

Semester Project -02

Origami Inspired Lighting Solutions

Prof. Sandesh R.
Project Guide

Submitted by
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Approval Sheet

The Design Project II titled Origami Inspired lighting solutions by Aryan Gajwe Roll Number 206130001 is approved in partial fulfillment of the Master's Degree (Industrial Design) at the IDC School of Design, Indian Institute of Technology Bombay

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19-Jul-23 05:24:55 PM

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Project Guide

Chairperson

Internal Examiner

External Examiner

Declaration

I declare that this project report submission contains my own ideas and work, and if any pre-existing idea or work has been included, I have adequately cited and referenced the original author(s). I also declare that I have adhered to all the principles of academic honesty and integrity and have not misinterpreted, fabricated or falsified any idea/ data/ fact source in my submission. I understand that any violation of the above will be cause for disciplinary action by the institute and can also evoke penal action from the sources.

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Abstract

Home decor and lighting is one of the booming industry in recent times. With every developing technology and sustainable light fixtures , space illumination has been explored to great extend. On other hand , Origami is one of the ancient craft that is still being practiced and is an integral part of cognitive development. This project involves intense exploration of origami as functional craft. This project focuses on exploring the origami forms and principles to design lighting solutions .

Acknowledgement

This endeavor would have not been possible without the support of my family, friends & peers. I would like to thank my mentor Prof. Sandesh R. to guide me throughout the project.

I would also like extend my gratitude to Prof. BK. Chakkravarthy to inspire me at times and my dear friend Amit Kumar, Aditya Parekh and Snehadeep singh Pabla to help me with technical issues.

I would also like to mention my friend Shivani Mule, T. Sumit Singha, Malhar Piwalkar and Pranay Gurumukhi to keep me motivated.

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Chapter 01:

Introduction

What is Origami?

Origami is a Japanese art of paper folding. Everyone thinks it originated from Japan, but it is not the entire truth. Creatives from several countries helped shape origami into the practice it is today.

Around 105 AD marks the invention of paper in China; folded paper, or zhezhi, most likely developed soon after. Paper yuanbao, often known as gold nuggets, were a common sight at traditional Chinese funerals by the year 900.

These transitory ornaments were made with the goal of being burned after the event and were made by painstakingly folding gold or yellow paper into ingot coins.



Fig 1: Chinese funeral Nugget

Paper was introduced to Japan in the 6th century. During this time, the practice of paper folding emerged as a ceremonial Shinto ritual.

It was not until Japan's Edo Period (1603 – 1868) that origami would also be viewed as a leisurely activity and art form.

Similar to Japanese woodblock prints, which were also very popular at this time, origami frequently depicted floral, avian, and other naturalistic themes. These themes are also evident in modern origami, which, with one exception, is identical to the traditional Japanese art form in that it originally let artists to strategically cut the paper. True origami is now totally moulded by folds, a technique the Japanese borrowed from Europe.

In Europe, napkin folding, which became common in the 17th century, is said to have evolved into paper folding. Similar to Japanese origami, napkin folding employed a variety of procedures and strategies to produce a wide range of figurative and abstract forms.

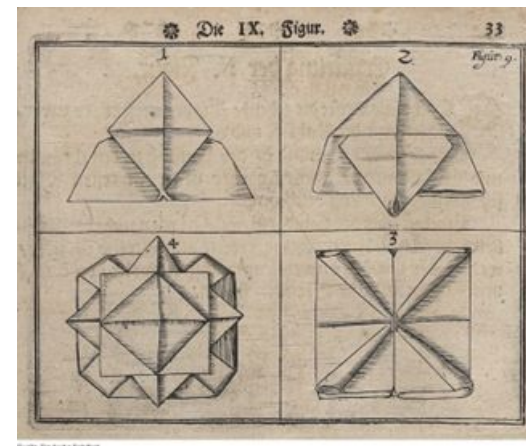


Fig 2: Europe Napkin Folding

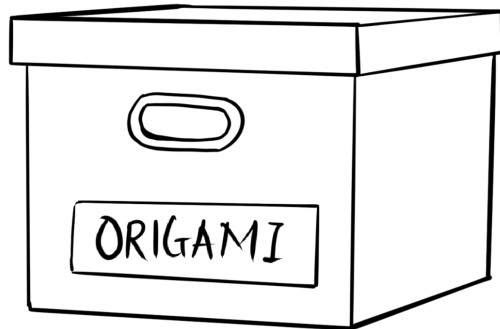


Fig 3: Japanese Origami

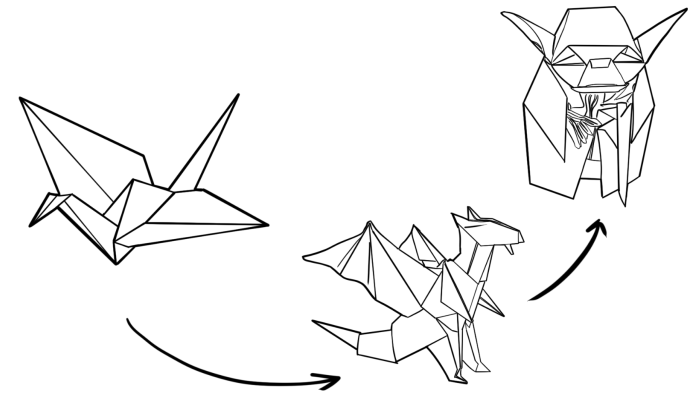
Why to Design in Origami?



Ever since my childhood I have always been fascinated by the art of origami.



But everything that I did ended up in a box full of paper and origami models.



I started with a crane, folded a basic dragon and then progressed toward more complex origami.



During pandemic, I rediscovered that box of origami and my interest for it.

Me rediscovering my interest for origami and then trying new techniques, making tessellations and many more was one of the reason that drove me in taking origami as an exploration topic for my project.

Design Approach

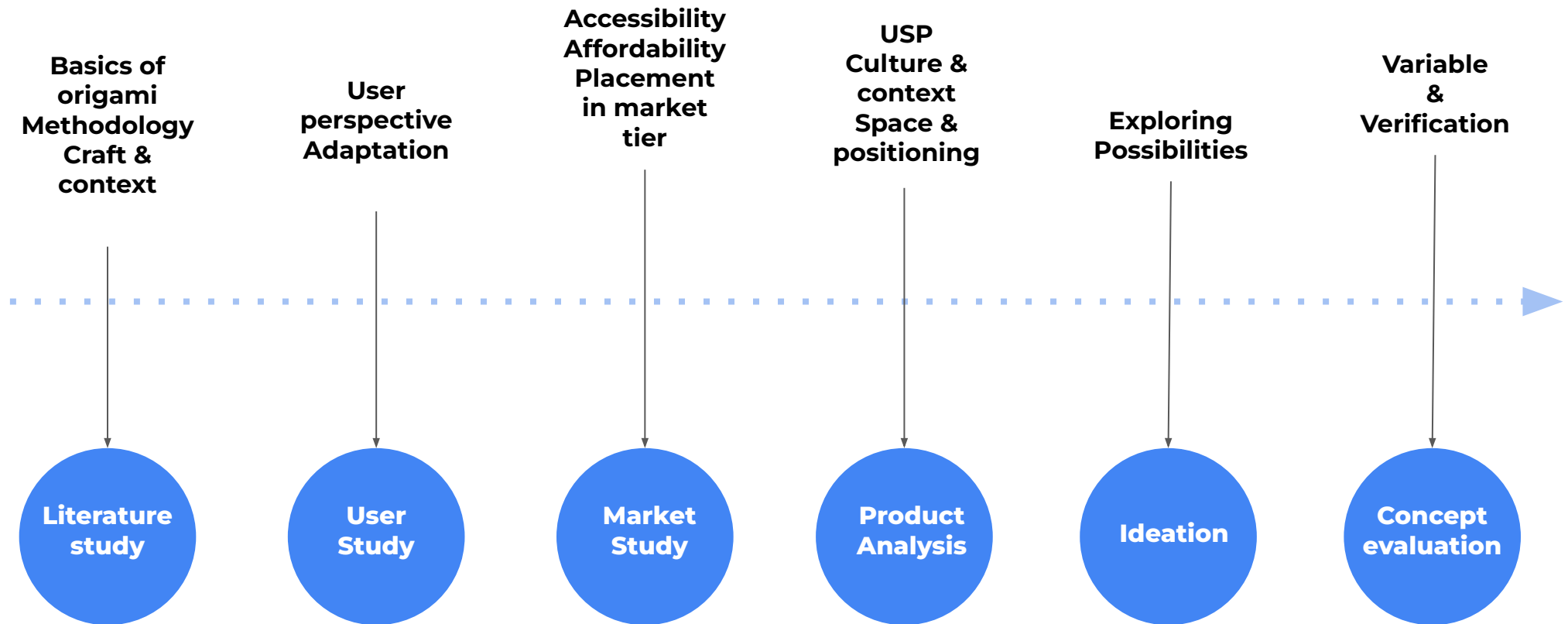


Fig 5: Design Approach

Chapter 02:

Literature Study

Origami Techniques

1. Basic Operations

Arrows indicate how origami paper is bent or manipulated, while lines depict different types of edges. Lines and arrows are the two main forms of origami symbols.

The paper's edge is marked by a thick line.

Valley fold is indicated by a dashed line. The paper is folded so that it faces front.

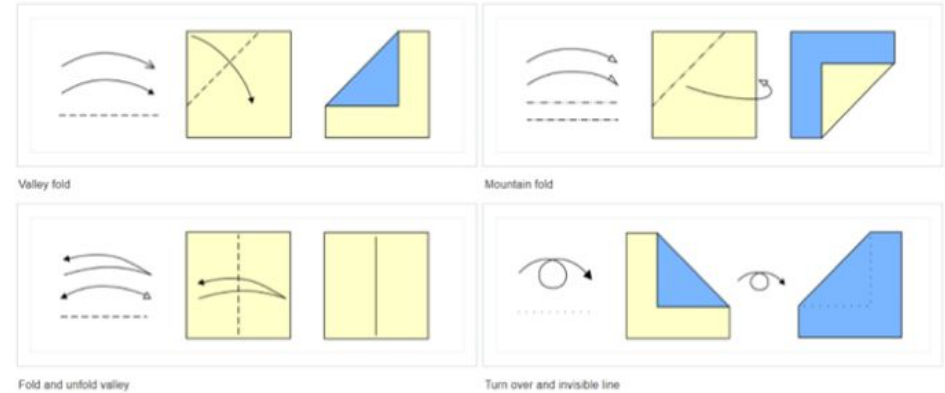


Fig 6: Basic Operations

2. Common Operations

All of the operations presented here are very typical. The two creases are frequently made at an angle for the reverse folds and pleat folds. Usually, feet or the heads of birds are created by folding a corner back on itself.

The sink fold is regarded as a middle to high skill move. The version displayed here is known as an "open sink," and another version known as a "closed sink" creates a triangular pocket with no flaps visible. The model can be folded with the sink in place after being partially unfolded in straightforward situations.

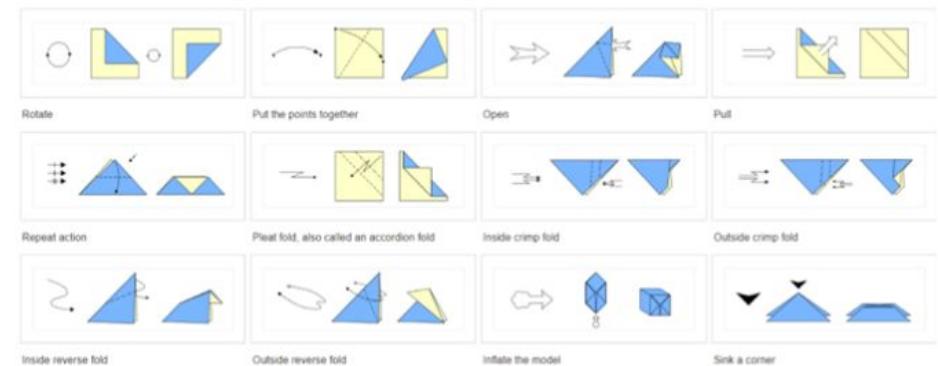


Fig 7: Common Operations

Origami Techniques

3. Compound Operations

A flap with at least two layers is required to begin a squash fold, and a reference crease running diagonally is required to begin a rabbit ear fold. Two flaps that are joined and have at least two layers each serve as the foundation of a petal fold. These are example of Compound operations in origami.

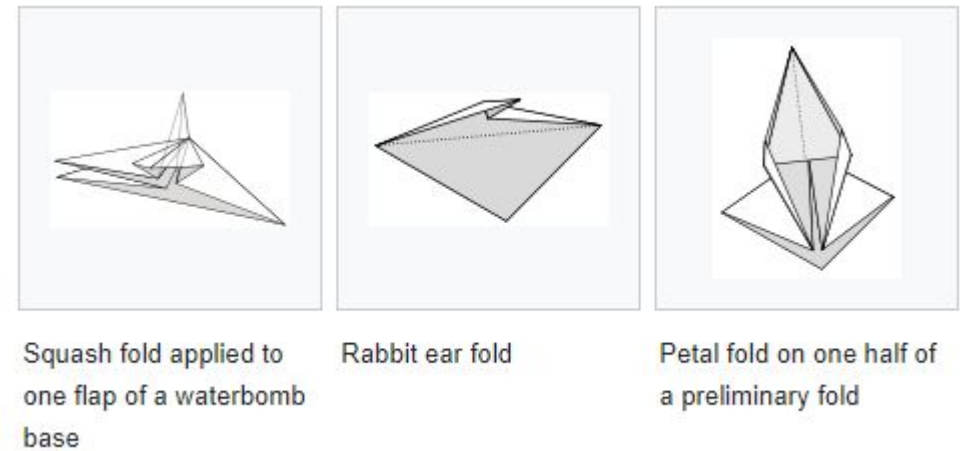


Fig 8: Compound Operations

4. Origami Bases

In origami, a variety of bases are used to build numerous models. Any folded paper that comes before the final folding and shaping of the model-to-be is referred to as the "base" in general.

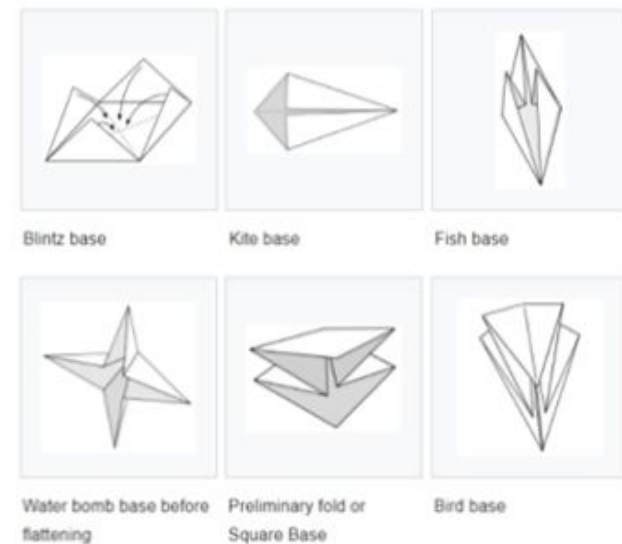
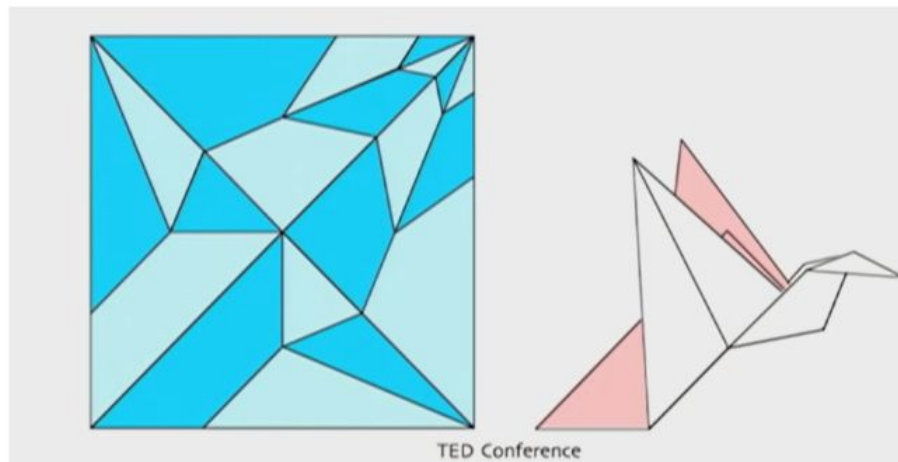


Fig 9: Origami Bases

Basic Origami Laws

2-Colorability

You can color any crease pattern with just two colors without ever having the same color meeting.



Alternate angle around a vertex sums to a straight line

If you look at the angles around the fold, you find that if you number the angles in a circle, all the even-numbered angles add up to a straight line, all the odd numbered angles add up to a straight line.

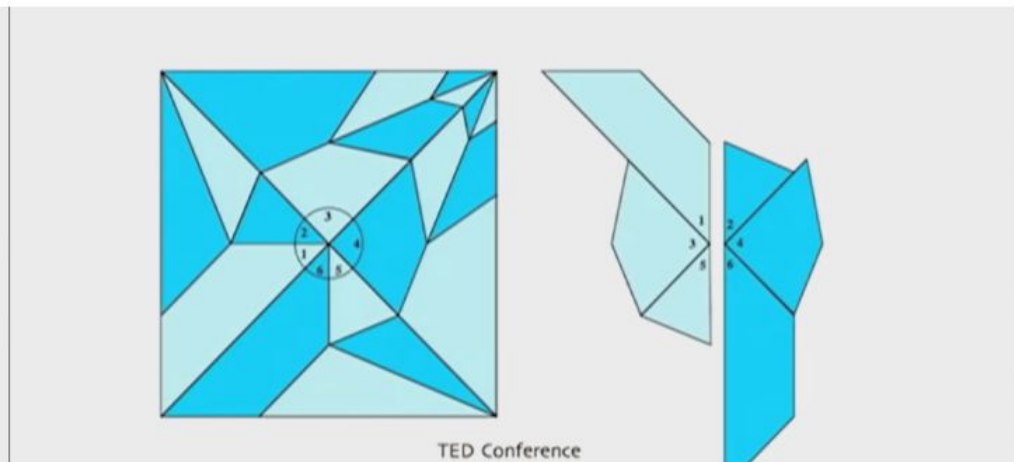


Fig 10(a): Basic Origami Laws

Source: <https://thesciencesurvey.com/spotlight/2022/02/05/a-mathematicians-origami-robert-i-lang/>

Basic Origami Laws

At any interior vertex, $M - V = \pm 2$

The directions of the fold at any vertex, the no. of mountain folds, the no. of valley folds always differs by 2. Two more or Two less

$$M - V = \pm 2$$

No self intersection at overlaps

If you look at the at how the layers stack, you'll find that no matter how you stack folds and sheets, a sheet can never penetrate a fold.

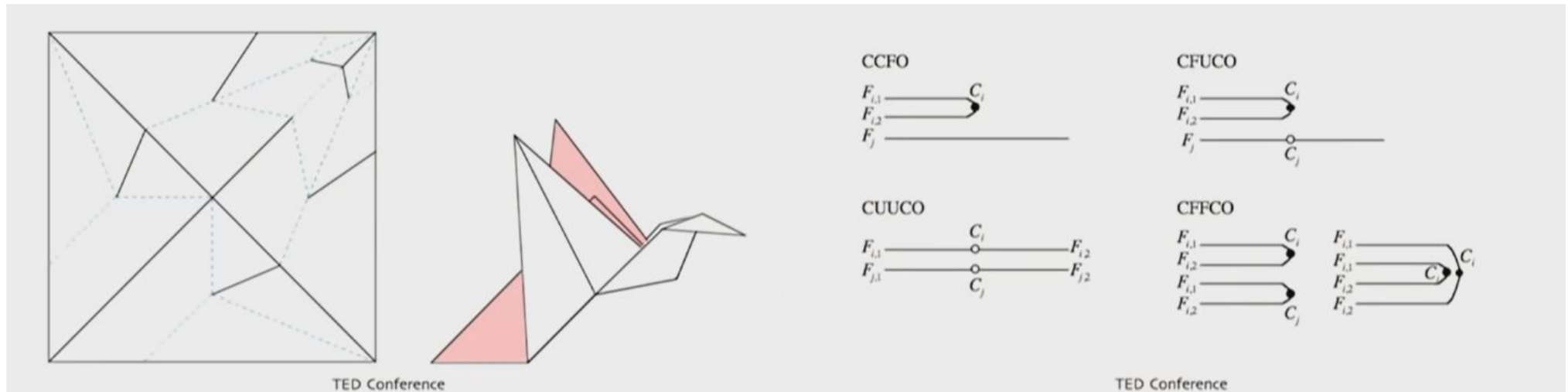
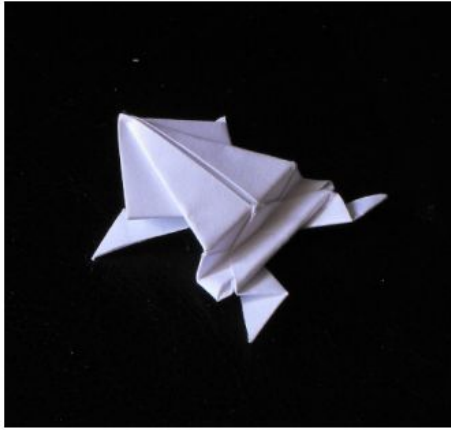
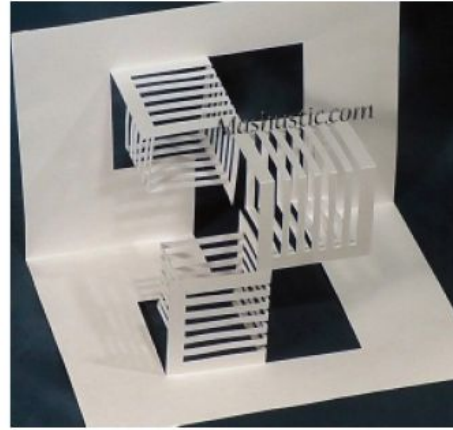


Fig 10(b): Basic Origami Laws

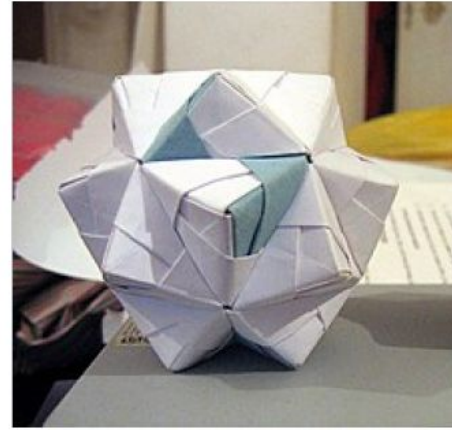
Types of origami



Action Origami



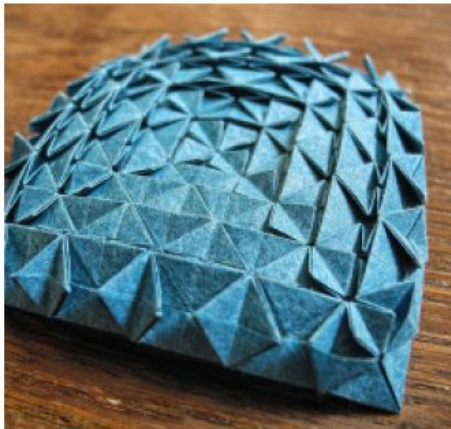
Kirigami



Modular Origami



Pureland Origami



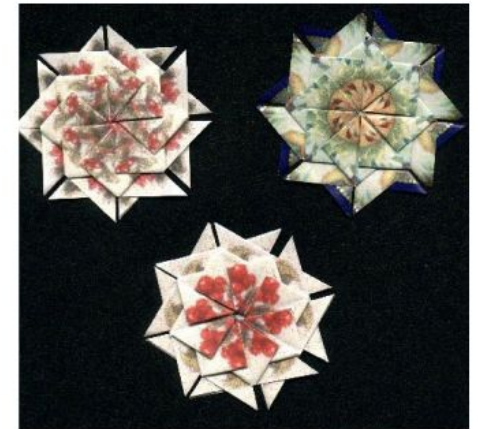
Origami Tessellations



Strip Folds



Wet Folds



Teabag Folding

Fig 10(a): Basic Origami Laws

Origami & World



Although the centuries-old Japanese technique of paper folding, origami, may seem like an unexpected source of inspiration for scientists and engineers, it is the driving force behind numerous new inventions.

