



*Light Creates*

*Insight*

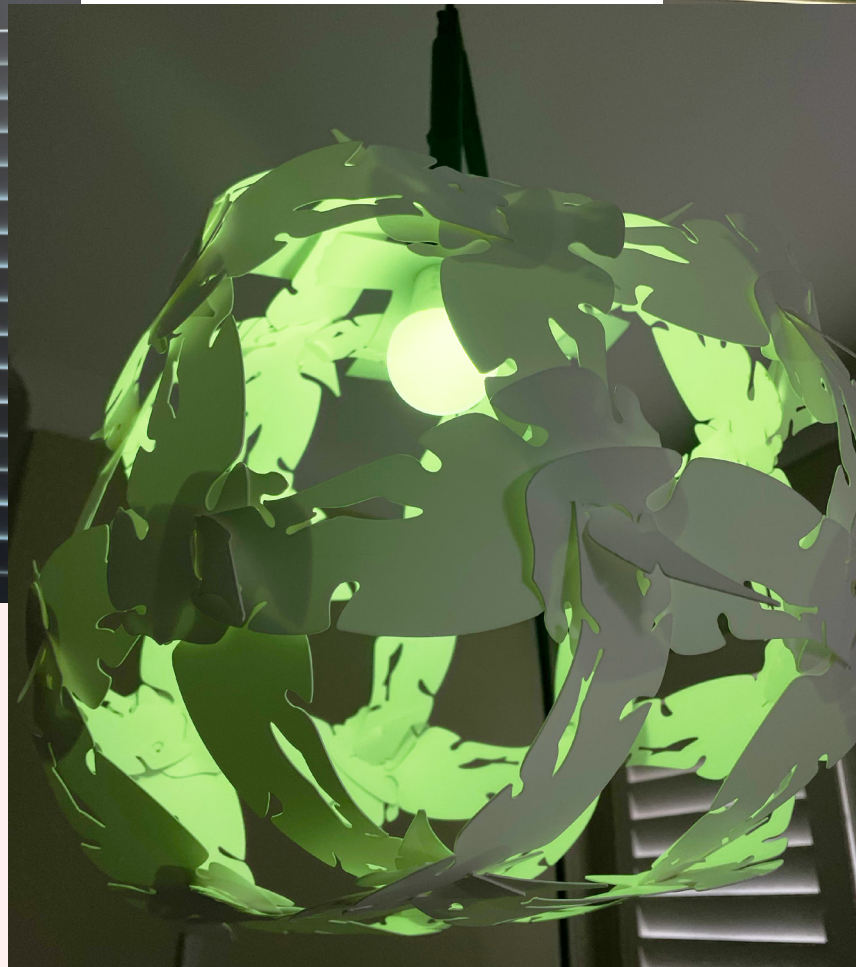
*Process Journal*

*DSO102 Design Studio 1*

*Alexandra Lossy*

*A00053552*

# Final Sculpture





# Final Sculpture



# Story

## Light and Lamps

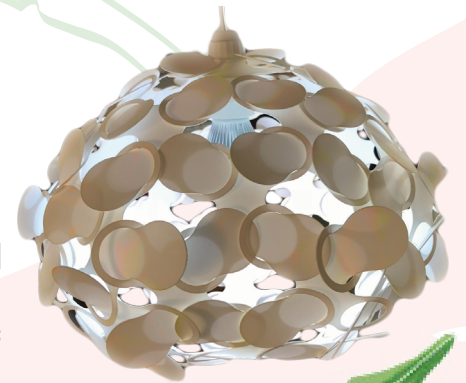
*Light Creates Insight* is the concept for assessments two and three. Researching different light fixtures and lamps, there was a common factor they all portrayed: the light played a large part in creating an atmosphere, and without light- nothing would be seen or appreciated. This puts a lot of pressure on a lamp: if turned off, it either blends into the background or isn't seen, but switched on, it creates an opportunity to see the background and creates an atmosphere. Creating a light that can not only complement, but also enhance an atmosphere was essential for this project. The first inspiration for this concept came from a year 11 project I had done, where I had to design and create a lamp shade from polypropylene, with the focus on creating something that could be flat packaged, consist of no more than three other materials, easily cleaned and easy to assemble. The outcome of the school project was effective and ticked all the boxes, although for this assessment, I wanted to produce a more contemporary structure, that could express my love for plants.

## Leaves

Plants and I have a love-hate relationship. I love the atmosphere they create, their properties and the calming green colour they portray, whereas plants don't like to live with me. The decision to create a leaf structure was to create a jungle atmosphere, without actual plants that needed attention: A contemporary jungle 'vibe' with no watering required. There was a lot of experimentation with the design of the leaf, was it going to be symmetrical? The holes of monstera plant seemed like an opportunity to create joints of some sort, which played a large part in the final design.

## Versatility and Self-Sufficiency

Creating a versatile lamp was crucial. Growing up, I was very responsible with money and found a passion in multi-purpose or multi-use items: they could be the best of both worlds for the same price of a single-use object! These multi-purpose items inspired the creation of a lamp that could change its layout or structure whether it was to switch things up, make it smaller or make it larger. I found that this concept could also appeal to a larger range of people because they could have control of the design and appearance of an atmosphere. Furthermore, self sufficiency would also play a large role in a versatile lamp: various structures but with the same pieces. All that's required for the structure of the lamp would be more pieces if necessary, but no other materials that create joints, creating an arrangement of strong pieces with various possibilities.



[Figure 1]



[Figure 2]



# Justification

## Polypropylene

Polypropylene is a versatile material that composes a large number of designs in the everyday world. For this reason it is perfect for the final sculpture of this class. It is a strong, flexible plastic that mirrors the characteristics of paper: it can be scored to create folds and can be cut easily.

