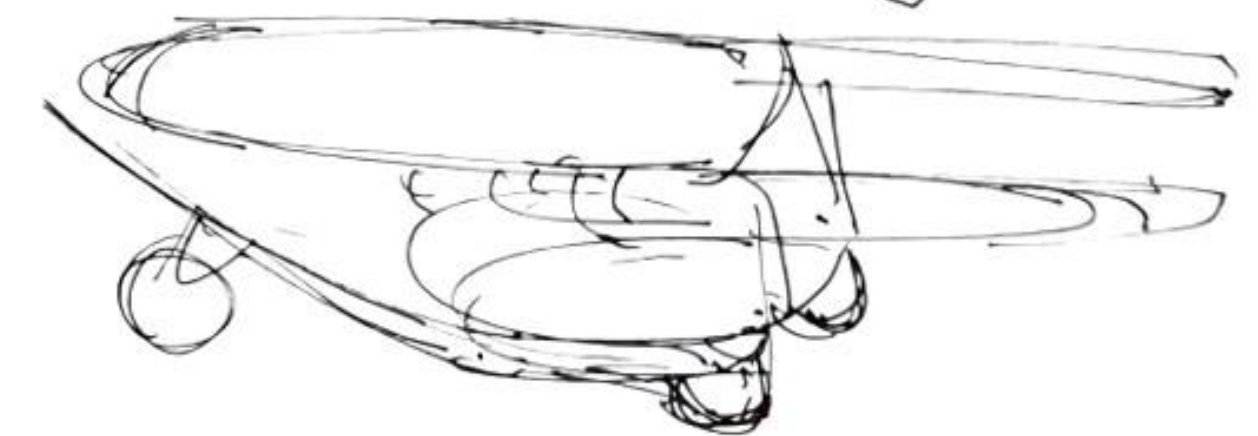
- transition to furniture  
not seamless

- connectors

- barrow tooling if also a chair?

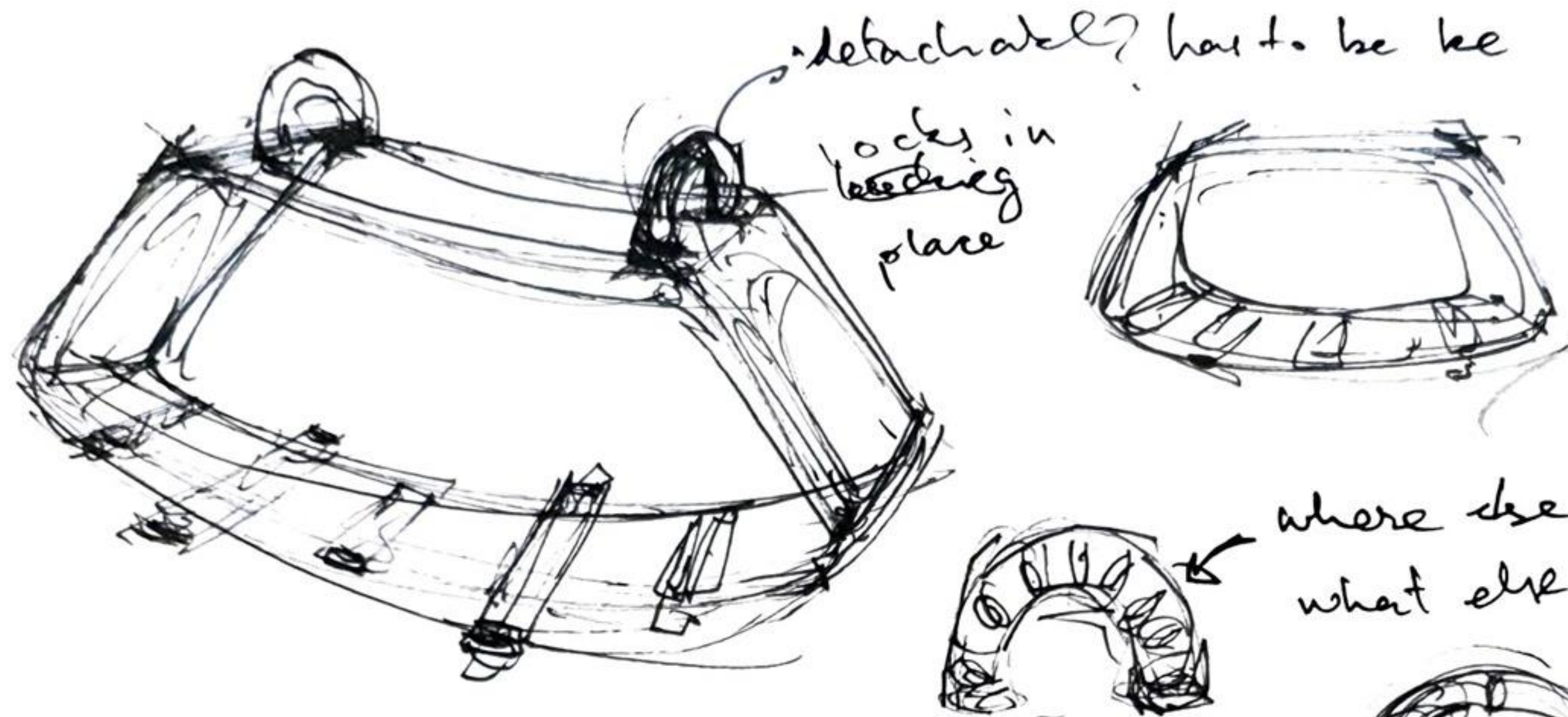


How stable is it gonna be





# Ideation



where else  
what else

How does the (2)  
kid make it his  
(different positions?)

moving part  
(necessaries)

Furniture that  
aids children  
achieving their  
cog. dev. goals

— symbolic &  
overcoming  
ego centric  
theory pretend  
play.

— ~~A form that is~~  
open

→ A form that can be interpreted  
in many ways. — not too alien tho?





# Ideation

① Notes - Ks one

Spandable

Just a hand?

→ starting off with a single kid

32 usdy 2  
net confers

possible  
combo

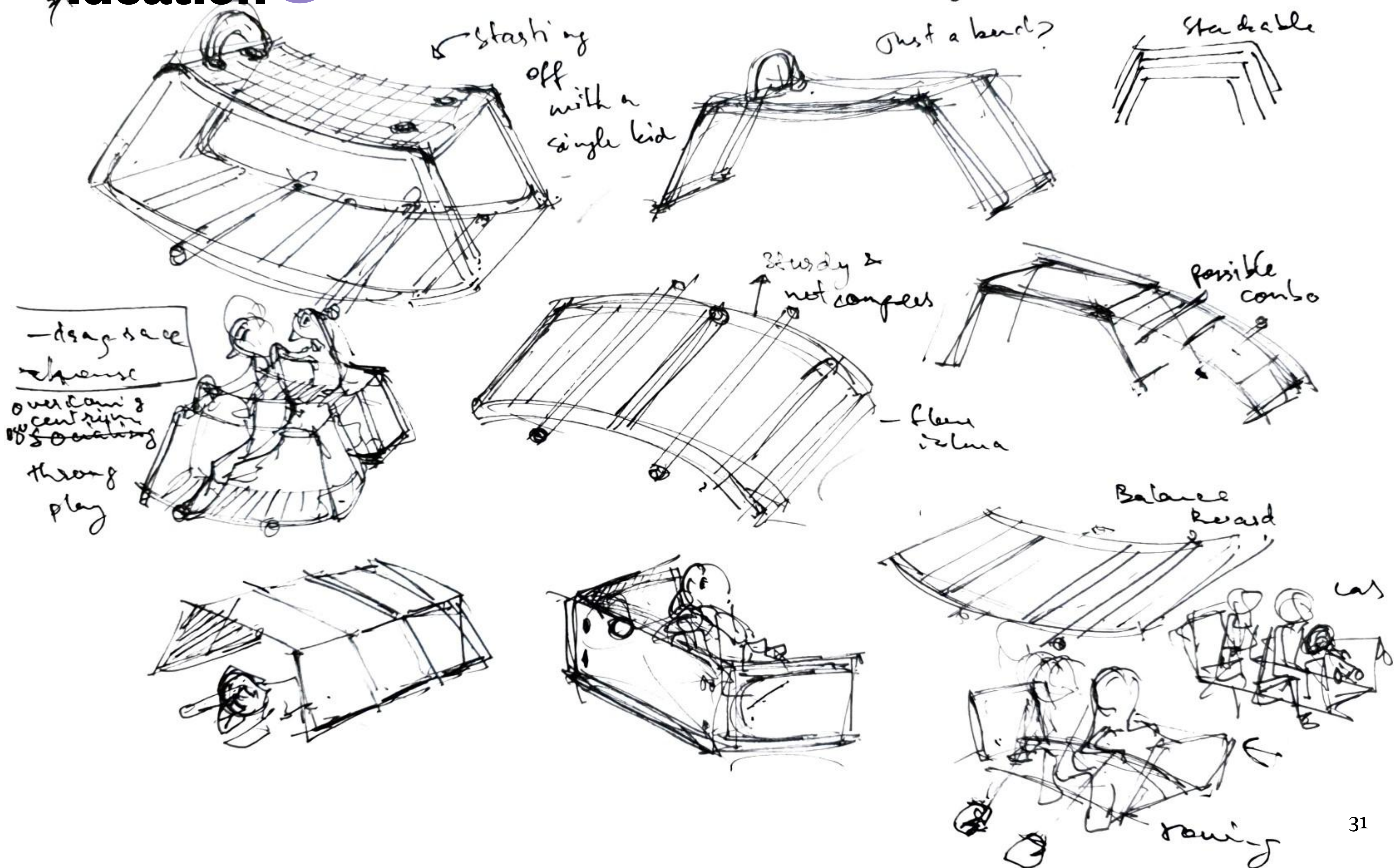
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isla

Balance  
Reward

۱۳

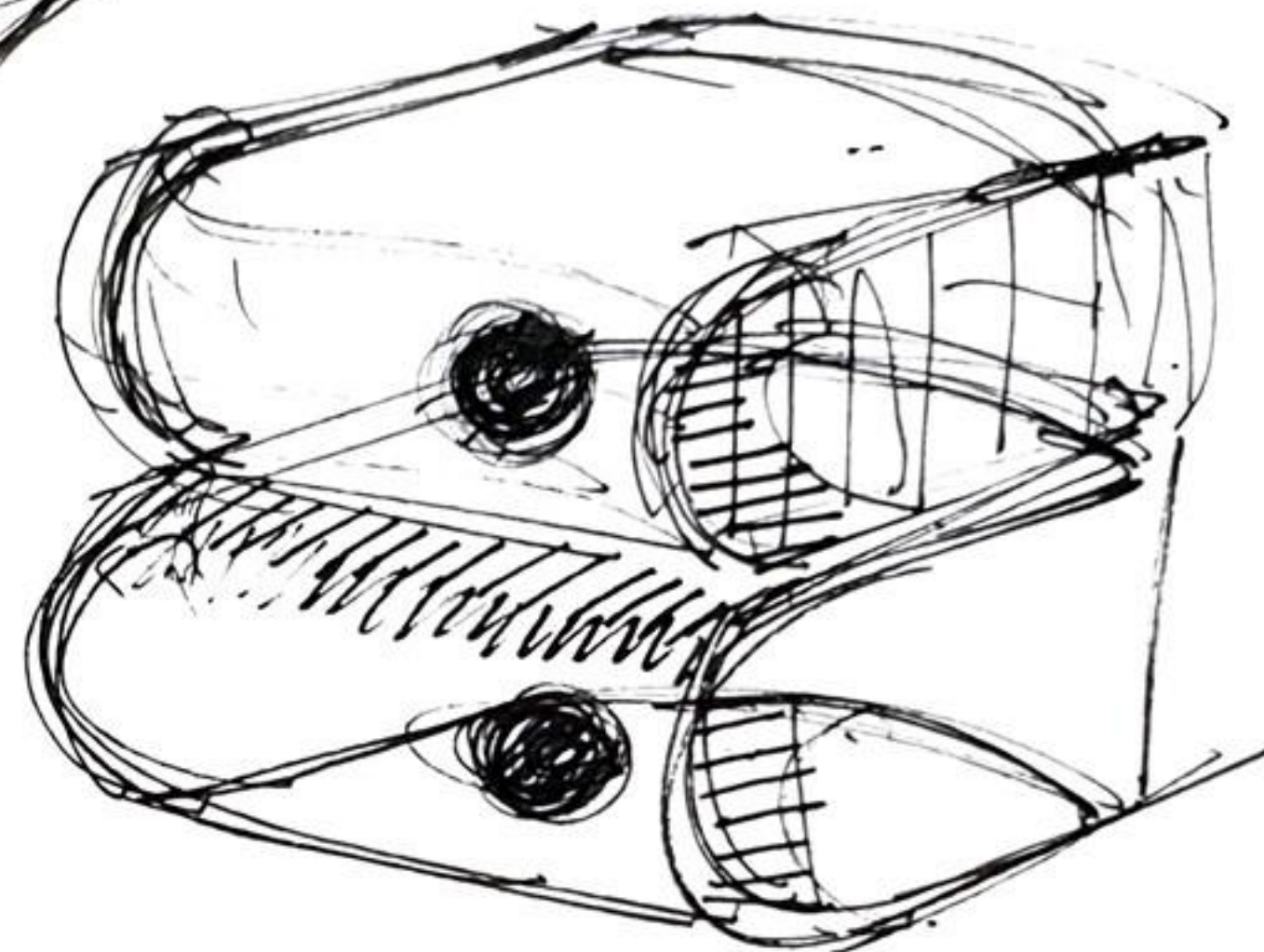
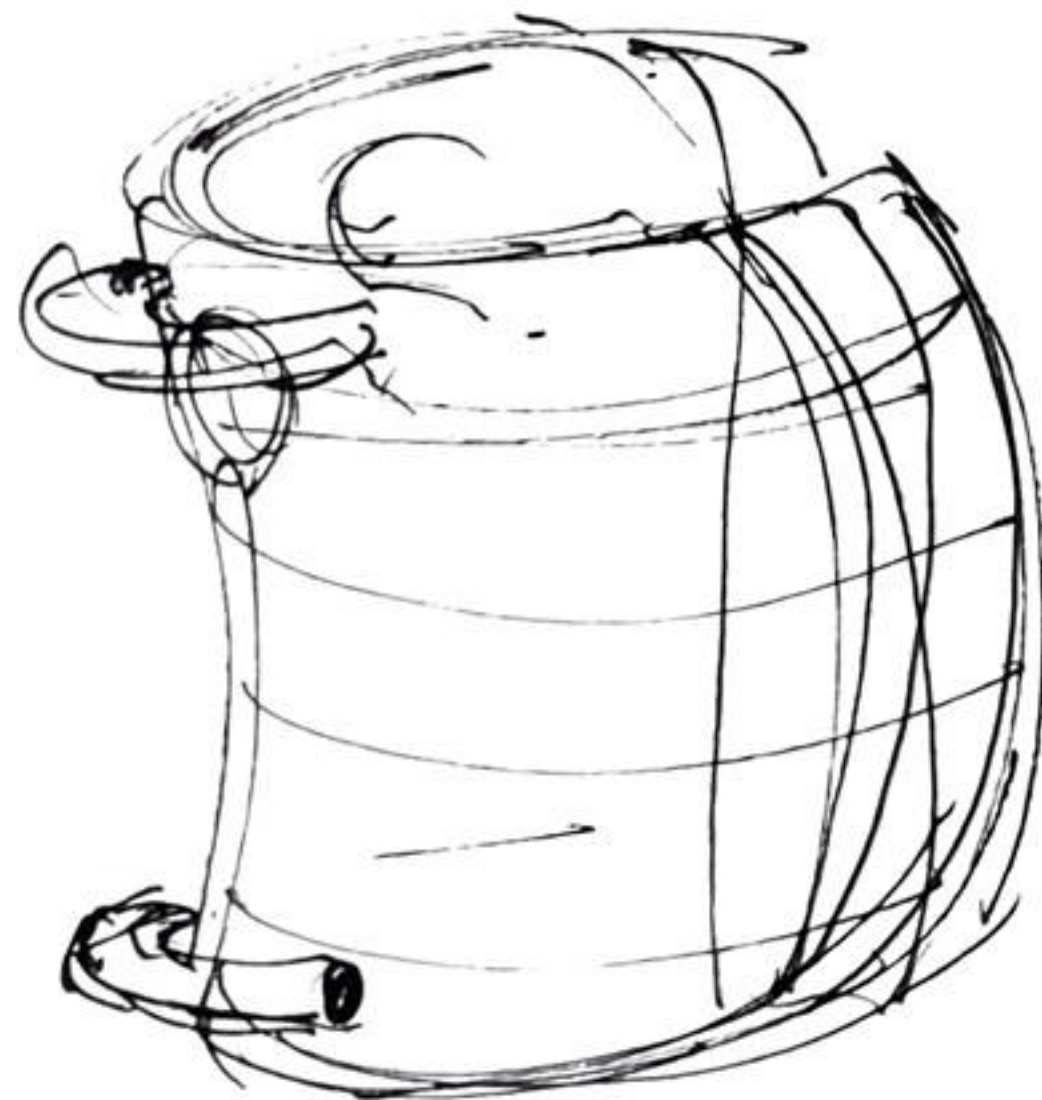
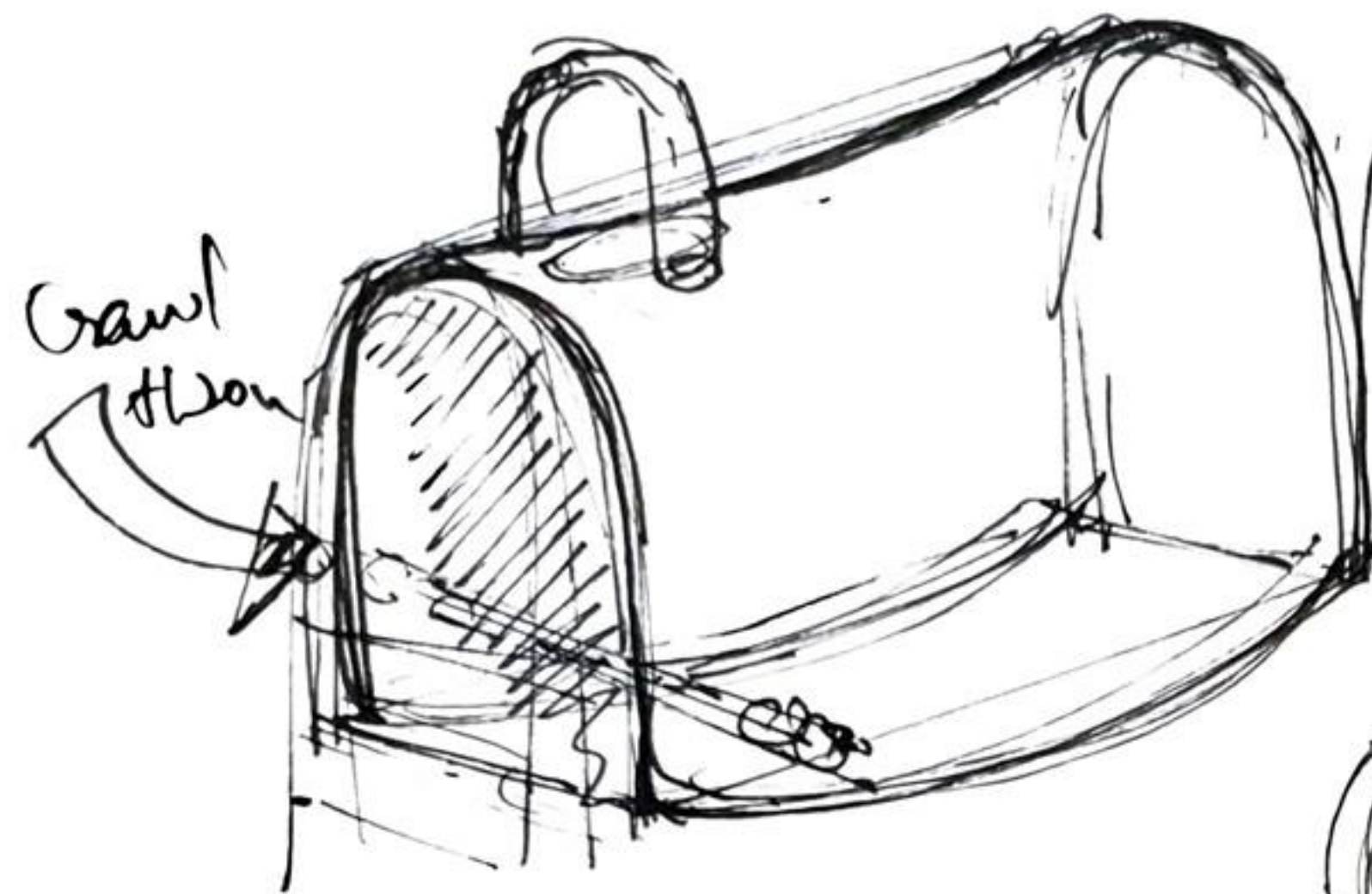
rainy