This is due to the fact that the delicate beauty of origami is derived from strong mathematical concepts that apply equally well to the worlds of metal and plastic as they do to paper.

Origami & Art Installations

These enormous and absurdly large origami projects have taken days and weeks to complete. These enormous works, which range from amazing big swans to bulls, dragons, and even a paper boat (you just have to get one of those), were inspired by traditional origami designs and magnified to enormous sizes for your viewing enjoyment.

Wherever they are, these powerful "models" are the centre of attention. Some of these excessive outdoor decorations are not only beautiful to look at, but they also have some extremely useful functions. For instance, the enormous comb in Virginia, USA, doubles as a bike rack.



Origami & Education

Origami even has applications in the modern-day classroom for teaching geometry, thinking skills, fractions, problem solving, and fun science.

Why is origami good for kids?

- eye hand coordination,
- sequencing skills,
- maths reasoning,
- spatial skills,
- memory, but also patience and attention skills
- Origami allows you to develop fine motor skills and
- mental concentration.

How Origami is good for Maths?

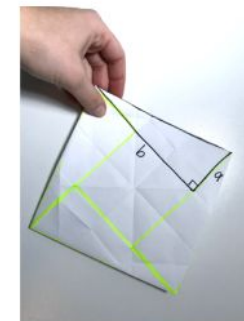
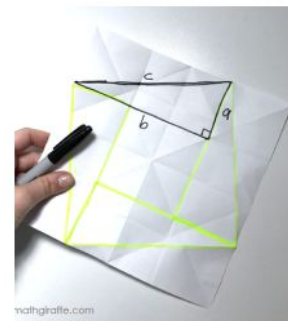
- Symmetry (the majority of origami patterns require symmetrical work)
- Measurement, Fractions & Proportions (are you making a fold $\frac{2}{3}$ of the way up? or half way)
- Geometry (are you folding into a triangle or a square)
- 3D Comprehension
- Sequencing
- Problem Solving



Photo by Skyler Taube for Virginia Tech

Origami and Mathematics

Proving Pythagorean theorem with origami



The figure shows how we can solve pythagorean theorem with basic fold used in origami.

Origami & Furniture

In origami, the seating or construction of a piece of furniture can be studied, and the volume can then be chosen and altered as necessary. We have the chance to include components of origami, allowing us to position it on a variety of knock-down, space-saving, stand-alone, statement, transformable, and DIY furniture.

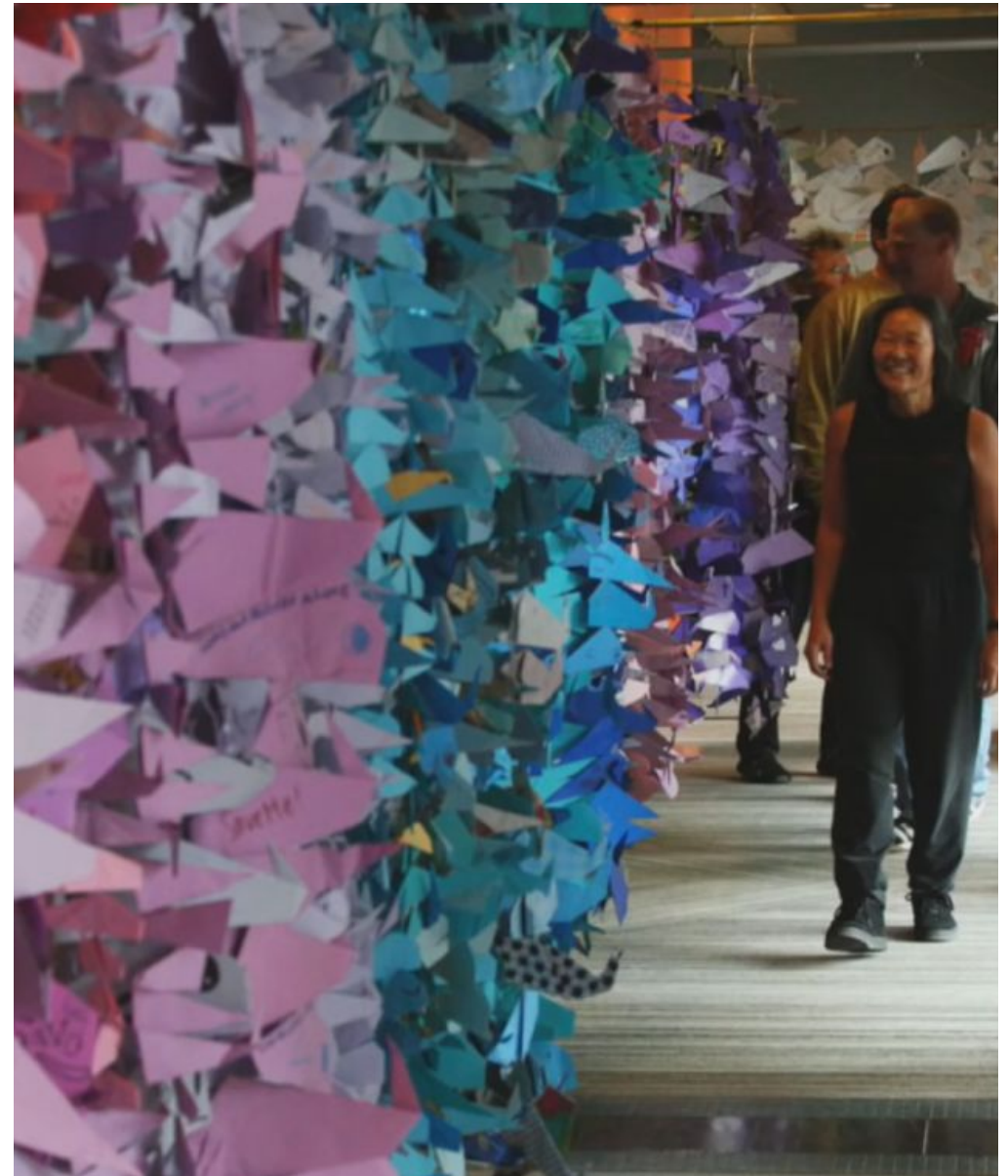
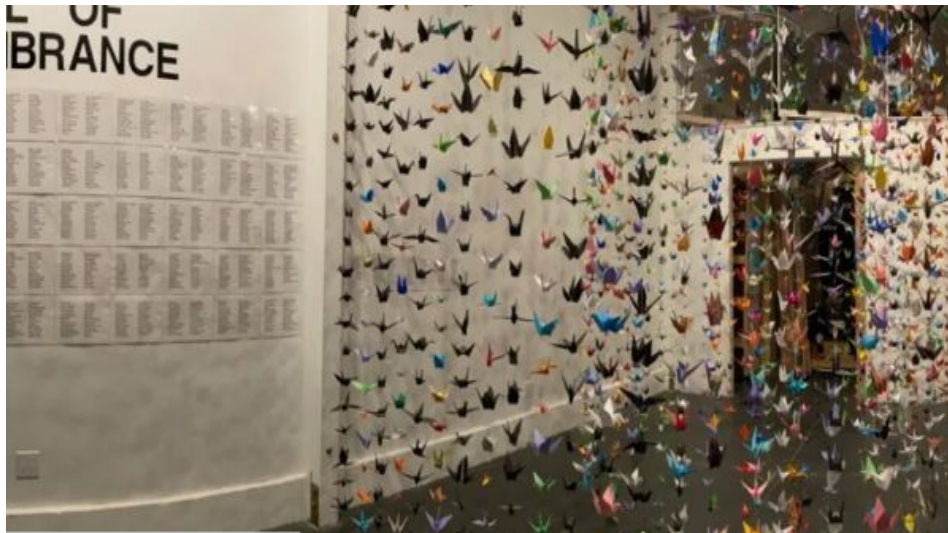


This chair was made using a sheet of polypropylene, which is light and rigid enough to become the structure but soft enough that it can actually bend many times – makes for a comfy sit.

Origami & Social Cause

Origami is being used a tool or a medium to spread awareness for a certain social cause. It could be for spreading awareness about conservation of animals.

Karla Funderburk: "It's an art installation. ... I started it about 11 months ago. I started it by myself to kind of give myself a way of processing the grief that I was feeling and witnessing and the sorrow that I was experiencing in my day-to-day world."



Origami & Packaging

Businesses today are continually looking for fresh, superior, and inventive approaches to enhance their packaging, particularly by attempting to concentrate on the user-friendliness and lower the production costs of the package. Origami Packaging is a concept that allows all of these objectives to be accomplished!



Origami & Fashion

In recent years, fashion has looked to origami for ideas to create futuristic, unique, and beautifully made geometric designs.



Origami & Architecture

For architects, using paper to visualise their designs in 2D and 3D forms is a convenient method. Instead of using sketches, this gives their design more flexibility and a clearer understanding of their concept.



Origami & Lighting

Luminaires made from origami have gained widespread acceptance. A study of origami combined with lighting helps comprehend the textures and tiles of origami and makes it fascinating to experiment with lights and shadows thanks to its facets, edges, corners, and varied tessellated patterns.



Origami & Lighting

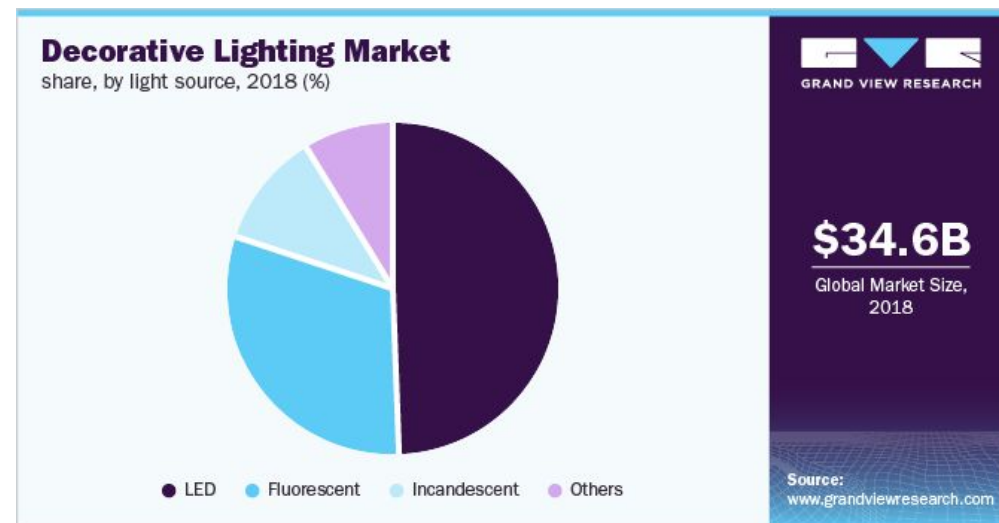
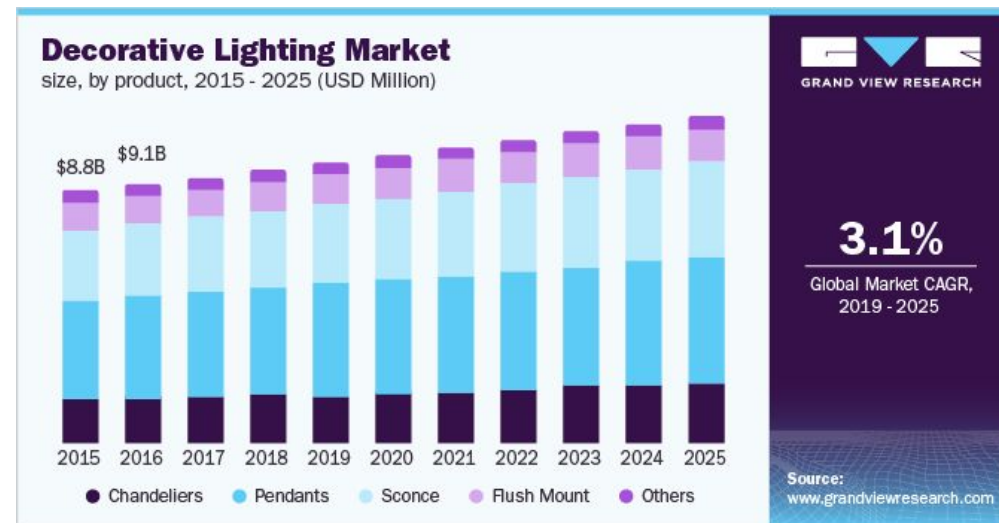


Market Trends

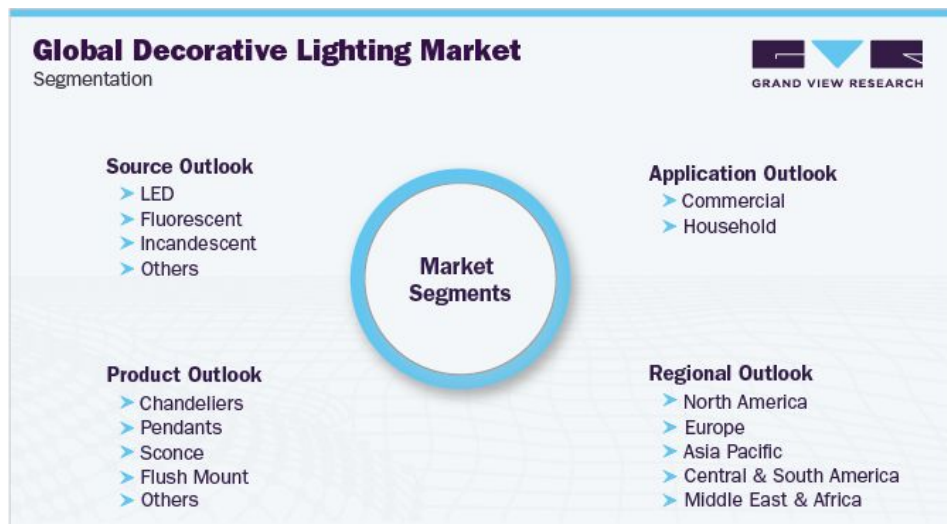
The market for decorative lighting is anticipated to reach a value of USD 42.9 billion by 2025 and expand at a 3.1% CAGR during the projected period. The utility of various ornamental lighting fixtures is anticipated to be enhanced by growing awareness of the role that the illuminating medium plays in creating the mood of the space. The brightness of a location alters how big it seems by making it visually interesting. Along with this, the suitable fixtures and appropriate lighting aid in giving the space a pleasing appearance.

The ornamental lighting fixtures of today's interior design are seen as a seamless fusion of style and functionality. When modern furnishings are carefully picked to match the floor, furniture, and wall colour, a warm, welcoming, and practical area is produced.

Living spaces have always been thought of as reflections of their owners. It aids in making a statement about the proprietor's preferences, personality, and general well-being. A key factor in accomplishing the aforementioned qualities is decorative lighting. Manufacturers have been keeping an eye on the rising demand and have developed decorative lighting innovations that combine fashion and utility. The expanding consumer influence of social media influencers and numerous home décor web series is driving up demand for various types of decorative lighting fixtures.



Source: <https://www.grandviewresearch.com/industry-analysis/decorative-lighting-market>



The global decorative lighting market report has been divided by product, light source, application, and region by Grand View Research.

Outlook for Products (Revenue, USD Million, 2015 - 2025)

- Chandeliers
 - Pendants
 - Sconce
 - Flush Mount
 - Others
- The global decorative lighting market report has been divided by product, light source, application, and region by Grand View Research.

Outlook for Light Source (Revenue, USD Million, 2015 - 2025)

- LED
- Fluorescent
- Incandescent
- Others

Application Outlook (Revenue, USD Million, 2015 - 2025)

- Commercial
- Household

Regional Prospects (Revenue, USD Million, 2015 - 2025)

- The Americas
- The U.S.
- Europe
- U.K.
- Germany
- Pacific Asia
- China
- India
- South and Central America
- Brazil
- Mideast and Africa
- S. Africa

Chapter 03:

Primary Study

Perception of people toward Origami

Paper folding into art

Paper folding

Make something out of papers

Can easily Change the shape, craftable, flexible, adaptable

Paper folded into shapes without cutting

Multi facets
Crease

Foldy papery bits

Something to do with folding paper and achieving a desired form (only through folding).

Its a art where u use thin paper or paper like material to fold it into something.

I think it's a dying art and that makes it more valuable.

Art of making objects /shapes by folding paper.

Lots of facets

Something small or flatter turned into Dynamic form

Lots and lots of details

Origami is awesome... It's divine art to modify the eccentric beauty of simplicity ❤️

objects made by folding paper.

An art with origins in Japan where you explore 3 dimensional shapes with paper. And as far as I understand you don't use glue or paper cutting tools at all to create them.

Designing with paper

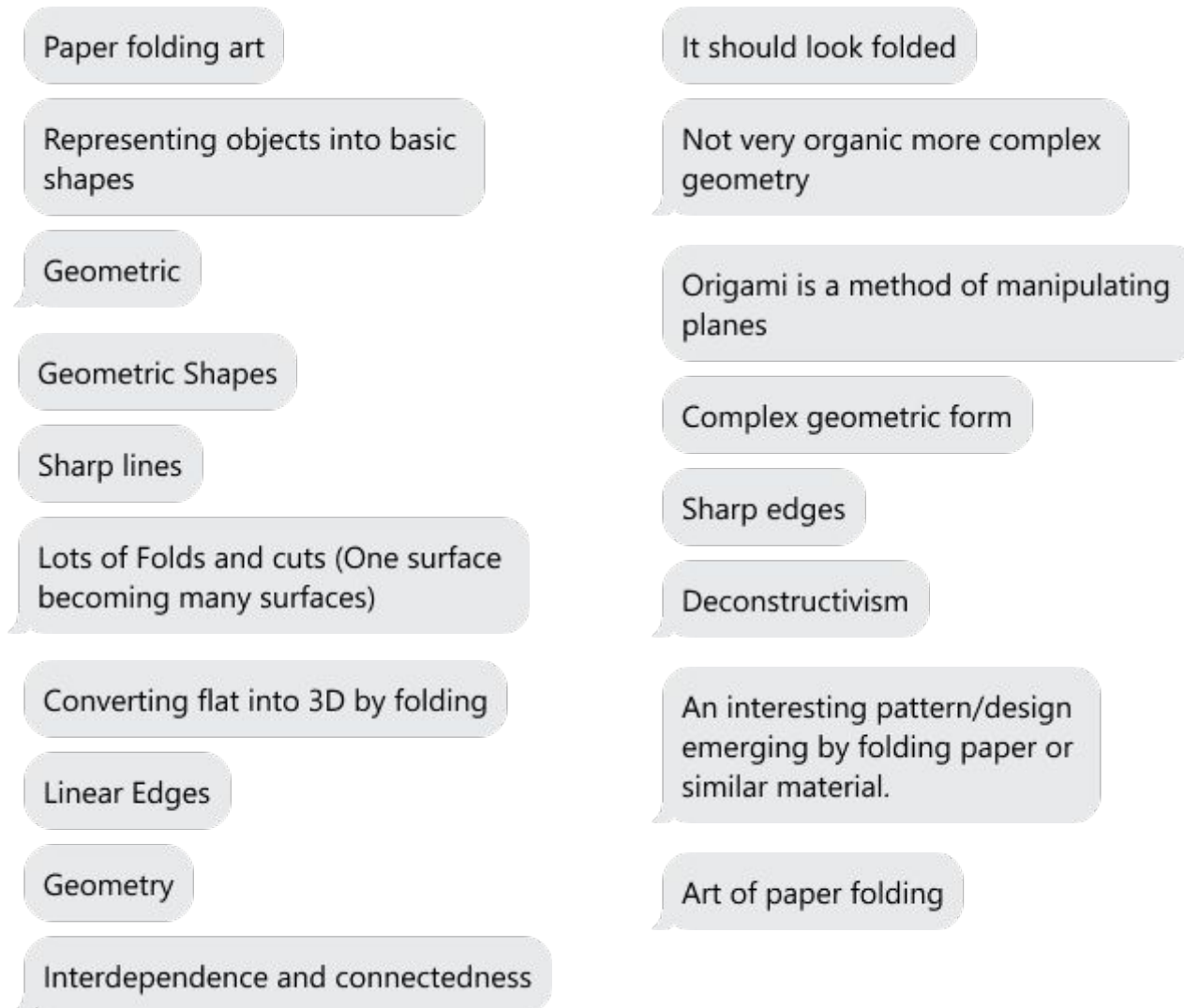
Something to do with folding paper and achieving a desired form (only through folding).

Origami is a Japanese art of paper folding

An art of making geometrically attractive 3d models with no or minimal cutting and only foldings.

Fold simple looking paper, make not so simple looking stuff.

Perception of people toward Origami

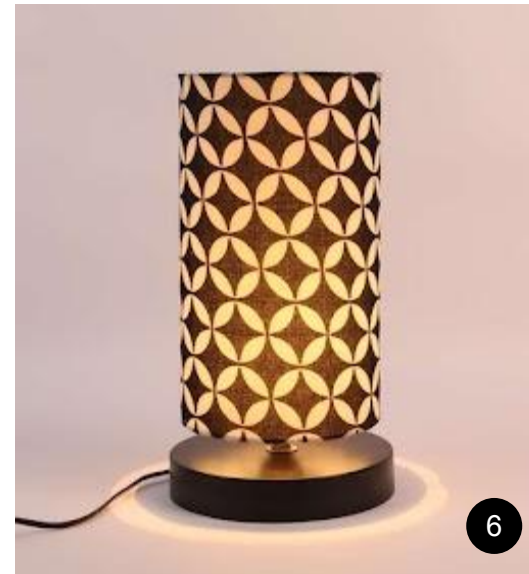
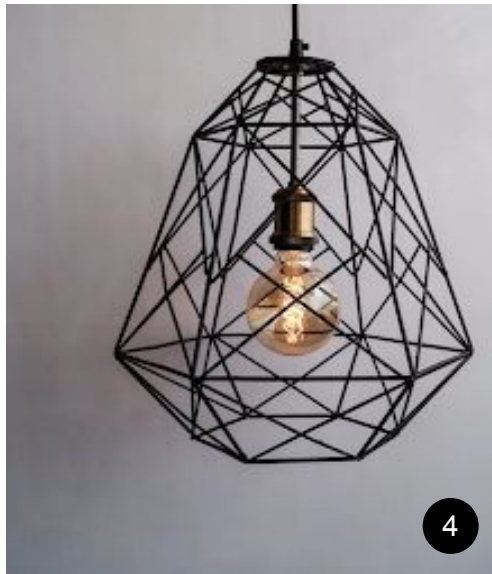


Key Insight

These were some insights given by common people about how they perceive origami.

