

DEP 403: Design Exploration Seminar – 1

Designing plastic lamp shades

Material design and exploration

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Approval

The Design Exploration Seminar titled “Exploring lighting designs; Material design and exploration” by Avinash Manikandan (Roll number: 18U130010) is approved for partial fulfilment of the requirement for the degree of ‘Bachelor of Design’ at IDC School of Design, IIT Bombay.

Project Guide

Declaration

I declare that this written document represents my ideas in my own words, and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or 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 which have thus not been properly cited or from whom proper permission has not been taken when needed.



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1. Motivation

Through the course of my college education, I have gotten disconnected from fiddling with forms and products. The design exploration project seemed like the perfect opportunity to revisit and satisfy my interest in this field.

Amongst all the available options for material design, designing lamps and lighting fixtures was the obvious choice for me as it offers the most freedom for exploration, with infinite possibilities for shaping light.

I wanted to make sure I get the satisfaction of tangible output, and Prof. Sandesh believed in the same, making it an easy decision for me.

2. Goal

I did not start this project with any specific objective, rather the ultimate goal was to explore. I wanted to try and push the limits of forming a particular material, and create simple yet interesting lighting. I got really inspired by iconic designs like the "Titania".

The goal is to create different plastic lamp shades as an exercise in form exploration with multiple methods exploiting the versatility of the material.

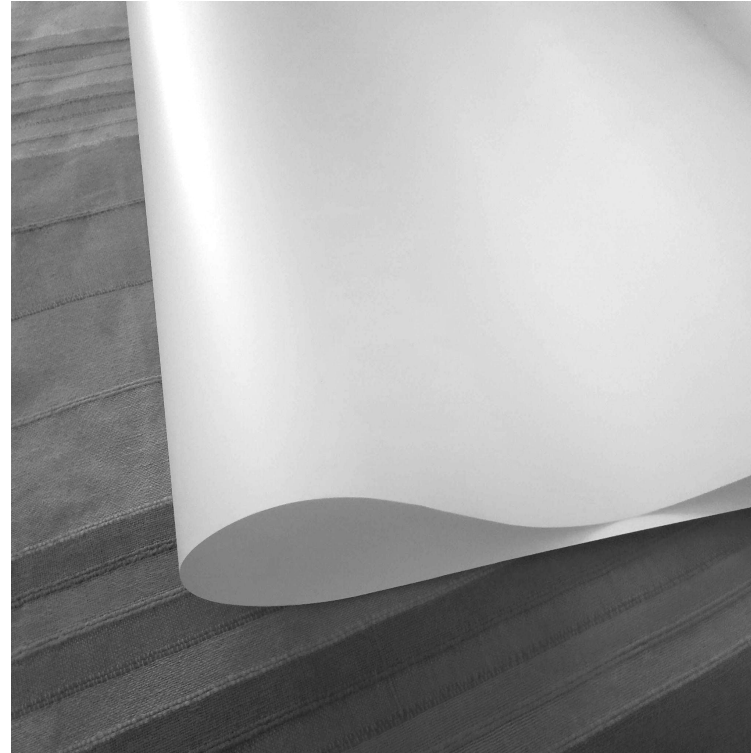
3. Process

3.1. Materials

As I mentioned before, lighting is one of the most explored domains, with materials of all kinds like metals, glass, wood, plastics, and even papers.

I decided to use sheet plastic as the material of choice as it would be simple to acquire and understand while making it possible to create multiple forms. To begin with explorations and prototyping, I used 80 gsm white low-density polyethene.

To experiment with different types of joineries, I used a multi-purpose adhesive that is suitable for plastics and simple stapler pins.

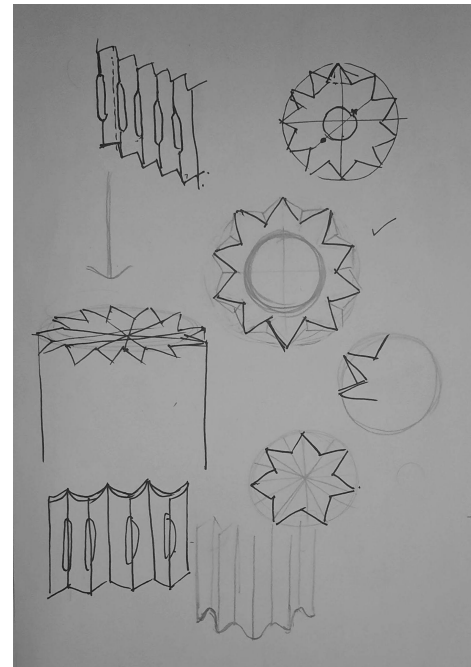


3.2. Ideation

After some secondary research and realising popular and common designs with sheet materials for lampshades and pendants, I started sketching some quick ideas out.

