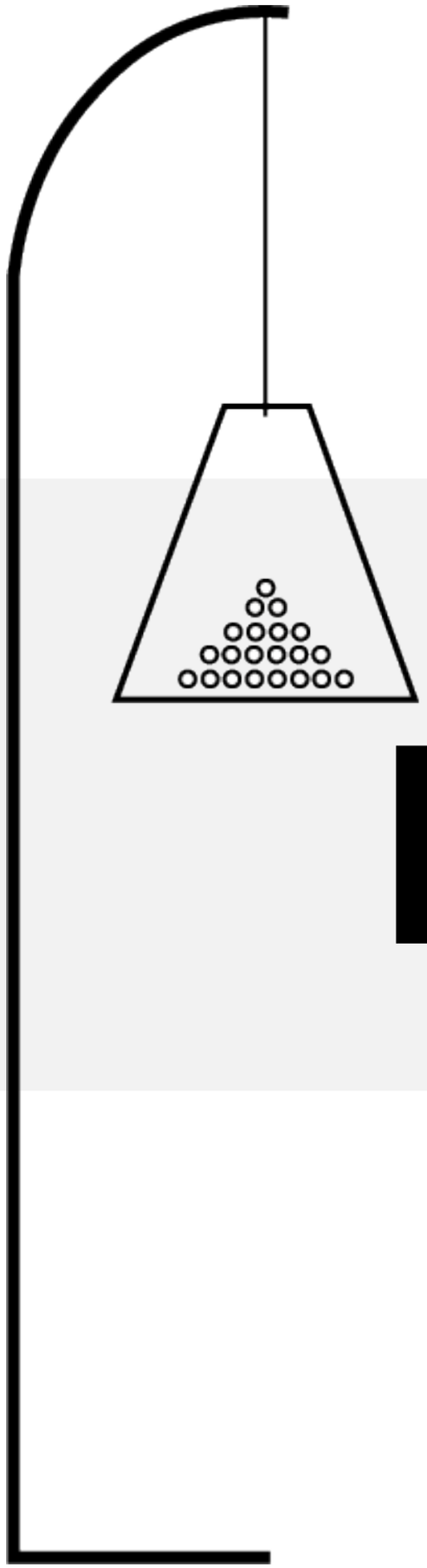


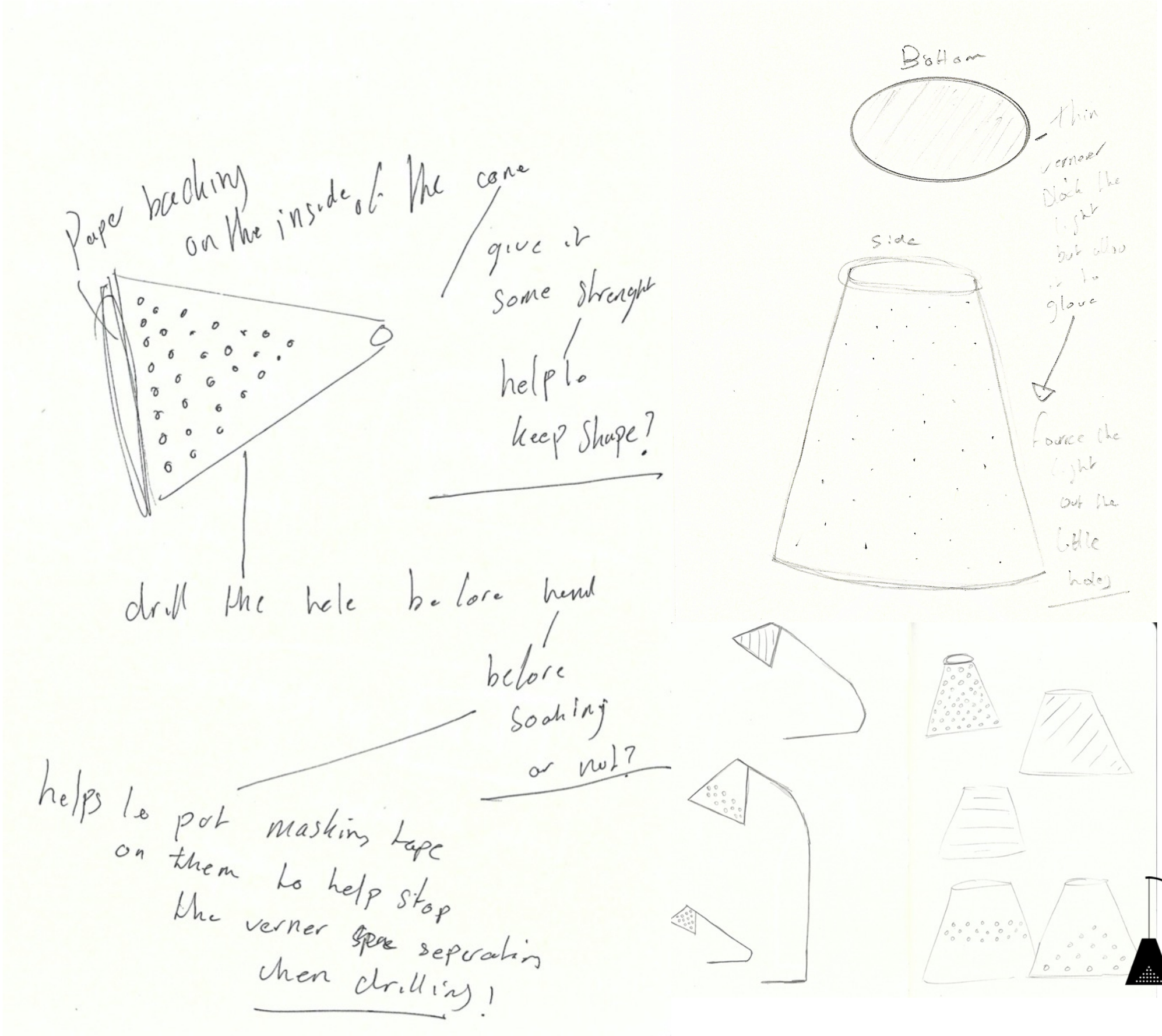
Thomas Oates

LIGHTING

For the beginning of this project I wanted to create a lighting device that was able to transform a rooms atmosphere.

I wanted to achieve this in the most sustainable way as it’s a big topic and I didn't’t just want to create something just for it to end up in landfill like most of the object that we use today.

My aims was to make a light with the use of suitable projects which I choses to be woods and veneers.



SECONDARY RESEARCH

To start my project off, I first started looking at children's night lights and projects.

I liked how they used light for another purpose some for educational purpose and some to create a friendlier environment for children to sleep in.

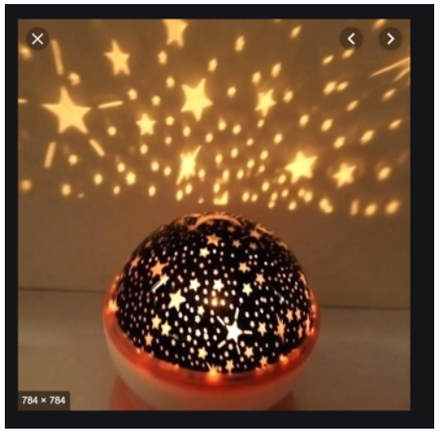
https://urbantrenddeals.com/products/fish-stars-led-night-light-projector - Accessed 13/ 10/2019

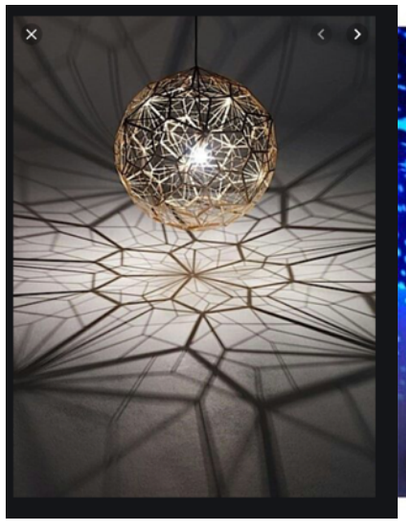
https://www.tomdixon.net/en_gb/family/post/etch-web - Accessed 13/ 10/2019

https://www.etsy.com/uk/listing/581820097/tree-shadow-lamp-forest-pine-tree-metal - Accessed 13/ 10/2019

http://www.storeportal.ir/product/چرخشی-پروژکتور-چراغ-فروش-موزیکال- Accessed 13/ 10/2019

https://www.3dspectratech.com/celebrate-diwali-with-3d-printed-lamps/ - Accessed 13/ 10/2019





Once looking at the children's lighting I then started looking online at what shops are selling in terms of light that create shadows.

What I found is that the are mostly the same style with a round light shade with pretty much the same patterns on the mainly stars.

little home at John Lewis Butterflies Easy-to-Fit Ceiling Shade, White

£35.00

little home at John Lewis Stardust Table Lamp, Navy

£28.00

little home at John Lewis Stardust Lampshade

£35.00

little home at John Lewis Star Lampshade, Navy

£15.00

https://www.johnlewis.com/little-home-at-john-lewis-stardust-lampshade/navy/p3449457 - Accessed 15/10/19

https://www.johnlewis.com/little-home-at-john-lewis-butterflies-easy-to-fit-ceiling-shade-white/p3479200 - Accessed 15/10/19

https://www.johnlewis.com/little-home-at-john-lewis-star-lampshade-navy/p1961536 - Accessed 15/10/19

https://www.johnlewis.com/browse/furniture-lights/ceiling-lamp-shades/_/N-cj9 - Accessed 15/10/19

For some initials research I began to look at a designer call David Trubridge. He is a sustainable designer who creates his lighting from a material called bamboo plywood. The reason why I looked into this designer is because he produces similar work to what I am planning to produce at the end off my project.

His lights are a net that then make a 3D object which once lit up creates shadows across the room which gives the light another aspect to the light which I found very interesting and inspiring.

https://davidtrubridge.com/us/

For some initials research I have looked into a handcrafted designer called Tom Raffield. This designer makes lighting and furniture using a method called steam bending. I came across this designer while I was researching for my second year project when I made a steam bent angle poised light from cherry wood.

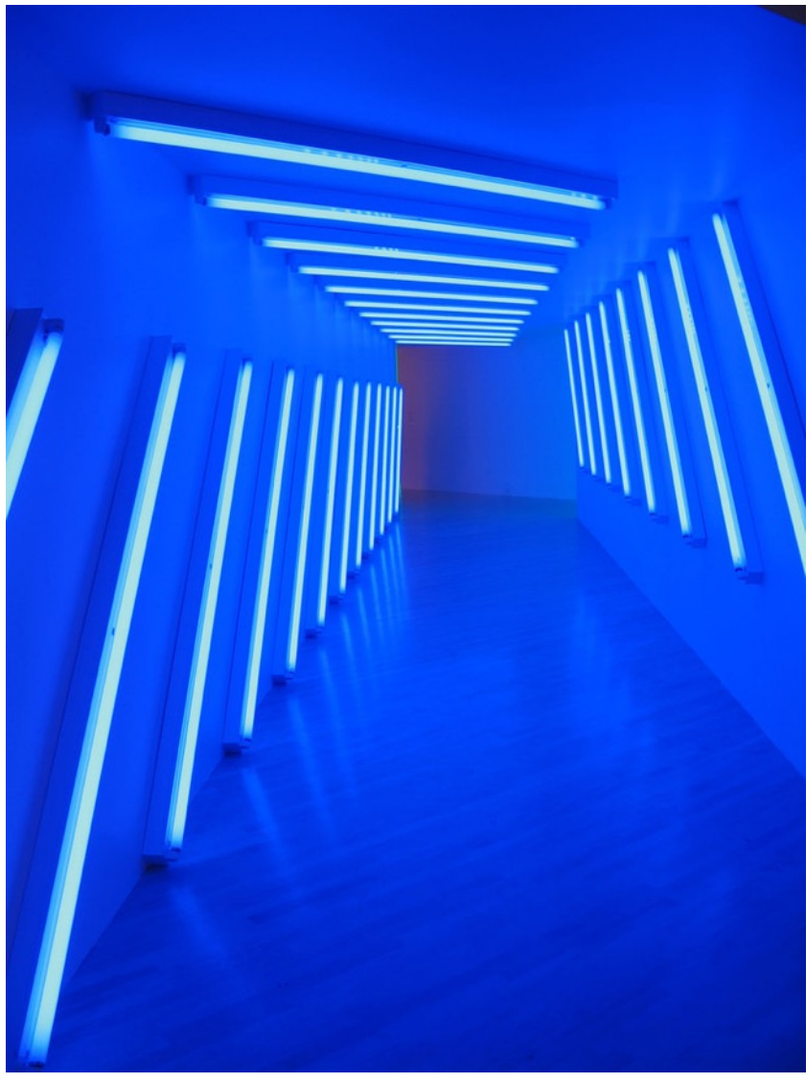
Tom Raffield uses a different handcrafted methods to produce his work which is a process called steam bending. He take sections of wood and places them inside a box which is pumped full of steam which then softens the wood to make it more manipulative and manageable to form the shapes that he wants.

I'm fascinated by his lights both in how they are made and how the lights where producing different effects formed by the shadows that the light emits.

When research I also looked at a lighting designer called Dan Flavin who uses fluorescent tubes to create his lighting.

I like the idea of using fluorescent tubes because when I think off them I see cheap inexpensive kitchen lighting. But with his work I don't see that.

The way he uses the light and the combination of colour brings a new element to rooms that he places his work in.



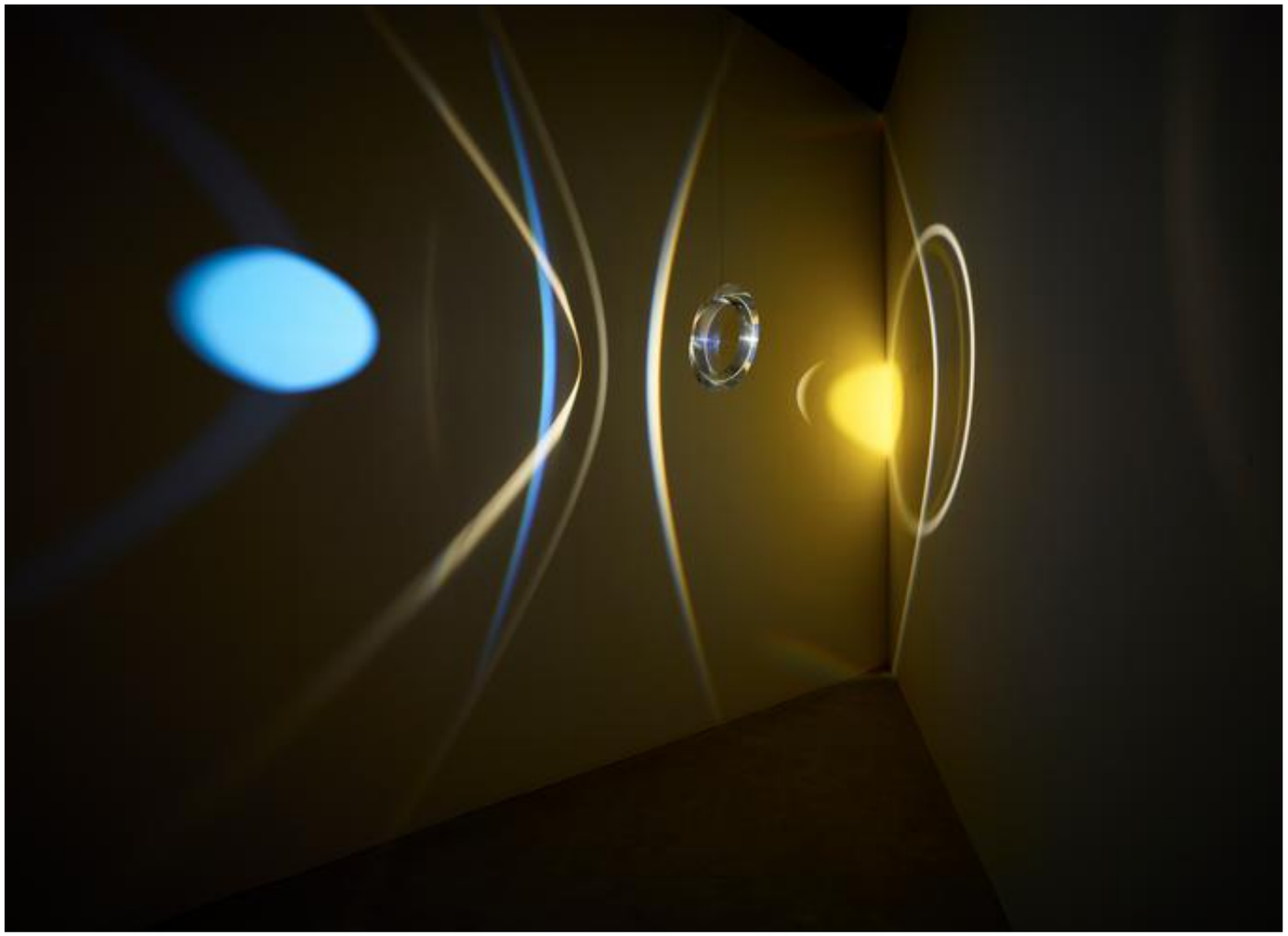
https://www.paulacoopergallery.com/exhibitions/dan-flavin-2016-11-03/installation-views- Accessed 11/12/2019

https://worleygig.com/2015/09/16/dan-flavin-corners-barriers-and-corridors-at-david-zwirner/ Accessed 11/12/2019

https://viamiznercapital.com/f/i-like-dan-flavin Accessed 11/12/2019

Olafur Eliasson is another lighting designer that I look at. I like his work because of the use of colour that he uses within his work and also the shapes that his lights make when reflect onto the walls.

I like the use of colour in his work because doesn't matter the room that your in it makes the atmosphere within the room change and that's something that I would like to bring to my lights.

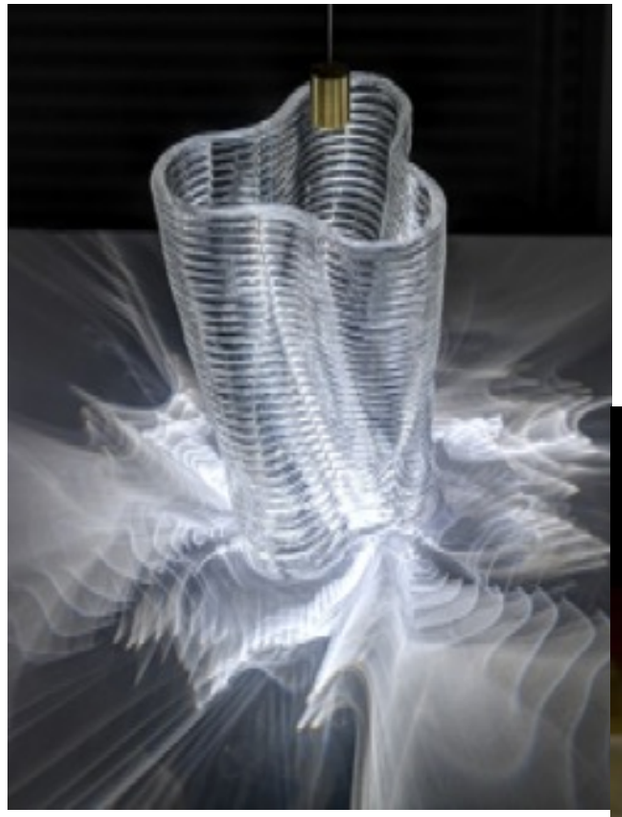


https://olafureliasson.net/archive/artwork?page=7 - accessed 9/10/2019
https://olafureliasson.net/tag/TEL1413/light accessed 9/10/2019

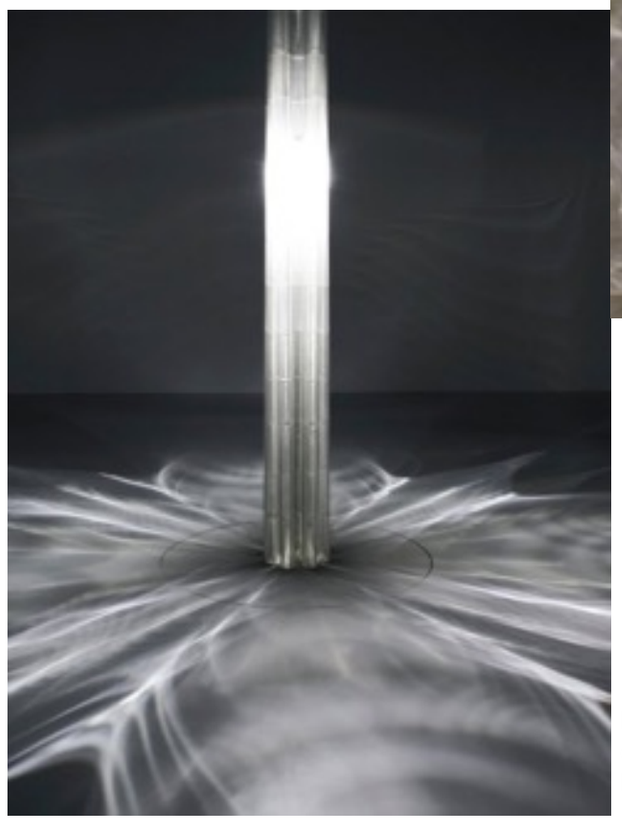
When I was researching I came across a designer who works with 3d printing glass to produce vessels and lighting fixtures.

The designers name is Neri Oxman an American- Israeli architect who combines nature and biology with engineering and architecture.

The use of natural materials combined with a manufacturing process is something that interested me as there is a natural element that you have no control over and another element is the man made side which is the 3d printing machine which you can control. Combine these two elements together like Neri Oxman uses I found interesting and maybe something to consider in my own project.



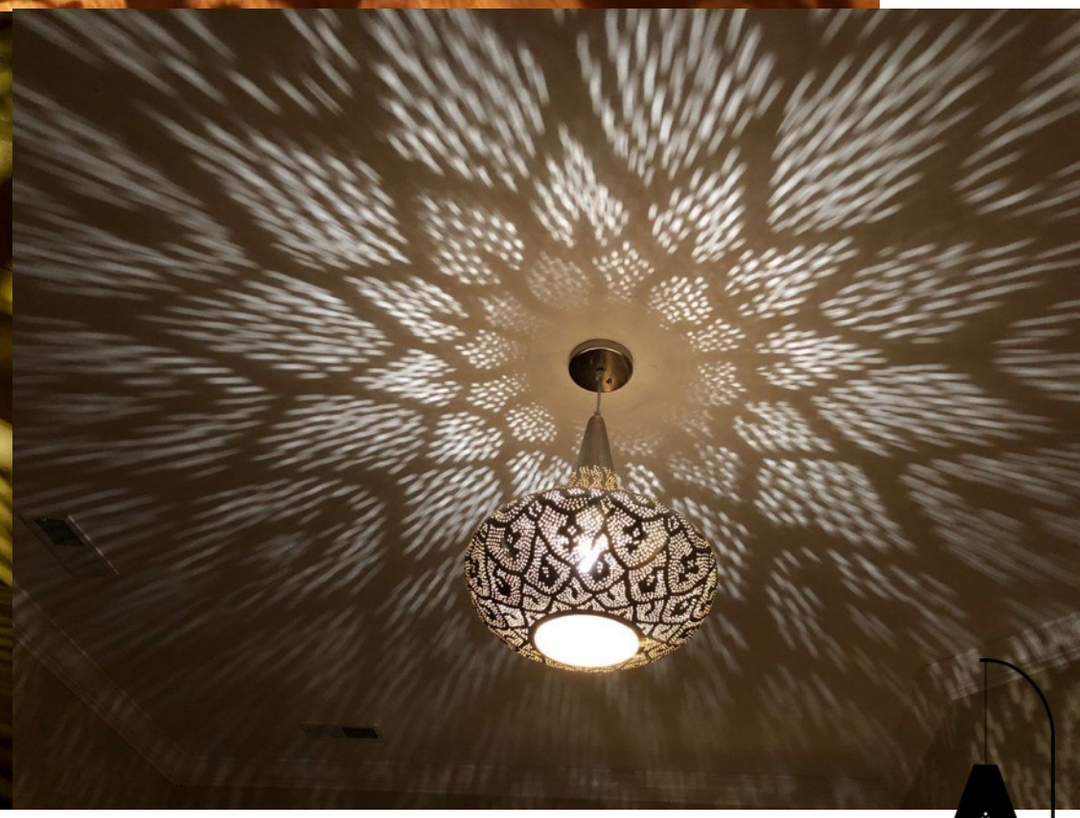
https://www.architectmagazine.com/technology/mits-neri-oxman-on-the-true-beauty-of-3d-printed-glass_o



https://www.3dprintingmedia.network/neri-oxmans-3d-printed-glass-columns-star-lexus-yet-installation-milan-design-week/

Also looking at traditional Arabic lighting where they use the traditional method of filigree which is normal used on precious metals works in which skilled jewellers solder tiny beads and twisted threads.

But has also been to create lighting pieces. The use of shadows and patterns are used as decorations but also help to change the feel off the room. This is the sort of atmosphere that I would like to re create with the lights I am making.



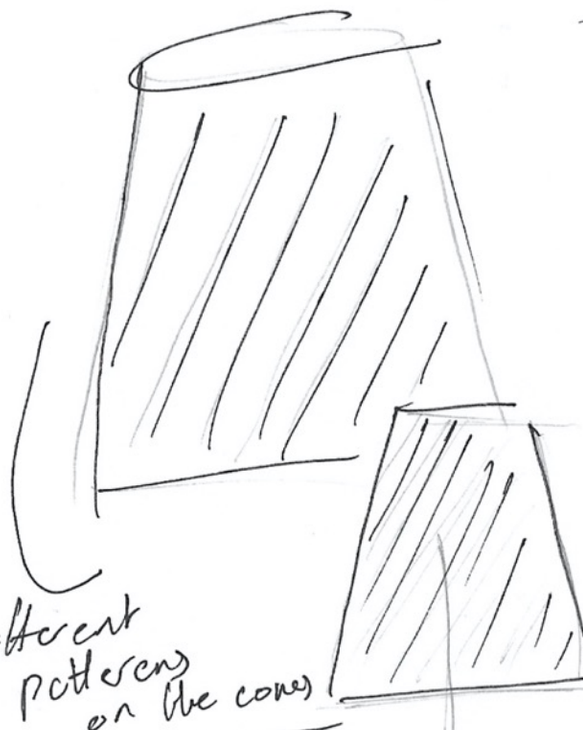
https://www.pond5.com/stock-footage/item/11472735-arabic-lamp Accessed 5/12/2019

https://www.etsy.com/uk/listing/642215415/free-shipping-oriental-gourd-lamps?ga_order=most_relevant&ga_search_type=all&ga_view_type=gallery&ga_search_query=arabic+night+light&ref=sr_gallery-1-7&frs=1 Accessed 5/12/2019

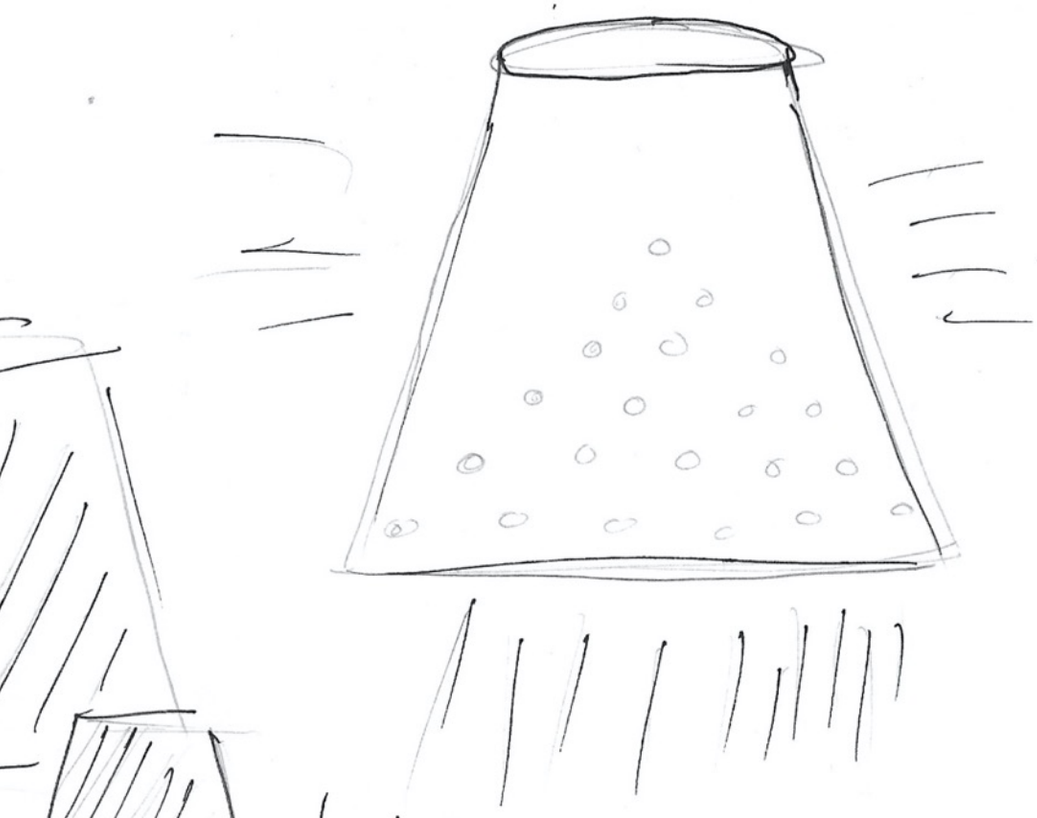
https://www.littlelightbazaar.com/?utm_medium=Social&utm_source=Pinterest Accessed 5/12/2019