Despite the negative connection between plastic and pollution, polypropylene is a thermoplastic: it can be melted down and hardens at room temperature to be re-used multiple times. Megara is the supplier of the polypropylene sheets used for the final design. They are 100% Australian owned and practice sustainable manufacturing by recycling their "own polypropylene products and post industrial waste" and by creating a closed loop that is "100% carbon neutral", "50% to 100% recycled" and "100% tree-free." (Megara, 2016)

To maintain sustainable values, for this design any paper used for sketches or prototypes will be recycled, any excess polypropylene will be recycled in a plastic-specific recycling bin and the final design will be used in my home. The versatility of the lamp sculpture will ensure that the materials are used for a long period of time, where new lamps will not need to be purchased and old lamps will not be thrown out to create land-fill.

## Additional Materials

To create an effective design, the final sculpture will compose of the IKEA floor lamp: "SKAFTET", a colour changing light globe and the final polypropylene lamp shade. The floor lamp is black, sleek and simple to not distract from the design of the lamp shade, and the light globe changes colour to create various atmospheres and adapt to any space, therefore adding to the overall versatility of the sculpture. Polypropylene has enough flexibility to bend and move, allowing easy transportation of the final structure without damaging the appearance of the lamp.

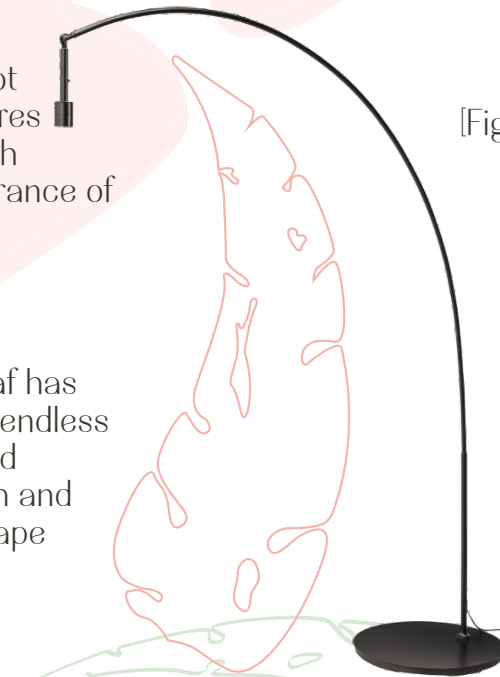
## Design

The main objective of the final design is to be versatile. To ensure this is enacted, the construction of the leaf has specific holes, shaped to fit different parts of the leaf and allow various configurations. Essentially, there are endless design possibilities depending on the number of leaves and how much layering is desired. The repetition and overlapping of leaves creates a peaceful, jungle atmosphere: essentially to feel a connection to a calm, fresh and clean jungle environment. Using a net-like structure ensures that the sculpture can sufficiently retain its shape without any other materials to connect or hold it.

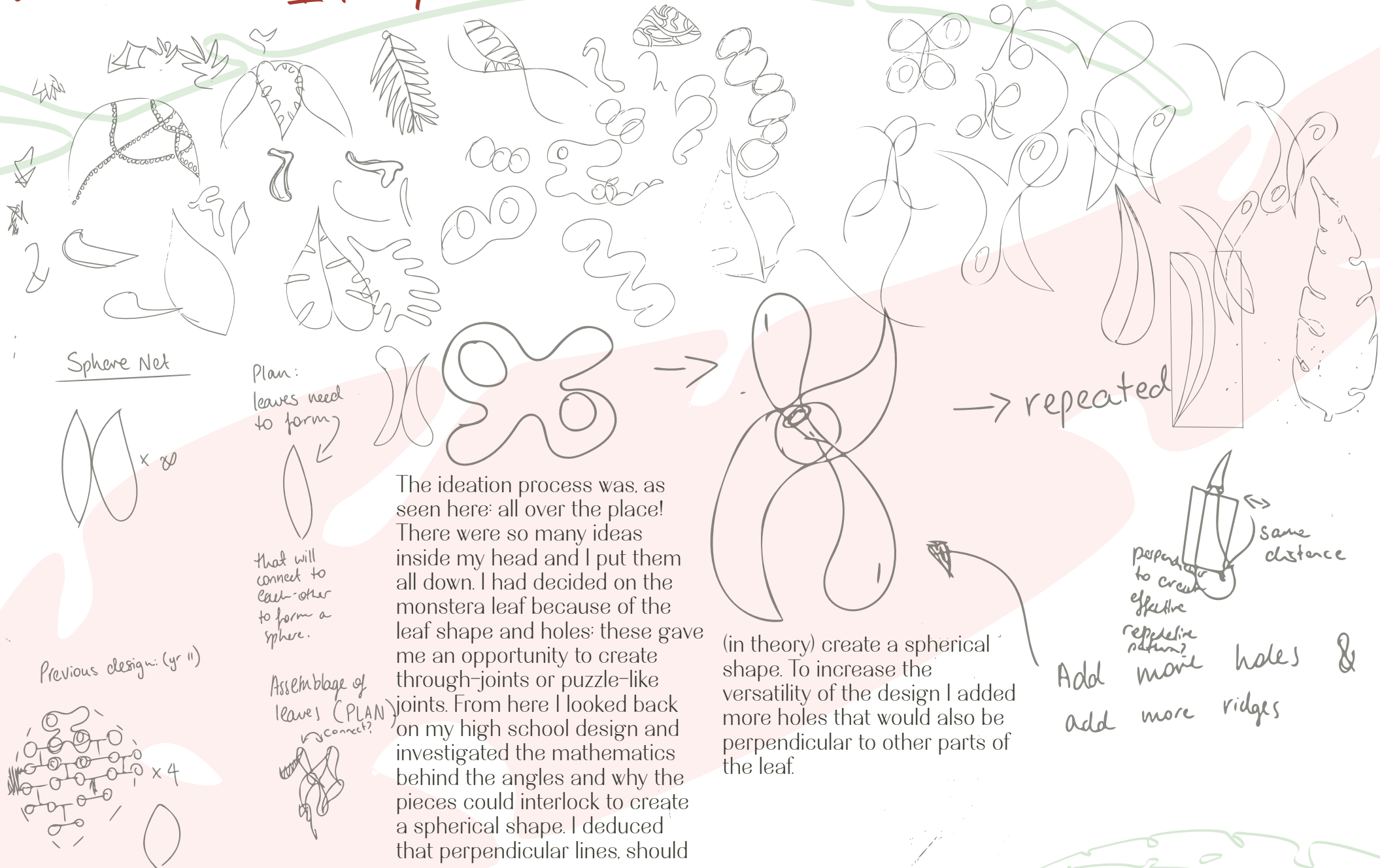
[Figure 3]



