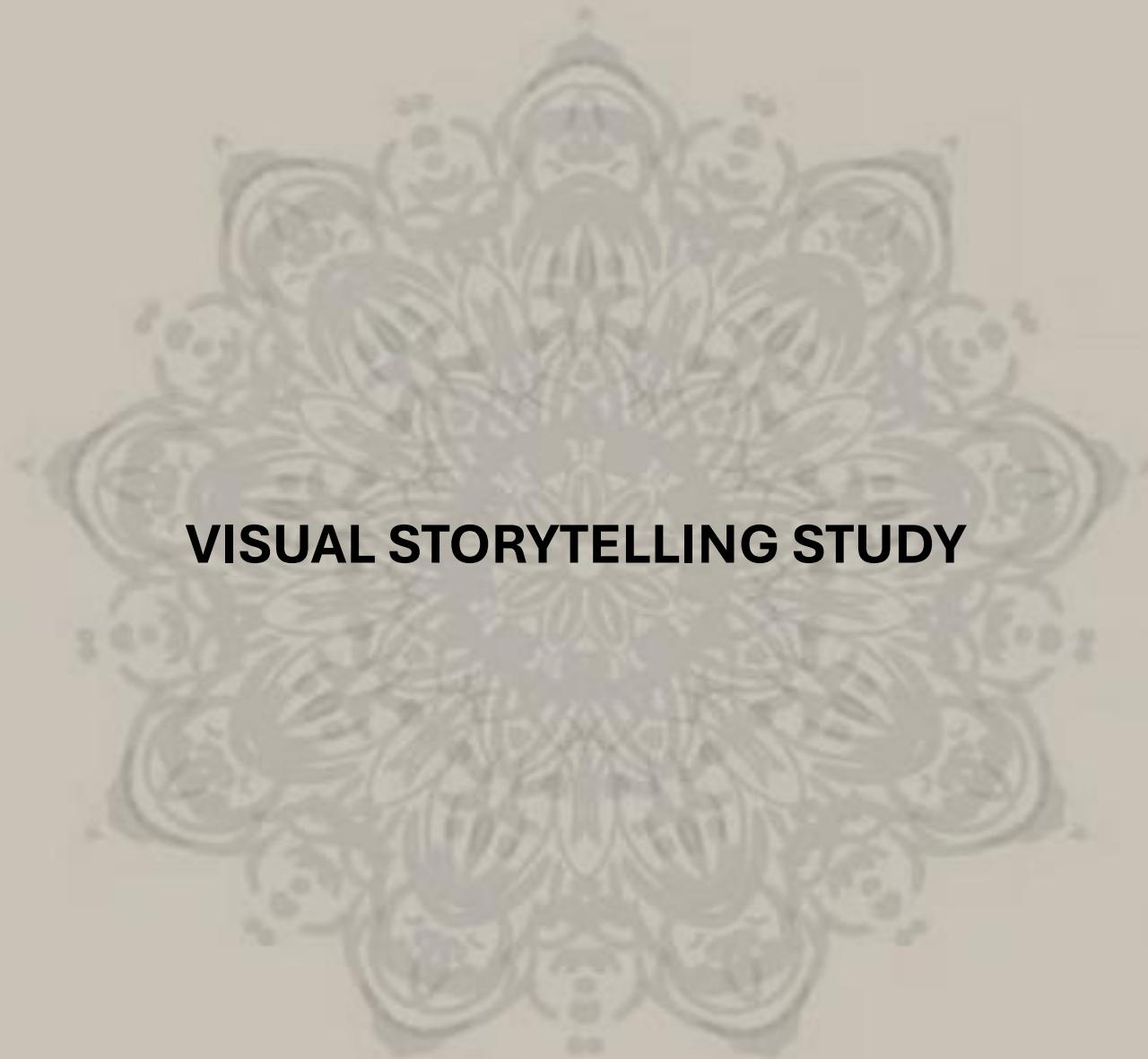


## MAKER'S WORD

Today, I want to invite you to travel with me. Through this presentation and project, I hope you will see, feel, and even smell the beauty of the culture I grew up in.

You're about to step into the heart of a sensory and emotional journey. Through shapes, colors, textures, sounds, and scents, this project was created to illuminate the language of my roots. It is the result of a fusion between my personal memories of Morocco, especially the city of Marrakech, and the artistic universe of one of my favorite movies, Azur and Asmar, which beautifully honors North African traditions. This project is designed to make people feel warmth, comfort, and belonging just as I did in my grandparents' home.

It is a celebration of shared humanity, told through the lens of my culture.



# **VISUAL STORYTELLING STUDY**

# The Art of Michel Ocelot : A Celebration of the North African culture



- Azur & Asmar is an animated film by French director Michel Ocelot. The film tells the story of two boys (one European named Azur, the other North African named Asmar) who grow up together and later embark on a magical quest rooted in **North African folklore**
  - Ocelot's visual signature blends :
    - **vibrant colors**
    - **intricate patterns**
    - **“ombres chinoises”** (silhouette animation)
  - *Azur & Asmar* is more than just a visual story. It's a **sensory experience** that invites the viewer to travel through:
    - **Sight**
    - **Sound**
    - **Touch (Emotionally)**
    - **Smell (Implied)**
    - **Imagination**



## Color Palette Analysis inspired by *Azur et Asmar* scenes & North African Culture

### Yellow ochre

•**Tone:** Warm tone that recalls sun, sand, desert landscape at dusk. It softens beautifully when blended with neutral greys.

•**In the film:** Dominant in village architecture, walls, and the desert scenes

•**North African culture:** Deeply tied to Marrakech's adobe architecture (called the "ville ocre") celebrating warmth, clay, and traditional craftsmanship.



### Vibrant blue

•**Tone:** Cold tone that creates depth and contrast against warm colors. When mixed with grey, it gives a more ethereal and dreamlike tone.

•**In the film:** Linked to magical and noble moments such as the palace, the fountains and the sky at twilight.

•**North African culture:** Represents nobility and the importance of water in arid regions. Commonly used in Berber textiles, ceramics, and protective charms.



### Green forest

•**Tone:** Cold tone evoking nature, harmony and serenity, offering a calm balance to the more intense warm palette.

•**In the film:** Seen in gardens, trees, and mythical spaces

•**North African culture:** Green is the color of paradise and peace, deeply tied to Arab art, tiles (zellige), and nature in oasis cities. Symbol of fertility and sacredness.



### Vibrant red

•**Tone:** Warm tone that evokes strong and passionate memories, intimacy. It can also represent danger, bravery, and power.

•**In the film:** Appears in clothing, and during moments of emotional tension or bravery.

•**North African culture:** Commonly used in festive clothing, henna ceremonies, and tribal motifs to express energy and power.



# Shape analysis : The Poetry of Shapes in Michel Ocelot's Azur and Asmar

Shapes and Forms matter in Visual Storytelling. In Michel Ocelot's movie, shapes are not just decorative, they carry a meaning. He uses a “shape language” to represent North African culture, deeply rooted in strong visual traditions.

