Industrial Design Project II

Design of Lamps with Warli Art

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Approval

Industrial Design Project II

The Project Titled "Design of Lamps with Warli Art" by Apurba Modal, is approved for the partial fulfillment of the degree of Master's of Industrial Design.

Project Guide:

Chairperson:

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Declaration

The content produced in the project report is an original piece of work and takes due acknowledgement of referred content, wherever applicable. The thoughts expressed herein remain the responsibility of the undersigned author and have no bearing on or does not represent those of Industrial Design Centre, IIT – Bombay.

I also declare that i have adhered to the principles of academic honesty and integrity and have not falsified any fact/data/ source/idea in my submission.

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Contents

Title	Pg No.
1. **Project Abstract**	1
2. Introduction to Warli Tribe and Art	2
3. Data Collection	6
I. Literature Review	
II. Market Study	
· Warli Artisans	
· Buyers	
· Sellers	
4. **Design Objective and Brief**	10
5. Project Timeline	12
6. Initial Ideations and Brainstorming	14
7. Mood Board	18
8. Concept Generation and Prototyping	21
9. Evaluation	34
10. **Final Concepts**	36
· Function, Form and Aesthetics	
· Dimensional Drawings	
· Exploded view in terms of assembly	
· Branding and Packaging	
· Mockup Models and Prototyping	
11. Product Manuals and Production	52
12. List of References	59

1 Project Abstract

Lighting is an essential part of everyday household and when put into scenarios depending upon the activity that needs to be performed, there are different types of the same. Lamps as a product has a lot of potential to bring out motifs and artforms. They can range from minimal, modern/ contemporary, to traditional and abstract. Traditional or Tribal Idian artforms especially Warli is facing a huge problem in sustaining in the modern society eventhough it is heavily used in products such as bags and clothing, they are however taken from an uncredited source.

In this project, Lamps as a product incorporating Warli art is explored to push the art further into urban households. A system level involvement of the artists living in their villages in the manufacturing of lamps would bring a viable source of income and hence keep the art alive. For this project, a hybrid of modern and traditional type of lamps has been taken keeping in mind the style of art and various lighting experieces have been explored.

2 Introduction to Warli Tribe and Art

About their Culture

The Warlis are an indigenous tribes living in the mountainous and coastal areas of Maharashtra-Gujarat border. The earliest recorded existece of the trie dates ack to 3000C ad were iitially doe iside the caves.They have their own animistic beliefs, customs and traditions, however, over the years they have also adopted many Hindu beliefs. The Warlis speak an unwritten Varli language which belongs to the southern zone of the Indo-Arya laguages.

The tribe resides in homes made of mud, Cowdung and thatched roof made of palm leaves and paddy straw. The art began as a means of recording activities and soon after became a medium to decorate their homes.

Majority of their customs are woven around the worship of Mother Nature. During the sowing season, God of rains 'Narandev' is worshipped followed by prayers to 'Himaidevi' and 'Hirva', the domestic Gods. Before harvesting, the Goddess of fields 'Savari' is offered prayers and worshipped. The reaping season calls for celebration and glorification of the Tiger-God (Vaghadev) and Corn-Goddess (Kaansaari).
At the time of marriage' Palaghata', the Goddess of fertility, is worshipped.

The main source of sustainance for the tribe is agriculture and fishing. Painting as an activity hardly provides a means of income as well as the tribes do not resort to moving to the cities to preserve their culture.

Visual Style

The art is done on the walls of their homes as a embellishment. Major activities depicted are:

1. Celebration of festivities and events such as wedding, child birth are shown by the tarpa dance as a circular/ spiral motif which is the most recognizable visual element.
2. Farming and Fishing: All events right from Ploughing, planting, harvesting are shown.
3. Everyday activities at home such as cooking, taking care of children.

Hunting

Fishing

Farming

Elements

Circle: Represets the Sun and the Moon also the circle of life, ifiite happiess.
Triangle: Derived from the mountains and trees
Square: A human invention which indicates a sacred enclosure or a piece of land. The central motif in each of the ritual paintings is the square known as the chowk.

Hence the Triangle is the dominant visual character in the artform. The visual Language shows Rhythm.

History of Lighting and it's Evolution

Starting from 1807 when the gas lighting revolution started, lamp shades started to come up and the materials were glass and metal. With the advent of new art movements over the decades, the styles kept on changing from Art Deco, Art Nouveau to Modern.

In 1932, came the all time classic, the anglepoise lamps which is a pure example of Industrial Design and modernist lamp where function overpowers the form. New production techniques and simple styles democratised interior desing in the 1980's.

Status symbols and heavy ornamentation were out, while unbranded clean designs were in. The minimal revival took inspiration from scandiavia and far east fashions, with these elegant simplified desings perfectly epitomised by Isamu Nogushi's Akari Lighting Scultures.

Since 2014, new revolutions in lighting technology is taking place. To keep the style of the old filament style incandecent bulbs but removing their heating and power issues, Tala Led light bulbs use less power but keep the retro aesthetic in place.

Most amount of experimentation has happend in shade and lamp design but there has been limited use of traditional art on the same.

Tala LED Bulbs

Isamu Nogushi's Akari Lighting

Anglepoise Table and floor lamp, 1932

3 Data Collection

Market Study

Table Top Lamps

Most of the Lamps have a flat base with the bulb eclosed with a fabric or paper shade, having a simple geometric volume with a lot of space availale for artwork to be aptly represeted.

Floor Lamps

These are again restricted to mainly cylindrical forms.

Ceiling Hanging

Most items in the market have only a bulb enclosed by a shade of fabric, paper,
veneer etc.
Traditional lamps have a earthy feeling to it.

Wall Lamps

Parallel Lamps in the Market

The current lamps are marketed by local traders and craft houses and have conventional and traditional forms of representation. Materials are mostly wood, Metal and Paper. The warli artist does not fall into the system of revenue collection directly and is not credited by the traders in it's sales.

Brands which are selling products mostly online in India such as these are: Rangresha, Pepperfry, Moorni, Sweetcouch, Craftsvilla, Shady Ideas.

They range from 700 - 3,000 INR.

After contacting the traders, it was pointed out that artists are hired on contract basis but if they are authentic warli artists or not is not kown. Therefore there is a huge tendency of replicating original artwork.

4 Design Objectve and Breif

Design Objective

" Design a range of Lamps incorporating Warli art for Urban consumers for their homes. "

Design Brief

To design Lamps to appropriately represent the tribal art of warli and create opportunities for the artisans to benefit from a designed system of manufacturing the products. It should create a unique visual experience and style which is new to the market.

Functional Requirements of the Lamps:

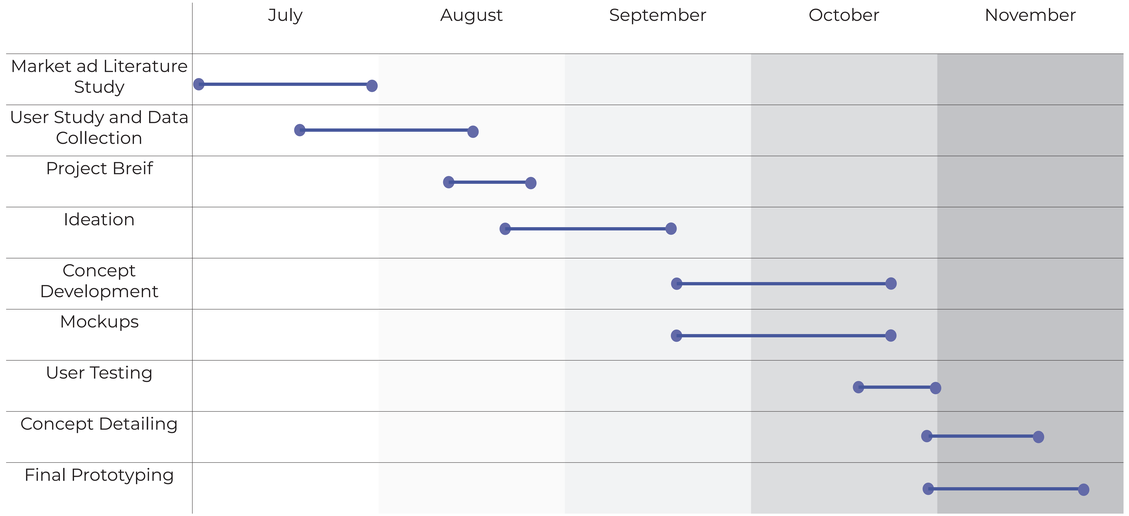
1. Easy to assemble and install.
2. Materials: Wood, Paper, Metal, Plastics (till a certain extent).
3. Meant for mood lighting and medium to light activities.
4. Optimized for mass manufacturing, hence simple parts and pieces.
5. Ease of painting the parts by the artists.