31

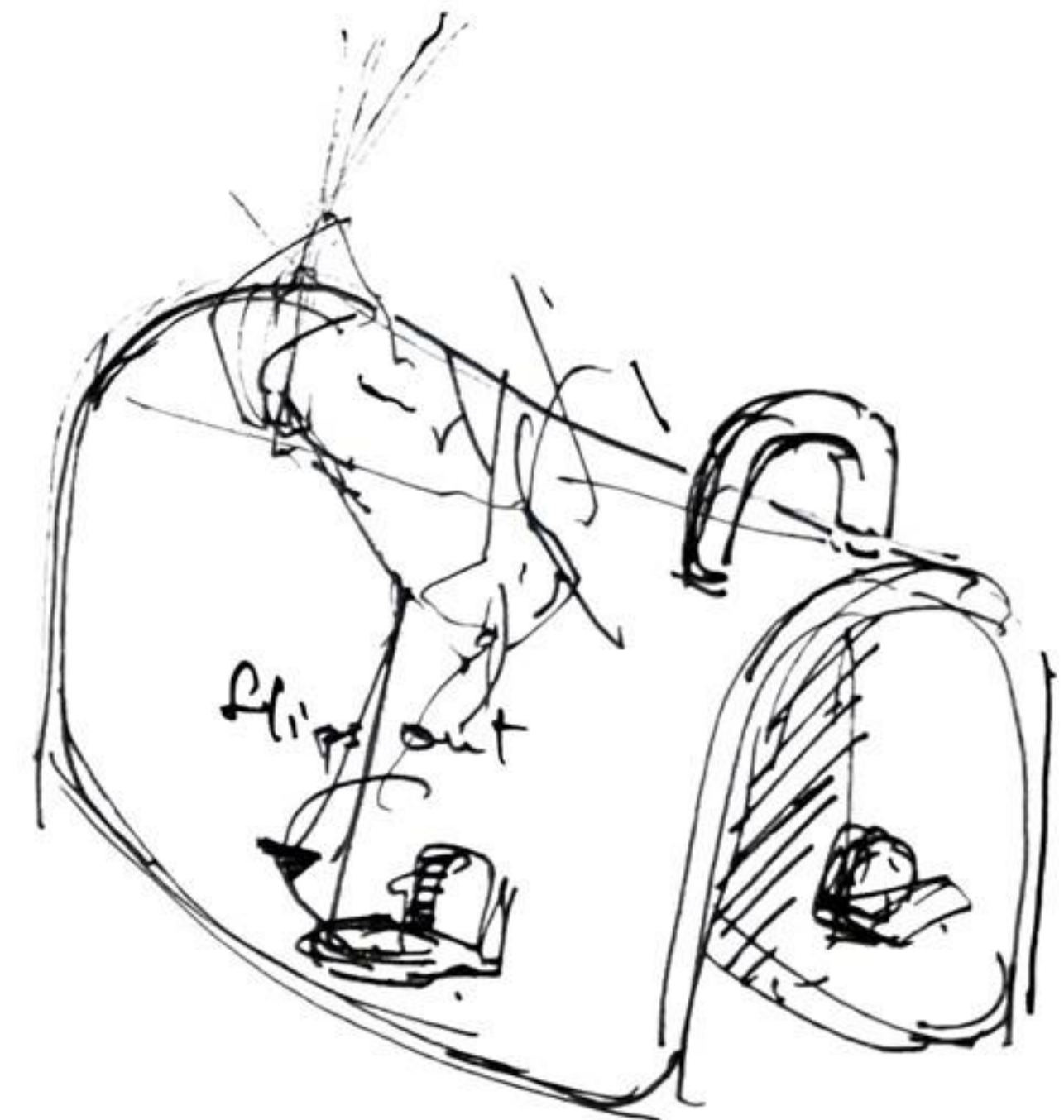




# Ideation



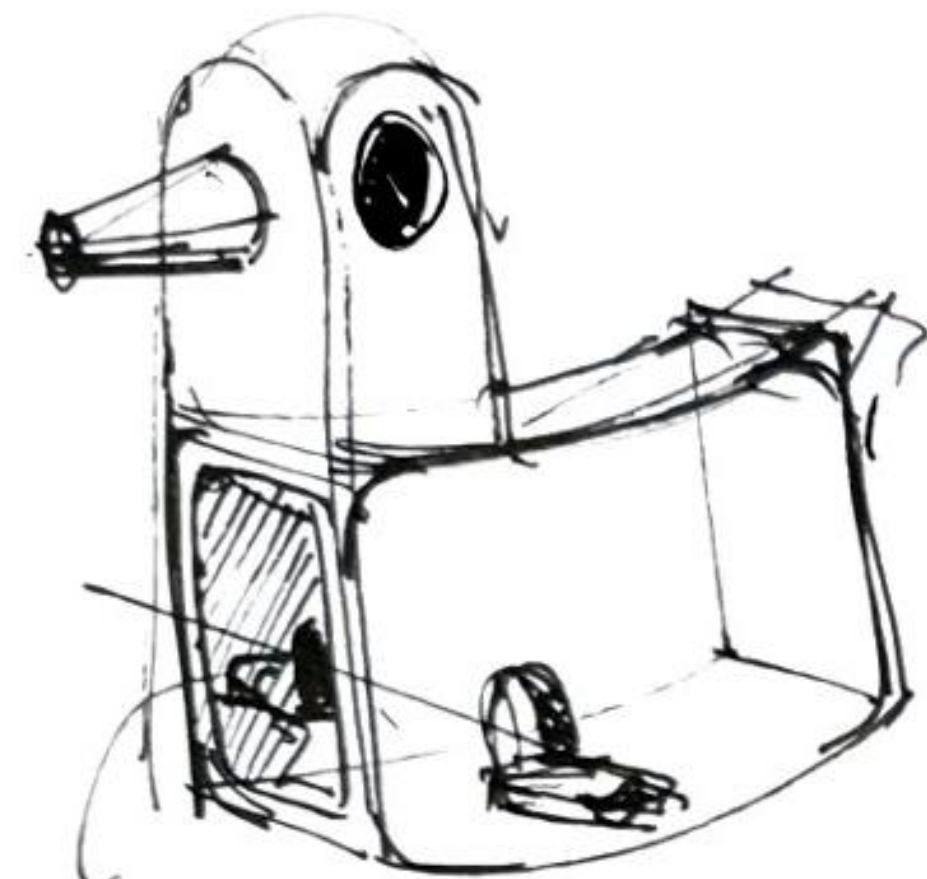
Rocks - tunnel



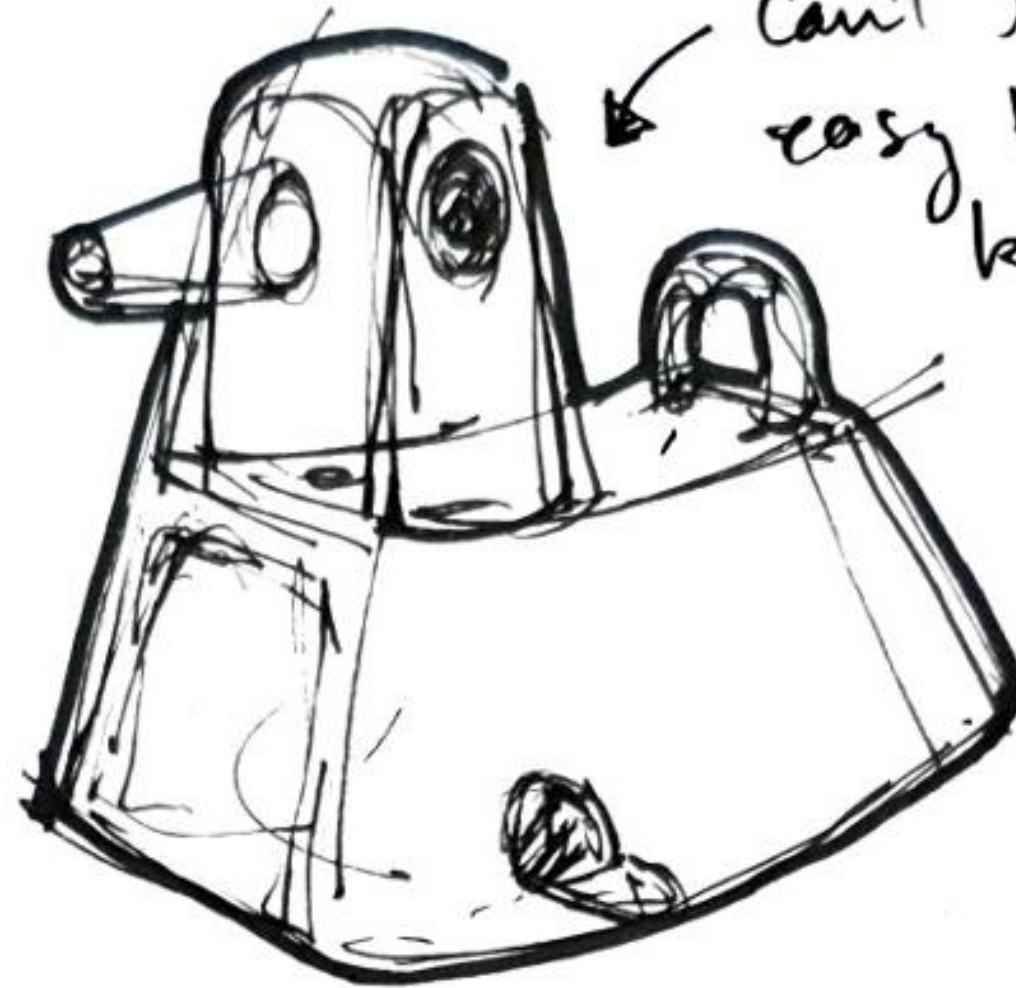


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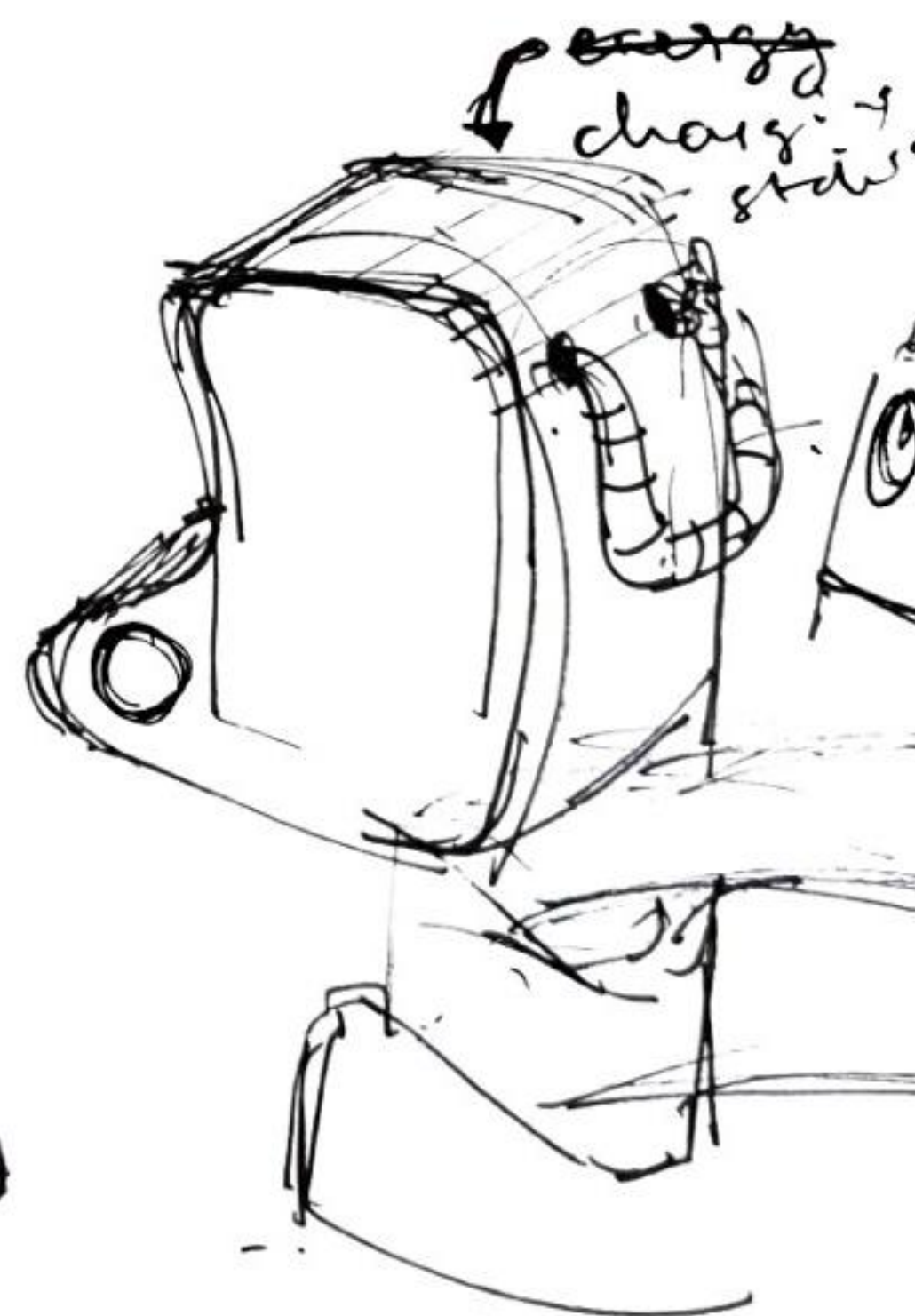
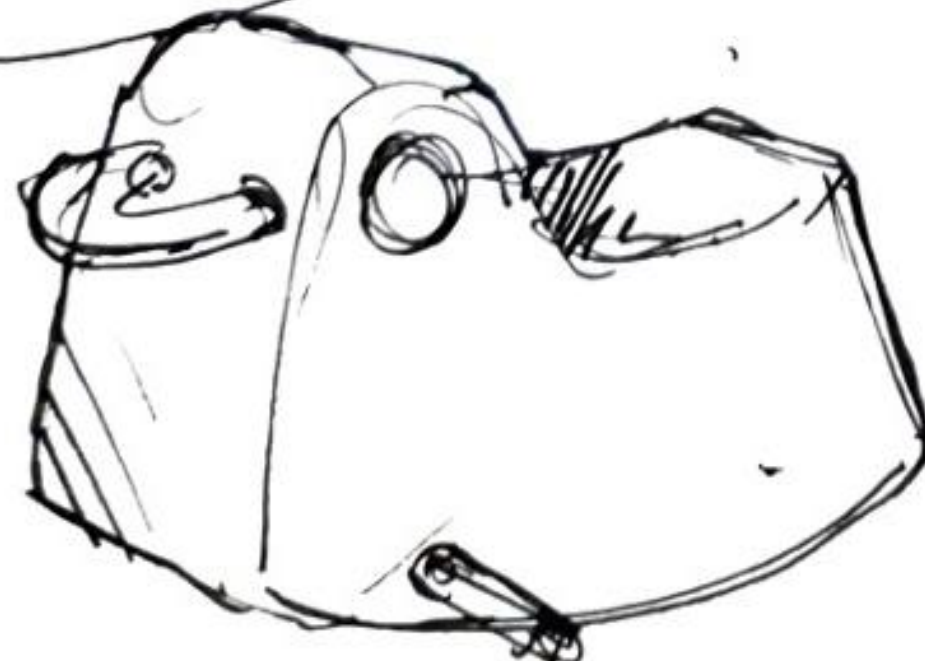
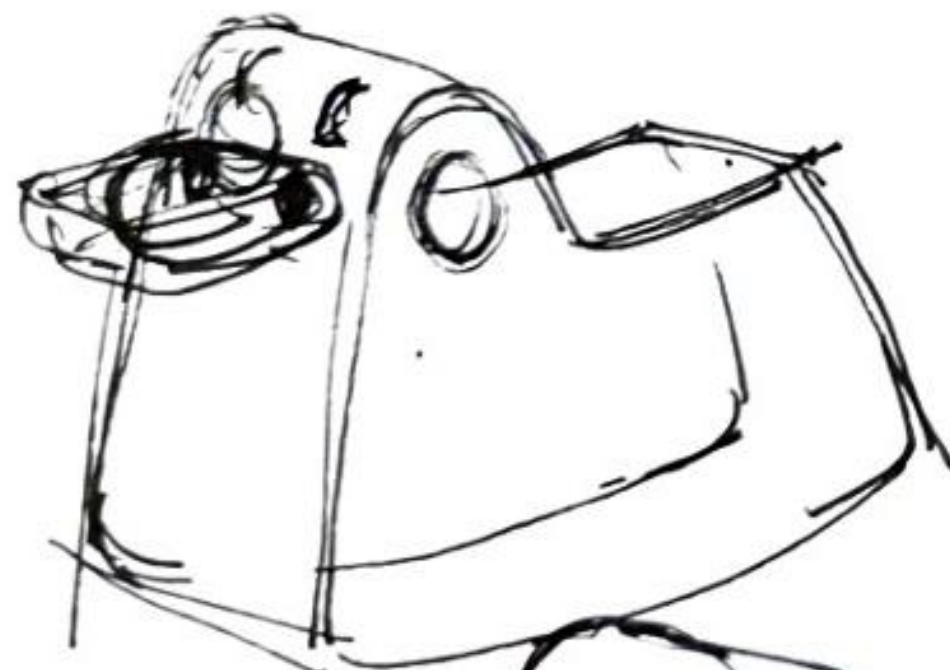
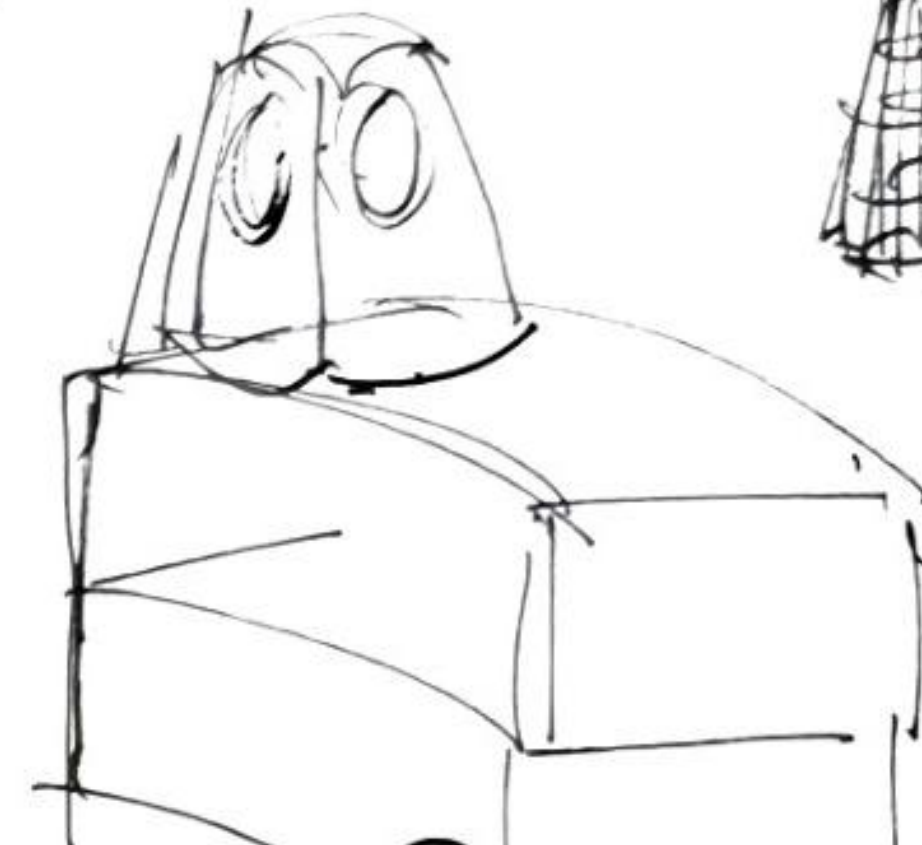
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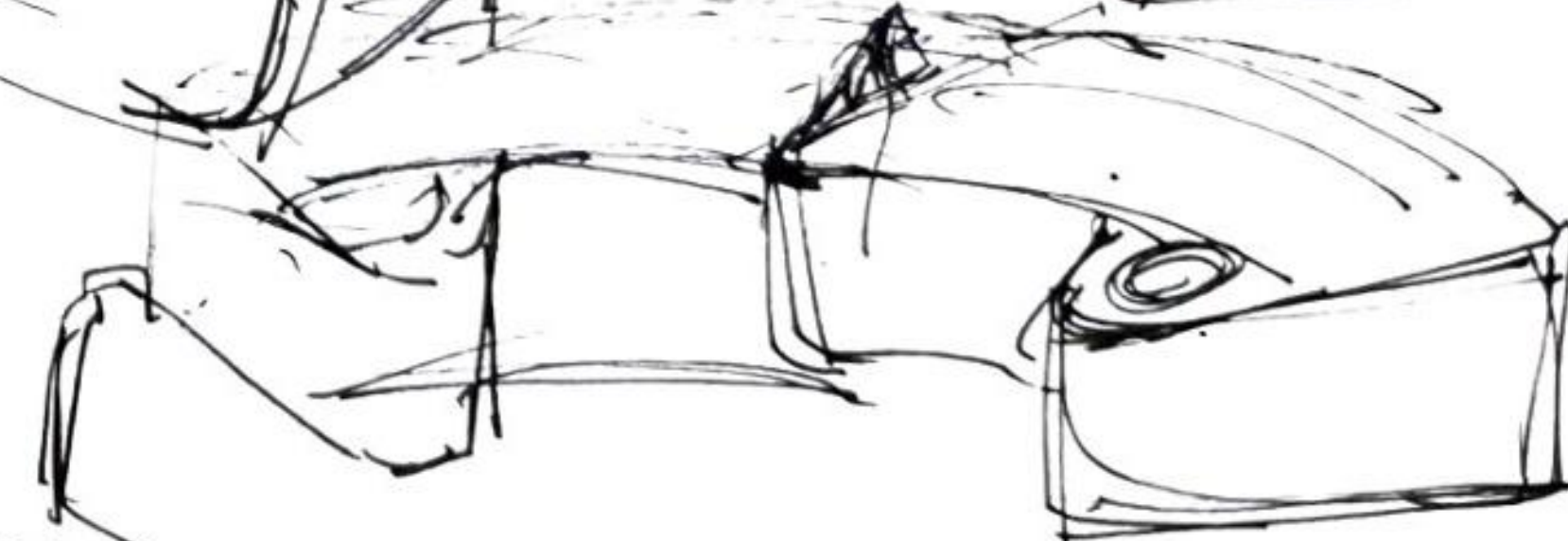
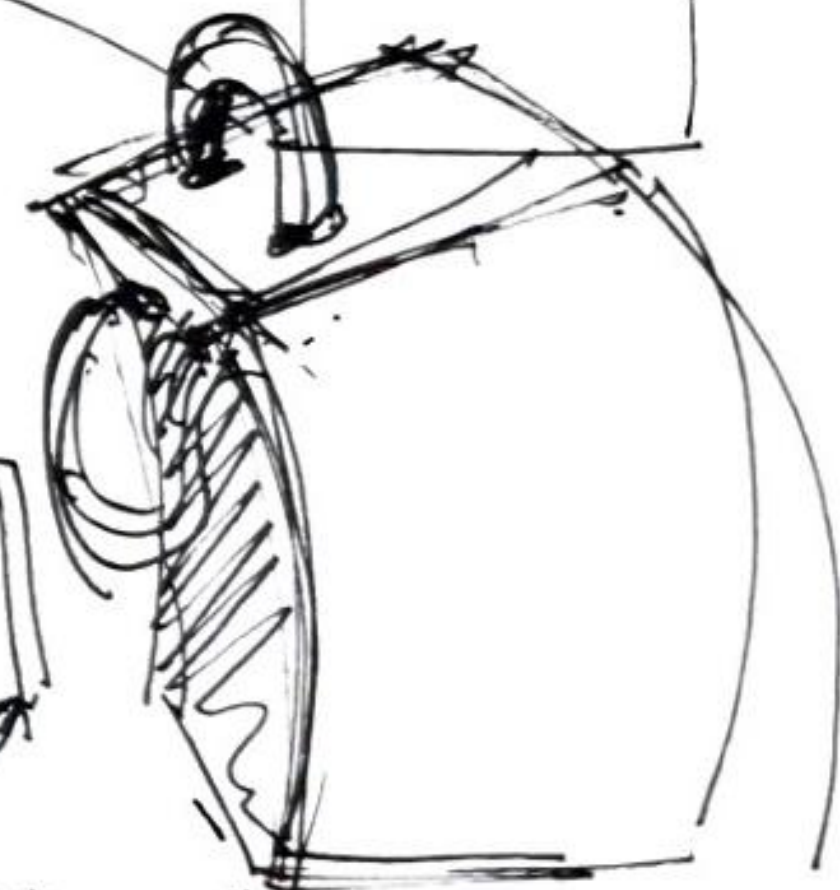
why should it open or closed