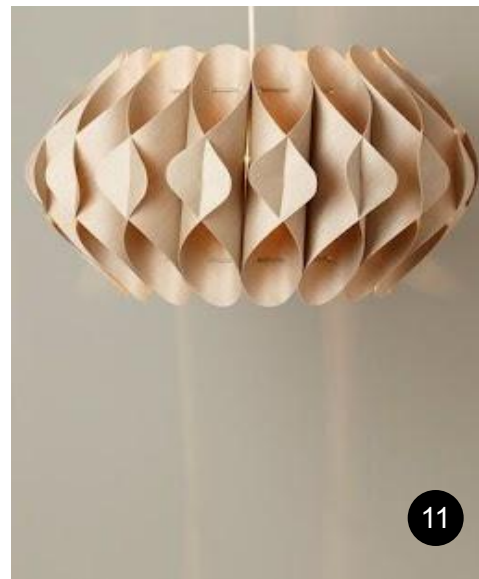
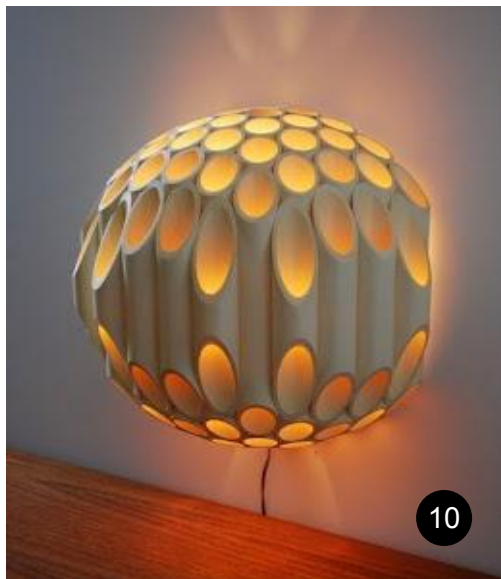
Now with the insights gained from the google form, I started clustering them to get the idea of how people see origami.

Identifying Origami-like Lamps



Imagery of different light included in survey for reference

Identifying Origami-like Lamps

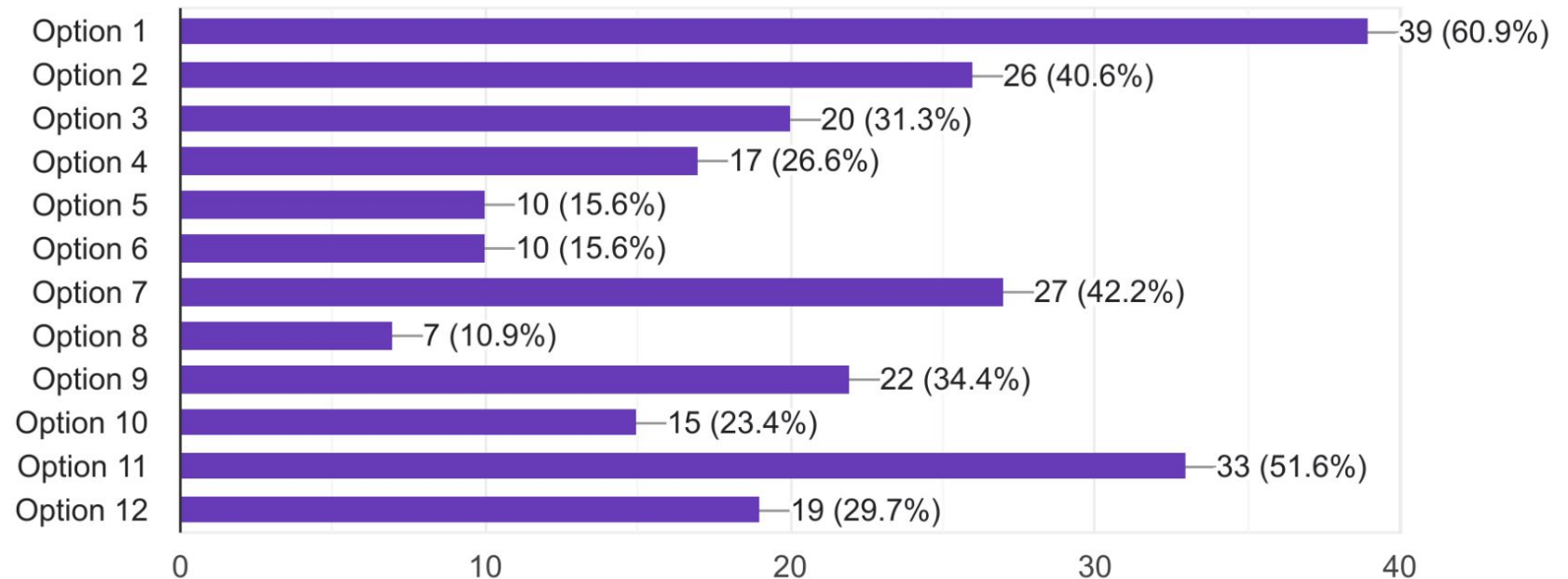


Imagery of different light included in survey for reference

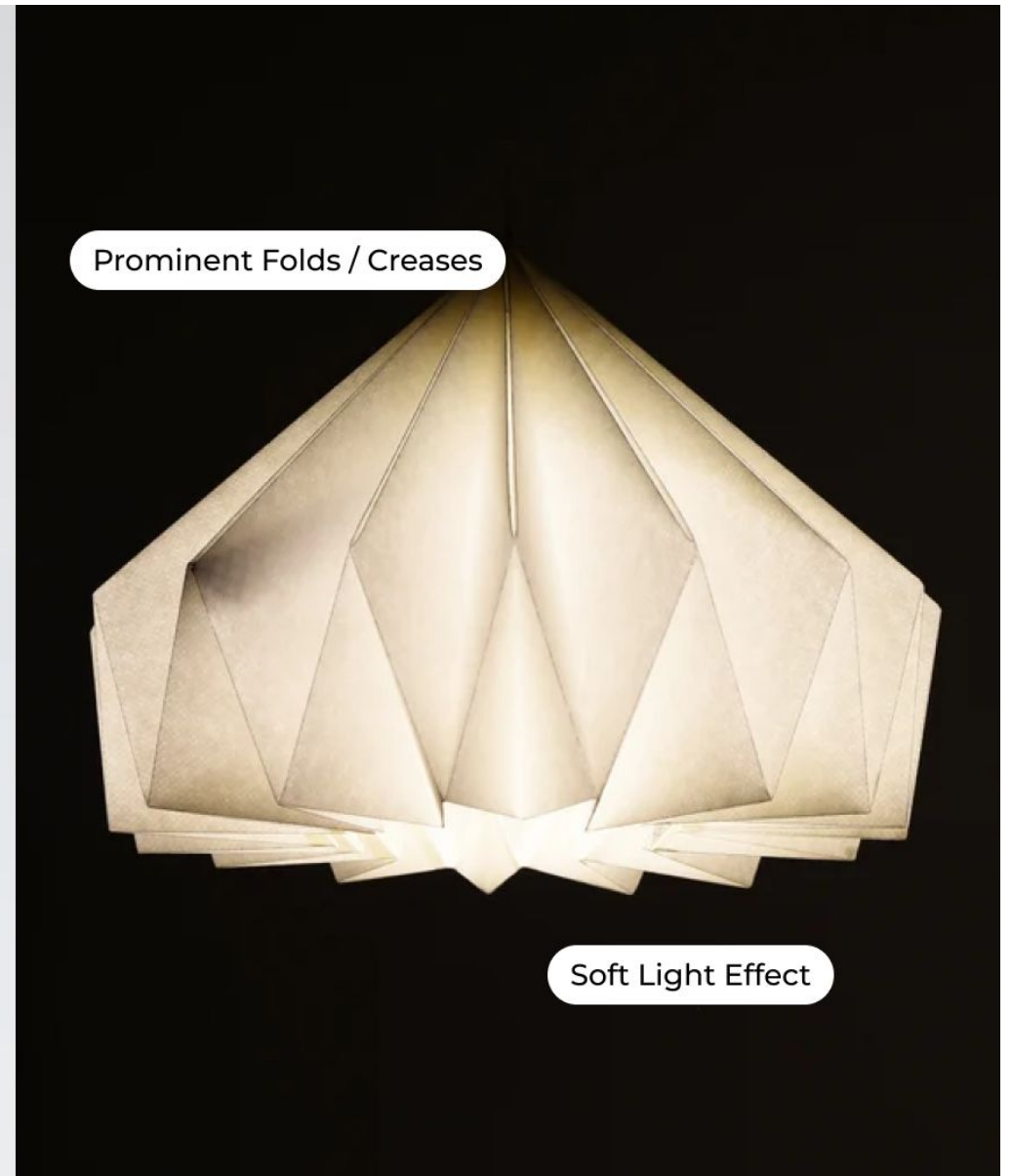
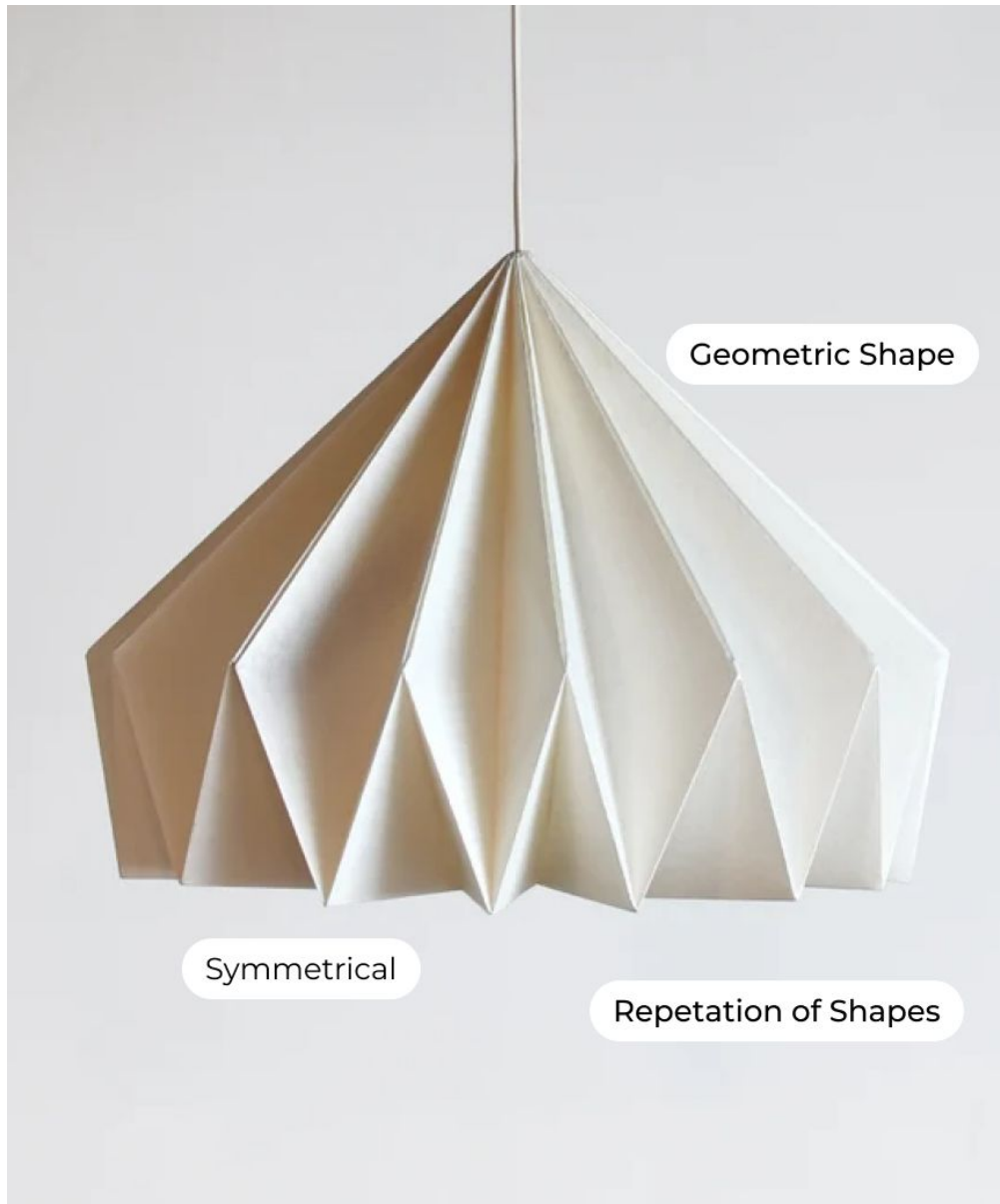
Identifying Origami-like Lamps

Origami For you (Please select the images that you think is origami or Origami like)

64 responses



Identifying Origami-like Lamps



Introduction of Lights

Light is natural agent that stimulates sight and makes things visible. Lighting or illumination is the deliberate use of light to achieve a practical or aesthetic effect. The main sources of natural lighting are sun and used as main source of light during the daytime. Artificial lighting is used for the task performance as well as adding aesthetic effects in indoor and outdoor area.

Indoor lighting is usually accomplished using light fixtures, and is a key part of interior design. Lighting can also be an intrinsic component of landscape projects.

Types of Indoor light

Ambient lighting

Ambient light gives an overall illumination within provided area. Also known as general lighting, it emits a comfortable level of brightness without glare. It is used for decorative purpose as well as adding aesthetics in to given space. It can be accomplished with chandeliers, ceiling or wall-mounted fixtures, recessed or track lights and with lanterns mounted on the inside and outside of the spaces for example at hotels, home, lobbies, restaurants etc . It can be also refers to available or low key lighting sometimes.



Source: <https://atomlighting.com.au/ambient-accent-and-task-lighting-explained/>

Task Lighting

Task lighting helps you perform specific tasks, such as reading, grooming, preparing and cooking food, doing homework, working on hobbies, playing games and balancing your checkbook. It can be portable as well as fix according to requirement. The adjustment makes easy to do some day to day life works. Task lighting is free of distracting glare and shadows and bright enough to prevent eye strain.



Accent Lighting

Accent lighting adds drama to a room by creating visual interest. As part of an interior design scheme, it is used to draw the eye to houseplants, paintings, sculptures and other prized possessions. It is also useful in highlight the texture of a brick or stone wall, window treatments or outdoor landscaping. To be effective, It requires three times as much light on the focal point as the general lighting surrounded by it.



Source: <https://atomlighting.com.au/ambient-accent-and-task-lighting-explained/>

Types of ambient indoor lighting

- Chandelier: Chandelier is an decorative ceiling mounted fixture. Distinct types of pendant light.
- Wall-mounted fixture: Is used for indoor and outdoor lighting usually fits into ceiling.
- Track light: Is used for focusing on products. It is used in to retail and showrooms,
- Floor lamp: It is used as decorative products in to indoor and outdoor settings. It adds drama in to interior and makes it more aesthetics.
- Table lamp: Is used for adding aesthetics. It is used as task and ambient both.

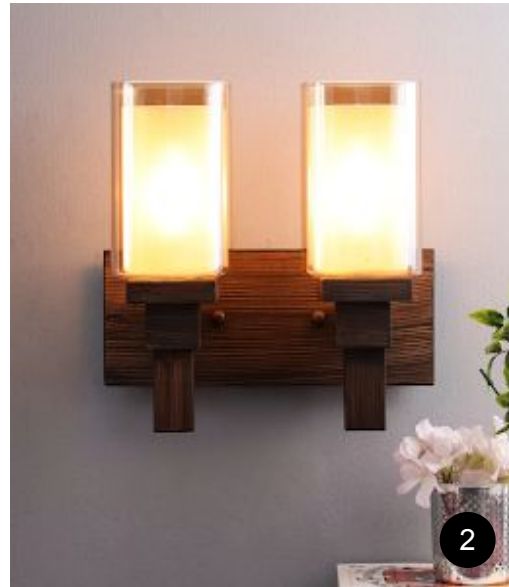
Types of lighting fixtures include

- (a) traditional table lamps
- (b) wall sconces
- (c) pendants
- (d) floor lamps
- (e) torchiers
- (f) chandeliers
- (g) theme table lamps
- (h) swing-arm lamps
- (i) desk lamps



Source: Home Decoration for Dummies by Katharine Kaye McMillan and Patricia Hart McMillan

Lighting Preferences

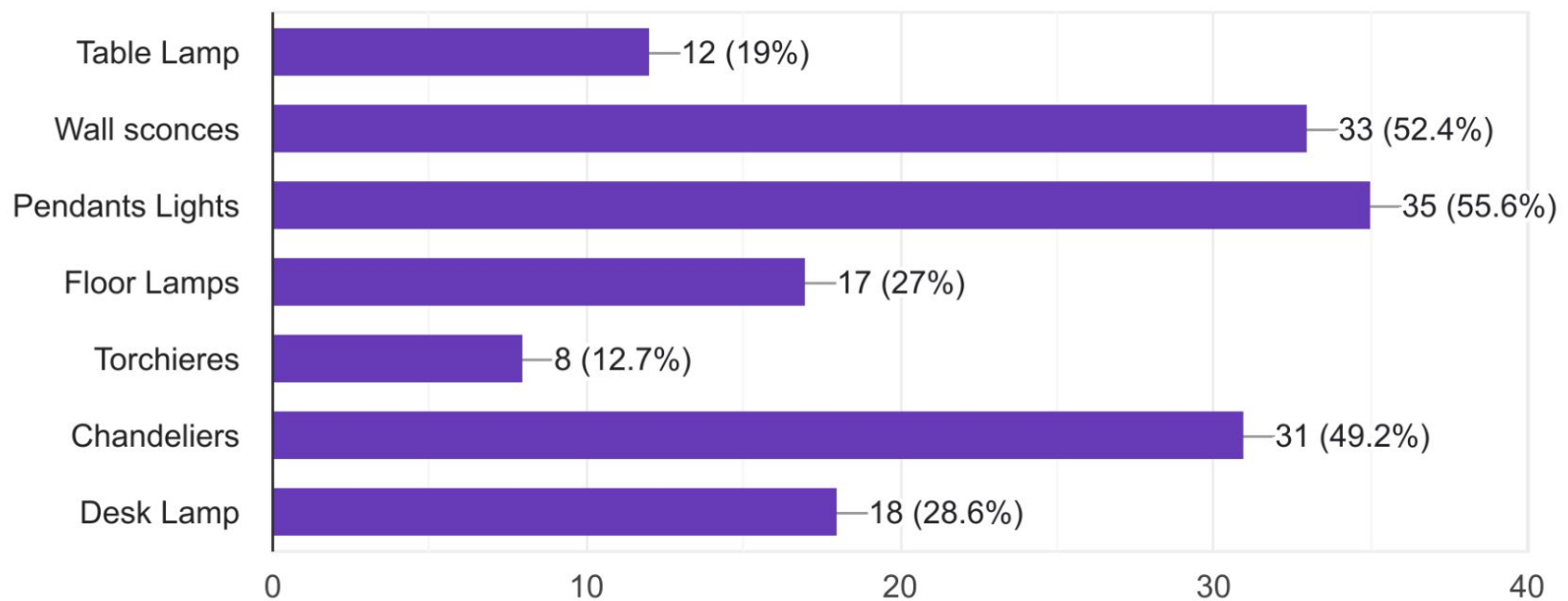


Imagery of different light included in survey for reference

Lighting Preferences

Lighting Preferences (Please select your fav types of lighting that you think might look good in your home)

63 responses



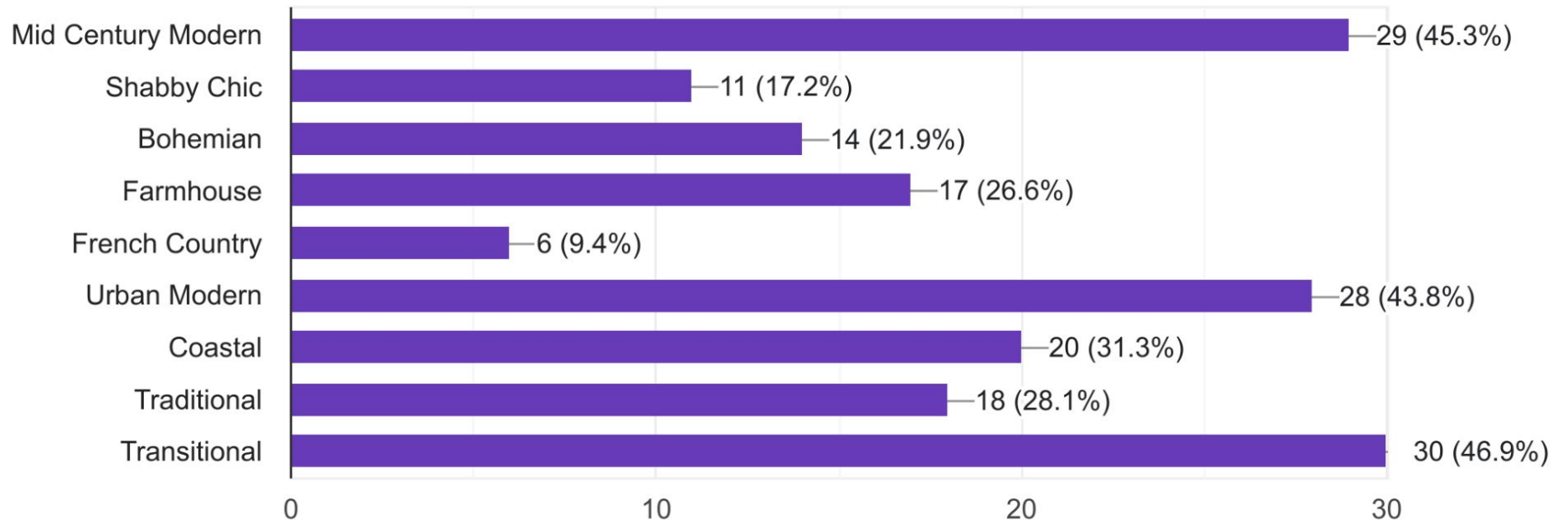
Home Decor Theme



Home Decor Theme

From the below images please select the home décor theme that you really like.

64 responses

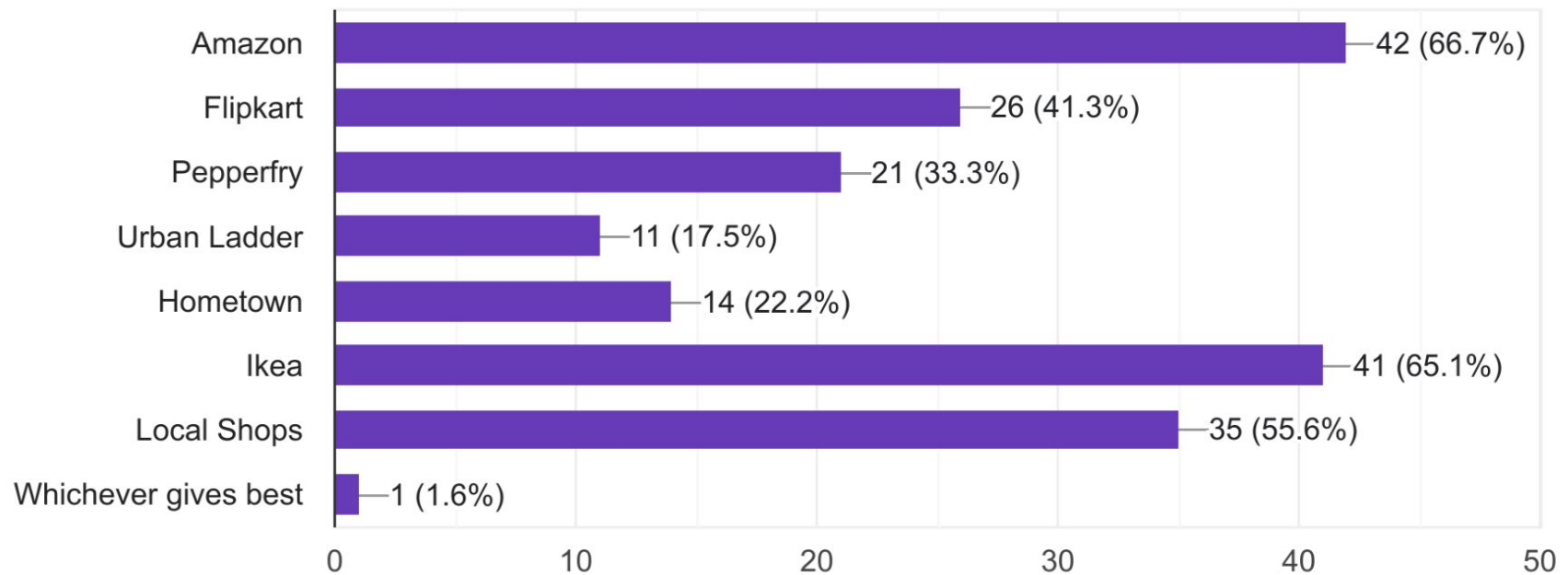


Defining the home decor theme helped with creating a theme where the product can be placed.