Aesthetic Requirements of the Lamps:

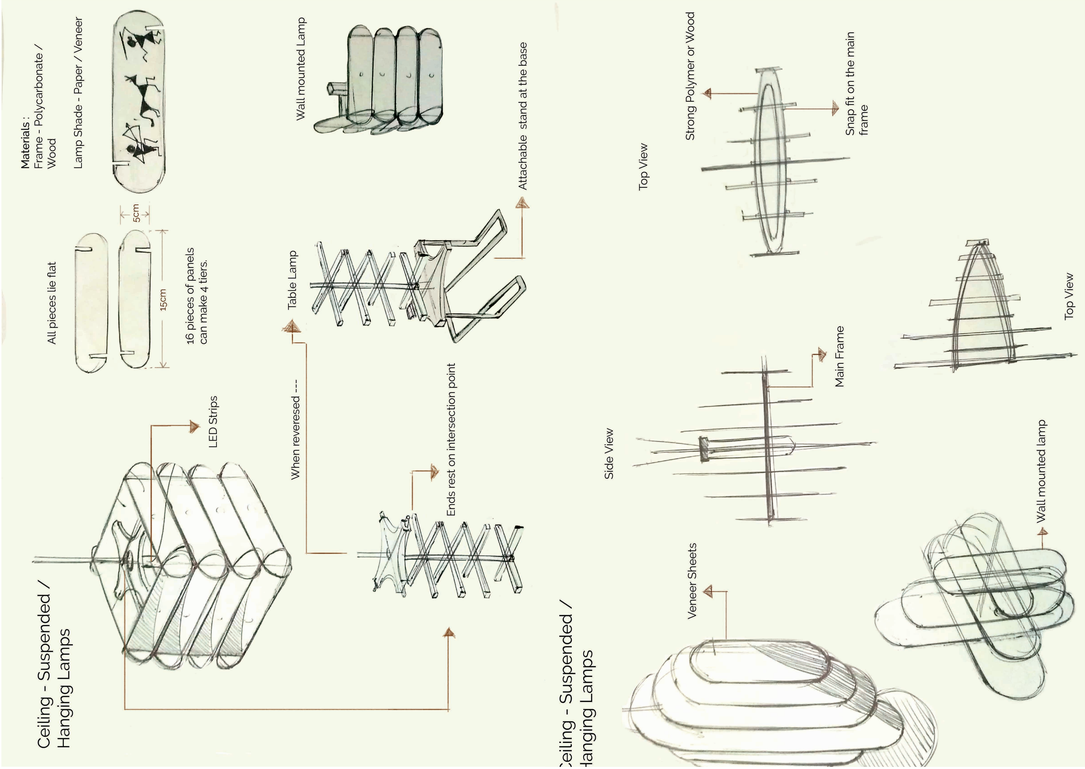
1. The form resonates with the warli artform.
2. A richer understandig of the artform by the consumer.
3. Artist ejoys paitig the paels ad thereffore keeps the art alive i the future geeratios due to icome geratig value of the system.

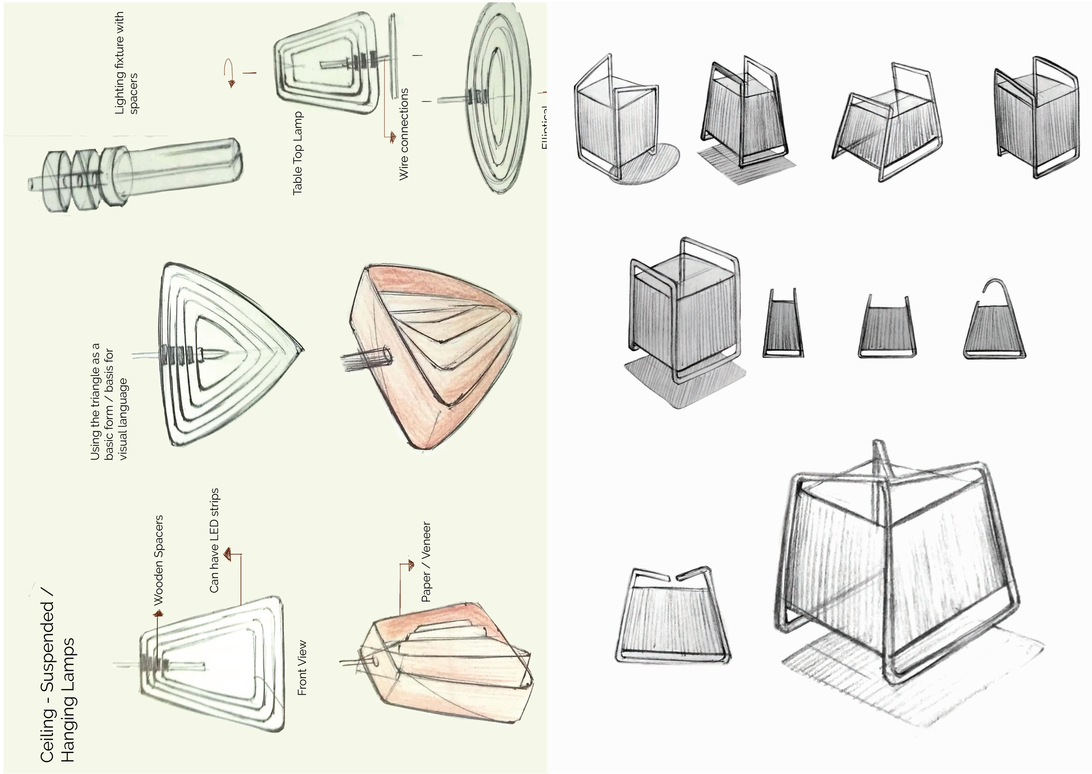
User Profile:
Citizens living in Urban areas who are lookig for alternatives to the lamps/ luminaires available in the market to decorate their newly purchased flat and have a taste towards Indian crafts but could also be a consumer looking for something new.

