

[DART-291] Toy Construction Game



Fairy & Tell

2019

Presented by

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Tribute to
ENZO MARI

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•Research

Documentation on Enzo Mari



Birth: April 27, 1932. In Novara, Italy

Academics:

Studied at the Accademia di Belle Arti di Brera in Milan. 1952-1956
Teached at University of Parma, the Accademia Carrara, Milan Polytechnic and ISIA, the Hochschule der Künste, and the “Hochschule für angewandte Kunst”.

Awards and Recognition:

Compasso d’Oro award: 1967 “for individual research in design”.

Compasso d’Oro award: 1979 for the “Delfina” chair.

Compasso d’Oro award: 1987 for the “Tonietta” chair.

Compasso d’Oro award: 2001 for the “Legato” table.

“Barcelona” prize: 1997.

The RSA of London: 2000 Honorary Royal Designer for Industry.

The Faculty of Architecture at Milan Polytechnic: 2002 honorary degree in Industrial Design in 2002.

Important Publications:

The Apple and the Butterfly (1969)

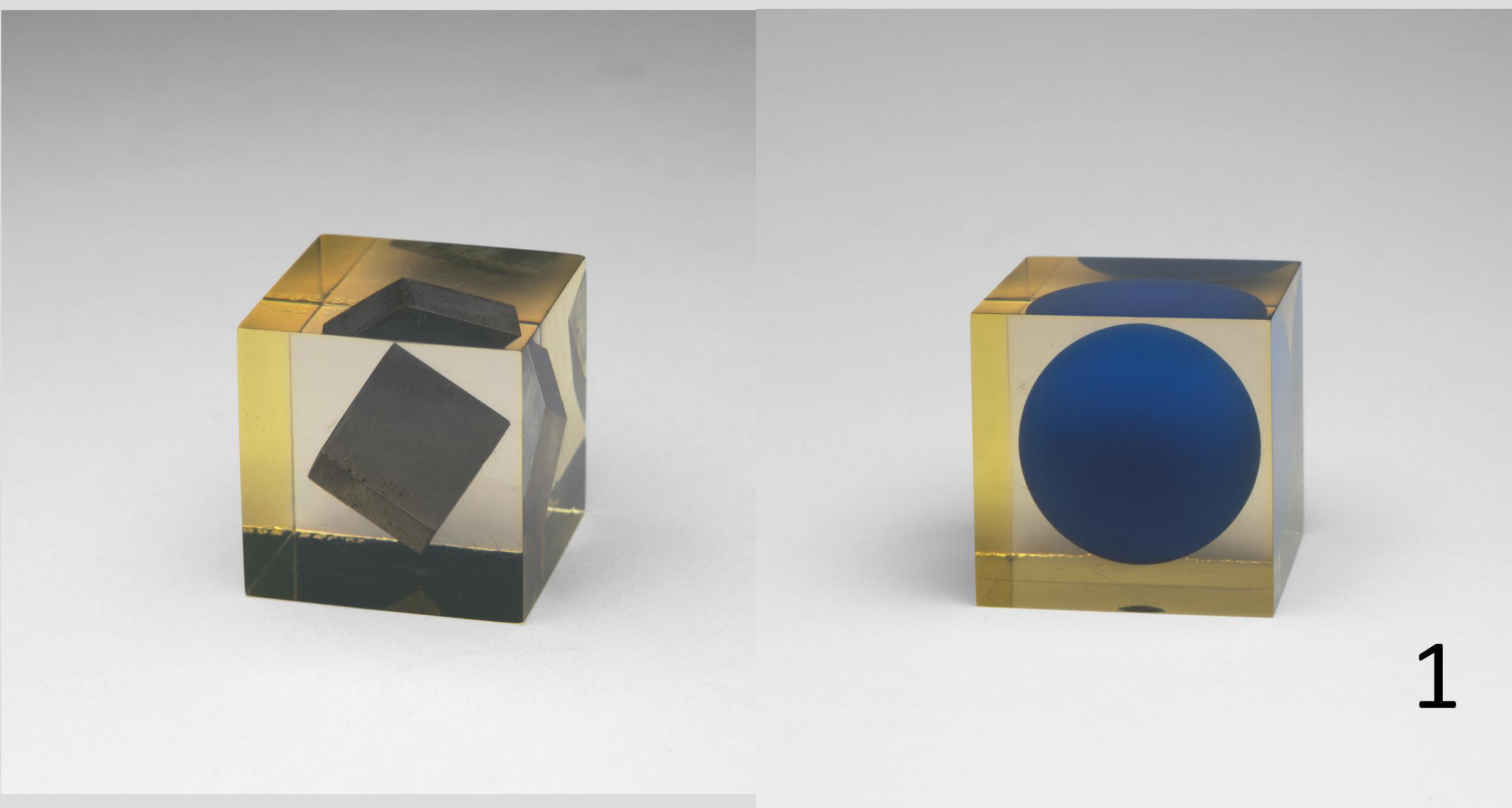
Book without text in which simple yet striking graphic-style illustrations depict the story of a caterpillar and an apple and the cycle of life.

Autoprogettazione (1974)

The DIY construction of furniture.

•Research

Documentation on Enzo Mari



1



2

3



4

Up until now, Enzo has designed more than 2000 projects that have marked design history. Some of the most known are:

1957: "16 Animali"

1959: "Object" (1)

1963: "Arte Programmata" (2)

1967: "Timor Perpetual Calendar"

1969: "3087 Vase" (3)

1971: "Sof Sof"

1973: "Samos Bowl" (4)

1975: "Box" (5)

1980: "Delos Ashtray" (6)

1985: "Tonietta chair" (7)

1987: "Smith & Smith" kitchen tools (8)

1995: "Progetto 1565 Ecolo"

2004: "Corallo Armchair"

2004: "The Fable Game"



8



7



5



6

4

[Source] Danese Milano

•Research

Documentation on Enzo Mari



“The sixteen animals that piece together Danese Milano’s “16 animali” puzzle are a “crazy idea” by designer Enzo Mari, who one day, in the late 1950s, had a dream in which an elephant, a rhinoceros, an hippopotamus, a snake, a giraffe, a bear, and quite a few more species formed a streamlined children’s toy with endless possibilities.” (Italian Ways)

1957

Oak Wood

Made in Italy, Danese Milano

Description

This is a puzzle set of 16 animals that once combined forms a rectangular prism with just one continuous cut, from a single piece of wood. It is one of the most famous examples of design applied to the field of children’s toys. At this period, Enzo received the influence of the designer Bruno Munari while creating this carved wooden puzzle.



[Source] Studio Pazo

•Research

Documentation on Enzo Mari

“Enzo Mari’s Timor is considered a classic icon of 20th century Italian design. The Timor is a great example of form and function associated with Mari’s concepts of modern design.” (Studio Pazo)



1967
PVC Plastic
6.7" x 3.5" x 6.3"
Made in Italy, Danese Milano

Description

This desk calendar can be found in the permanent collection of the Museum of Modern Art, New York. The system works with flipping and rotation to display the day of the week, date, and month. The base contains a support to display the right date. The available versions for purchase are either black, off-white or the original 1967 green.

[Source] MoMA+Duplex

•Research

Documentation on Enzo Mari

“This chair has harmonious lines that convey the essential elegance of the design by Enzo Mari. Made by Driade in 1972, and redone in 2015, Sof Sof is a timeless icon. The structure is almost a sculpture, made up of nine steel rod rings that simultaneously define the top of the seat and the shape of the back.” (Driade)



1971

Chrome-plated iron and fabric
31 1/2 x 18 x 20 7/8"

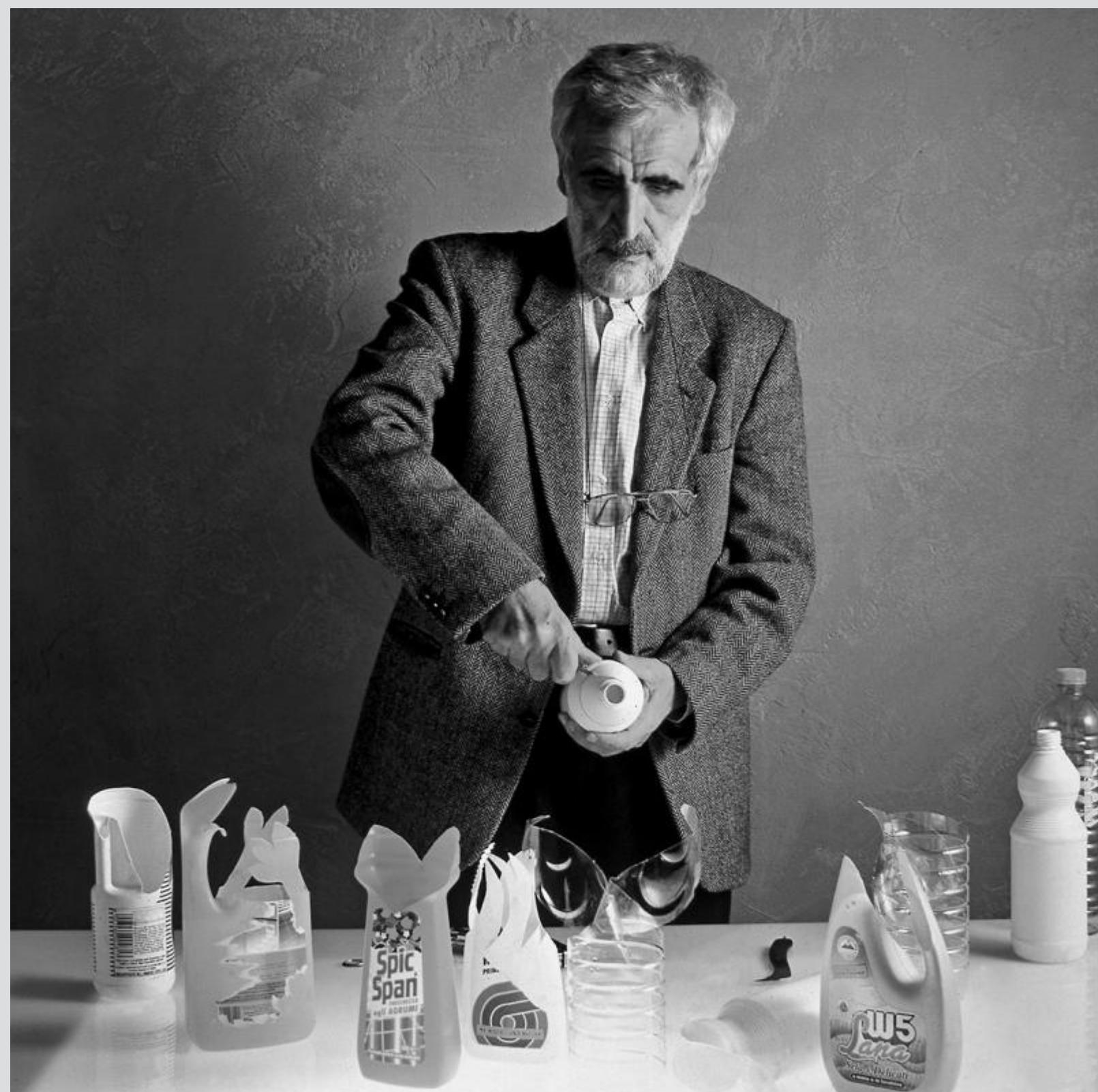
Made in Italy, Driade S.p.A.

Description

The chair features a structure in steel rod with protective cataphoresis treatment finished in graphite gray colour polyurethane paint. The Cushions is made either in polyurethane foam of varying density and removable cover fabric or micro-perforated leather. The chair is now sold with around 1500\$ CAD.

•Research

Documentation on Enzo Mari



Project 1565 Ecolo is described as an allegory of an unequivocal co-habitation with the degradation of our days. Taking its root from a performance show of Enzo transforming manufactured container into sculptural flower vase. The performance features one of the earliest root of DIY and lead to a new horizon into Design. In 1995, limited production of 80 beech boxes each containing four vases made personally by Enzo Mari, with a numbered label and signed by the author is put into the market with the name Progetto 1565 Ecolo.

1995

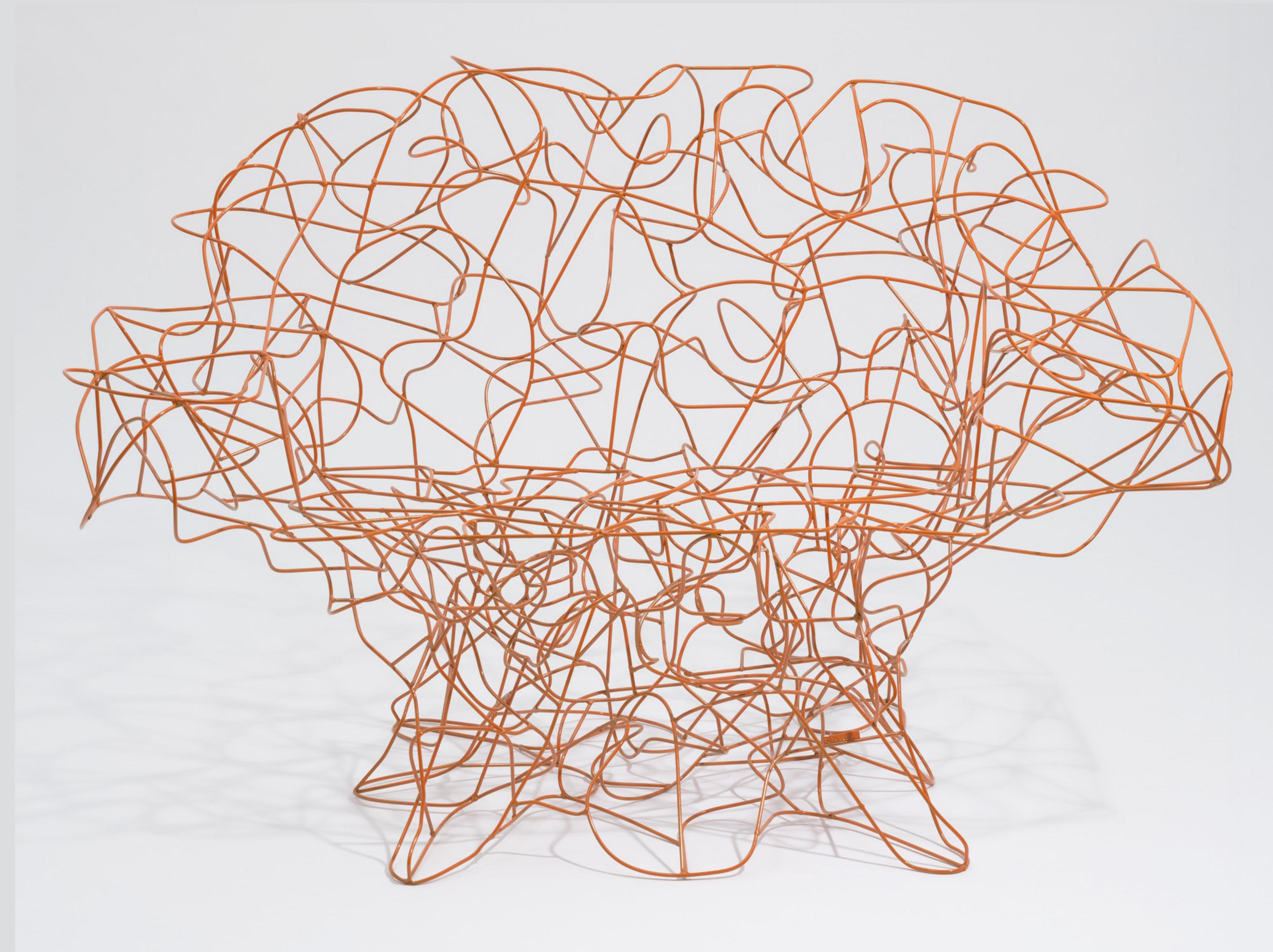
Plastic Containers



•Research

Documentation on Enzo Mari

“The Corallo Armchair distinguishes itself from this tradition and allies itself with a very contemporary design concern: emotional and psychological appeal... The evocation of coral lends the chair an appearance of having blossomed organically through its own DNA-encoded growth patterns, completely free of the strictures of mass production. Indeed, no two Corallo chairs are alike.” (MoMA)



2004

Steel wire and epoxy paint

38 x 60 x 39”

Made in Italy, Edra S.p.A.

Description

The chair features short fragments of steel wire which are hand-bent and welded each onto the next, like the budding and branching process by which coral grows underwater. A coat of epoxy paint protects the steel and seduces the eye with dazzling color. The chair is perfectly suited for indoor or outdoor use.

[DART-291]

Enzo Mari: Fable Game

[Source] Ideabooks+Abebooks

•Research

Documentation on Enzo Mari

"It's not a book to read or to leaf through but to make, unmake and build up: a never ending adventure, played and invented anew each time by the endless possibilities at hand." (Ideabooks)



2004
Cardstock
12.4 x 6.2"
Made in Italy.

Description



The Fable Game is a story construction set comprised of six cards, covered with Mari's illustrations of all the classic elements of fairy tales and fables: animals, umbrellas, mountains, moons, shoes, etc. The slotted card design allows children to assemble and make up their own stories that they can tell them to adults or to other children.