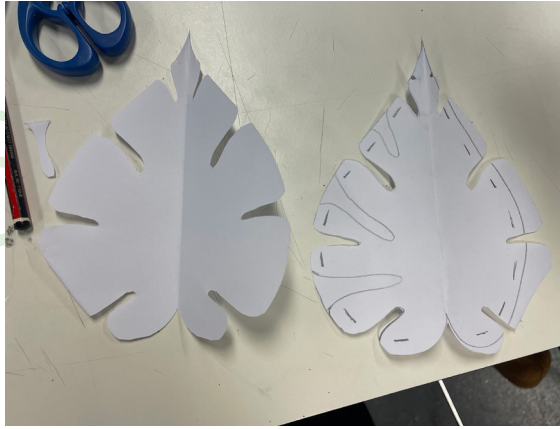
[Figure 4]



# Process-Ideation



# Process- Prototyping



At first I thought a symmetrical leaf shape would be a great way to structure the lamp. I thought the tabs could create joints and overlap to create a round structure.



The tabs interlocked nicely but it felt quite boring and not random. I also found that the interlocking tabs were not very strong and couldn't hold together easily.



In an attempt to create a more random looking arrangement, I experimented with the possibilities of interlocking tabs but still found them quite structurally weak.



Next I moved on to a similar shape, but asymmetrical and with holes. I really liked the look of this shape because it was more random-looking than the previous leaf shape.



I experimented with layering this leaf shape in a square-like formation and found it strong but felt like light would not emit as much due to the multiple overlaps.



Next, I explored the option of a second hole that could interlock with the top of the leaf rather than just the base.



I arranged the leaves in a diamond shape and found it quite appealing.



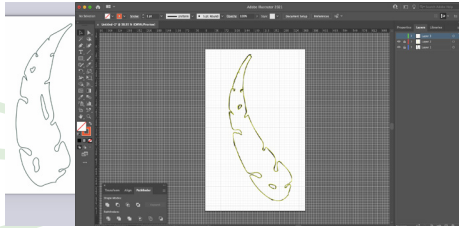
To explore a more random design, I played with a more abstract arrangement and found it really effective.



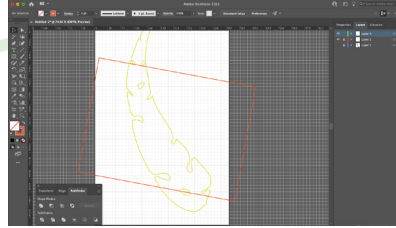
I refined the first design and tested it with a diamond and cross-like structure and felt like it could be a good starting point to creating a spherical design.



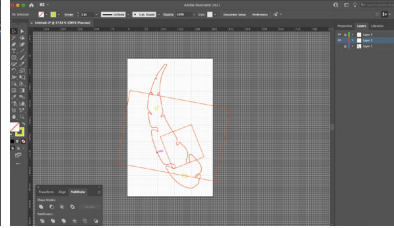
# Process- Production



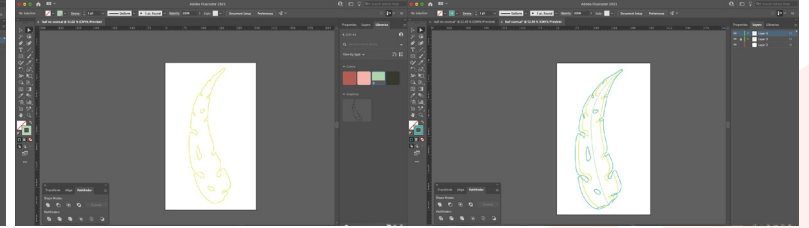
Once I was happy with the paper design of the leaf, I used Adobe Capture to export the design as a vector image into Adobe Illustrator. I used the pen tool to draw the shape of the leaf.



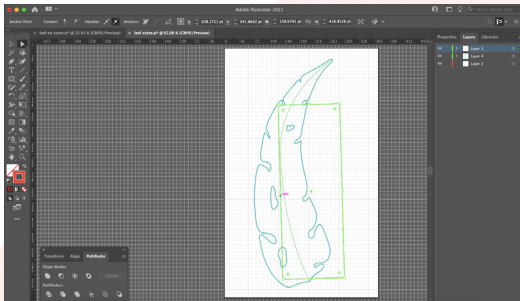
Next, I drew a rectangle on a separate layer and aligned it with the top slits, so that I could draw a hole that was perpendicular to them and in an organic shape.