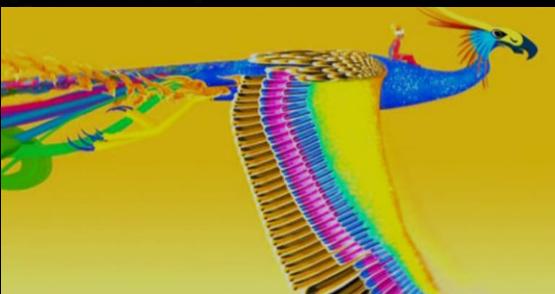
## North African Design and Architecture

- Shapes evoke architecture from cities like Marrakech, merging yellow ochre tones and geometry to create one of the oldest and most iconic cities in North Africa
- Use of **arches, tiles, and symmetry**
- Patterns reflect the infinite and divine



## Fantasy and Magical Worldbuilding

- Shapes can evoke fairy tales and suggest a dreamlike world
- Use of **organic and flowing shapes with airy and curved lines** for magical creatures to
- Add a poetic tone to the visual experience



## Symbolic Shapes

- Symbolic motifs : **stars, crescents, mandalas, floral patterns** borrowed from Arab and Berber symbolism
- These shapes bridge between the real and the mythical, enhancing the cultural depth of the film
- Reinforce the movie's theme : beauty, identity and complexity of heritage

## A Celebration of Scents: A Sensory Language of North Africa in Azur & Asmar

Scents are deeply tied to **identity, rituals, and childhood**. In *Azur & Asmar*, the scents aren't shown, they are **felt**. The movie **suggests olfactory memories** through imagery of **spices, market (souk) and gardens**.

### Palette of North African scents :

- Oud
- Rose
- Nutmeg
- Geranium
- Amber
- Fennel
- Musk
- Olives
- Cinnamon



Movie :

### Real life :





**MAKING OF THE PROJECT : BUILDING  
A LANTERN THAT CAPTURES THE  
NORTH AFRICAN CULTURE**

## WHY A LANTERN?

1) Sensory Experience wanted :

- **Sight → light**
- **Sound → music**
- **Touch → warmth**
- **Smell → scented candles?**
- **Imagination → dream**



3) Design Inspired from *Azur & Asmar* movie. In the movie three main keys needed to be found

- **The metal key → design using metals**
- **The warmth key → design creating warmth**
- **The odor key → design linked to an odor**
- **Magical creatures**



2) Design respectful of Michel Ocelot's art:

- **Silhouette → shadow game**
- **Vibrant colors → Red, blue, green, ochre**
- **Intricate patterns**

4) Design celebrating the North African culture:

- **One of the oldest symbol of traditional craftsmanship in North Africa/Arab World**
- **Handmade from metal (brass and copper)**
- **Recognizable symbol in the U.S., with representations in popular culture like Disney's Aladdin, where the genie emerges from a lantern.**

A lantern was a fitting design choice  
(visual appeal and cultural significance)



# Projects Requirement and Available Resources

Before starting any project, I like to clearly understand the constraints, requirements, and the tools available to me. This helps guide my design choices and process planning from the very beginning.

## Requirements :

- Use at least two distinct manufacturing processes
- Meet the deadline to present the design at 'Meet the Makers'

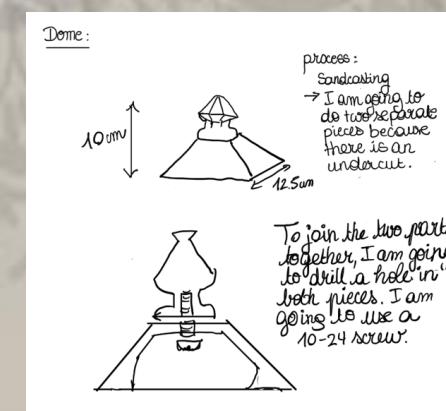
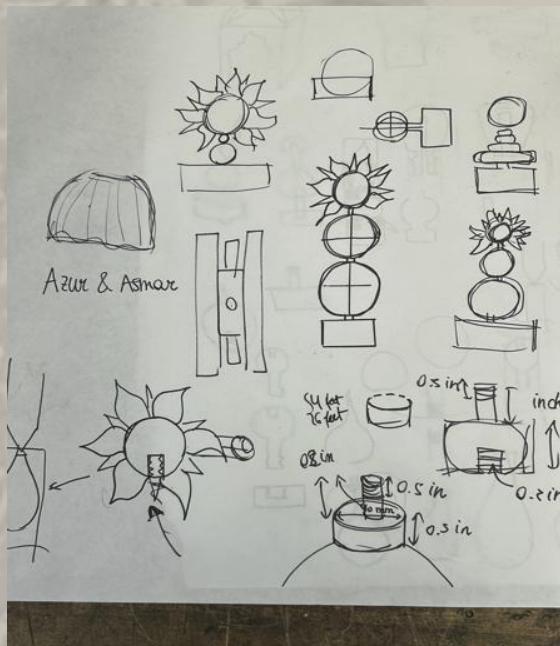
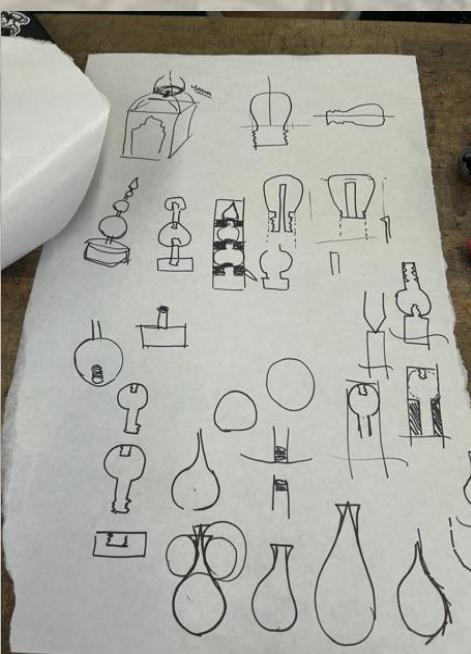
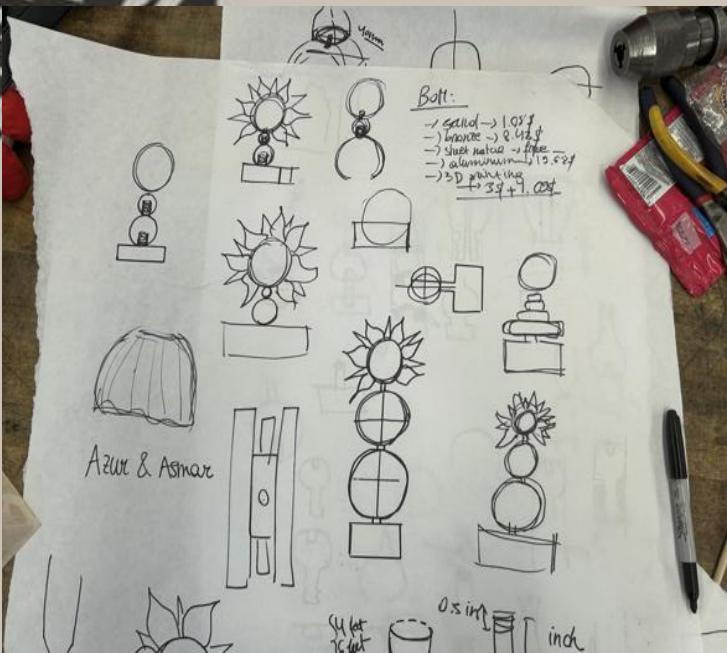
## Available Resources :

- Welding
- Turning (Lathe)
- Drilling
- Milling
- Casting (Sandcasting)
- Woodworking shop
- Sheet metal Equipment (Rolling, Bending)
- Waterjet Cutting (OMAX)
- Laser Cutting (FabLight)
- 3D printing (Form Labs, Bambu X1E)

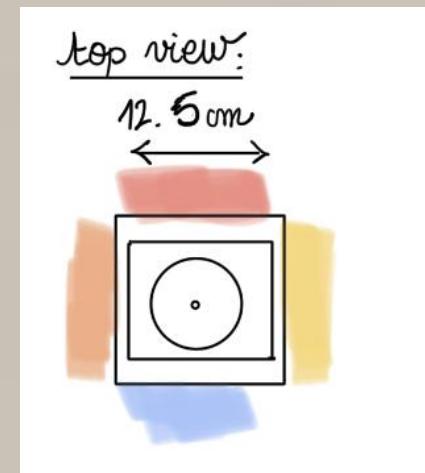
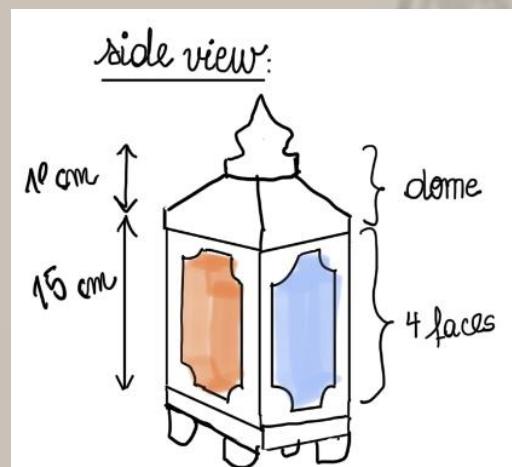


## Sketches

Through brainstorming, I was able to identify components such as the dome, and by sketching, I was able to propose a possible way to design it using casting and turning.