can't see tall  
easy to  
knock over

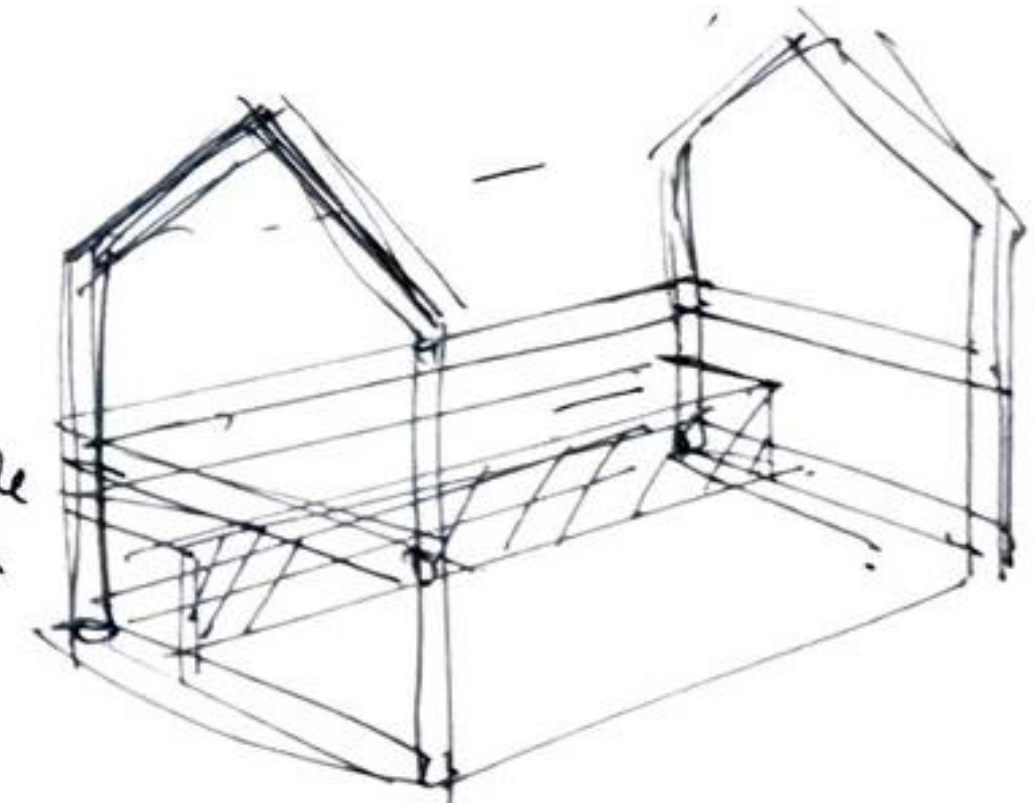
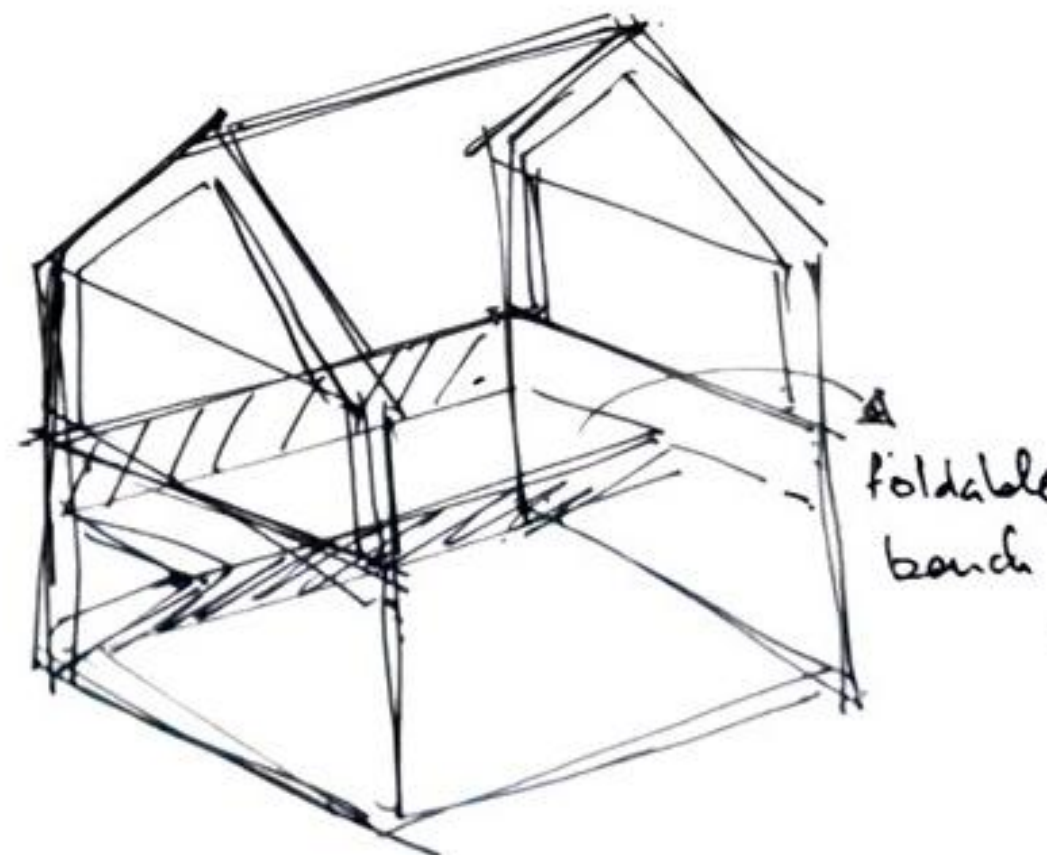
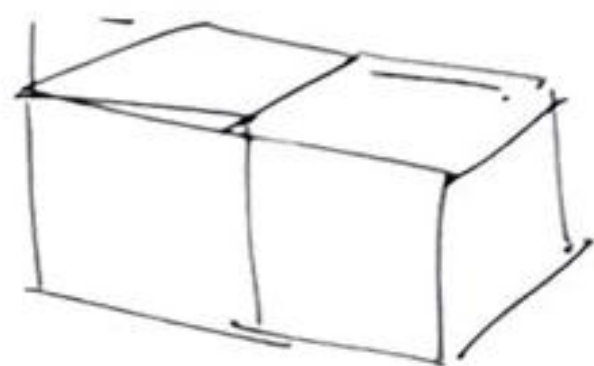
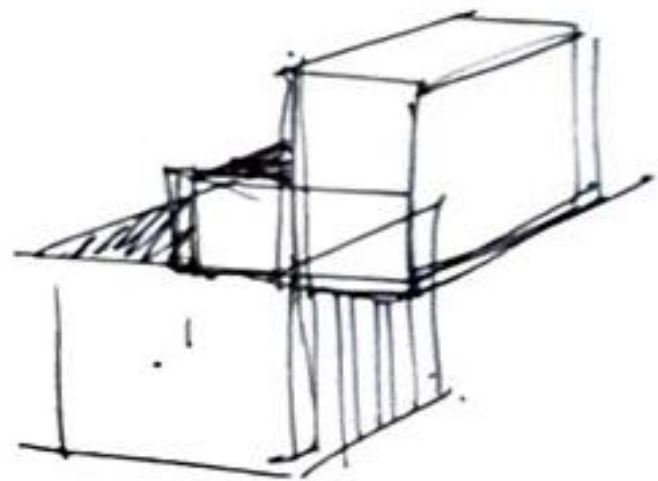
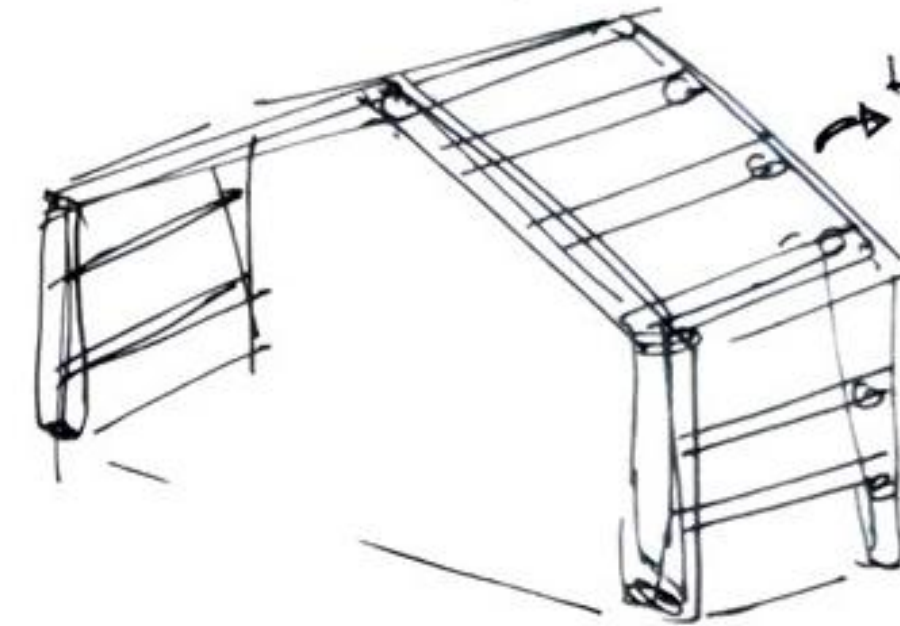
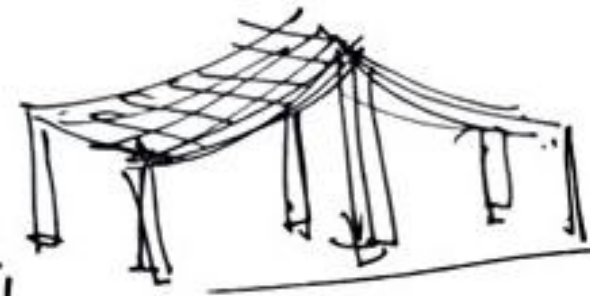
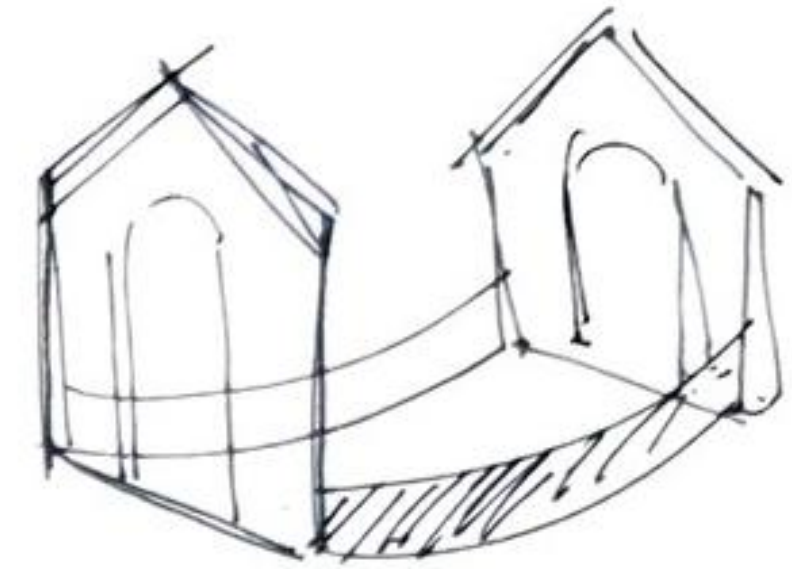
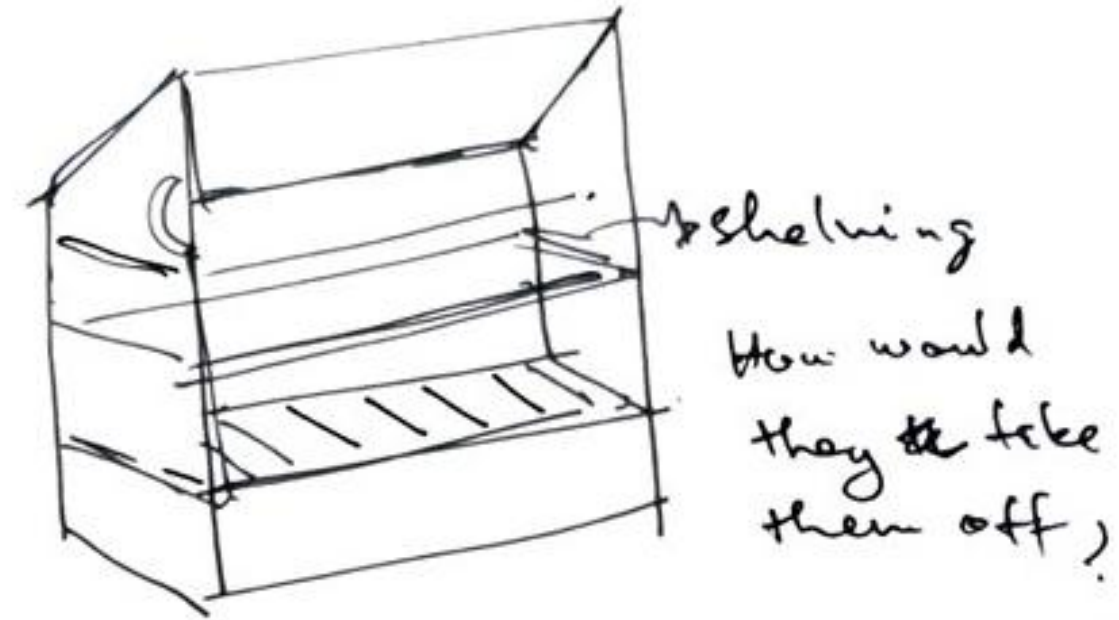
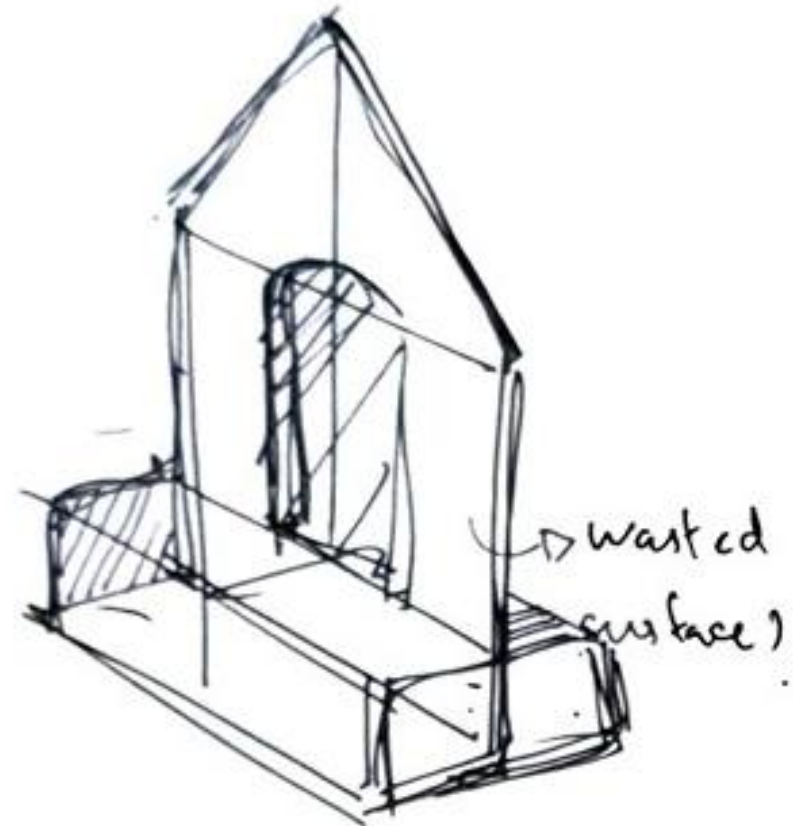
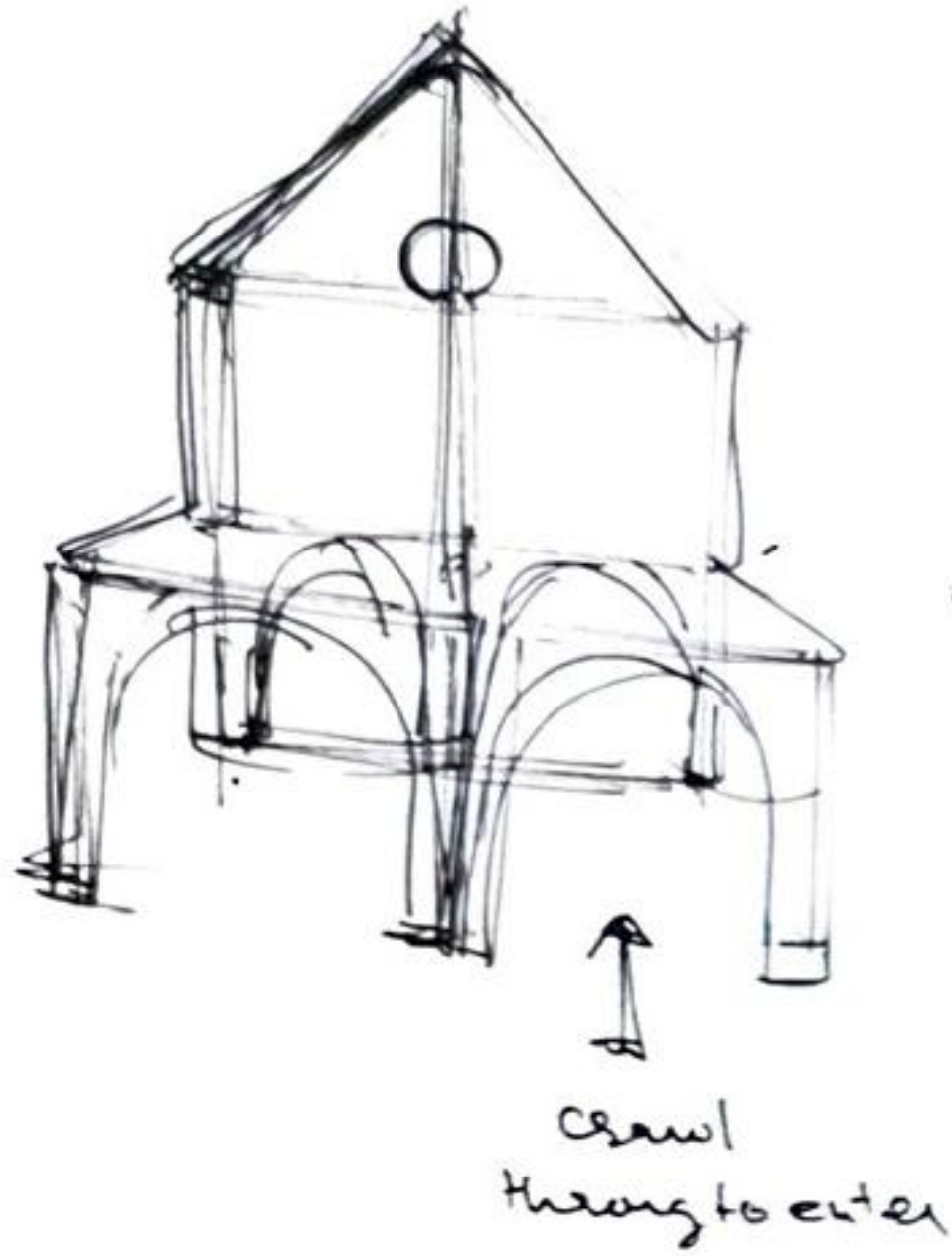