5 Project Timeline

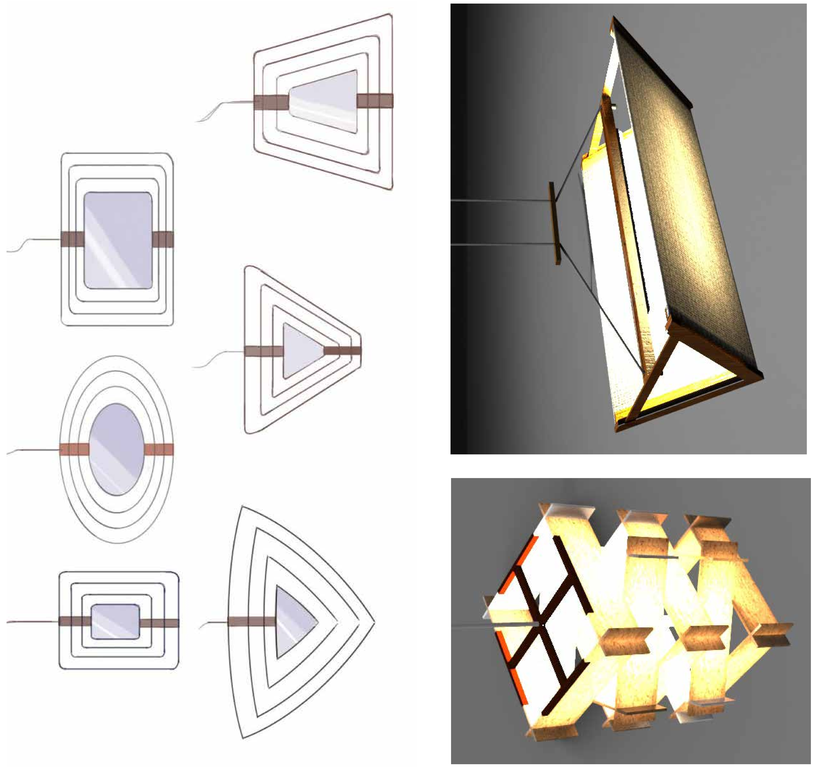


6 Initial Ideations and Brainstorming





Project 2: Design of lamps with warli art



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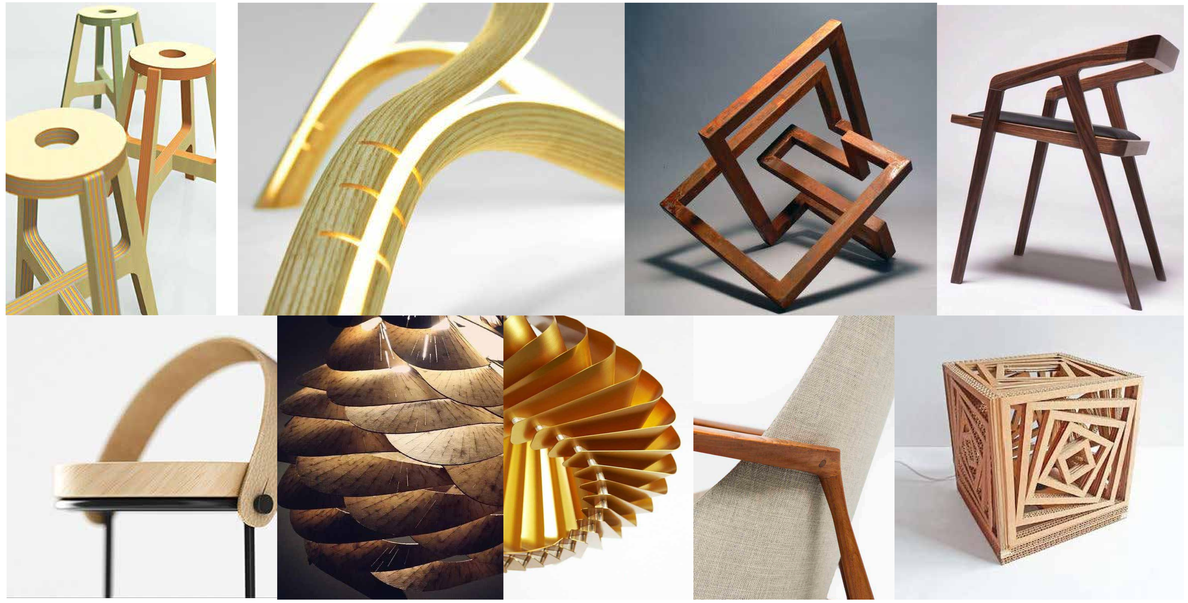
7 Mood Board

Based on the Mood boards generated, the aesthetics of lamp concepts were developed.

Creased

Wooden



Project 2: Design of lamps with warli art

8 Concept Generation and Prototyping

Keeping in mind the ease of construction by craftspersons and ease of assembly by the user, the concepts were generated. Materials such as paper, Wood and Metal were kept as the primary focus.

Concept 1

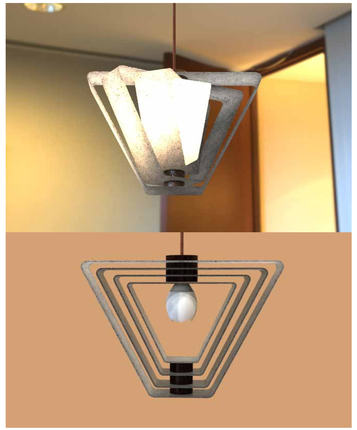
Inspiration:
Circular Movemet of the tarpa dacers have a rhythm.
The shape of the paels have ee take from the asic geometic shapes used i their artform

Warli Art positioning:
The art peice is paited on the central as well as side panels and stories or scenes selected are from a particular festivity or event.
Different coloured lights can be used as well.

How light behaves?
The light diffuses as it passes from one panel to the outside ones and the central panel has a covering to not let directlight enter the person's eyes.
Lighting used: Warm White LED bulb, 5 watt.

Construction:
Banana fibre paper is stuck on 1mm translucent polycarbonate sheet of 6cm X varying Lengths. The panels open up and stay in the position because of the stoppers on the axis.

Mockup Model



3D Digital model

Concept 2

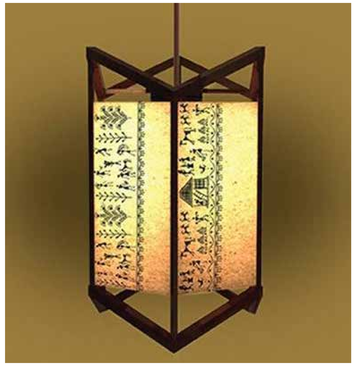
Purpose:
Light Living/ Dining room activities such as snacks, casual reading, corridor lighting.

Inspiration:
Inspired by the homes of the warli tribes.
The different viewing angles of this distorted hexagon.

Warli Art positioning.
The art peice is hand painted by the artist on a single roll of paper of about 70 cm length to 20 cm width.

How light behaves?
The form of the lamp gives a feeling of enclosure which is synonymous to their land which they pray to and live on. Light diffuses equally in all the sides. Type of lighting: CFL bulb of 5 watt has been used. Different coloured lights can be used as well.

Construction:
The lamp is assemled by the user as there are 4 categories of items to join. The top and bottom rim, 6 rods to hold the frames, a sheet of painted artwork and light fixture.



Concept 3

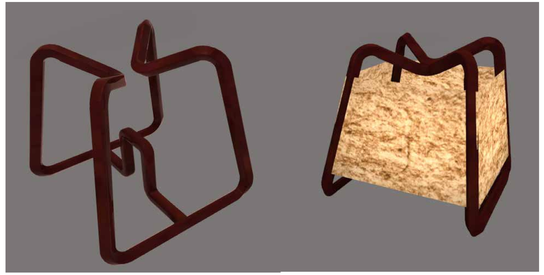
Purpose:
Side Table Lamp for reading, Using the phone, corridor lighting etc.

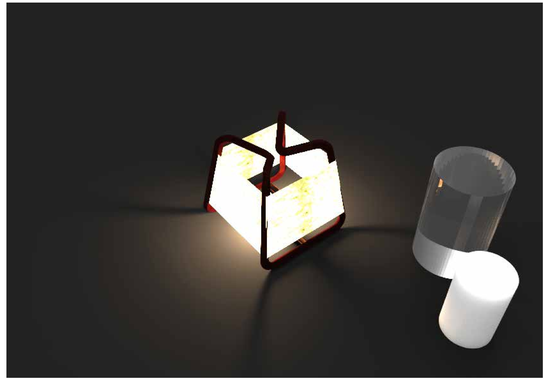
Inspiration:
The form is inspired from the houses of the warli tribe and the usage of one single line frame which represets the circle of life.

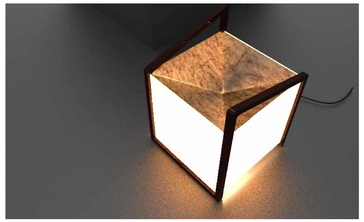
Warli Art positioning:
The art peice is hand painted by the artist on a single roll of paper of about 45 length to 8 cm width.

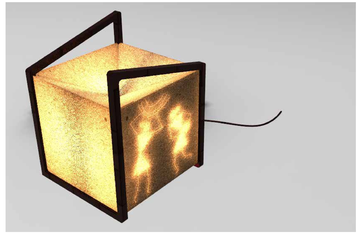
How light behaves?
Light diffuses equally on the surfaces. The top part of the lamp will be covered to not let light come directly to the eyes.

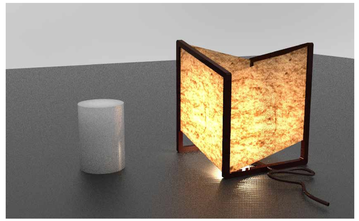
Construction:
Wood peices Cut straight, joined and sanded to form the frame and the paper panel is held together by the snap on the frame.