SKETCHBOOK

- Big ceiling light



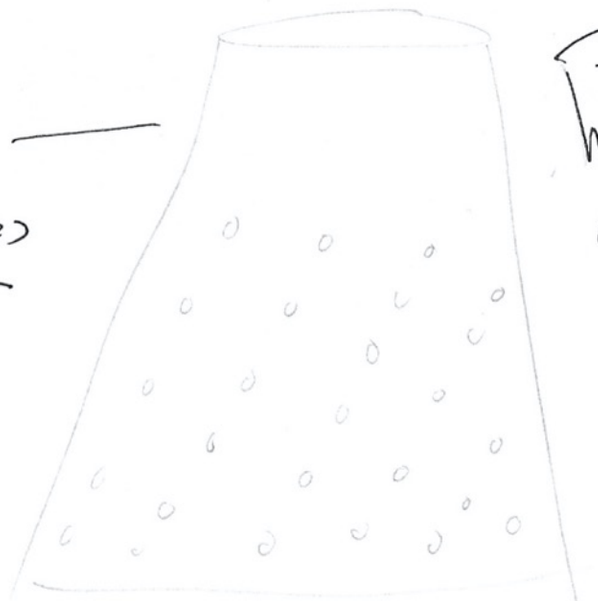
different patterns on the cones



light escapes out the bottom and the sides

stander wooden cone

different patterns on the cones



- have them different angle

Some taller
Some latter

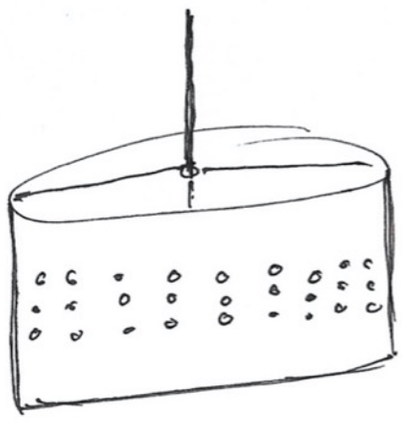
floor lamp

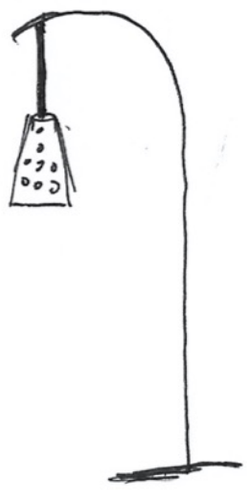
Solid cone on the outside

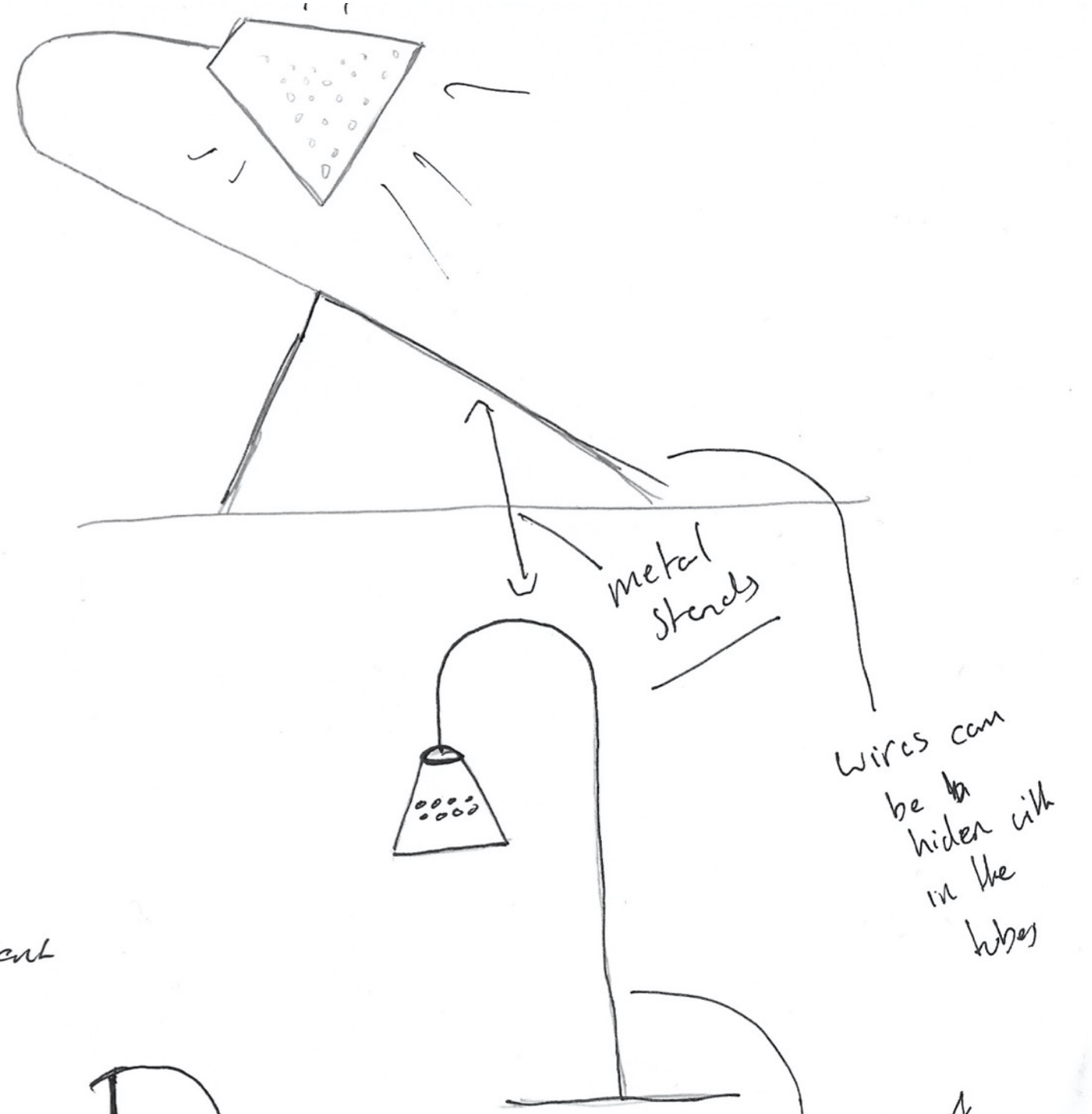
with a cone with hole on the inside

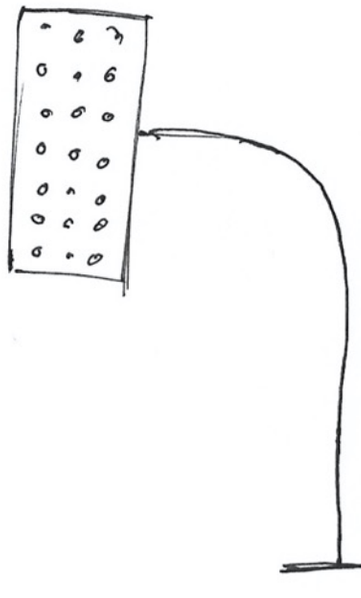
more the bottom cone is exposed the more patternated light is exposed

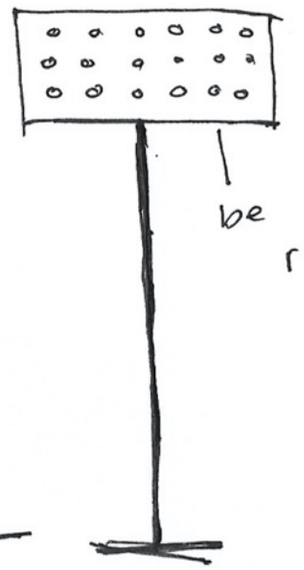
could also be ad. Herent Colour? / 3D printed



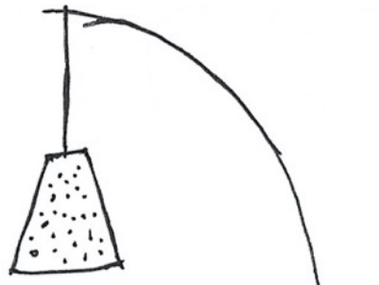




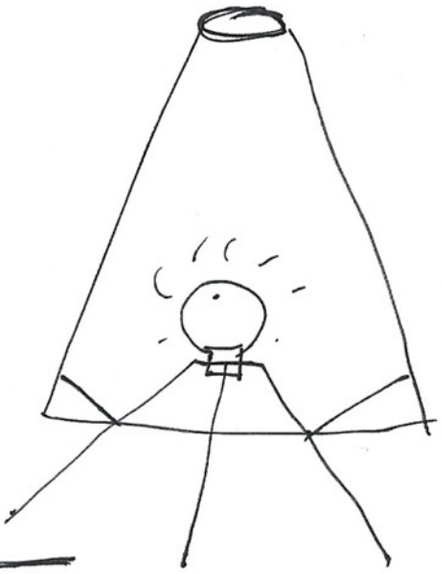




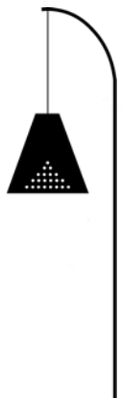
be another ring inside / outside ring could turn to allow and shut the light out

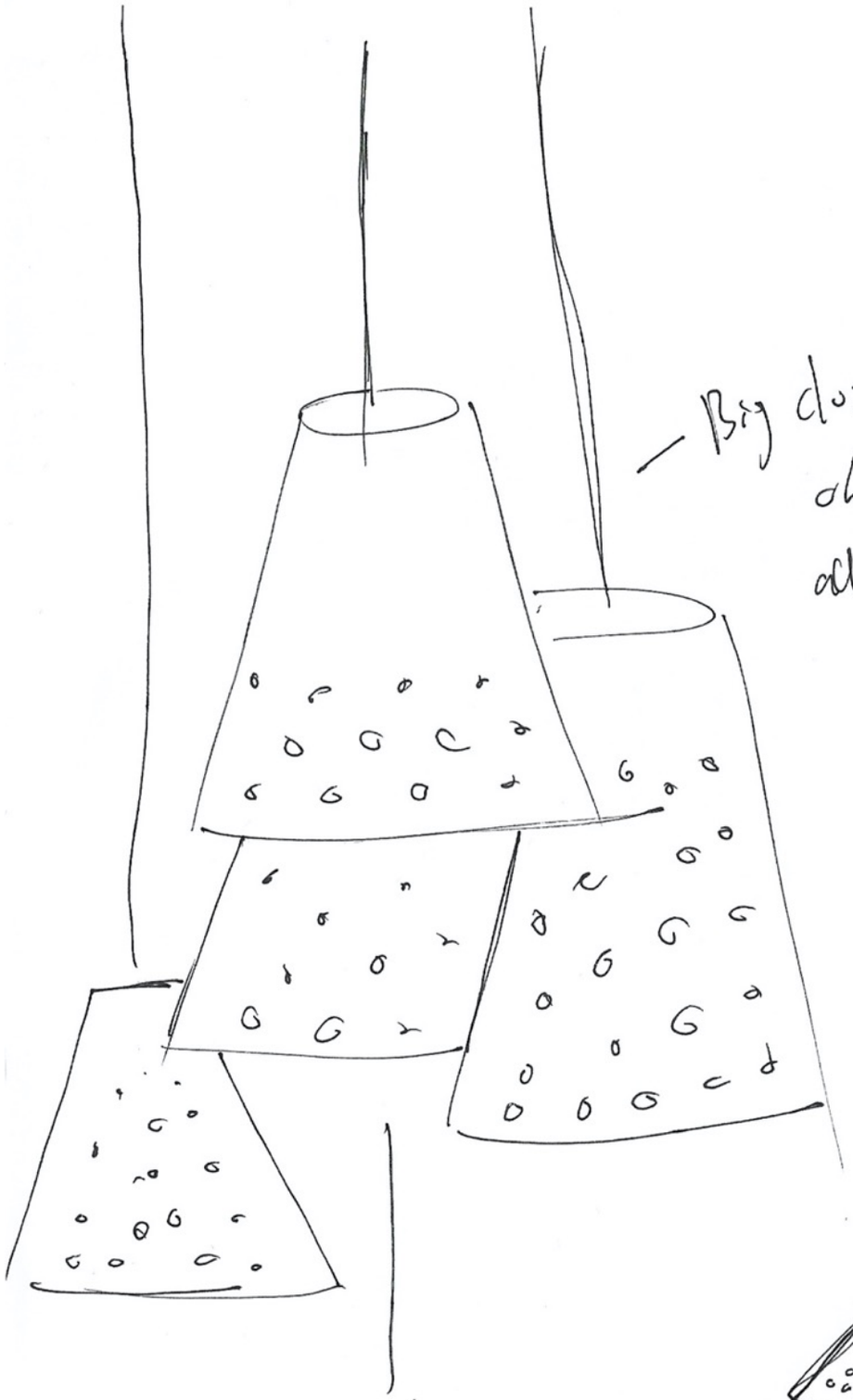


floor light

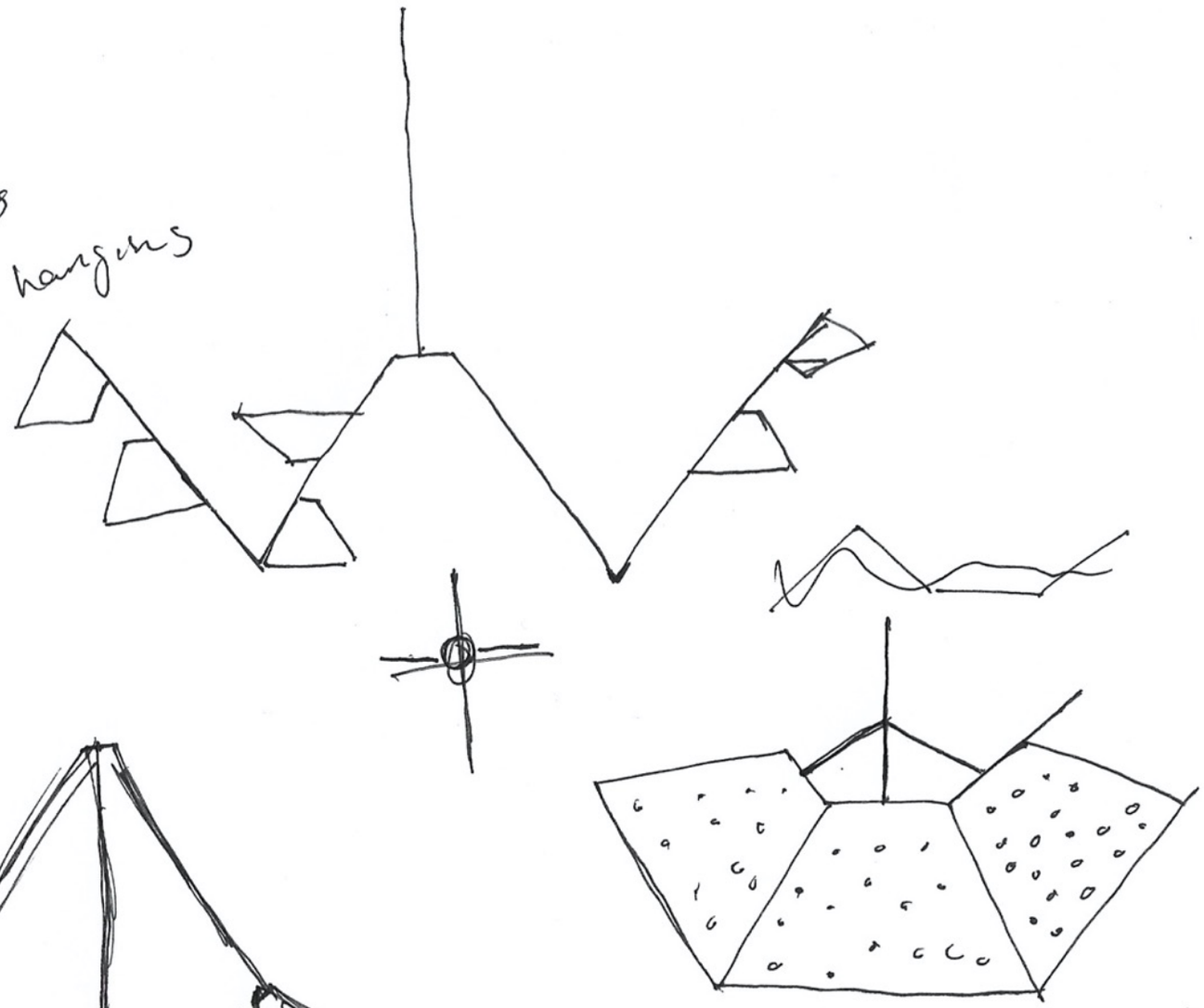


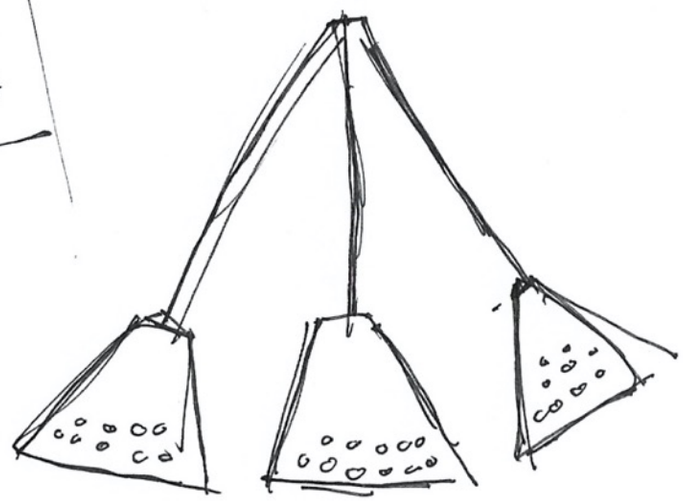
want the stand to be minimal so it doesn't take anything away from the cone





Big cluster of lights on tree hangers



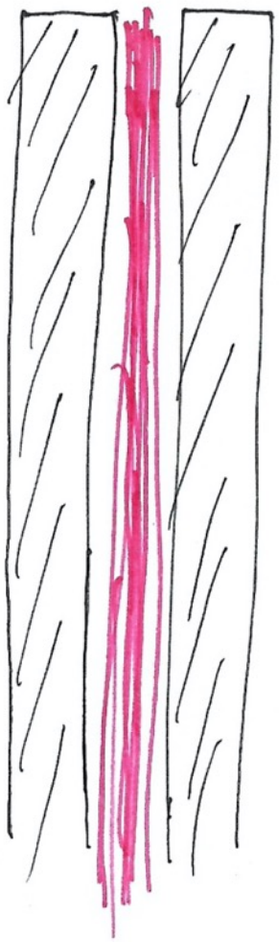


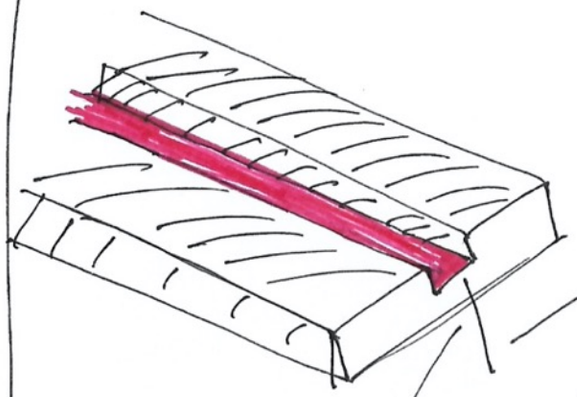
chose it

Close enough to form a big chandlier

Deep enough for it to be flush with the top

Channel for the cable to run in



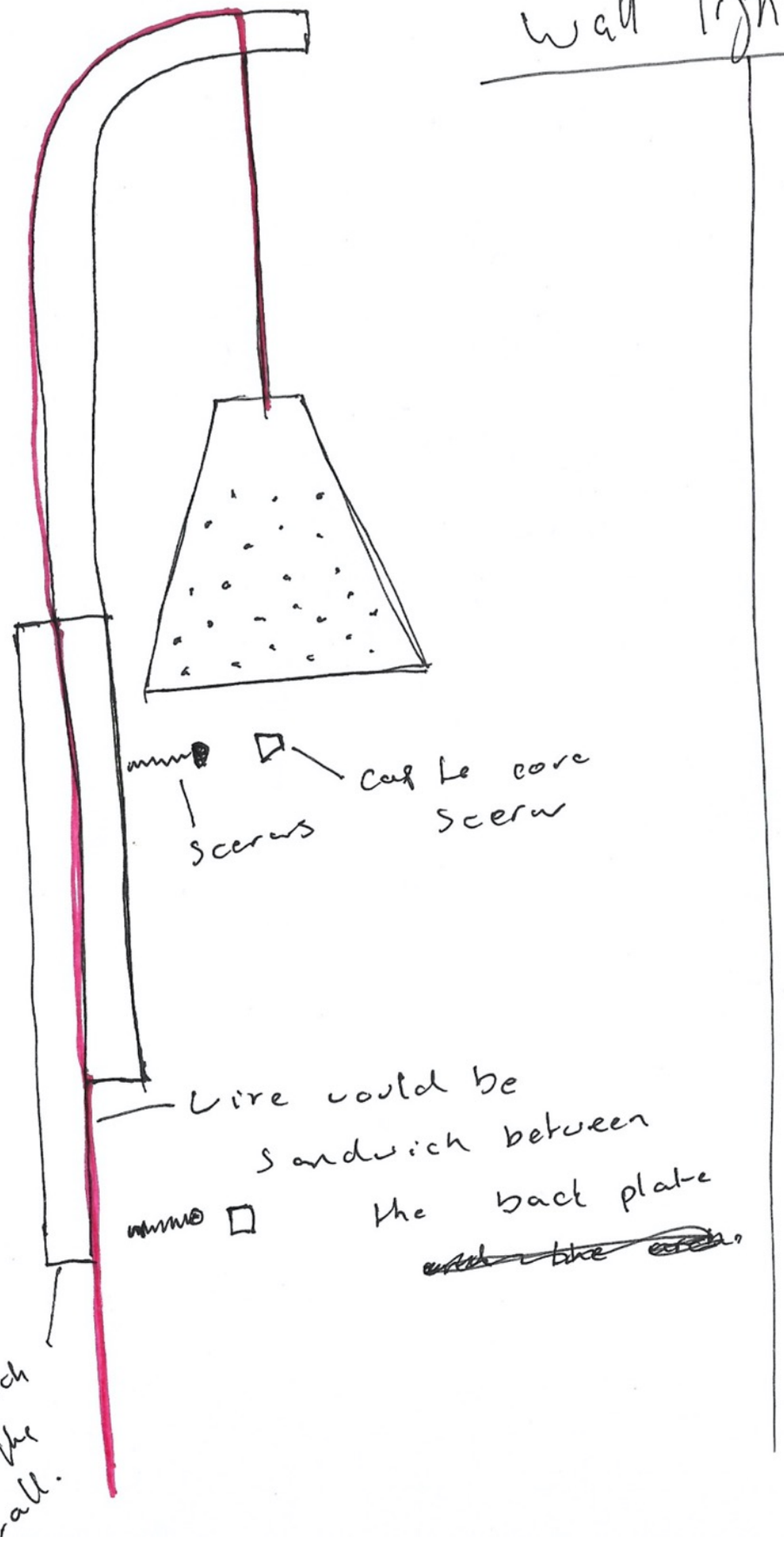


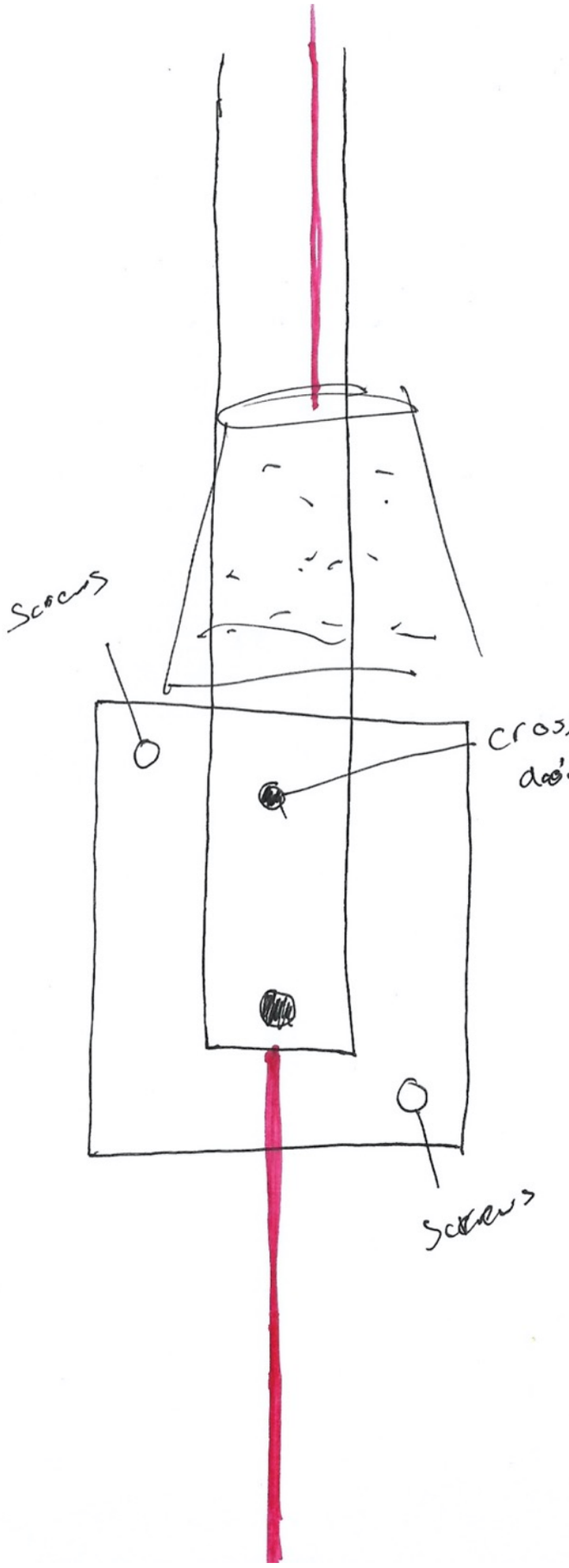
would do before steam bending.

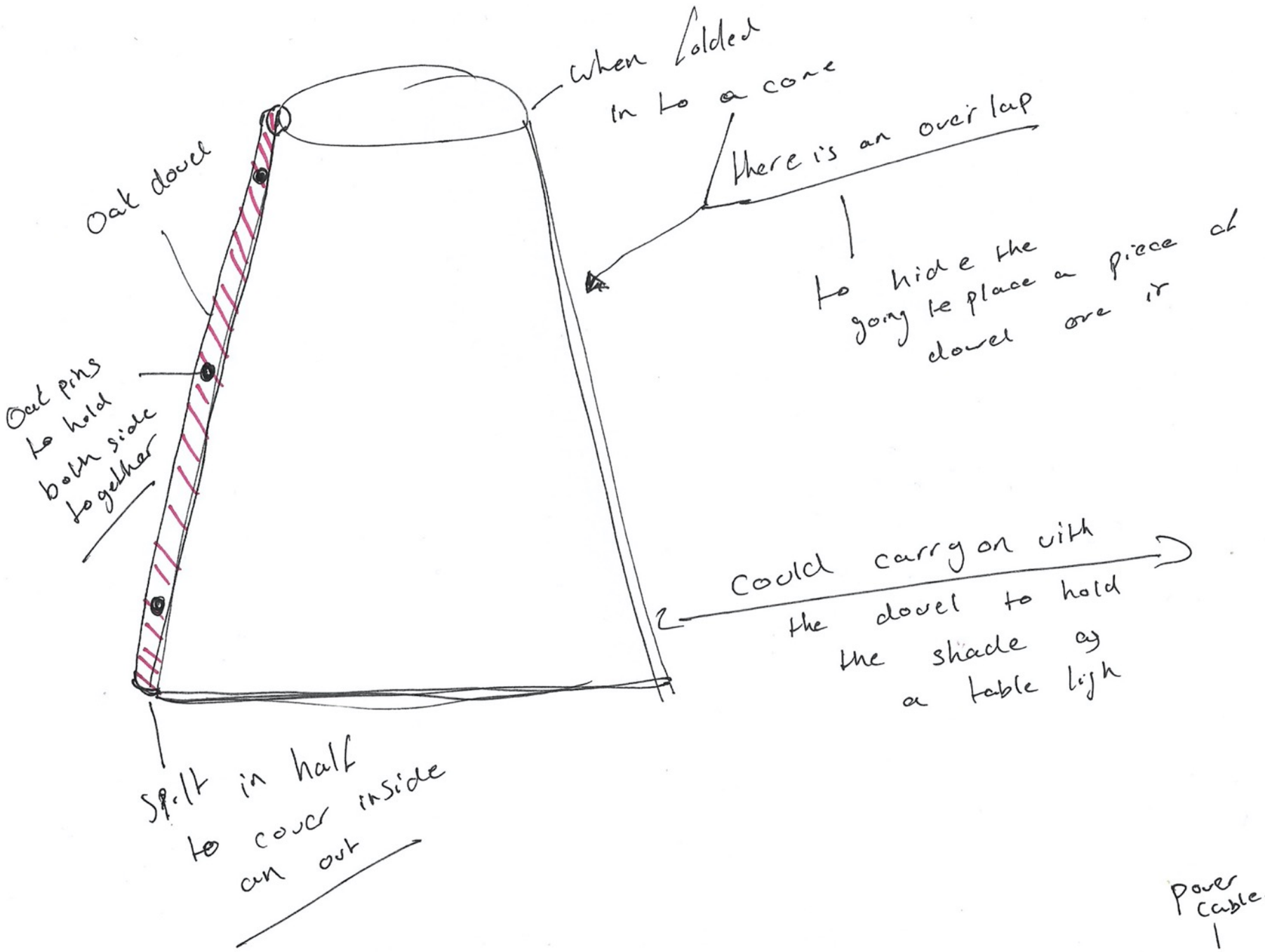
use a Router to remove the waste

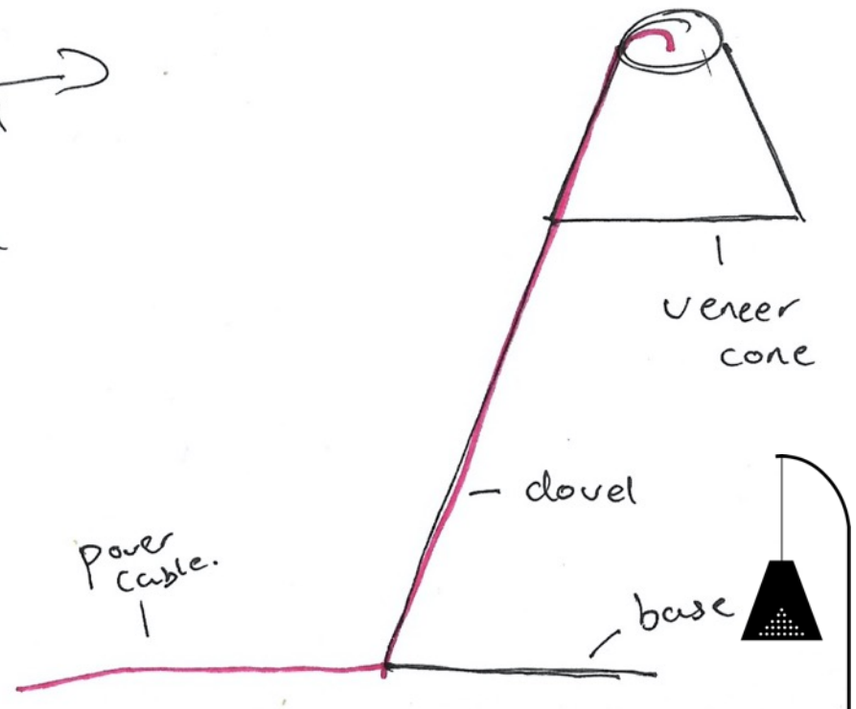
Give me a cleaner cut with less clean up.