Market Platforms

Where would you like to buy the lamps from?

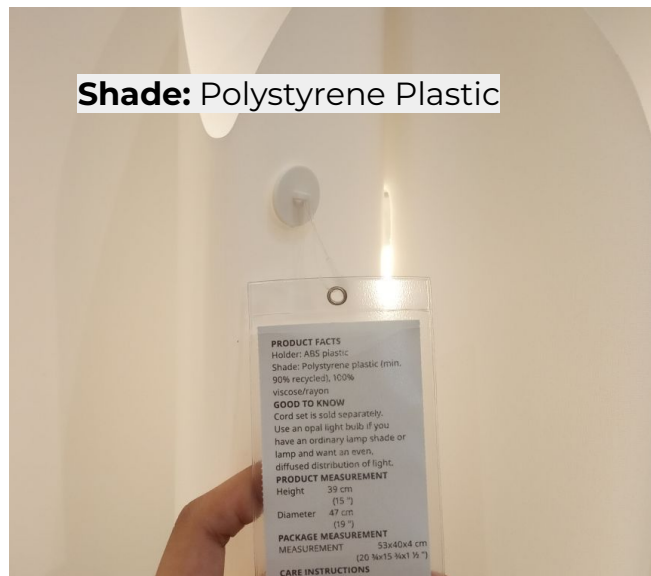
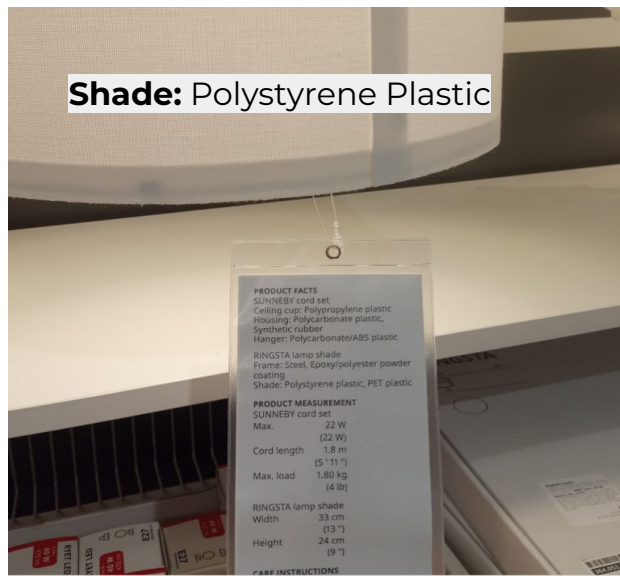
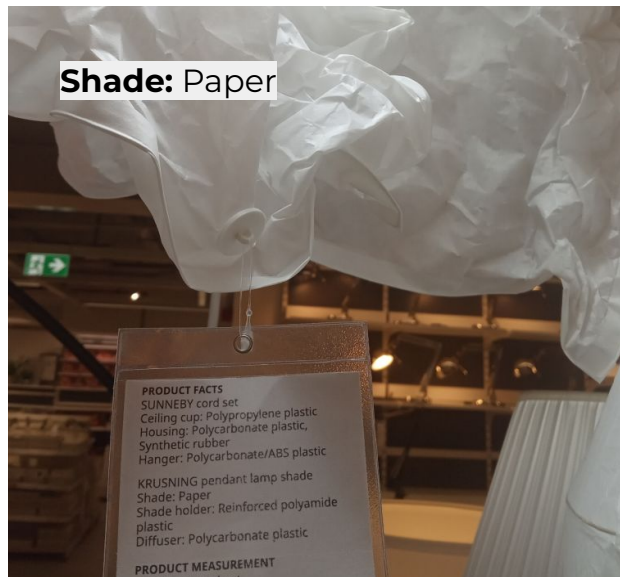
63 responses



Market Study: Ikea

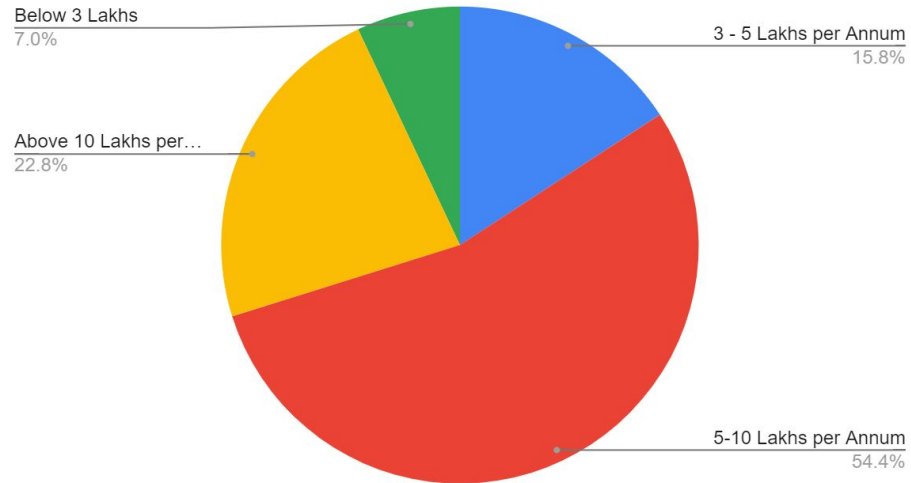


Materials Trends: Ikea



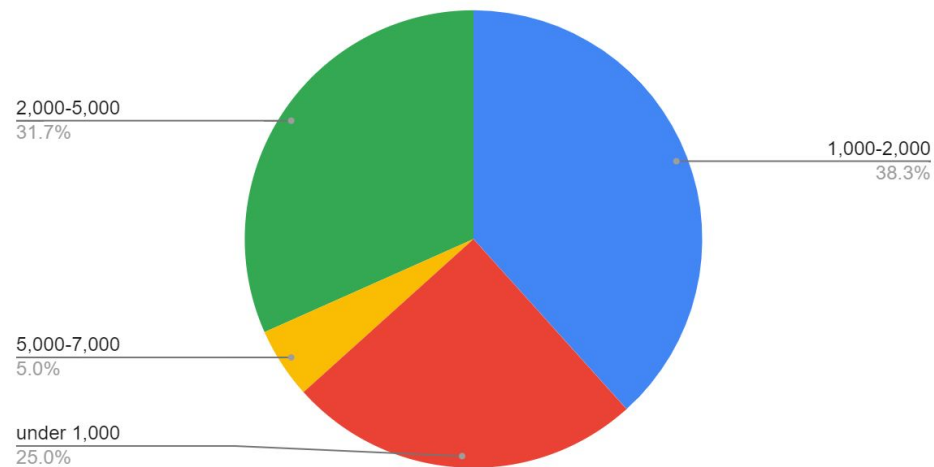
Target Group

Count of What is your average annual income?



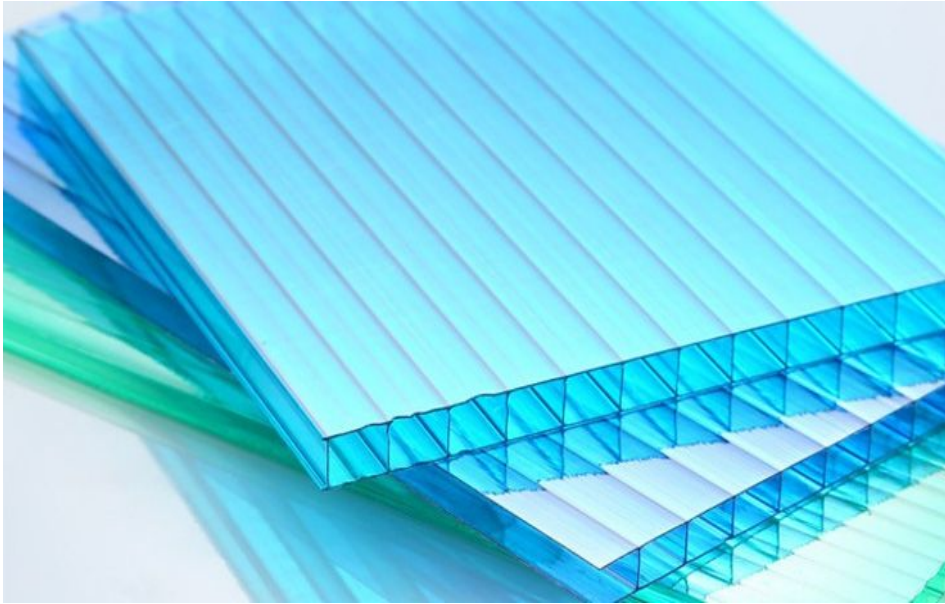
The survey was conducted to understand the income vs splurging ratio of individuals in metro and suburban region. It is observed that the consumer group consist of middle income group. The group tend to explore and exhibit the decor with vanity. As per the survey more than 30 % people are willing to spend around 5000 rs on lightings and home decor items.

Count of Price Range (If you buy a decorative light for your home what price range would you consider for buying it?)



Target user: Middle income group
Context : Residential spaces
Cost : 3000-400

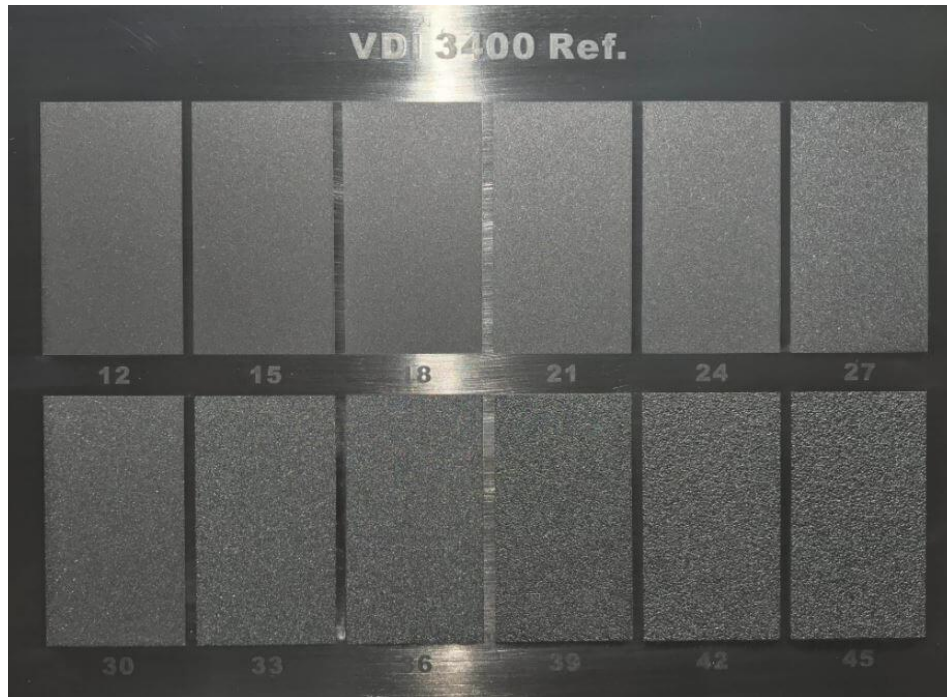
Types of Plastic : Polycarbonate



- Polycarbonate is a durable material. Although it has high impact-resistance, it has low scratch-resistance. Therefore, a hard coating is applied to polycarbonate eyewear lenses and polycarbonate exterior automotive components.
- The characteristics of polycarbonate compare to those of polymethyl methacrylate (PMMA, acrylic), but polycarbonate is stronger and will hold up longer to extreme temperature. Thermally processed material is usually totally amorphous¹ and as a result is highly transparent to visible light, with better light transmission than many kinds of glass.
- Polycarbonate has a glass transition temperature of about 147 °C (297 °F), so it softens gradually above this point and flows above about 155 °C (311 °F).
- Tools must be held at high temperatures, generally above 80 °C (176 °F) to make strain-free and stress-free products. Low molecular mass grades are easier to mold than higher grades, but their strength is lower as a result.
- **Polycarbonates (PC)** are a group of thermoplastic polymers containing carbonate groups in their chemical structures.
- Polycarbonates used in engineering are strong, tough materials, and some grades are optically transparent. They are easily worked, molded, and thermoformed. Because of these properties, polycarbonates find many applications
- The toughest grades have the highest molecular mass, but are more difficult to process

Source: <https://www.techbriefs.com/component/content/article/tb/supplements/lt/features/articles/14324>

Injection Moulded Plastic Surface Finish



- You should have a clear notion in mind of the sort of mould you require based on your production volume and the type of material that your mould will be built of before deciding on the surface finish type for your plastic injection moulded product.
- The steel material has the advantage of being able to be polished for a surface finish that is smoother than other materials, which is also helpful for such secondary finishing operations as painting intended to enhance your final moulded products.
- As a result, a steel mould typically has a higher hardness than an aluminium one and can therefore offer more surface finish options.

Available surface finish types include:

- Geometric shapes / patterns
- Grains, e.g., the leather texture
- Secondary finishes, e.g., paintings, print, etc.
- Etching
- Sand blast
- Glossy, matte, or satin finishes
- Mirror polishing or lens finishes

Source : <https://www.ecomolding.com/surface-finish/>

Design Brief

To design a origami inspired range of lighting solution which can be mass manufactured for upper middle class residential spaces.

The lighting should incorporate origami in terms of it's form or folding or usage such that it brings the serenity associated with origami forms to the spaces it is used in.

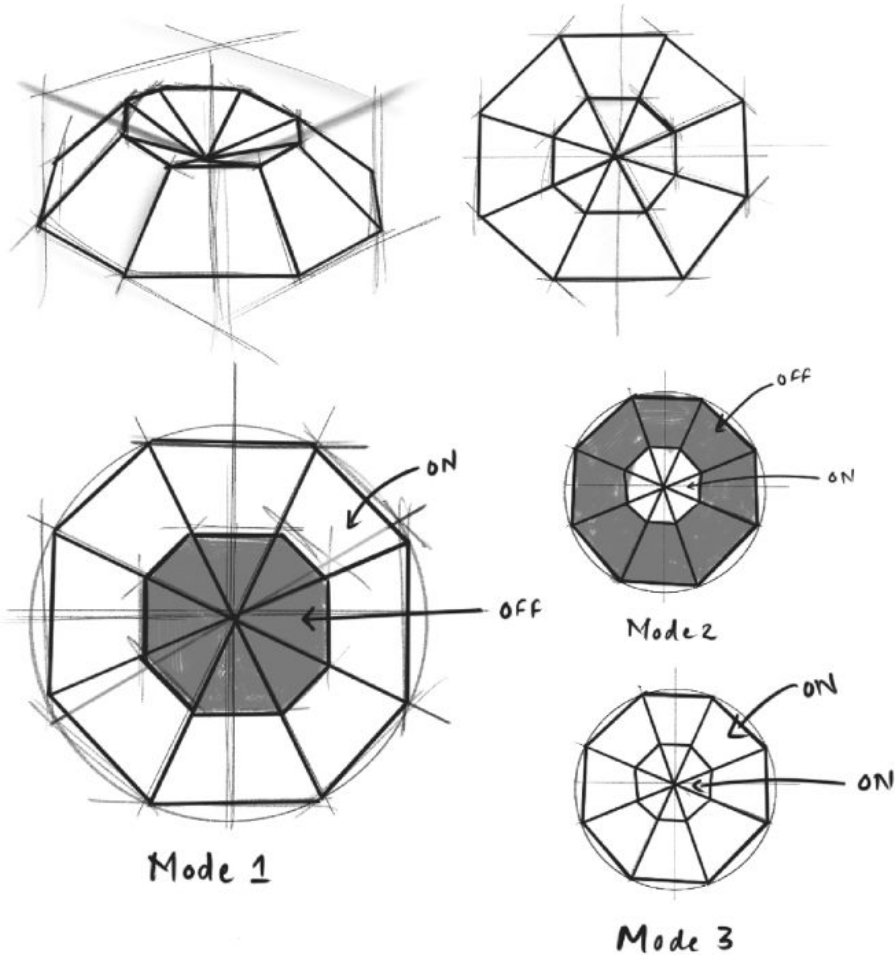
It should create a language that could be incorporated further to create similar form or a range in lighting. The lighting should cater to different market segments in terms of its pricing depending on the usage of material and technology involved.

Mood Board

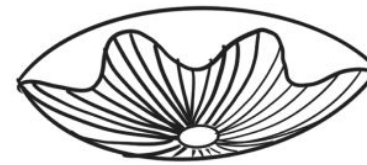


Chapter 04:
Ideation and
Exploration

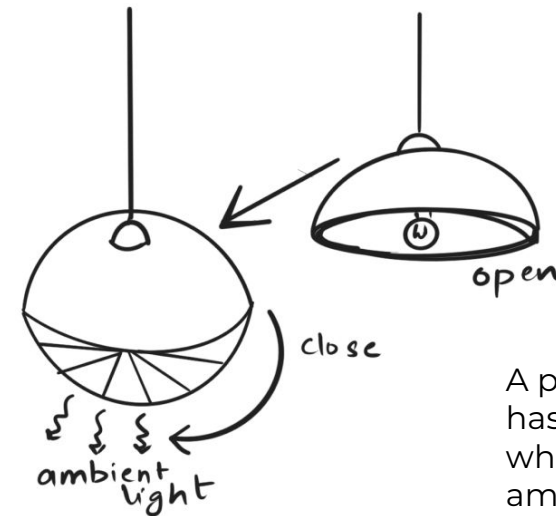
Ideations 01



A basic geometric shape with different modes of lighting for creating various range of light intensity.

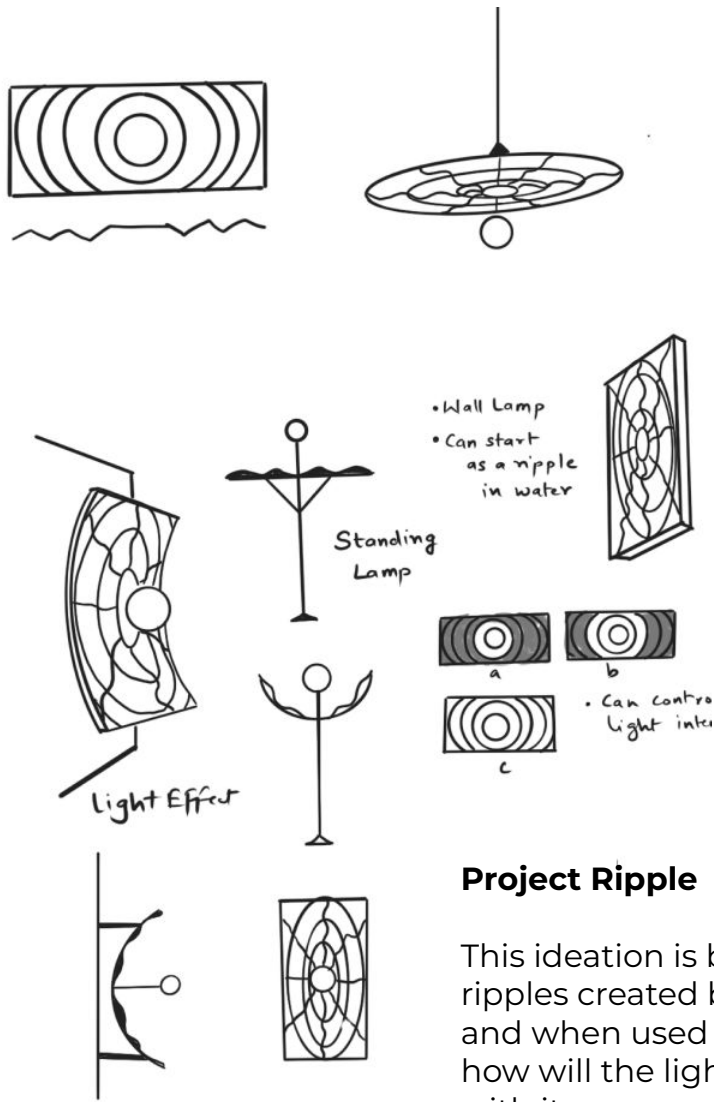


A ceiling light which has multiple folds to have a give a sense of origami.



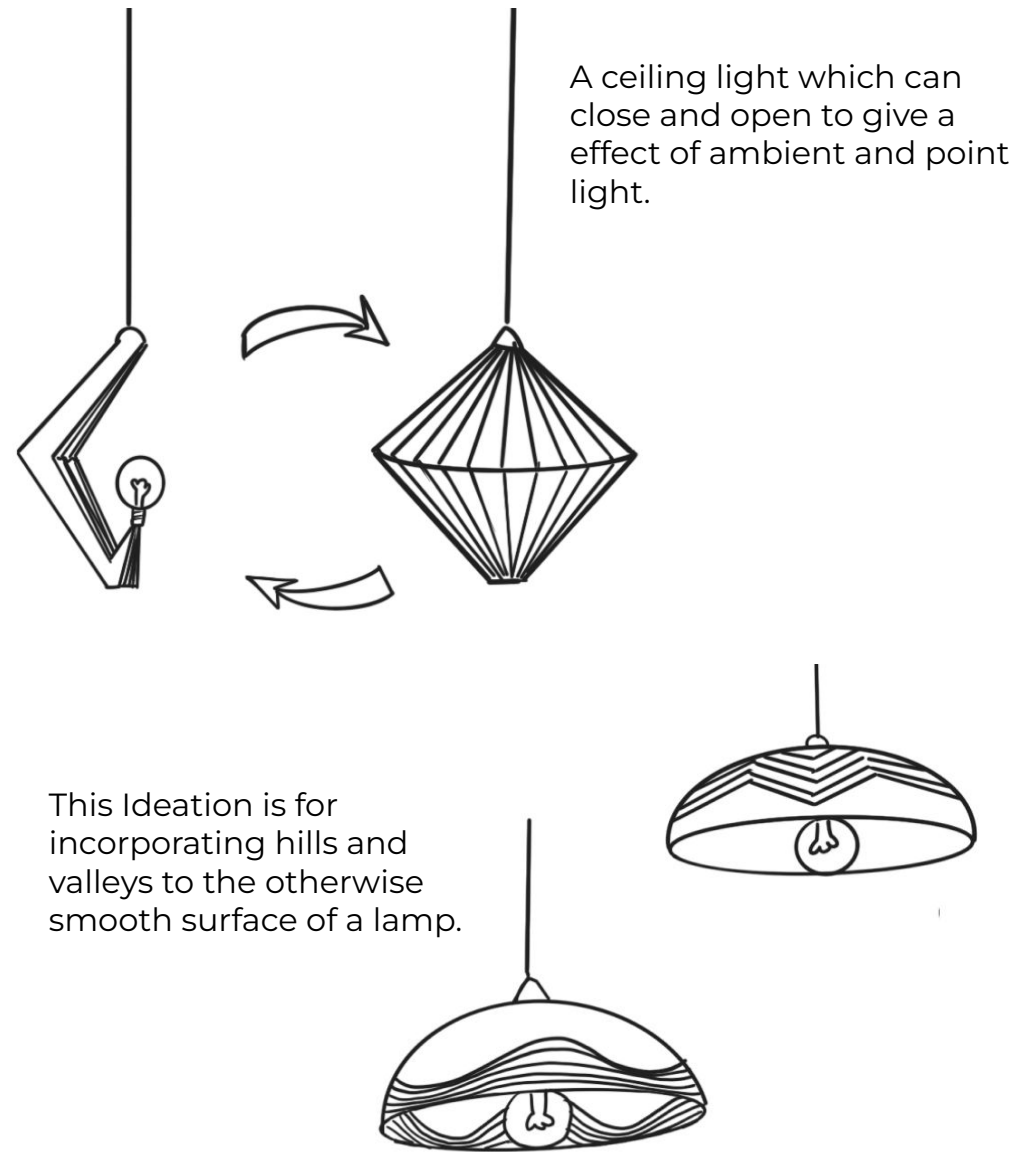
A pendant lamp which has a cover of its own which when closed give out ambient light and when opened can be used as a task light.