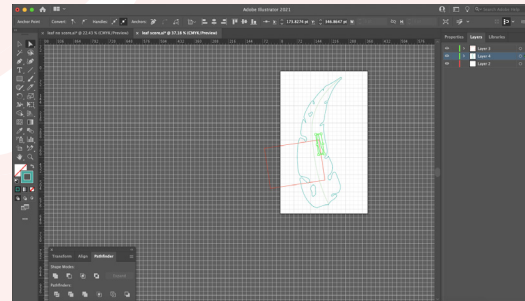
I then proceeded to do the same technique with another slit to create a versatile design that would have multiple possibilities of assemblage.



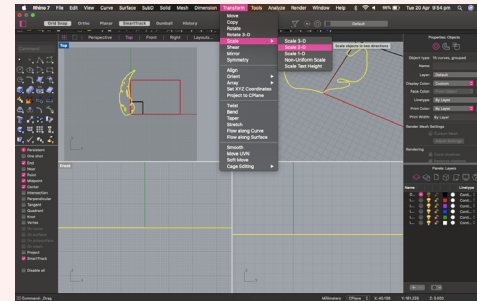
After I had created slits and holes that were perpendicular to each other, I reviewed the shape and decided to widen it so that less light would be emitted once assembled.



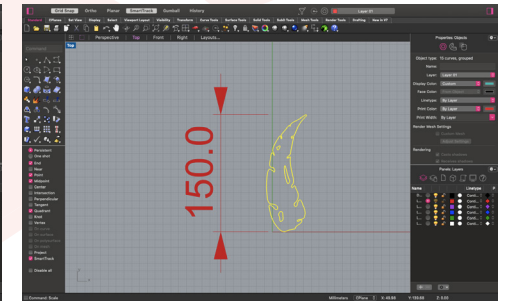
After the leaf was wider, I ensured that the holes and slits remained perpendicular.



Some parts of the slits had moved so I moved them into different positions.

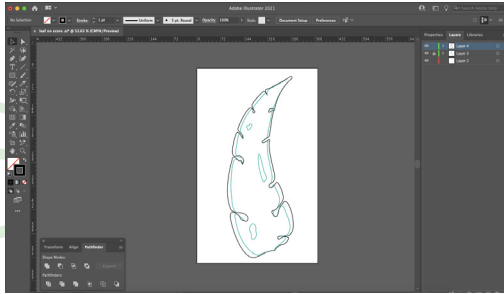


Next, I placed the design in Rhino 3D to prepare it for laser cutting.

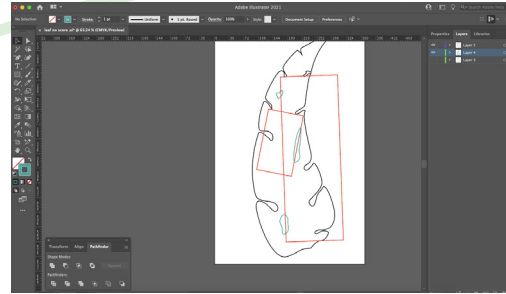


Once I had made the leaf to scale, I felt like I wasn't satisfied with the result.

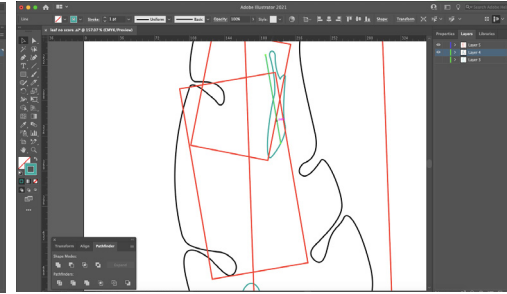
# Process- Production



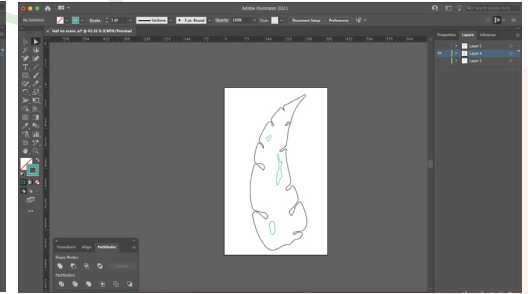
To widen the design, I drew another outline around it and kept the distance between the slits the same, so that the holes would not have to increase in size too.



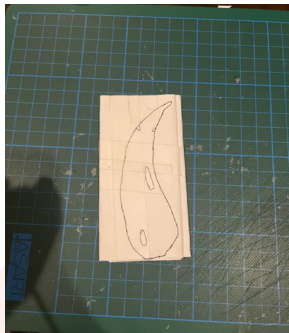
Afterwards, I checked over the slits and holes to ensure that they remained perpendicular to each other.



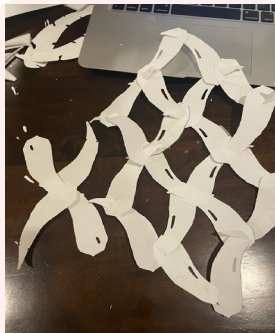
To add versatility to the design, I created one of the slits in a crossed shape, with the distance matching the distance between other slits.



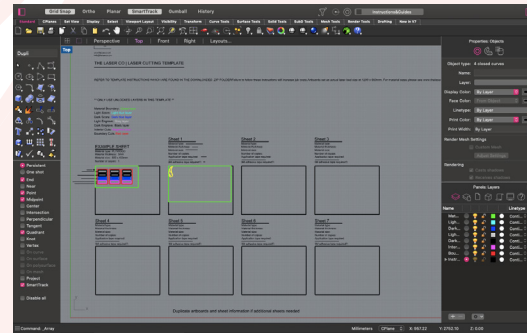
Once I had completed drawing the outline and holes of the leaf, I exported the vector into a CAD software.