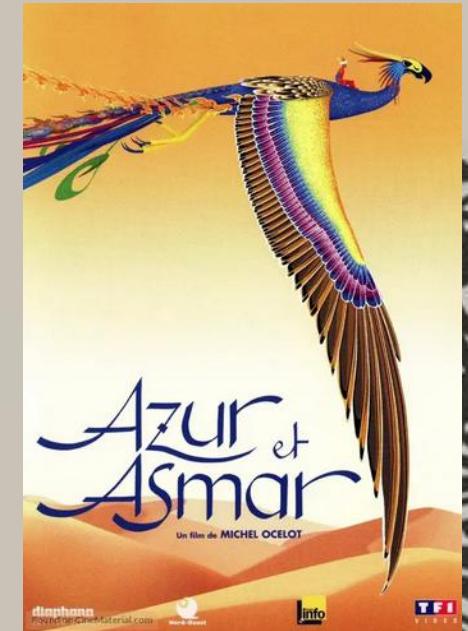
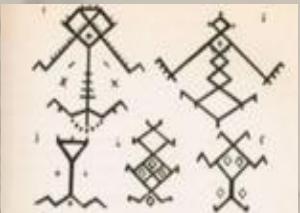
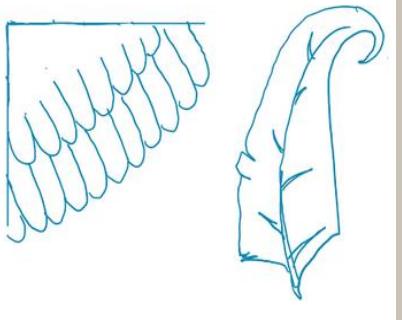
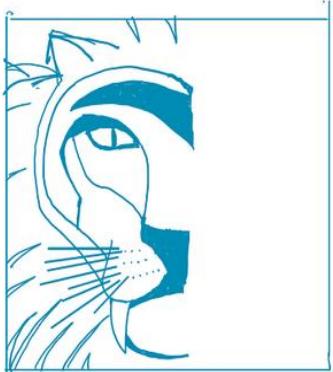
## Brainstorming



+ a door

# Sketches and Brainstorming for the faces

Process : Sheet Metal Cutting and bending



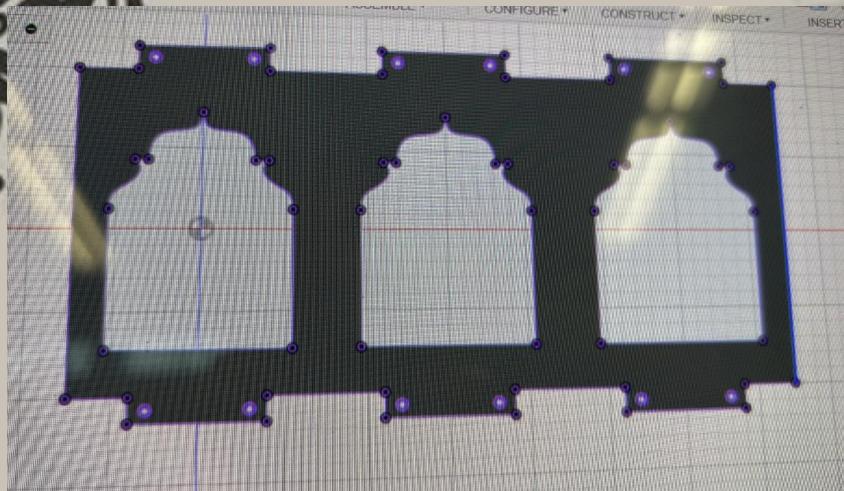
# Materials

	Quantity	Suppliers	Dimensions	Price
Sheet metals Mild Steel	1	Alan Steel	80 cm x 30 cm , 0.05 in thickness	offered
Aluminum 6061	1	Alan Steel	1-3/4 in in diameter, 20 cm long	19.68\$
hinge 1	2	Home Depot	1-1/2 in. Zinc-Plated Non-Removable Pin	2.58\$
hinge 2	2	Home Depot	Everbilt - 1 in. Zinc-Plated Pin Narrow	2.58\$
Casted part 1 in Silicon Bronze	1	PRL	1.6 lbs (+ 4lbs for gate runner)	8.43\$
Casted Part 2 in Aluminum 356	1	PRL	0.71 lbs (+2 lbs for gate runner)	4.4\$
3D printed feet	4	PRL		0.16\$
3D printed nut	4	PRL		0.02\$
washer #10	5	Home Depot	#10 Zinc Flat Washer -1/2 inch outside diameter	1.47\$
screws 6-32	8	PRL		0.4\$
screws 8-32	8	PRL		0.4\$
screws 10-24	5	PRL		0.4\$
Epoxy	3	PRL		7.35\$
screws 1/4-20	5	PRL		0.6\$
screws 10-32	3	Home Depot	#10-32 x 3/8 in. Combo Round Head	1.47\$
nuts 6-32	8	PRL		0.4\$
sand (waterjet cutter)	1.8 g	PRL		1.8\$
washers 1/4-20	5	PRL		0.25\$
heat insert 1/4-20	4	PRL		2.8\$
heat insert 10-24	4	PRL		1.8\$
3D printed dome corrected	1	PRL		3\$
Acrylic Sheets Plexiglass	5	Amazon	6 Pack Colored Acrylic Sheets 5x7 Inches, 1/8 Inch Thick	15.99\$
3D printed dome	1	PRL		3\$
			Total =	78.98\$