•Research

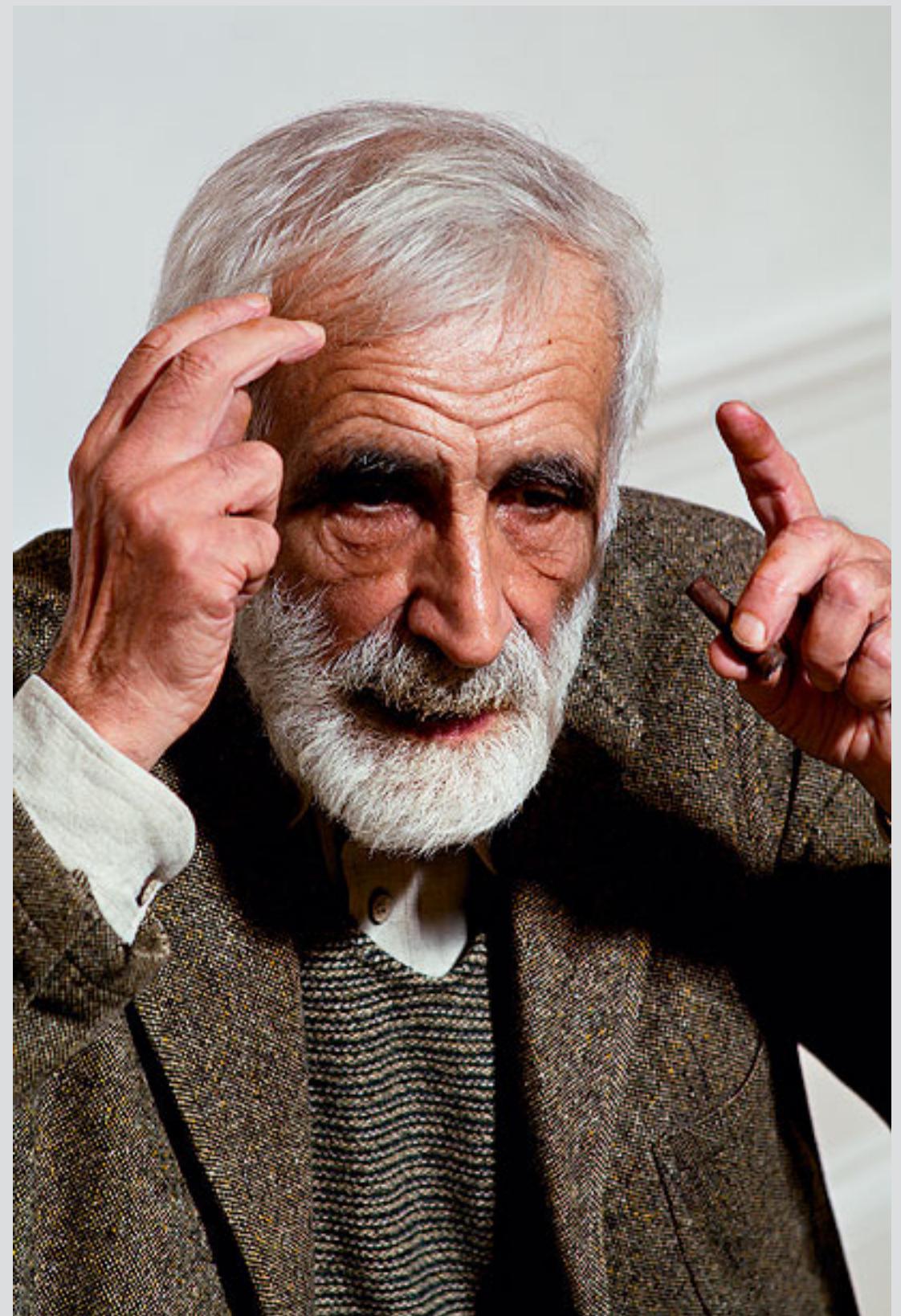
Documentation on Enzo Mari



- **2010:** “Design is always education” ----- short documentary Enzo Mari for Artek: Homage to Autoprogettazione, premiered yesterday at La Triennale di Milano design museum.
- **2011:** “Designing is an instinct inherent in man...as the survival instinct, hunger, sex. We are a species that wants to change its environment.” -----Enzo Mari, 25 Modi Per Piantare Un Chiodo
In this book, Mari considers and reflects on the design practices, while supporting his ideas with autobiographical notes. He considers context condition as a part of the design process, such as the capacities of the workers, the affordability of the material, the construction/assembly process of the object for normal people, etc. What emerges from the book is how the consideration of the “material conditions” of production have always been at the center of his practice, to the point of driving him to devise innovative and seemingly counter-intuitive solutions to save workers from alienating gestures. By this, he gives the example of the ceramicists responsible for the vase in 1974 that, even if he gives the workers the permission to not follow the models too closely, were meticulously copying the deficiencies and inaccuracies of the first models.

•Research

Documentation on Enzo Mari



"I cannot give an immediate answer because I ask myself the question of how the millions of young designers in Europe can survive today," says

Mari. "There are more schools of design than stones in the streets. They produce a hundred times more designers than the amount of objects we can produce. Sixty percent of them will not be able to do the profession that they wanted."

2017, Enzo Mari's interview with Icon:

It is the workforce he cares about, not the consumers. He worries about how they'll earn a living in a world whose values are completely warped. He likes to tell the story of a cheap wooden bed that he designed for Driade that didn't sell "because it was too cheap!" Mari believes design has become distracted by luxury and is caught in a vicious cycle of novelty – mundane observations, except that for him schools are complicit in the problem. Instead of a profession, they teach personal expression. "I find problems and defects in these chairs," he says, looking around. "I've got to blame the schools." He points to some hybrid chairs that he describes as "stupid copies of Martino Gamper" – Frankenstein task chairs bolted with bits of pine. "Does he think he can sell these for £20,000 each? When I did my ones 40 years ago it was a desperate act."

...

Rules. That's what he thinks we need. That's what design schools ought to teach, not "creativity". Design used to be about a common grammar, now "everyone invents his own language". All he sees is a Babel of creativity. "If someone tells me to be 'creative' I just want to give him a punch in the face!"

[Source] CUCULA

•Research

Documentation on Enzo Mari



In 2015, Enzo Mari has given Berlin-based CUCULA the rights to redesign and sell his Autoprogettazione furniture to raise funds for its refugee support programme. Enzo Mari suggests the democratisation of design and creating a provoking alternative to the capitalist paradigm of mass consumption. Building your own furniture, when required, that's the idea.

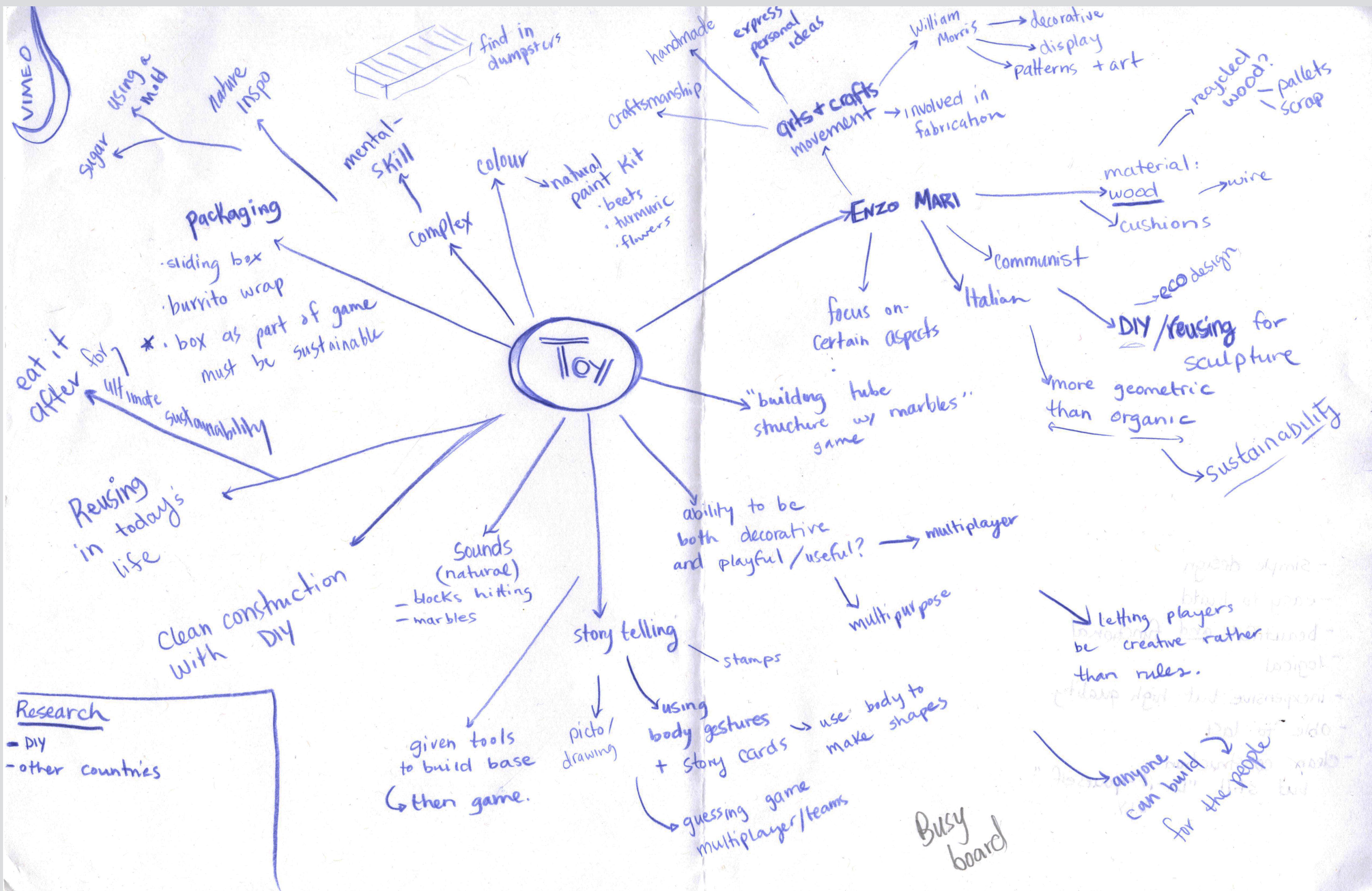
The CUCULA educational programme aims to help refugees by teaching them to design and build furniture, and also offers general education, assistance with language skills, and legal advice. Five refugees from the organisation have created limited-edition versions of Mari's furniture. Pieces were built using wood from refugee camp huts, as well as planks from boats used to travel to Lampedusa – an Italian island that serves as a European entry point for many migrants. "This is how the young African furniture designers turn chaos and desolation into high-quality objects, which in their engaging aesthetic invite for a dialogue," so said CUCULA's spokesperson.



[DART-291] Game Structures: Key Words

•Research

Research and Analysis



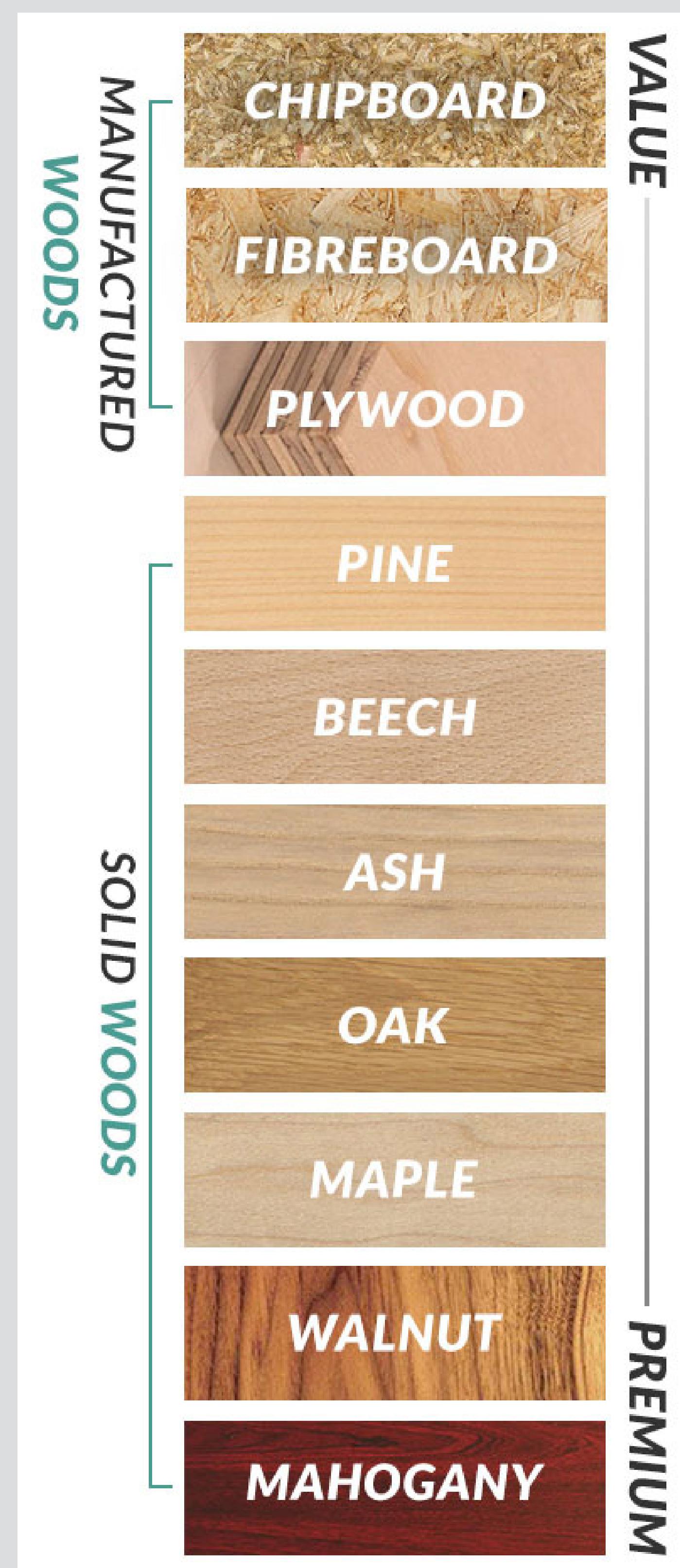
Research

- DIY
- other countries

[Source] Oxford Wood Recycling

•Research

Research and Analysis



Wood Types (from the softest to the hardest):

Chipboard: manufactured wood, made from wood chips and shavings that are bonded together with resin. It is a dense wood and is commonly used with a veneered surface which is used for flat-packed furniture and work surfaces.

Fibreboard: inexpensive manufactured wood made from the breaking down of hard or soft woods into fibres which are then bonded together with wax, resin and heat to create a dense piece of wood.

Plywood: strong manufactured wood as it is build-up of layers of wood veneers which are bonded together to create a flat smooth sheet of wood. It has good strength and resistance to warping due to the bonded cross-ply construction.

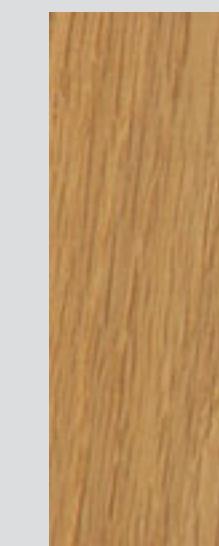
Pine: soft wood with a pale finishing, less durable compared to other hard wood.

Beech: a hard, strong and heavy wood. It has a fine, tight grain and even texture. Beech wood is very light in colour and has a high shock resistance. It is a popular wood for furniture.

Ash: a tough hardwood which is known for its excellent bending abilities. It is primarily used for bent pieces of furniture such as a chair with curved backrests. Ash is light brown in colour with a straight grain.

•Research

Research and Analysis



Oak: hard wearing and heavy. It is known for having open wood grain markings. Oak can be purchased in two shades; white oak, which is grey/brown in colour or red oak which is very similar but with a prominent reddish tint.

Maple: durable and heavy, it is so strong and moisture resistant that it is the ideal wood to withstand wear and tear. Maple wood is pale in colour and has natural swirls and twists in the wood grain. It is good for any type of stain or paint.

Walnut: hardwood and is known for its strength, straight grain and its rich chocolate brown colour.

Mahogany: an expensive hardwood and varies in colour from a medium brown to a deep red brown, depending on its age. It is a very traditional, versatile and popular type of wood. It is often used as veneer.



Machines to use (Fabrication Shop):

Straight cutting: Band Saw, Table Saw, Scroll Saw.

Drill holes: Drill Press, Hammer Drill.

CNC carving: Milling machine, Laser Cut machine.