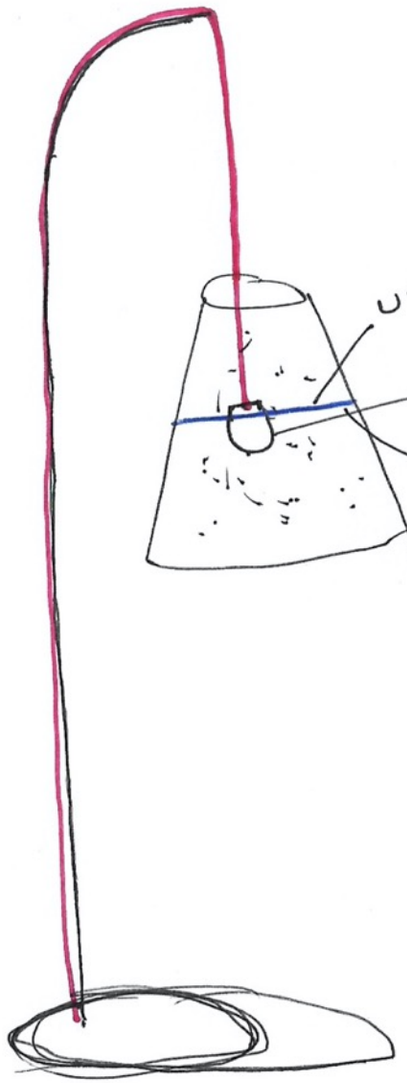
Wall light


Cut to core screw
screws
Wire could be sandwich between the back plate
attach to the wall.

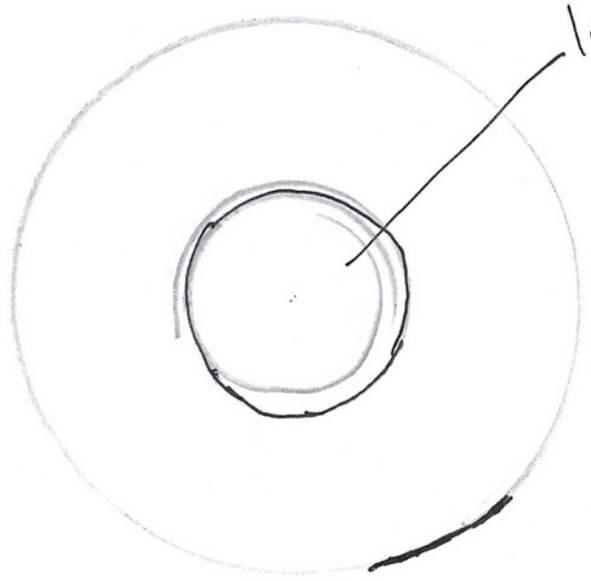

screws
cross gain dowel pins.
screws


When folded in to a cone
there is an overlap
to hide the join going to place a piece of dowel over it
Oak dowel
Oak pins to hold both sides together
Could carry on with the dowel to hold the shade of a table lig
Split in half to cover inside can out

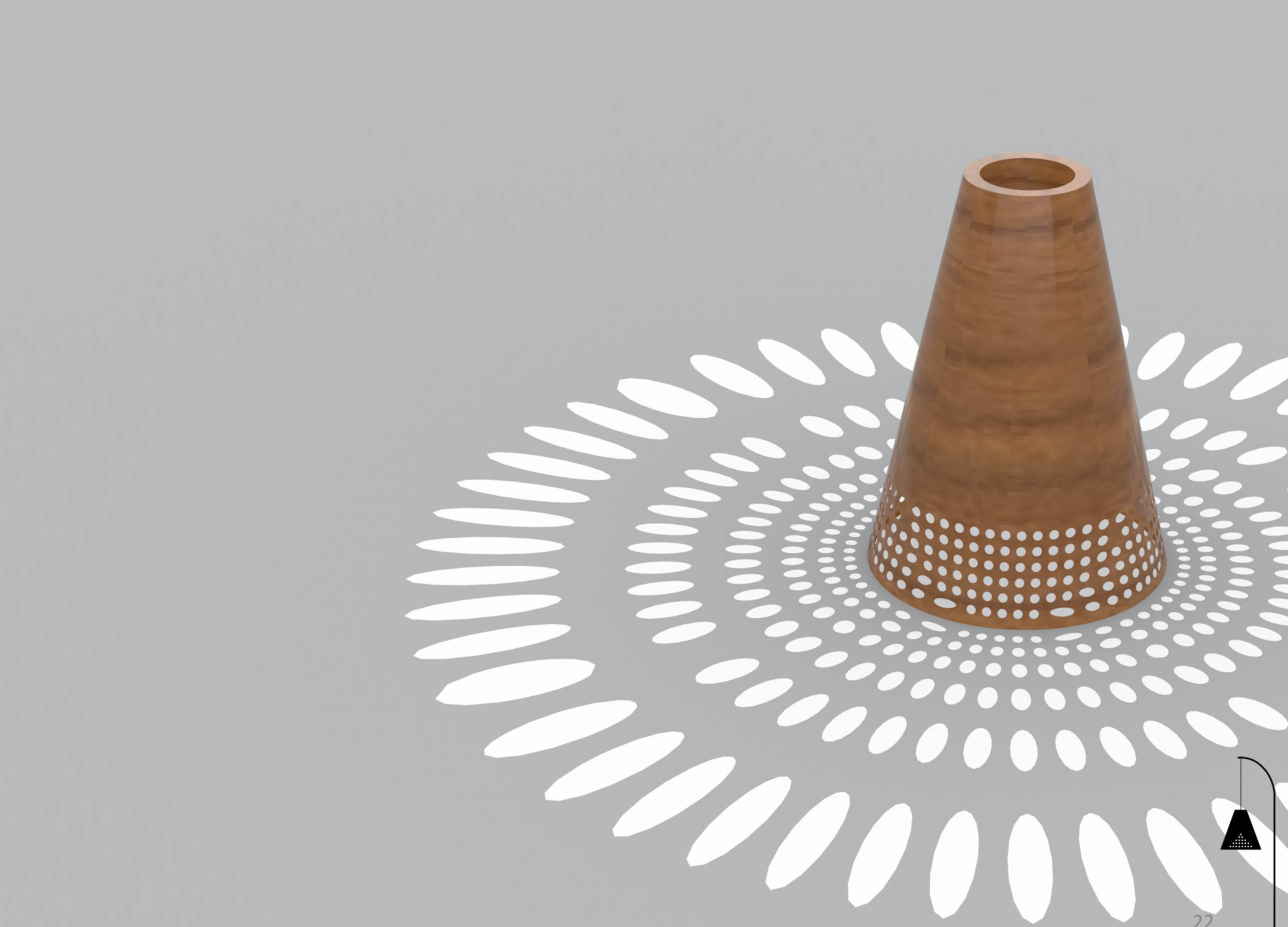

veneer cone
dowel
Power cable.
base

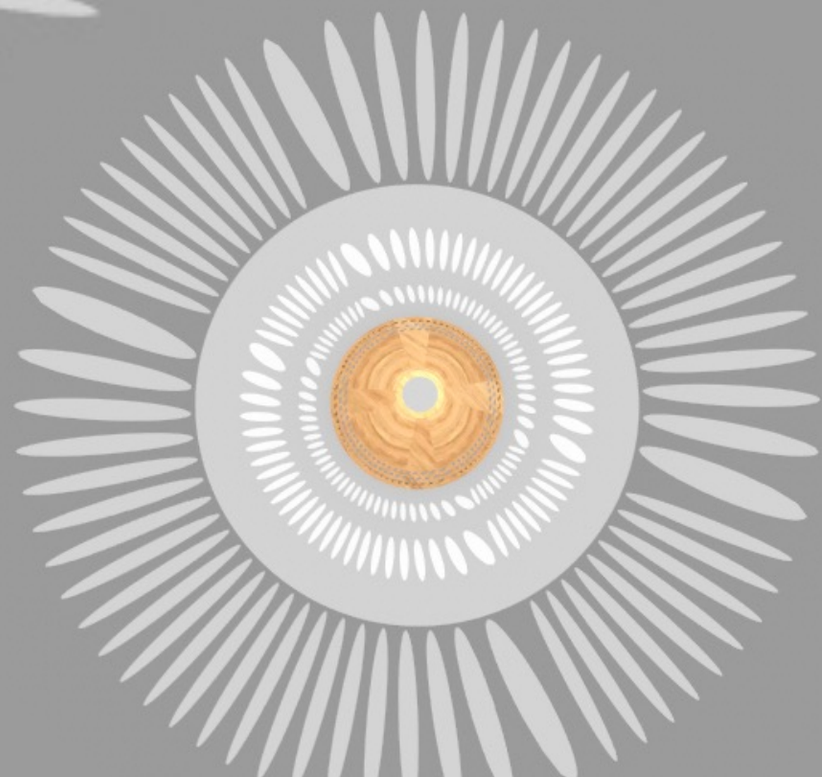


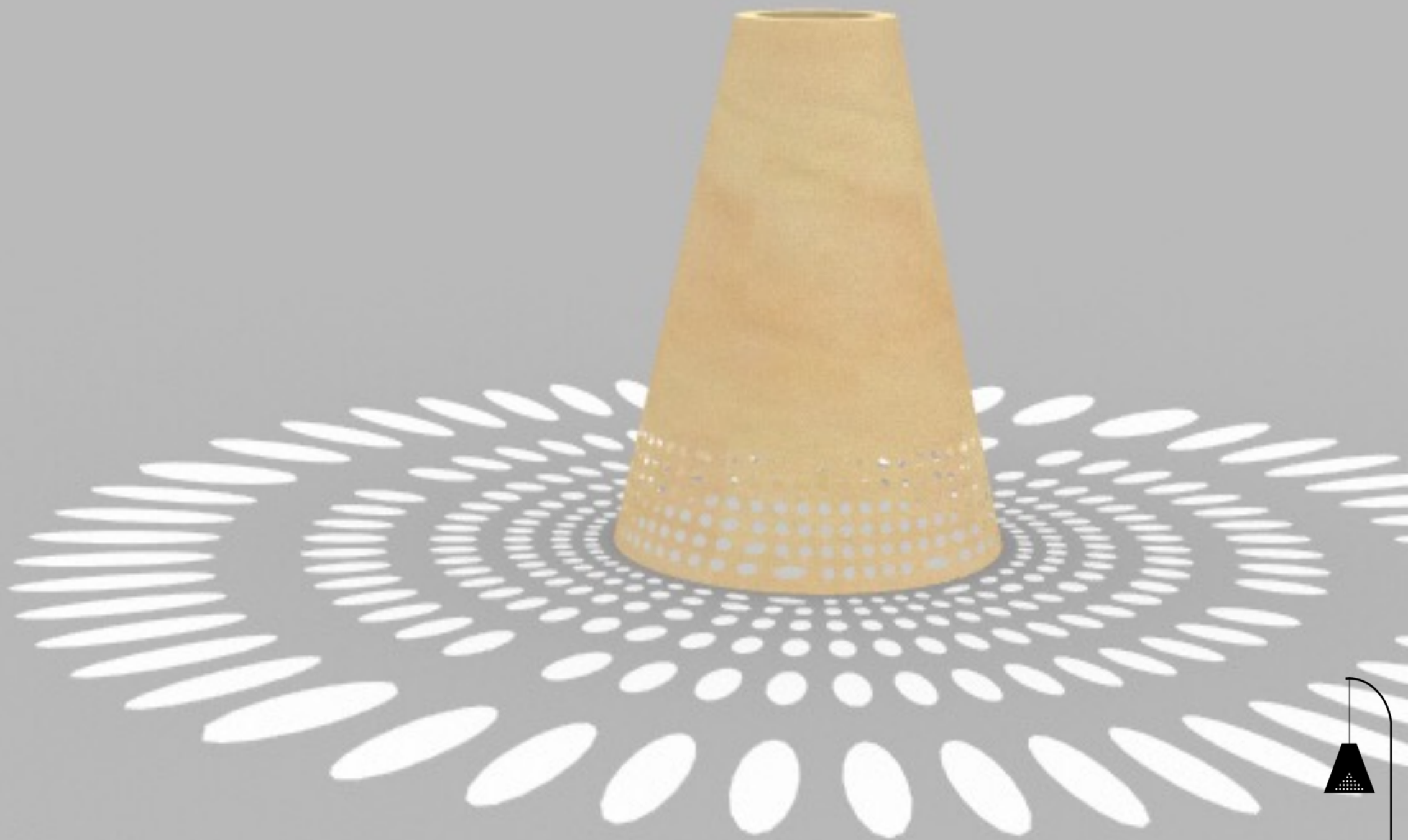
different size
either increase or decrease the intensity of the patterns