Concept 4

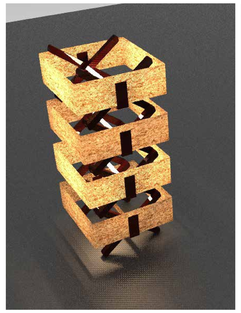
Purpose:
Table Lamp for Mild to Intense Readig as well as other activities such as Dinner.

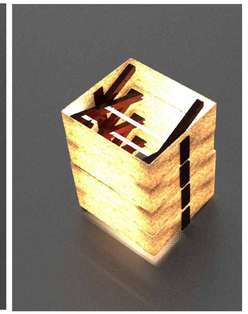
Inspiration:
Increasing heights of the trees.

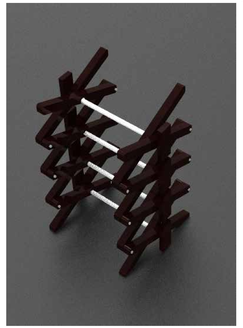
Warli Art positioning.
The art peice is hand painted by the artist on 4 strips of paper of about 9 cm cm width to 75 cm length.

How light behaves?
The stacked panels which rise up emits more light with increasing height when pulled up and vice versa.
Lighting: LED strips are o the axis of each level.

Construction:
The scissor hinge mechanism can be acheived by using strips of thin (2mm) acrylic sheet, drilled and connected. The paper panels are set on each hinge using a snap clip of sheet metal.







Concept 5

Purpose:
Table Lamp for Mild to Intense Readig as well as other activities such as Dinner.

Warli Art positioning.
The art peice is hand painted by the artist on 5-8 strips of paper of about 11 cm cm width to 27 cm length.

How light behaves?
The concept of a lamp has been deconstructed where the light falls on the surface of the lamp rather from the inside to the outside.
Light used: LED strips soldered (5 watt).

Construction:
The inner long panels are held at the top via metal clips which are adhered to disc at the top. The Disc also has LED's throwing light downwards and on the surface of the inner panels. The outer strip is prefixed onto the disc with adhesive.

1st Iteration

2nd Iteration

Mockup Models

Concept 6

Purpose:
Ceiling lamp for mood lighting in living room and Bedroom.

Warli Art positioning.
The art peice is hand painted by the artist on 6 strips of banana fibre paper stuck on polycarbonate sheets.

Inspirations:
The circular tarpa dance.

How light behaves?
Light is diffused by the sheets and some of it shows out brightly through the slits. The Form creates a circular movement.

Construction:
Banana fibre paper is stuck on 1mm translucent polycarbonate sheet of about 13cm cm width to 35 cm length.
The top and the bottom disc of wood are attached via wooden rods where the user has to just insert nut on the bolt comig out of the rod which passes through the discs. Each sheet is held together by the groove on the wood discs.

Concept 7

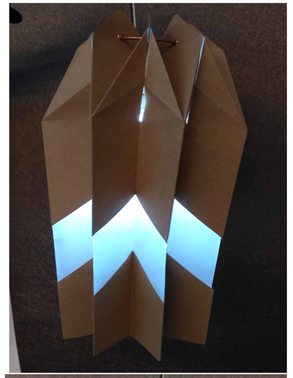
Concept Refinement:
After workig on the refinement of compactness of the lamp shade of concept 5, we arrived at the accordian fold for the same. An origami style lamp was chosen where diffusion of light was implemented using two different types of paper.

Purpose:
Hanging Lamp for Mild to Intense Readig as well as other activities such as Dinner.

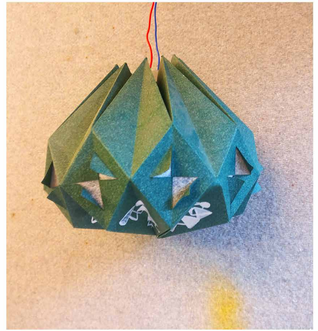
Warli Art positioning.
Daily activities of warli women at home and village on the banana paper which lets out more light.

How light behaves?
The light emits out of the paper with lesser gsm. A band of light is seen in zig zag.

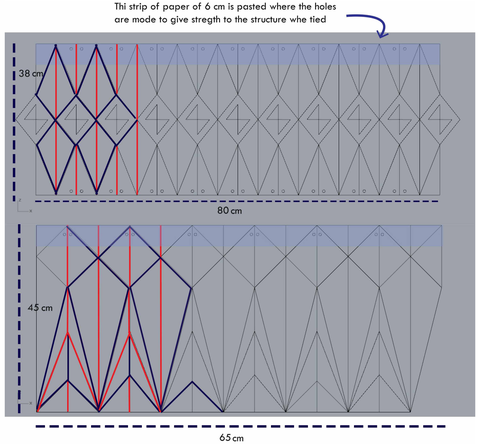
Construction:
One single sheet of handmade 110 gsm paper of dimensions 90cm x 30cm was folded and cut and another sheet of banana paper was used of 90cm x 15 cm.



Concept 7



The Origami lamps were further evolved keeping in mind the novelty of compactess while packaging and transport. Variations in shape of folds were done along with cuts and using more than one type of paper.
To provide stability at the bottom, tying as well as having a second loop of metal wire were explored to give a uniform and symmetric shape to the lamp when hung.



Concept 8

Purpose:
Table top lamp for multiple desk activities.

Inspirations:
The connected social structure of the warli tribes. The pieces come together and can form different forms using magnets.

Warli Art positioning.
Multiple faced polygons have one character each depicting celebration. It is painted after the lighting and magnets are fixed inside and pasted.

How light behaves?
User can create different volumes by manipulating the form as the polygon's faces have magnets.

Construction:
All the yellow lines marked fold like a valley and top edge is stuck to the bottom. A strip of LED runs through the inside and small disc magnets are pasted from the inside surface .

Concept 9

Purpose :
Table top side table or wall lighting for bedrooms which will act as a reading light as well. The same form can be extended and be made full circle to be a ceiling lighting fixture as well.

Inspiration:
Monsoon is a season of celebration for the warli community and peacock is a symbol of the season. The Lamp opens up like a peacock's tail feather.

Lighting Experience:
LED strip light is between the front and back fold. The light passes through as well as falls on to the surfae to illuminate the artwork.

Construction and Assembly:
The entire lamp is folded out of one single sheet of paper, an LED strip is pasted once the paper is opened and tied using a metal ring. The lamp is painted before folded.

Concept 10

Purpose:
Mood lighting for living room spaces. Can be used for light reading.

Warli Art Positioning:
The bottom part of the lamp is completely hand painted in black by the artists before it is folded.

How light behaves:
Light source used is a LED bulb which gets fixed when the lamp is tied at the top. The cutouts and folded edges add varying lighting experiences.

Construction and Assembly:
Handmade or good quality catridge paper is cut and space is assigned to the artist for painting. After drying, the inner side of the lamp is folded and cut according to the grid and butter paper is stuck behind the cutout area for diffusion.

The lamp is tied at the bottom and the top using jute strings with beads at the end.

9 Evaluation

Based on user review, the Lamps which were preffered most depeding on factors:

1. **Ease of Assembly and Collapsabilty**
2. **Novelty in Lighting**
3. **Warli Art Representation**

Concept 3
Novelty: Light passes through the positive of the artwork.

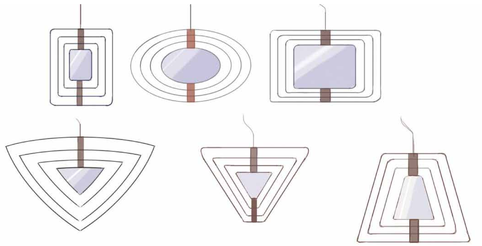
Concept 1
It needs further refi**n**eme**n**t to fix the flimsiness of the bottom of the strips.

Concept 8
It was further simplified in terms of construction as to have a playful table lamp which changable forms.
Novelty: Variale forms, I**n**teractivity of the user.