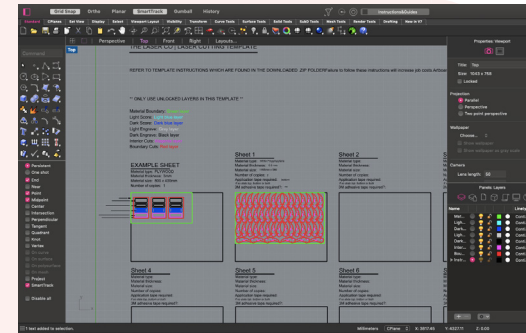
My theory of perpendicular slits and holes had to be tested: I cut the exact shape I had designed out of folded paper.



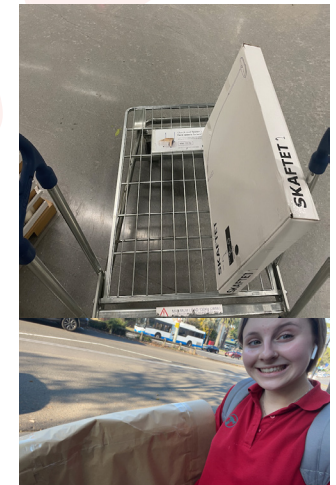
Next, I joined the pieces together in a cross formation to create a net. Once I saw that the leaf shape created a shape that could create a sphere, I was satisfied.



To prepare the shape for laser cutting, I used a template supplied by laser.co for Rhino 3D, (the chosen laser cutting company) and arranged the design to scale. I changed the colours to align with how the template was set out.



Next, I used the array tool to create more rows and columns of the design, ensuring that it was to scale. I sent the document to laser.co and awaited their response telling me the laser cutting was complete.



This was me picking up the Ikea lamp and then, excitedly taking the laser cut polypropylene home.



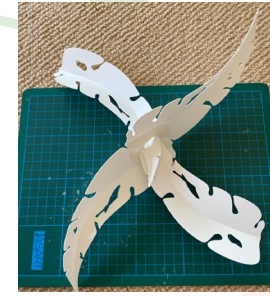
# Process- Assembly



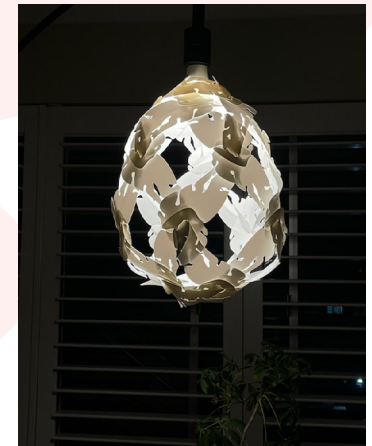
To un-pack the leaves from the polypropylene sheets, I removed the strips of tape and the backing tape that I had asked for to prevent burn marks. The cuts were very clean and the pieces were flexible.



I was curious to see what the leaves would look like if they had a score through the centre. I cut a few leaves with scores because they created additional texture.



Next, I tested how the leaves fit together, and they fit together just as I had planned. I proceeded to arrange the leaves in a cross structure.



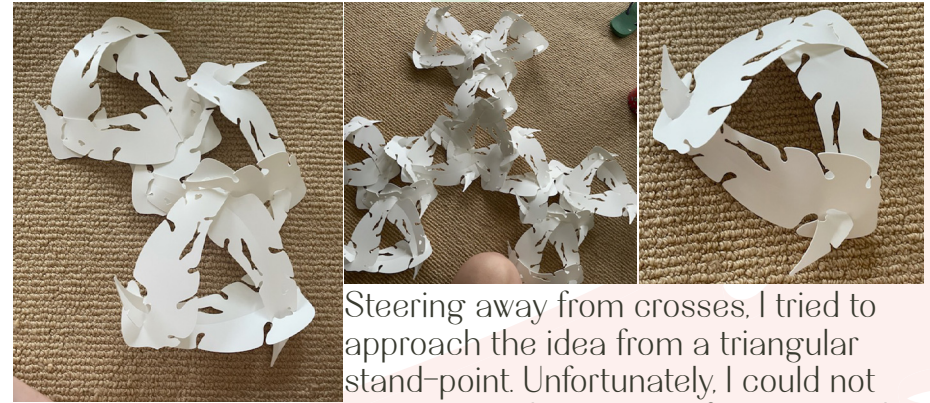
Once I had assembled the leaves as planned, I was disappointed that they didn't create a sphere. The lamp still looked quite nice and could be used as an alternate design, but I was convinced that there was at least one spherical design that I could create. I was also pleased that it held its structure as anticipated and did not require any additional pieces to hold on to the floor lamp.



# Process- Assembly



At another attempt to create a sphere, I had created a pear shaped structure. I had used a similar cross arrangement, but had the leaves facing in different directions. This structure was also larger, emitted much more light and was not very stable.



Steering away from crosses, I tried to approach the idea from a triangular stand-point. Unfortunately, I could not create a whole structure from triangular arrangements.