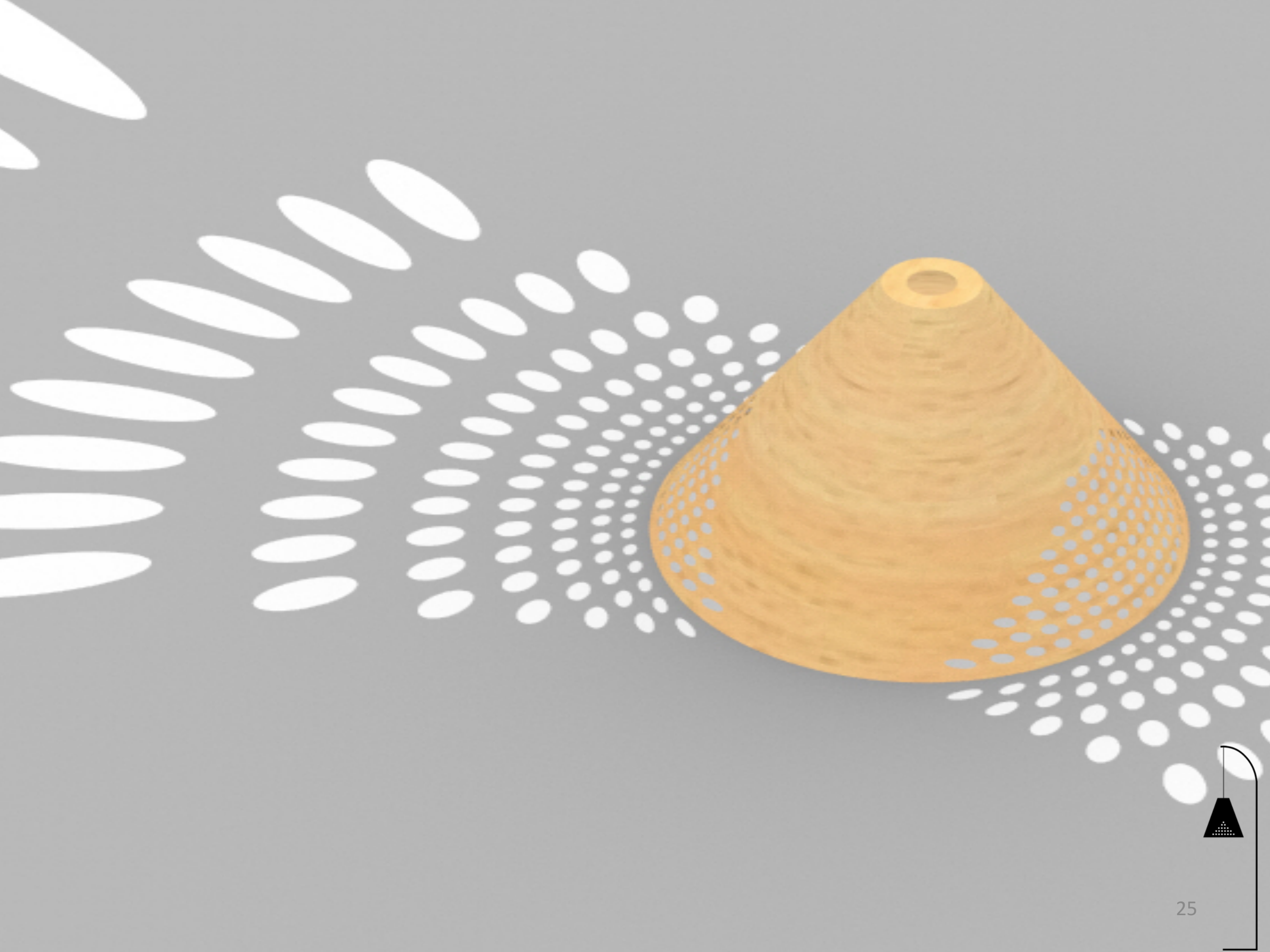


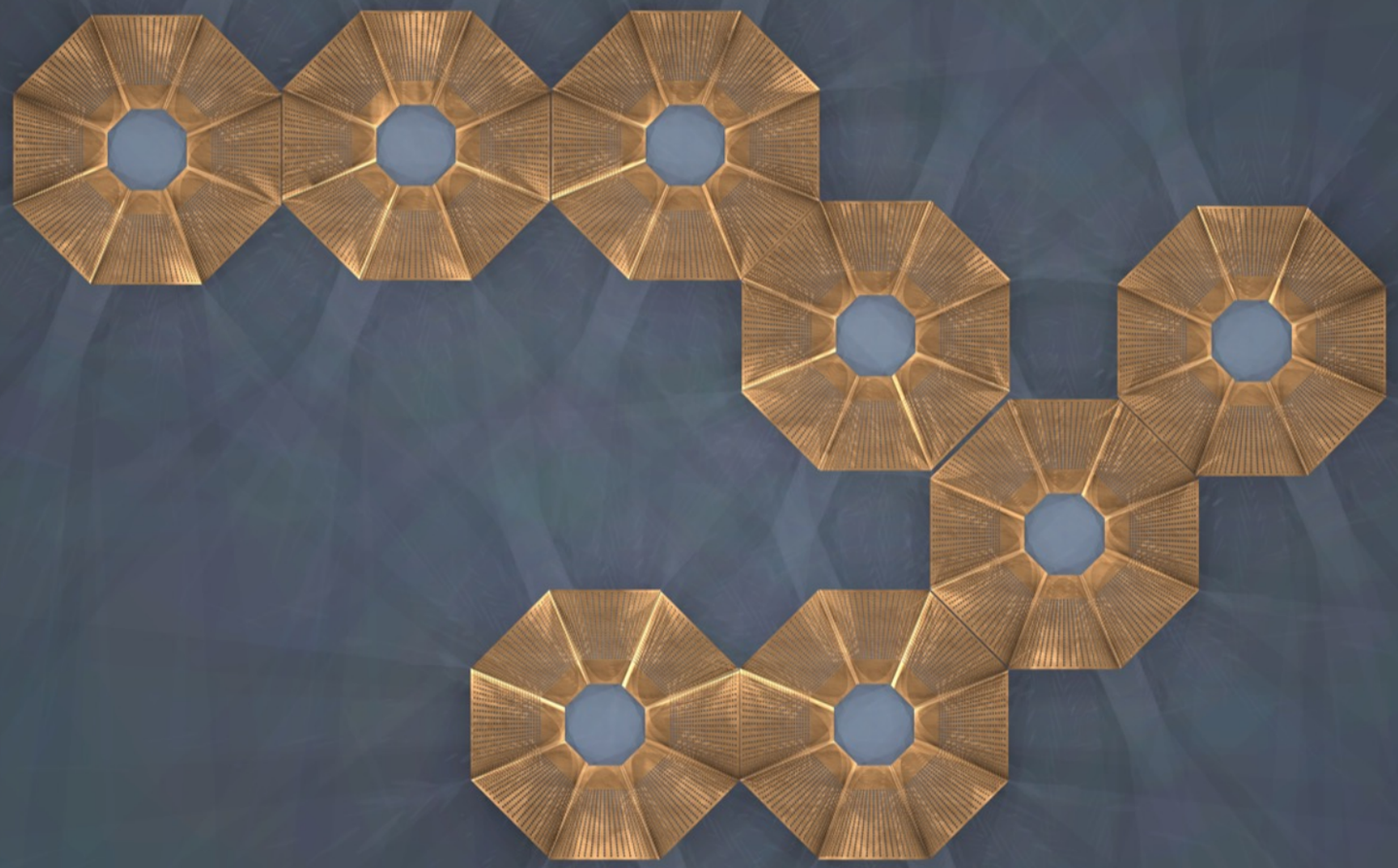
Renderings

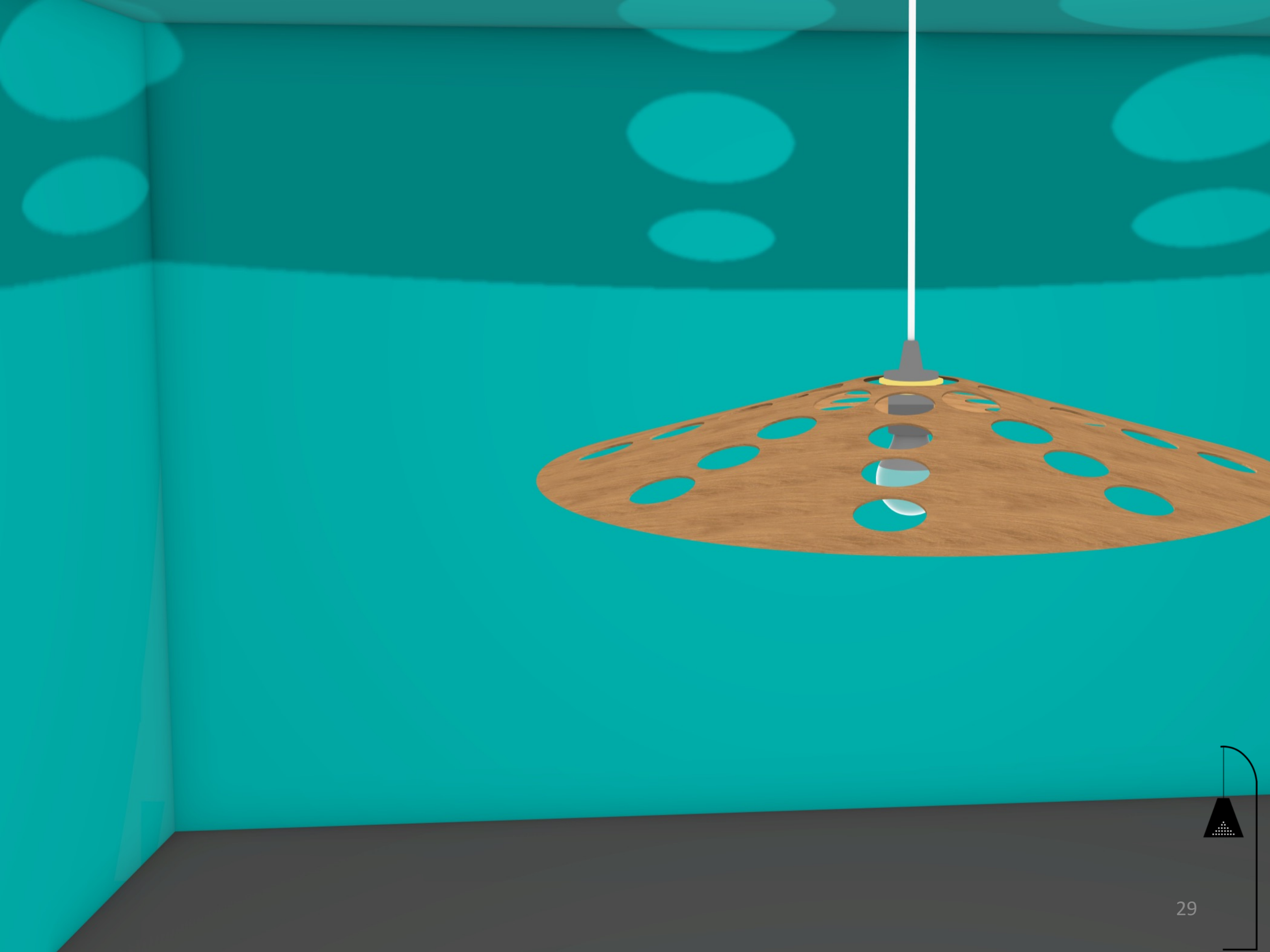


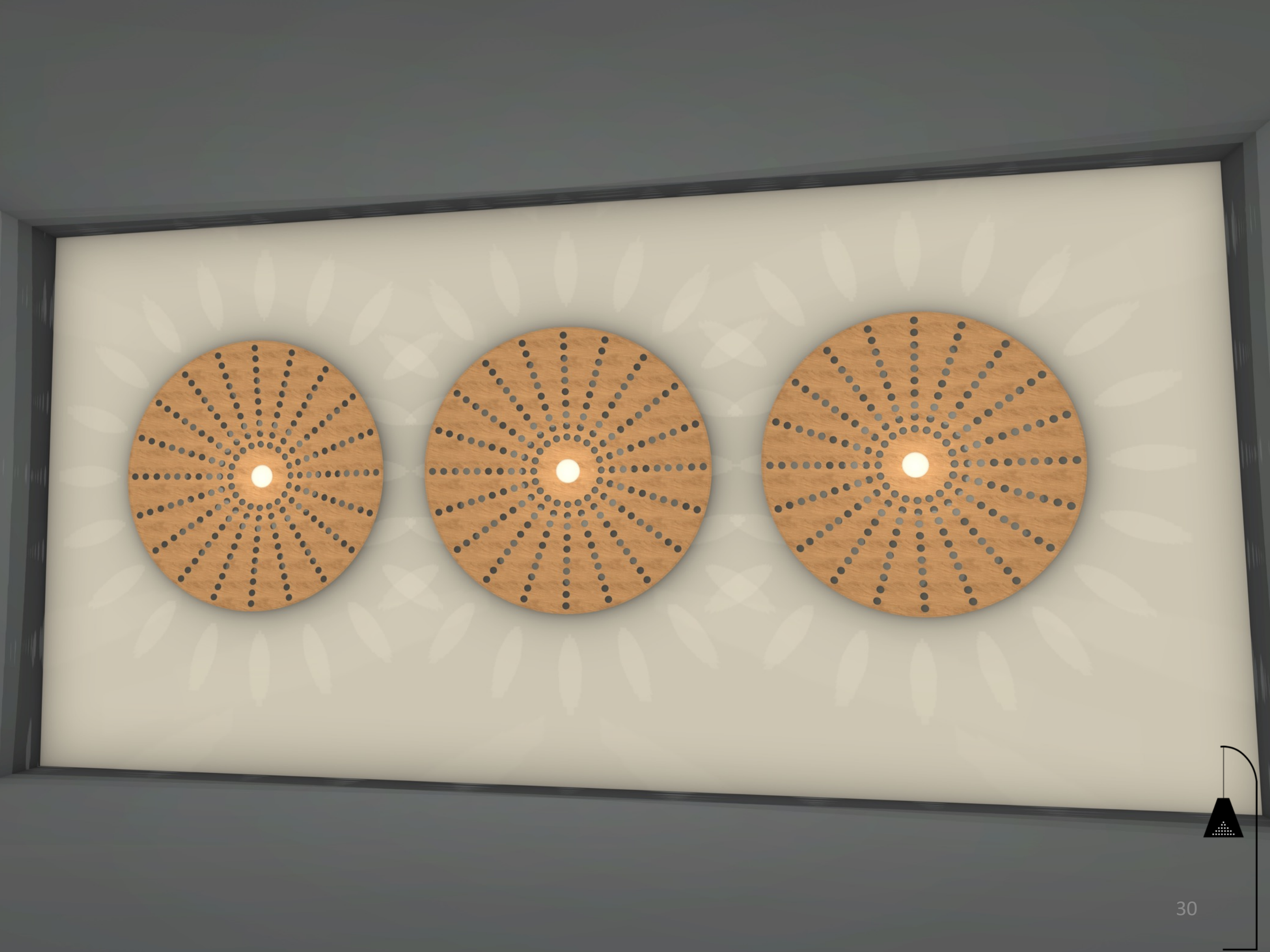


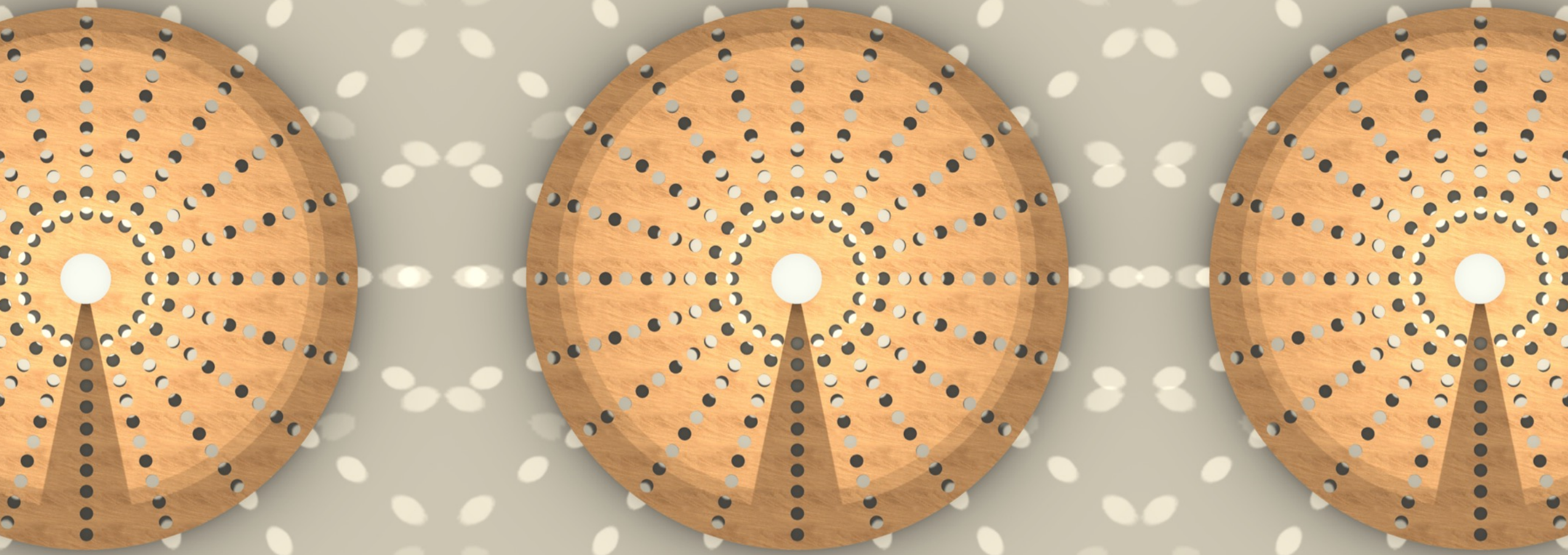


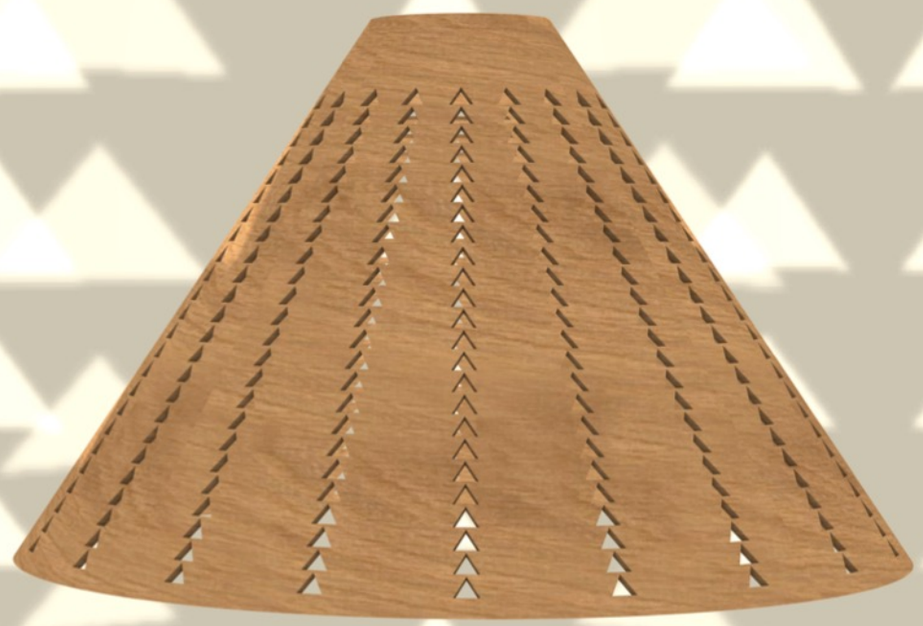


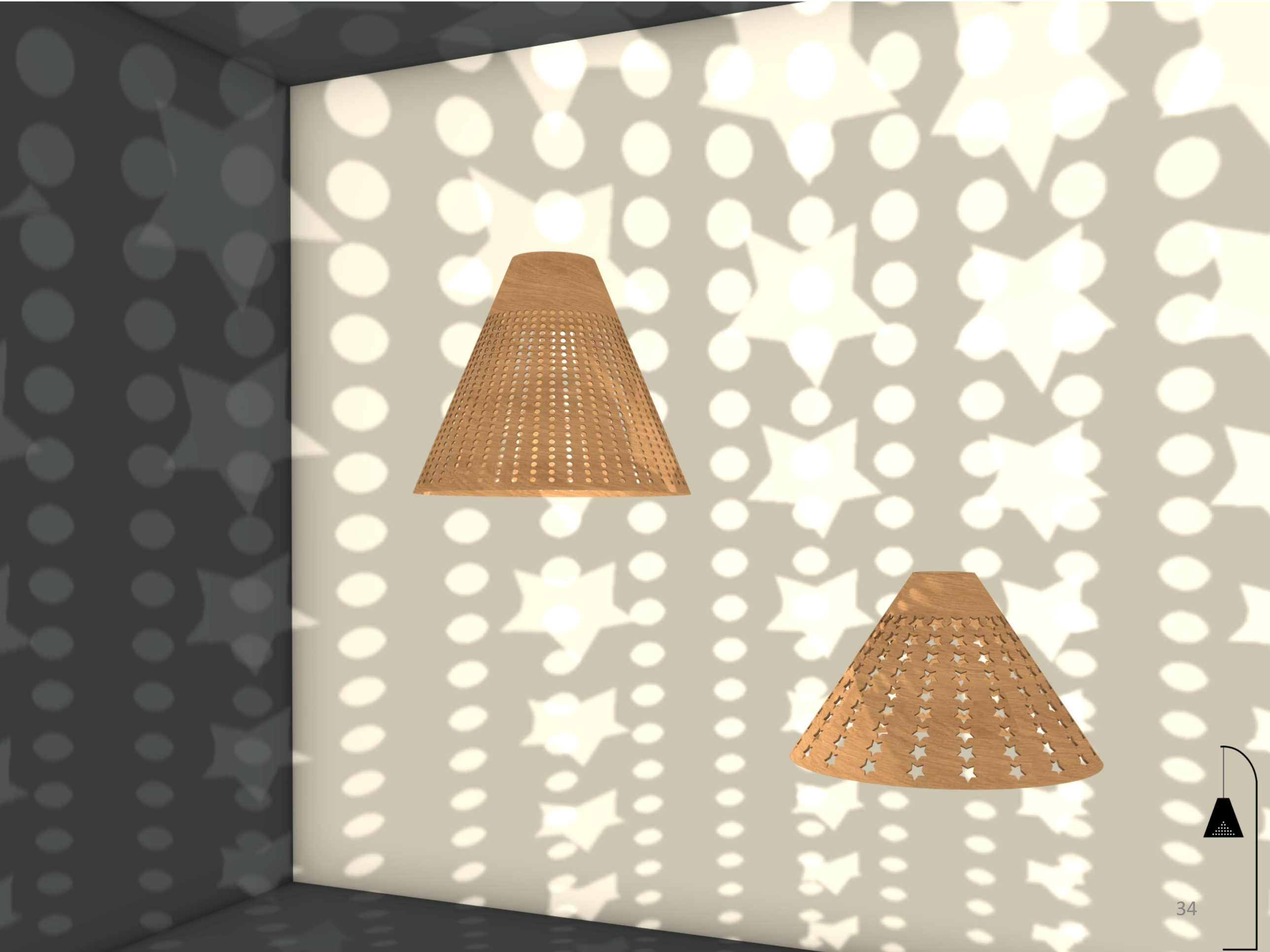


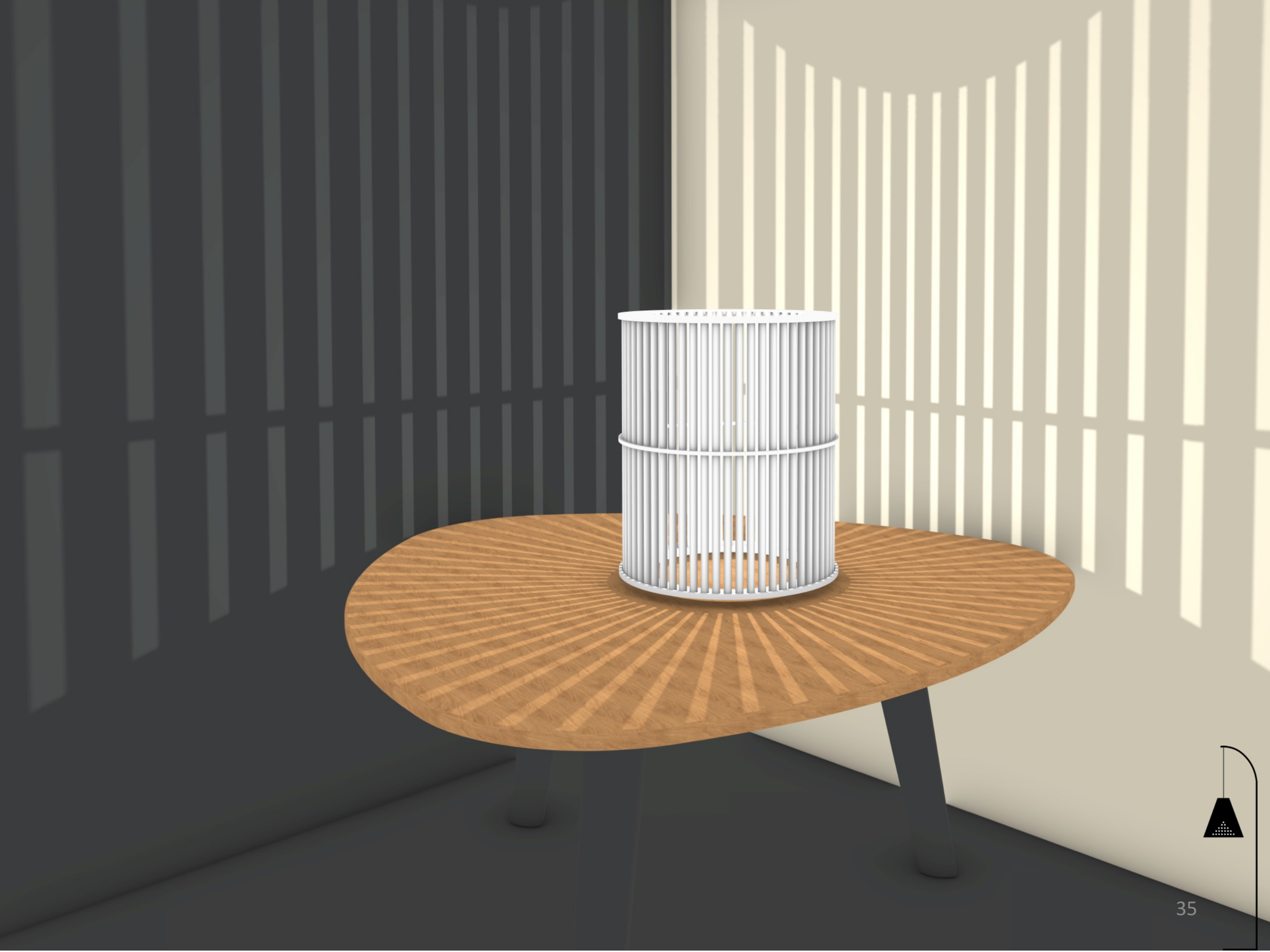


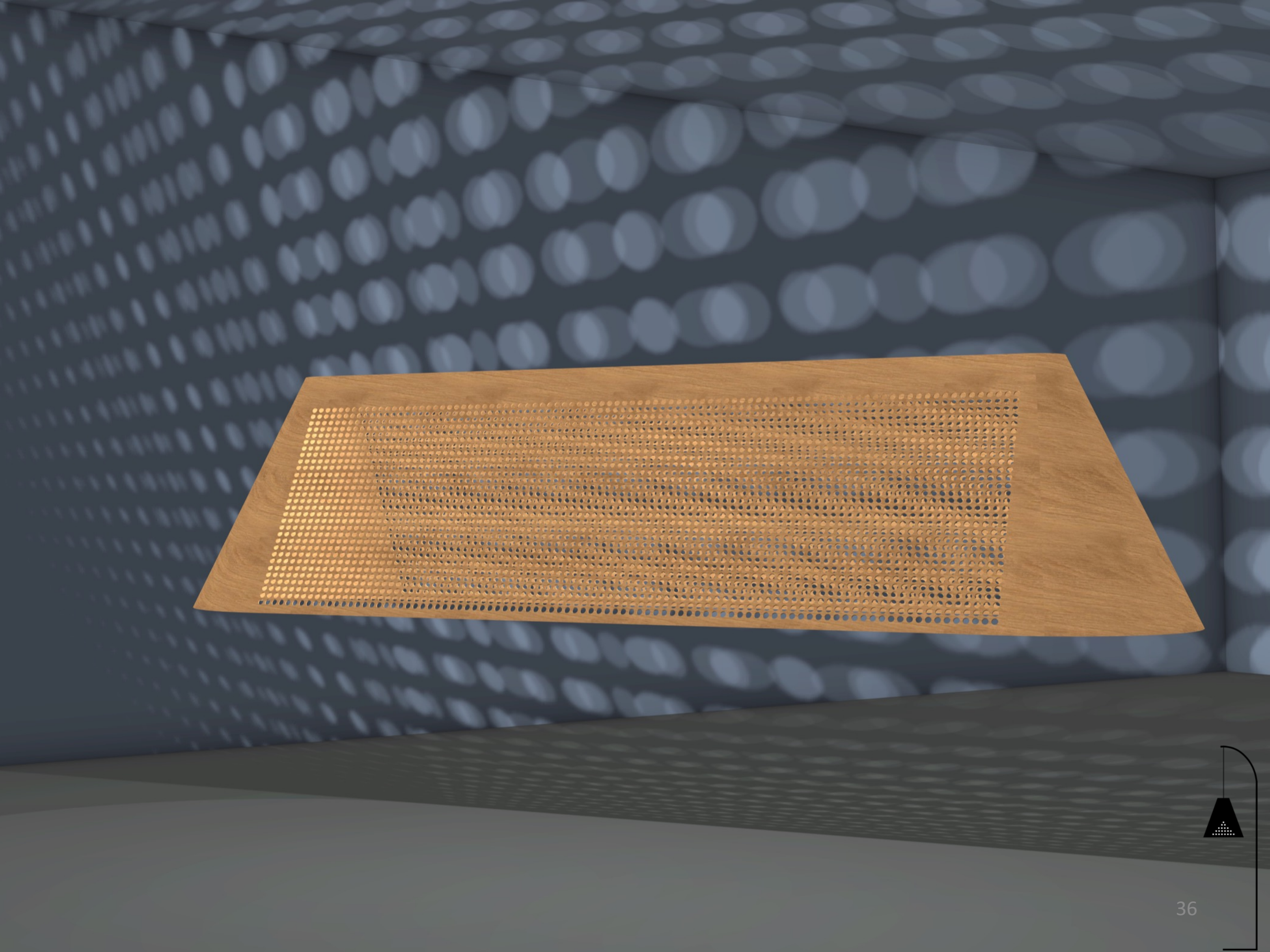












Time scale/ planning

SEP2019

SUN	MON	TUE	WED	THU	FRI	SAT
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23 Start Day!	24	25 model	26 making -	27 material test start	28
29	30					

OCT2019

SUN	MON	TUE	WED	THU	FRI	SAT
		01	02 Model	03 making -	04	05
06 Material	07	08 Lectures	09	10	11	12
13 test	14 veneers to	15 see if I can	16 form a	17 cone.	18	19
20	21	22 three	23 option	24 of	25 [illegible]	26
27	28	29	30	31		

Back in November but not In the work shop Due To health & Safety – spend time in the teck hub

DEC2019

SUN	MON	TUE	WED	THU	FRI	SAT
01	02	03	04	05	06	07
					Using the laser cutter to produce some cones that I can the form	
08	09	10	11	12	13	14
					Finished for the year. Back in Jan	
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JAN2020

SUN	MON	TUE	WED	THU	FRI	SAT
				01	02	03 04
05	06	07	08	09	10	11
				3D modeling & printing		
12	13	14	15	16	17	18
	Material testing with the Decoflex					
19	20	21	22	23	24	25
		Laser cut Decoflex - produce different cone shapes.				
26	27	28	29	30	31	
	Steam bending — Prepar wood Ready for thurs					

Because of my knee operation I had to have Physio which took place every Friday.

FEB2020

SUN	MON	TUE	WED	THU	FRI	SAT
						01
02	03	04	05	06	~~07~~	08
09	10	11	12	13	~~14~~	15
16	17	18	19	20	~~21~~	22
23	24	25	26	27	~~28~~	29

steam bending lamp & wall lights

floor ligh - Big cone / base / stand.

Chandlier modeling - C.A.D

Paper models → ~~to~~ Dowell

MAR2020

SUN	MON	TUE	WED	THU	FRI	SAT
01	02	03	04	05	~~06~~	07
08	09	10	11	12	~~13~~	14
15	16	17	18	19	~~20~~	21
22	23	24	25	26	27	28
29	30	31	1st	2nd	3rd	4th

group Review
have bits Ready to show!!

final chandlier modeling
- (using Dowel for a joint?)

order material - Dexoller

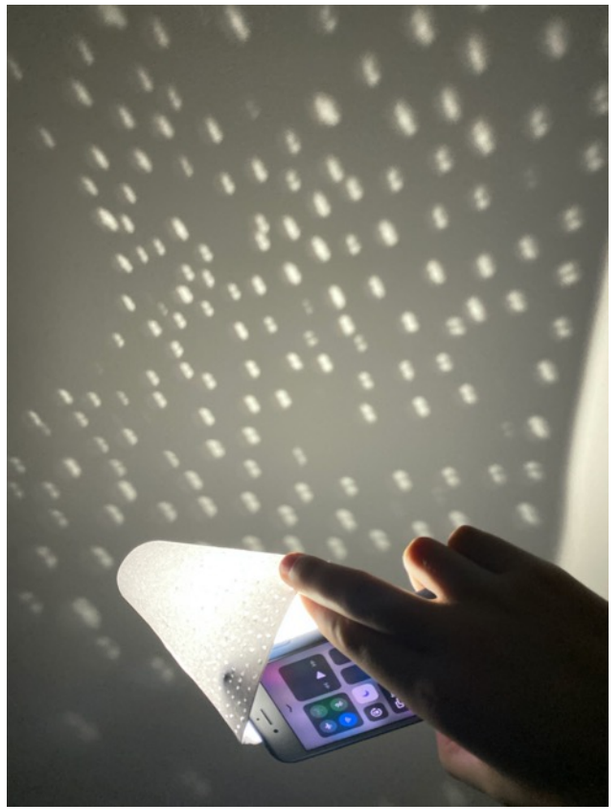
Laser cut final cones
Ready

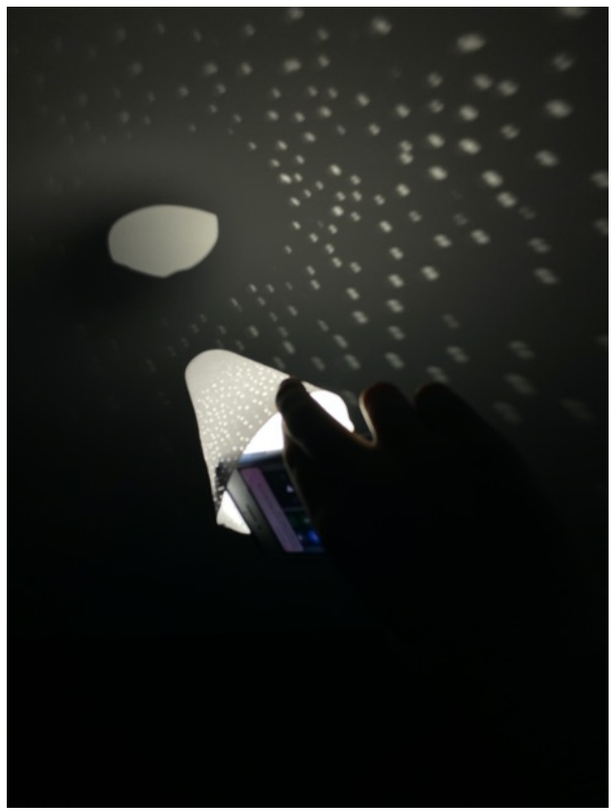
Steam bend final stands for the lights

Material testing & Prototyping -Cone

To start the modelling process I started with paper cones. I began poking hole into the paper as a quick way to get the idea off the paper into 3D.

I found that this worked and looked quite effective but the only thing with this is that it took a long time to make and also I wanted the holes on the cone to have more of a structured pattern.

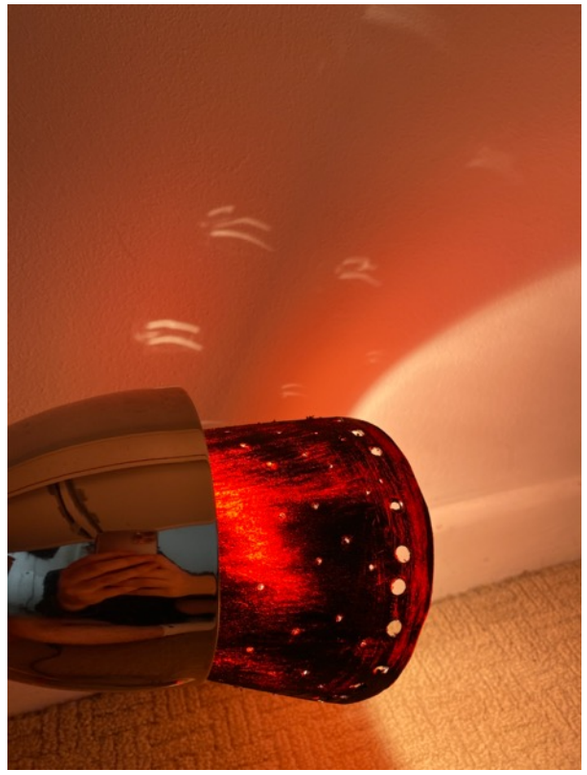


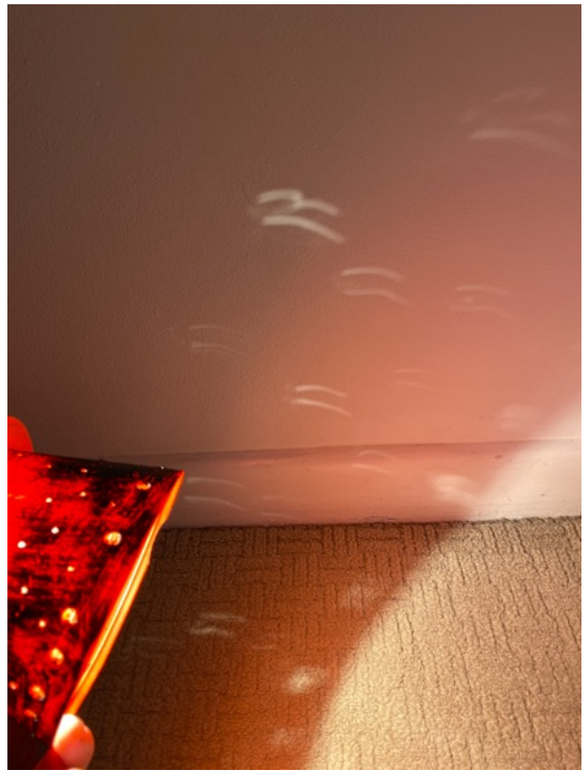


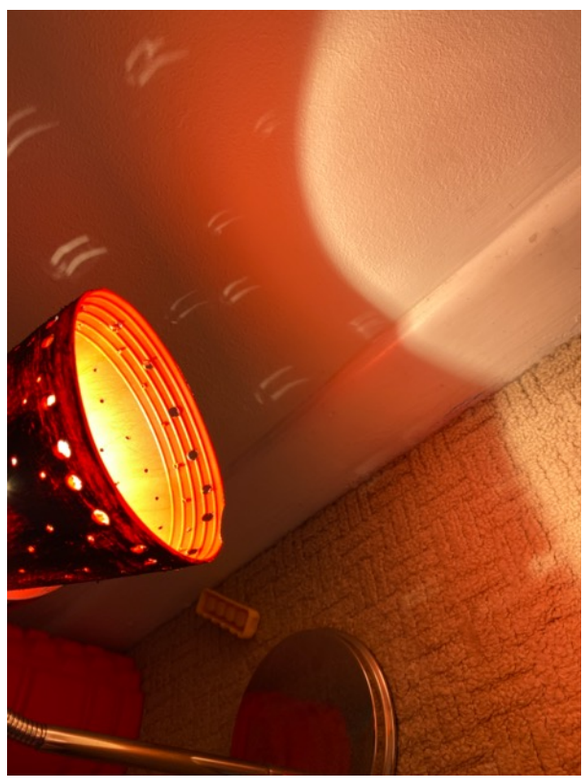
I then moved on to a plastic cone where it was a similar thickness to the veneers that I plan on using. I started by drilling holes into the cone.

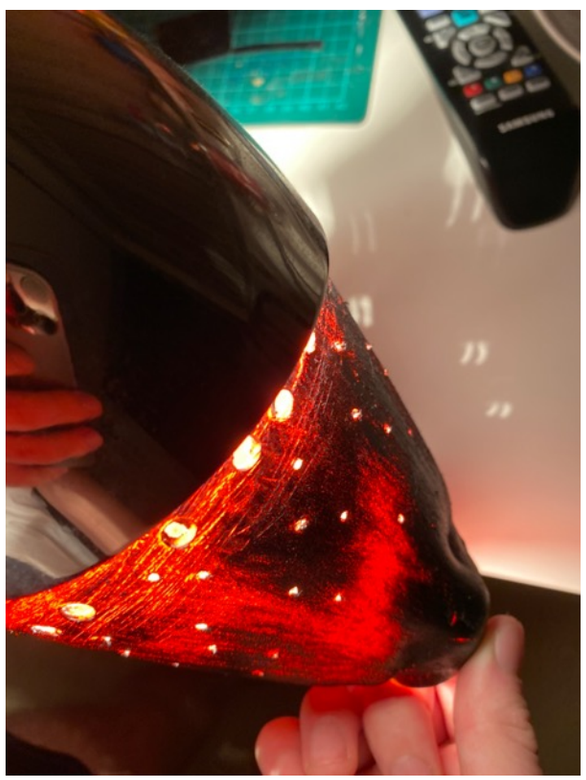
This was to get an understanding off how the cone was going to direct the light once the holes where drilled into it.

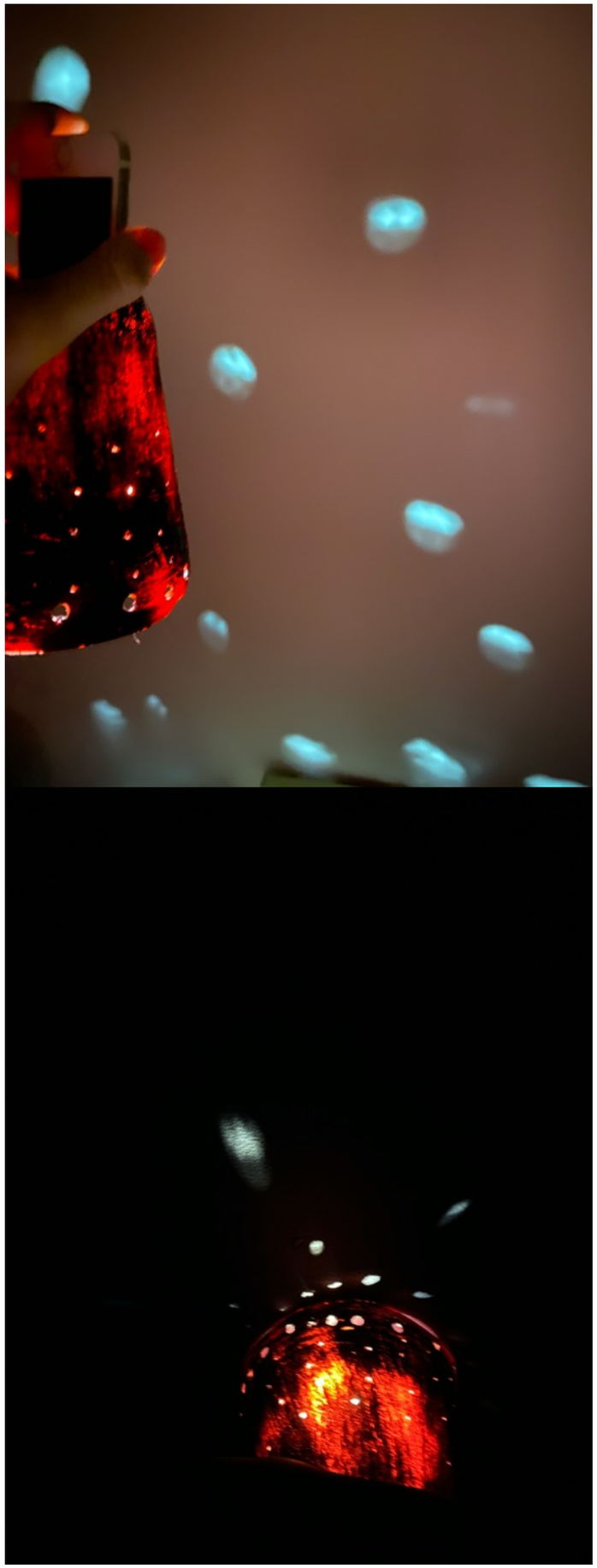
Once the hole where drilled into the cone I still want the light to work as if the holes didn't’t exists.