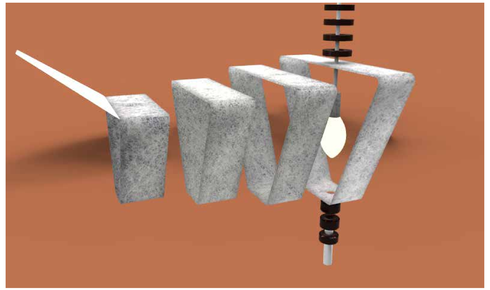
Concept 9
Construction details were worked upon.
Novelty: easy Assembly, knock down and compact packaging.
Light falls on one surface and light passes through the other.

10 Final Concepts

Final Concept 1



Formal Explorations



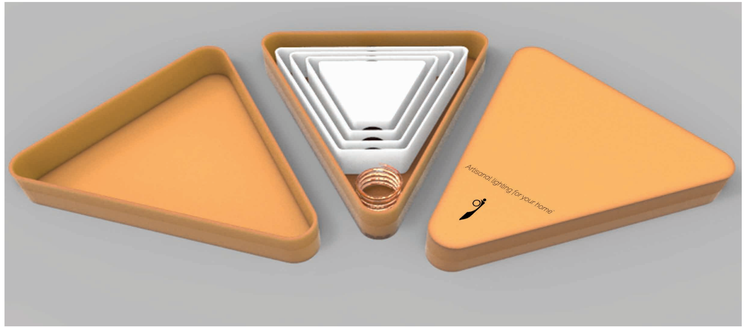
Assembly

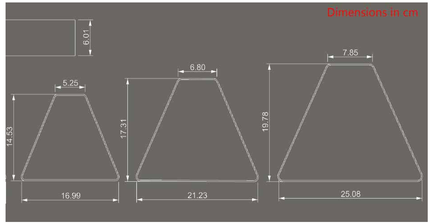
Construction Details & Sequence:

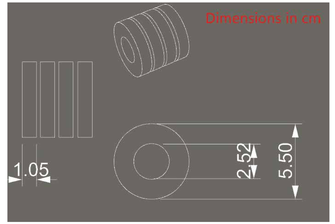
Acrylic pieces are laser cut.
Holes are drilled to create axis top and bottom.
and bent by wire heater.
Banana fibre papers are cut and pasted.
Wooden rings (spacers) are cut on the lathe/ circular jig.
The axis pipes(Aluminium) are cut to dimension.
Bulb wiring is passed through the axis pipes.
Everything is assemled together.

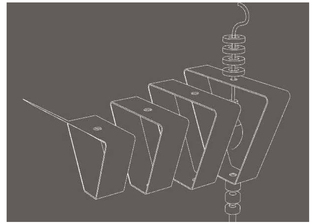
Packaging and Branding

The lamp lays flat inside the box with the bulb and cord placed inside it. The pamphlet is provided inside which describes about the warli artist who had painted it as well as the philosophy behind the lamp.









ASSEMBLY

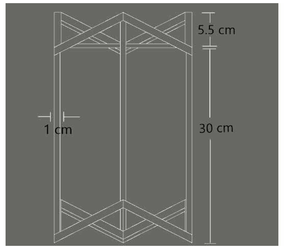
The Dimensional Details here explains the craftsperson how to construct the lamp:
Step 1: Polycarbonate sheet is cut, bent and banana fibre sheet are cut according to the 1st figure and pasted.
Step 2: The seperators are cut in mdf of 5mm thickness according to size.
Step 3: Everything is assembled according to the 3rd figure.

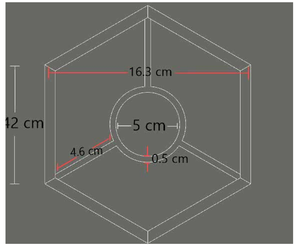
Final Concept 2

The top and the bottom panels are constructed by the craftsperson based on the dimensions in mahagony wood. the 6 sticks connected the top and the bottom frame have two screws at their ends which passes through the frames and the user has to put the nuts from the other ends to hold them together. The paper is held in place by the wooden slots provided.

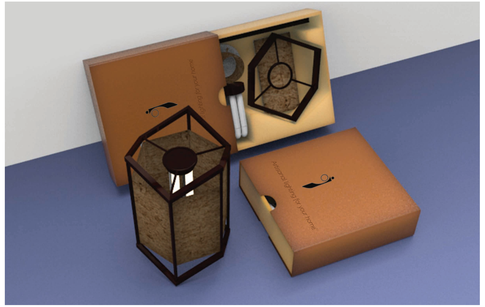
Assembly Details

The top frame has a circular ring connected at the centre with 3 wooden bars which hold the bulb. These parts are manufactured by the wood workshop craftspersons and assembled by the user according to the maual provided in its packaging.





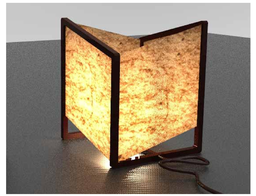
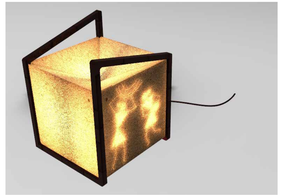
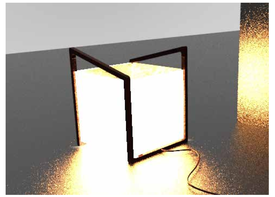
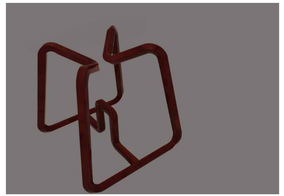
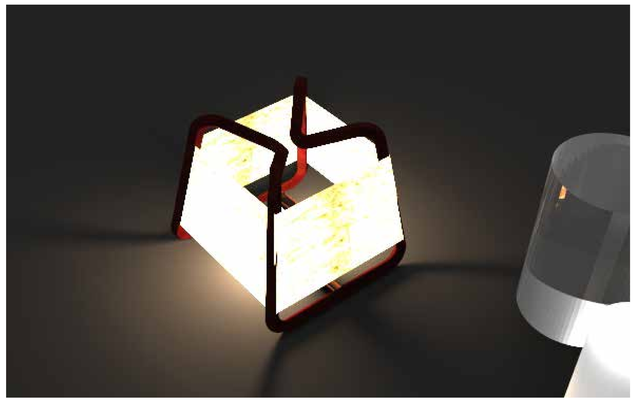
Dimensional Details



Packaging and branding

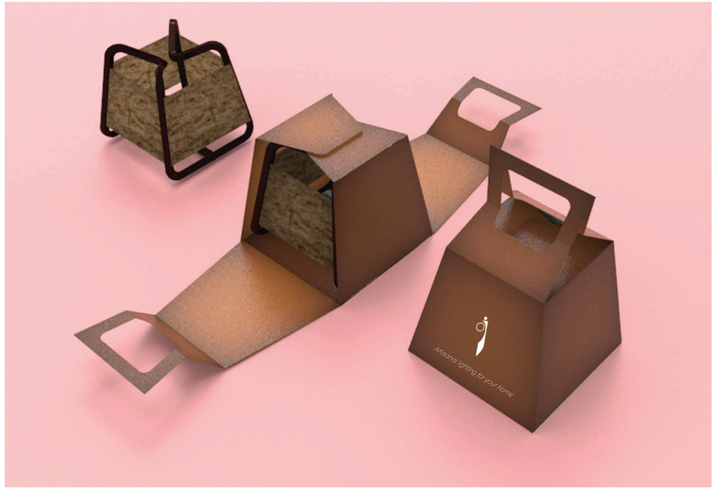
Final Concept 3

Preliminary form explorations

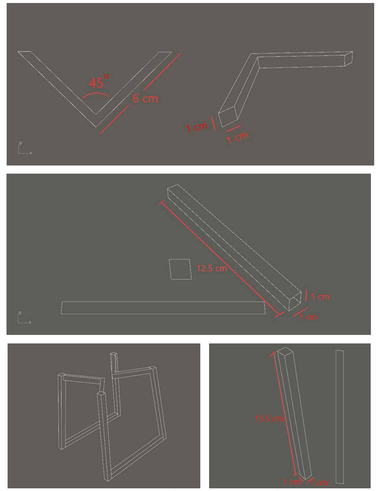






The aim here was to create a compact frame which when looked at has a continuous flow. There are two bars at the bottom which supports the structure and hence making it stable.
The contrsuction consists of indivdual horizontal and vertical parts to be seperately cut, pasted and then grinded to give the soft edge form.