## **MAKING OF THE LANTERN'S FACES AND DOOR**

## Testing of the waterjet cutter

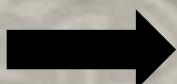


### Testing :

- Fine details
- Holes

### Disadvantages :

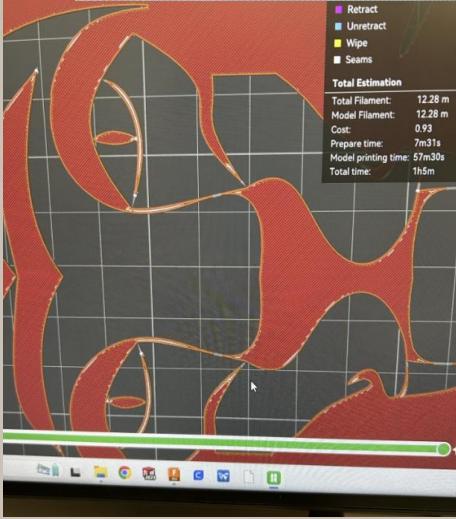
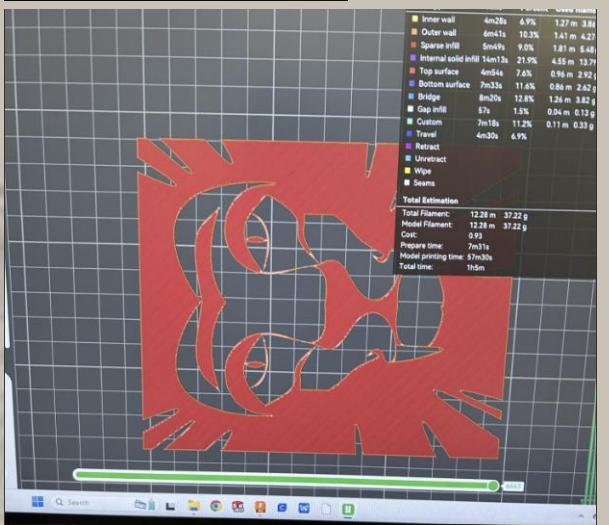
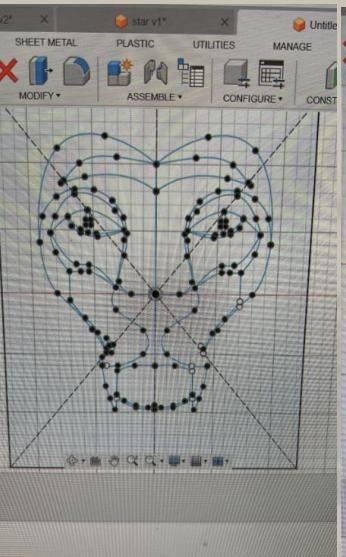
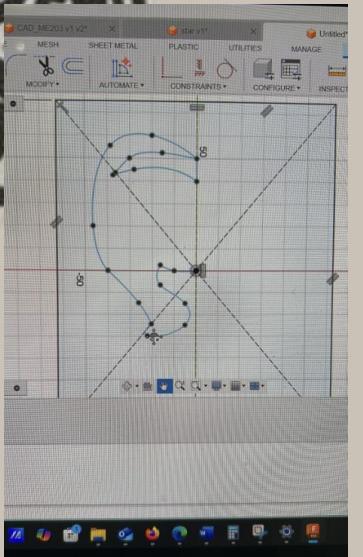
- Very fine details removed when cutting (kerf width: 0.021", which is the thickness of the cut)
- Holes are not fully cut
- Abrasive sand is expensive



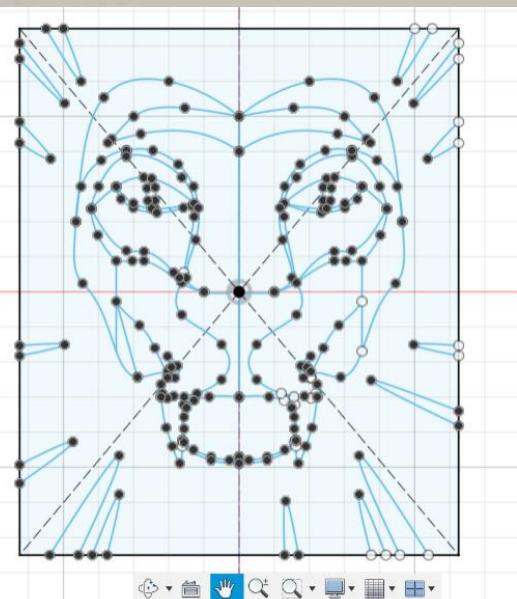
I stopped using the waterjet cutter and started using the laser cutter instead

# CAD

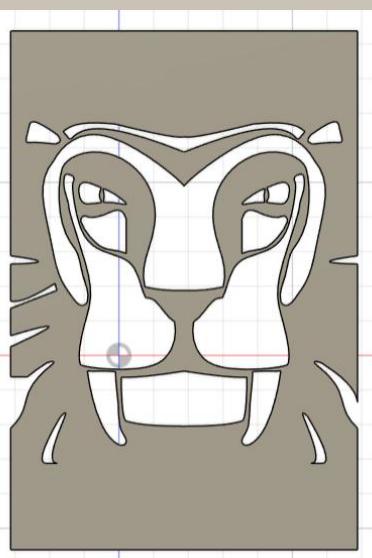
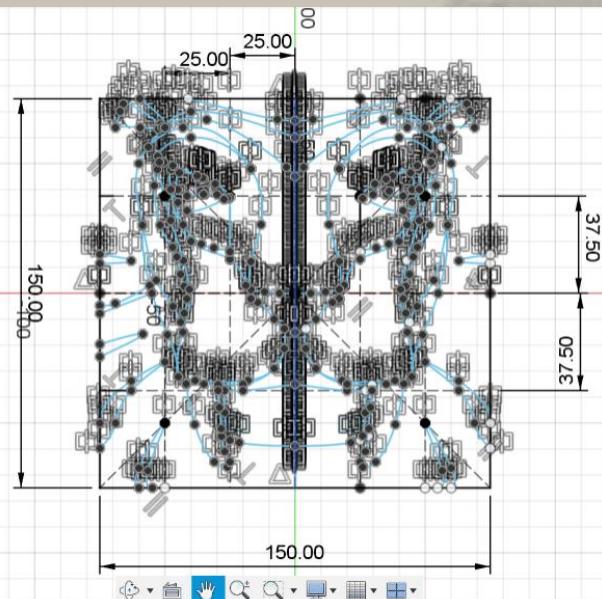
## Making of the lion shadow silhouette



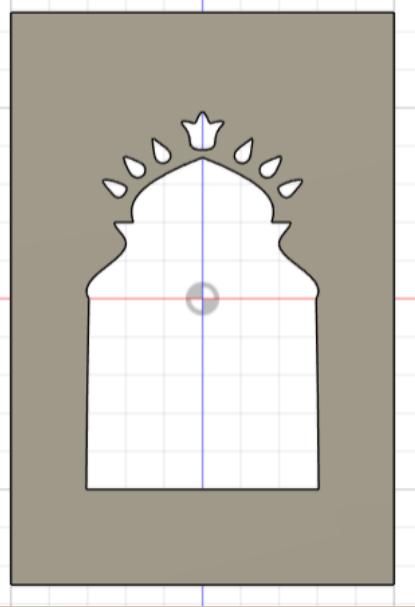
## Version 1



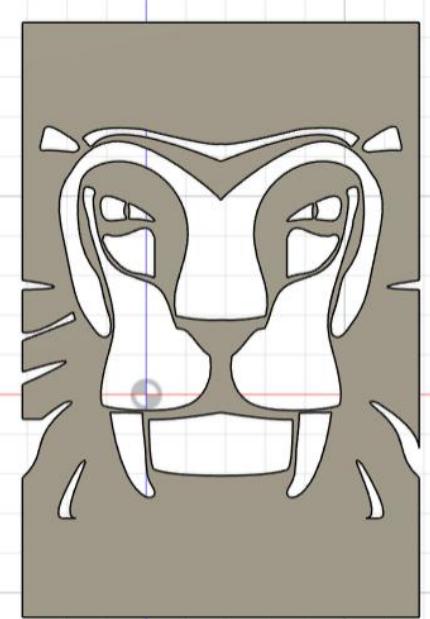
## Version 2 (Final)