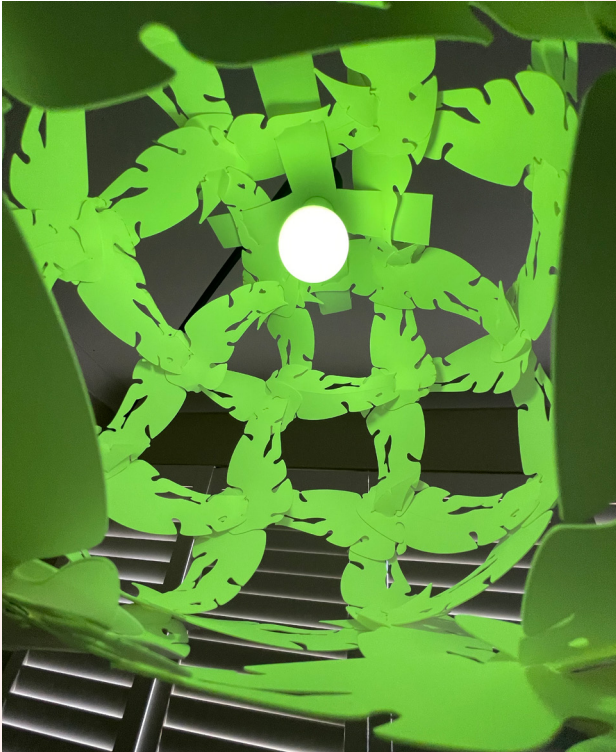
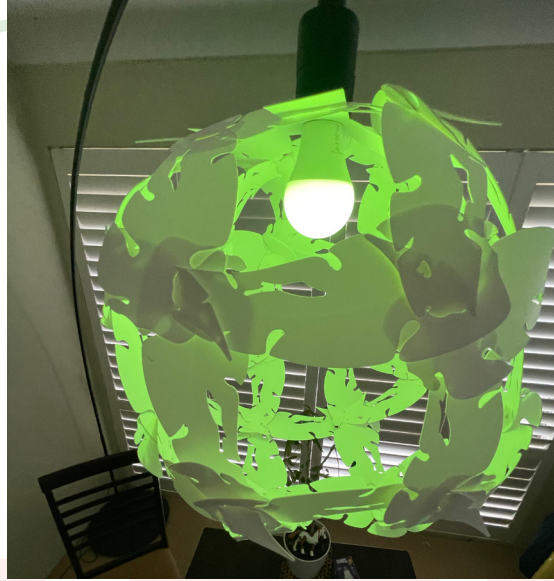


At this point I had become quite frustrated and had decided to give myself a good night's rest and attempt to create a new structure the next day. Without using any of the scored leaves I created a box structure. To my surprise it worked perfectly and created a rounded cube that resembled a sphere. Once I was pleased with the

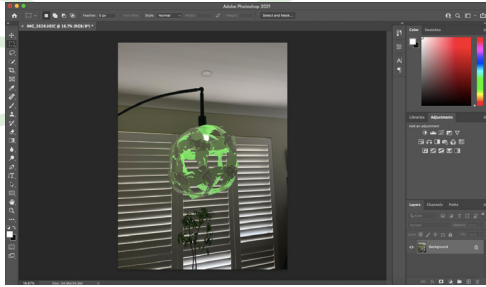
appearance, I cut a cross from my spare polypropylene sheet and used a scalpel to cut a circle where the light globe could go. Finally, I weaved the cross through the holes in the leaves and attached the polypropylene lap to the IKEA floor lamp and globe.



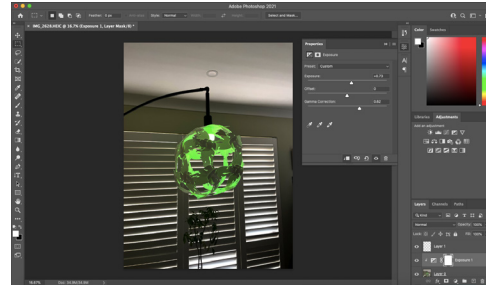
# Process- Photographing



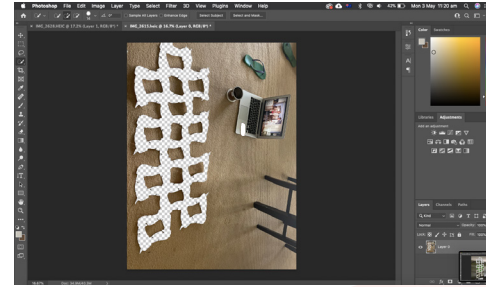
# Process- Digitally Editing- Image



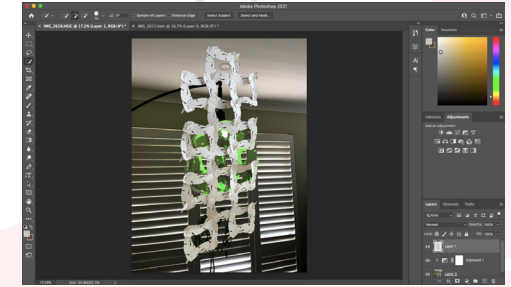
For the digital editing of the image, I chose a picture I had taken with the light bulb coloured green. I really like how the green worked with other parts of my dining room and complemented the leaves. I used Adobe Photoshop.



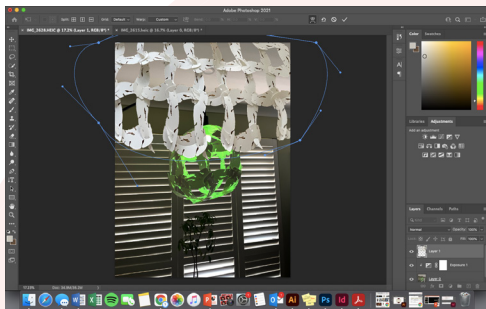
First I changed the exposure and saturation of the image to make the green slightly darker and more intense. The contrast made the background darker to help the lamp stand out.