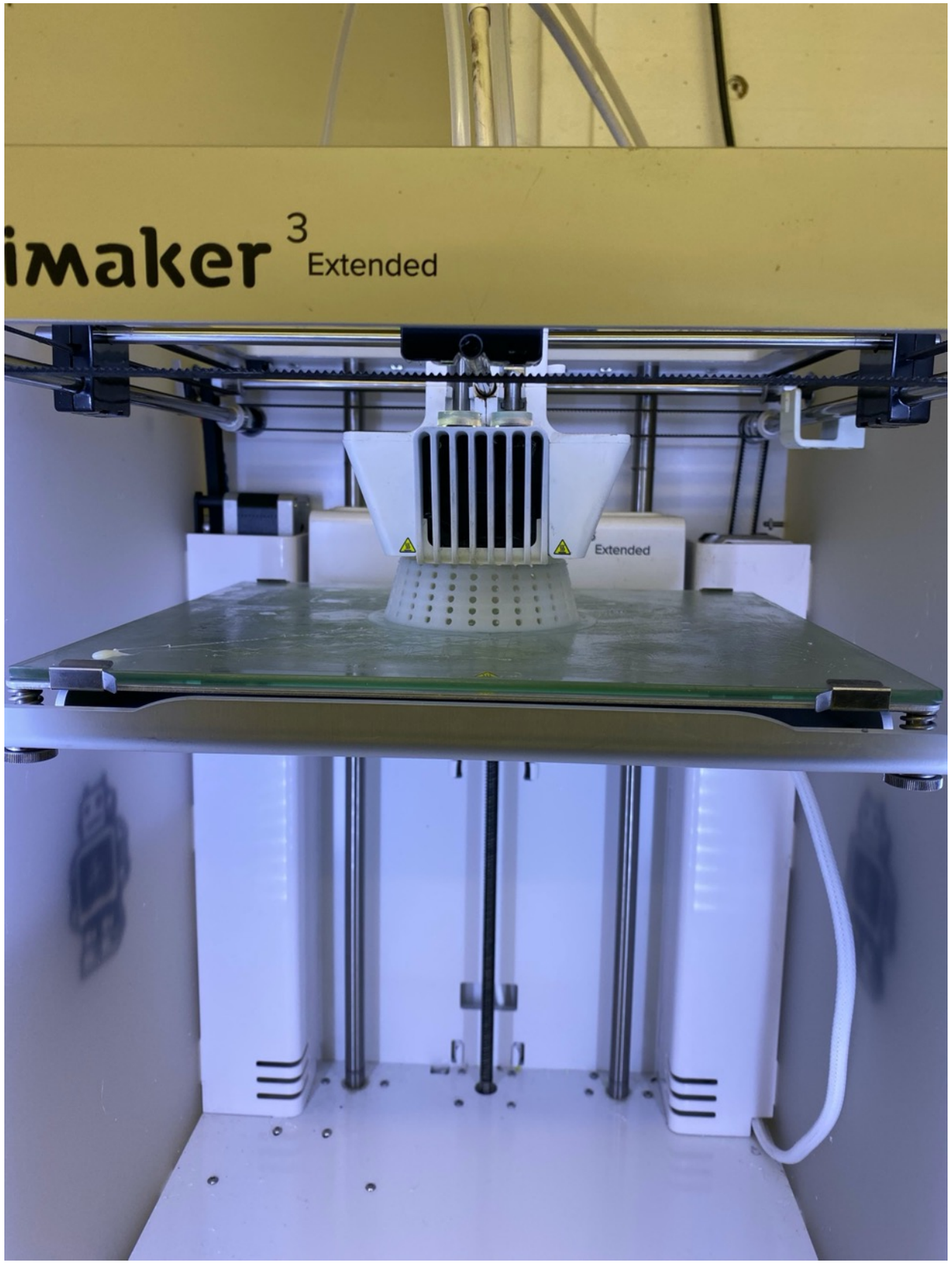






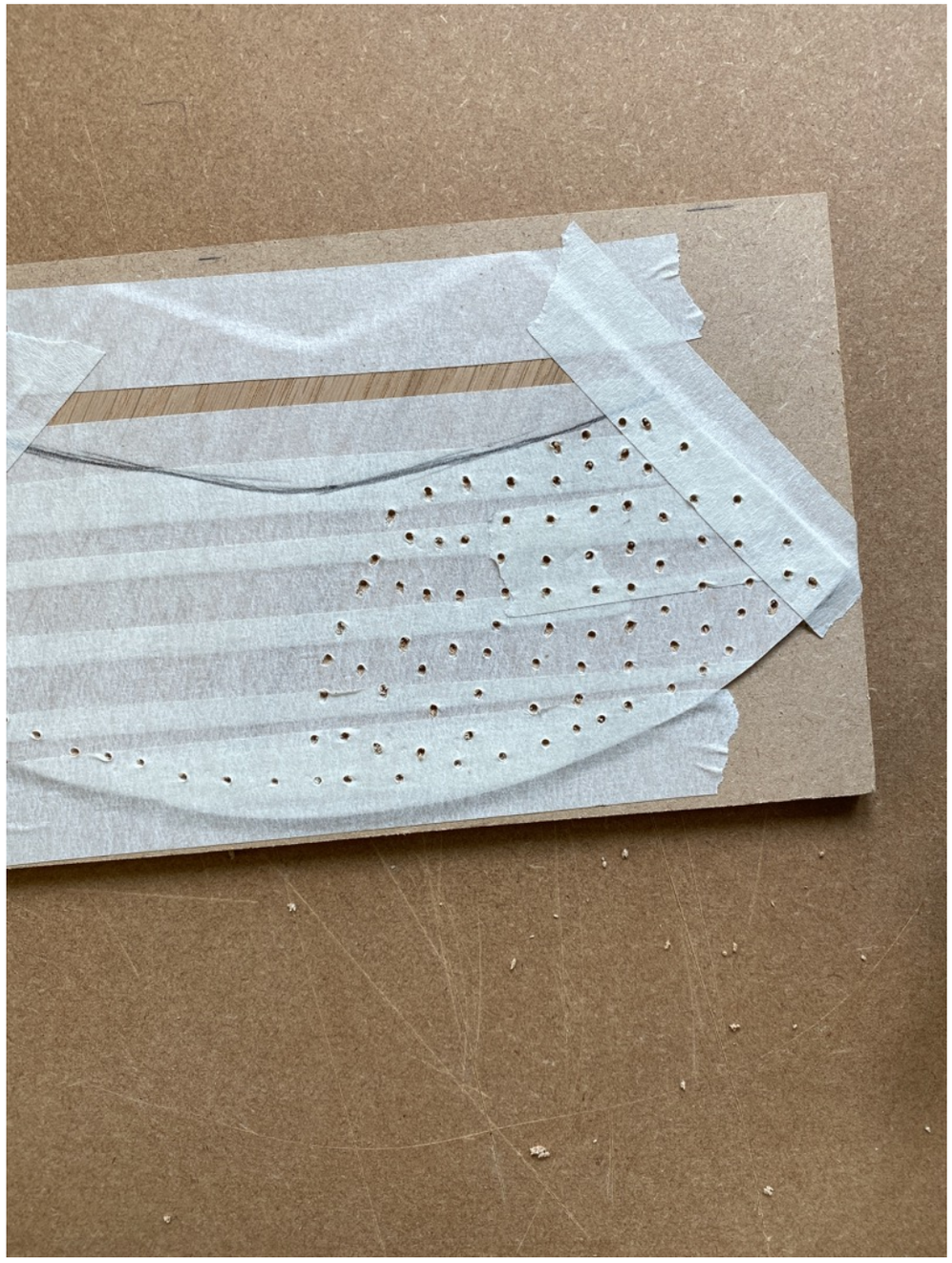
From using the plastic cone I then 3D printed a cone that I could hold and use to see what the end product could end up looking like.

From this I learnt that there needed to be more holes to get the desired effect that I was hoping for. I would also have to explore how I intend to attach the light to the cone.



To move on from the cones I stared with Oak veneer which is an open grain and is also very straight this should allow the veneer to form the cone shape.

Following the idea I did with the plastic cone I started by drilling hole in to the veneer and then soaking in water to make the cone more supple and more likely to take shape.



Placing the veneers in water helped them to bend, but with the nature of the grain in the wood some cracked with the grain wanting to splinter off as I tried to form them.

This didn't help with how the veneer was stored at the university. Most of them where to dry and very fragile even before they where being formed.

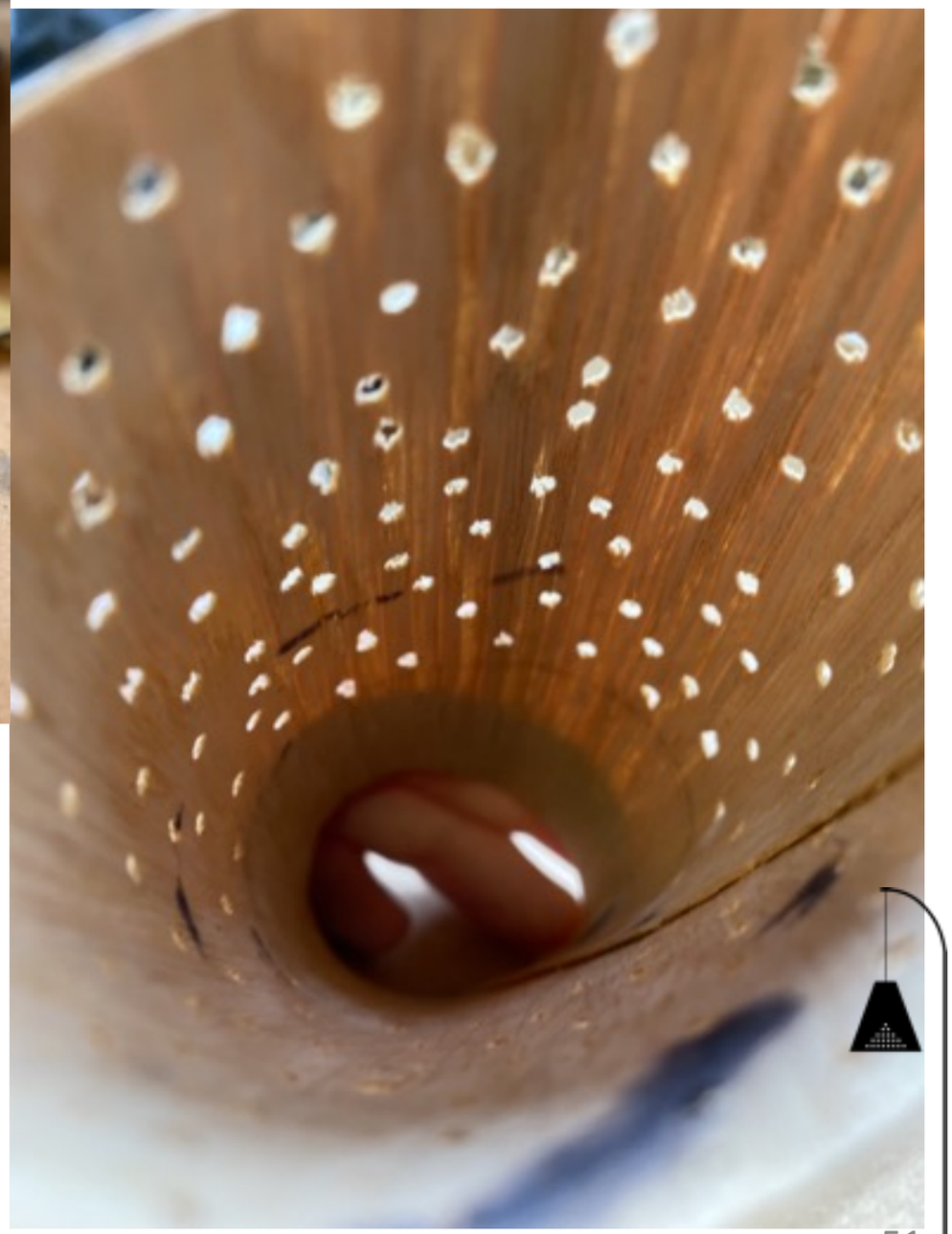
After doing some research I found that veneers like to be store in a dark damp room, so that don’t dry out and stay moist.

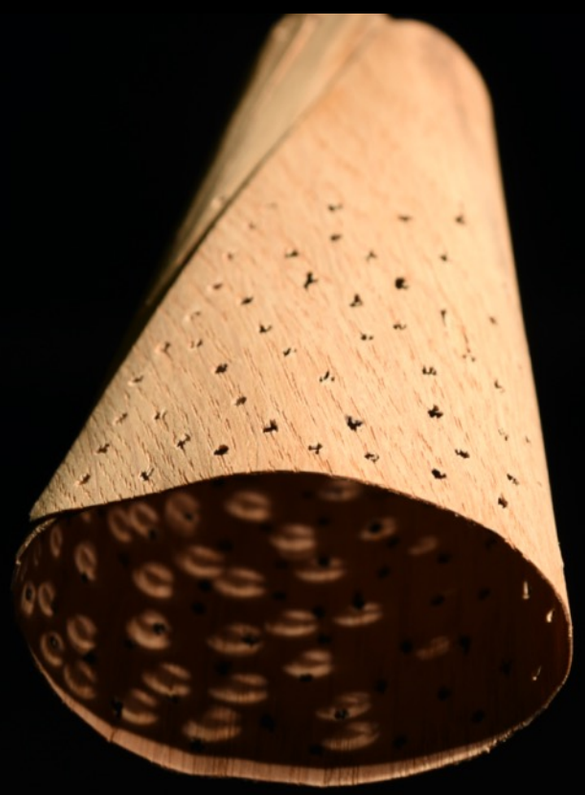
I tried a few more attempts and found that some wanted to stay in a shape but others wanted to go with the grain and if I was to force them into a shape they would just snap with parts breaking off.

Once I knew that I would be able to form the cones with the wood veneer, I then started to make the design that I had drawn with the holes in the veneer.

I Started by using a drill but this wasn't really working as the drill kept splitting the wood which meant I was getting inconsistent shapes when forming the cones.

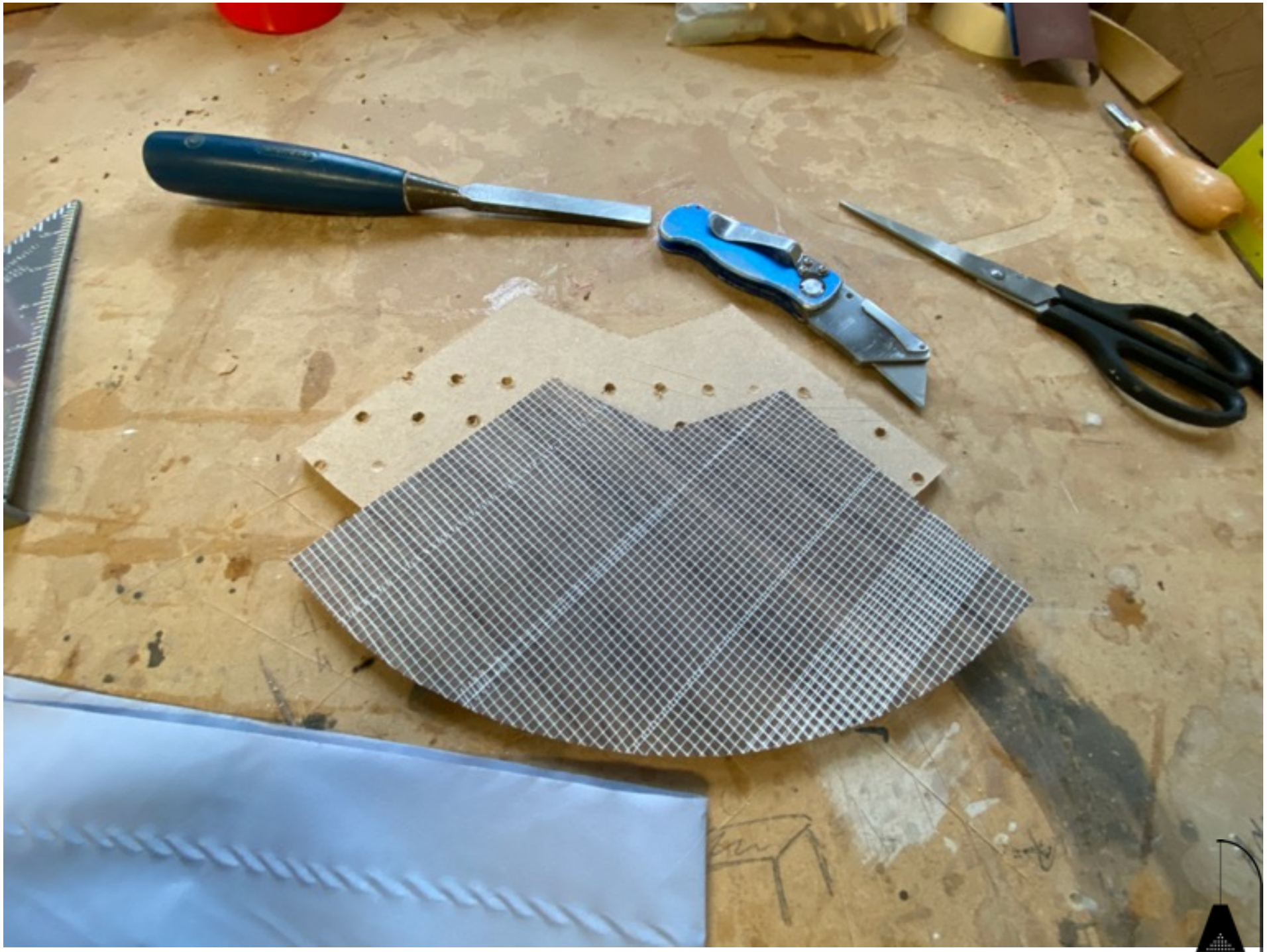
This was due to the wood veneer not being stored in the correct conditions. The condition of the veneer was down to the wrong temperature. The veneer should have been stored in a humid place to keep the moisture in the veneer.

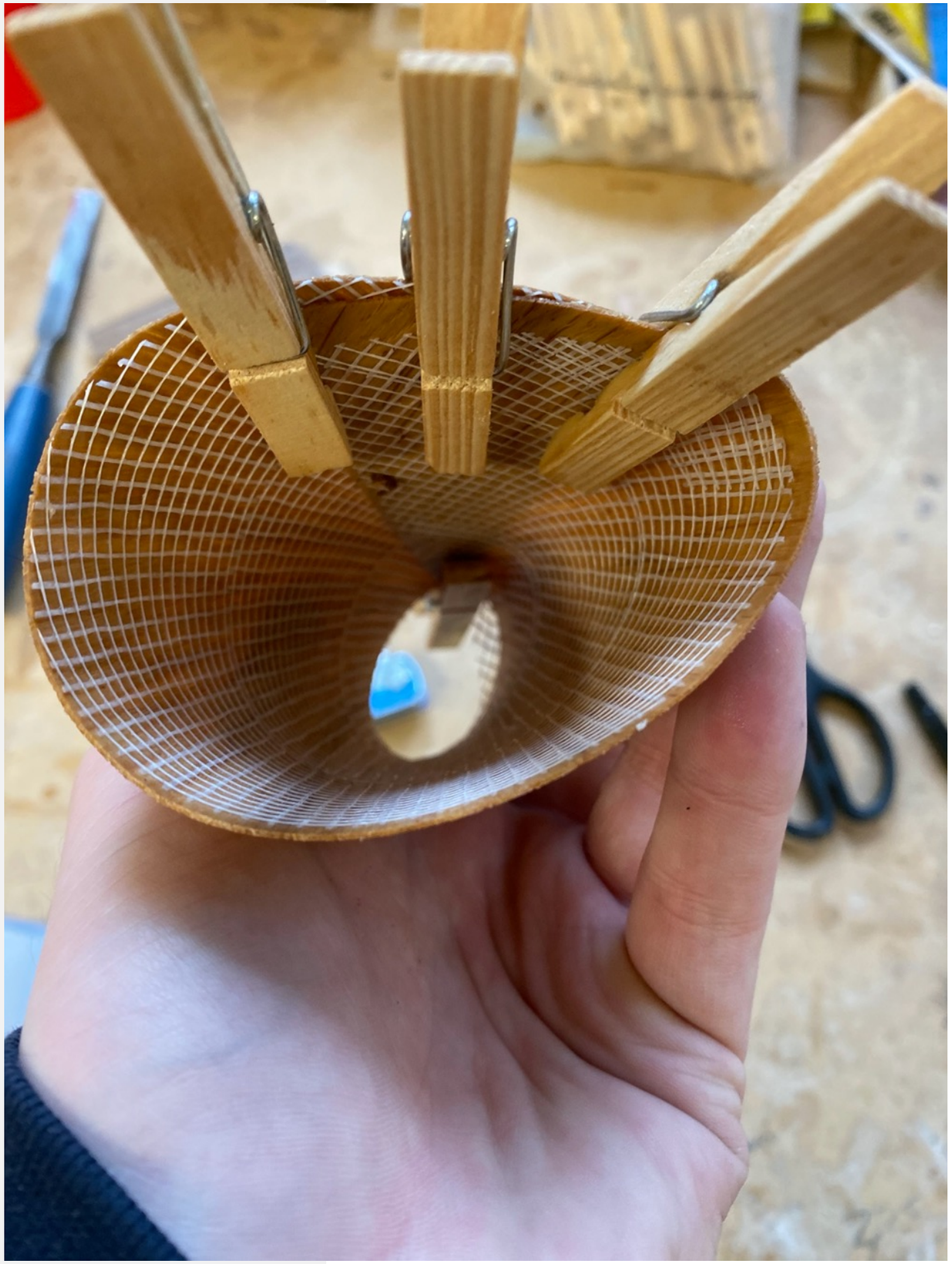




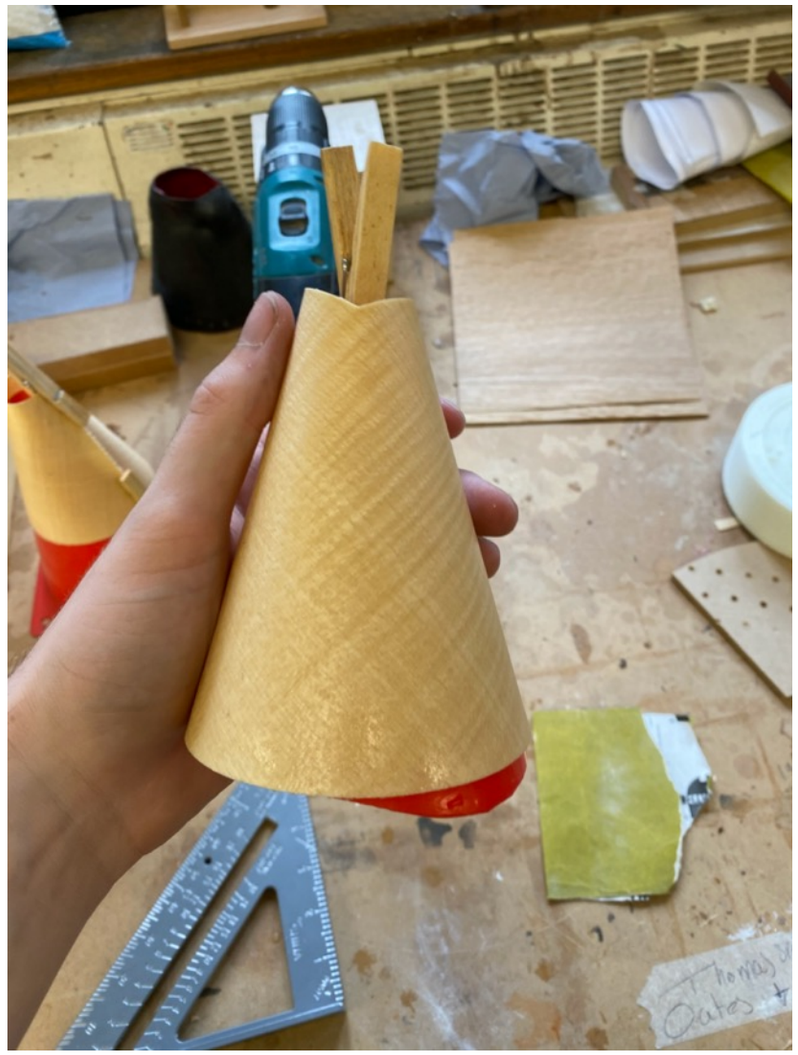
When designing the last set of cones that kept breaking and not forming properly, I then discussed with my tutor who suggested to look at a product called scrim tape.

Scrim tape is normally used to cover joins when plastering, but I found that when you applied this tape to the back of the veneer it supported it enough to allow me to form the cones and stop them from cracking apart.

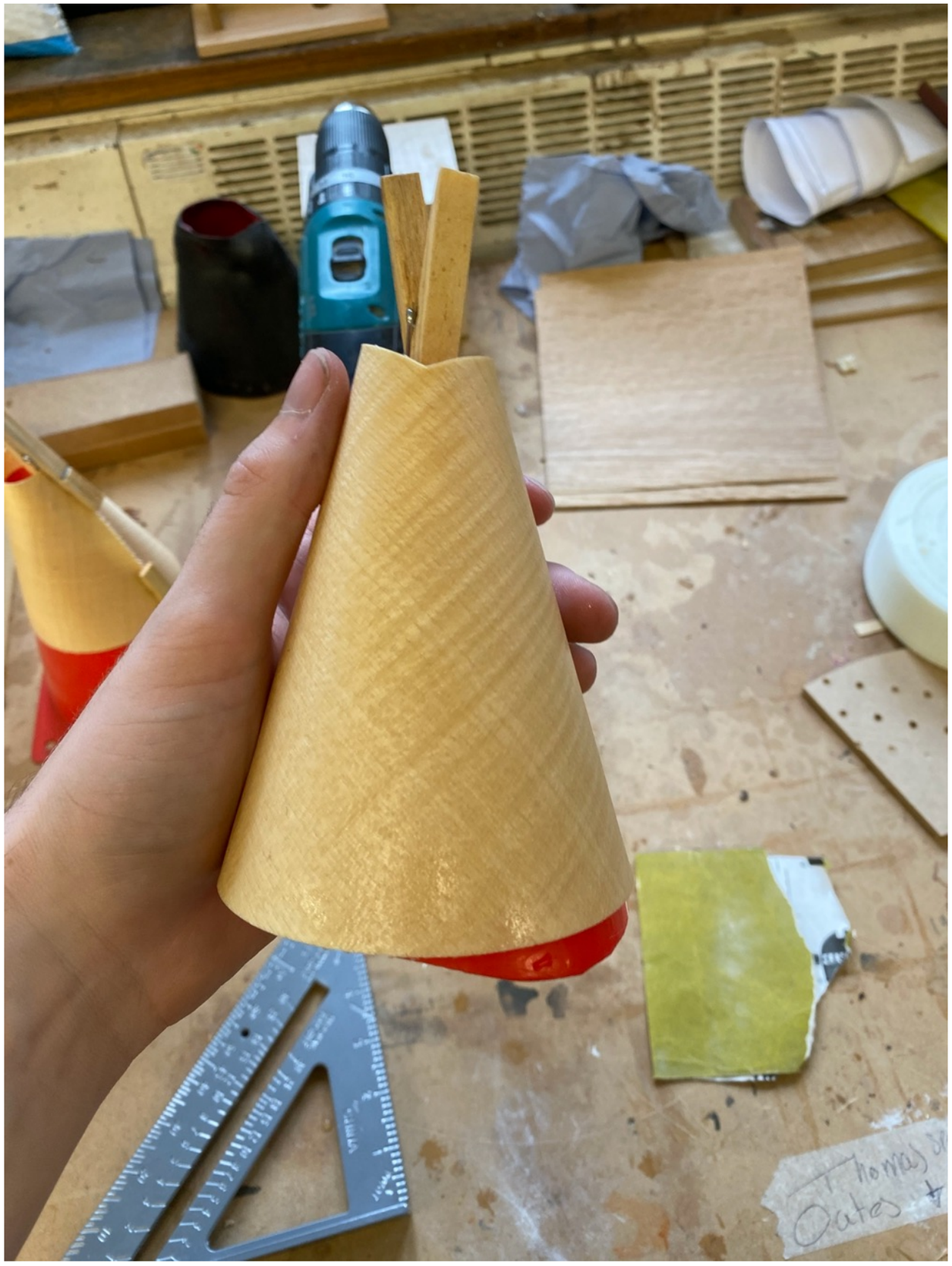


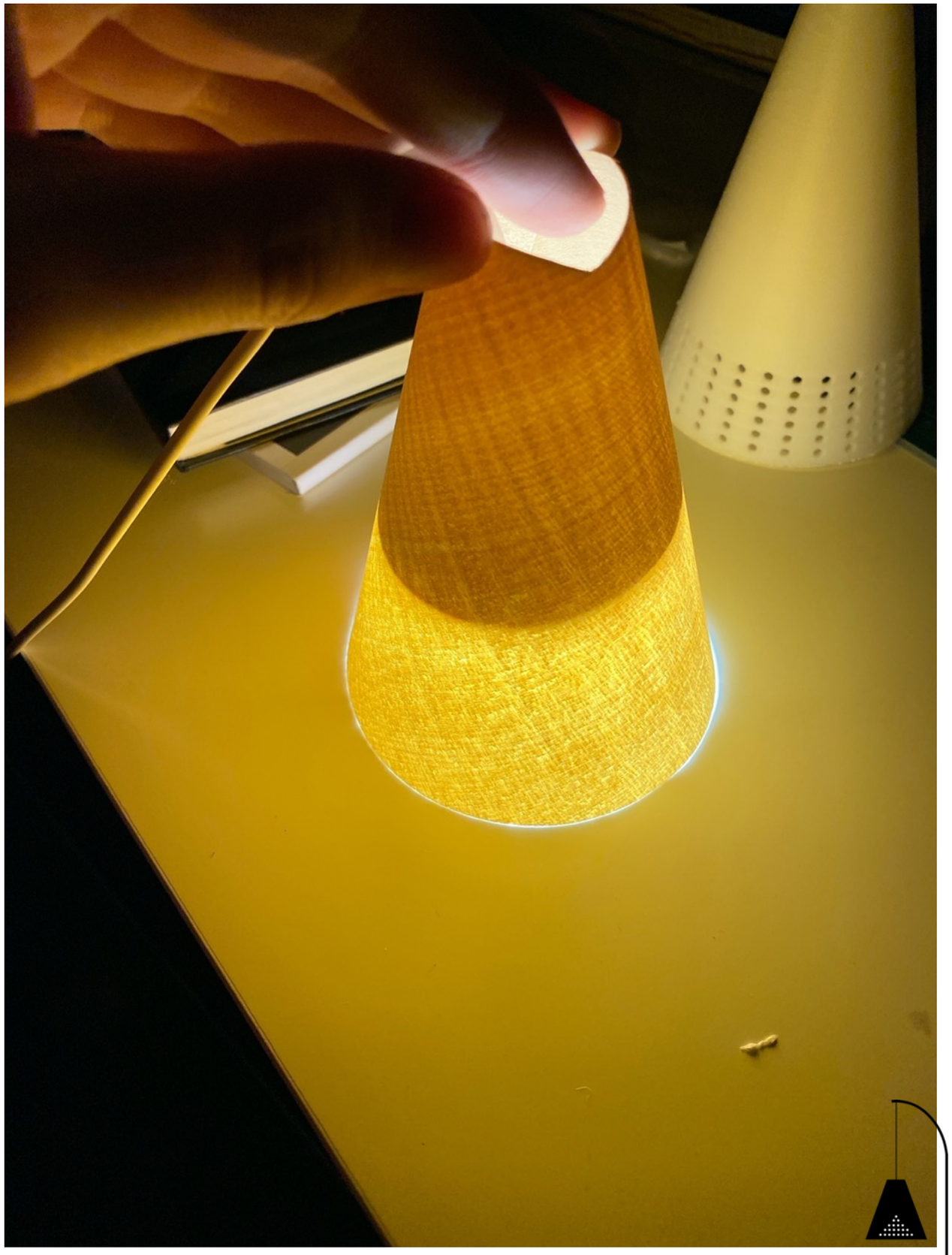



Kim
Yuan
KIM YUAN GLOVES
Lemon
Oil.