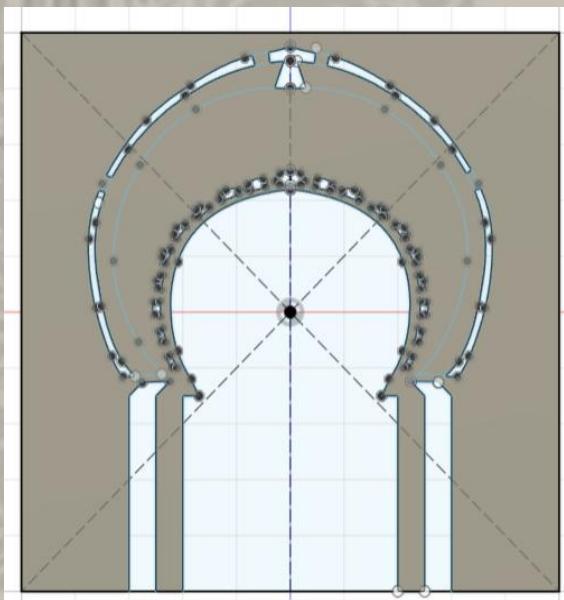
## CAD of the different faces



- North African Architecture
- Arches
- Floral Patterns
- Symmetry
- Symbolic shapes inspired from one of the key in *Azur & Asmar*



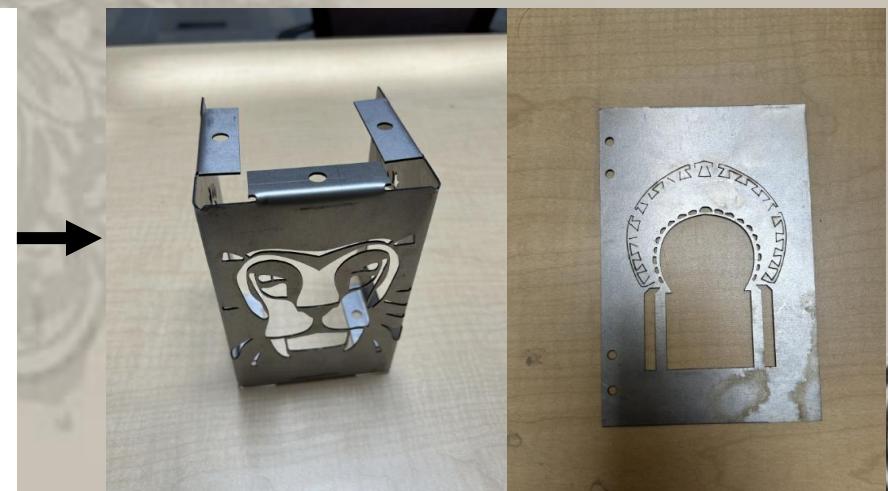
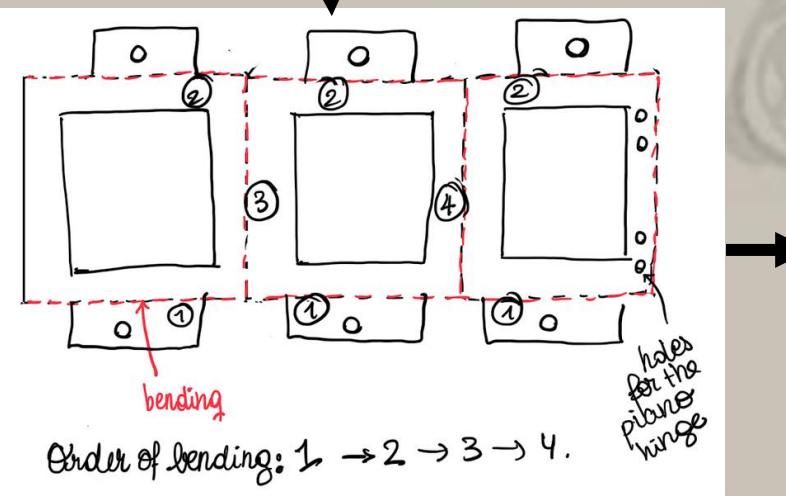
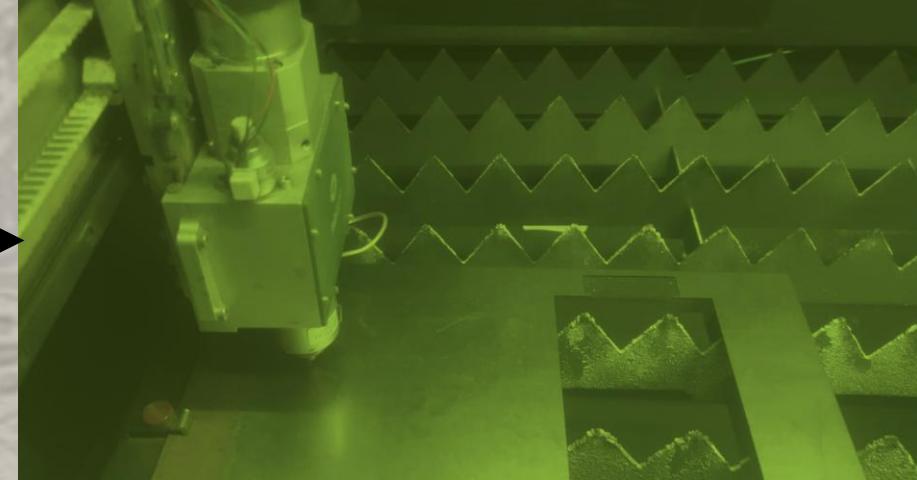
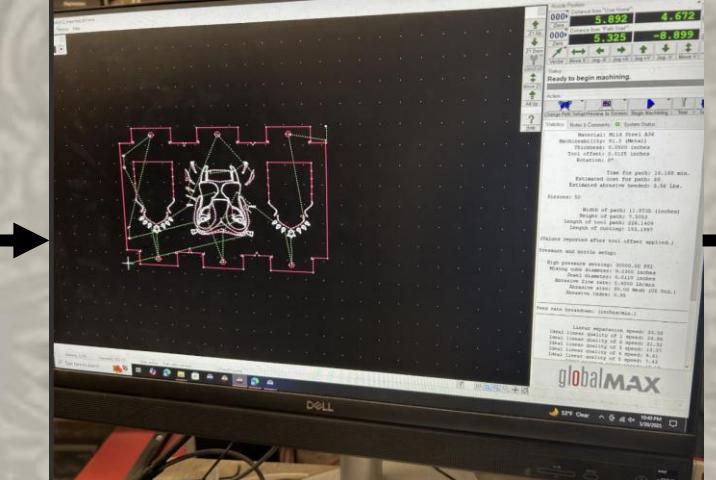
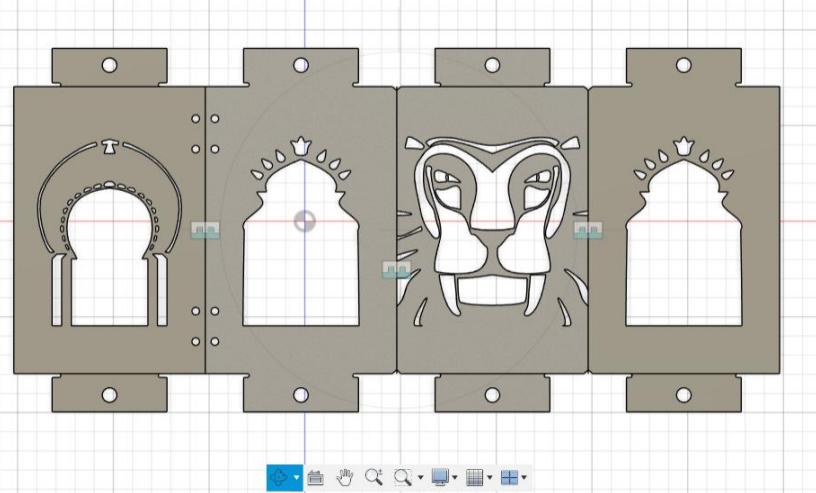
- Strong symbol of Morocco (lion de l'Atlas)
- Inspired by the lion design in *Azur & Asmar*



- North African Architecture
- Arches
- Symmetry
- Door design inspired by the palace's main entrance in *Azur & Asmar*