Ideations 02



Project Ripple

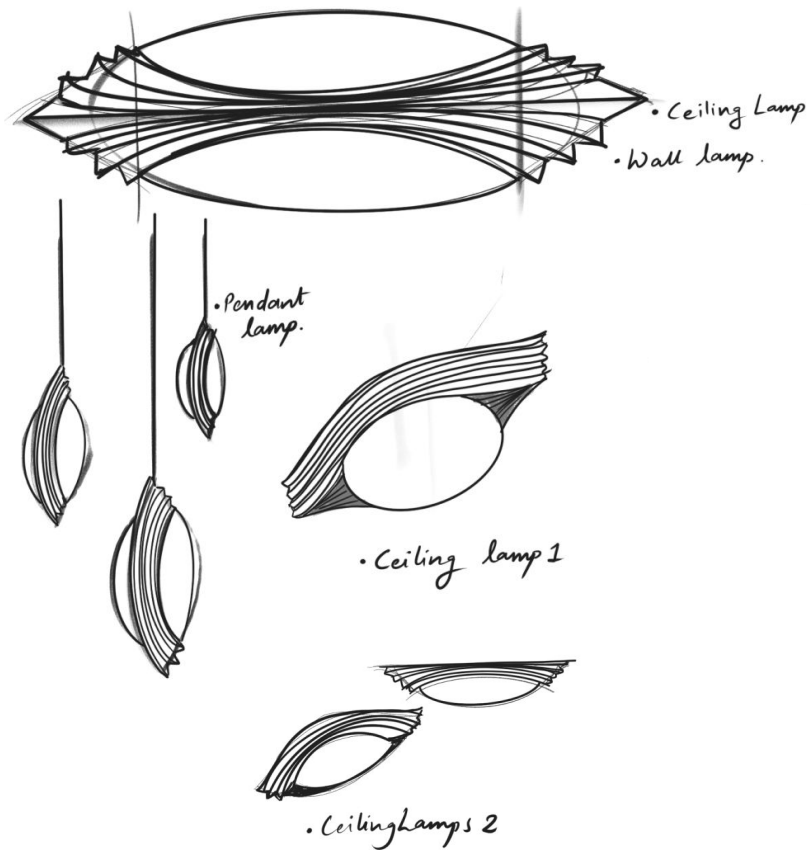
This ideation is based on ripples created by water and when used with glass how will the light interact with it.



This Ideation is for incorporating hills and valleys to the otherwise smooth surface of a lamp.

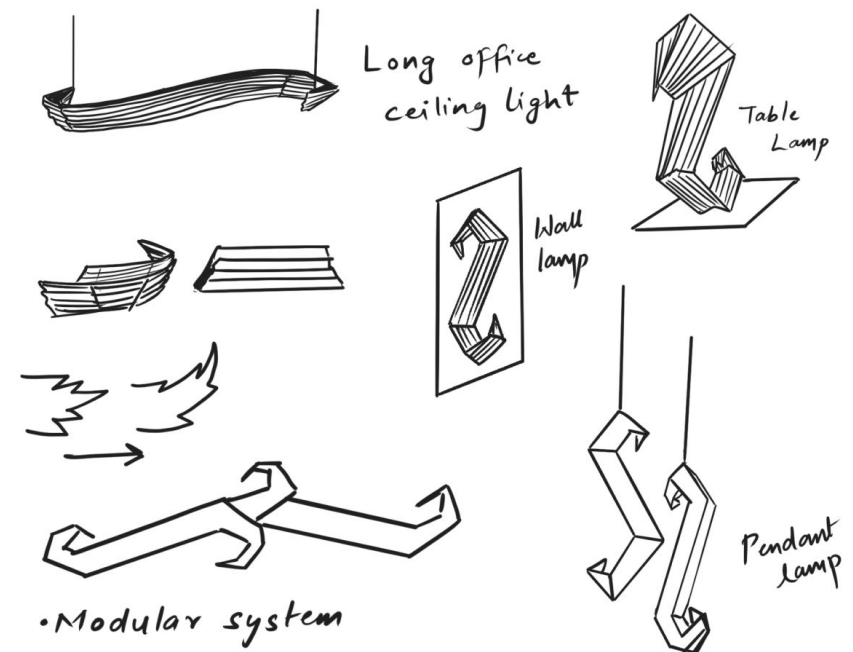
Ideations 03

This Ideation is about adding elements of origami to a smooth cover.



Project Growth

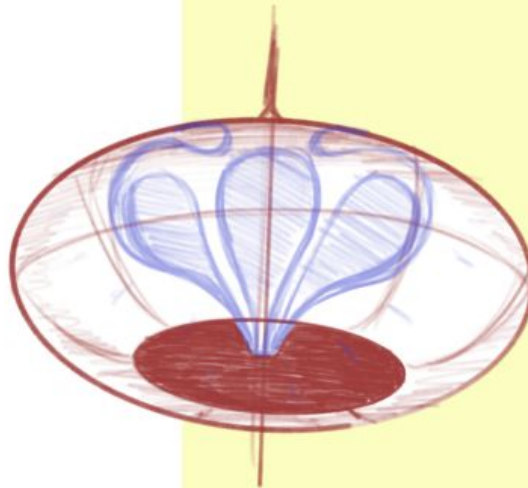
This Ideation is based on the concept of modularity where we can join different parts and make your own unique ceiling Lamp.



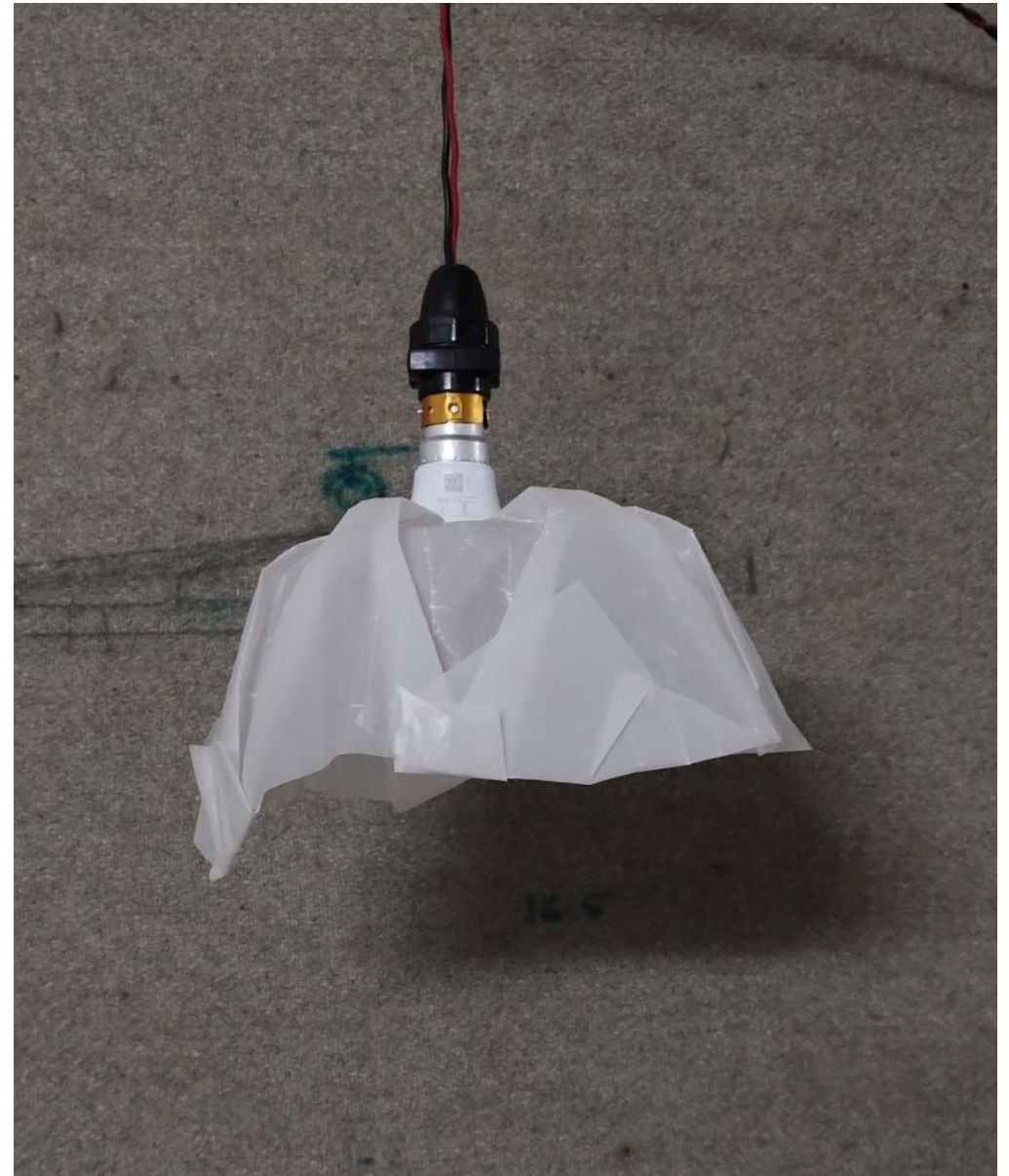
Ideations 04

Taking inspiration from Jun Mitani's idea of origami "The whipped cream" and developing it further in terms of light drives me toward developing this concept.

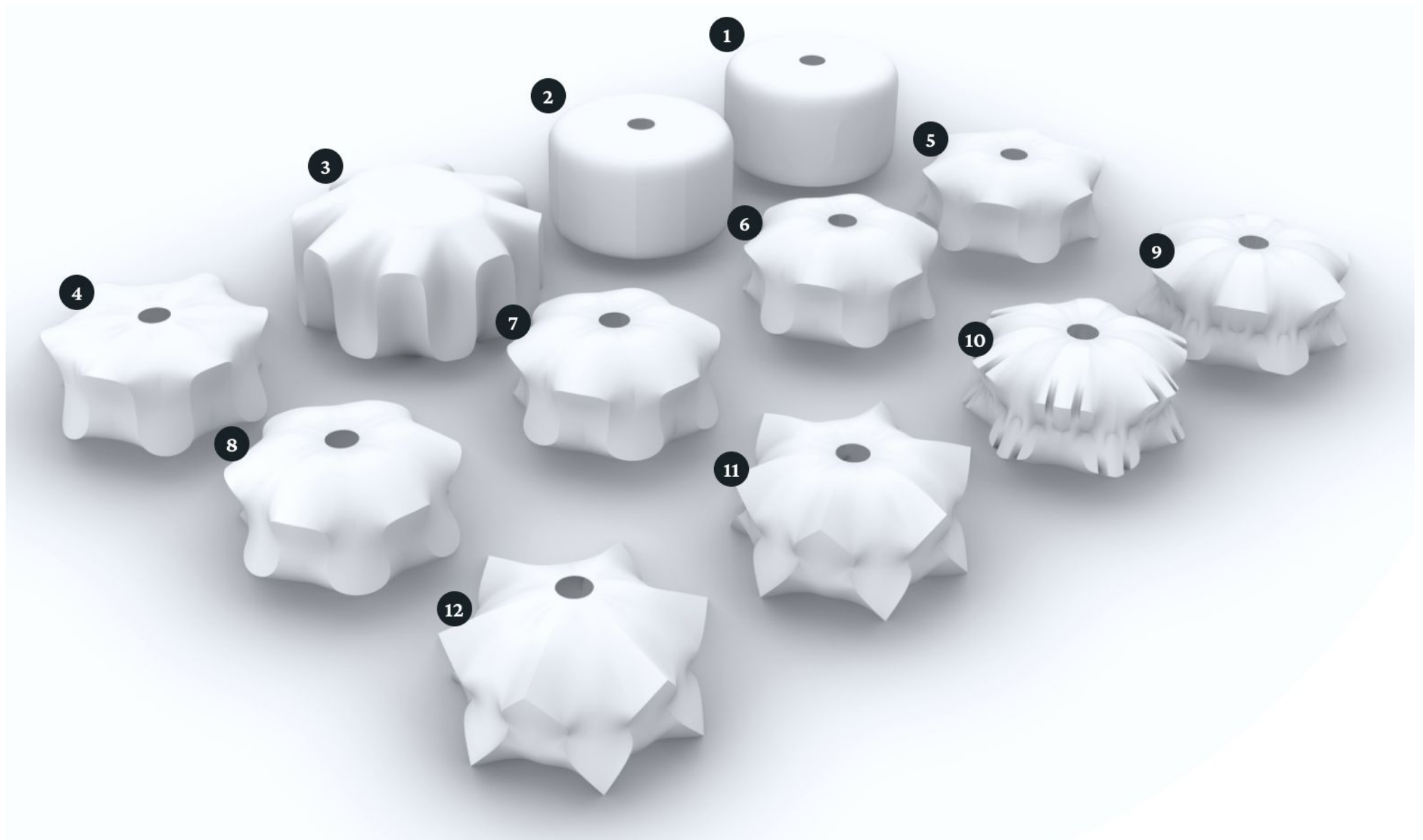
Where the whipped cream design encompasses the electric bulb which facilitates a soft light that then comes in contact with yet another layer, making the light softer and more serene to look at.



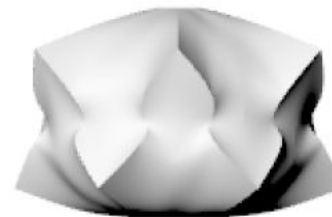
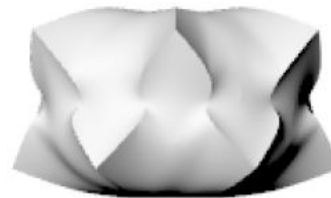
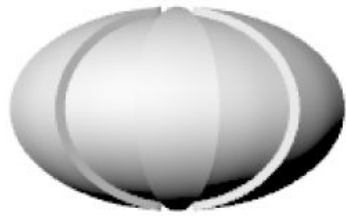
Ideations 05



Form Exploration



Form Exploration

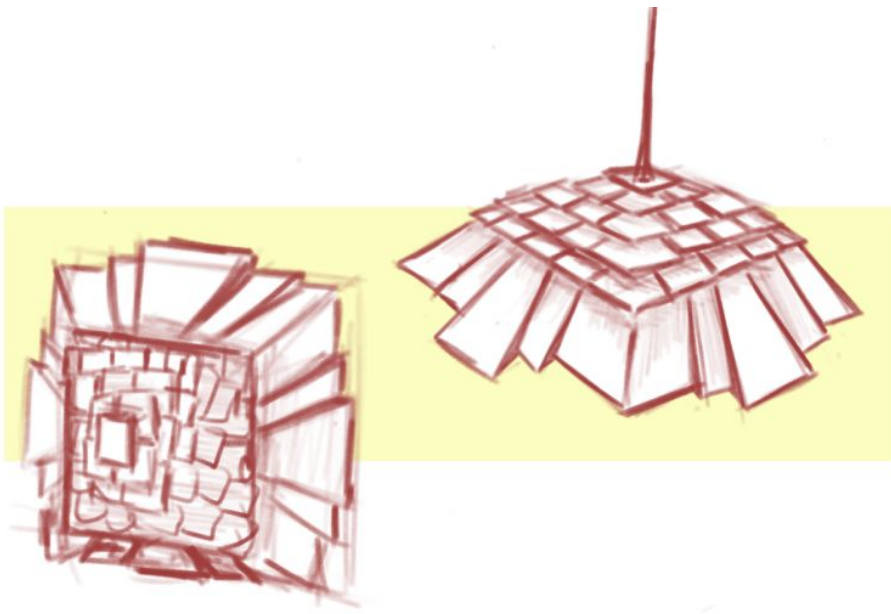


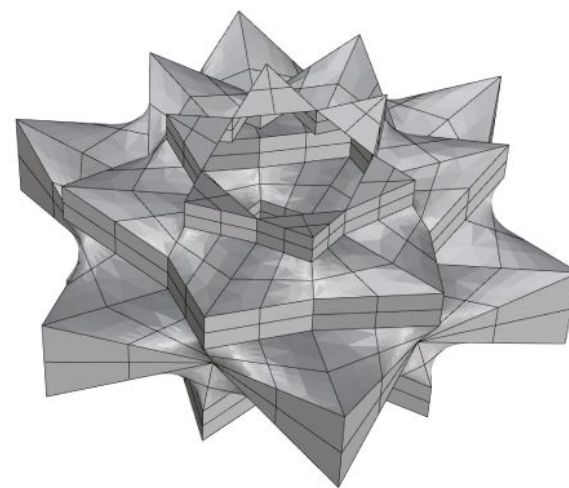
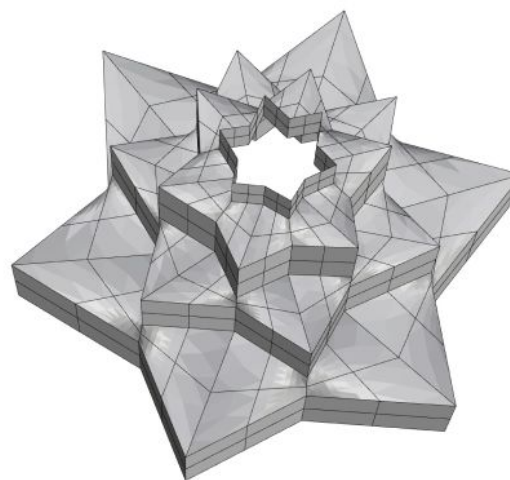
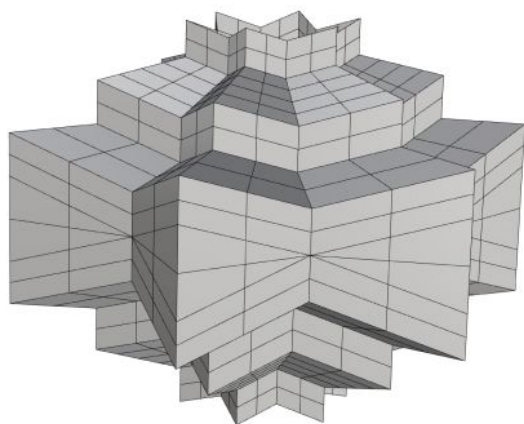
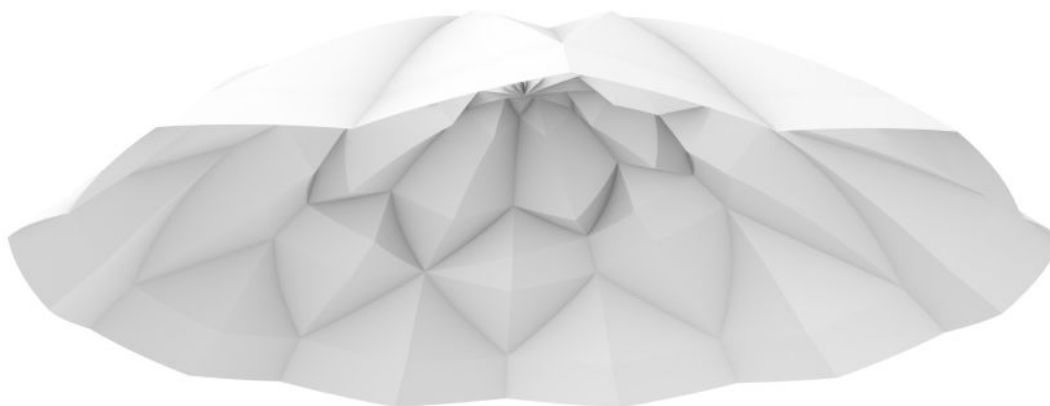
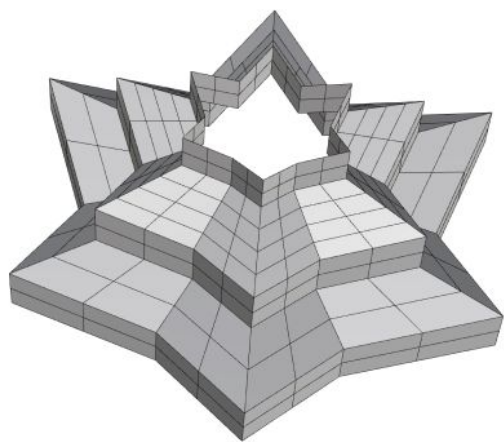
The forms very developed with the constraints of blow moulded method of manufacturing.

Ideation 05

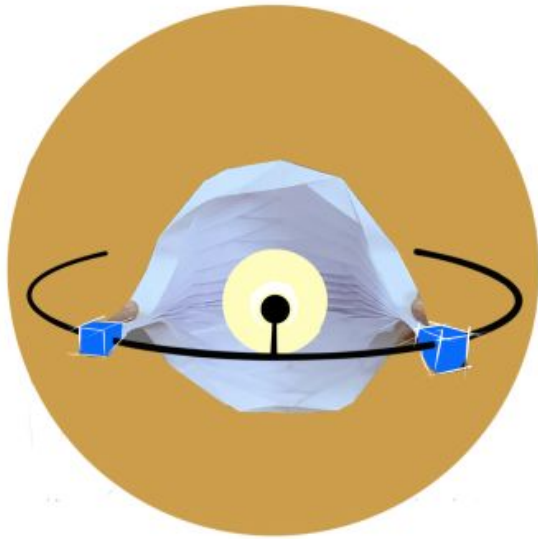
Creating tessellations itself is very time-consuming and it needs a lot of practice to achieve desired results.

Tessellation is the repetitive pattern made by folding a single sheet of paper. This in turn can provide us with interesting light effects when used as a light/lamp.





