

Creative engagement for the Autistic : A design approach

*Semester IV
Design Project III Report*

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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.

Edu Mohan, 126130014
Industrial Design Centre, Indian Institute of Technology, Bombay
July 23rd , 2014

Approval Sheet

The project titled 'Creative engagement for the Autistic : A design approach' by Edu Mohan, 126130014 is approved for partial fulfilment of the requirement for the degree of 'Master of Design' in Industrial Design Programme at Industrial Design Centre, Indian Institute of Technology, Bombay

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Chairperson

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External Examiner

Date

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I would like to thank Faculty at Industrial Design Centre (IDC) for their support.

I would also like to thank Shraddha Charitable Trust for mentoring me and guiding me in the areas of work, Doctor Binu K, Consultant Psychiatrist for sharing information on Autism and for keeping up with my inquisitiveness on and off the topic queries.

Colleagues at IDC for their suggestions and comments during various discussions. Nikhil Das, Shashank Sawant, Avinash Prabhune Arunraj and Vidushi Yadav for their timely help in everything they did. Anyone I missed out

The library. The internet.

*Edu Mohan
August 23rd, 2014*

Abstract

Autism Spectral Disorders(ASDs) are a range of neuropsychological disorders which affects an individual. One is born autistic due to various genetic, environmental and psychological conditions before, during and after birth. ASDs are non curable. The severity can be controlled by timely identification and appropriate therapeutic measures. In Indian context alone, the numbers go as high as one out of 88 children.

‘Shraddha’ is a non profit NGO, based at Mumbai, which is working towards the betterment of the situation of young autistic adults. The institution provides them with vocational training and involves their abilities creatively for making small products. These products are sold and the Shraddha students are given back a small incentive.

The aim of my project was to work in close collaboration with Shraddha and come up with a range of products and also design the process through which these products can be created by the people at Shraddha, keeping in mind their abilities and disabilities.

Why this Project?

I had attended IDC there was a presentation by Dr. Radhika Kanna about SPJ Sadhana School and Shraddha Charitable trust. Then she asked us how design can help in the improving the status of autistic crowd. When I was looking into possibilities of doing something meaningful through my Design Project III, the possibility of working with Shraddha came up as an option. I seized this opportunity and had a visit to Shraddha to see what was happening. After a couple of visits I felt that there was a scope of design intervention for creating improved products though processes which can utilize their abilities. Looking at the situation today in India, there are about 10million people affected by autism. One among the 10 million being my little brother. Thus, when I was given a chance, I decided to go ahead and try to make some changes, putting into use-the 22 years of "user study" and "data" I have unconsciously gathered while growing up with my little one, who is of the same kind.

I started, hoping I could contribute to the process of rehabilitation at Shraddha from the design perspective.

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1. An Introduction to Autism Spectral Disorders

Autism spectral disorders are a range of neurobehavioral disarrays that impairs a person from social interactions and creates difficulties in verbal and nonverbal communication skills.

There are mainly three types of disorders under the ASD differentiated by their partially overlapping symptoms.

- Autism
- Asperger's Syndrome
- Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS)

ASDs are mainly caused by the presence of some rare gene changes or mutations and environmental and psychological factors affecting brain growth in first few years. The symptoms of ASDs can be seen in a child as early as two years after birth. Inability to empathise and socialise with people, repetitive and stereotype behaviour, delay in understanding and communicating, etc. are typical signs of autism spectral disorder.[3] The symptoms change as a child grows into adulthood. Most of the signs stay whereas in some cases new signs emerge. It can be associated with cognitive and intellectual disability. In most cases it also affect motor and visual coordination. It is however interesting to note that some of the autism affected excel in math, music, art, etc.[1][2]