With the help off the scrim tape to support the veneer, I was able to start to form the cone. Using the additional help off some old football cones that I was able to cut down to use as formers, I was able to start turning the veneer in to cone like shapes. The additional help off pegs allowed to me to clamp the cones in to position quickly as I found out that multiple attempts weakens the veneer, so by using the pegs I could quickly form the cone with both hands into the position before attaching the pegs.

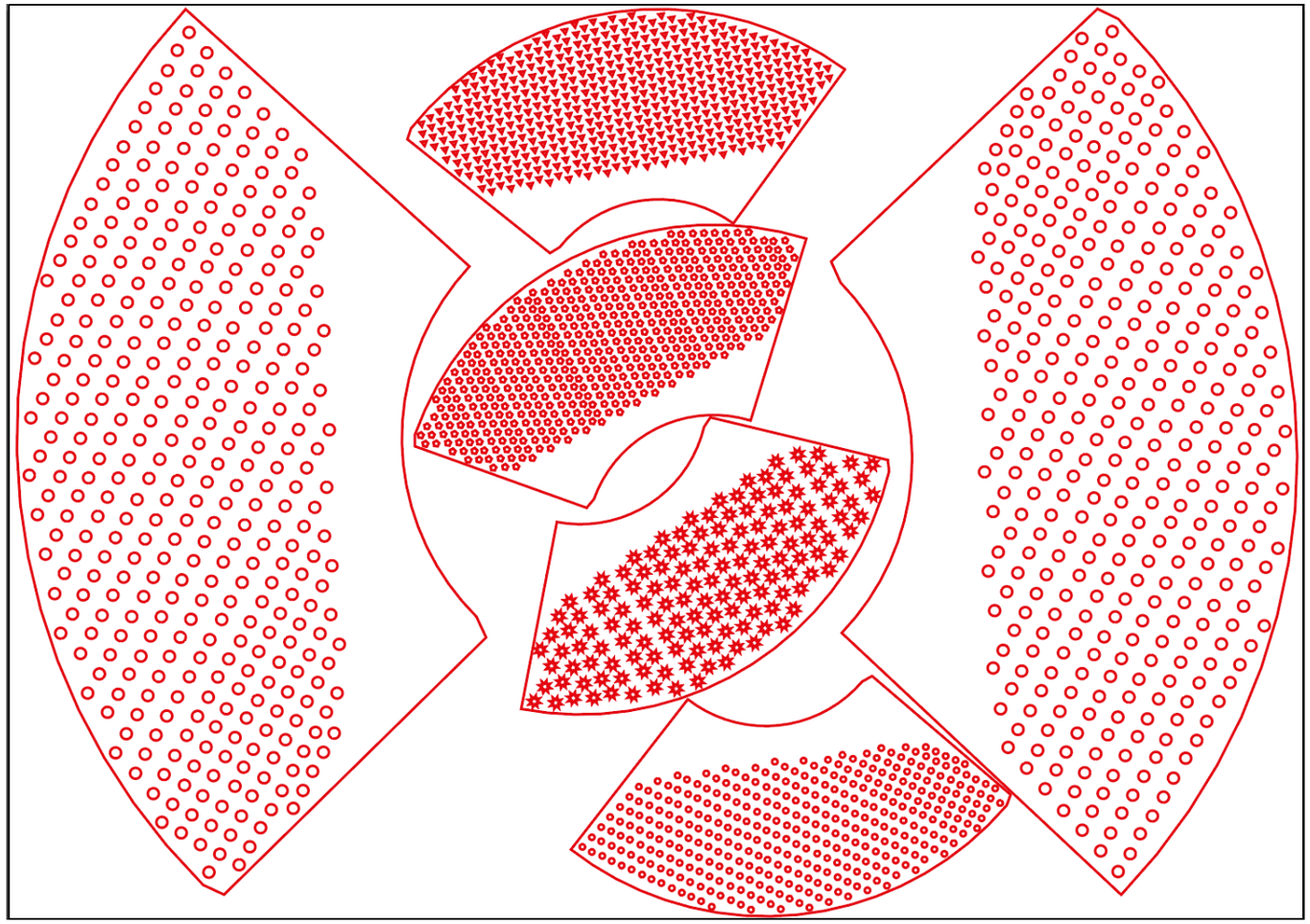


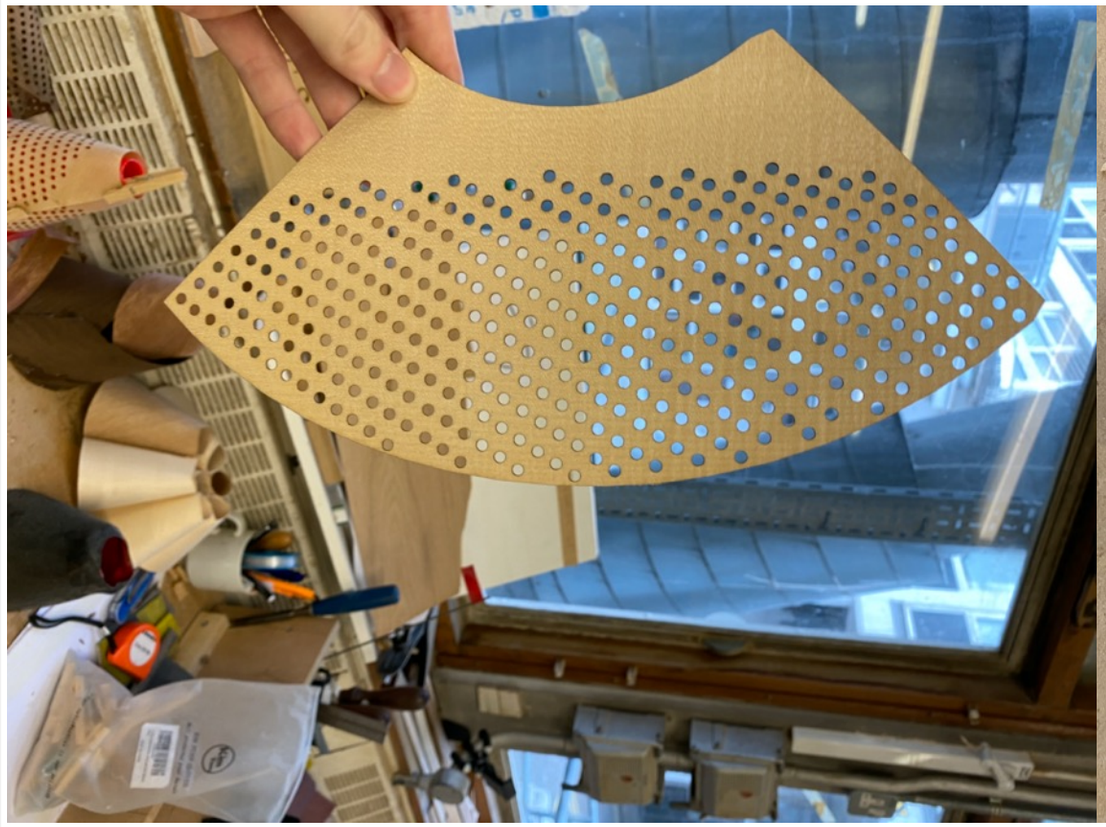


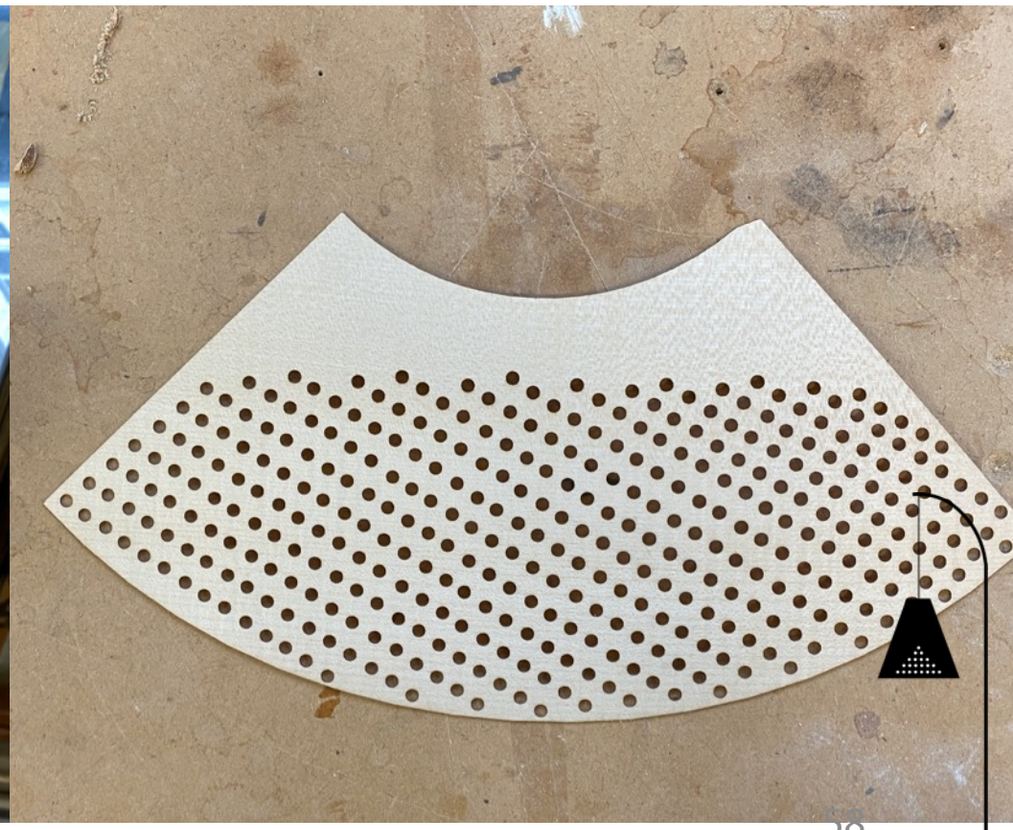
Now that I new I could form the cones and I had a method that was working I then needed a way to repeat the process and get every cone looking identical.

Firstly I went on to InDesign and made a file where I could then send over to get laser cut.

I chose to use the laser cutter because It was quick and could give me consistent and precise result over and over again.

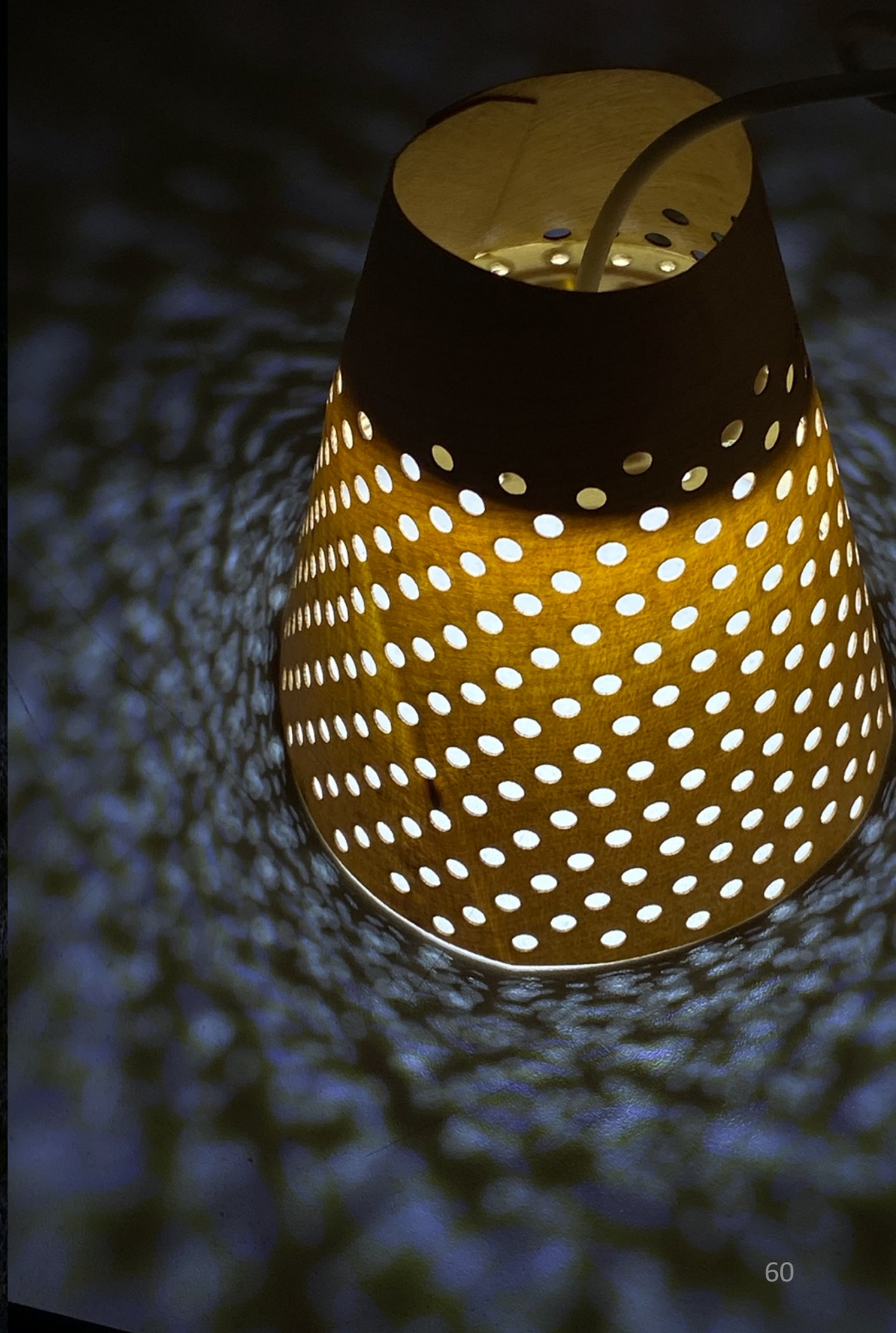






Even-though the laser cutter was giving me the same result over and over again the veneer wasn’t.

The veneer still wanted to do what it wanted but the ones that did work. Worked well and gave me the cones that I was looking for.



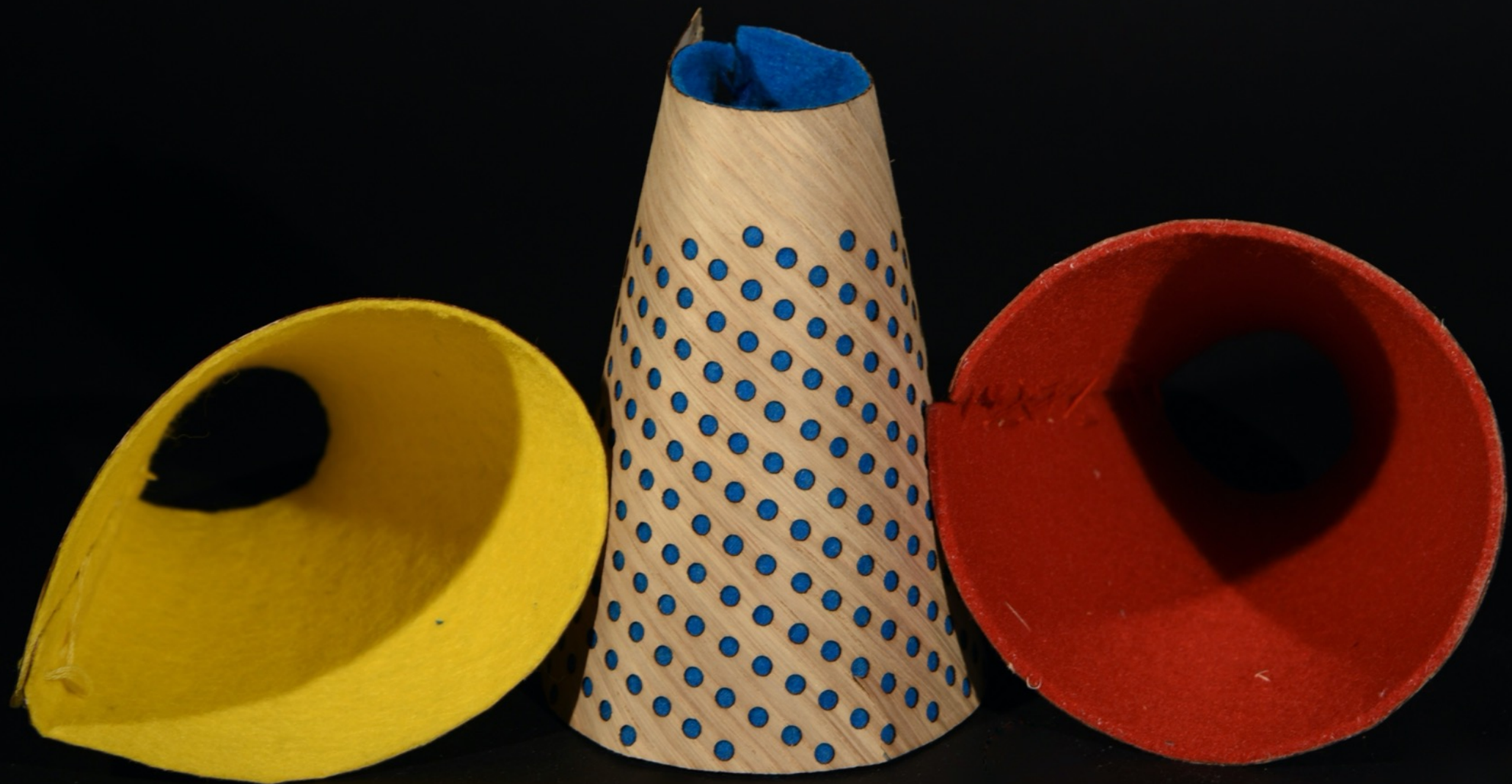
Because of the veneer that I had available to make the cones with, they weren't always making the correct shapes and to get hold off the correct veneer that had been stored properly would have been very expensive, therefore I found a cheaper type of veneer.

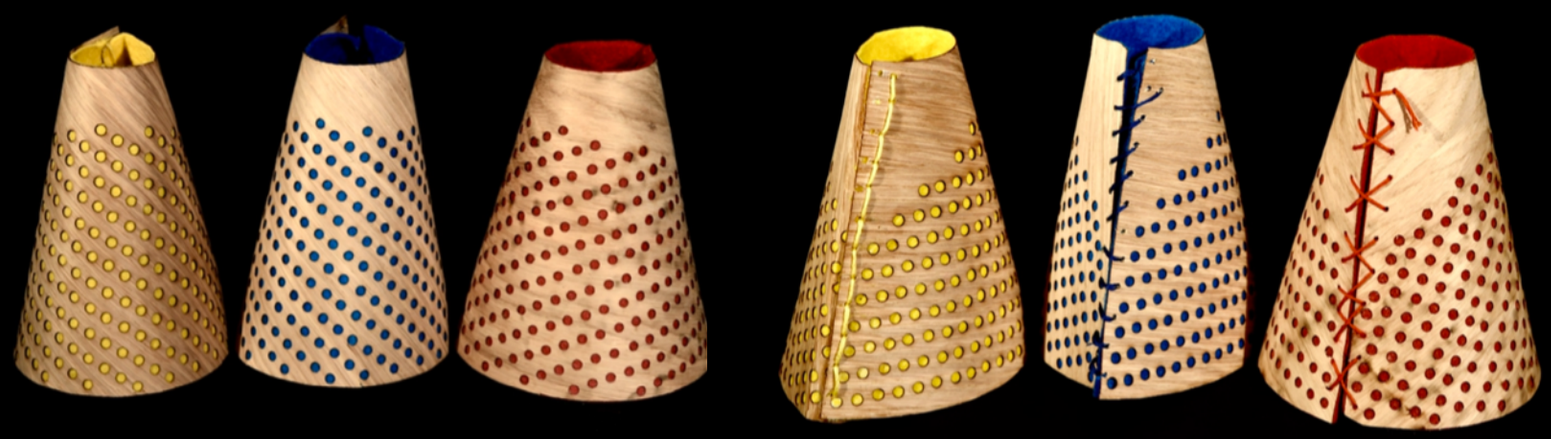
The veneer is called decoflex and it's a flexible type of veneer that is still wood its just had a paper backing put on it so that it allows the veneer to be formed more easily.

Using the material still allows me to use the laser cutter to be able to get the same result that I wanted to achieve.

With understanding off how the decoflex is going to work and that its going to be a suitable material to use for the making of my cones.

I wanted to experiment with some different shapes and patterns and also so different backing.

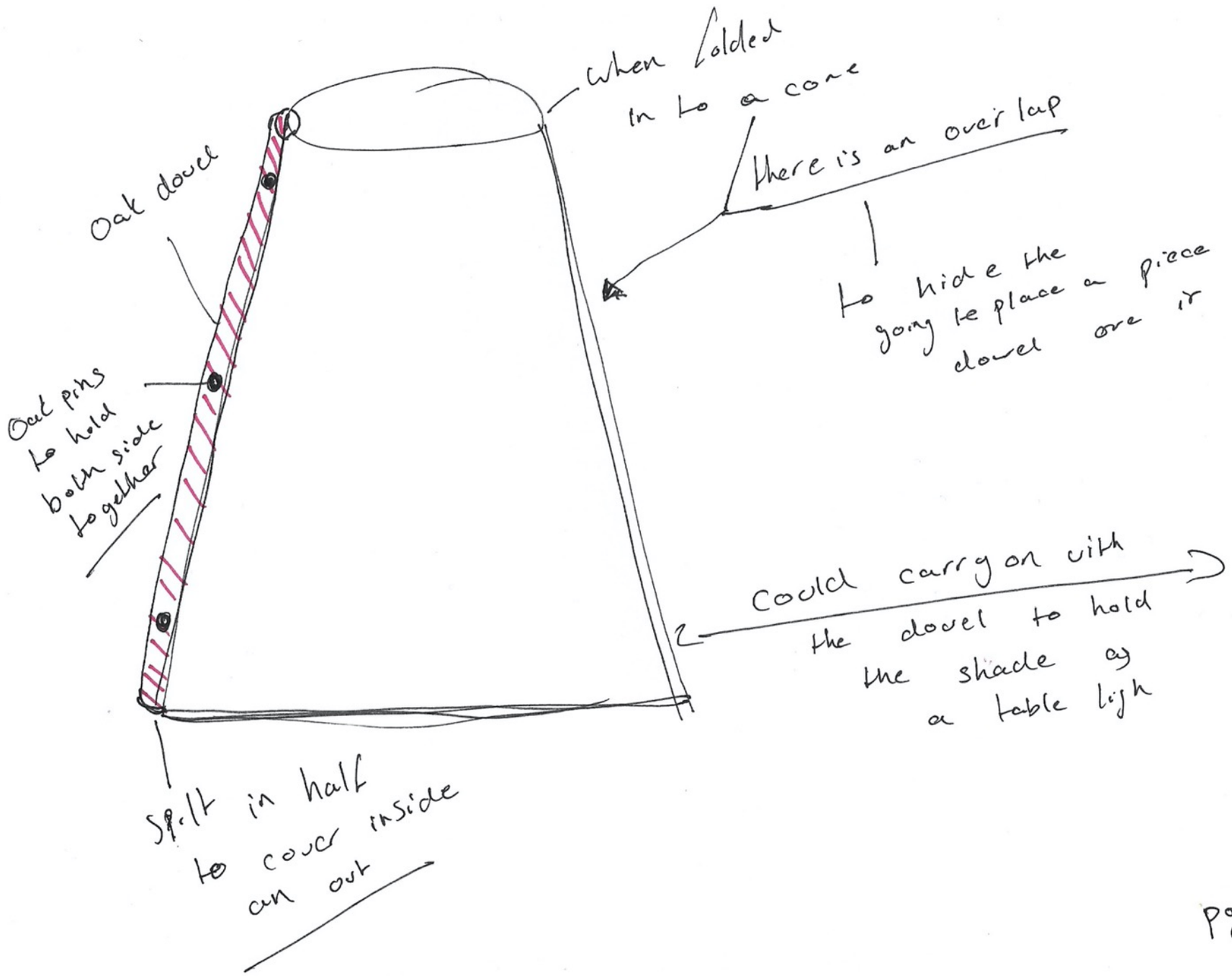


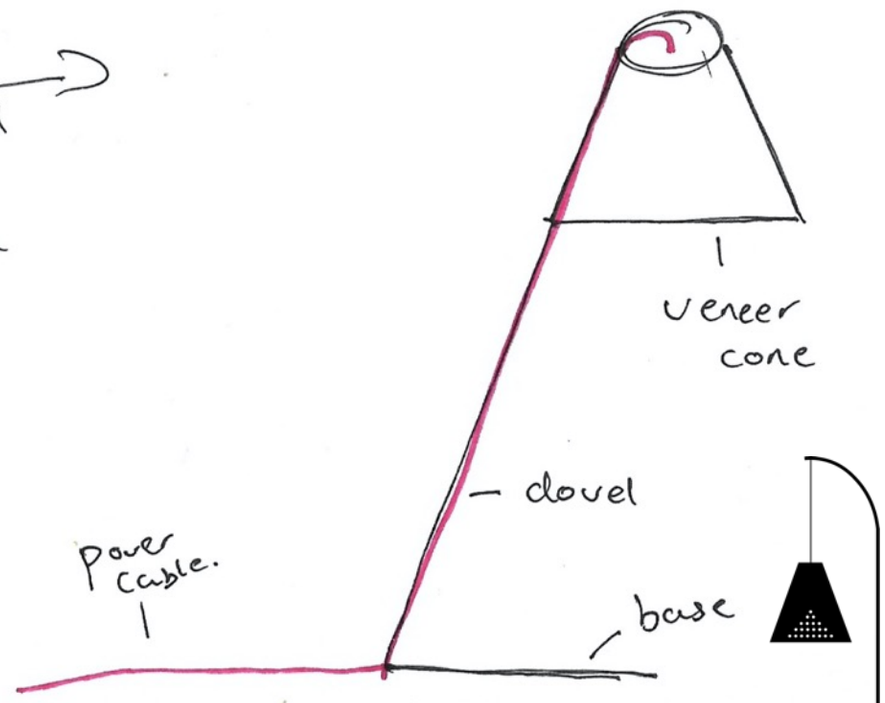


Now that I knew that the decoflex was going to work and was going to give me the desired look that I wanted to create there was one thing that didn't't look they way I intended and that was the join.

In order to form the cone I had to glue the two ends together which left a seem.

So, to cover this I placed a piece of dowel over the seem. This complemented the cones and covered the seem.


When folded in to a cone
there is an overlap
To hide the join we are going to place a piece of dowel over it
Oak dowel
Oak pins to hold both side together
Could carry on with the dowel to hold the shade as a table lig
Split in half to cover inside can out


veneer cone
dowel
Power cable.
base

Manufacturing Process - Stand

The next step was to figure out how to make the stand they the lampshades where going to be attach to and how I was going to make that. In my second year I made a steam bent angle poised light, and from that I loved the idea of carrying on some kind of steam bent design into my third year. I like the idea that we have all this accesses to this machinery yet this simple process can create thing that they cant. Even though all I intended what to form a simple bend I liked the idea of creating it with out wasting loads of material.