Image: <https://all3dp.com/2/cnc-carving-great-cnc-machines-to-carve-wood/>

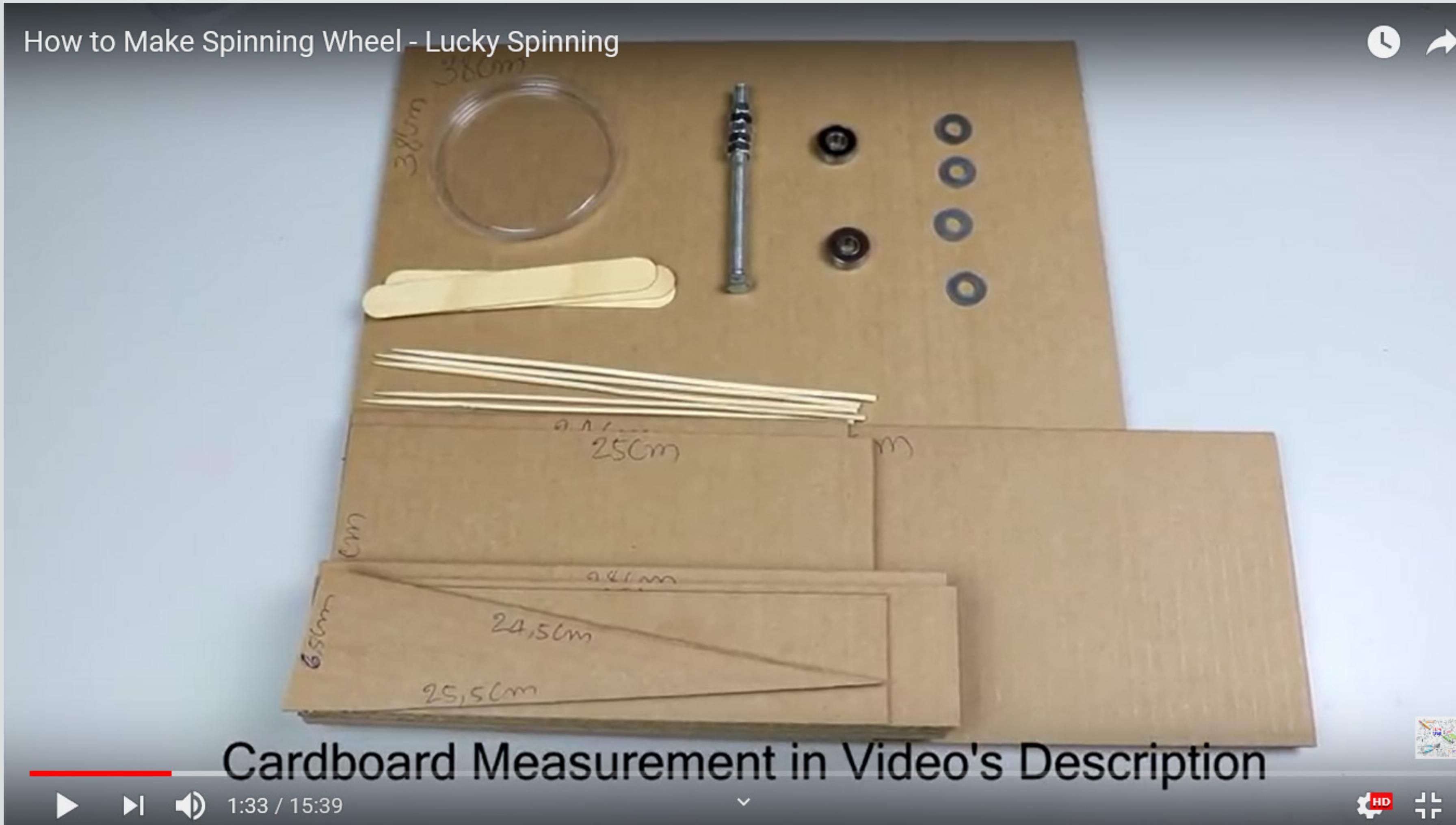
[DART-291] Game Structures: Spinner

[Source] Youtube

•Research

Research and Analysis

<https://www.youtube.com/watch?v=FawJBeul-eQ>



<https://www.youtube.com/watch?v=jdK5ApquzTs>

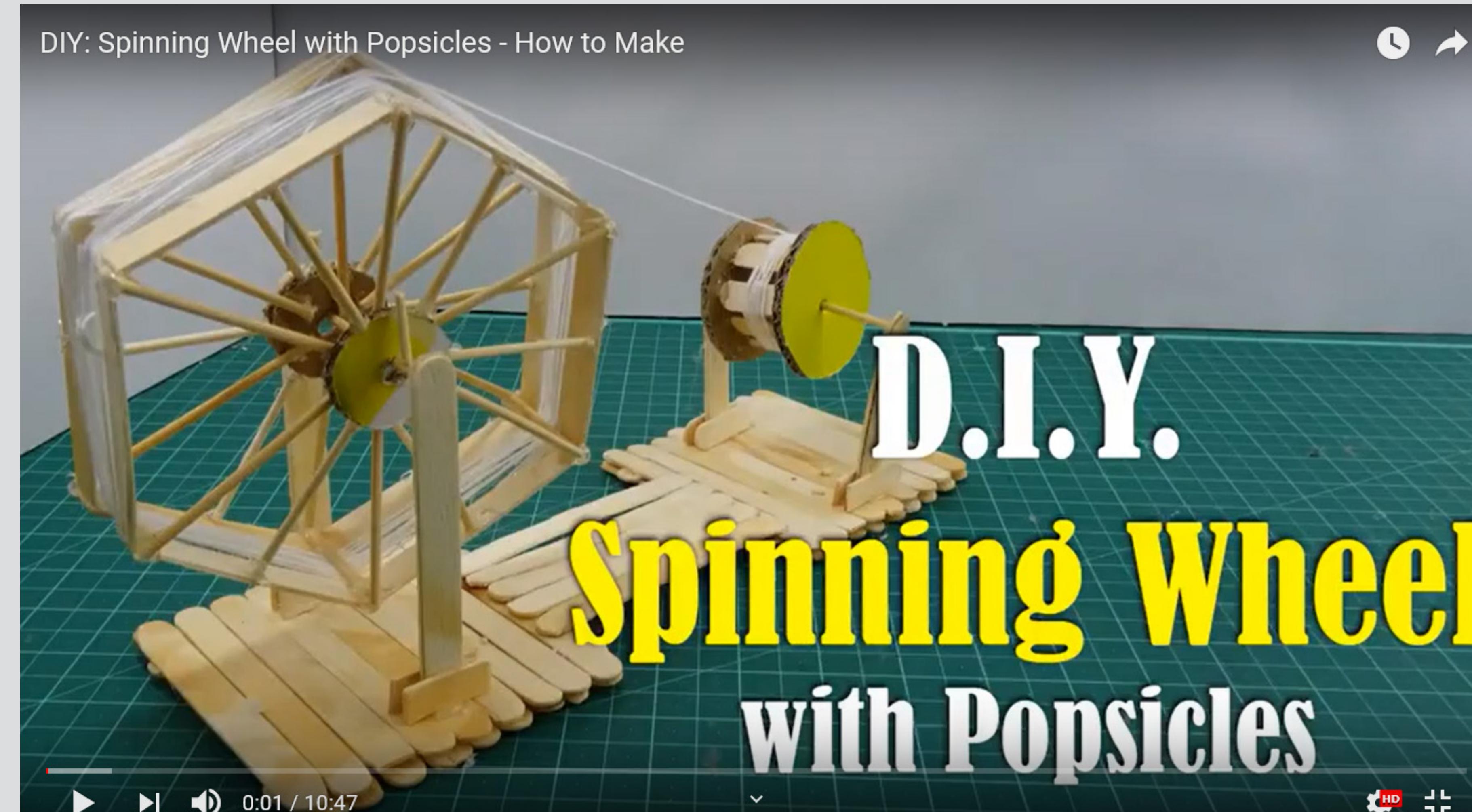


Exploration of different mechanism for the spinning wheel. The two images show some of our research. After considering several videos and methods, we find out that the most simple way for our situation would be to use screw and washers as a turning mechanism and a separator between the layers. To secure the screws, we will use a bolt at the bottom. Other references, such as the turning numbers are using the same principle, the difference is that instead of using washers they used cardboard layers as separation.

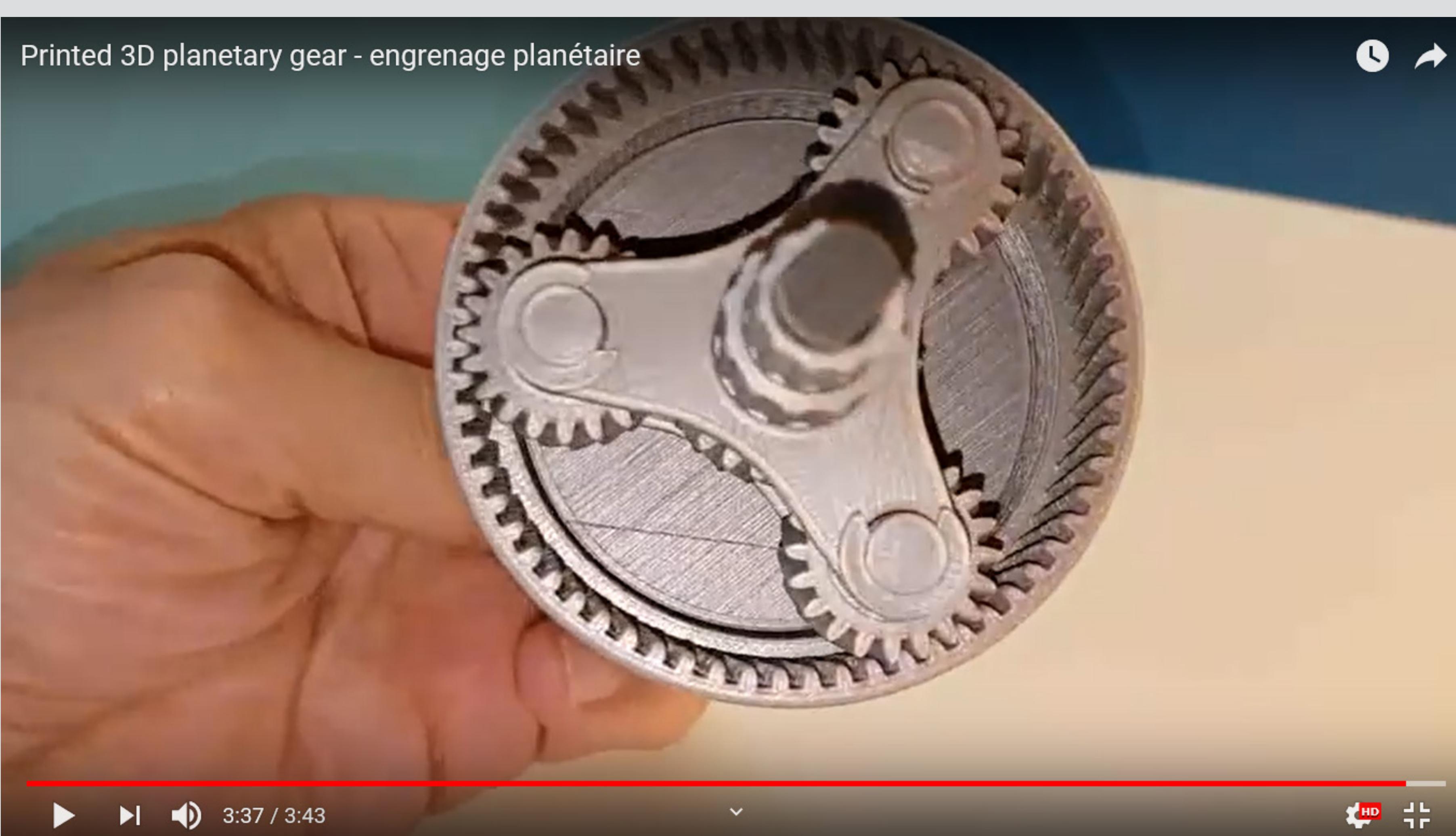
[Source] Youtube

•Research

Research and Analysis



<https://www.youtube.com/watch?v=fU81cJ0qkfl>



<https://www.youtube.com/watch?v=WHXImOYJ7yw>

We eliminated those rotating systems for the following reasons:

- take too much space
- lack of unpredictability (we want the factor of luck to interfere in the game)
- complexity of fabrication

[Source] Titebond+ Cottage Life

•Research

Research and Analysis



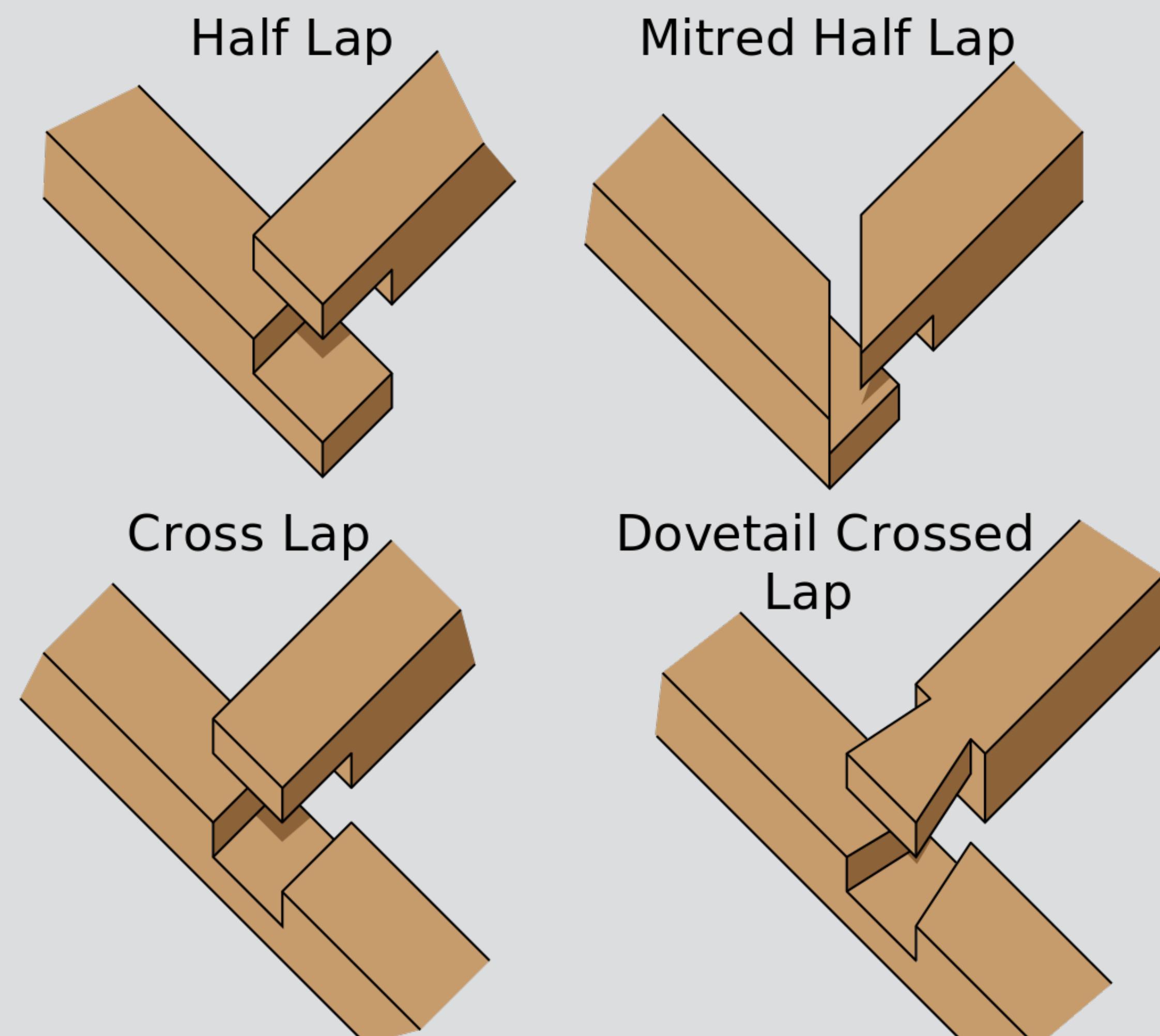
Glue Characteristics

- Glue sets quickly but needs to cure for at least 24 hours (Burrus).
- Glue is easy to sand once dry and won't be affected by finishing materials (Burrus).
- Different glues used for different moisture levels in the wood (Chaudhry).
- PVA (Polyvinyl Acetate) is the most common woodworking glue – very strong hold with flexibility and best for indoor, dry wood projects (Chaudhry).
- Use clamps with uniform pressure to secure and hold the work while the glue sets. 30 minutes.
- We can use glue to make the cover lid and the grid separator device. We will need the pieces to be well measured – flat and square and use glue, clamps, and weights to keep it even. We can glue them in sections and then assemble fully once the sections set.

[Source] The Spruce Crafts

•Research

Research and Analysis



Joinery Information (Baylor)

Butt joints connect the two ends of a material together with glue, screws or nails.

The glue can get absorbed quicker on the ends so use more glue. The butt joints can be reinforced with a fastener. Use clamps. Can miter the ends to form angles that fit together squarely.

Tongue and groove joint – one piece fits into the other at each end. Very strong but has to be cut exactly to fit.

Biscuit joint – has a thin but wide tab on one piece and a slot on the other to fit in tightly. Must be cut consistently.

Box joint – has a satisfying look, row of square tabs that connect to the other piece that has the squares in the opposite spots. Fits into each other seamlessly. Very strong hold.

Sliding dovetail joint – slide tab piece into cutout piece for a secure hold. Could use this method for the bases of the plexi-glass card stands.



[Source] Ardek

•Research

Research and Analysis



Screws

Screws – easier to remove with a screwdriver, could loosen threads if overly removed and inserted. Needs enough depth the screw in and not pierce through the base of the piece.

Nuts and bolts – can drill a space for the nut to be flush with the bottom of the piece – set it into the base. They come in a range of widths and lengths. Use washers to separate layers of spinners.

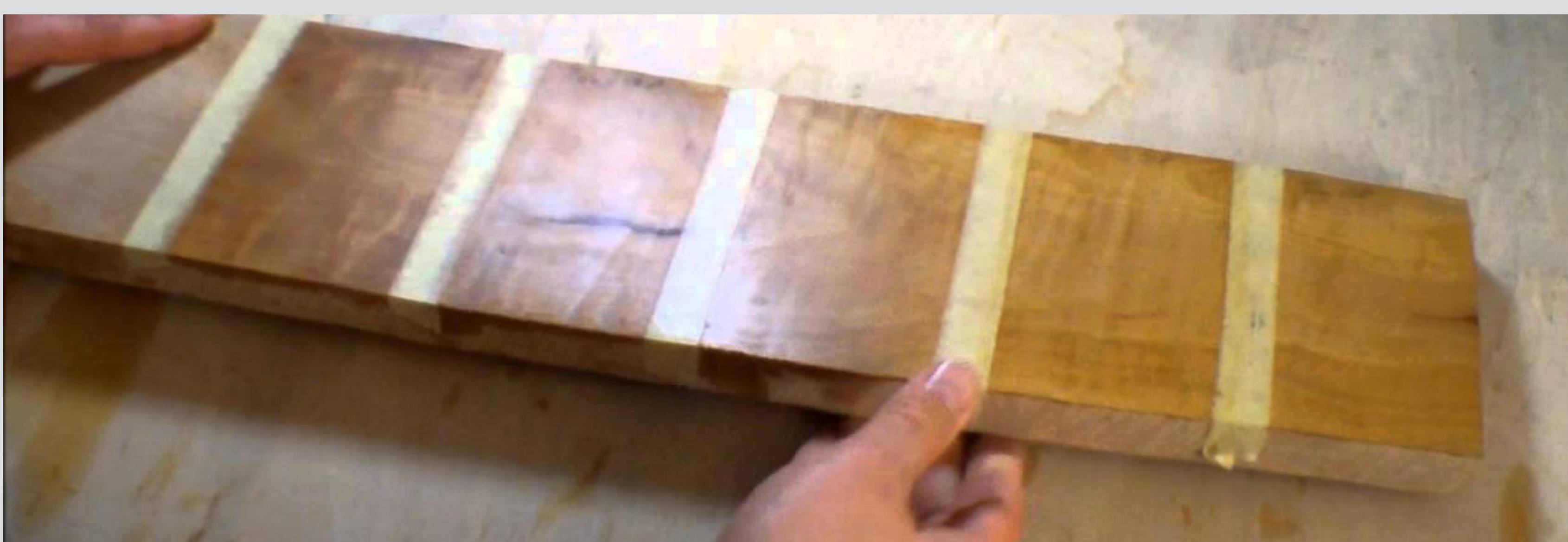
Finishing

Finishing treatment: linseed oil is natural, preserves wood well, very slow to dry, water resistance, boiled linseed oil dries quicker, less expensive than other finishing's (Ventures).