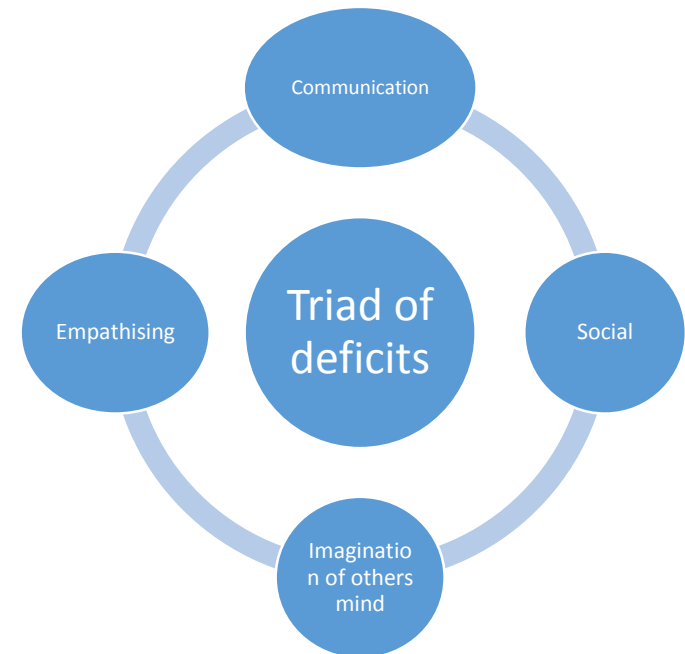
Autism is non curable. One out of every 88 children in India is born with autism. According to the current statistics by Centres for Disease Control and Prevention (CDC), India has about 10 million autism affected individuals. They face harassment and discrimination in spite of the law providing transportation facilities, vocational education, banking, housing and other benefits.[5] Only 1-2% of the total affected population get to live the near normal life in terms of social, occupational and married life. The majority still live their lives independently under constant or intermittent supervision by a caretaker. [1] Less than 75% of children with autism have an IQ level below 70. More than half of them have mental retardation, absence of speech and epilepsy.[2] They have underdeveloped motor skills, Uneven cognitive abilities and Emotional difficulties which they cant even express. [4]

1.1. Cognitive neuroscience of Autism

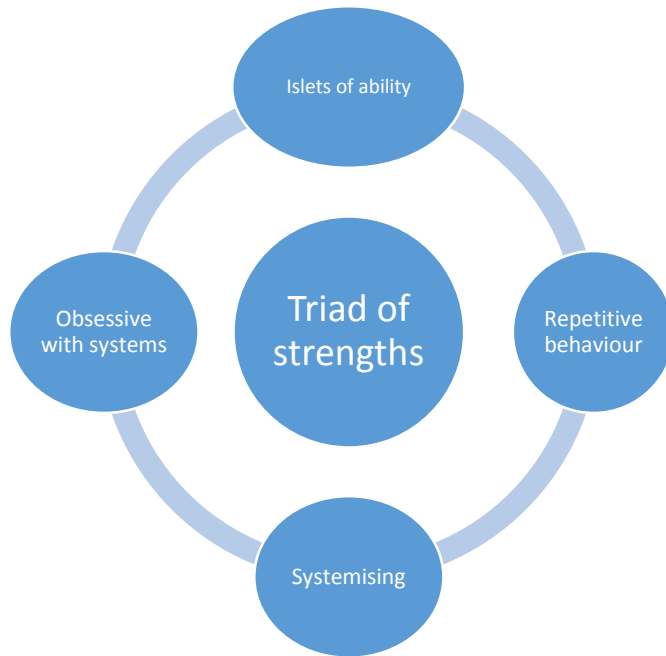
Autism is a disorder characterised by impaired behavioural, social and communication abilities and repetitive/obsessive behaviour, IQ being a strong predictor of it. It is mostly accompanied with language delay. People with Asperger Syndrome also come under autistic spectrum and they share many symptoms as seen in autism but they don't face language delay and have an IQ of an average healthy person.

A theory called 'The mind blindness theory of autism' says that autistic people are found deficit in the normal process of empathy relative to their mental age, it can differ from person to person in different degrees.