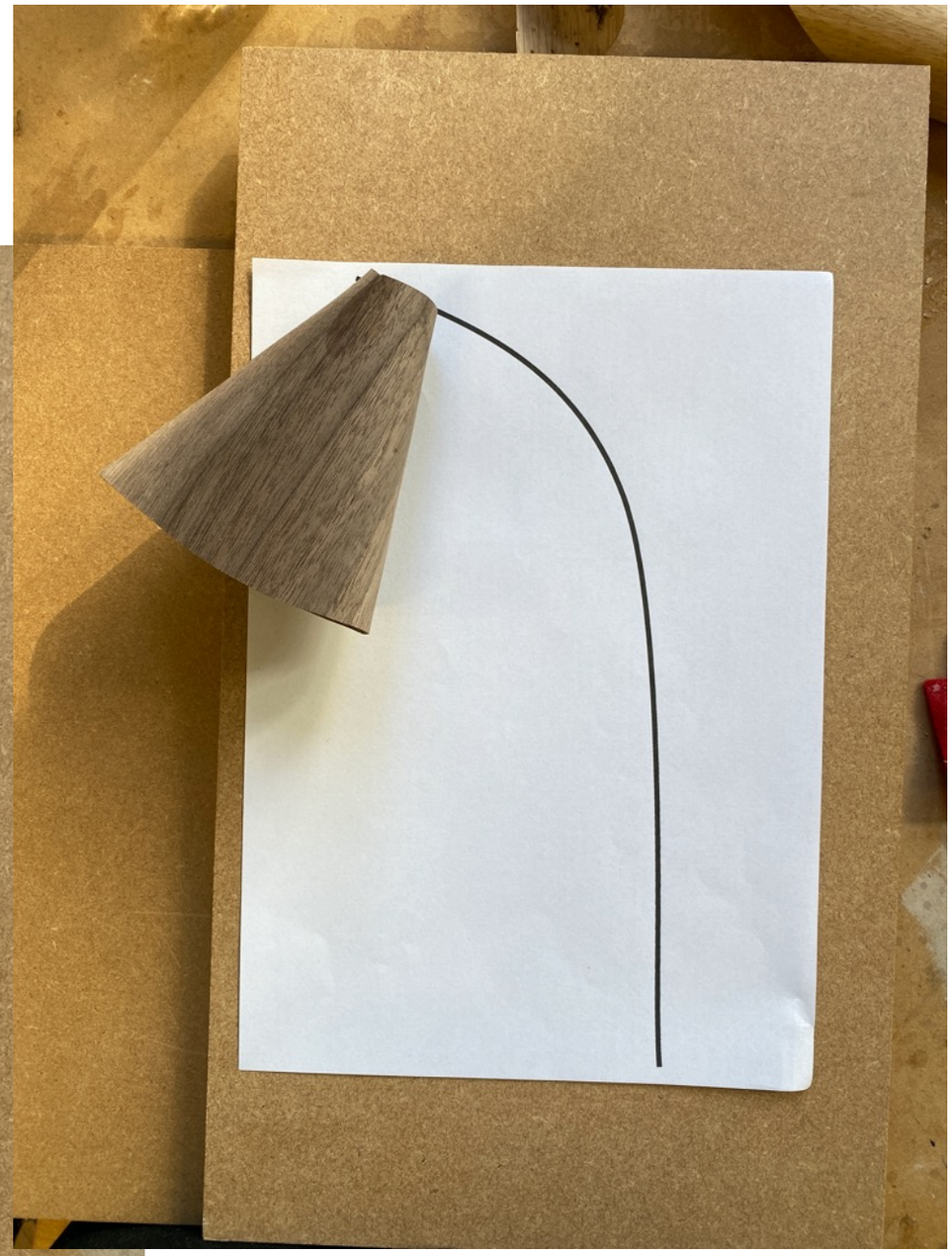
With the steam bending I knew that I wanted to produce a simple bend. With the stand I didn't't want anything complicated so that it took your attention away from the cones.

I wanted the stand to simple compliment the cones and not take your eye away from them.

To started by placing a section of Oak in the steam bending for 45 minutes and then placed into a jig until it dried. I did this to gain an understanding of how the oak works when being steam bent so, that when it came to producing a larger scale piece I had the knowledge on how the wood was going to react.

After testing the steam bending and see how the Oak was going to work. I then when on to illustrator to draw up some bends that I could potentially use for the lamp and then scale up to make the floor light.

Once I had drew them up I then printed them out and placed one off my cones on to the paper to see what they would look like.



Once I had decide on the type of bend that I wanted the stand I then used that piece of paper to make a jig.

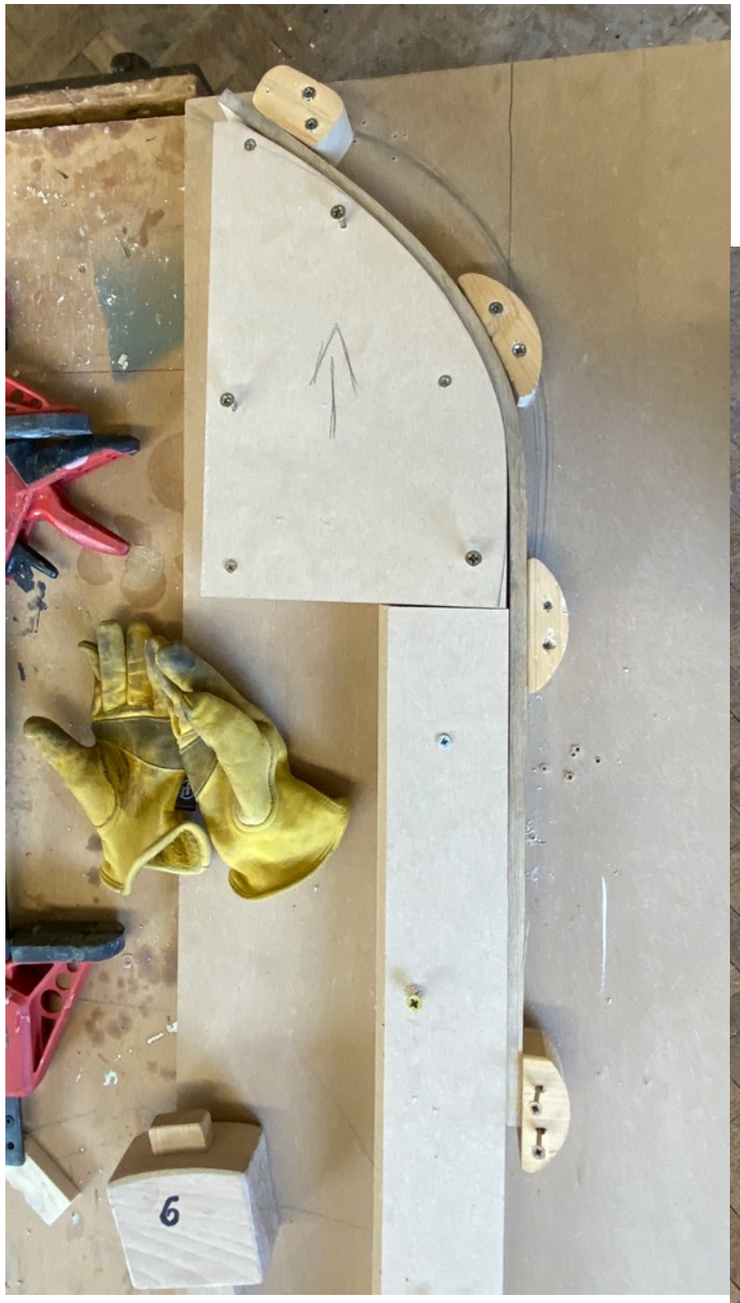
Using MDF to make the jig it allowed me to get repeatable curves. It also, allowed me to clamp the freshly steam oak into position.

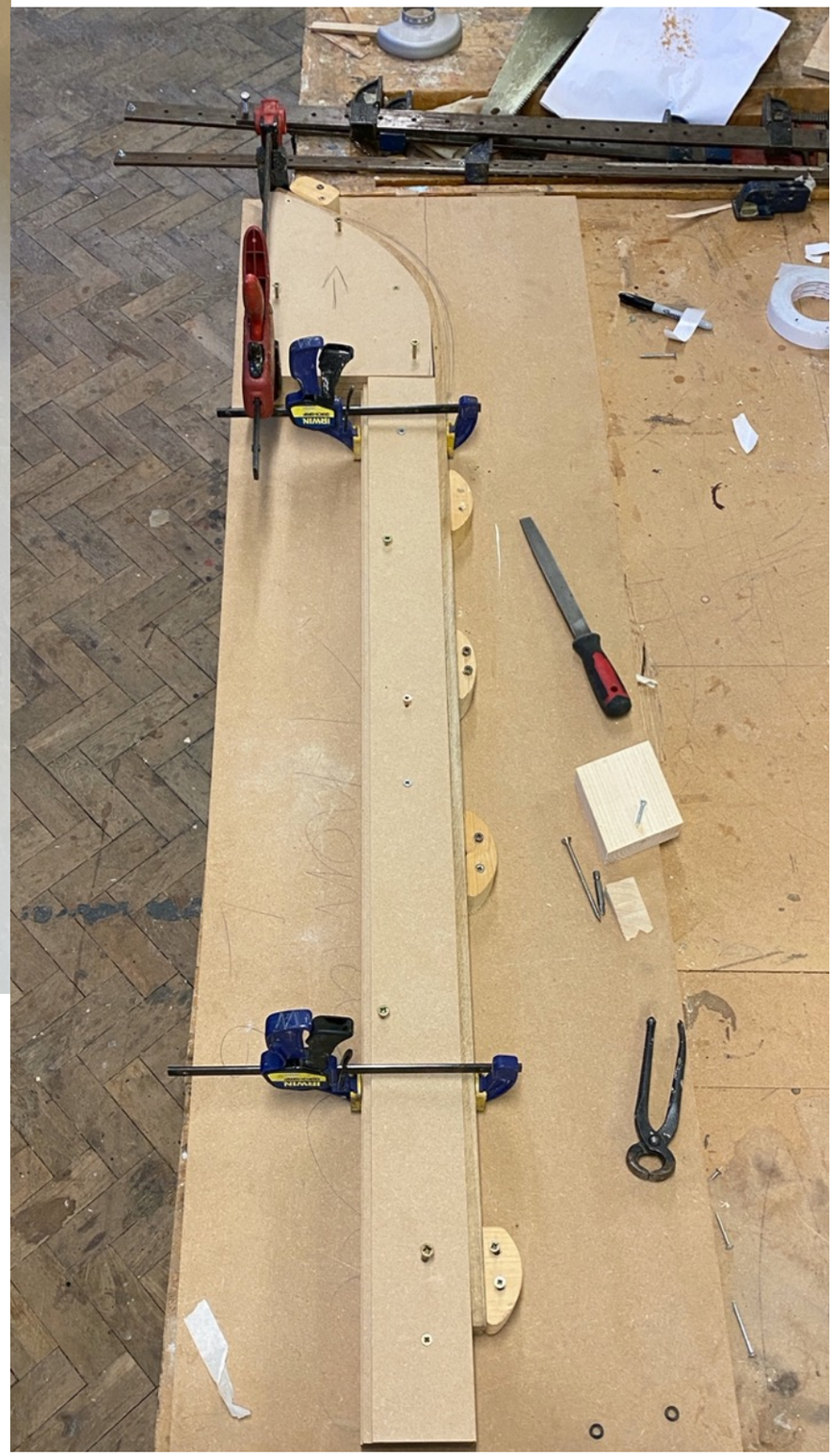
To allow the wire to run I added a grove into the back. As the piece where solid and not round this was the best way to do it.

As I was using braided cable it also added another feature the light.

After testing different thickness and width. I made the final jig that was going to use for the final floor light.

This jig allowed me to get the bend I wanted and support the wood as I bent it which stopped it from cracking and splitting as I was bending.






Laminating Jig
WURTH
ESHERS WOOD

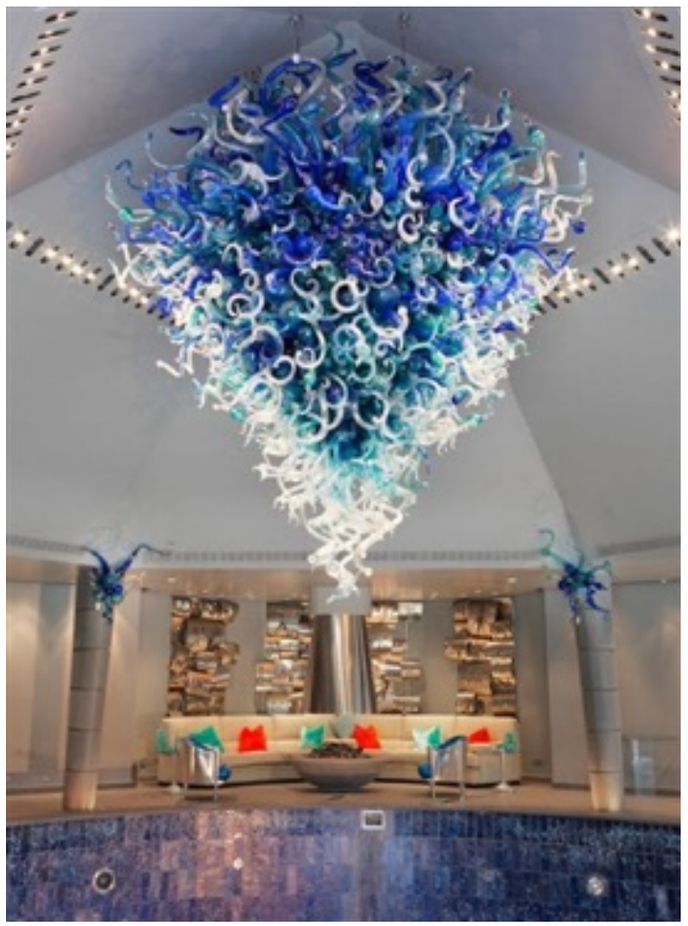
CHANDELIER

Chihuly is one off the designers that I have researched into while developing my chandelier.

When making his chandelier he uses individual sections of glass and then joins together to make a large scale piece of work.

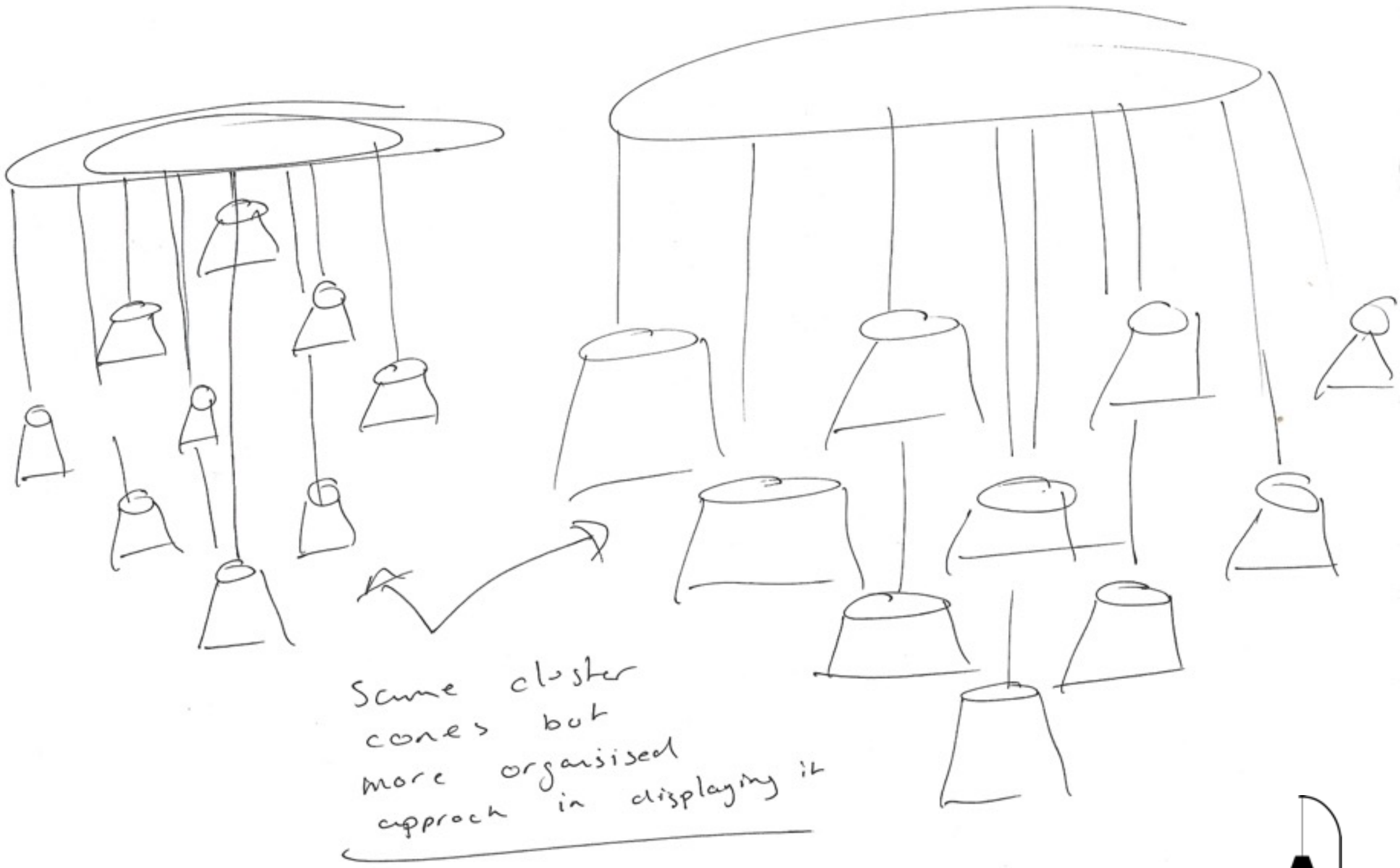
Using coloured glass to create illusion with the different shapes that he creates. His work gives a playful and out of this world feel.

http://seattlerefined.com/lifestyle/a-visit-to-chihuly-garden-and-glass



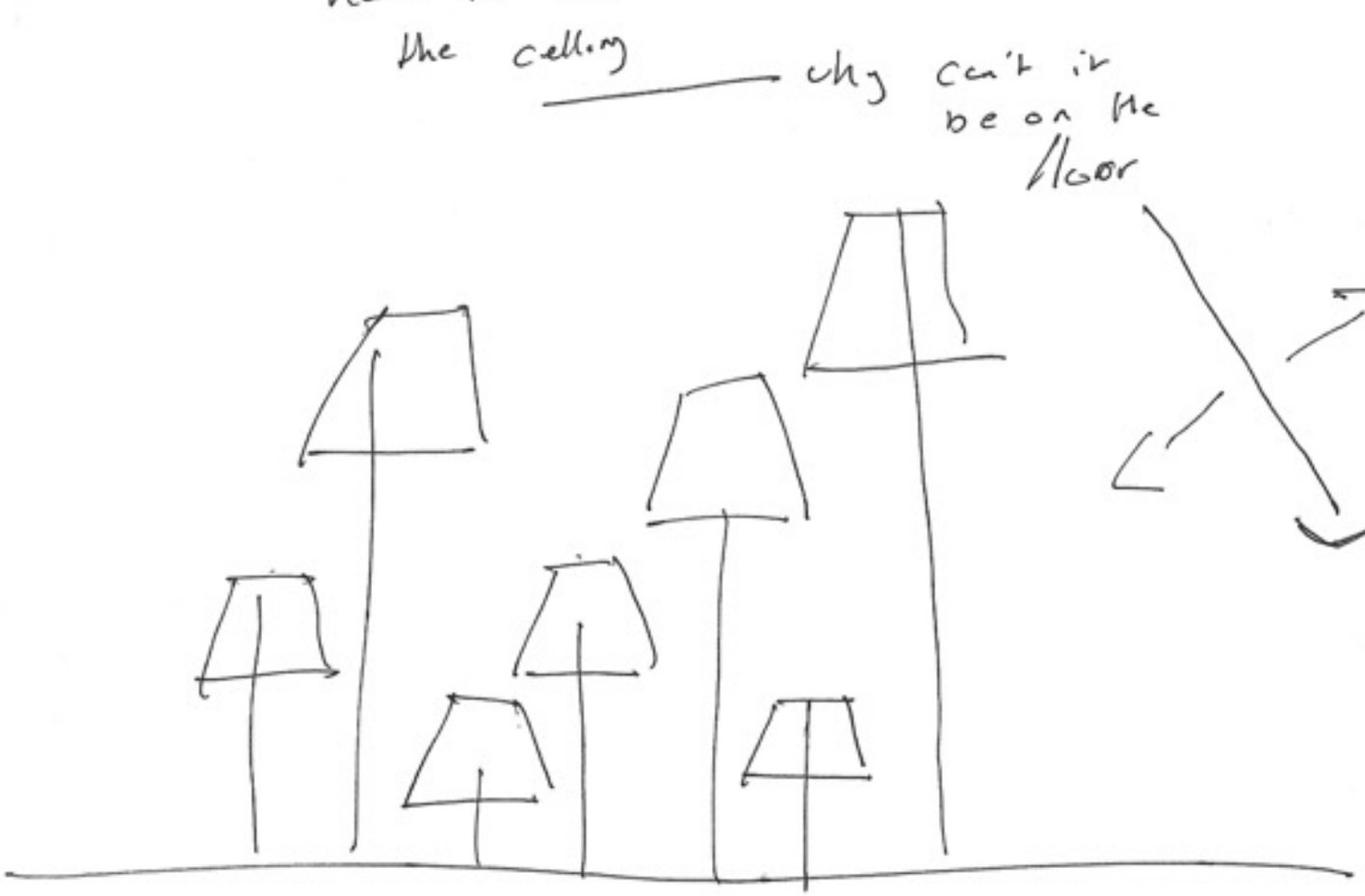
http://www.artnet.com/artists/dale-chihuly/massive-chandelier-XzibYri_DF9HcT-a1JKkEg2

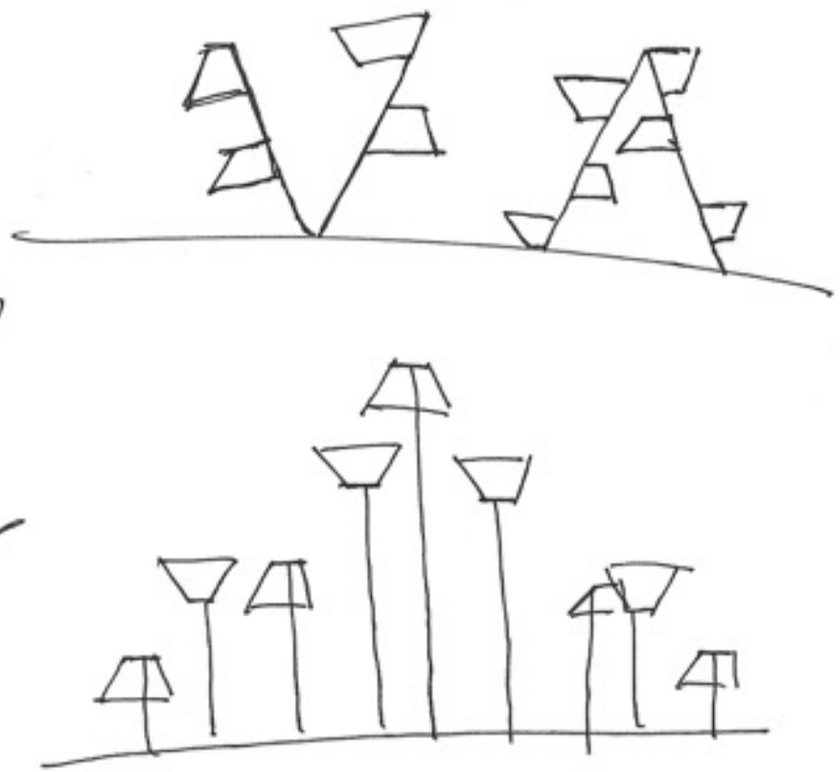
https://www.chihuly.com/work/installations

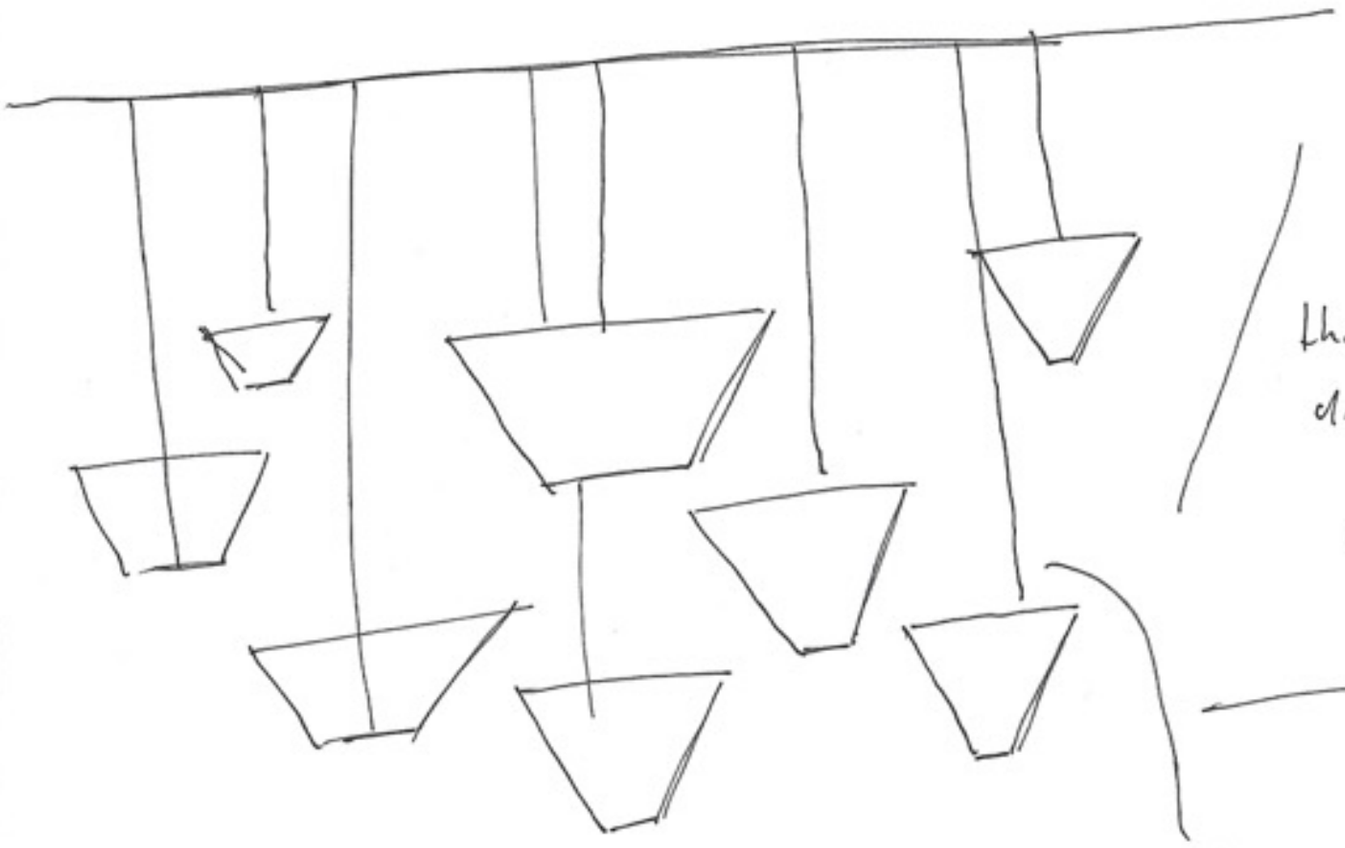

Some cluster
cones but
more organised
approach in displaying it

does a chandleir have to be on the ceiling

why can't it be on the floor





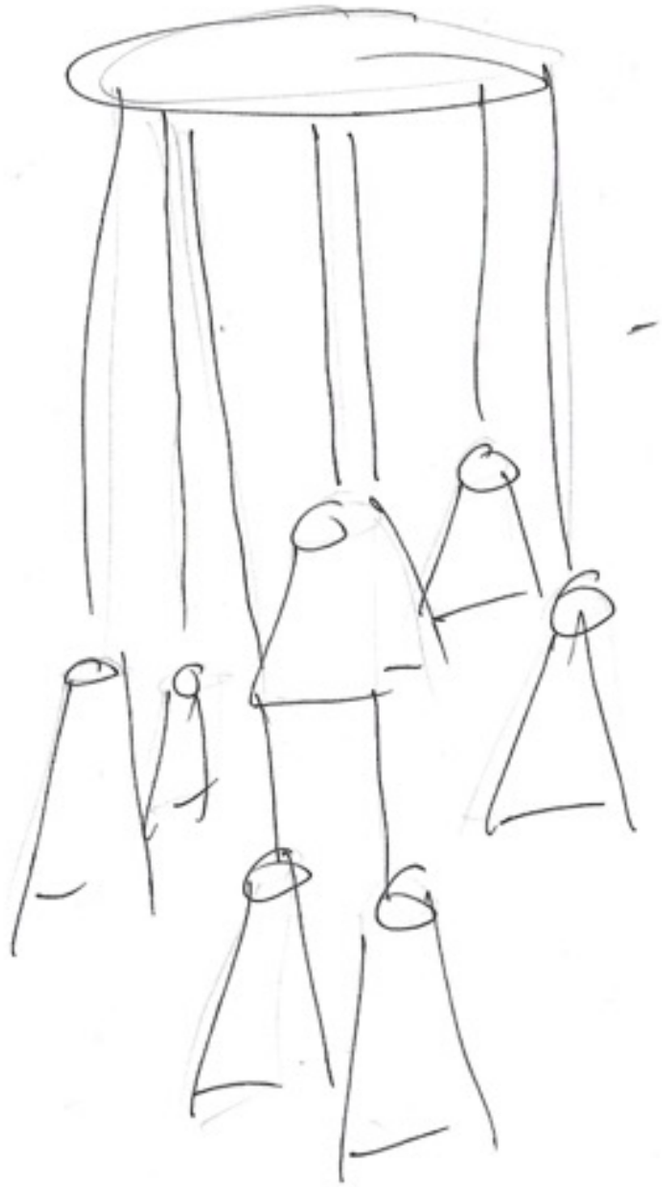


the use of different size of cones allows and restricts light.