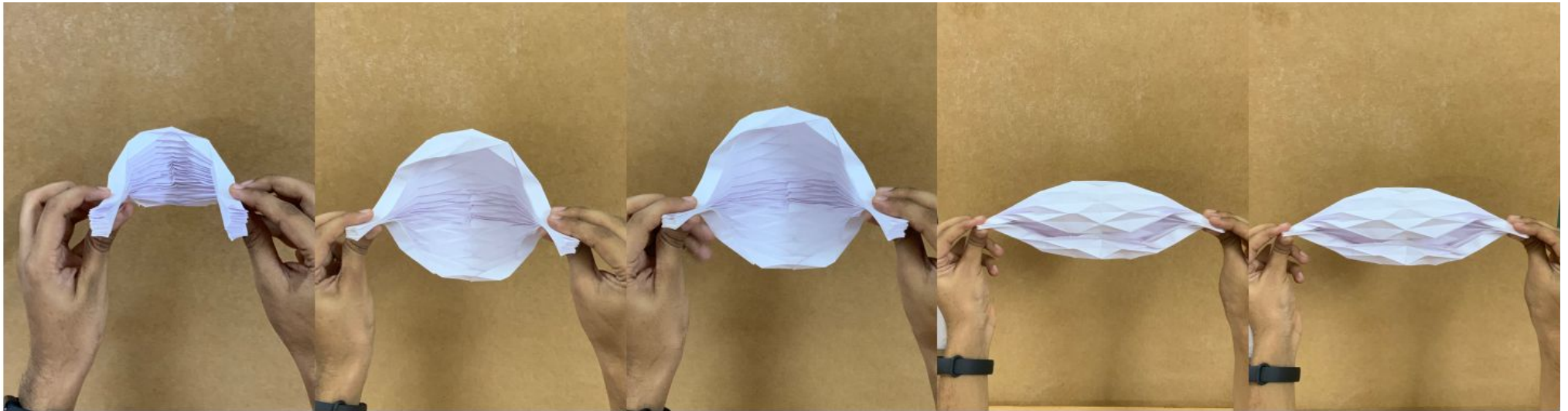
Ideation 06



For my next idea, I was thinking of using the flexibility of origami when folded in a certain way to make a kinetic lamp which when used can give both accent and direct light.

Kinetic lights and kinetic light sculptures are more than just innovative and unique moving light fixtures; they are functional works of art that physically change shape.

And with the help of origami and its property to collapse and expand we can make a kinetic lamp.

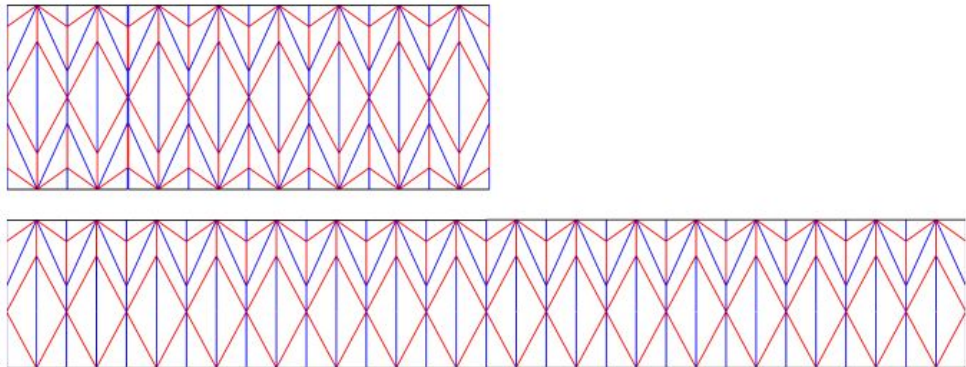


Ideation 06

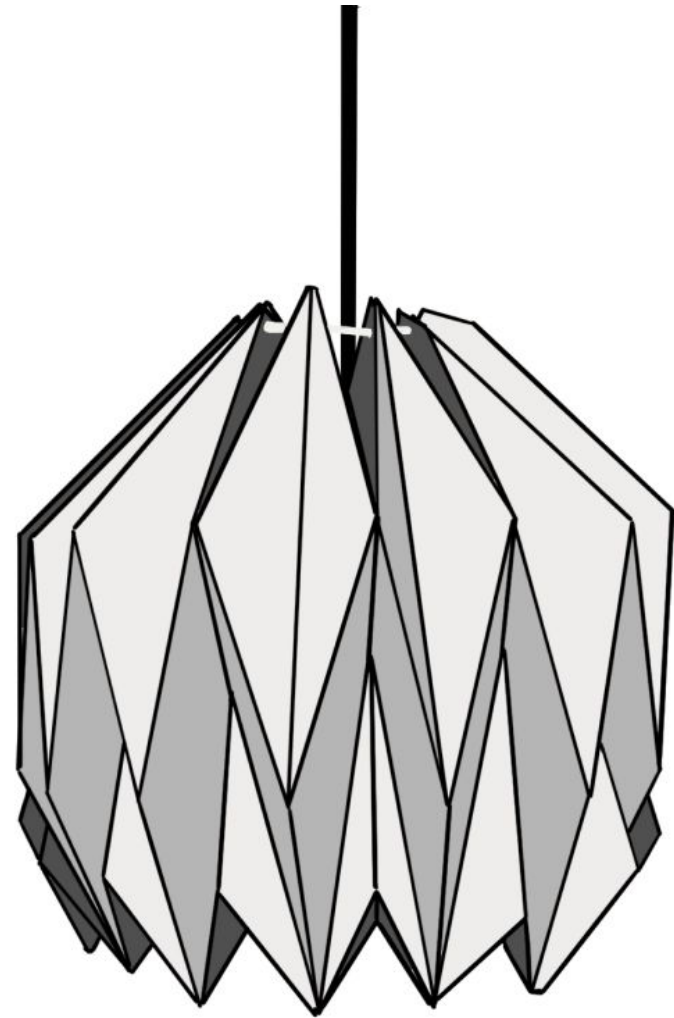
By getting insights from people about how they perceive origami and If I intend to incorporate origami into the light form, what are the factors that I need to consider?

A lot of facets, geometric shape, sharp edges, converting flat surface into 3D etc. were some of the insights that I gained when I asked some people.

So I started incorporating those factors into my concept and thought of making a range of light fixtures.



Crease Pattern

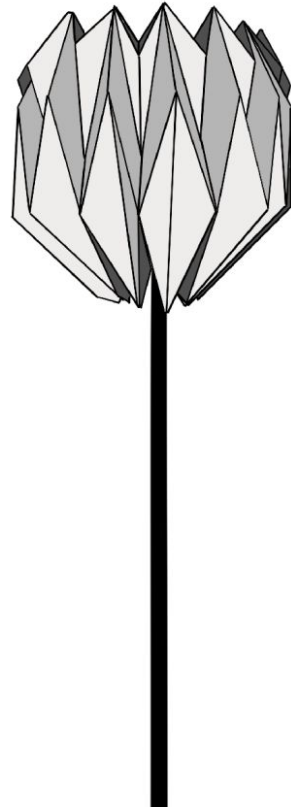


1. Pendant Lamp 1

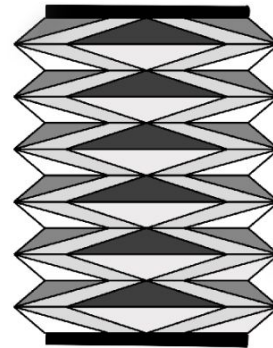
Different ranges of lamps with similar forms / crease pattern.



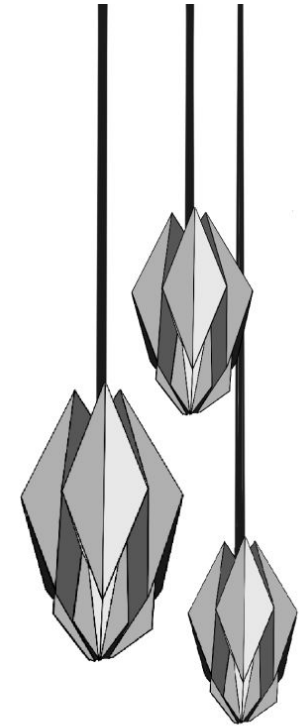
2. Floor Lamp 1



3. Floor Lamp 2



4. Wall Lamp



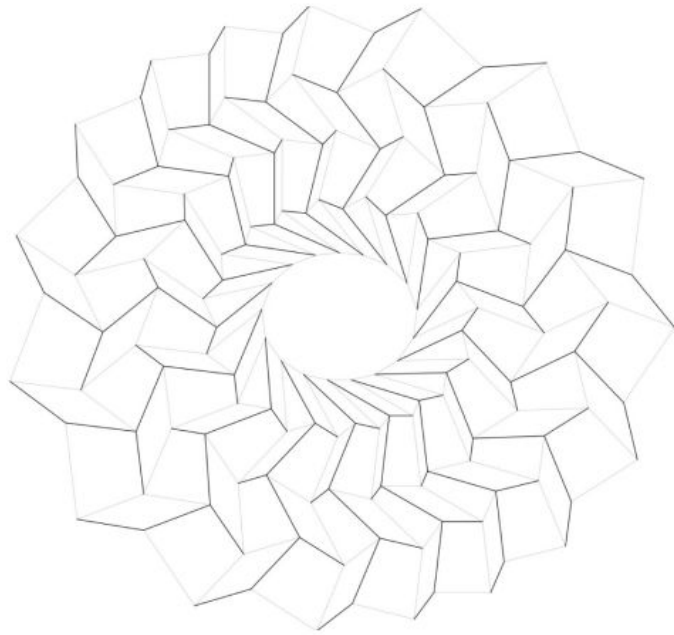
5. Pendant Lamp 2



Ideation 07

Why do I have to cover the light?
Why can it be exposed?

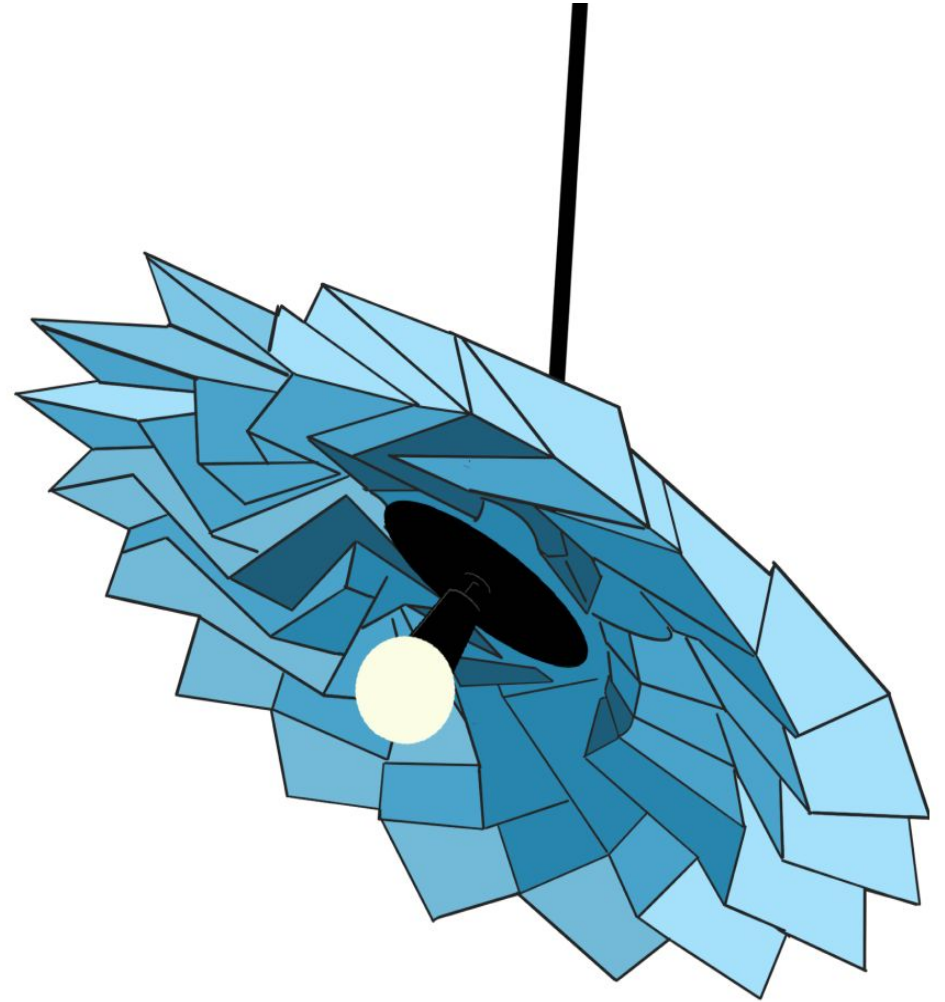
Taking inspiration from Robert J Lang's Idea of origami, this ideation was based on the bulb being positioned below the shade, and as it evenly distributes light throughout the area below, it illuminates the folded pattern.



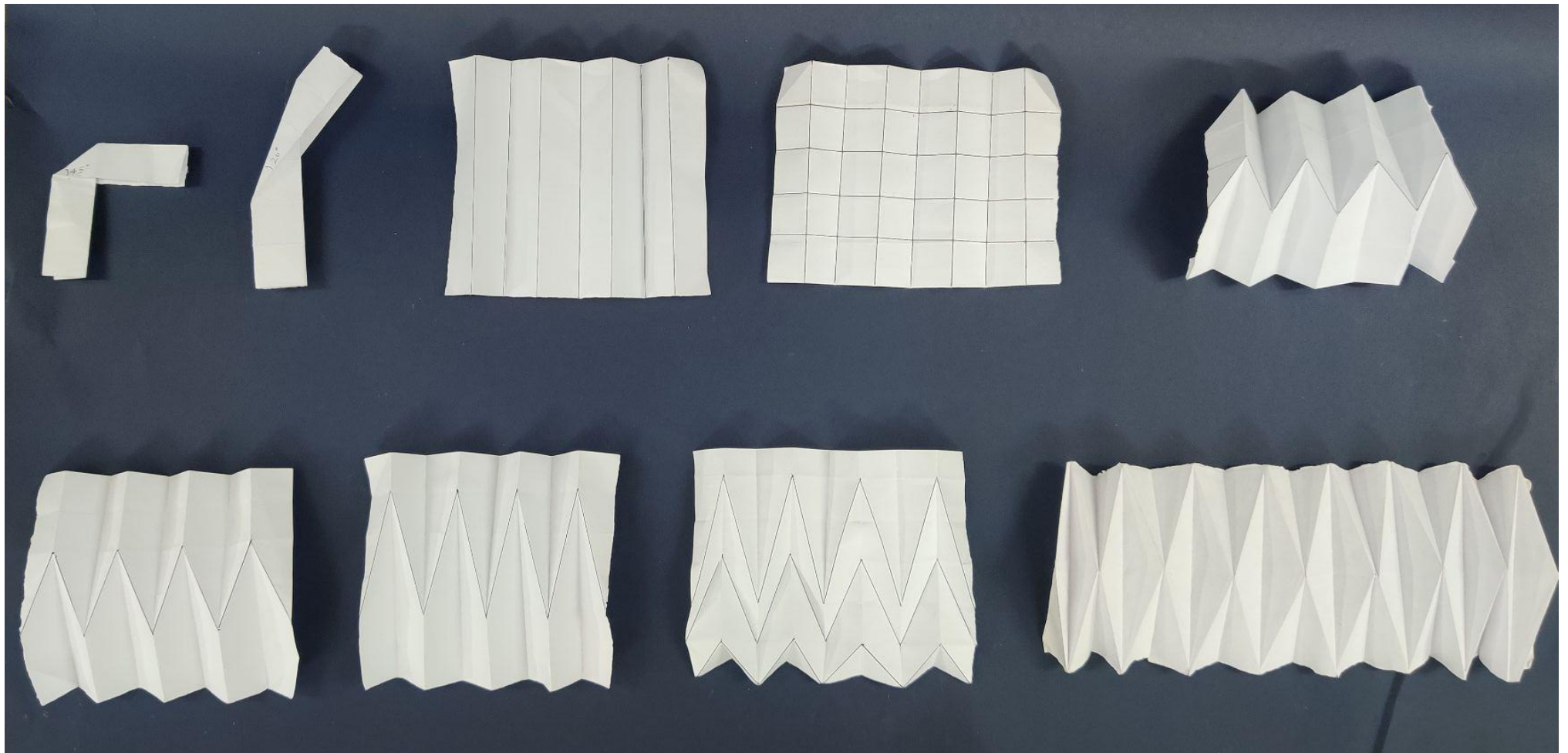
Crease Pattern



We can make more variations by using tessellations and can create a range out of it.

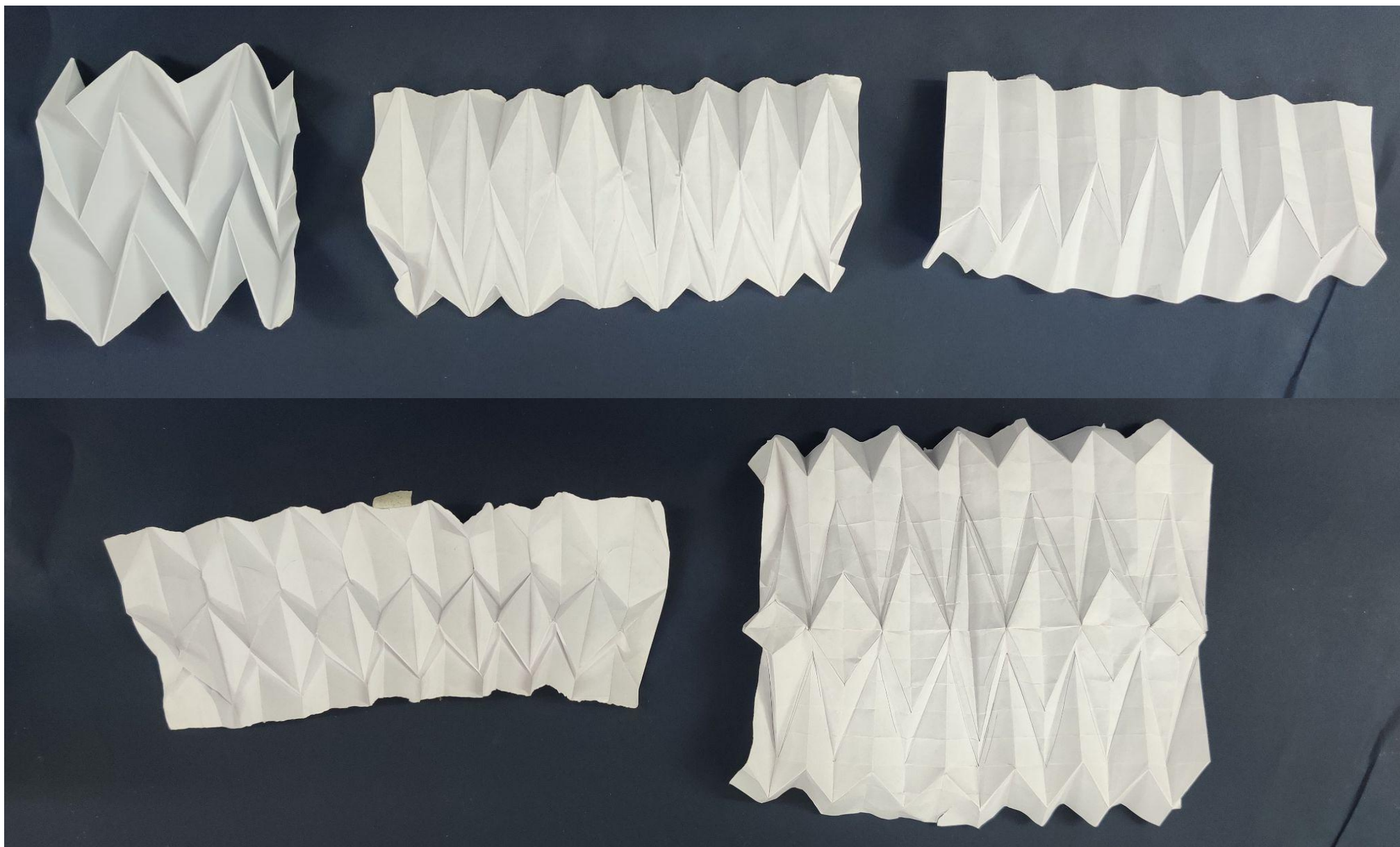


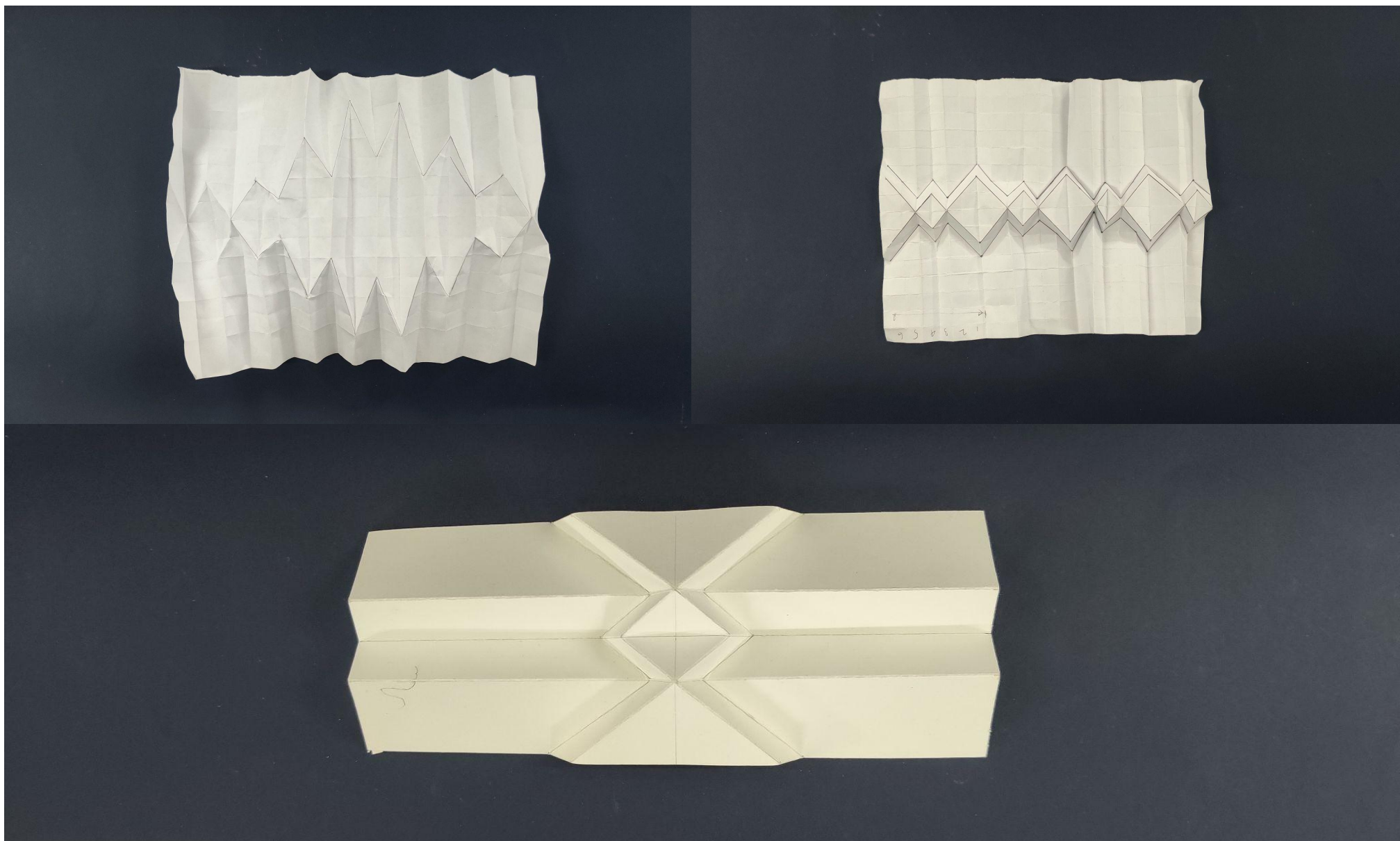
Repository of Explorations



I started my exploration in origami from just one valley fold and one mountain fold. These folds propagated to square grids to different angled folds to combination of both angles and folds etc.