Linseed oil colours wood slightly darker than natural colour as it saturates, satin finish, enhances view of grain (Ardec).

Stain – could make a natural stain out of beets, turmeric, spinach

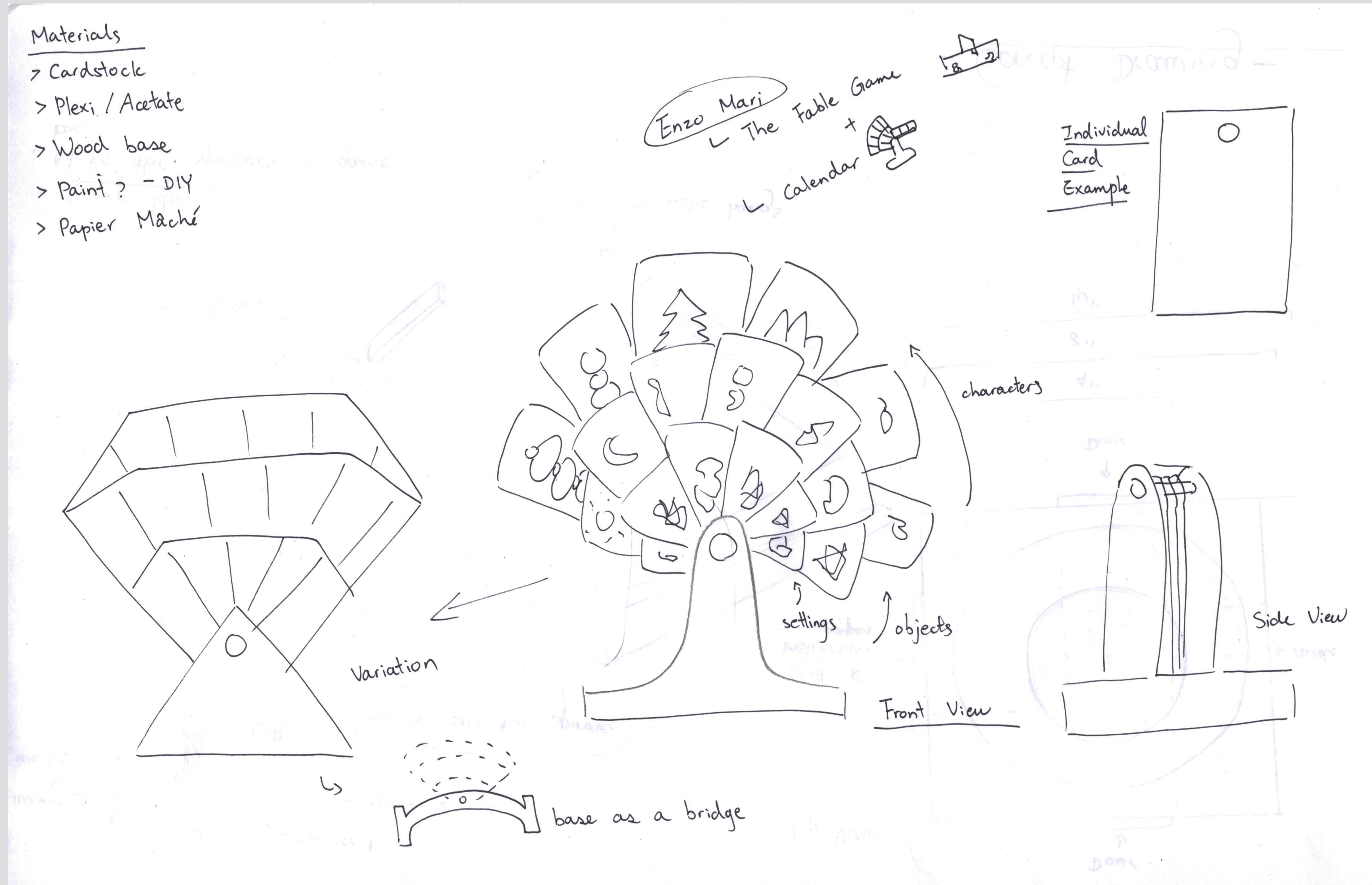
Varnish – too unnatural, many chemicals



Concept Drawings

•Concept

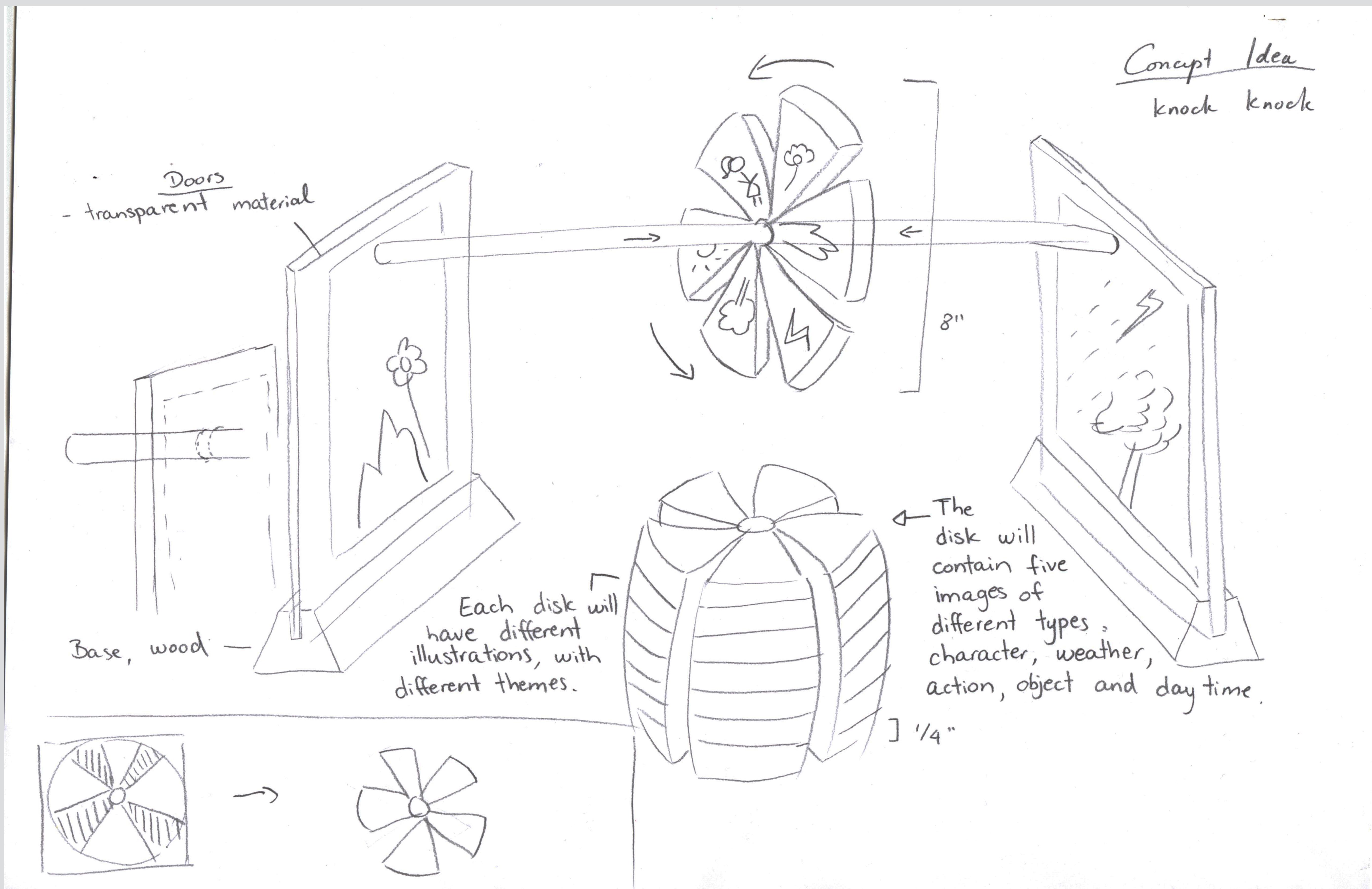
Concept Drawings



Concept Drawings

•Concept

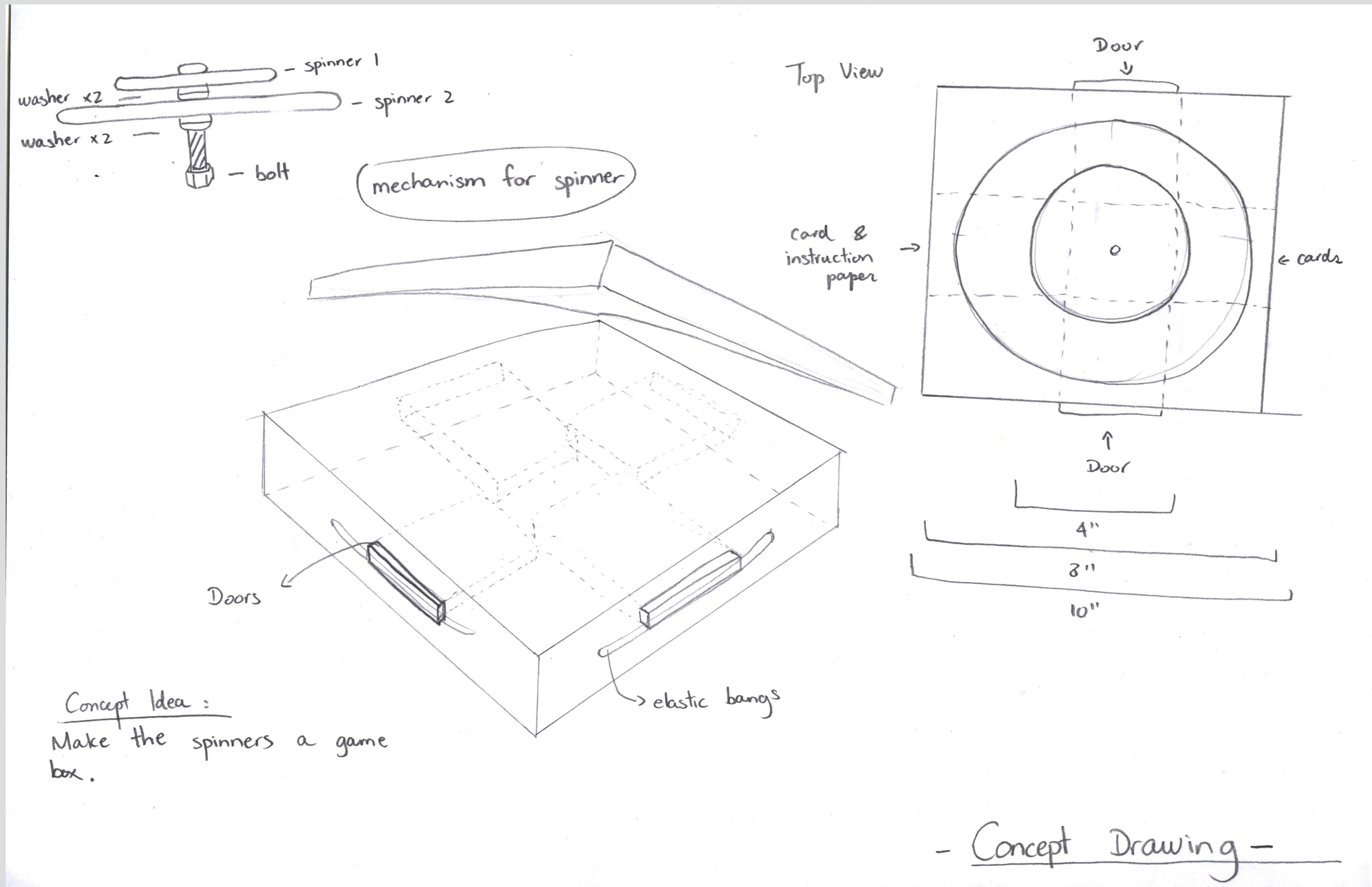
Concept Drawings



Concept Drawings

•Concept

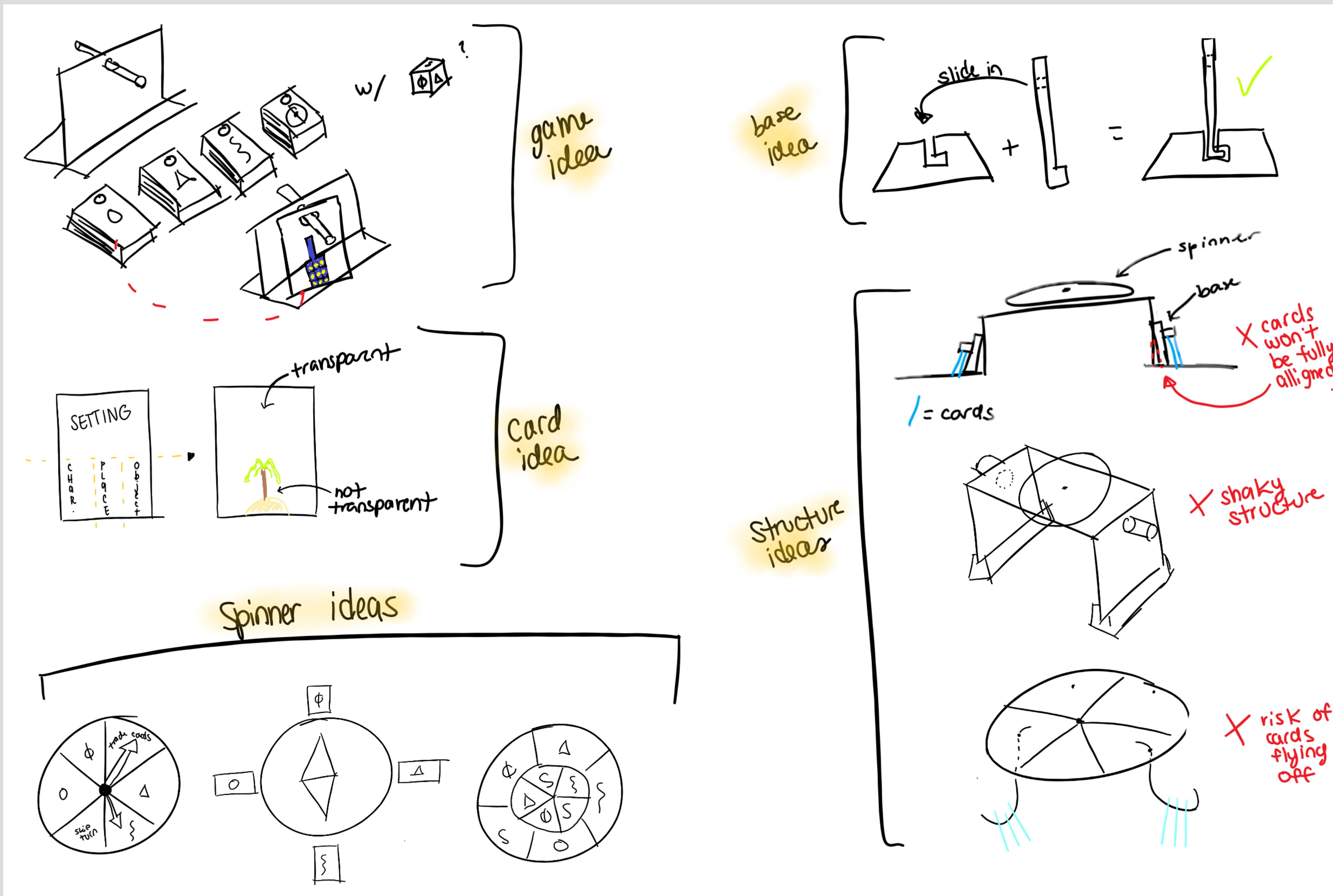
Concept Drawings



Concept Drawings