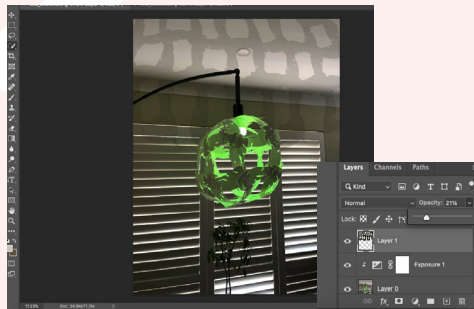
Using a picture of my process, I removed the net of the structure from the lamp using the select tool.



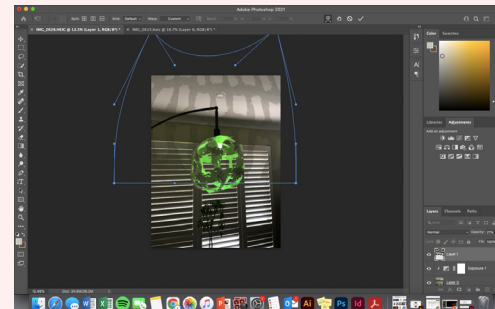
Next I placed it in the image on a new layer and rotated it to the top of the image, where shadows would be created if the globe was more luminescent and the room was darker.



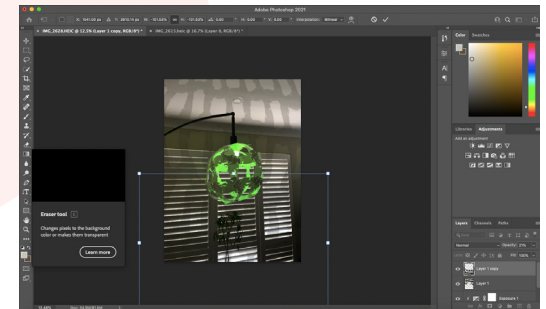
Afterwards, I used the warp tool to make the net look more rounded and realistic as if the shadows had been emitted from the lamp and globe.



Next, I lowered the opacity of the net and reduced the lightness and saturation of the layer, to make them look more like shadows.



I felt like the shadows were not looking realistic because they were not very rounded and quite blocky, so I used the warp tool again to make them look more realistic.



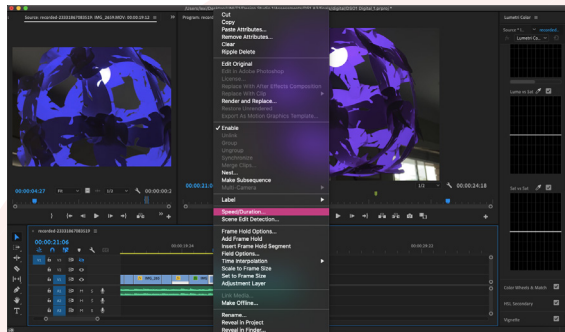
I then added another layer, duplicated the net and reflected it to the base of the image. Again, I warped these shadows, made the slightly more opaque and then used the erase tool to remove any of the shadows from the lamp.



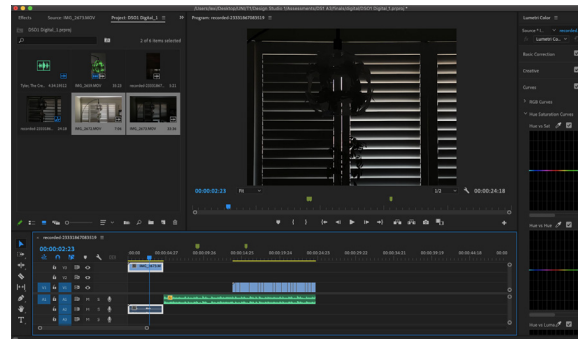
# Process- Digitally Editing- Video



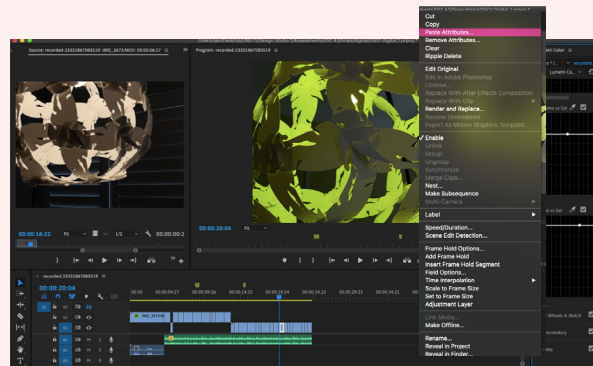
Even though I had already done a digital edit of my lamp I thought it would be fun to make a video to challenge myself further. While listening to this song I found myself thinking about the lamp I had designed and how it created a mix of proud and frustrated emotions, similar to the concept of this song. I also thought the lyrics about colour could be fun to play with.



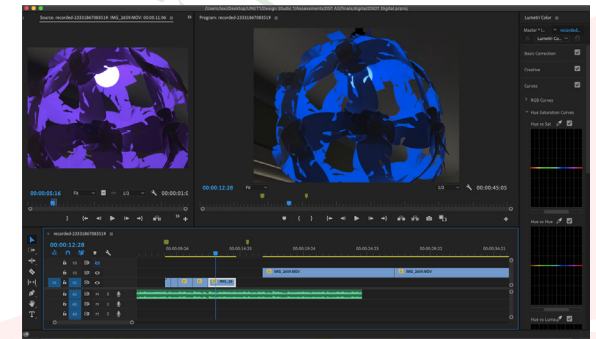
Then I proceeded to cut the videos and put the yellow ones where the lyrics say "like, yellow?" Because I had filmed most of the videos the same way, I reversed them to make the video less repetitive.