The paper is pinned from the inner four sides fo the frame afterthe artwork is painted. The light source is a folded strip of LED which is pasted on the portion of the frame marked.



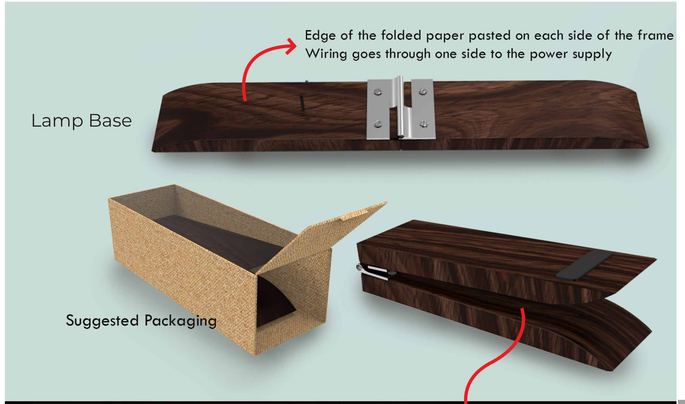
Product Packaging and Branding



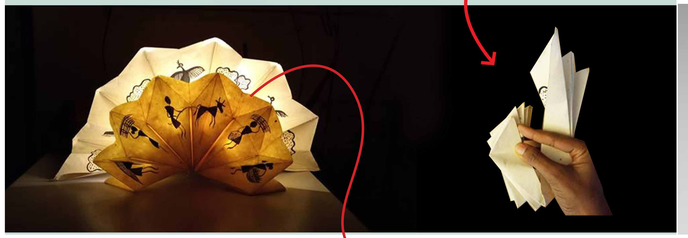
Dimensional Drawings

The frame of the lamp is constructed according to the dimensional drawing provided to the craftsperson in wood workshop and the corners are sanded to give the soft edges. The Handmade sheet is painted from the inside but only the negative so that the artwork region lets out more light. The sheet is fixed on to the frame by the grooves provided on the wooden frame. The packaging is kept simple and is cut from one sigle sheet of stiff card paper of 300 gsm quality and to aid it's carryability, handles have been provided on the package. The pamphlet inside describes about the warli artist who painted it and about the theme of the artwork.

Final Concept 4



The wooden base is hinged at the middle and locks at 180 degrees so that the lamp can be placed at suitable surfaces. Rubber grips at the bottom also helps in the same. The LED strip is pasted in between the two fans of the lamp and the power cord passes through the base. Switch is provided at the back of the frame and offers three levels of light intensities.

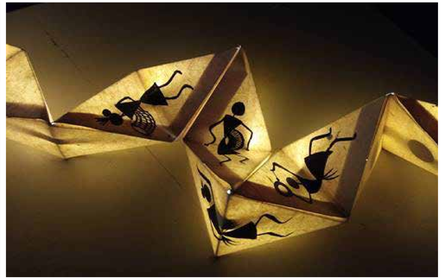


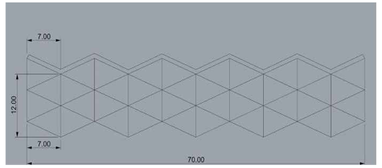
LED strip pasted on the folded paper.

Power cord is wrapped around for easy storage and transportation.

Final Concept 5

This is designed for multipurpose usage in office spaces, living spaces etc. The lamps can be put in multiple orientations. Hanged and folded with variable geometry and gives user opportunity to control light by changing the shape of the lamp.
Inspired from the traditional dance form of tarpa where the people move rhythemically in a chain formation.





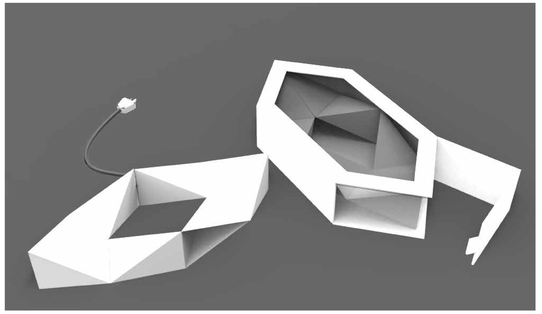
Dimensional Drawing of Sheet. The extra border is where glue is put.

Construction, Assembly and Packaging

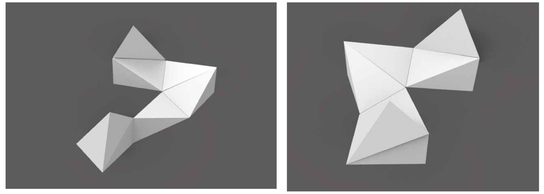
Made out of flexible hand made paper, a LED strip runs through the inside and creates a diffuse lighting. Thin magnetic strips runs along the edge to help maintain the forms when folded.The last pyramid has the switch where light intensity can also be controlled.

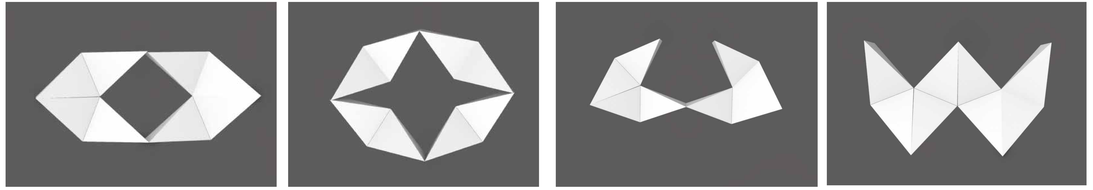
The paper is first cut, creased and folded. Magnetic strips are pasted along the inside and while the sheet is being closed, LED strip is inserted.

Packaging Design



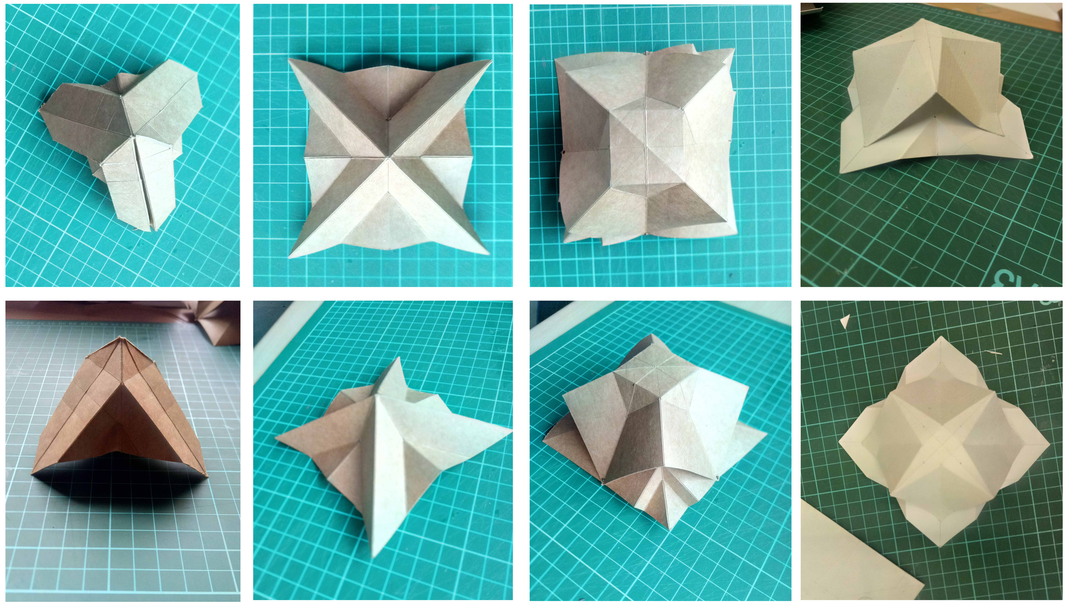
Below two: Perspective views





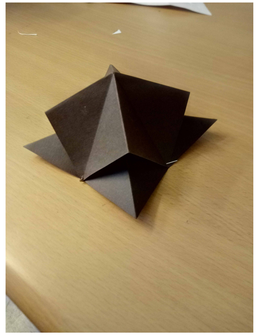
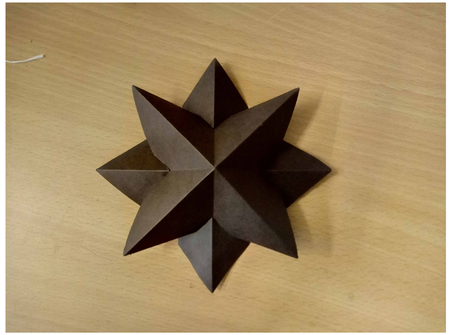
Few of the possible planar arrangements

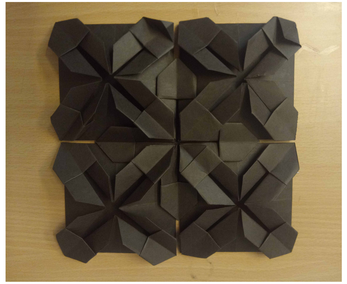
Paper form explorations



study of paper folds and forms to fit on to a frame hung on the wall.