- Concept

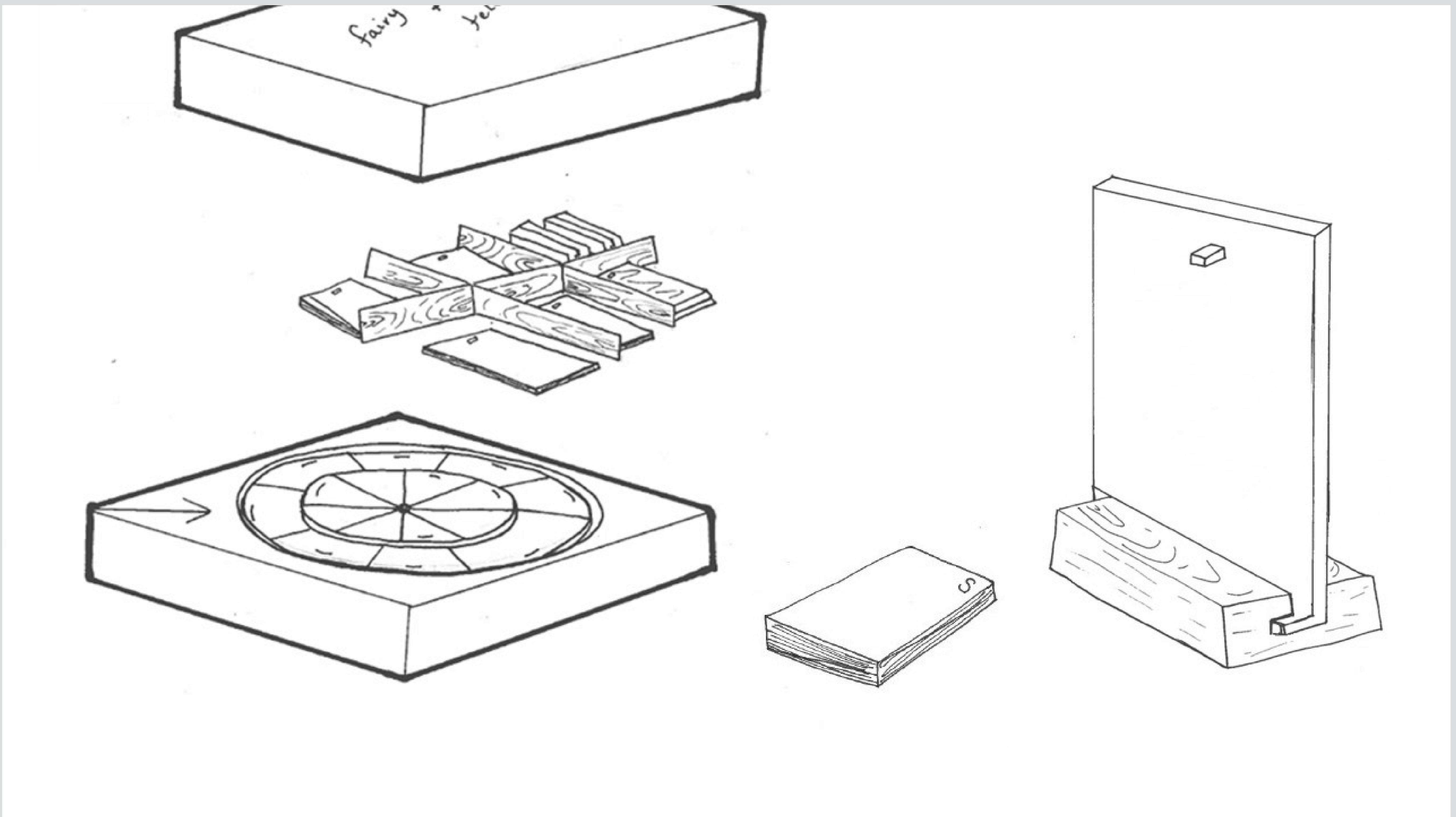
Concept Drawings



Technical Sketches

- **Concept**

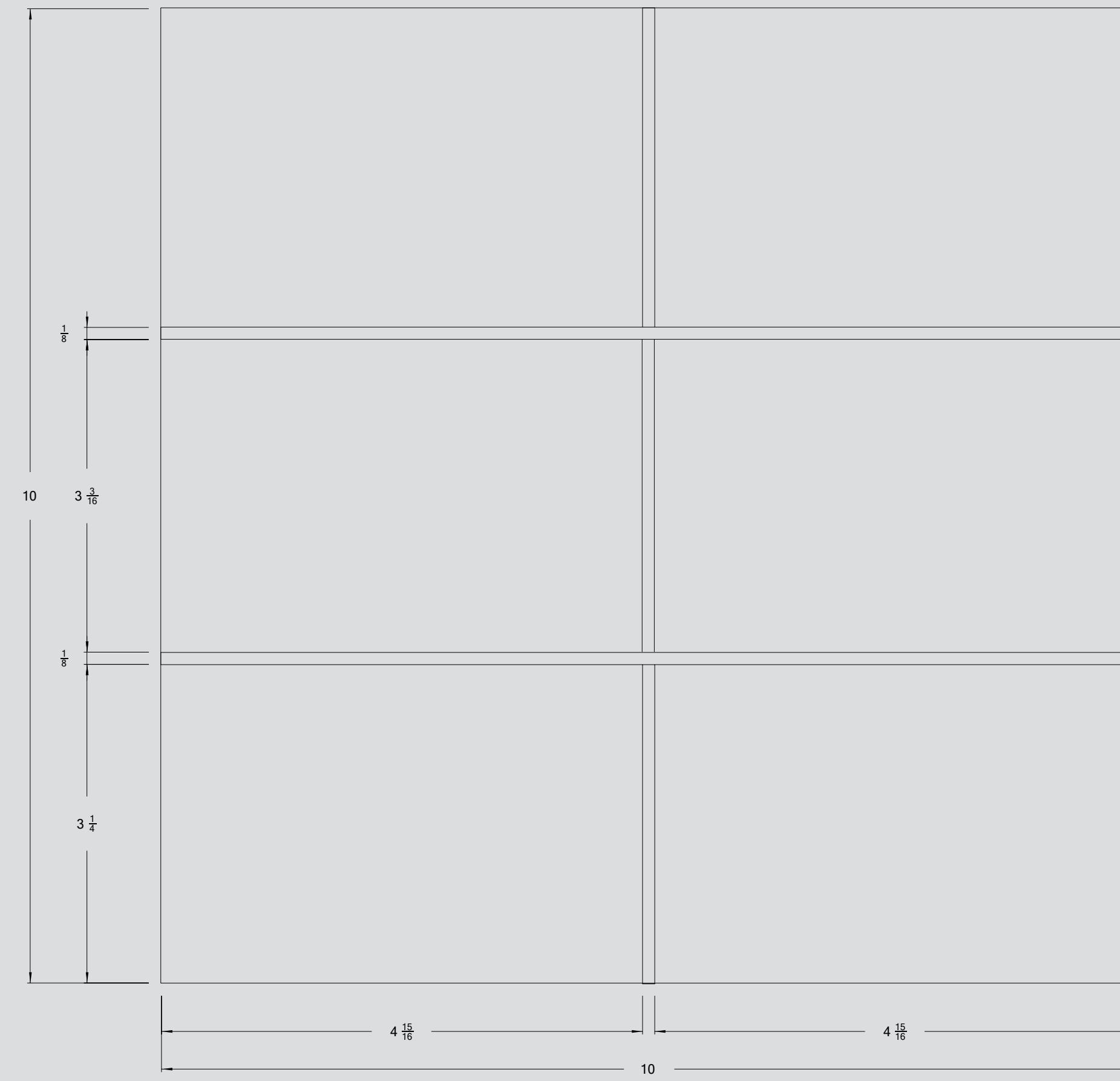
Technical Drawings



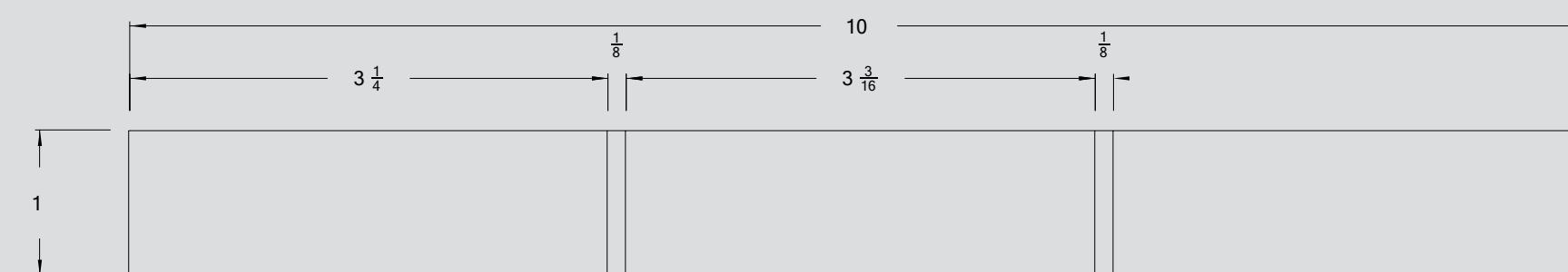
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Technical Drawings

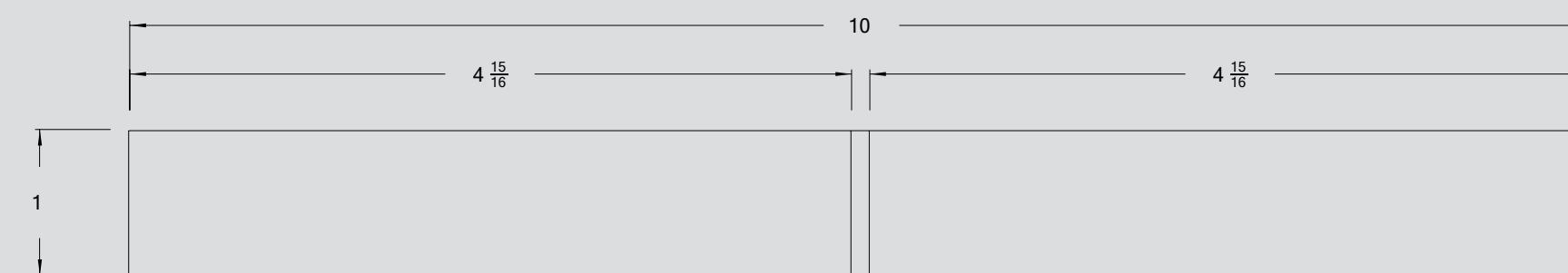
Grid Top View



Grid Side View 1

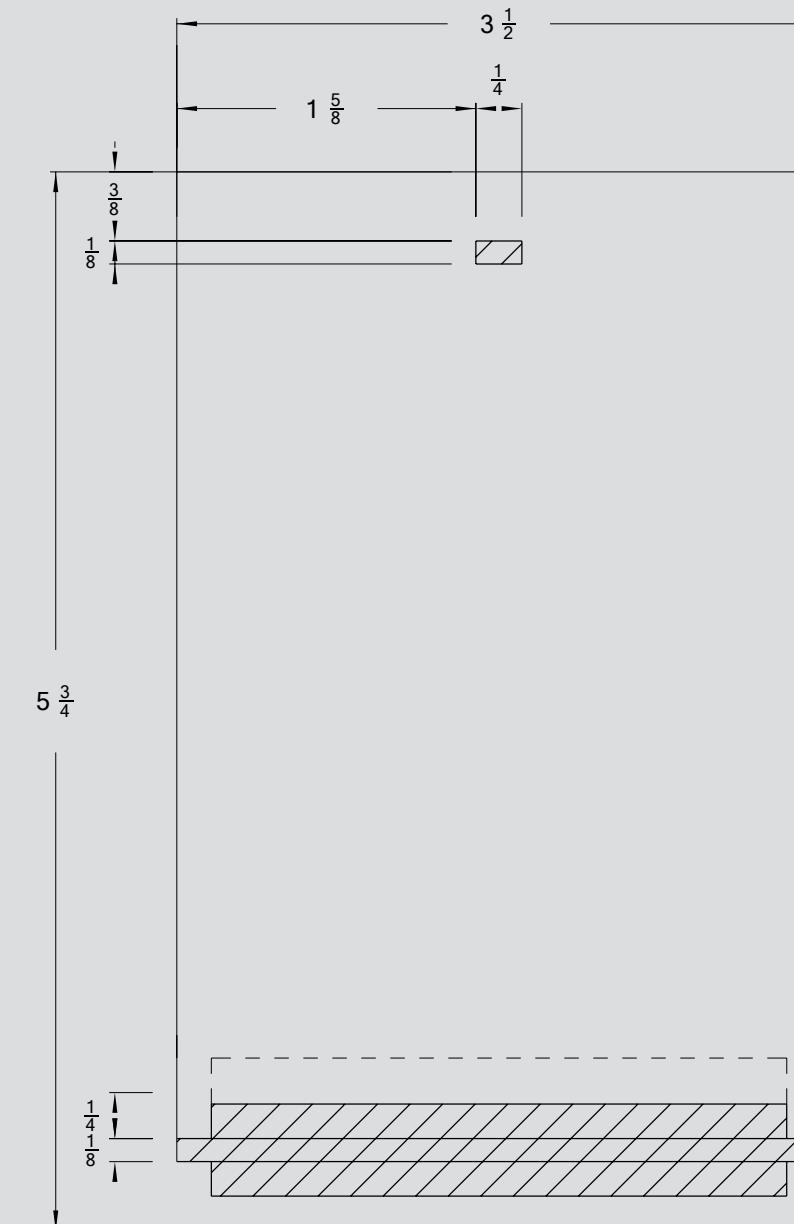


Grid Side View 2

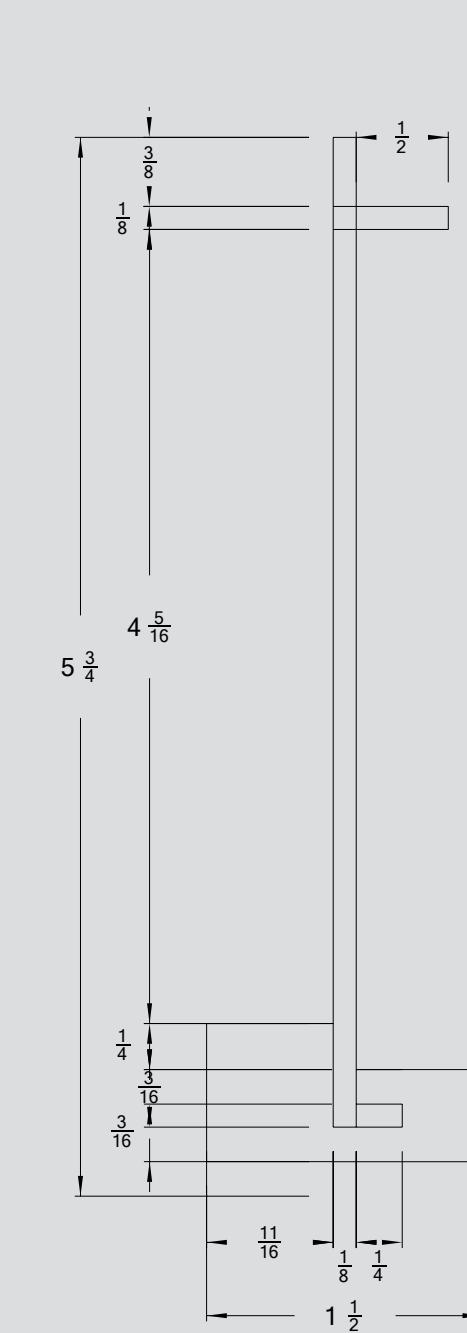


Name: Grid	2019-11-29	Concordia, Design Department
Reihaneh Tamizkar	DART 291	Jeremy Petrus