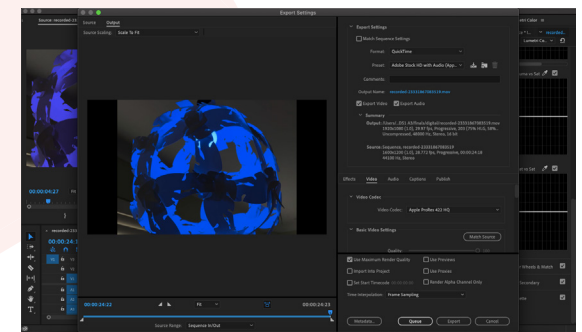
After filming some takes of me using my google home to turn on the lamp and the light globe changing colour, I inserted them into a Adobe Premier Pro. I made the beginning dark and monotoned, to create juxtaposition and align with my concept: Light Creates Insight.



For some of the videos, I increased the lumen and saturation, then I pasted the attributes to other cut videos.



Next I trimmed the song to a shorter length and cut the videos in time with the beat. I used the videos of the white light at the beginning, then coloured videos when the lyrics say "Can we add some more colour?"



Once I had fully edited the video, I exported it as a MP4 file and placed it in my InDesign files.

# Reflection

This assignment was a creative roller-coaster. Set on creating a perfect design, I missed a great deal of experimentation and planning within the design process. I found that I could have worked endlessly in pursuit of perfection but ultimately felt that my current design met my key design principles of versatility and sustainability while making the best use of my time and materials. The cost of this assessment was more than I had intended, although I am pleased with how I maintained awareness of the sustainability of polypropylene. This assessment taught me more than previous assessments and was also the most rewarding because I had an opportunity to create a design that I was proud of, and would use everyday. Having a physical representation of the work and time I put into this subject was gratifying because I would be able to present it to family and friends.

Using mathematics over physical prototyping and experimentation was a massive mistake. The presumption that slits perpendicular to holes would create a sphere was incorrect. Although I was quite lucky to create a spherical lamp in the end, it took a lot of time and experimentation. Additionally, the asymmetrical shape of the leaf made it extremely difficult to create a perfectly circular structure. I found that a lot of light was emitted from the lamp, rather than being diffused. As a consequence, I opted for a colour changing LED globe with low luminescence. I am also quite disappointed in how, to my knowledge, there are not many other spherical arrangements that can be created without impairing the structural integrity of the lamp. As a result of this, versatility was achieved: a variety of structures could be created, although they would not be spherical. The appearance of the lamp is very appealing: the colour changing LED light globe adjusts depending on the mood of the room and the leaves make me feel calm. It is extremely easy to remove the light globe and clean the pieces of the lamp. Although I didn't achieve my initial objective of a perfectly spherical design, I learned a great deal about structure and versatility and ultimately created something which still achieved my desired outcomes.

Time definitely influenced the prototyping and experimenting of the design process. I found that it was very difficult to experiment with polypropylene unless it was laser cut, which cost a lot of money and could only be done once a design was finalised. If the cost of laser cutting had been cheaper, or if my high school had allowed me to use their laser cutter, I feel as though it would have benefited the design and allowed for more experimentation. Polypropylene itself was a cost-effective material to use, as well as sustainable. The polypropylene sheets I had purchased and not used, I returned. All of the excess polypropylene was recycled appropriately. I did learn that the emissions that come from laser cutting polypropylene can be harmful to inhale and damaging to the environment. Additionally, I learned about water-jet and how it does not emit the same amount of harmful chemicals into the surrounding environment, although it is much more expensive.

# References

MEGARA. (2016). Megara Capabilities. <https://megara.com.au/wp-content/uploads/2017/07/Megara-Capabilities-2016-.pdf>

Tyler, the Creator. (2013) IFHY. [Video]. [https://www.youtube.com/watch?v=3lDqMx4rmFU&ab\\_channel=OFWGKTA](https://www.youtube.com/watch?v=3lDqMx4rmFU&ab_channel=OFWGKTA)

[Figure 1] Freepik. (2019). Exotic Tropical Leaves. [Image]. [https://www.freepik.com/premium-vector/exotic-tropical-leaves-monstera-plant-leaf-banana-plants-green-tropics-palm-leaves-isolated-set\\_6286774.htm](https://www.freepik.com/premium-vector/exotic-tropical-leaves-monstera-plant-leaf-banana-plants-green-tropics-palm-leaves-isolated-set_6286774.htm)

[Figure 2] Arka Design. (n.d.). Leaf Lamp. [Image]. <https://arkadesign.co.in/product/leaf-lamp/>

[Figure 3] TED. (n.d.). Reduce Reuse Recycle. [Image]. [https://www.ted.com/playlists/740/reduce\\_reuse\\_recycle](https://www.ted.com/playlists/740/reduce_reuse_recycle)

[Figure 4] IKEA. (n.d.). SKAFTET. [Image]. [https://www.ikea.com/au/en/p/skaftet-floor-lamp-base-arched-black-00405524/?utm\\_source=google&utm\\_medium=surfaces&utm\\_campaign=shopping\\_feed&utm\\_content=free\\_google\\_shopping\\_clicks\\_Lighting&gclid=CjwKCAjwvMqDBhB8EiwA2iSmP\\_GQjY3kPsI23HwKidNHveMZ8Zvp2z6cMRg4SgESlijcjBTDPEg9vBoCDioQAvD\\_BwE](https://www.ikea.com/au/en/p/skaftet-floor-lamp-base-arched-black-00405524/?utm_source=google&utm_medium=surfaces&utm_campaign=shopping_feed&utm_content=free_google_shopping_clicks_Lighting&gclid=CjwKCAjwvMqDBhB8EiwA2iSmP_GQjY3kPsI23HwKidNHveMZ8Zvp2z6cMRg4SgESlijcjBTDPEg9vBoCDioQAvD_BwE)