Through various researches and experiments it has been found that majority of autistic people have profound impairment in empathising with a situation, because of that they have difficulties in their social and communication development as well. These symptoms are called 'triad of deficits'.



1.2. Cognitive abilities of Autistic



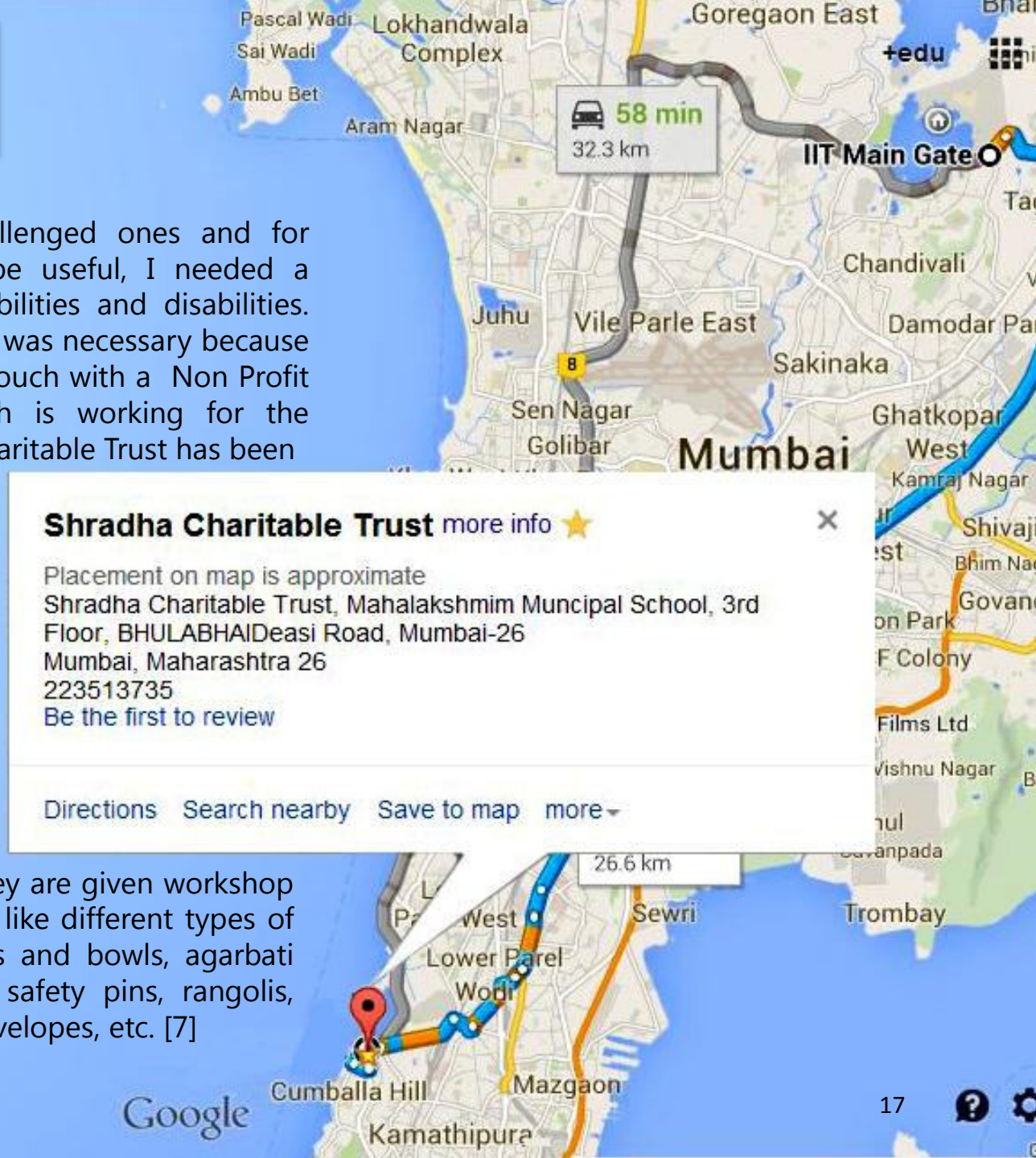
The Empathising-systemising theory says that, in autism the eye to analyse a system is superior because they are deficit in empathising. Systemising leads to different set of behaviours such as unusually strong repetitive behaviour, a need to be in routines, and desire to be same. Such people are unable to shift their attention to something else from their usual routine and they have an obsessive need to preserve it for example an autistic kid usually has an obsession with mechanical systems such as switches, water taps etc. Such symptoms are called 'triads of strength'.