charge  
charging  
stairs





# Ideation

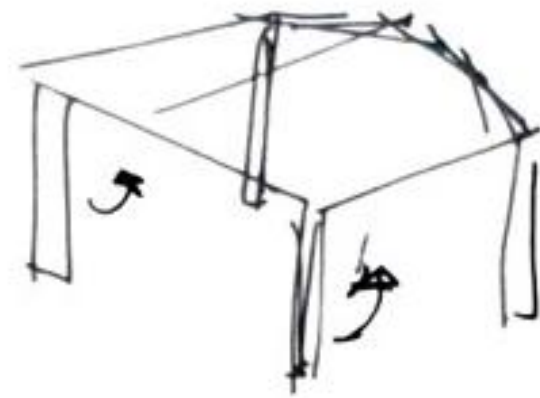






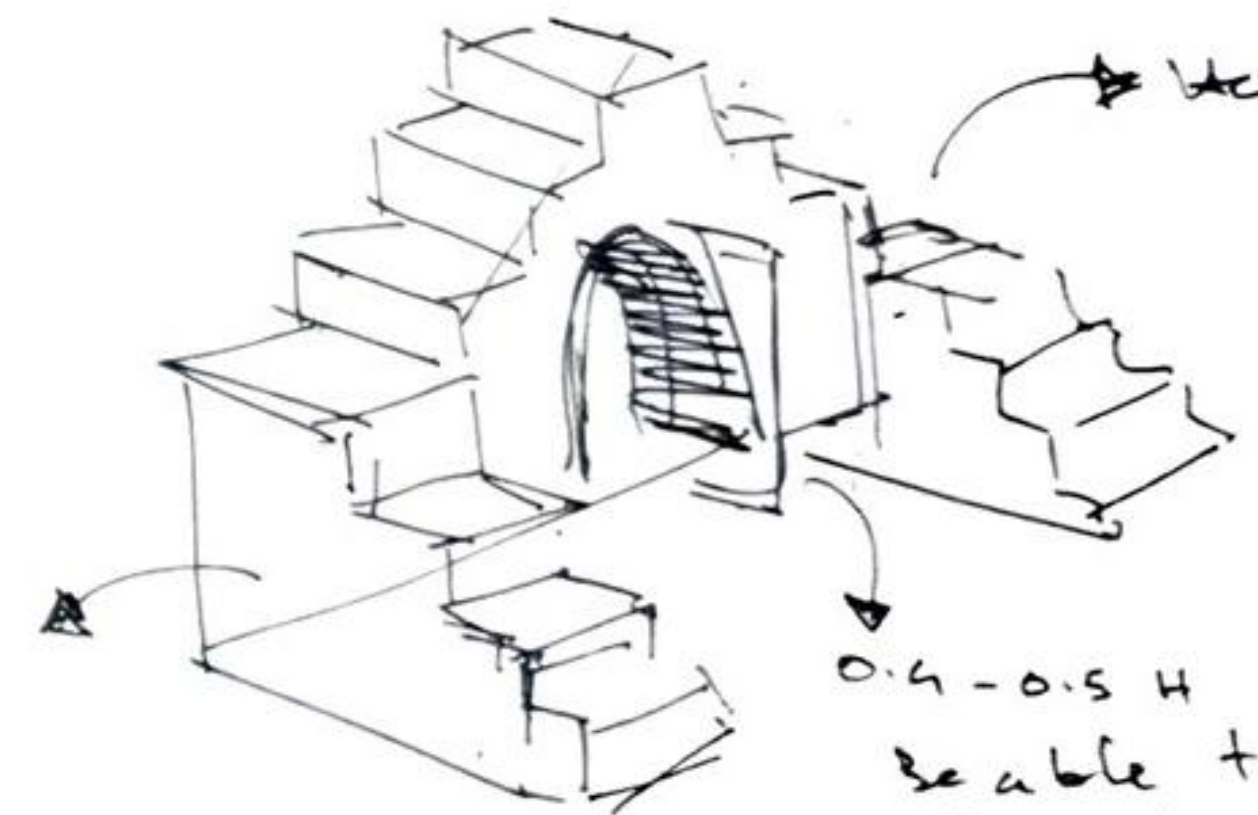
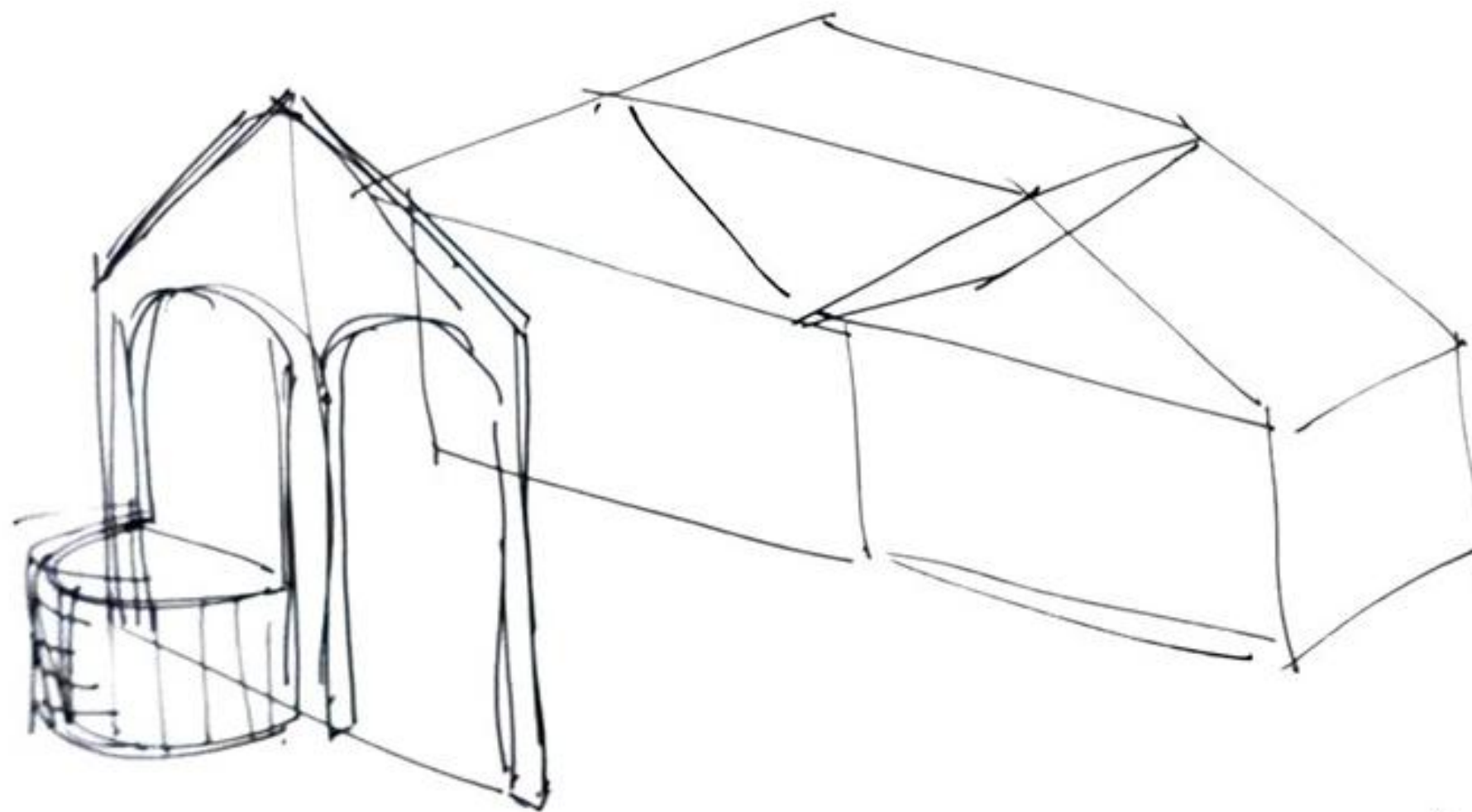
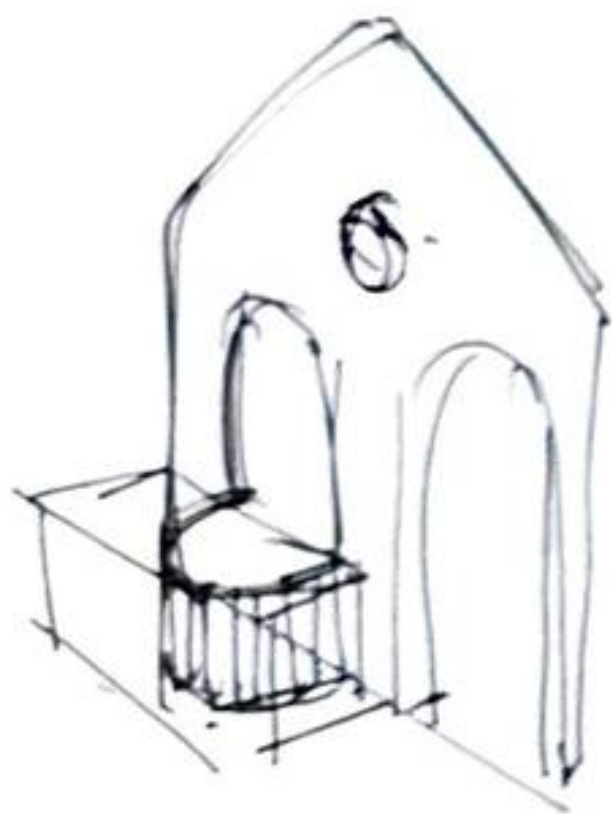
# Ideation