# CAD of the overall design and Post Processing

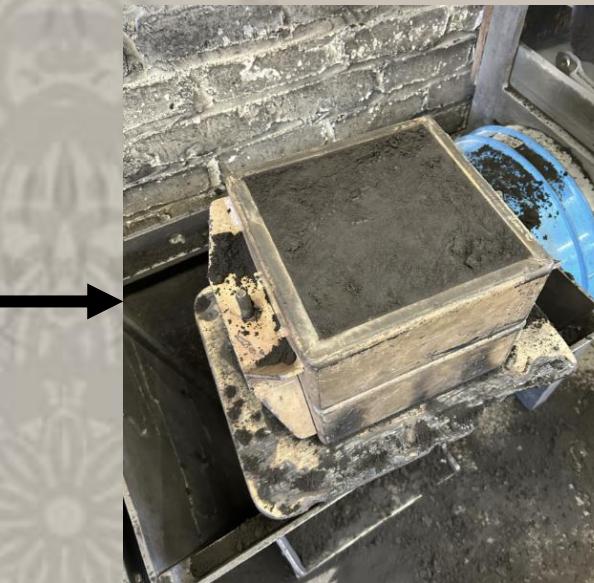
Several operations were performed to shape and define the faces of the part.





## **MAKING OF THE LANTERN'S DOME**

# Casting

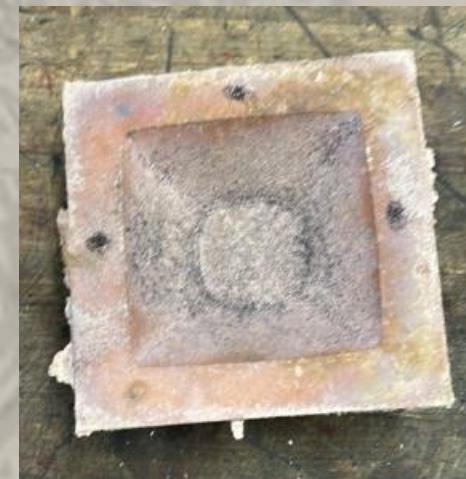
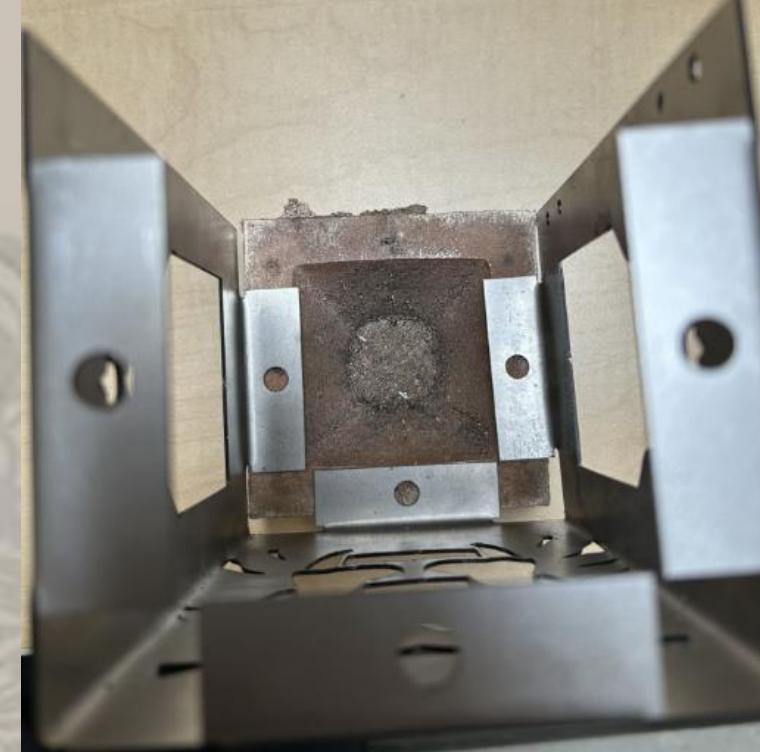


I had a casting Failure, so  
I had to recast it

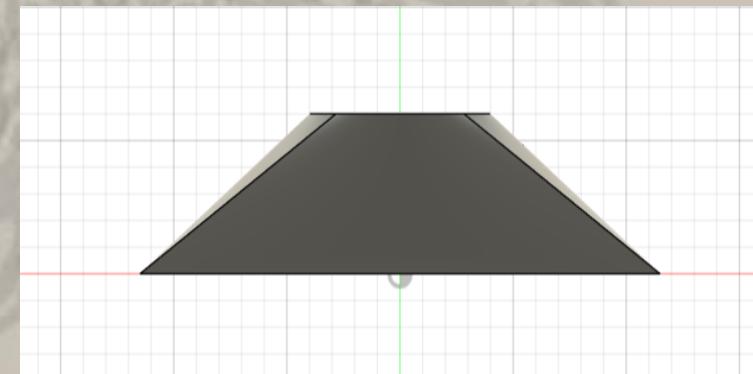
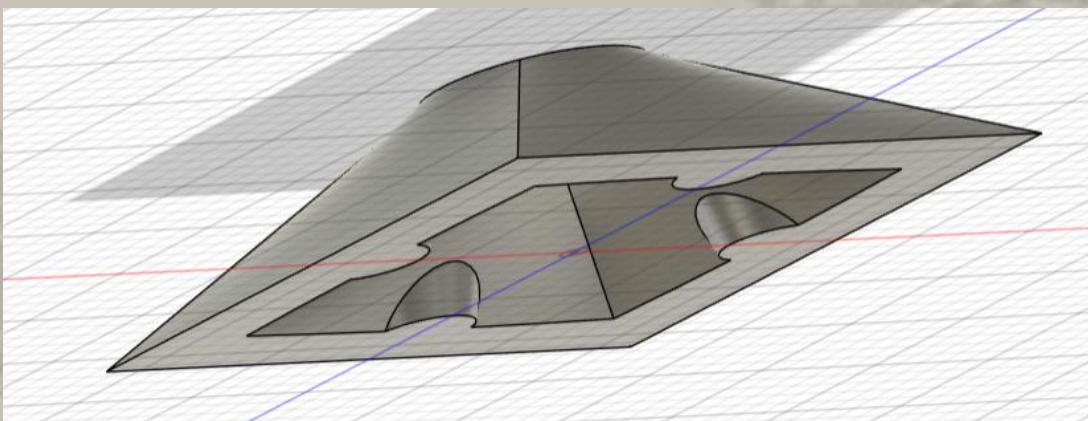
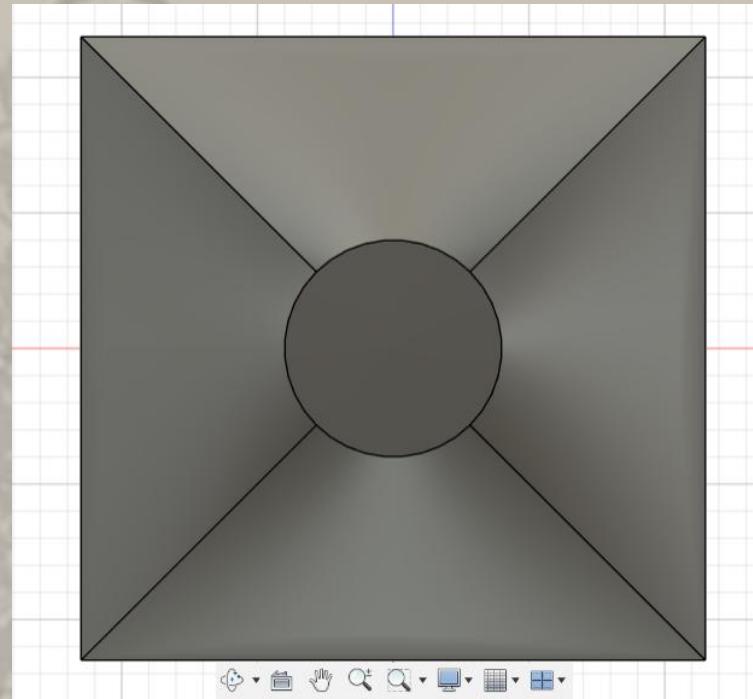
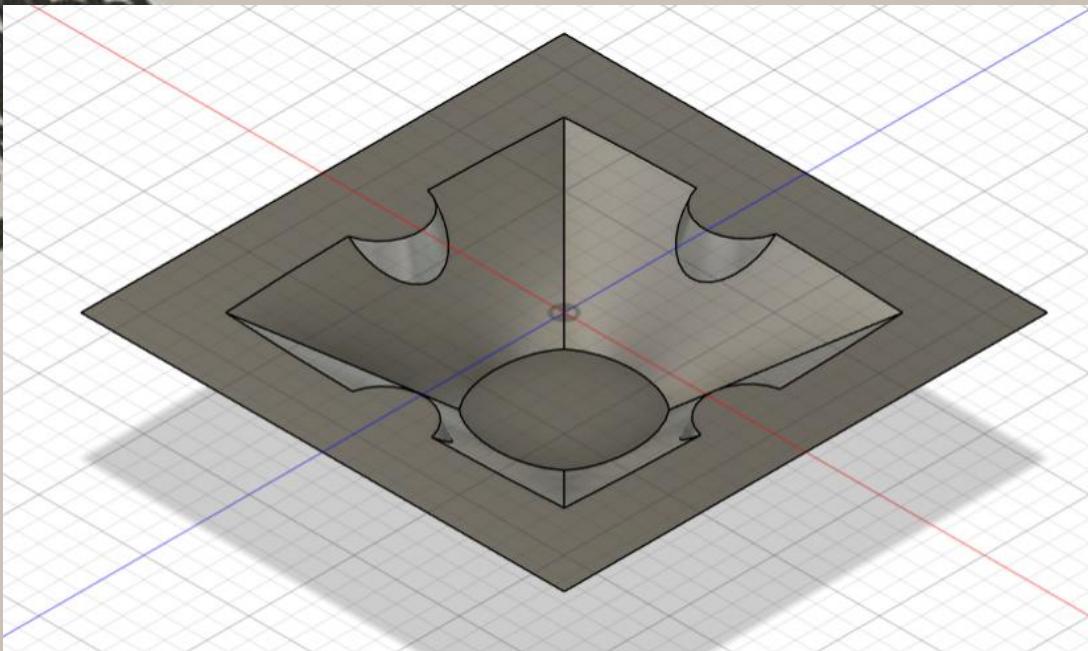
## Drilling