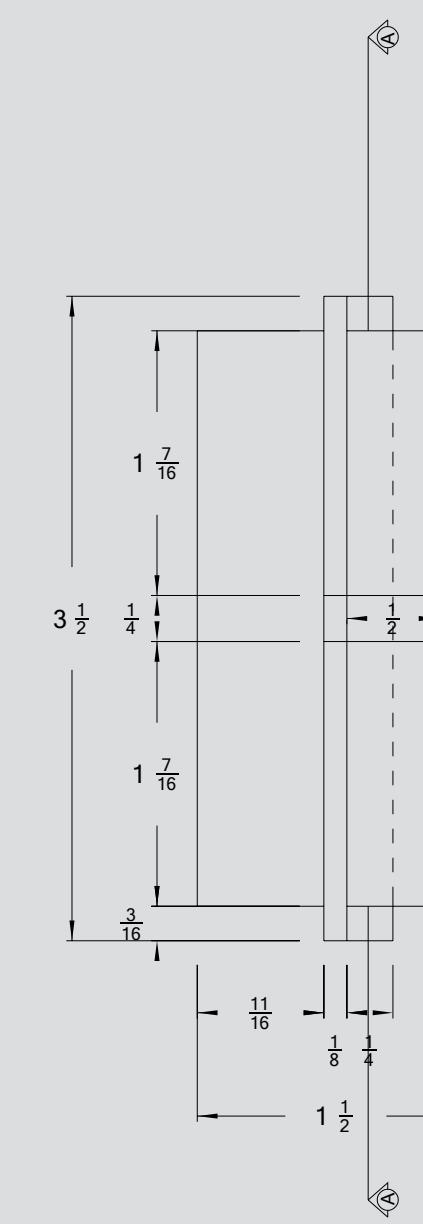
Technical Drawings



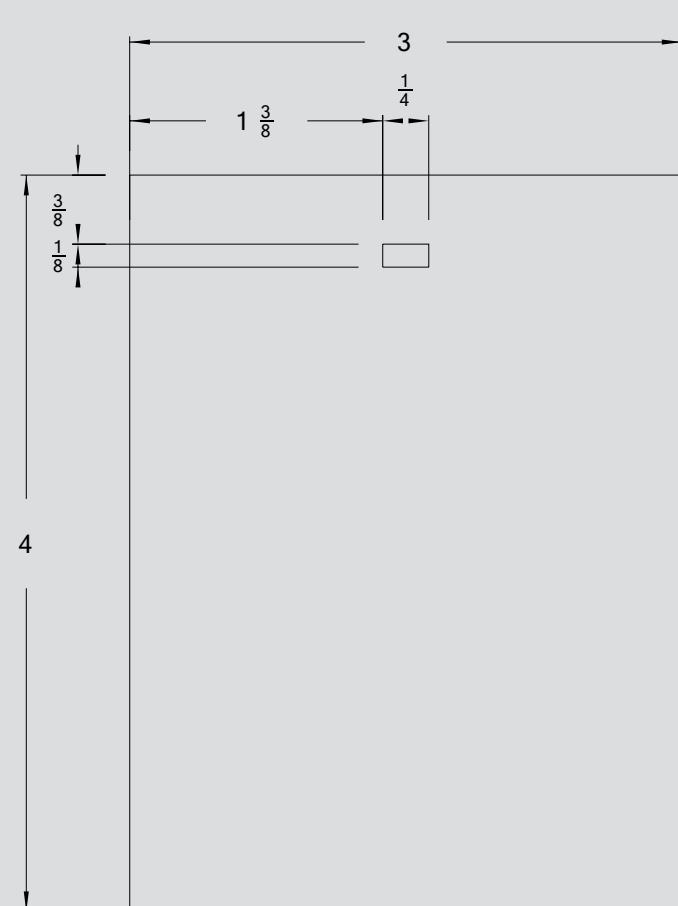
Card Stand A-A Sectional View



Card Stand Side View



Card Stand Top View

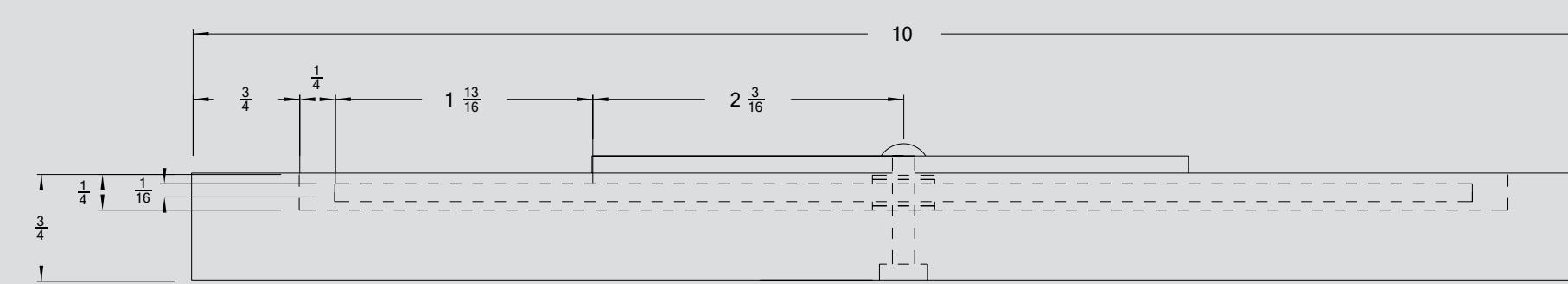


Card Dimensions

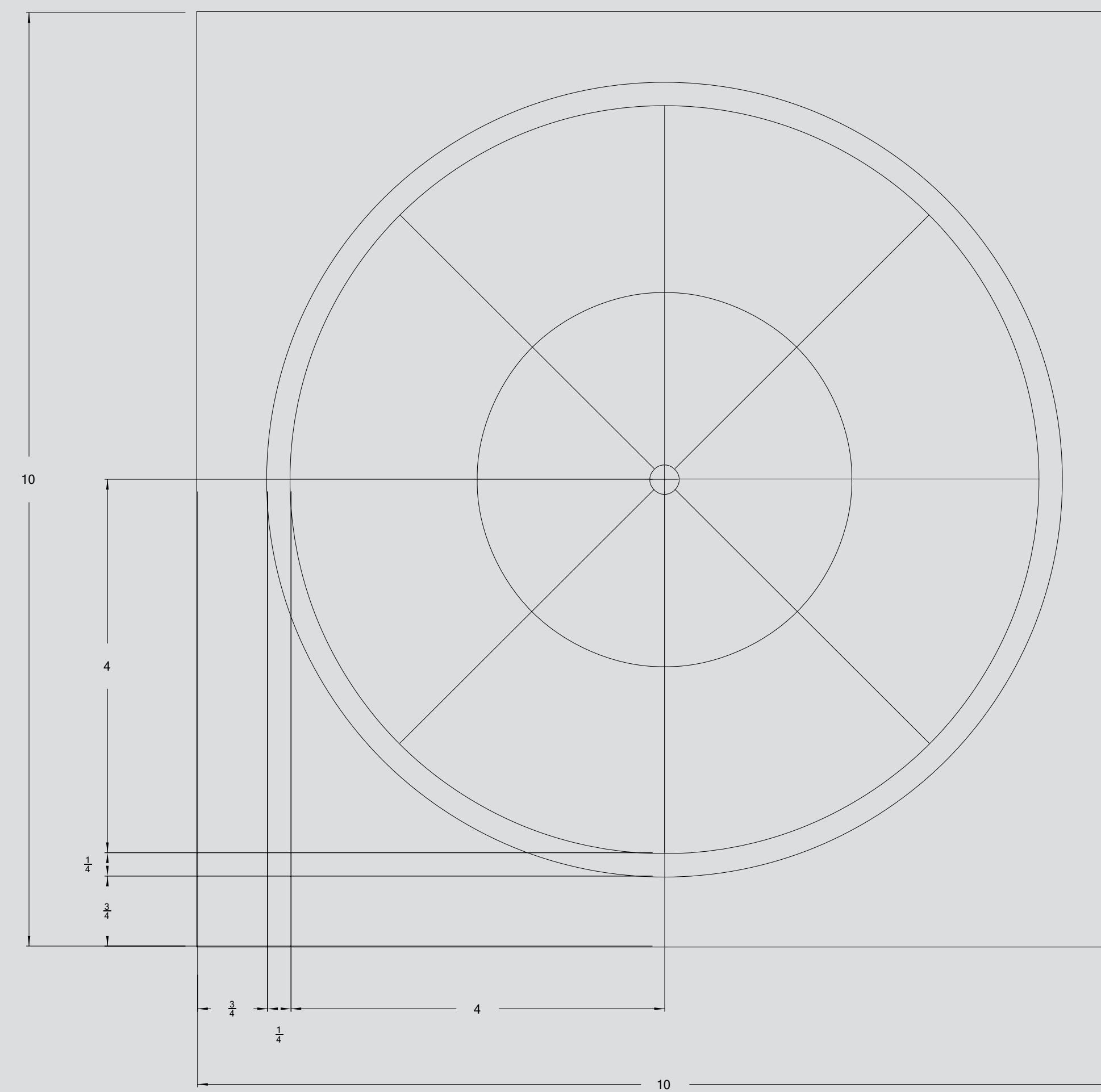
[DART-291]

Technical Drawings

Spinner Side View



Spinner Top View

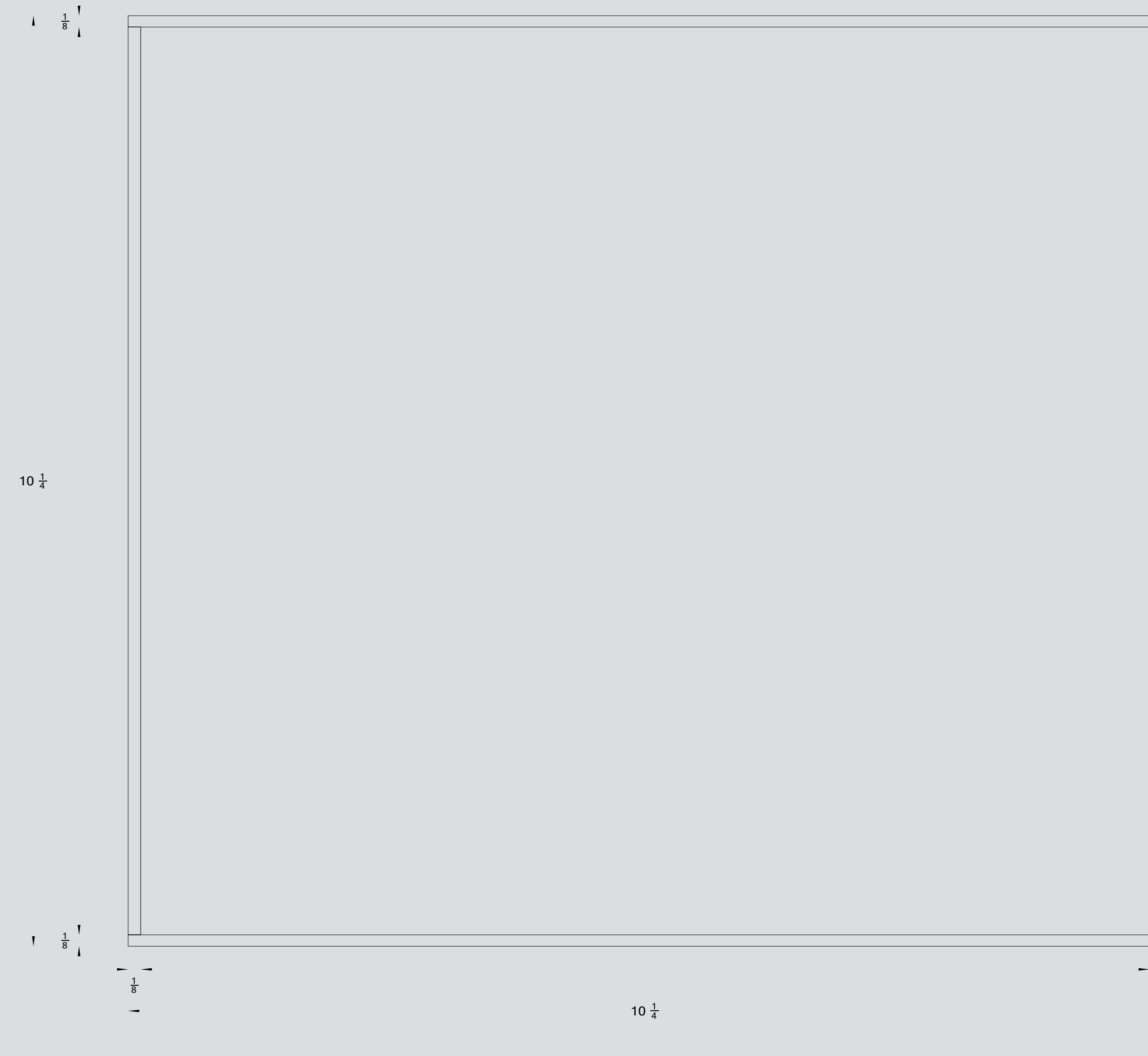


Name: Spinner	2019-11-29	Concordia, Design Department
Reihaneh Tamizkar	DART 291	Jeremy Petrus

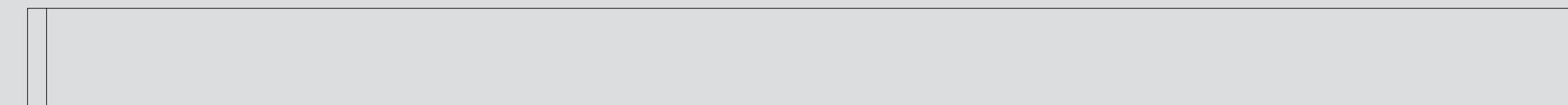
[DART-291]

Technical Drawings

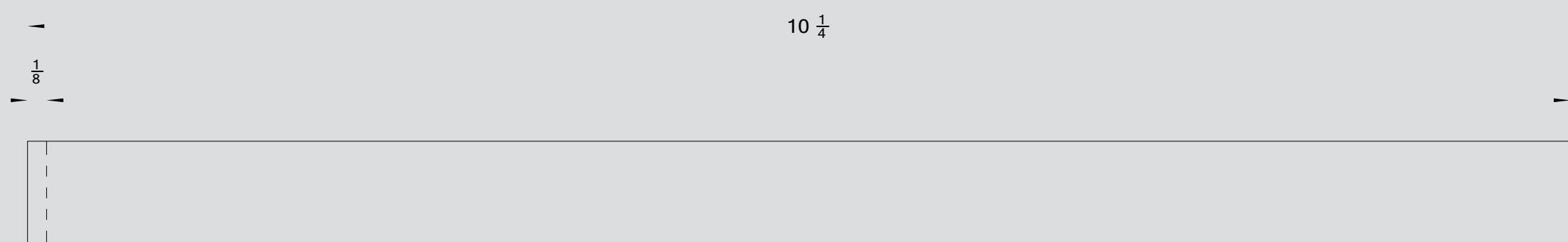
Lid Inside View



Lid Side View 1



Lid Side View 2



Name: Lid	Date: 2019-11-29	Concordia University, Design Department
Reihaneh Tamizkar	Course Name: DART 291	Instructor: Jeremy Petrus

Technical Drawings

•Concept

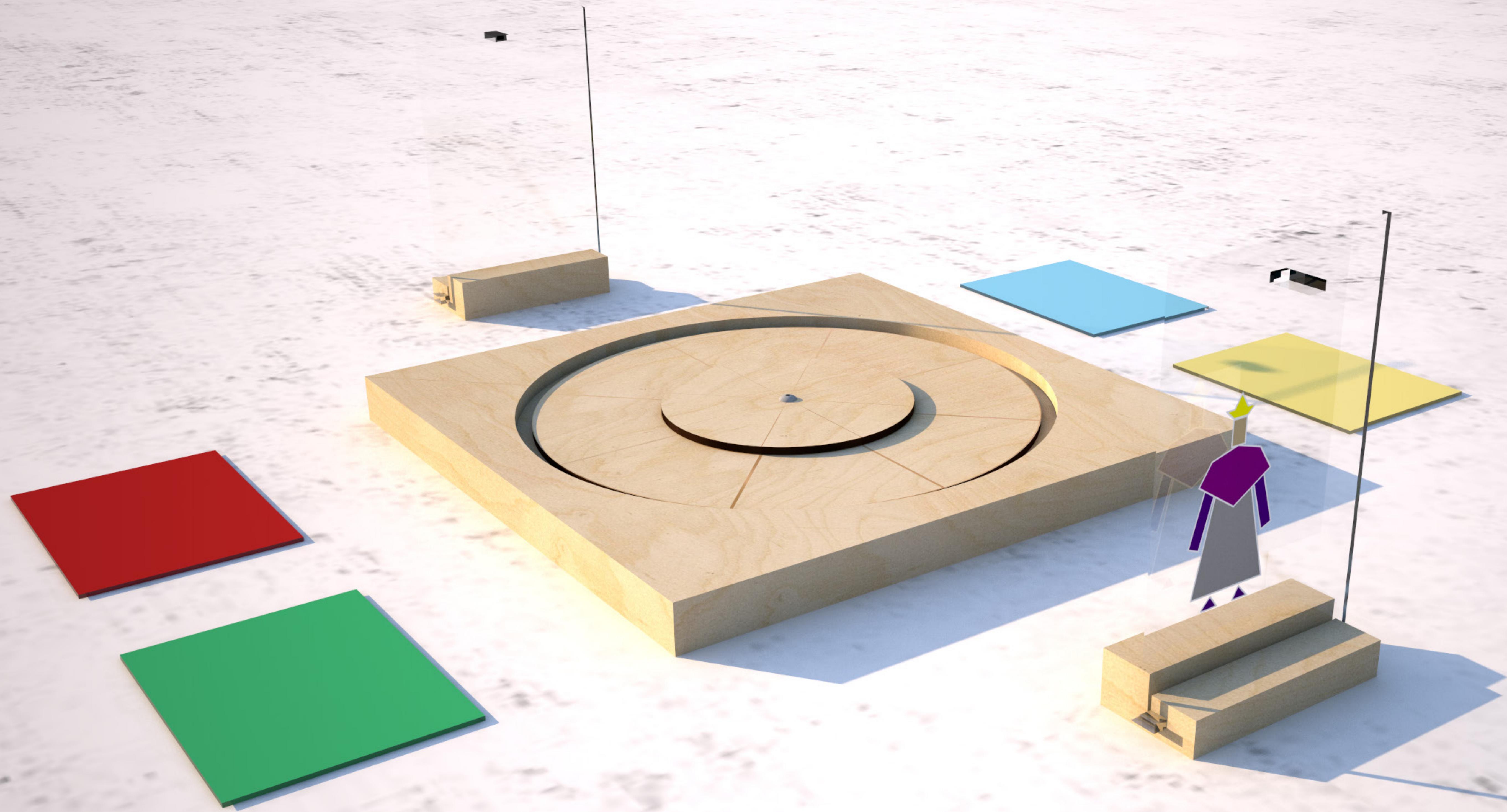
Technical Drawings

Table of Materials

Name	Amount	Material
Base Spinner	1	1/8" Plywood Disks 3/4" Plywood Base 4 x 3/8" Hilman Stainless Steel Flat Washer 1 Hilman Hex Stainless Steel Nut 1 Hilman Button Head Socket Cap Screw
Spinner Cover	1	1/8" Plywood Wood Glue (Pichloromethane)
Card Stands	2	1/8" Plexi Glass Various sizes of Plywood Wood Glue (Pichloromethane)
Acetate Cards	35	Acetate
Cardstock Cards	5	Matte Cardstock
Wooden Separator	1	1/8" Plywood Wood Glue (Pichloromethane)

[DART-291]