+ house  
get stuff in it  
- too figurative



bench +  + 



house

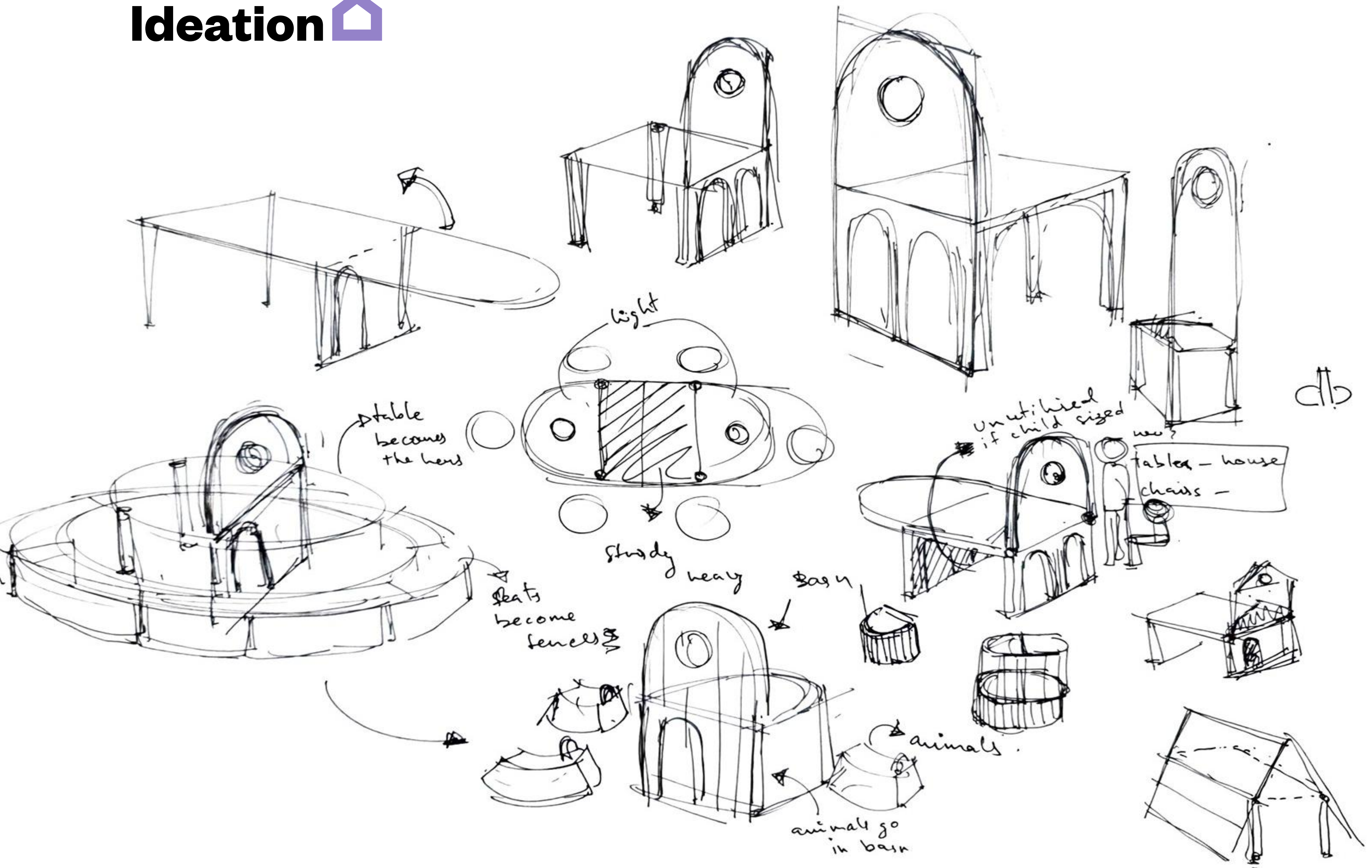
step  
ladder

0.4 - 0.5 H  
Be able to crawl  
through

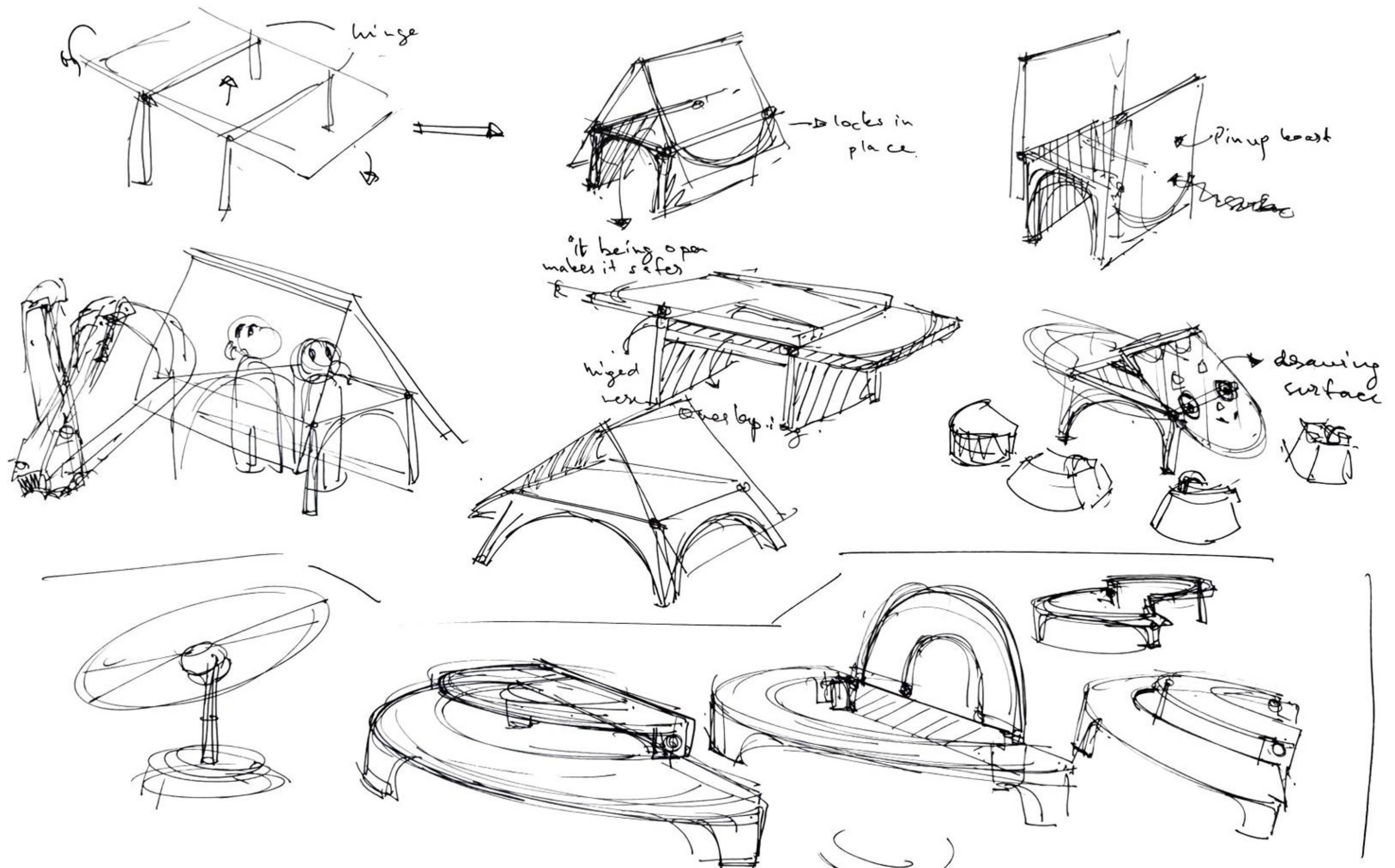


pyramids

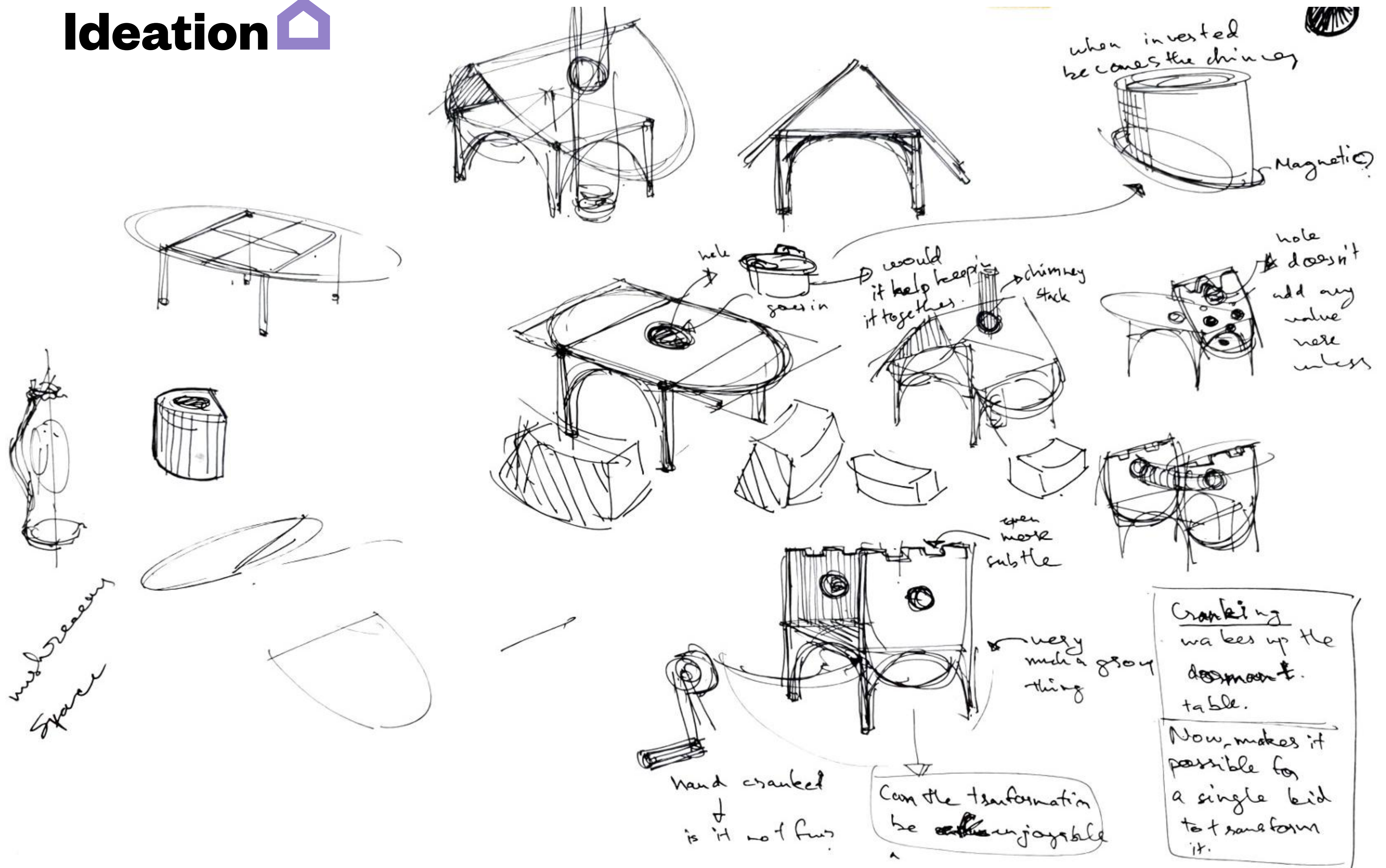




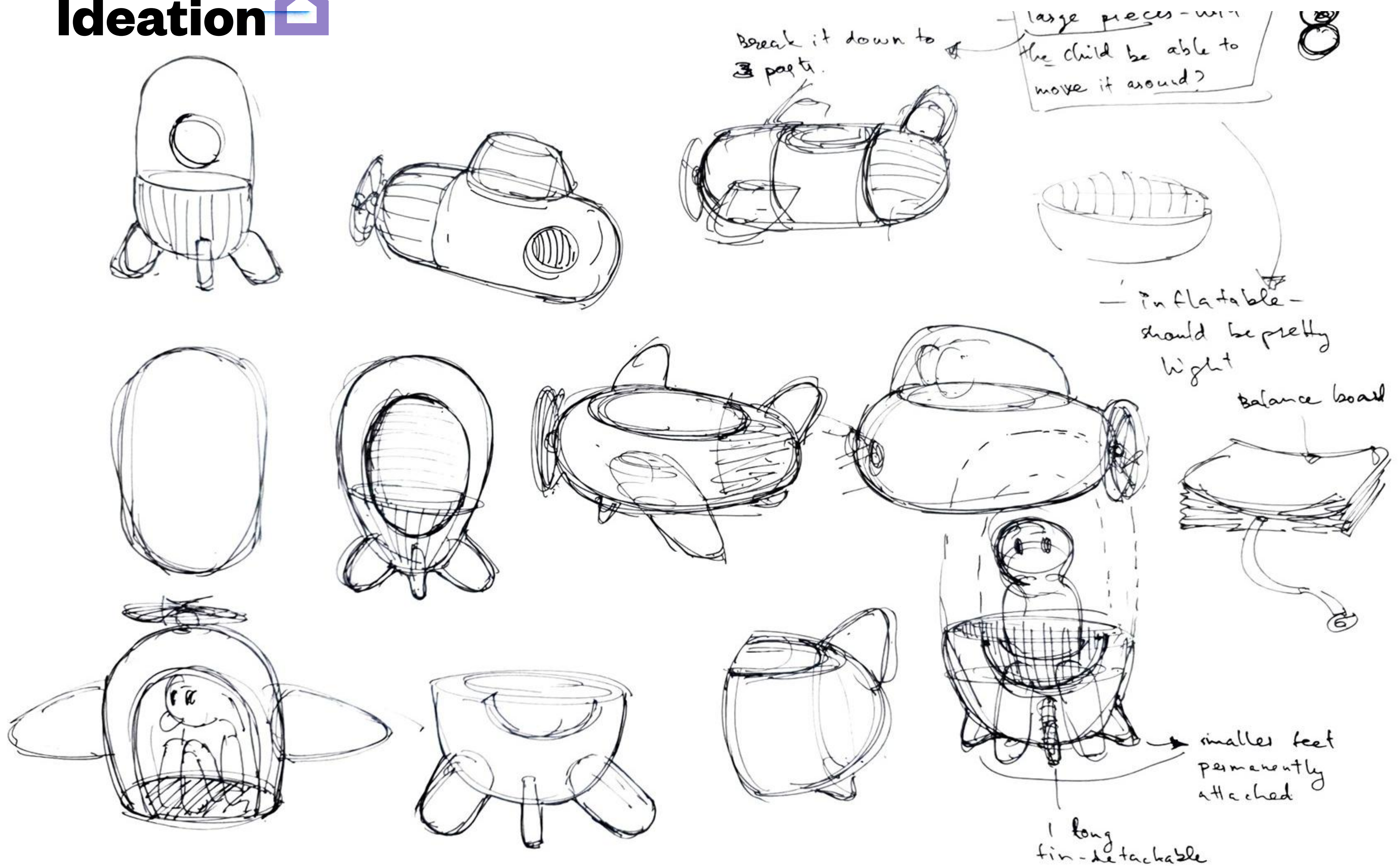




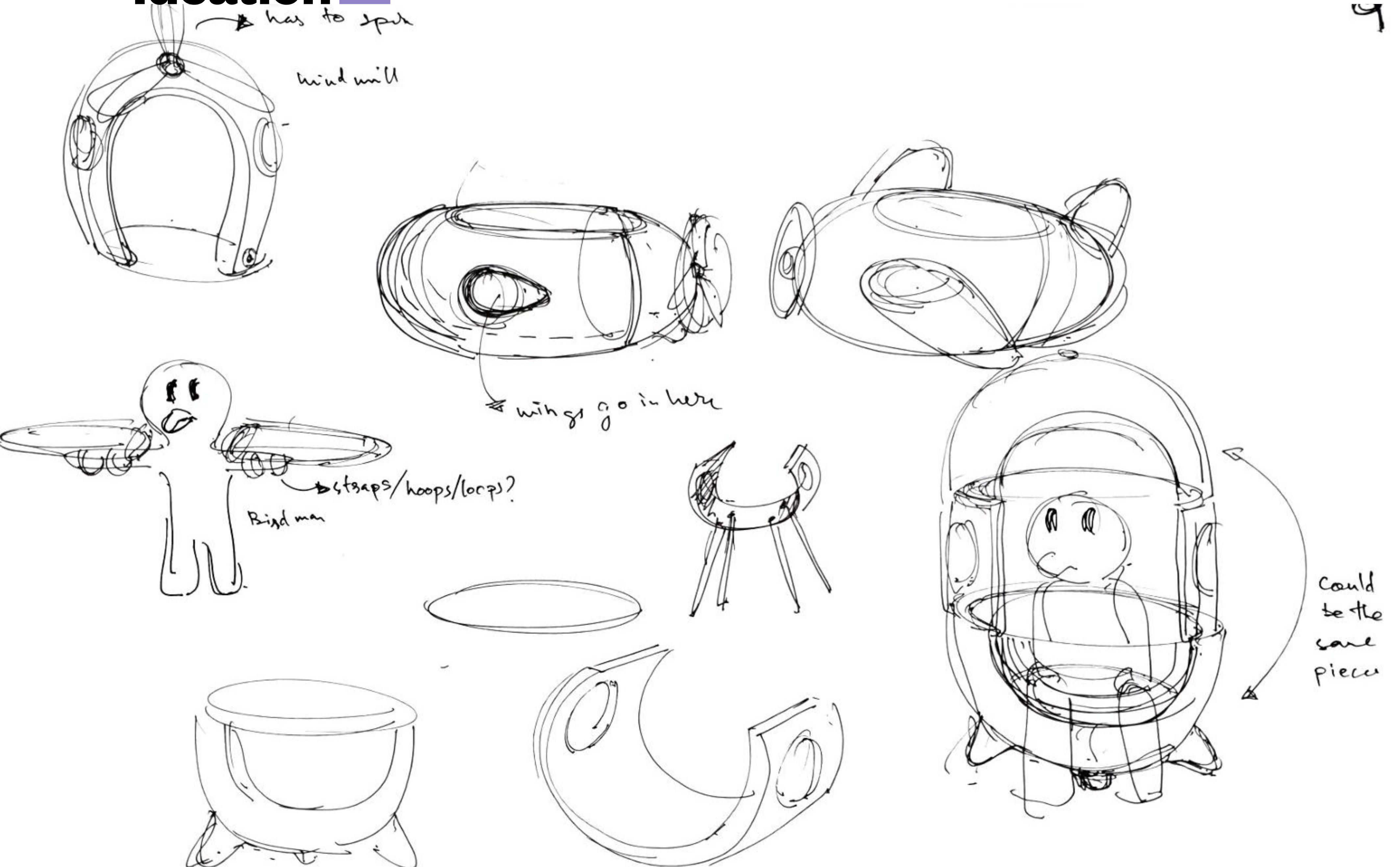