The thickness was too small, with a maximum of 270 thou. I tried to use #2 drills to make holes that wouldn't go through the material. Unfortunately, in one of the holes, the thread wouldn't engage because the hole was too small, and in the second hole, the tap broke inside it, so I had to recast the part.



## Updating the CAD of the casting part

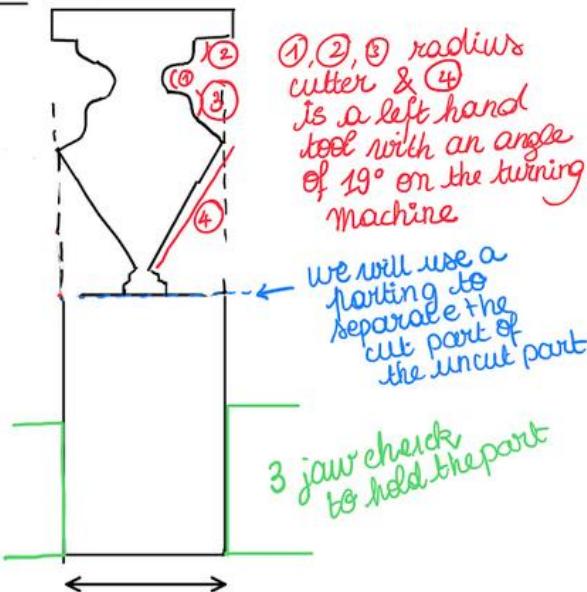


After updating the CAD model of the casting part, I was able to increase the possible depth of the holes from 270 thou to approximately 472 thou, representing an increase by a factor of about 1.75.

# Turning and Taping

Lathe/Turning.

Critical Part: Material = aluminum 6061



Turning



Taping



## **ASSEMBLING AND FINISHING**

## Hinge Testing



The hinges I selected were too large, which prevented the door from closing fully. I had two options:

- use smaller screws, which I tried, but this introduced too much play in the hinges
- switch to smaller nuts.

However, the smaller nuts were quite expensive, costing nearly \$20 for just 8 pieces, which was a significant part of my \$100 budget. To solve this, I imported the CAD model of the desired nut from McMaster and 3D printed them. Another challenge I faced was that the printed nuts did not fit the 6-32 screws perfectly, so I decided to print nuts sized for 8-32 screws instead. This solution worked perfectly!



# Finishing

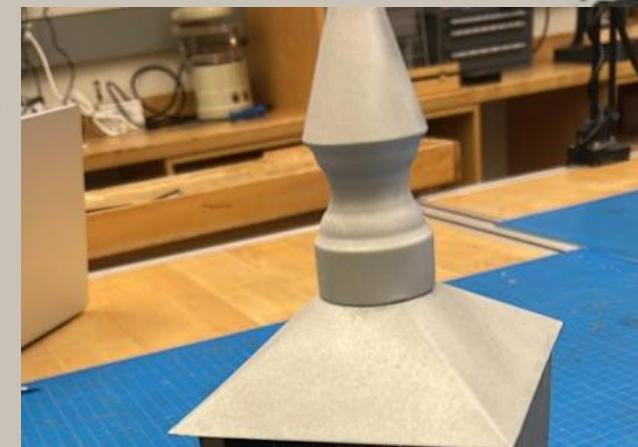
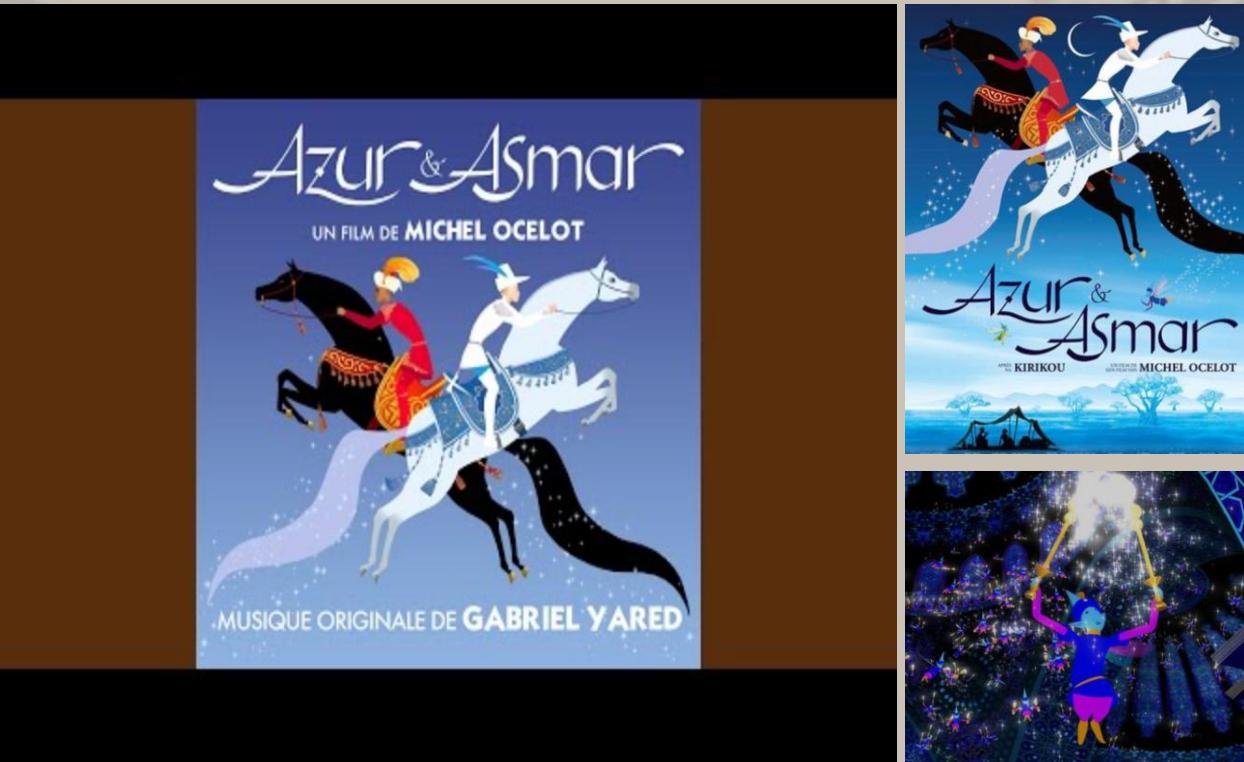
Various finishing options are available :