Technical Rendering

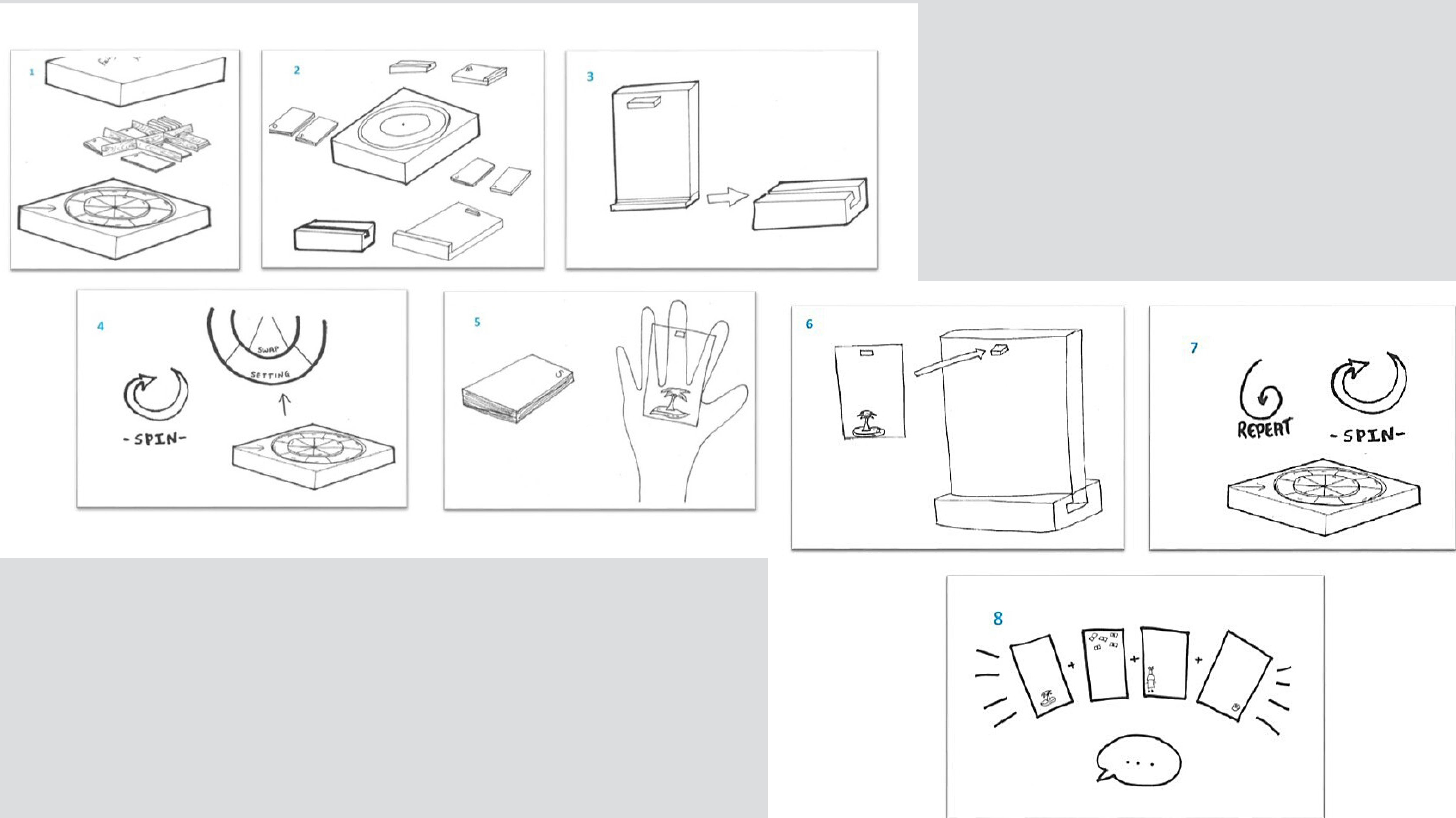


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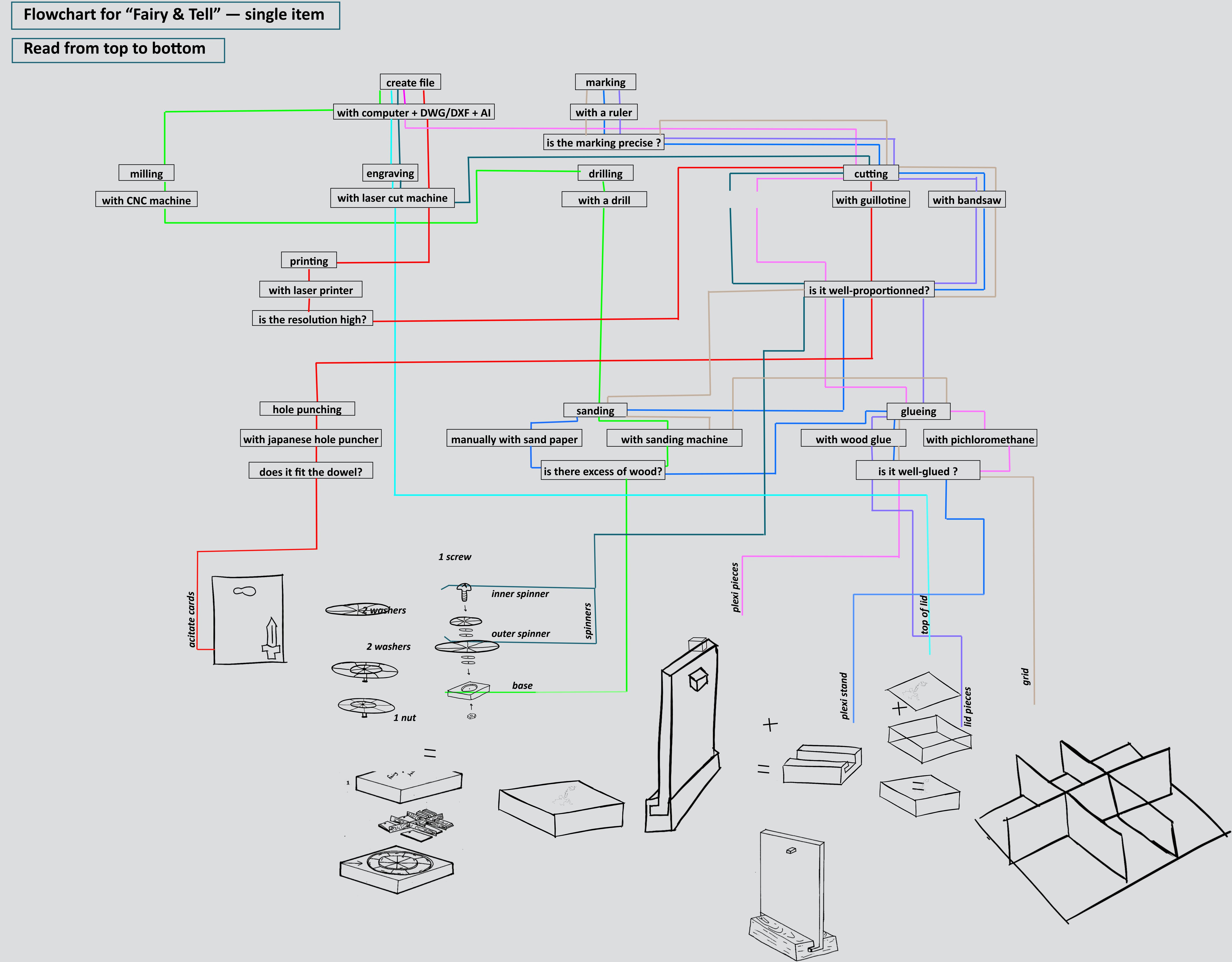
Storyboard

•Concept

Storyboard



Flowchart

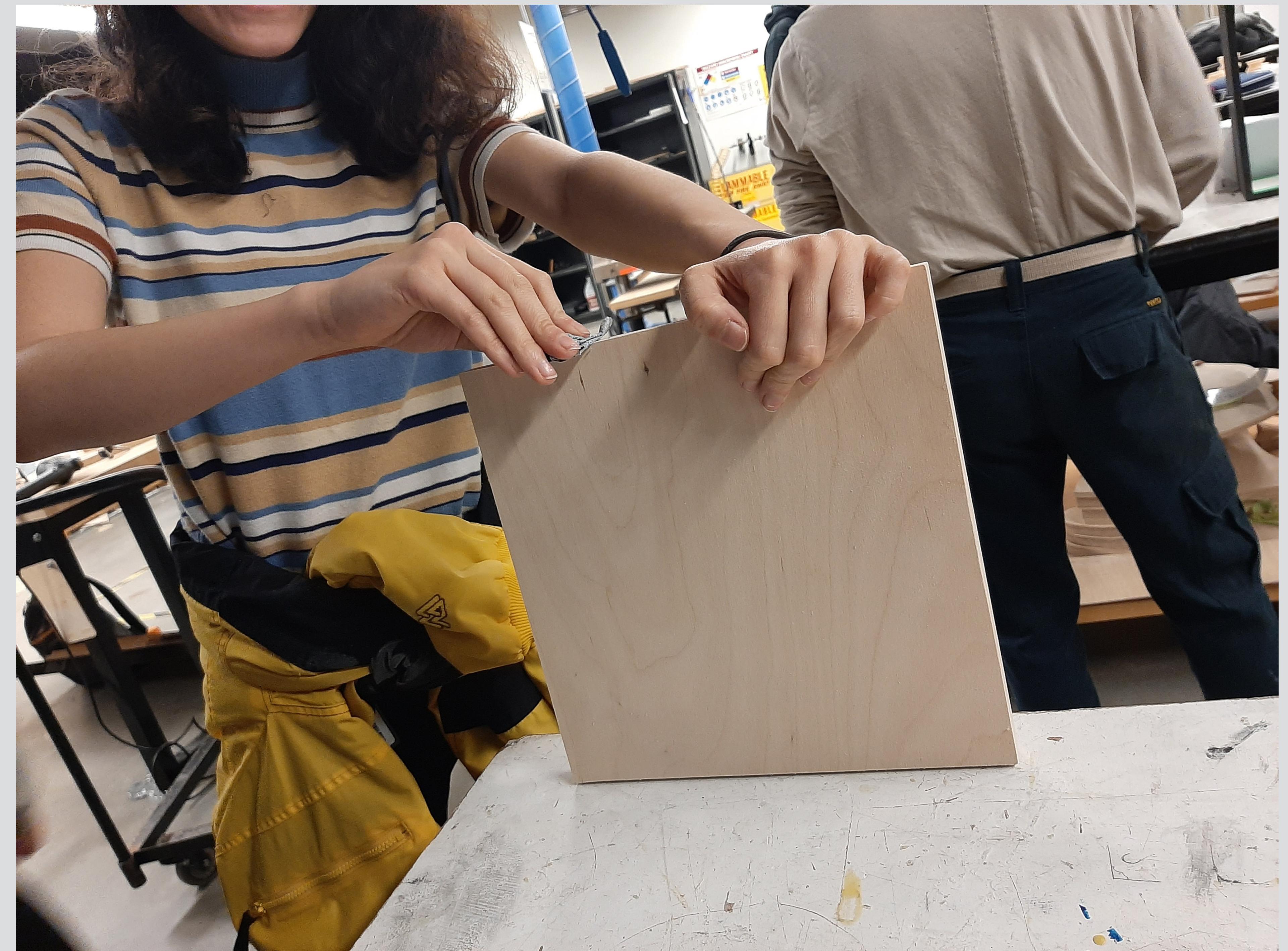


•Fabrication

Process documentation

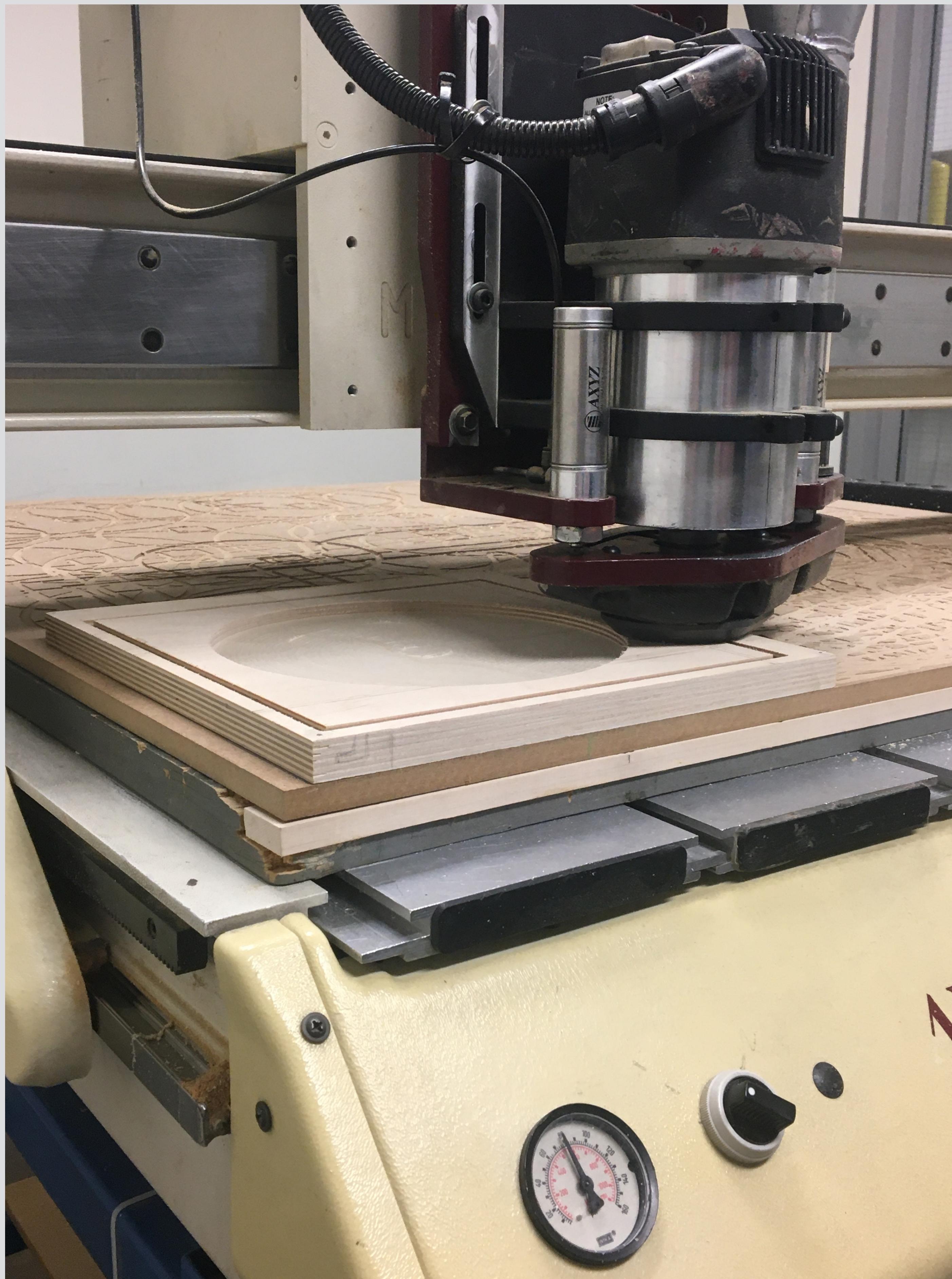


After marking our recycled pieces, we went to cut them on the band saw and sand them afterwards.