Origami is the most commonly used forming method, not without reason. Hence I consciously decided to avoid it and think differently.

As part of ideation, designs were created with variations in the way the lampshade attaches to the bulb, the method in which it is fabricated and joined, as well as different patterns and shapes of created light.



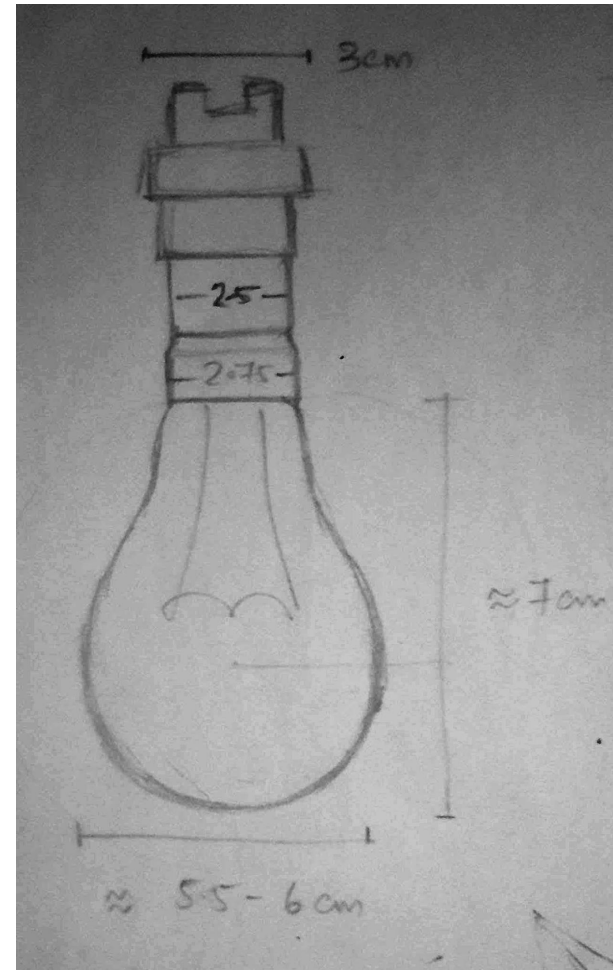
3.3. Measurements and templates

For the sake of convenience, I decided to work with a single 12W incandescent filament bulb, mounted on a holder and wire. I chose this also because it is one of the most common light bulbs in Indian households and creating fun, affordable lamp shades for it makes sense.

After the round of rough form ideation, I measured the said bulb across all dimensions, along with its holder and used it as a reference to determine the dimensions of the final designs.

Although the forms seemed simple, using these measurements to create a deconstructed template of the form required quite a bit of geometric calculations. The maths, although basic, proved quite complicated for someone who's not had to do more than simple functions.

The templates were made on a vector software, keeping in mind provisions for joinery, like flaps, slits, etc as well as guides and markings for creasing and folding.



3.4. Cutting and forming

Laser cutting was the most convenient and efficient option available for producing various designs quickly. With the right amount of speed and intensity, it effortlessly and satisfyingly cuts the plastic sheet into any complex design.

Joining these shapes was the challenging and fun part of making these forms. Some designs were made with simplicity and ease of understanding in mind. For example, customers should be able to buy DIY kits of such templates and quickly make beautiful lampshades with just minimal resources. Whereas, some were complex even for me to stick to, which felt more like artworks which didn't focus on efficiency.

Stapling works perfectly for the material as well as aesthetics as it is very unobtrusive and simple. Hence I decided to explore further designs with its usage.

I also considered creating a simple clamping/ riveting system for similar materials and use cases, but that's a project for later

4. Final designs

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