Studies also show that people suffering from autism have problems in assembling fragments of objects and uniting sentences in paragraphs but they have been seen to possess good segmentation skills and great attention to details, much superior to average human beings. A person with autism has a stronger drive to learn the system compared to normal people.

They can easily understand and predict the effect of change of one parameter in the whole system and its effect on other parameters. [7]

2. Data Collection

For further learning about the challenged ones and for designing something which could be useful, I needed a deeper understanding about their abilities and disabilities. Being able to empathize with the user was necessary because the user was different. Thus, I got in touch with a Non Profit Organisation called Shraddha, which is working for the benefit of Autistic adults. Shraddha Charitable Trust has been providing care and vocational training to the autistic & mentally challenged young adults. Shraddha was started in 1997 with a mission of making autistic people self-confident through their own creative ability. The young adults at Shraddha finishes training at SPJ Sadhana School for the Autistic Impairment in simple job skills, such as, to name a few, sticking, plastering, moulding, pasting, pressing and folding. At Shraddha, they are given workshop training in making eco friendly items, like different types of gift bags from recycled paper, plates and bowls, agarbati stands, trendy jewellery beaded on safety pins, rangolis, colorful lantern bags, hand painted envelopes, etc. [7]





2.1. Shraddha

To begin with, Shraddha has a flexible yet intense training method which is not easy. The sense of the environment of the autistic adults is very different from the normal adults. Initially the Shraddha staff works with them one on one. With continuous practice they gradually get adjusted to the training and become alive with enthusiasm. They are then eager to be promoted to group working. The aim is to slowly help them grow into their own and connect with them at their level. Thus eventually a sense of friendship and oneness is created as they learn more.

The complex and precise work are done by the volunteers. Some products are made completely in Shraddha whereas some finished products are taken up off the shelf and are further worked to make it a final product.



2.1.1. Pasting

Pasting is an activity given to adults having severe autism and those who cannot do very skilled work or those who do not have good gross motor skills. They have to just apply gum on the paper and paste it to the cardboard. The cardboard once dried is taken to make paper plates. It is done under supervision of the volunteer.



A close-up, side-profile photograph of a middle-aged man with grey hair and glasses, wearing a red t-shirt. He is focused on a task, likely a craft project, with his hands visible at the bottom of the frame. The background is blurred, showing other people and a bright, indoor setting. A semi-transparent text box is overlaid on the left side of the image.

2.1.2. Arranging and Pasting

Arranging and pasting is an activity they do to make small Rangolis and decorate boxes and bags. The process involves understanding of patterns, colours and a higher motor skill level. This is done with the supervision of volunteers.