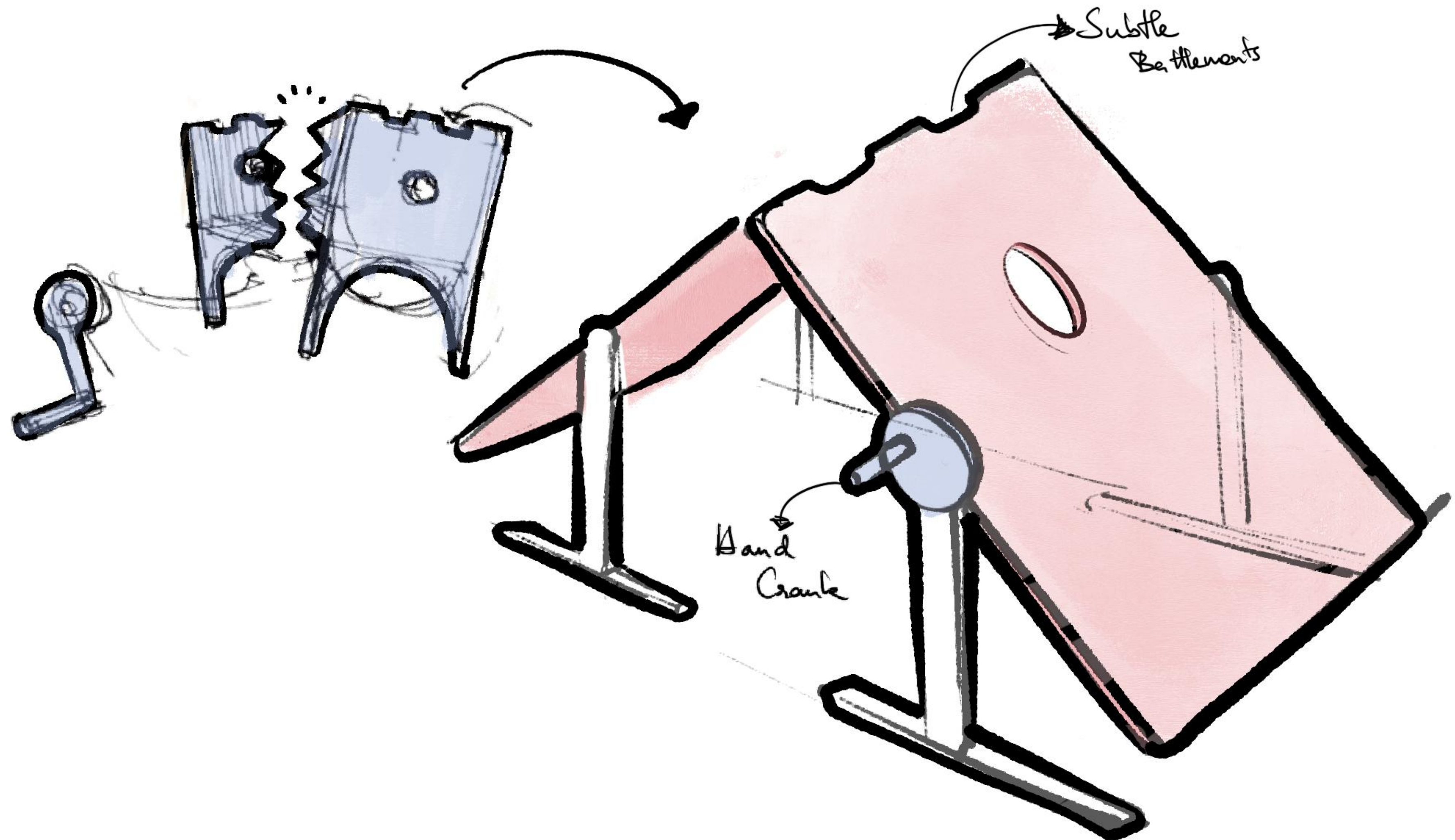






# Concepts

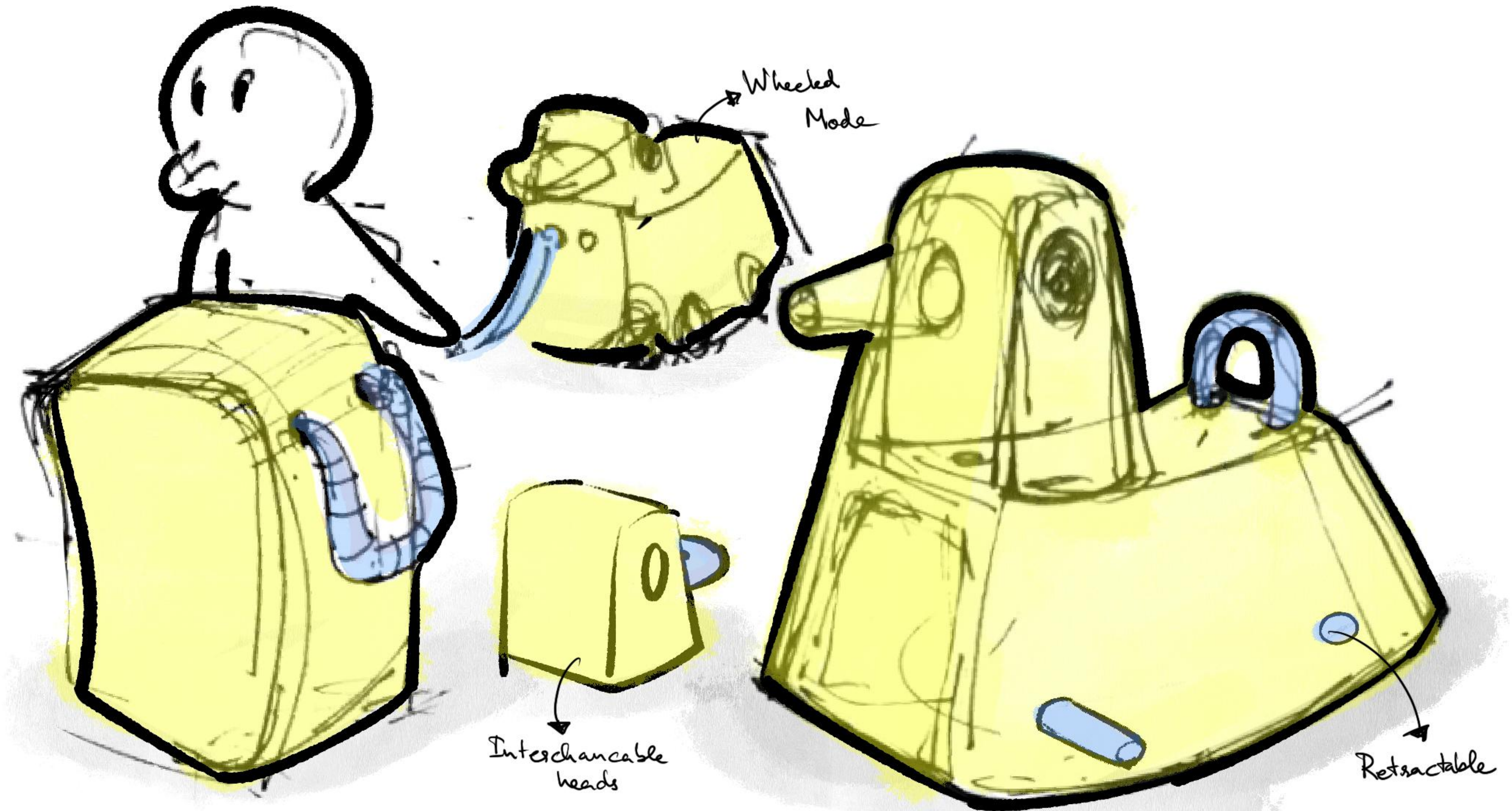
## Concept 1





# Concepts

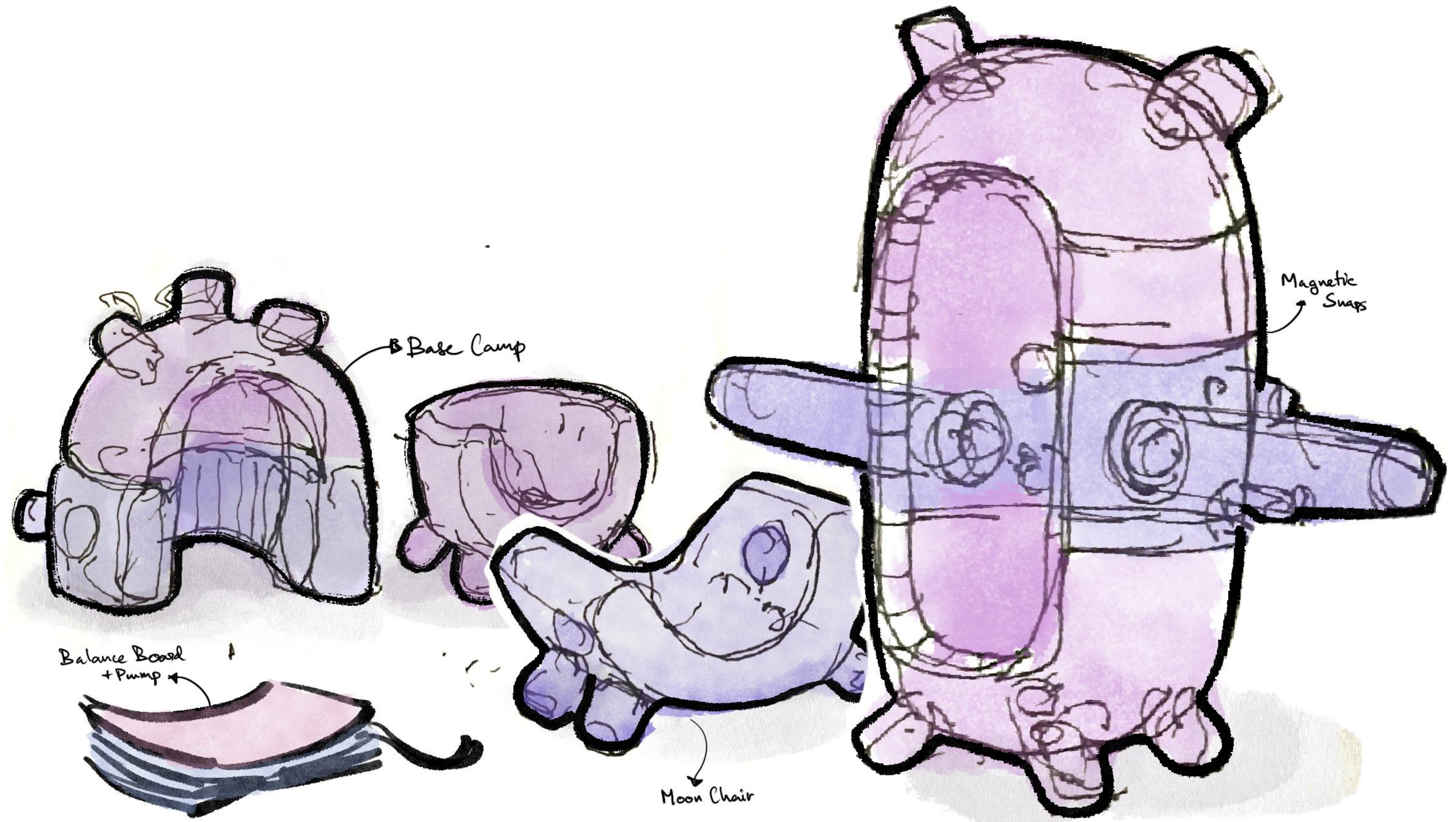
## Concept 2





# Concepts

## Concept 3





# Concept Evaluation

The concepts were then evaluated using the evaluation criteria derived from the design brief.