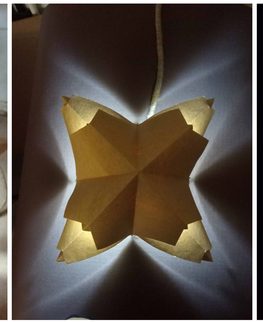
Paper form explorations

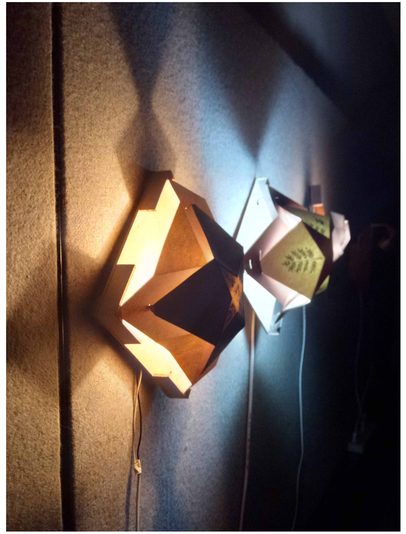


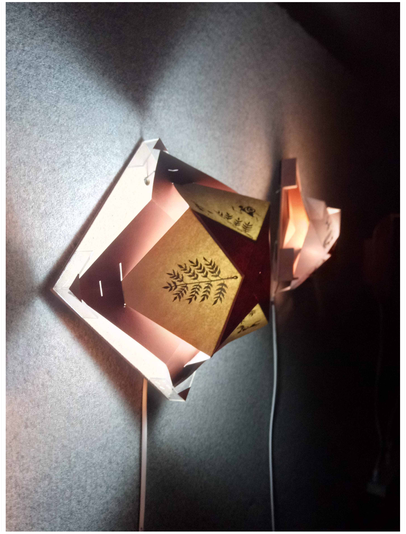
Paper form explorations & Light

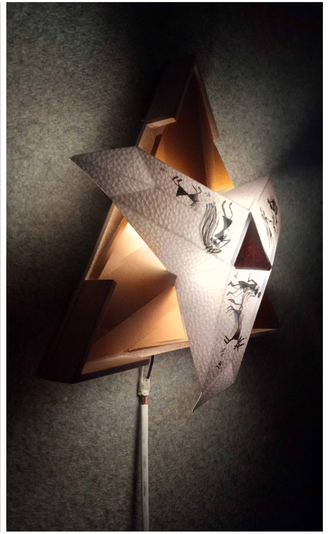
Light can pass through the paper surfaces, fall on to the paper surfaces or light falls on the wall or surface. Here a few options with a single light sources was explored where the paper folds, forms and opacity were varied to get a suitable lighting for festive lighting at homes.

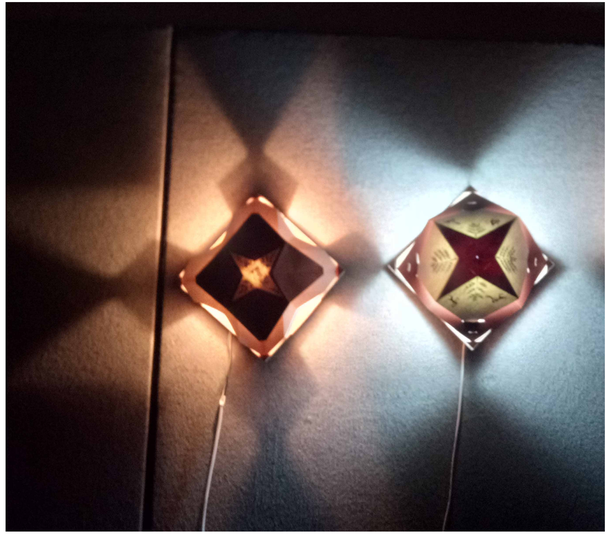


Lighting Explorations









Sharp symmetric shadows falling on the wall brings out the warli art as well as a feeling of celebration and life.

11 Product Manual and Production

How are the production tasks going to be divided?

A single person residing in a village in northern palghar district doing all the tasks in the production process would result in inefficiency in terms of quality and Time. A single artisan would have to carry out only a certain set of tasks and payment would be in terms of the type of task done.

Salary = Cost per set X Sets completed.

This would be recieved weekly.

Different lamps would have different stages in production. Cost per lamp would take into cosidertion the material charges, machinery charges, trasportation of materials charges, Artisan salaries per item and packaging, printing, cutting, transportation, handling and storage. The materials would be purchased and transported in bulk to reduce cost.

For promotion and Distribution, an individual from the NGO/ Cooperative will be responsile to contact potential vendors, buyers and keep track of the supply and demand chain of the system.
He/She would have to let the material suppliers know how much material is needed for the next week.

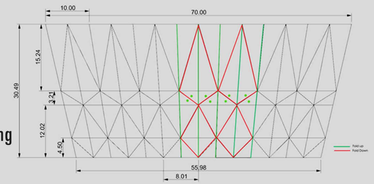
An individual would also have the resposibility to handle artist issues and grievances related to work timing, salary, houses, health benefits etc.

Artisans would be given the freedom to choose flexible work hours and olny be paid on the basis of numer of tasks completed. If a woman who is unable to make it to the community centre can take the materials from there once a week and complete the tasks at home.

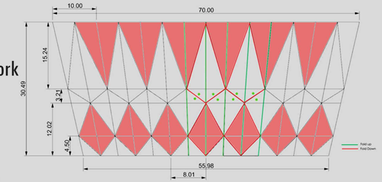
Production Manual

LAMP 4 Tasks

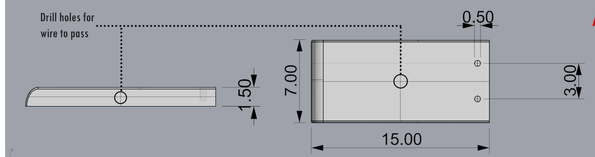
Artist 1
- Cutting Paper
- Marking Paper
- Creasing and Folding



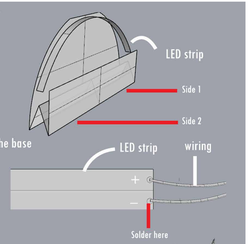
Artist 2
- Painting the artwork on marked areas



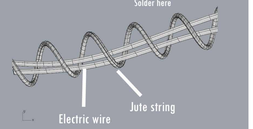
Artist 3
- Cutting wood locks with saw and sandig them
- Drilling holes on the blocks to put the hinges and switches



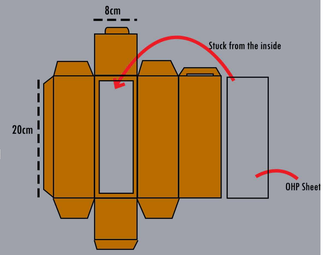
Artisan 4
- Pasting the LED strip on the lamp
- Soldering the LED strip to the wires
- Passing the wires from the woode base
- Pasting the two sides of the lamp onto the base
- Connectig the switches to the wire



Artisan 5
- Wrapping the electric wires with jute strings and connectig a plug



Artisan 6
- Pre Laser cut pieces of the packaging is creased, folded and pasted
- All items are assembled and stored inside the box
- Labels are put