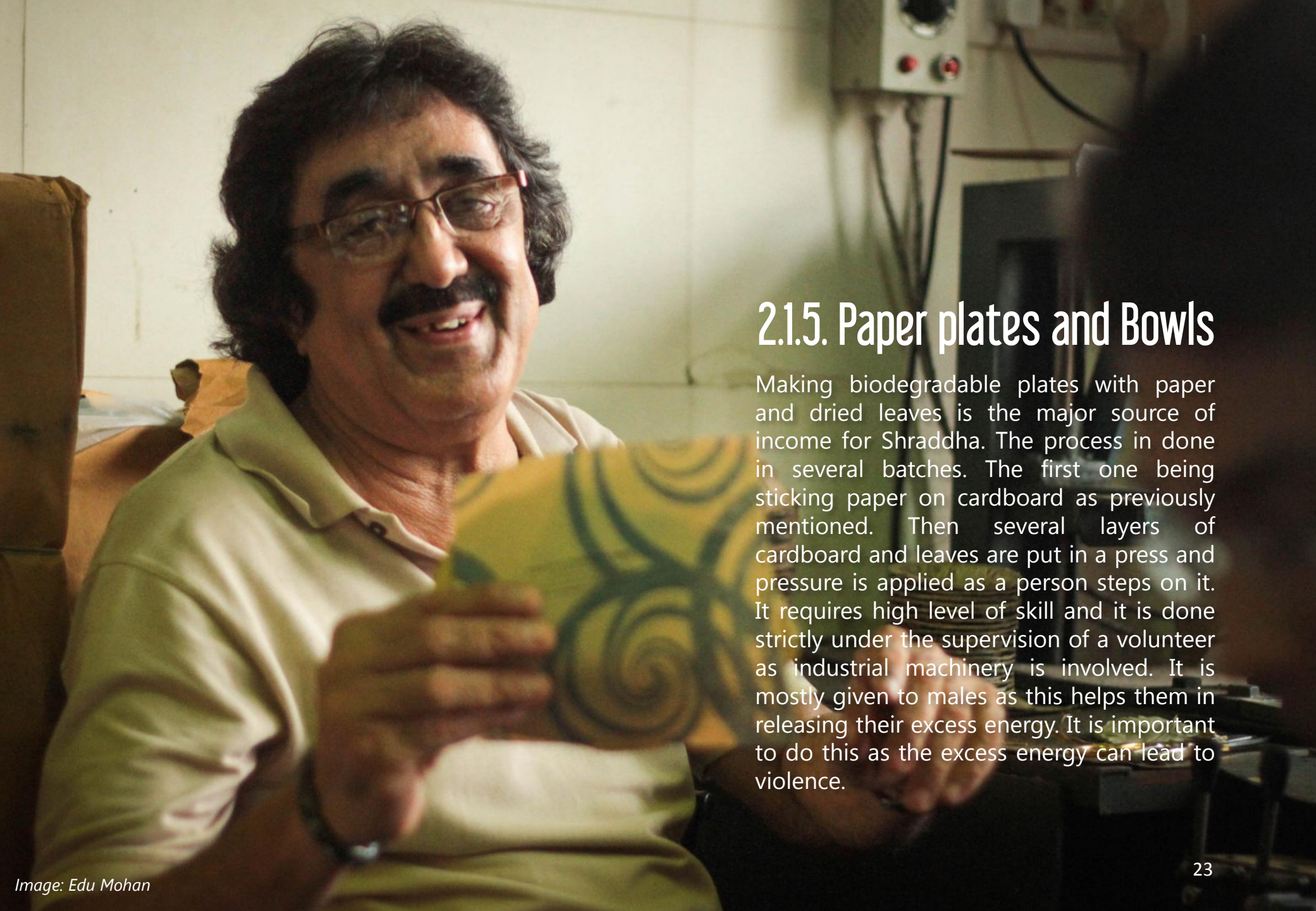
2.1.3. Painting

Painting is done mostly by the moderately skilled. They need a template to paint in as their motor skills are not so well developed. It is done mostly on cloth bags.