**Affordance**-ability to draw the interest of children

**Play Possibilities**-the combination of both transformability and tranforming ability of the object.

**Independance factor**- How idependent the child is while interacting with the object.

**Shared Play**- Ability of the object to bring children to bring children togeter to play.

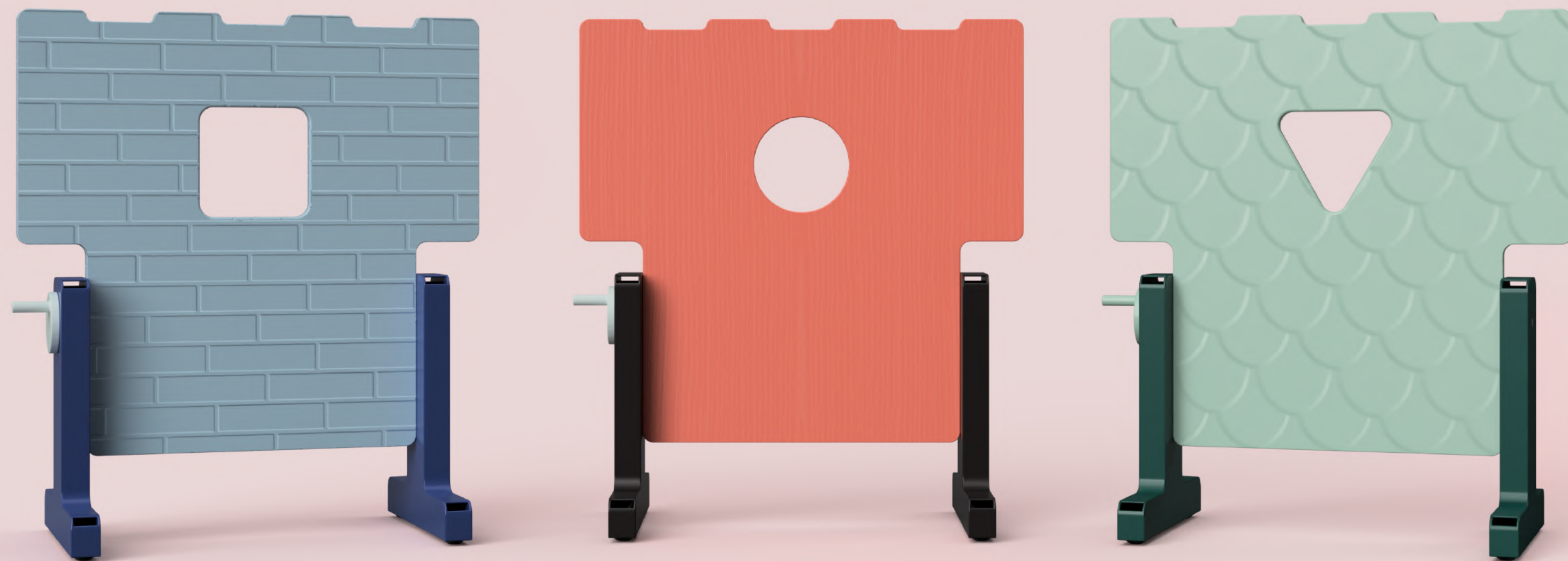
**Furnitureness**- How furniture like is the object.

Concept 1 came out on top.

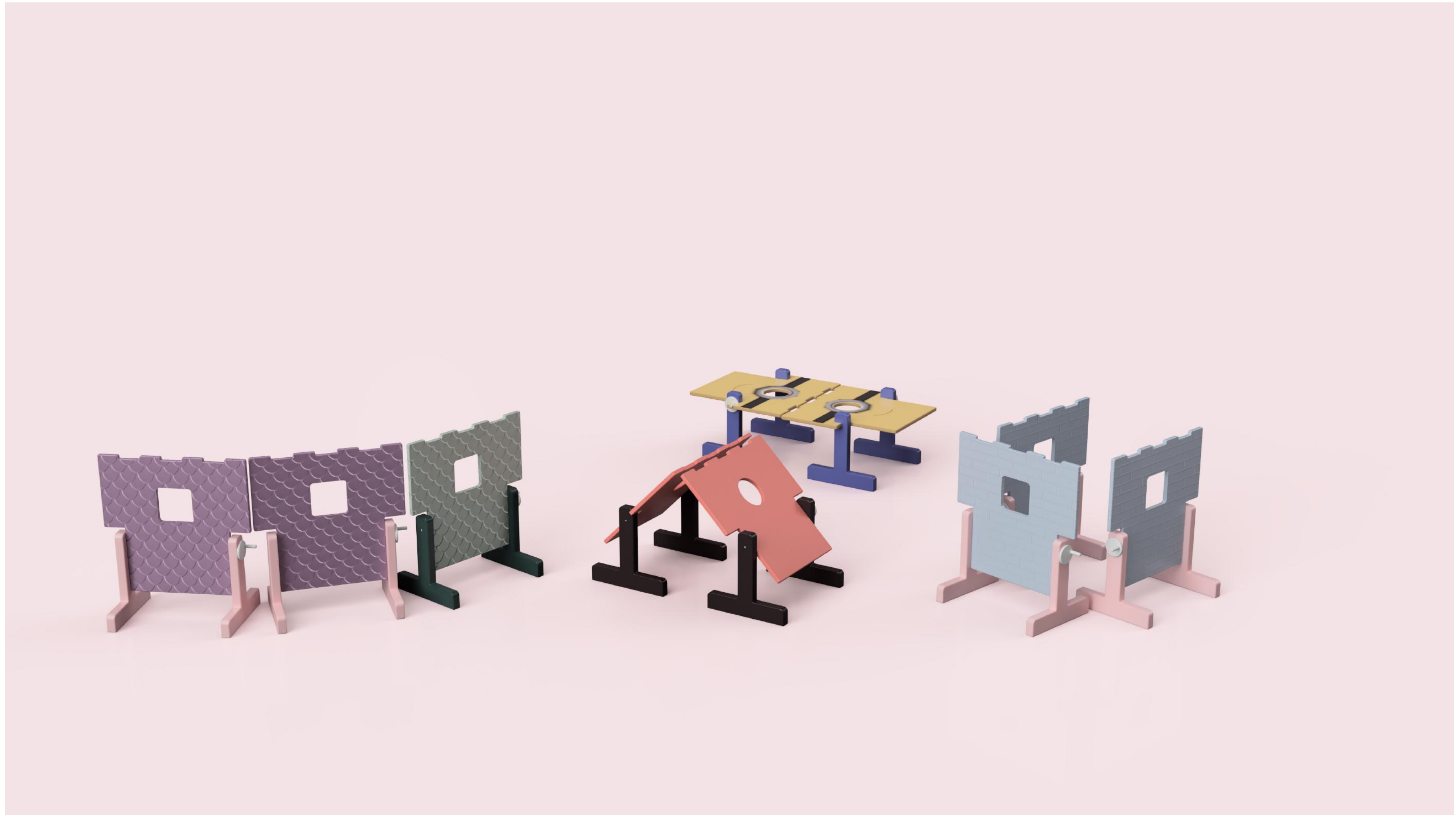
Concept	Affordance	Play Possibilities	Independence Factor	Shared Play	Furnitureness
Concept 1	0	9	3	9	9
Concept 2	3	3	9	0	0
Concept 3	9	0	0	3	3