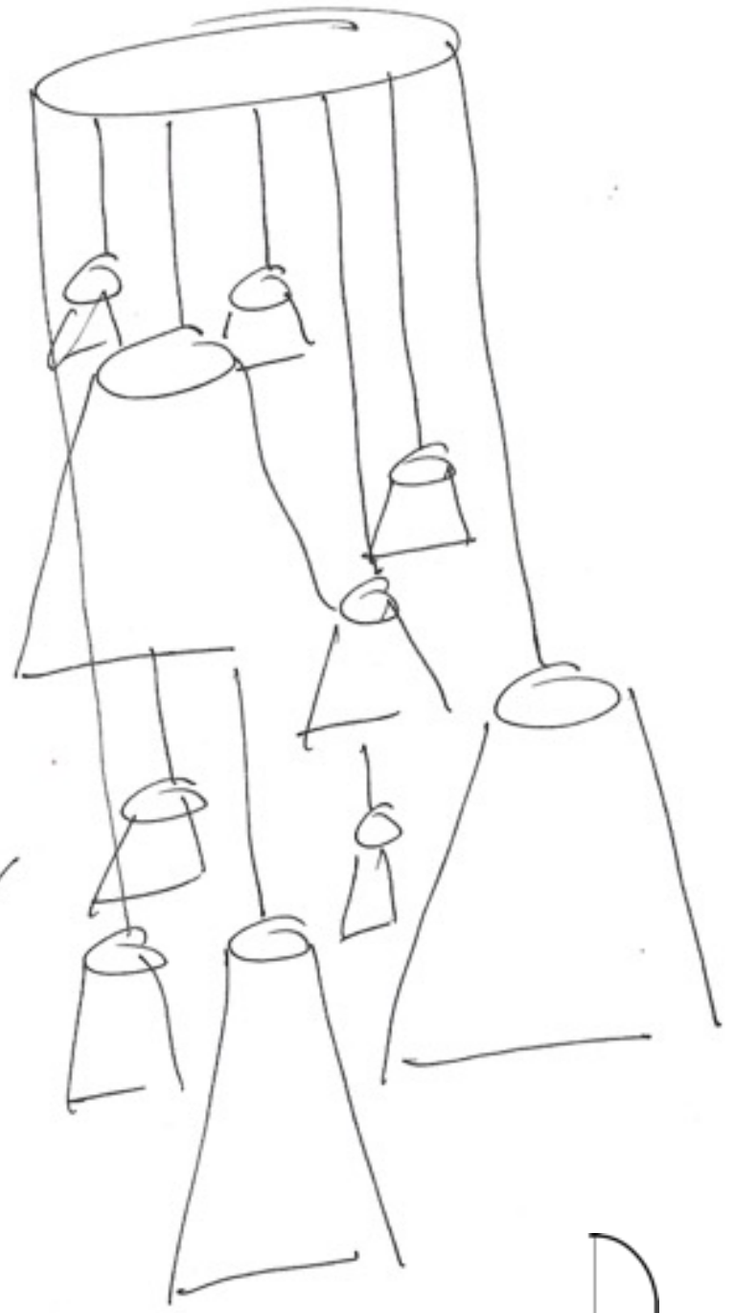
also using different materials to contrast the wooden cones

the cones can also be used as up lighting

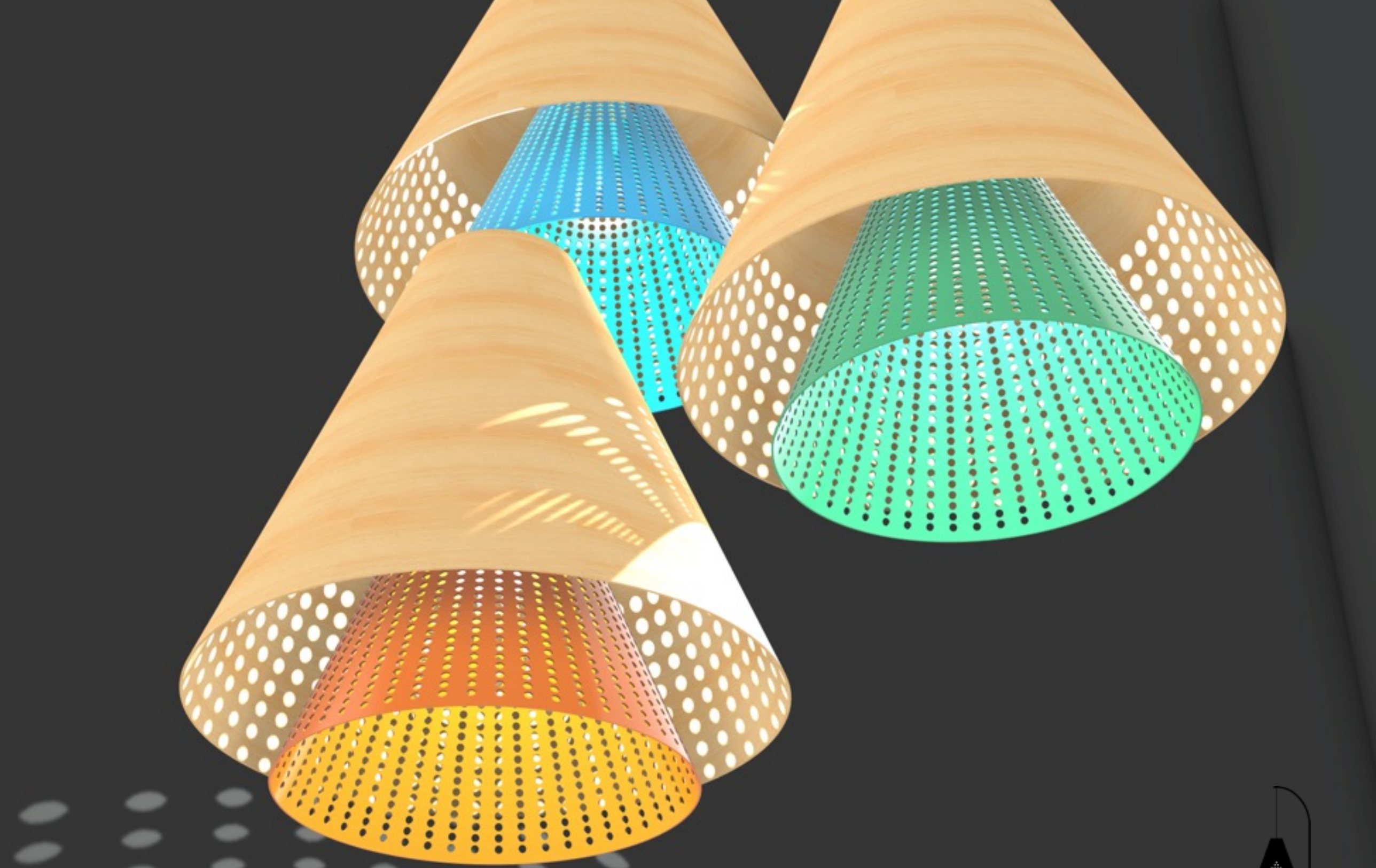
the use of tubes can hide the cabling use for the lights

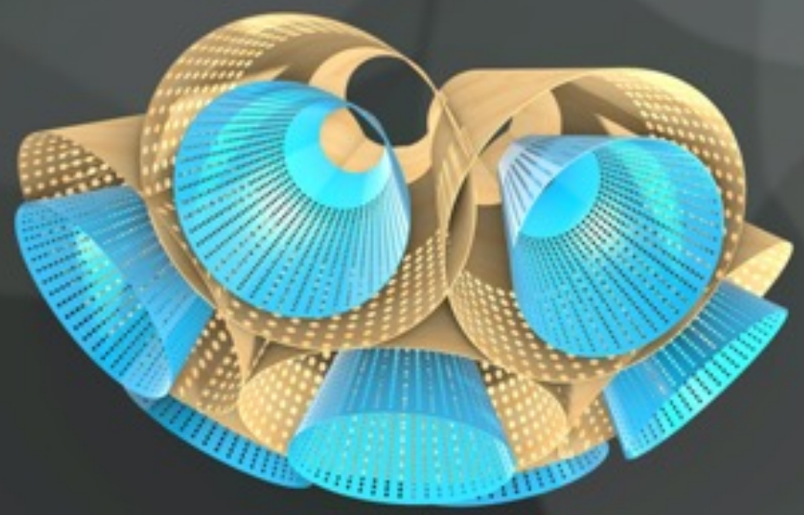


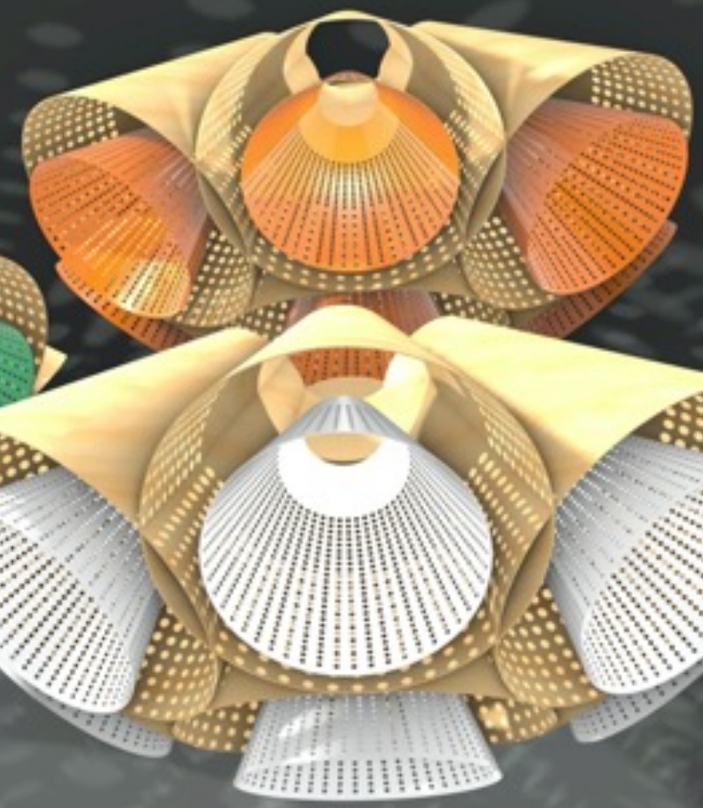
- different might of cone's creating a cluster light chandelier

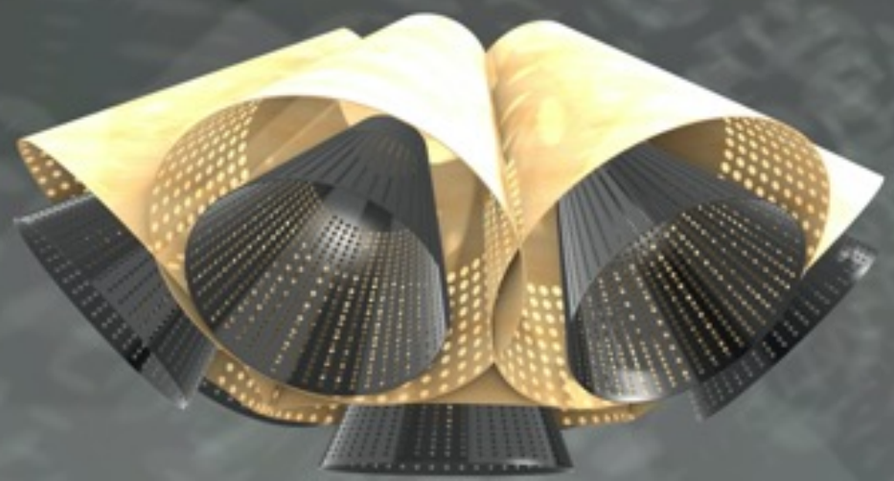


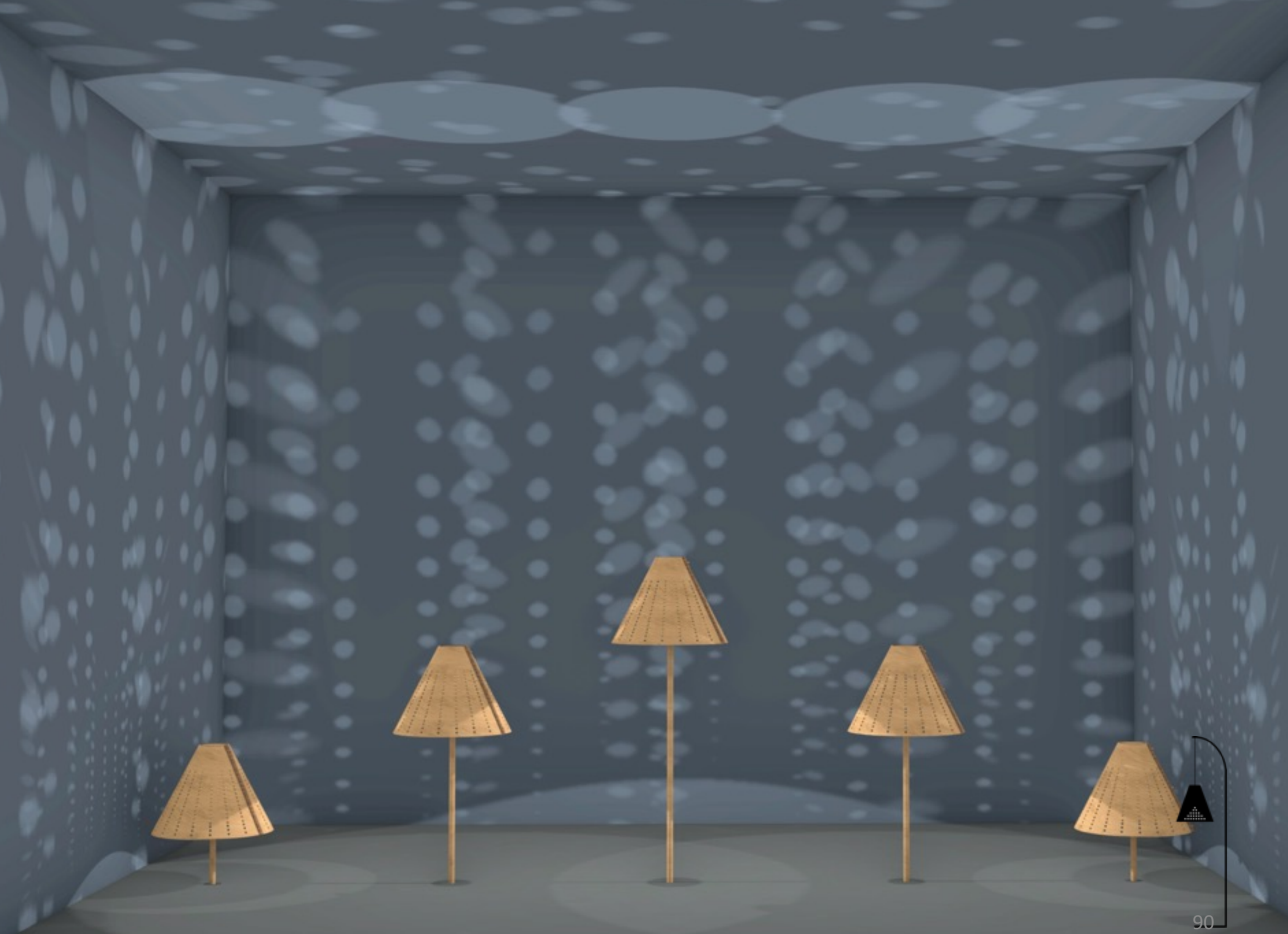
Same Cluster concept but mixture of large and small cones

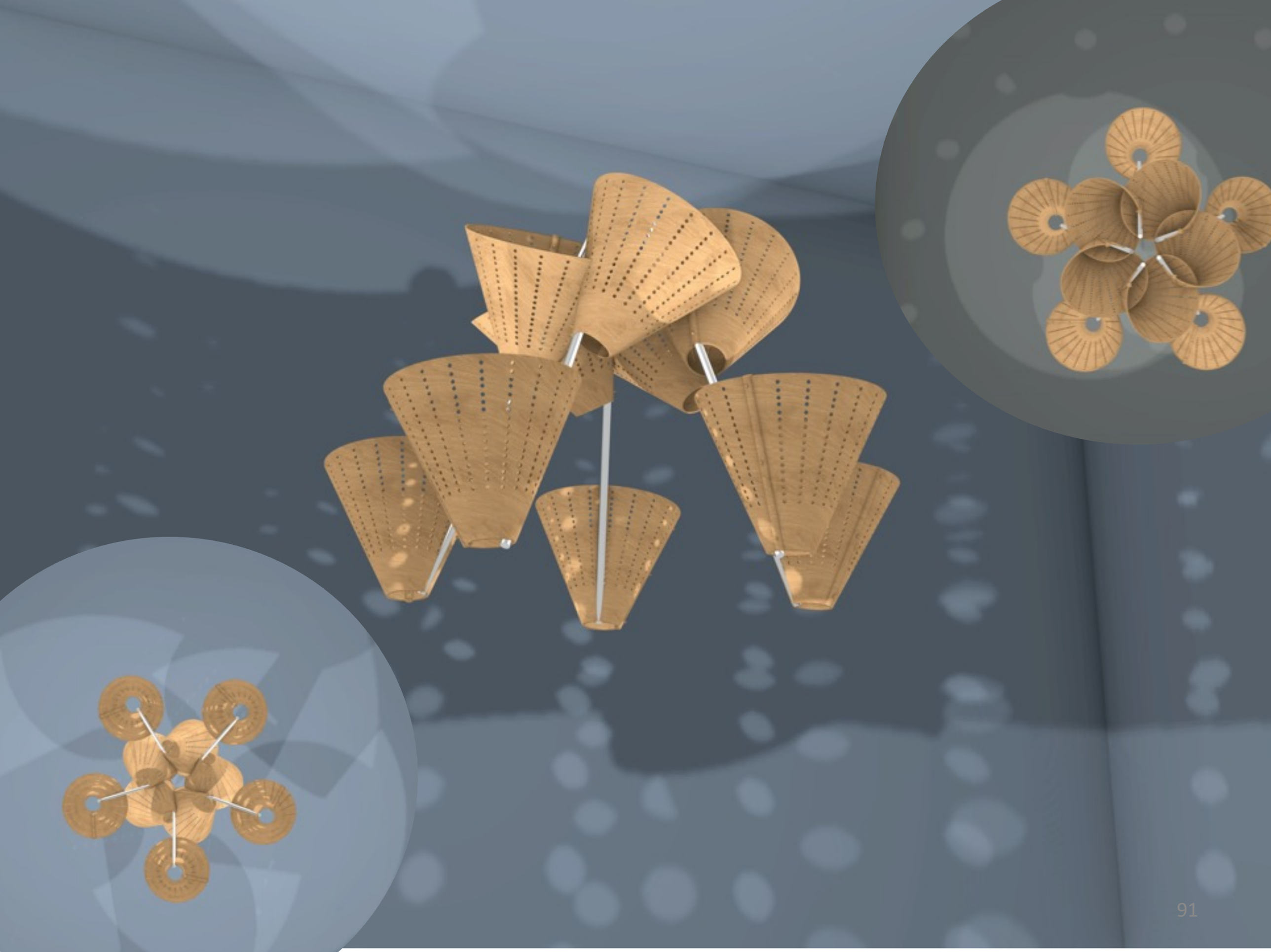


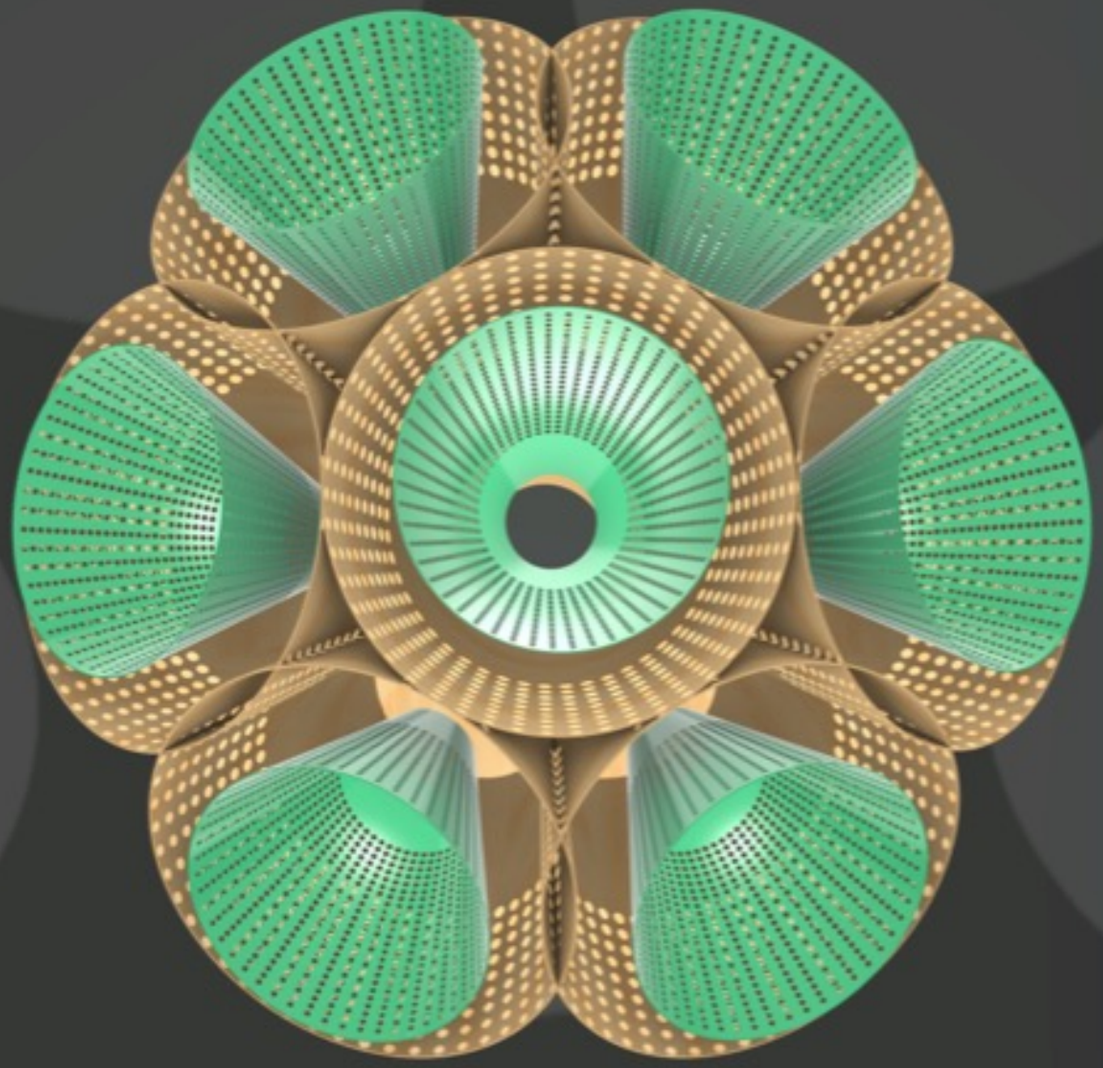


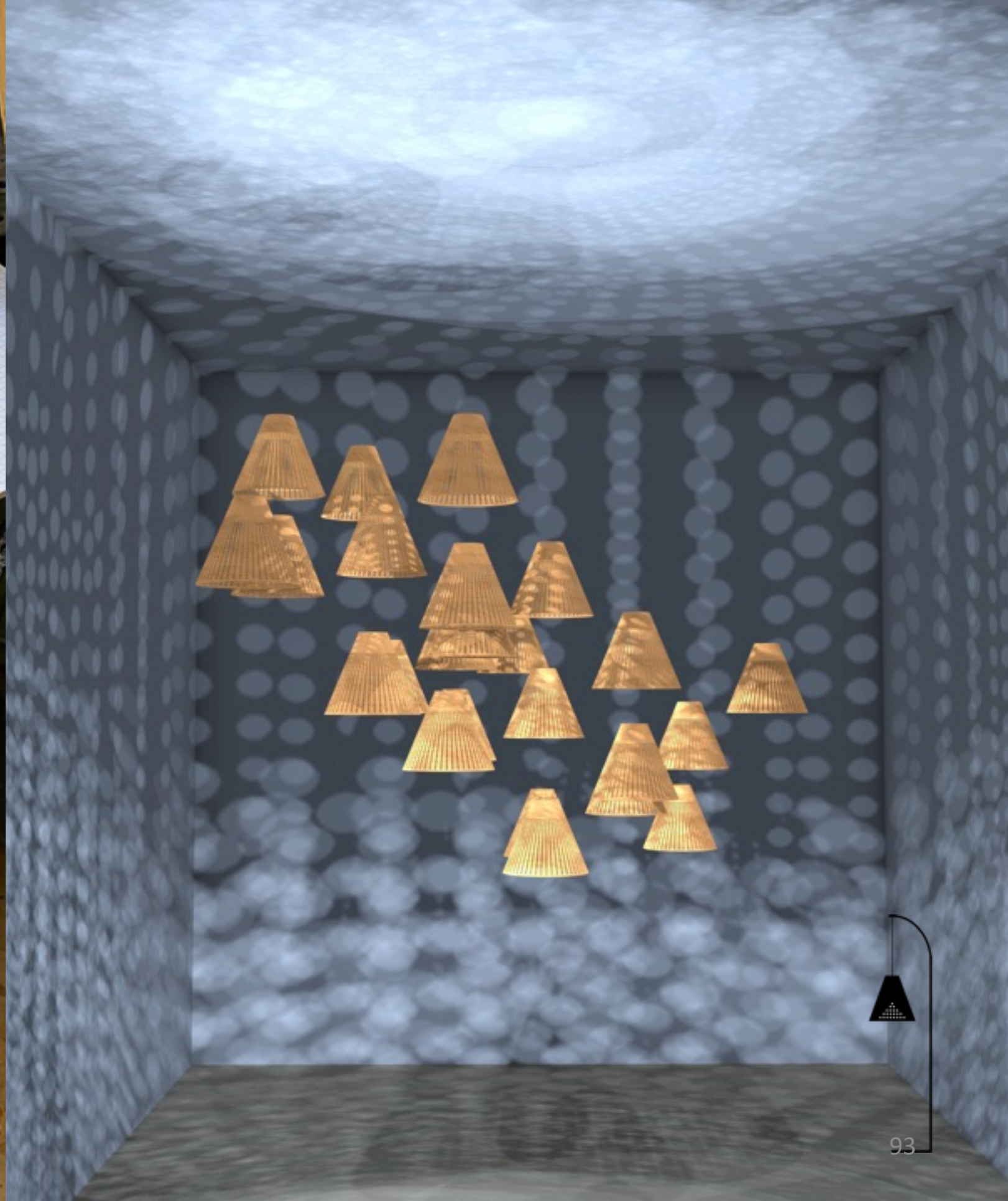








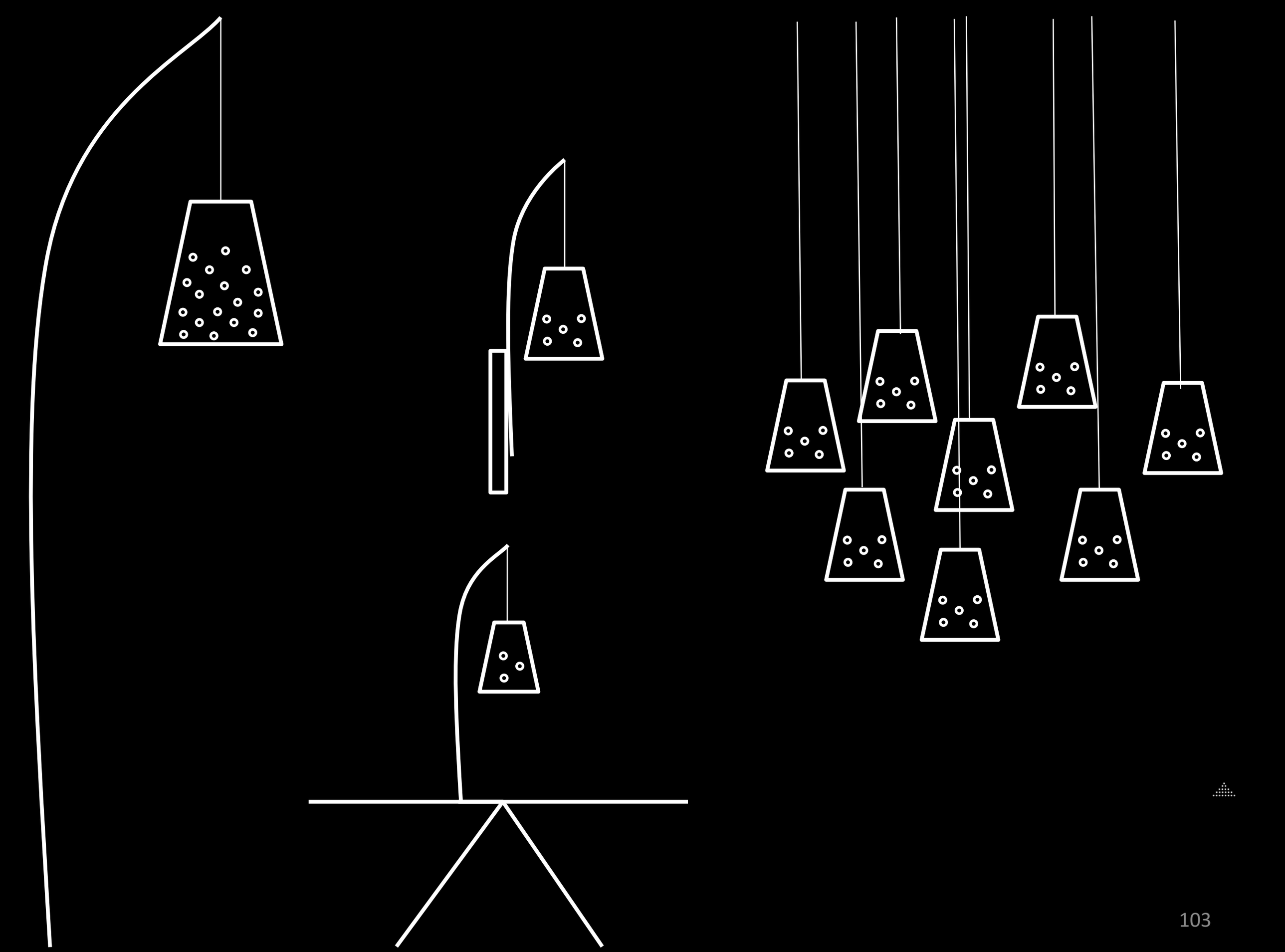




Final Design

Due to covid-19 I was unable to finish making the final chandelier. The finished product would have looked something like this.

The research of both Tom Raffield and Chihuley's work and the method of using smaller pieces to make a large scale piece of lighting, has enabled my design to come together to shows off this light in its natural form.



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- https://www.tomraffield.com all photos about Tom Raffield are from his site.
  https://davidtrubridge.com/us
- https://www.architectmagazine.com/technology/mits-neri-oxman-on-the-true-beauty-of-3d-printed-glass_o
- https://www.3dprintingmedia.network/neri-oxmans-3d-printed-glass-columns-star-lexus-yet-installation-milan-design-week
- http://seattlerefined.com/lifestyle/a-visit-to-chihuly-garden-and-glass
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