- Sandblasting
- bead blasting
- Glossing
- mirror finishing (sanding)

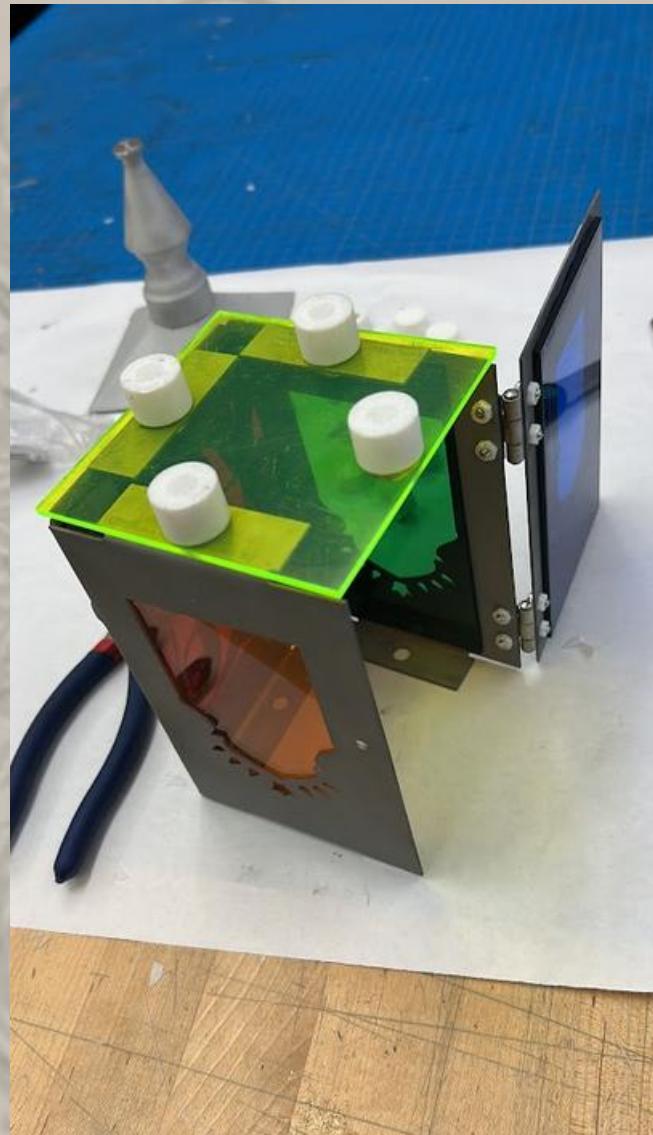
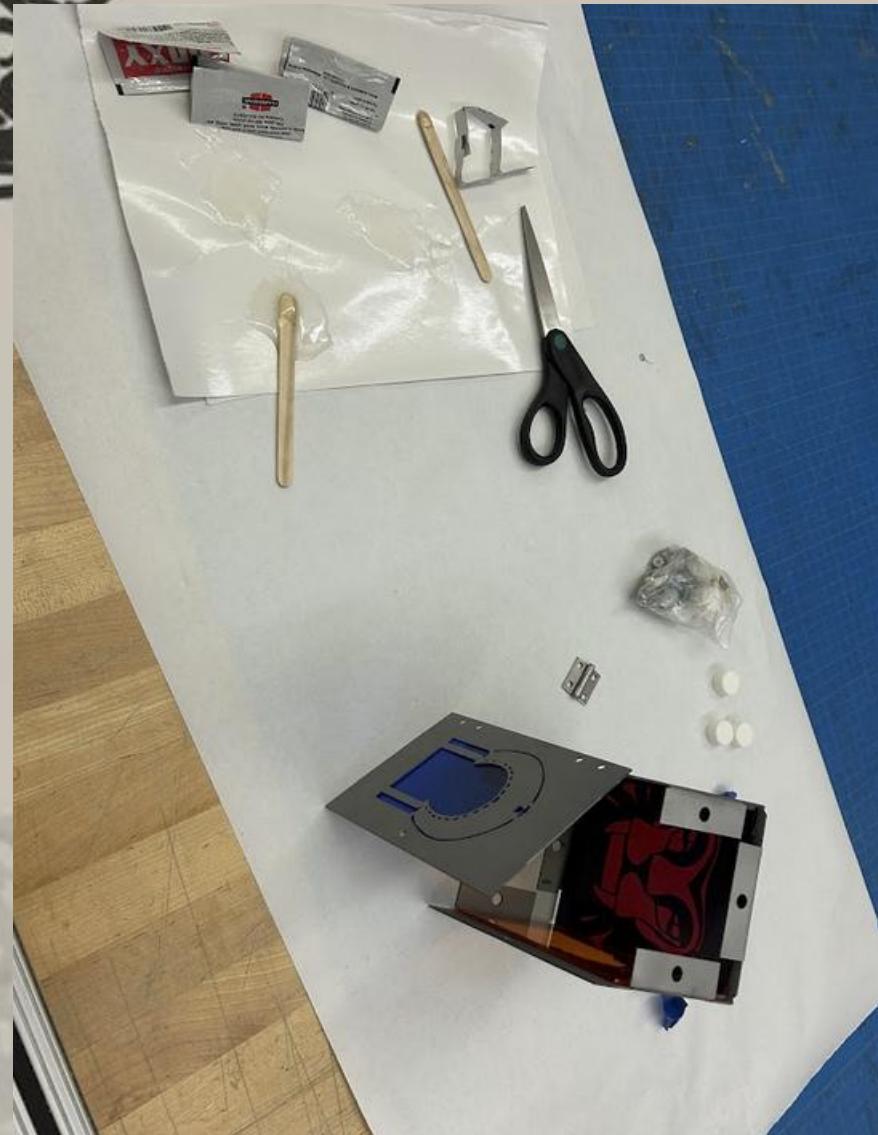
In the movie :

- glittery soundtracks
- Shimmering appearances of the djinns

So I decided to sandblast all the parts to create also an effect of cohesion.



## Final Assembly



## Olfactive finishing



### Palette of North African scents :

- Oud
- Rose
- Nutmeg
- Geranium
- Amber
- Fennel
- Musk
- Olives
- Cinnamon

For the candle, I chose a blend of olive, oud, rose, amber, and geranium.







Thank you !