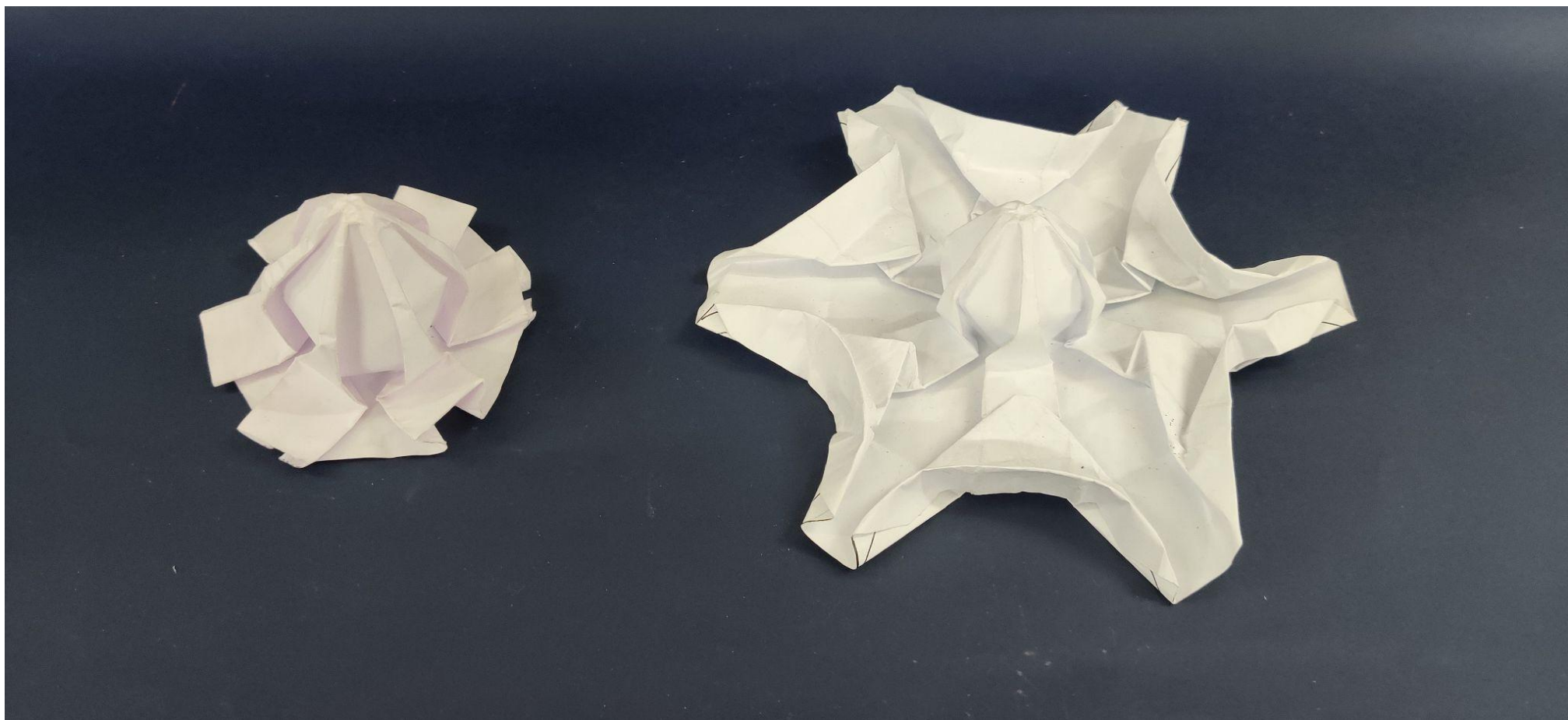
Different combinations of angles gave different shapes and angles of paper making it 3D from a 2D flat paper sheet.







Angles and square grids were not the only technique that i explored. I also thought of making those rigid geometric folds into soft curved folds. Just to see how it affects the origaminess of the form.



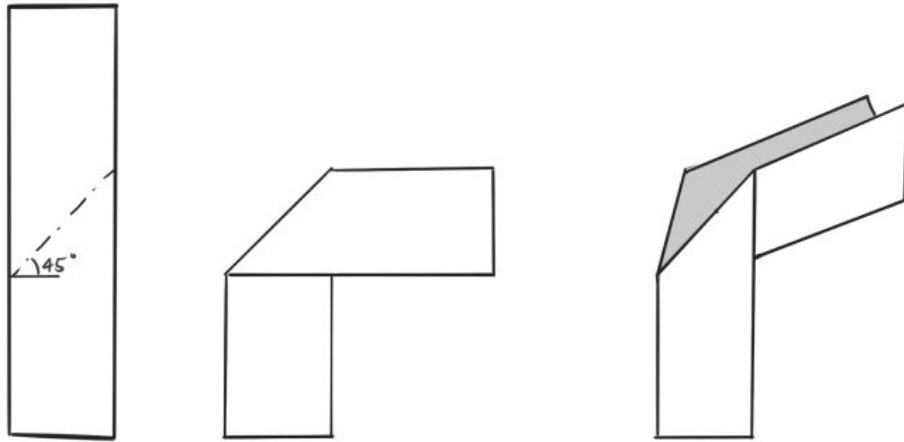
Apart from that I also explored Jun Mitani idea of origami incorporating the curviness in the form.



I also started exploring by making a hyperbolic curve with multiple hills and valleys at varying angles at each fold.

I also explored Chiaroscuro effect in origami where directional light will have a light and dark effect revealing some kind of pattern to the form.

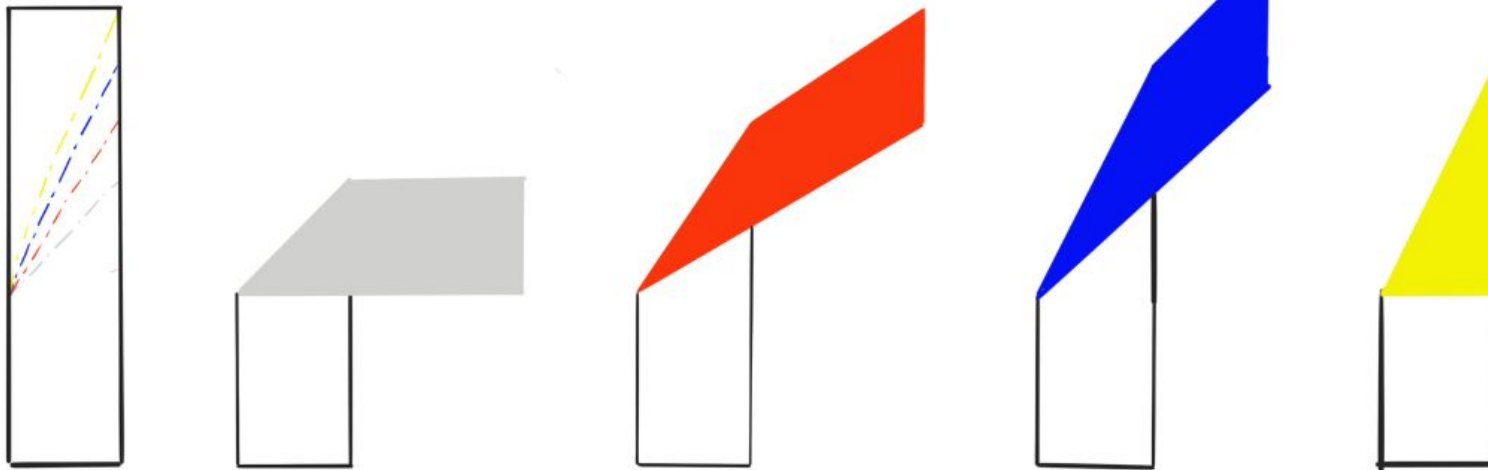
Observations



The angle at which you crease the accordion fold determines the angle and direction of the fold. If you crease the fold at 45 degrees you will get a 90-degree fold as shown in the figure.

You can go lower or higher than the 45-degree mark.

The higher or the lower the angle, will decide how the fold will look as shown in the below figure.

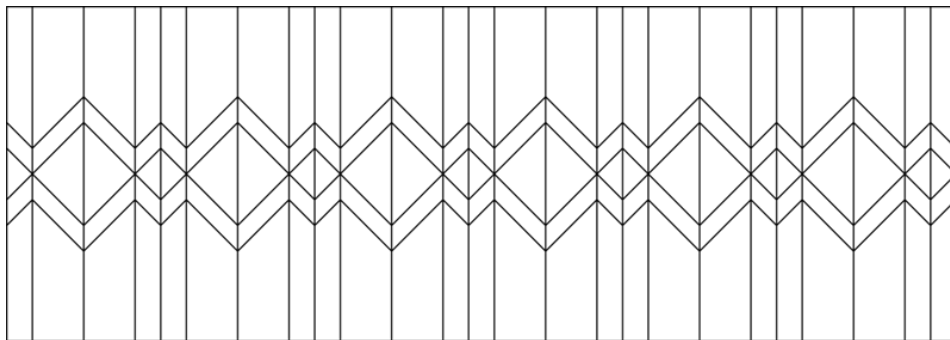


Concept Development

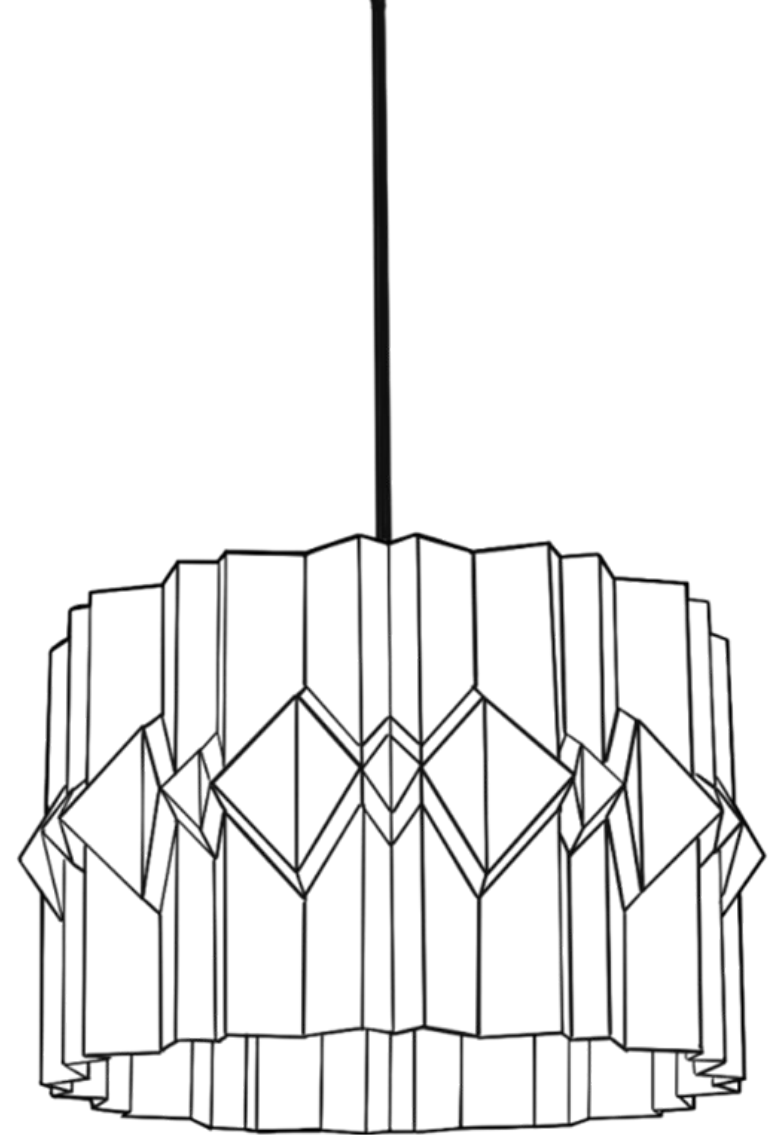
By getting insights from people about how they perceive origami and If I intend to incorporate origami into the light form, what are the factors that I need to consider?

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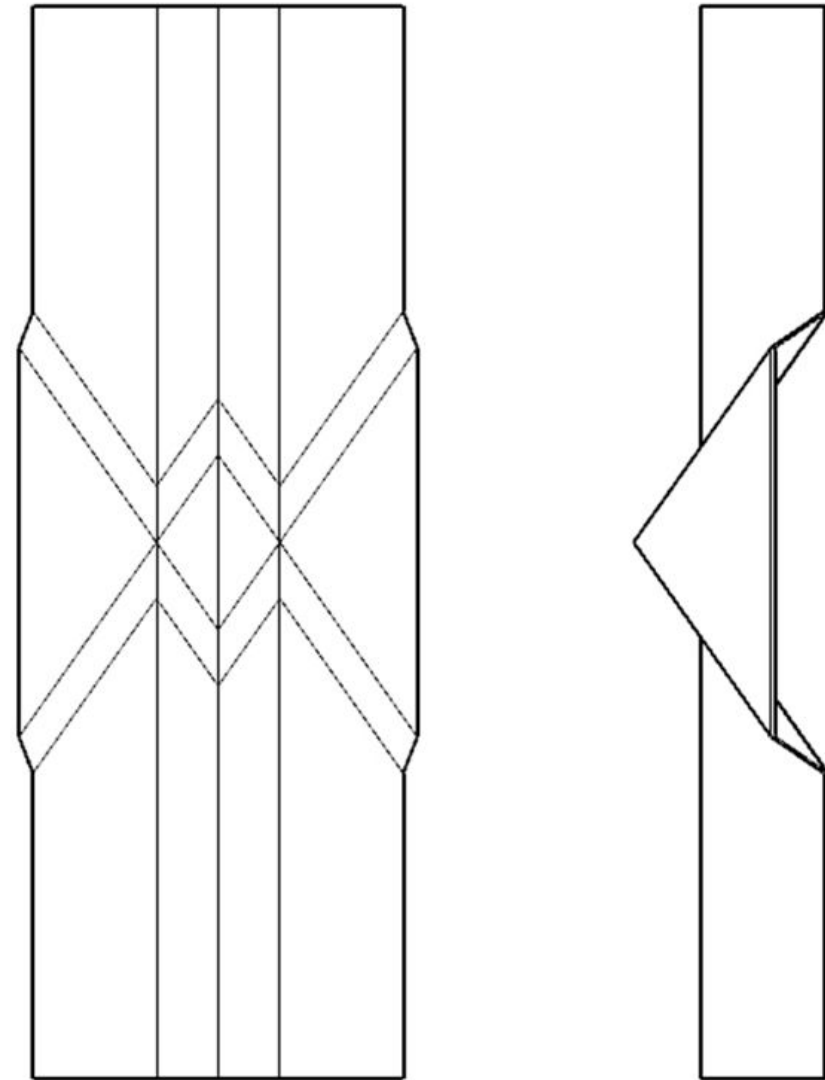
Crease Pattern



Pendant Lamp

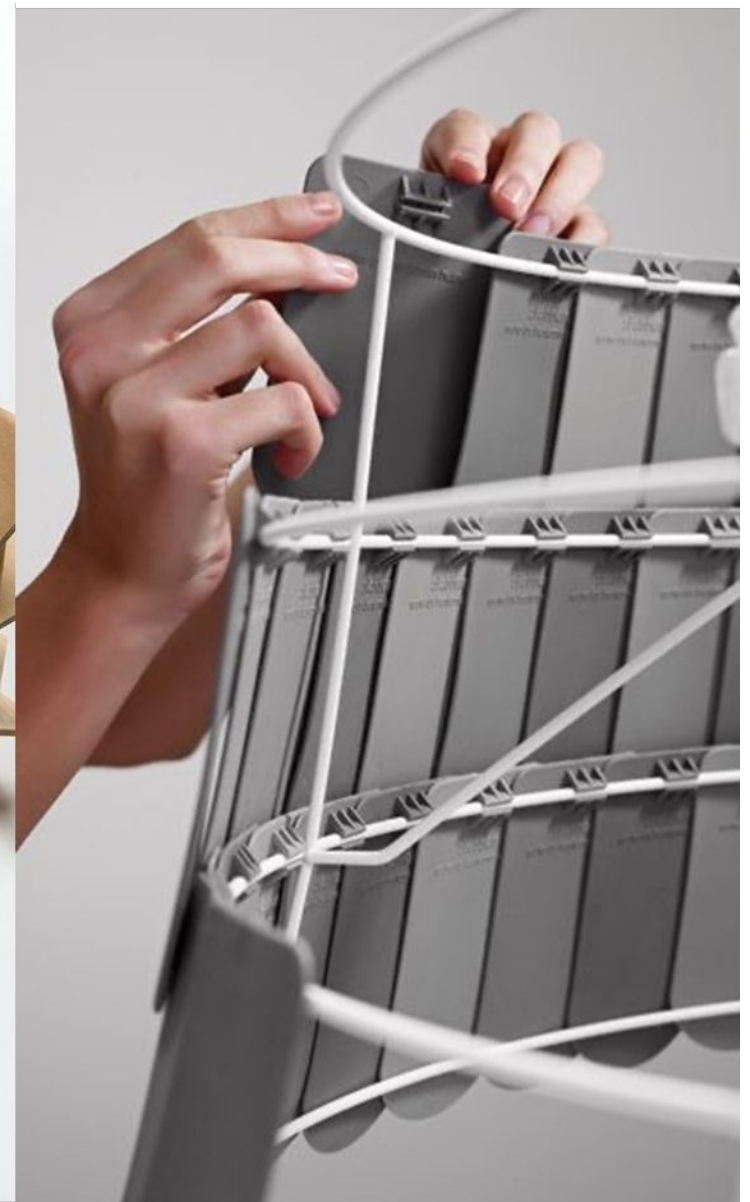
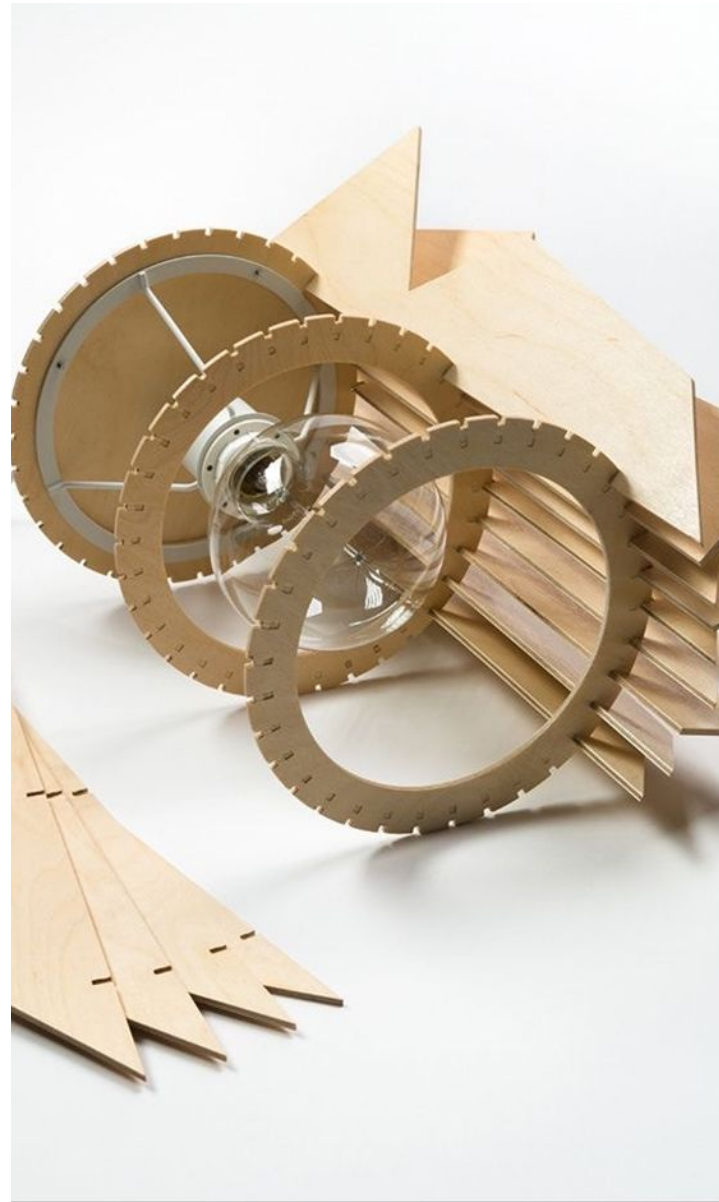
Adding Modularity

As we can see the patterns in origami is always repeating, we can take one single repeating pattern and make a single injection moulded module which can be repeated to make the lamp.



Joinery Details

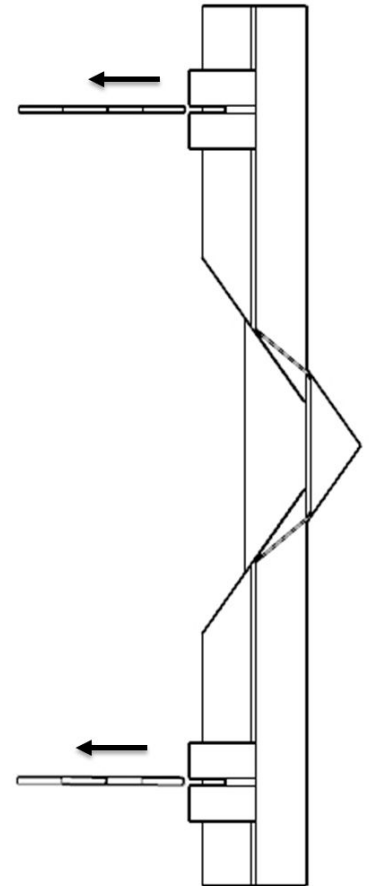
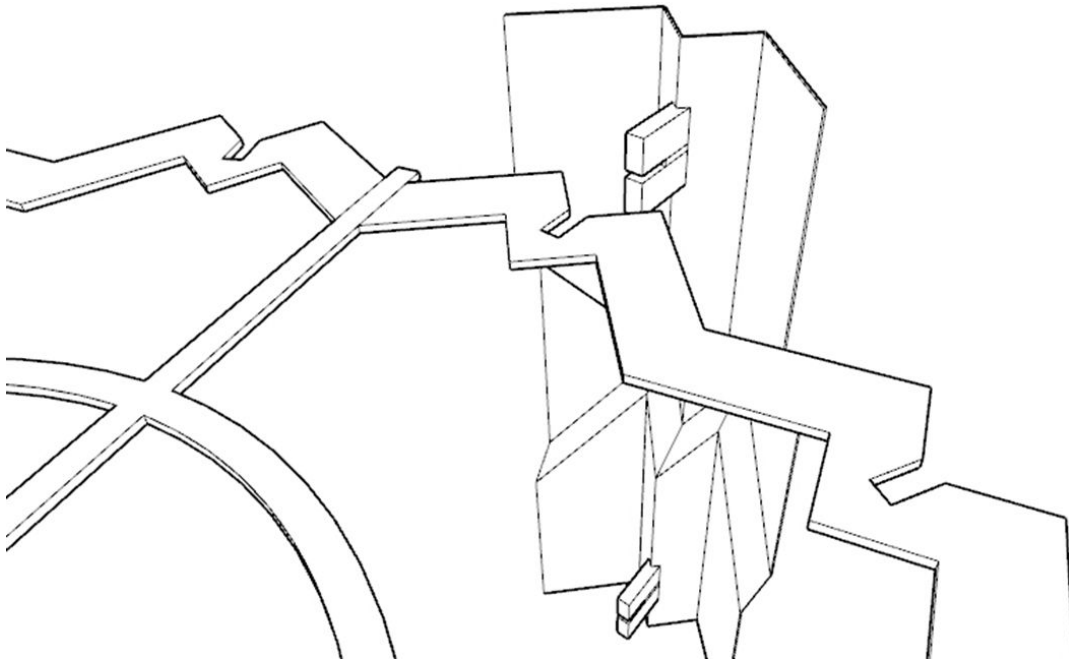
I came across two types of joints that I can incorporate in my design one was a simple snap fit mechanism and the other one was a groove and tongue mechanism.