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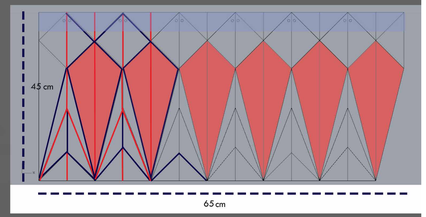
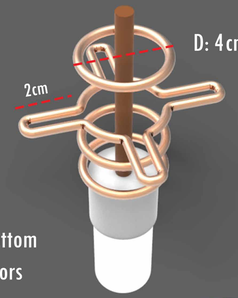
Production Manual

Origami hanging Lamps

Artist 1
- Cut paper
- Mark Paper
- Paste strip at top
- Punch holes
- Crease and Fold

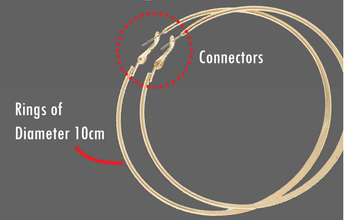


Artist 2
- Paint on the pink marked areas

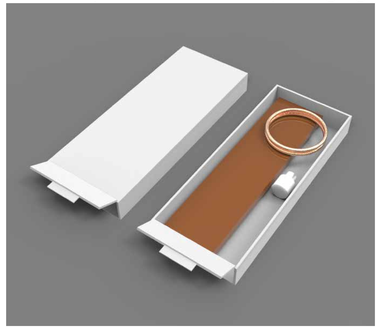


Artist 3
- Bend and fix rings for bulb holder
- Bend rings for holdig the top and bottom of the paper and solder the connectors

Artist 4
- Packaging & Assembly

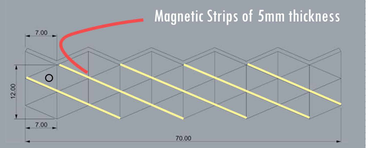


Below: Representation of the packaging

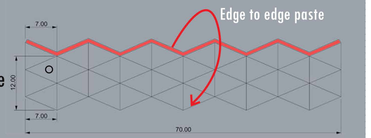


Production Manual

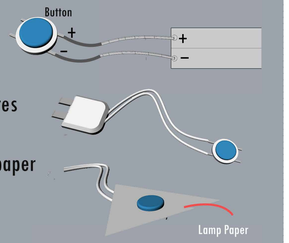
Artist 1
- Cut Paper
- Mark Paper



Artist 2
- Paste magnetic strip along yellow marked edges
- Crease and Fold
- Paste paper edge to edge and insert the LED strip



Artist 3
- Solder LED strip end to a switch
- Solder the switch to the plug via wires
- Place the button on the slot on the paper

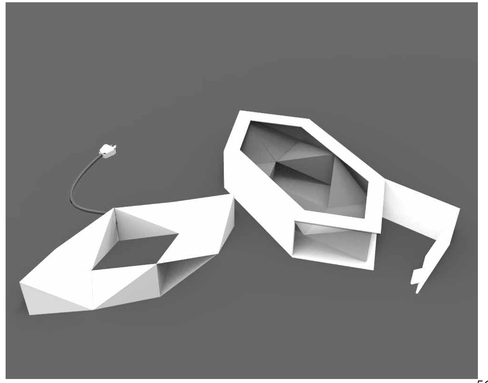


Artist 4
- Wrap the wire with jute strig

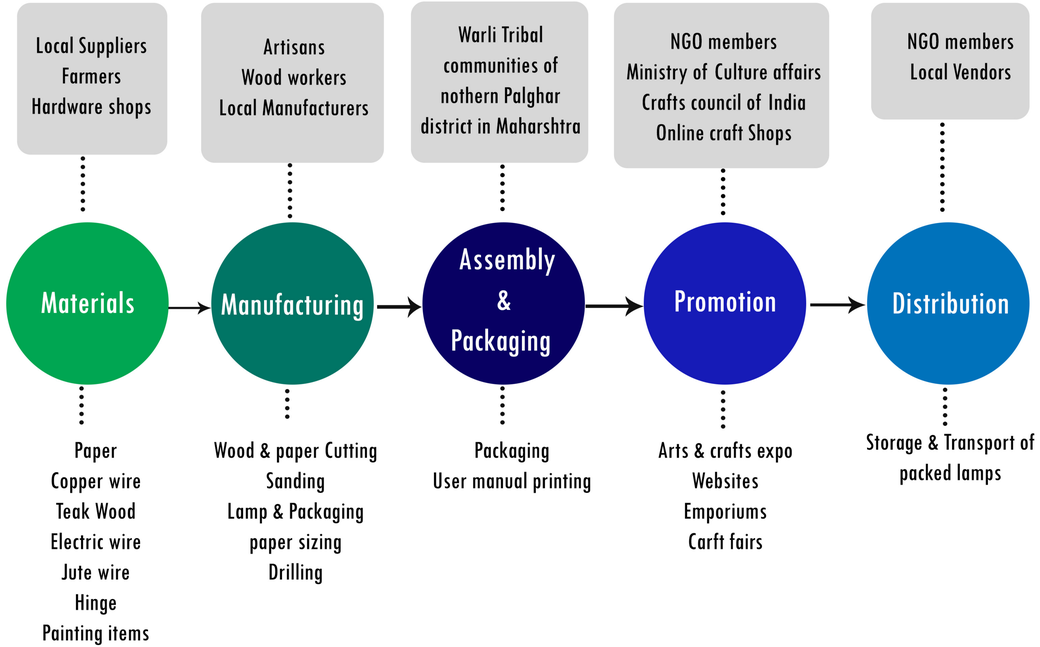
Artist 5
- Paint the lamp at last

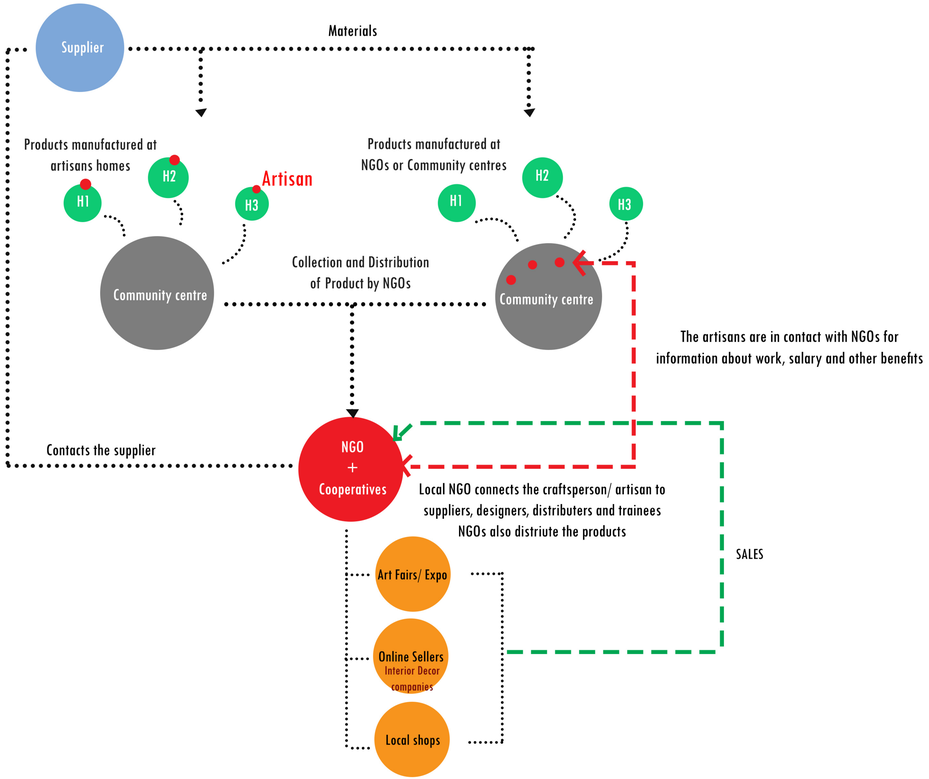
Artist 6
- Packaging and Assembly

Below: Representation of the packaging



System Design





12 List of References

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3. ikea-ps-pendant-lamp__AA-1806654-2_pub
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