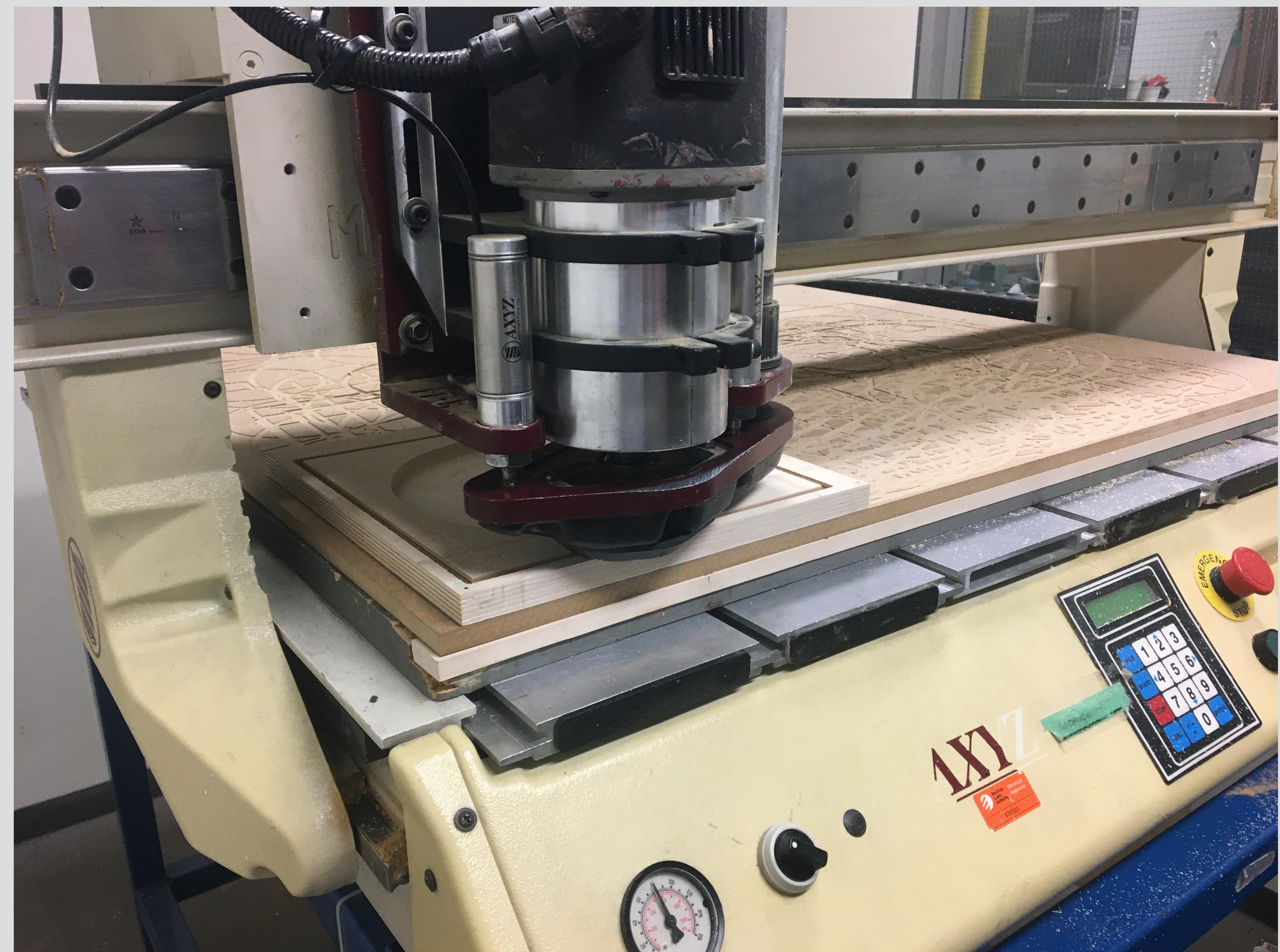


•Fabrication

Process documentation

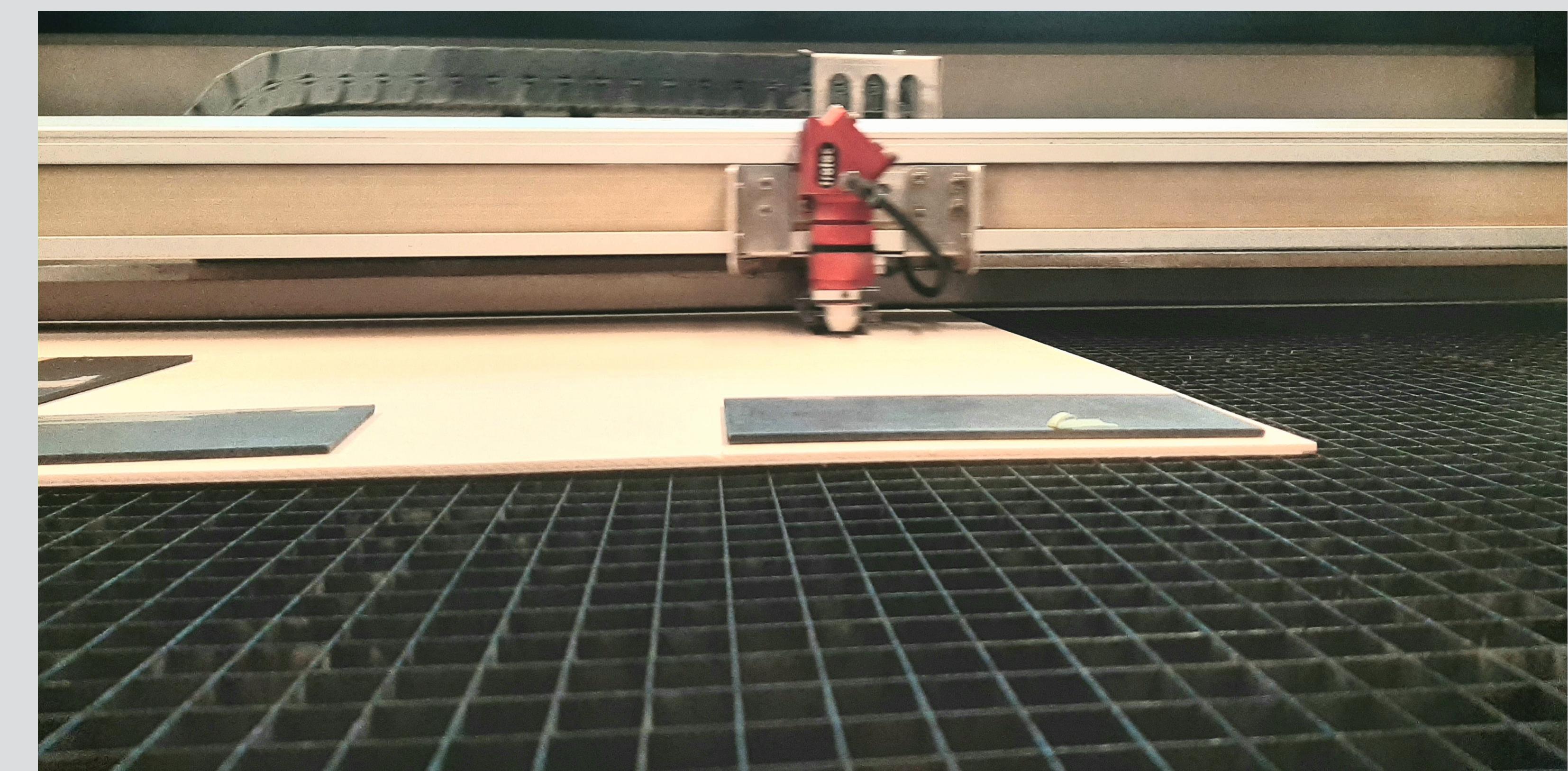
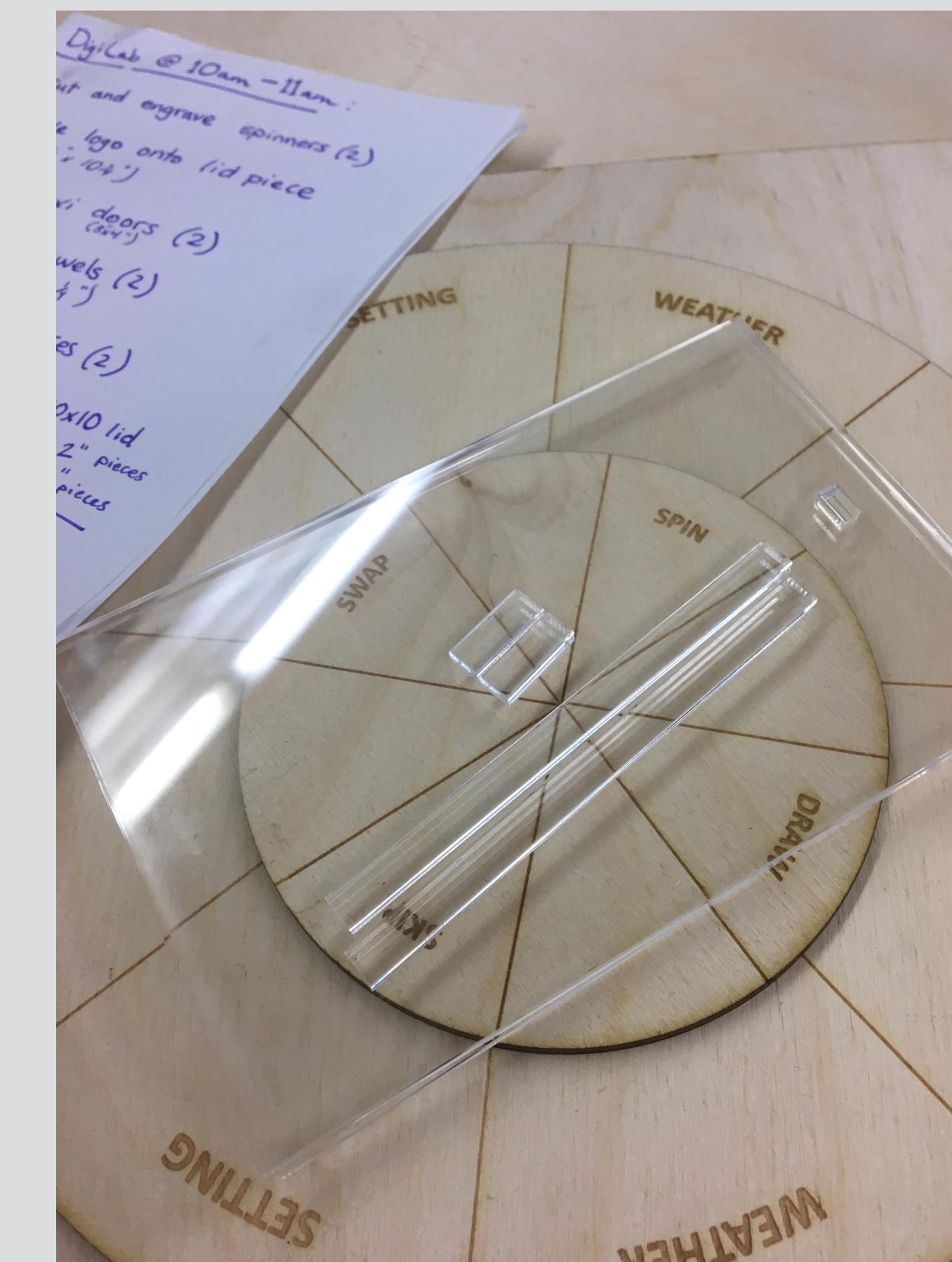


For our spinner base we made an AI file and cut it with a milling machine.



•Fabrication

Process documentation



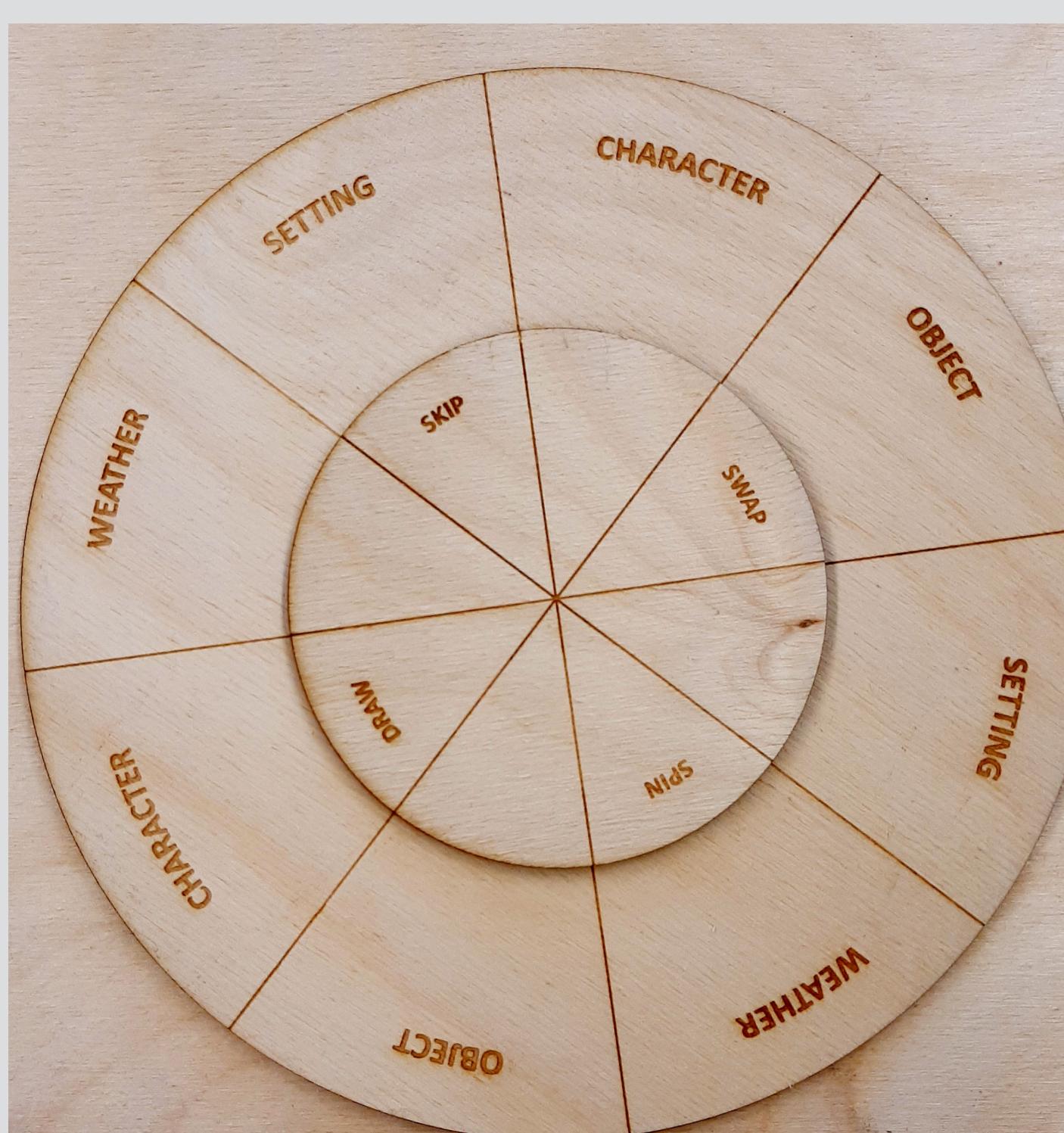
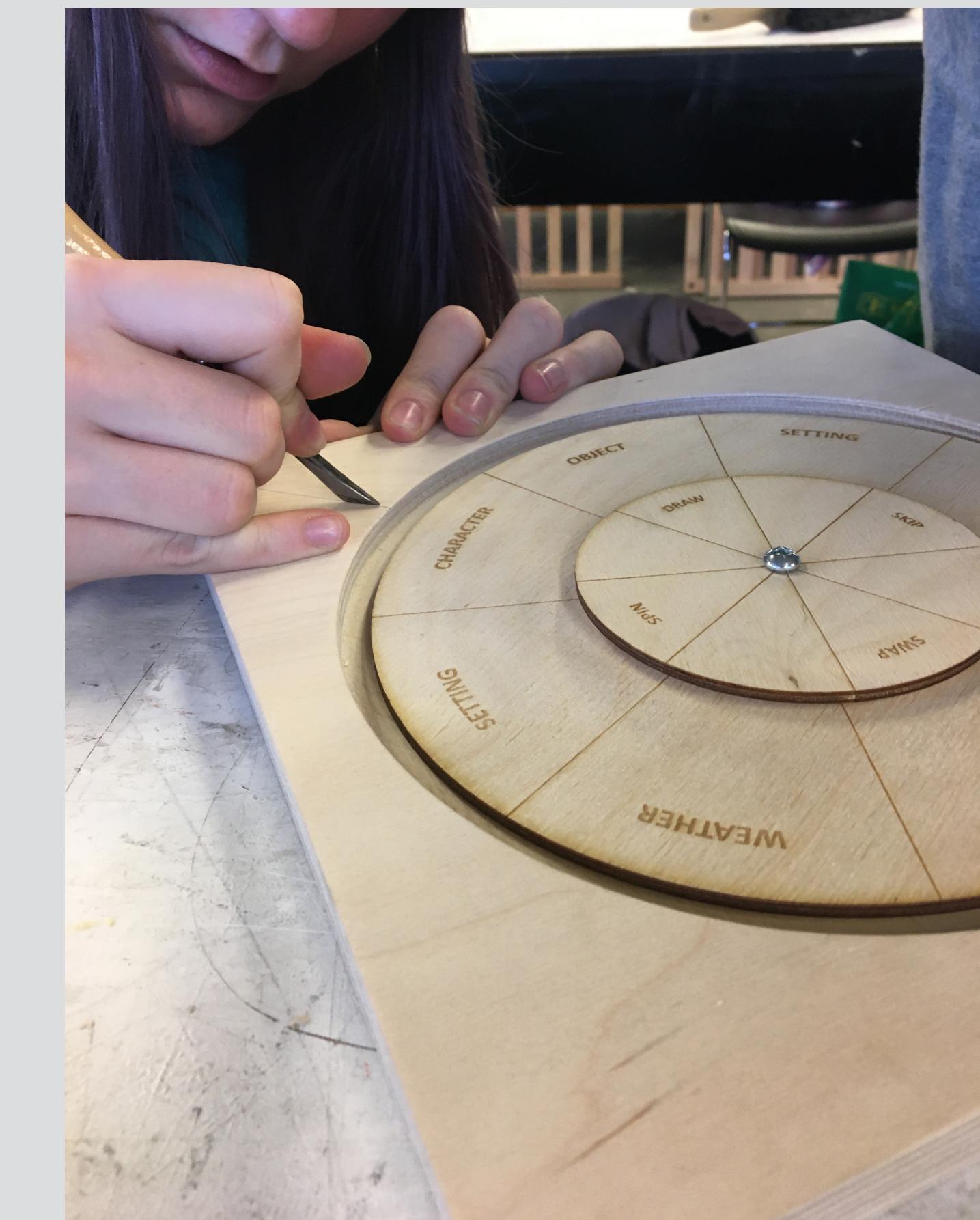
Laser cut for the spinners
and parts of the doors

•Fabrication

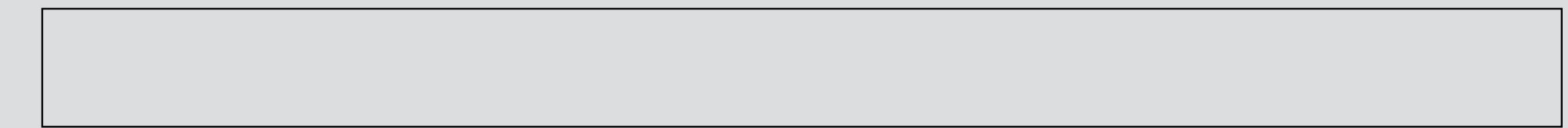
Process documentation



Following assembly steps.



Final Prototype



•Final Product

Photo Documentation



[DART-291]

Final Prototype

•Final Product

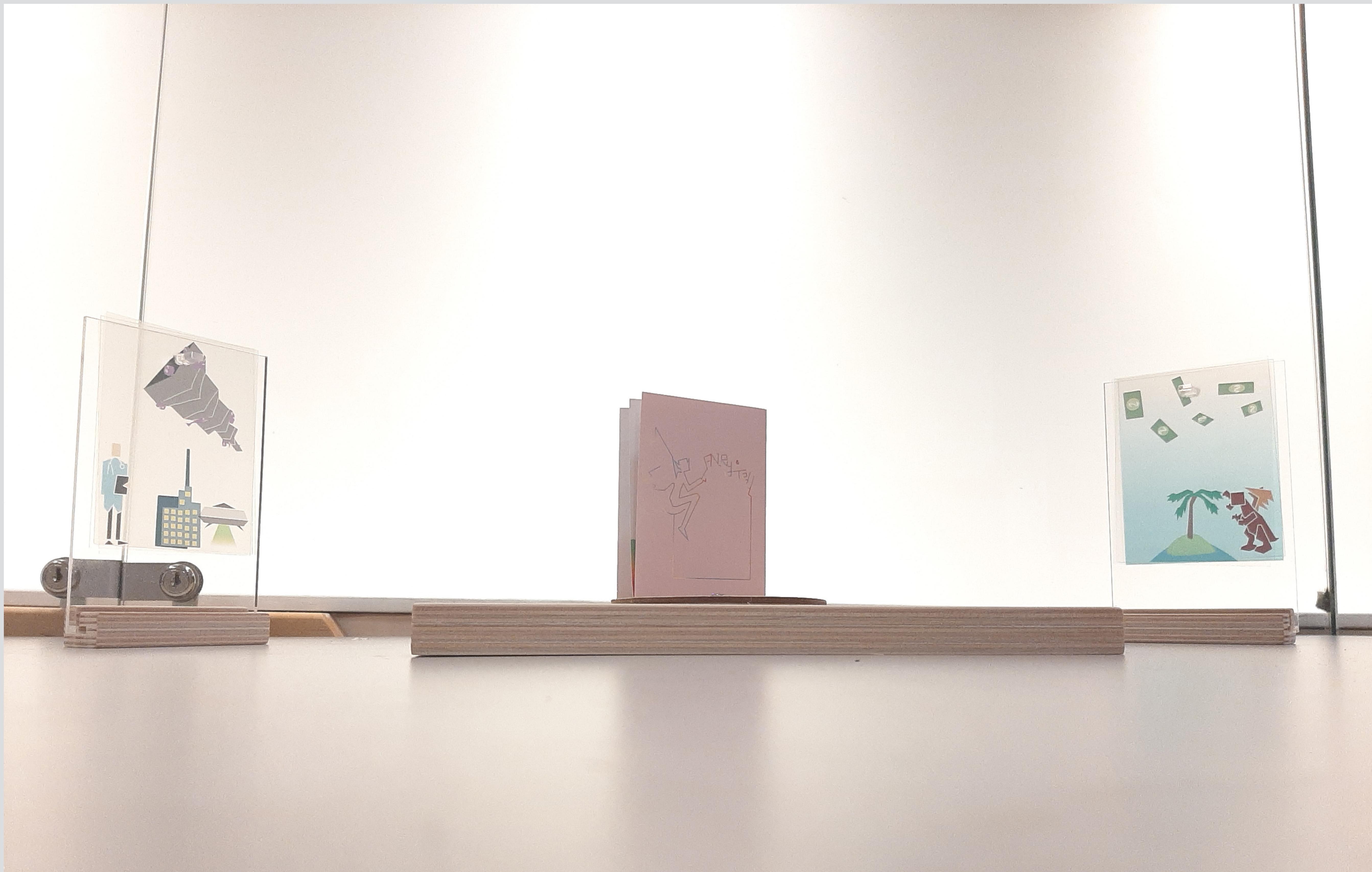
Photo Documentation



Final Prototype

- **Final Product**

Photo Documentation



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