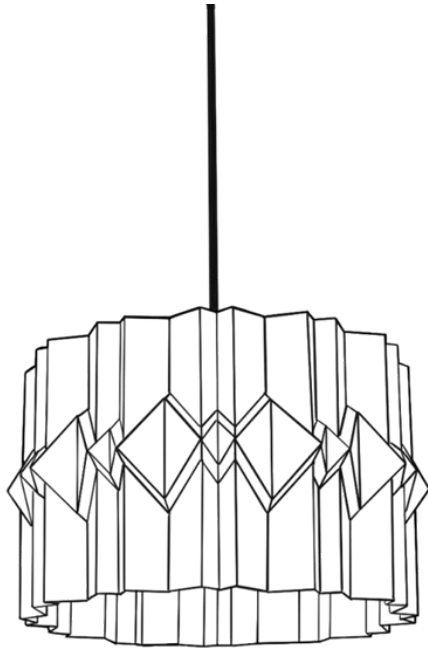
Joinery Details

One injection moulded module will get fixed on the armature where the entire lamp will rest on.

Armature will be present on both top and bottom side to make it more stable

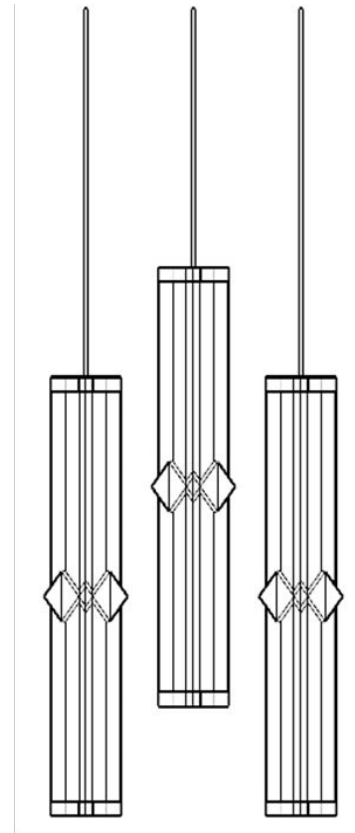
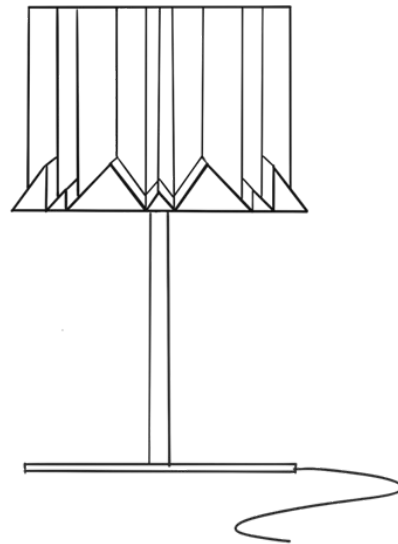


Lamp Range



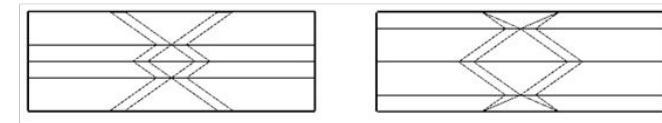
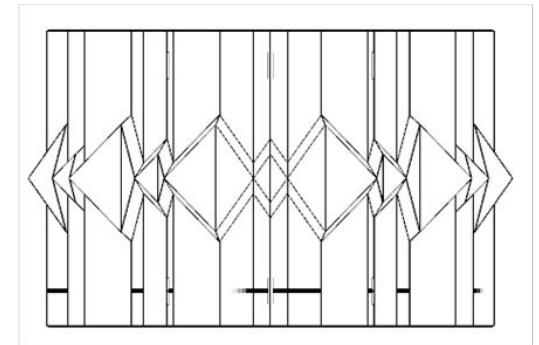
Pendant Lamp

Table Lamp



Pendant Lamp 2

Wall Lamp



Panel Lights





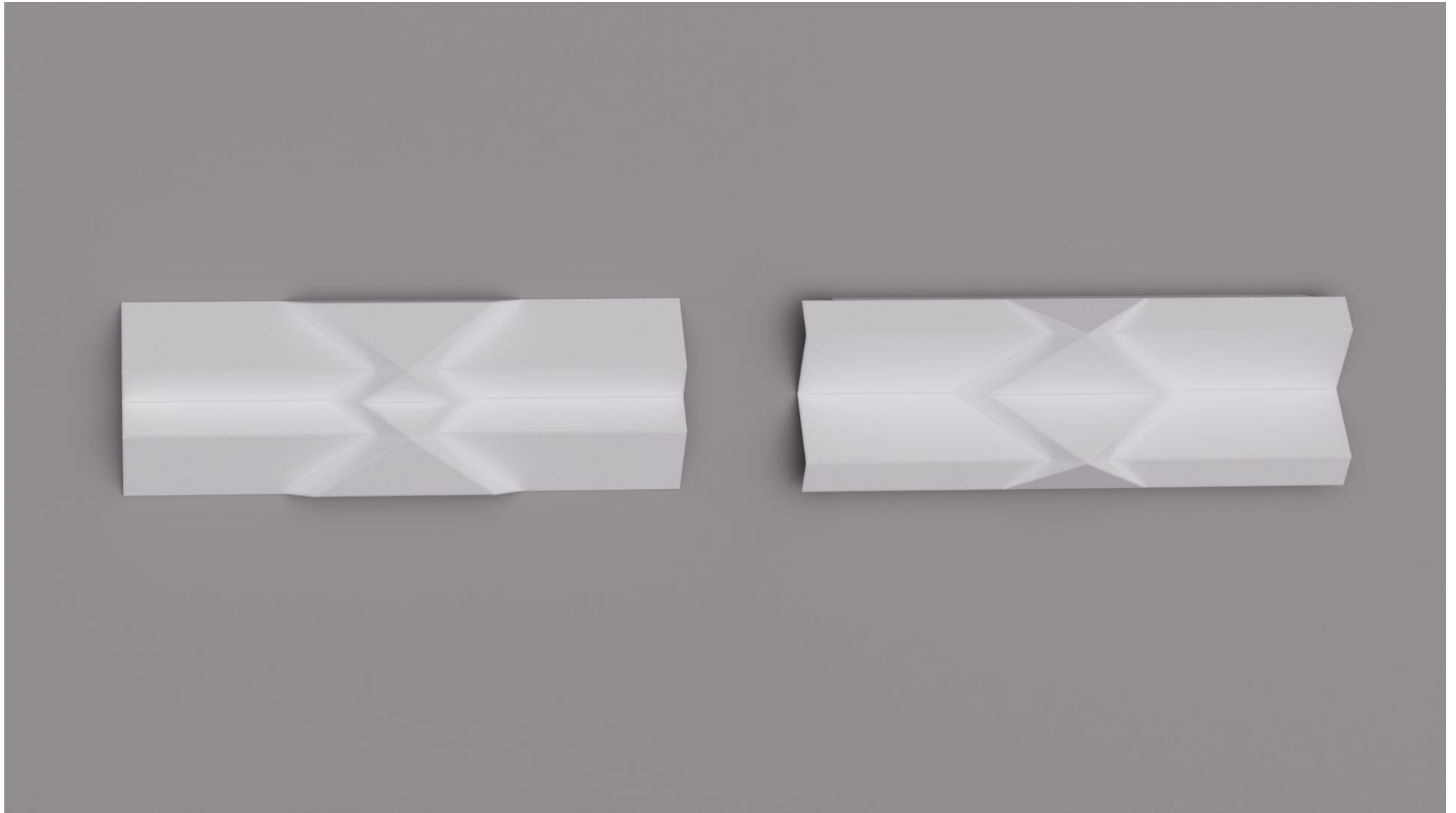


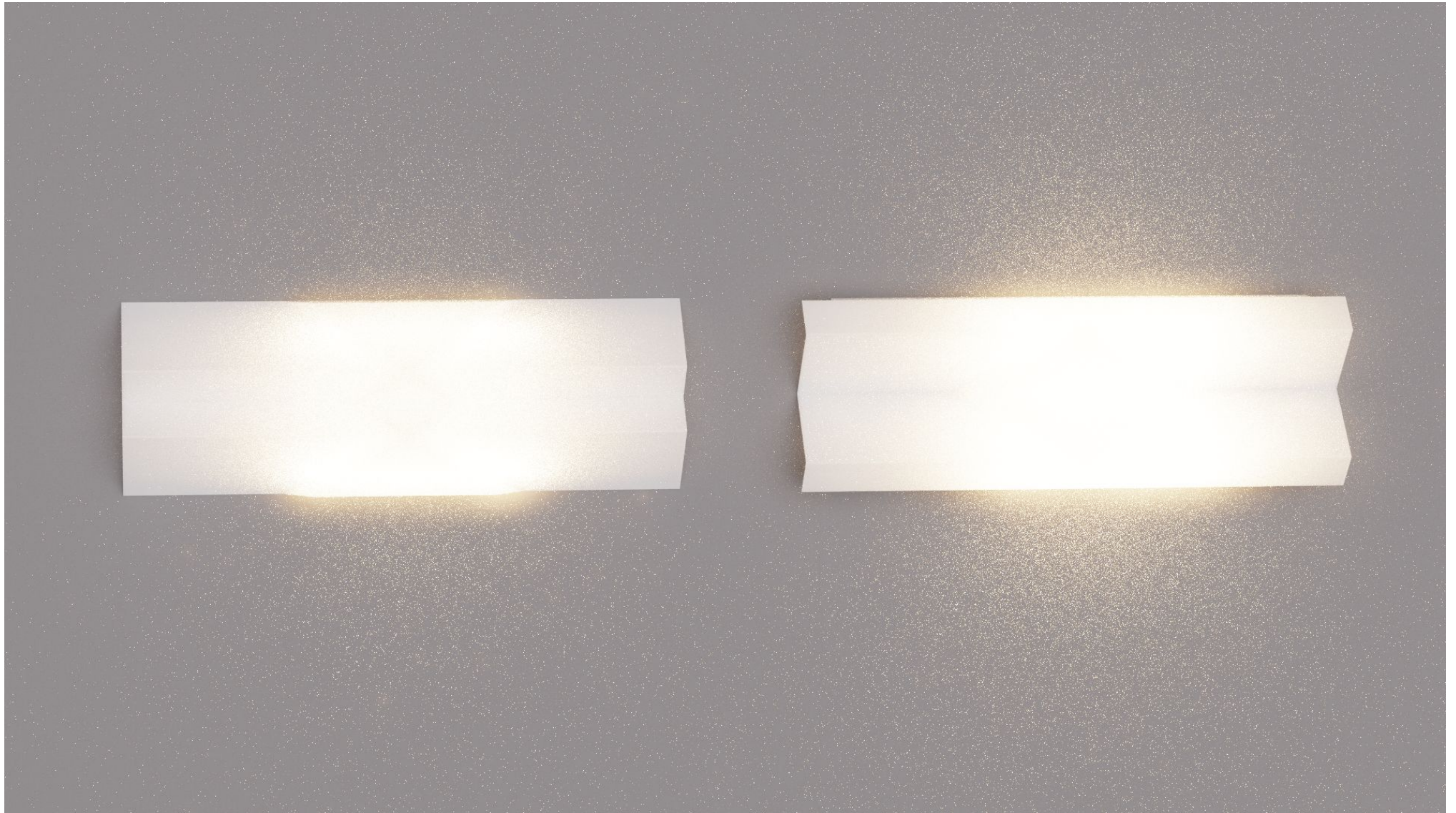


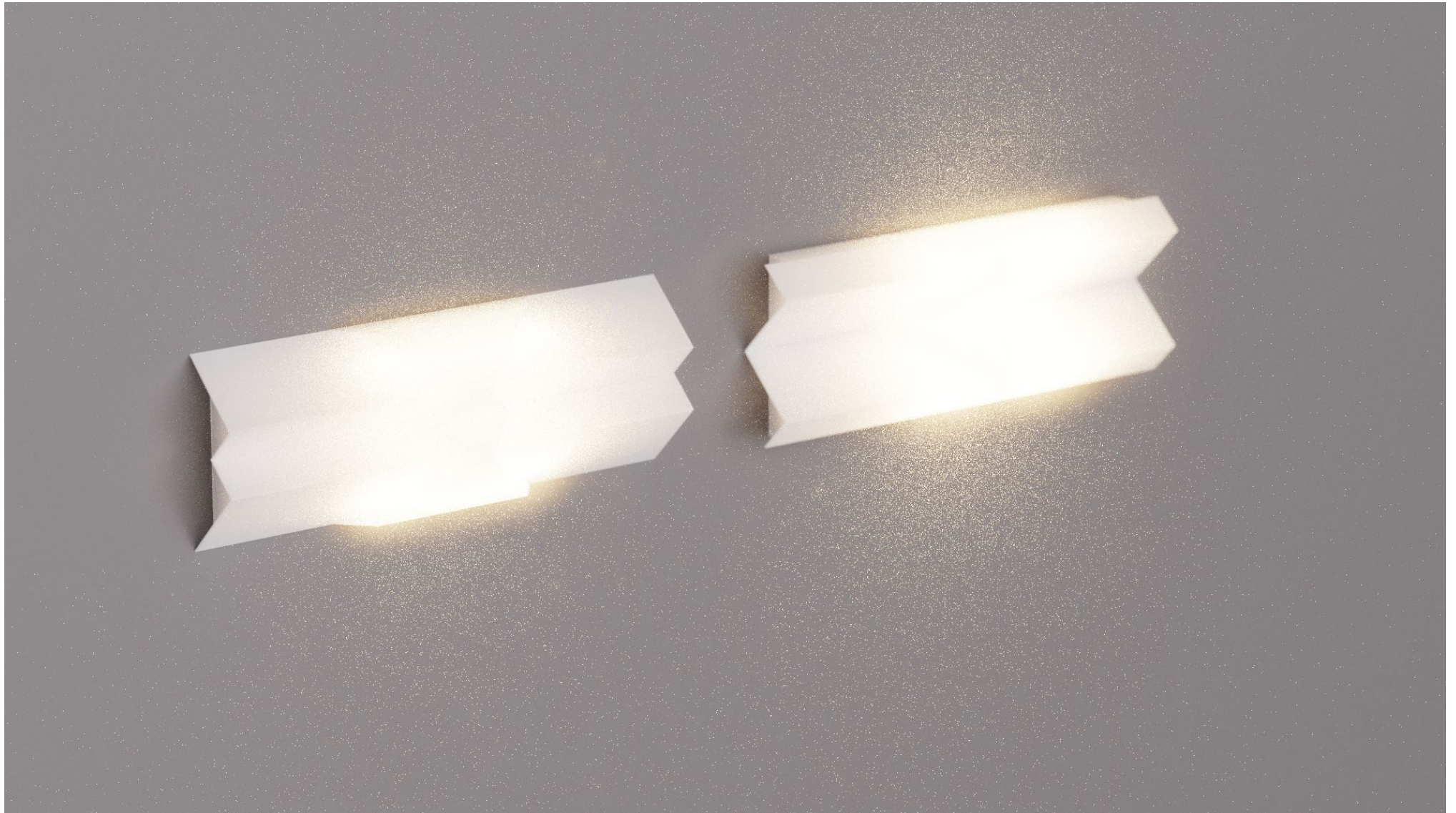


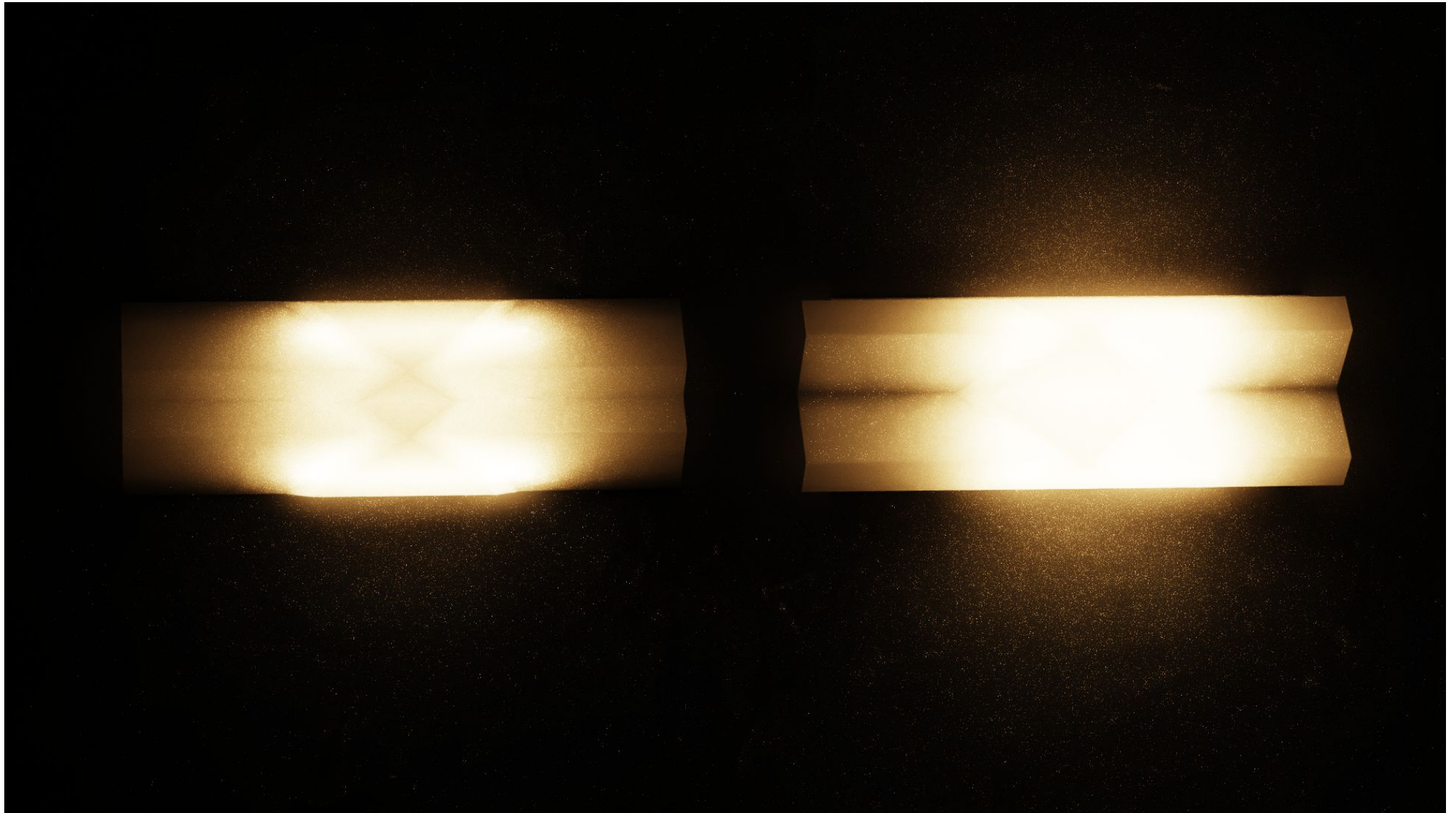




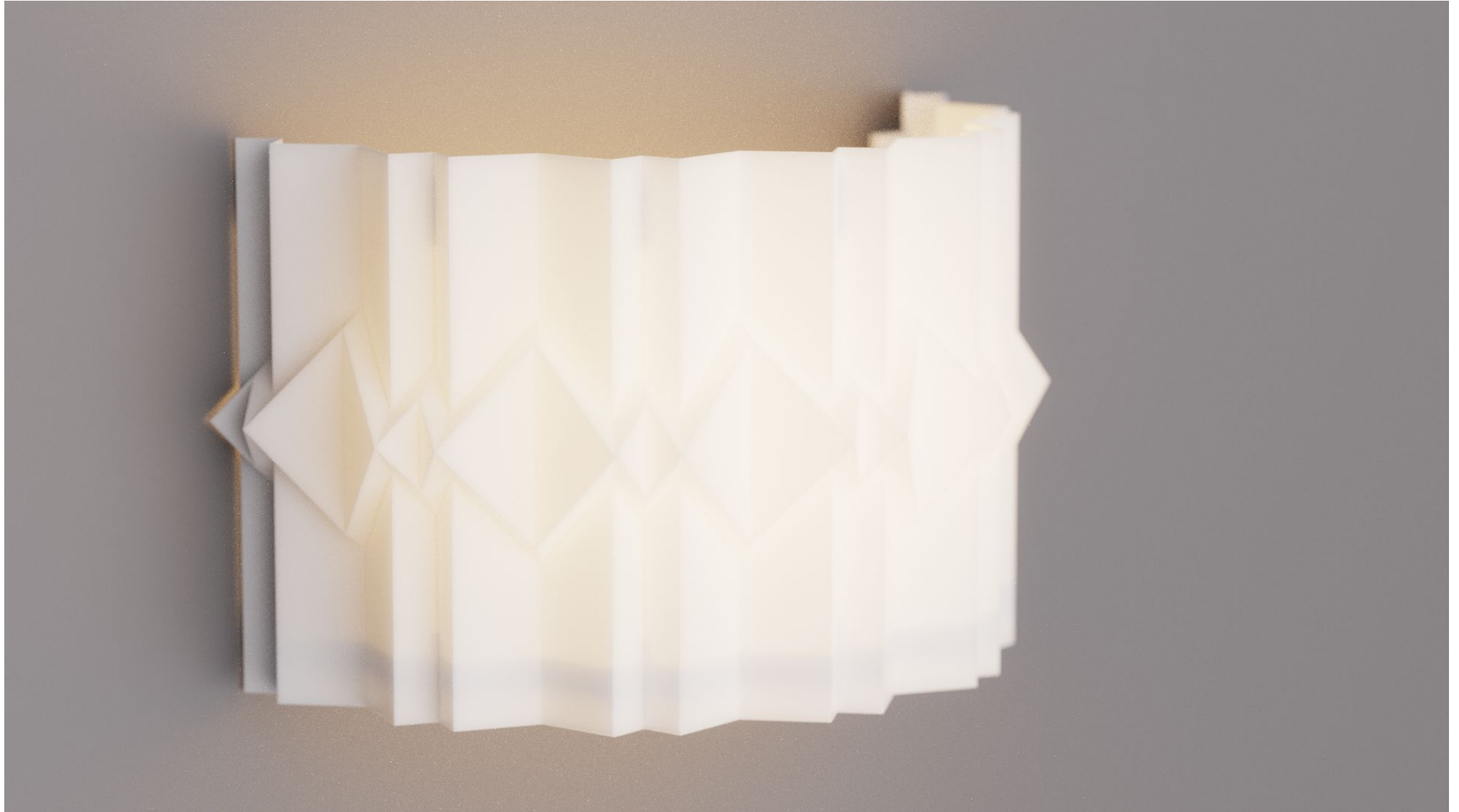












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