# Mockups

# CAD Modelling

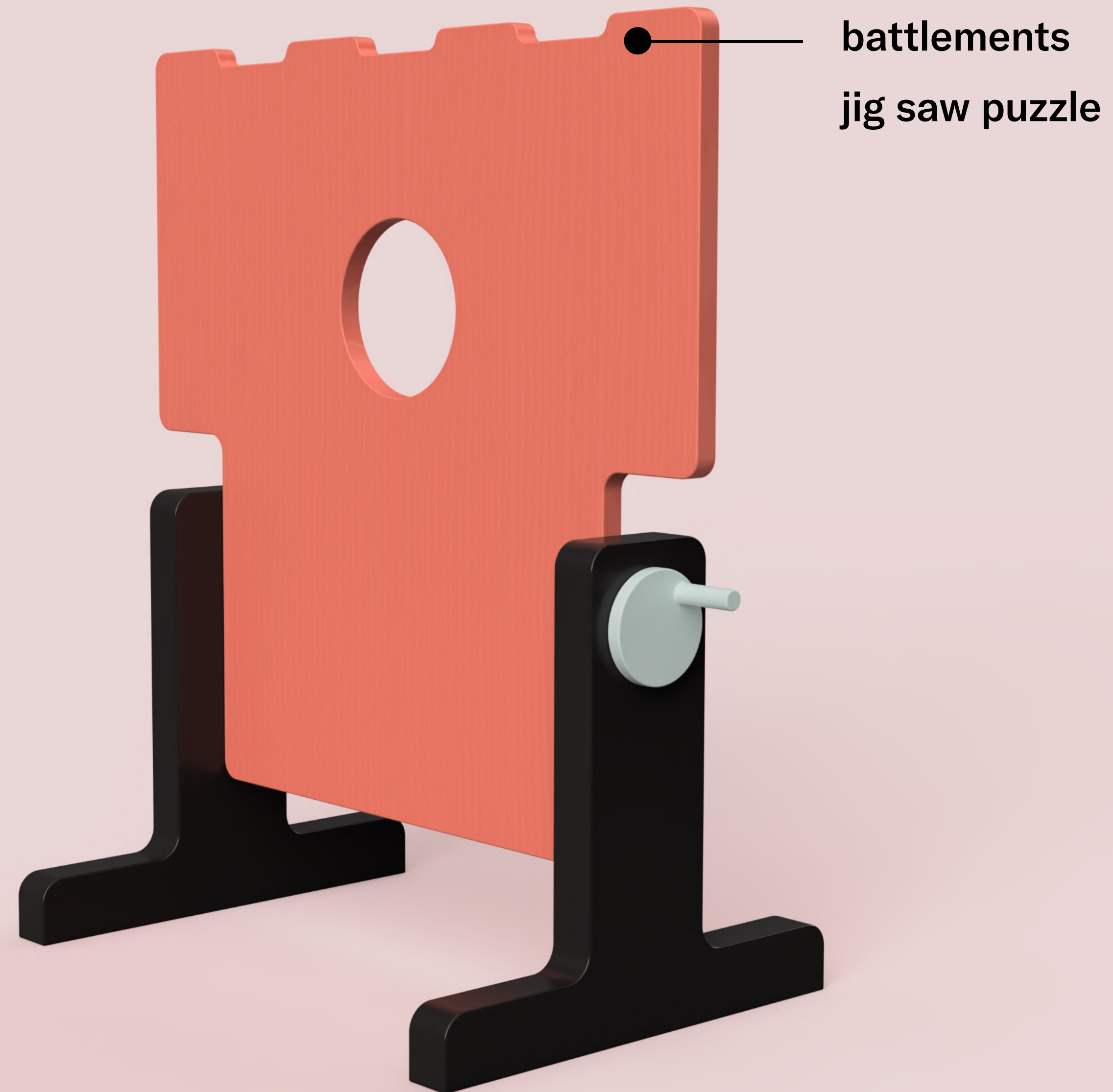


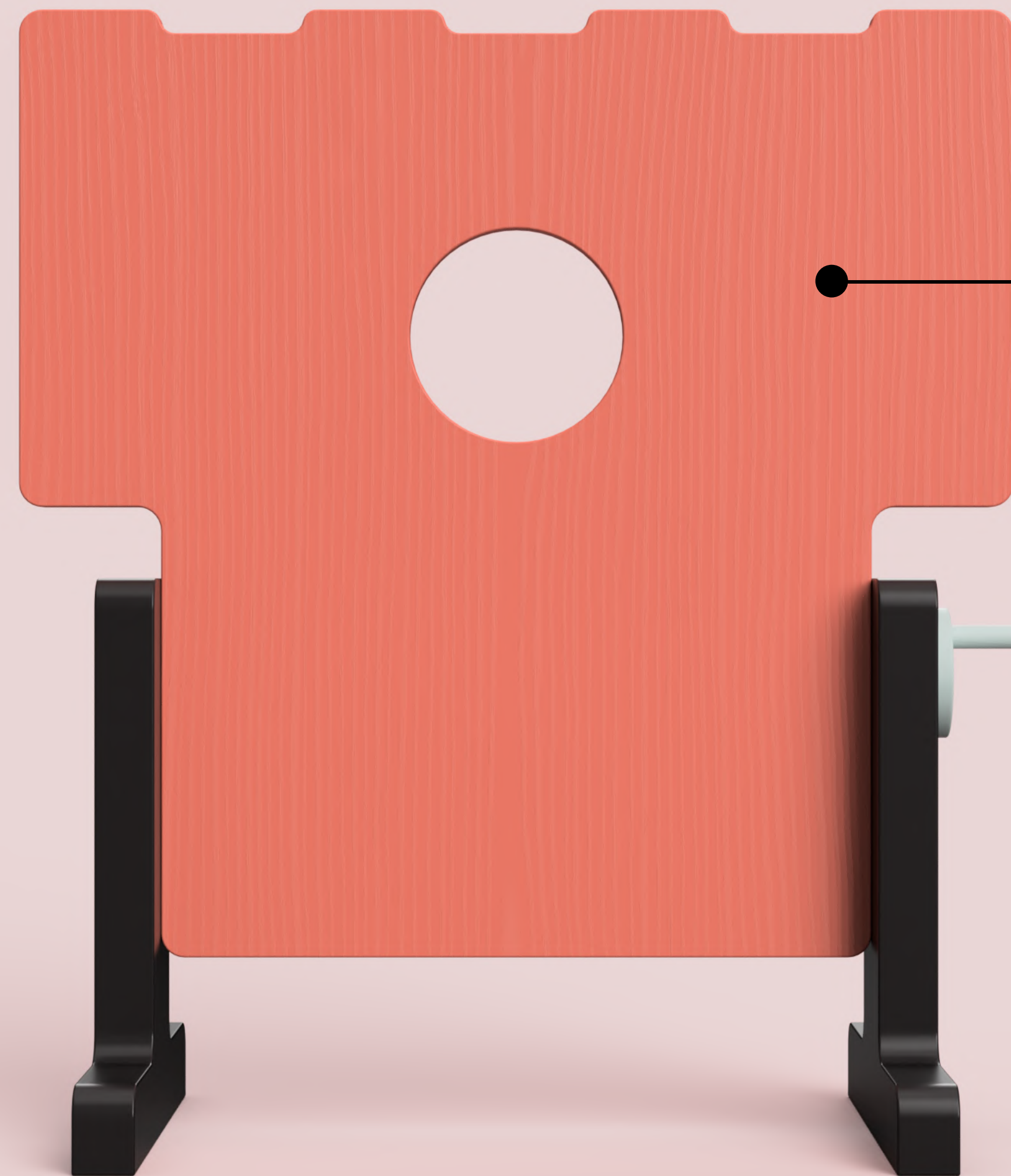
# CAD Modelling





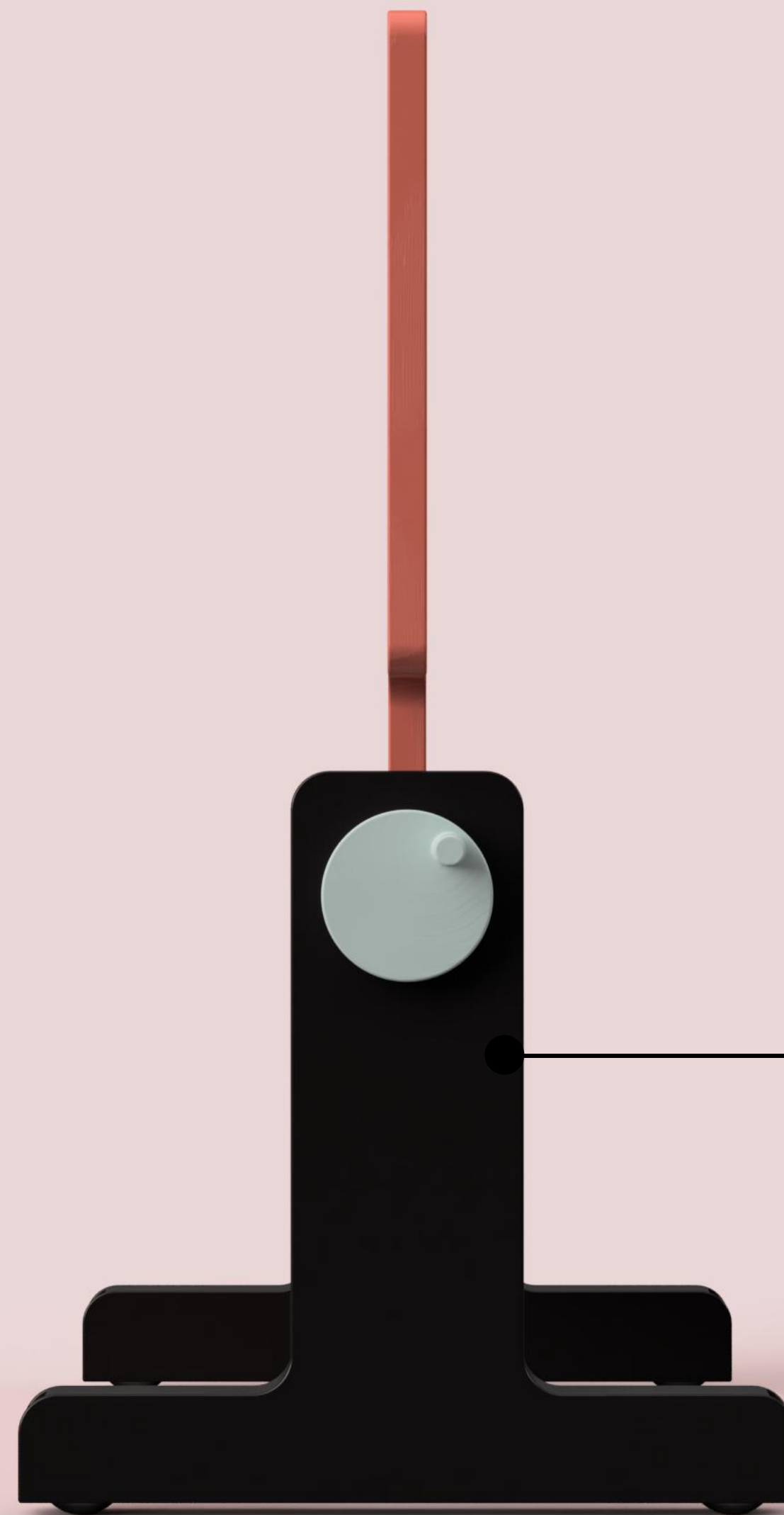
# Details





comical-wide shoulders

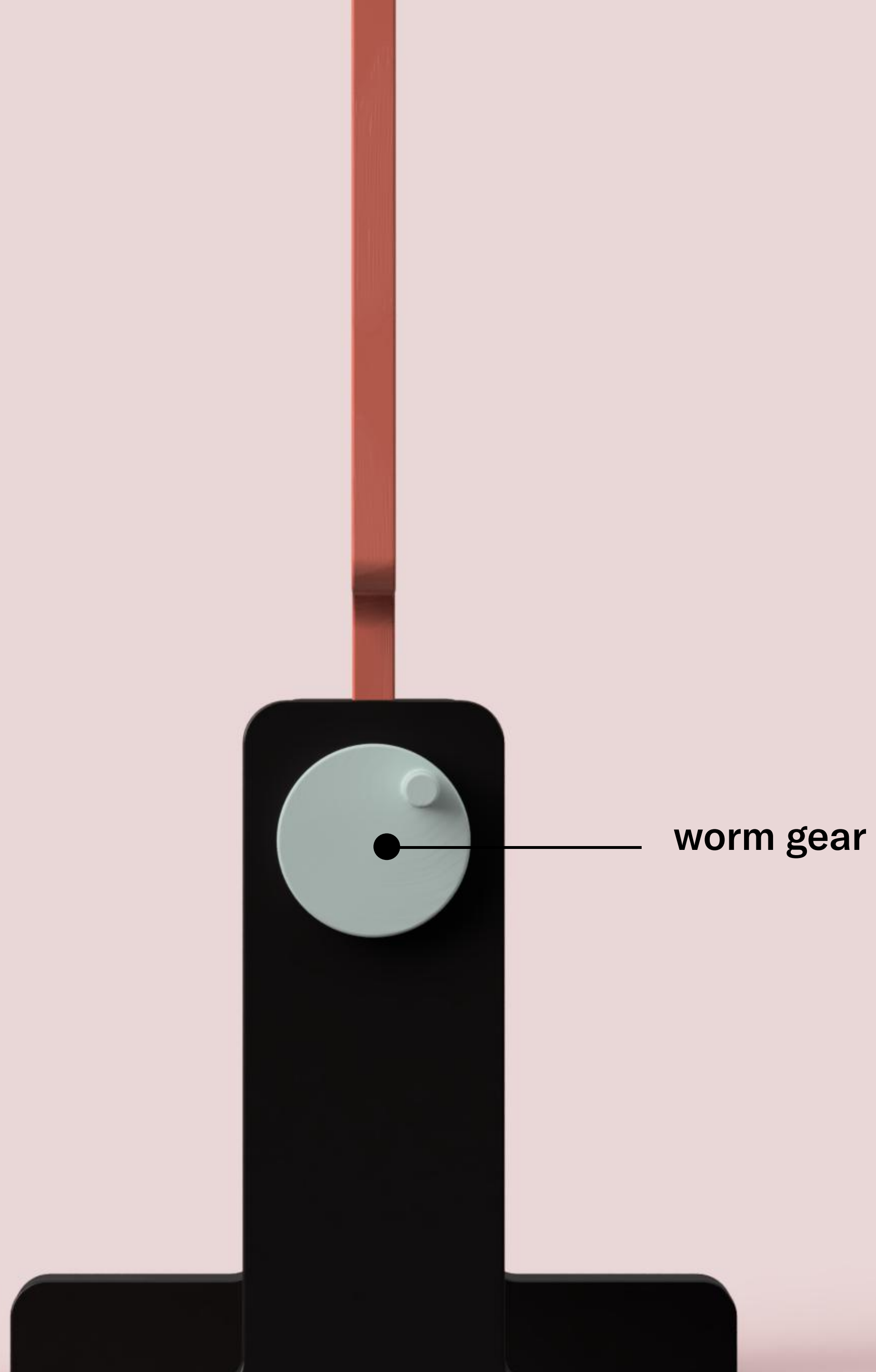
hole-one more element to  
interact with



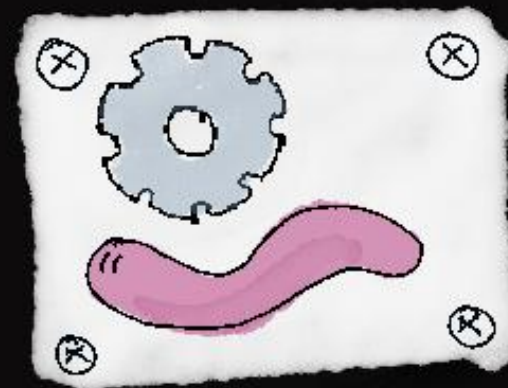
weighted base

low profile wheels





worm gear

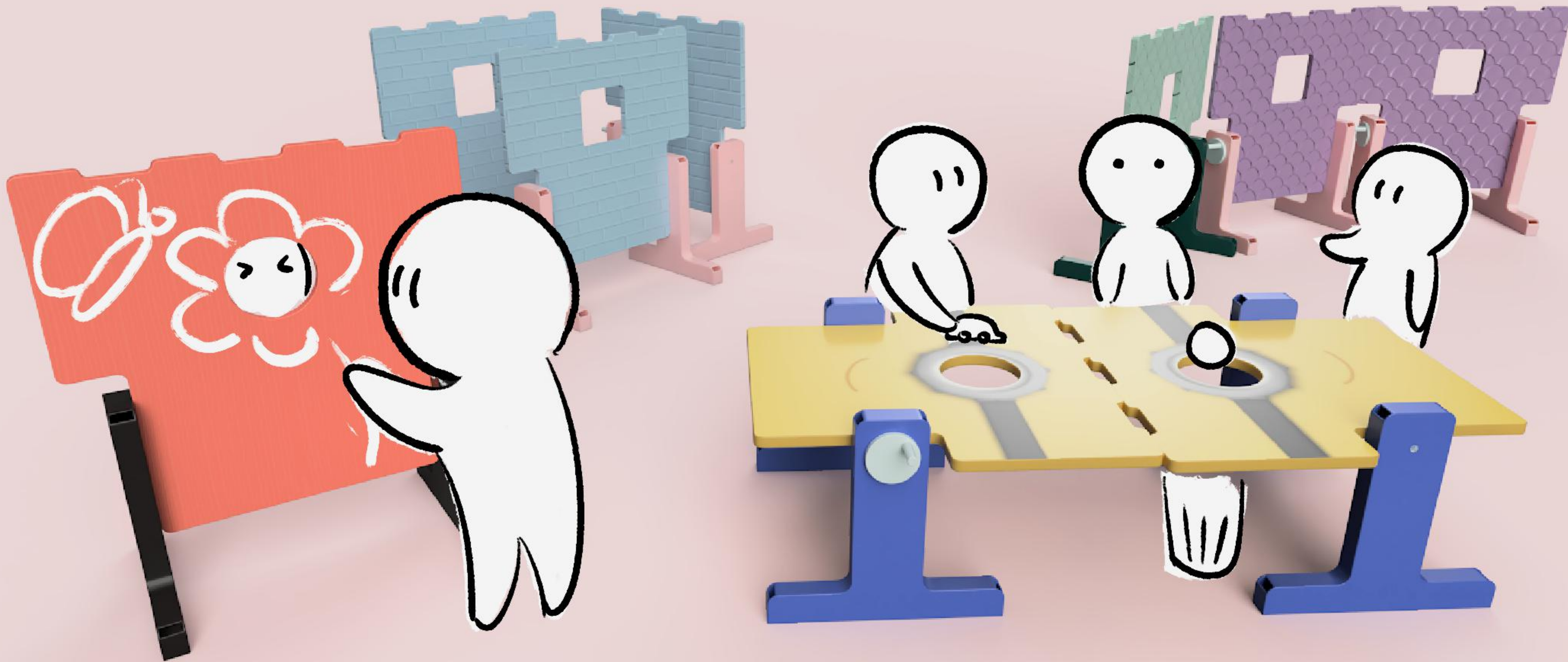


worm gear

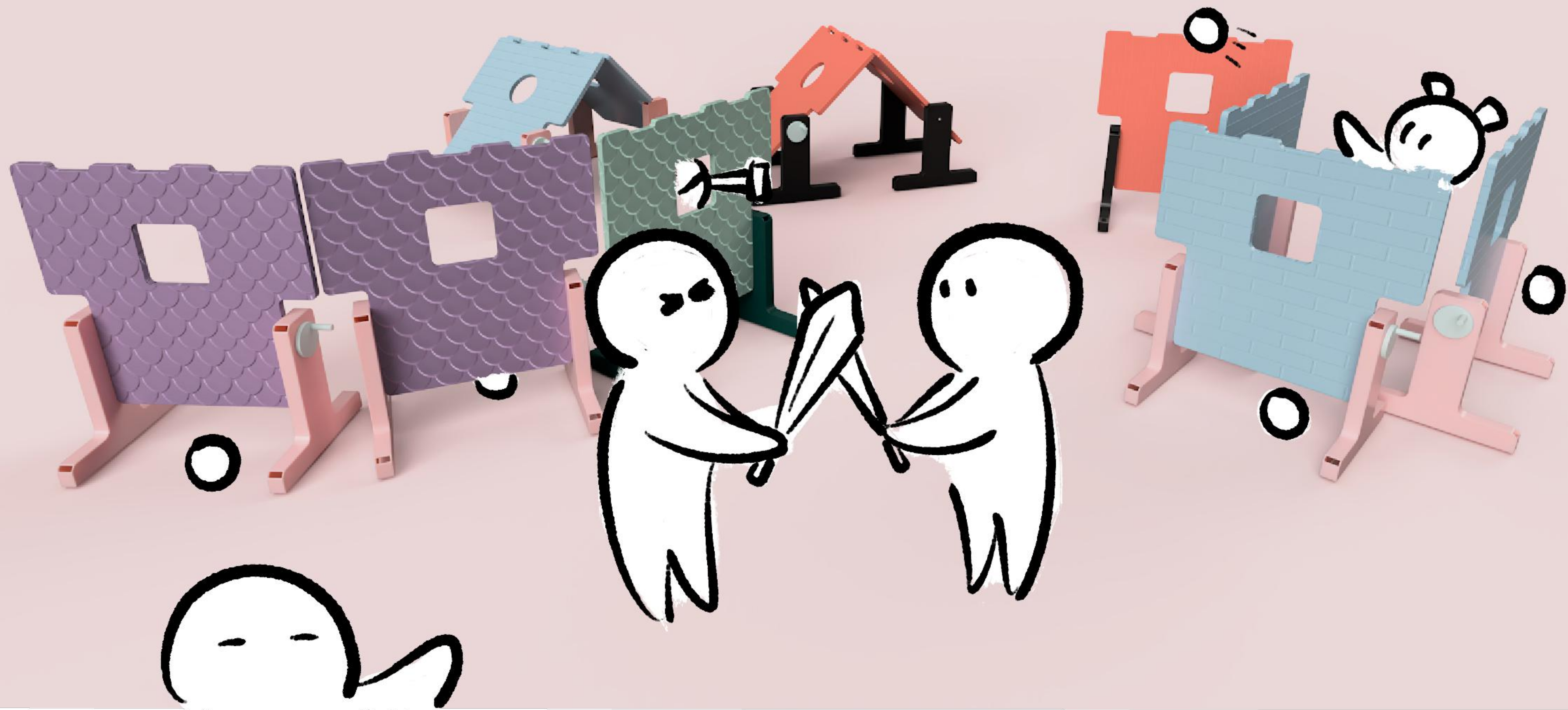
# Scenarios



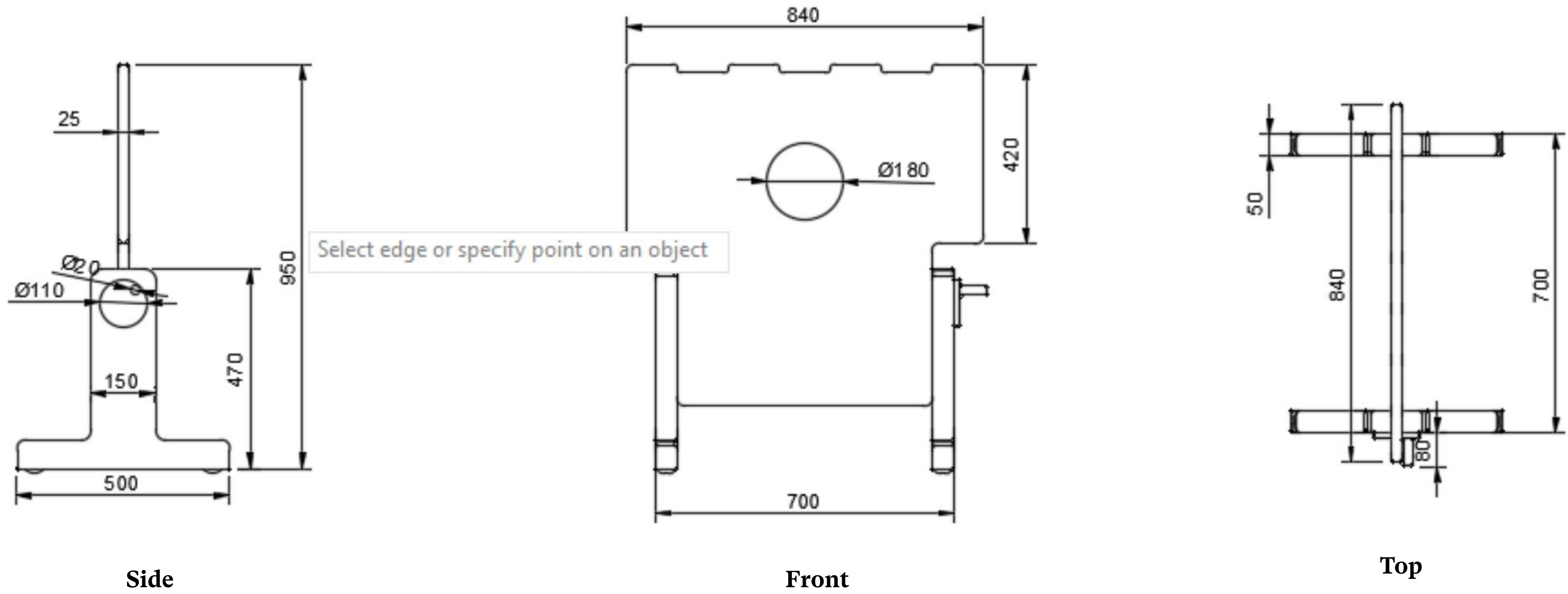








# Dimensions





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