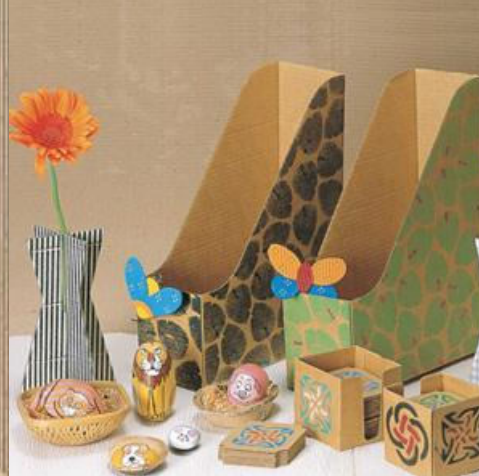
2.1.4. Beading

Beading is done by a person who has high motor skill. One has to insert bead into the string. Sometimes there involves a pattern or the sequence in which it is to be inserted. One's ability to understand different colours and shapes of beads are also important. Mostly jewellery and decorative products are made using this.



2.1.5. Paper plates and Bowls

Making biodegradable plates with paper and dried leaves is the major source of income for Shraddha. The process is done in several batches. The first one being sticking paper on cardboard as previously mentioned. Then several layers of cardboard and leaves are put in a press and pressure is applied as a person steps on it. It requires high level of skill and it is done strictly under the supervision of a volunteer as industrial machinery is involved. It is mostly given to males as this helps them in releasing their excess energy. It is important to do this as the excess energy can lead to violence.





2.1.6. Products made at Shraddha

All products made at Shraddha has its own artistic appeal and a noble intention behind it. There is a holistic approach in designing these products. Some products are made entirely by them but some of it is just finished to an end product. However small the input of the children are, it adds value to the product and instils a sense of confidence among them be it making a whole chain or just sticking a bead.

- They are already trained to do activities like pasting, arranging, etc.
- Arranging paper cut-outs and sticking them are the work they do.
- They have worked with traditional lighting products but not with new generation products.
- Products are partially or entirely made at Shraddha.
- They can work in different batches depending upon their severity of autism

2.2. Insights from Shraddha

Every young adult is different, their abilities and disabilities are different. They need tailor made aids and products. Every method might not be efficient and suitable for everyone. The products created and process used in their creation are dependent on the capabilities of autistic adult.

The students are categorized into groups based on the severity of disorder and IQ. Different groups are given different sets of work for example, the group having a lower IQ is given a task to just apply glue on paper whereas the more able ones are given tasks involving industrial machinery such as punches and hydraulic presses. The males generally are given work which has high energy requirement. It also prevents them in releasing excess energy which may lead to fits n violence.

The fact that Shraddha provides a pay check to all the individuals depending on the sales and performance is actually boosting their confidence and enthusiasm to do better work. This creates a quality for survival in the real world. The emotional betterment when the society accepts them is appreciable.(contd..)

The major problem Shraddha faces today is that the competitors make similar products in large scale at a faster rate with normal adults. Shraddha needs to come up with new products in order to survive and engage these differently abled young adults.

- Students have various abilities.
 - Some students can even operate a hydraulic press.
 - Some students can do fine work.
 - Each individual is different and unique in terms of these abilities.
- Depending on the abilities they are divided into groups.
 - Some can and like to do repetitive work.
 - Some have a lot of energy and are given work needs a lot of energy like operating a manual pressing machine.
 - Pattern recognition is possible for some group.
- Softer material is better to work with to ensure safety.

3. Insights from the doctor

For further understanding and having a better approach, I contacted Dr. Binu K, Consultant Psychiatrist. Discussion unfolded that:

- Behavioral therapy is the only treatment available for ASDs.
- It cannot be cured but a systematic approach can be created where the affected one's situation doesn't get severe.
- They are very strict in their routine and can get disturbed by the slightest change in their timely activities. The best possible way is to develop a regular routine with as few changes as possible.
- Every child/adult has different Skillsets and thus needs a unique developmental programme customized to their abilities, IQ and disabilities.
- Most of the affected ones have further disabilities in either verbal communication, nonverbal communication or gross motor skills. Thus Speech therapy and/or sign language teaching might be necessary. Behavioural techniques should encourage one to have more interpersonal interaction.
- Psychotherapy and Pharmacology are used where necessary, when one exhibits hyperactivity, fits or violence.

SRADDHA.

Tools

Teaching aids
for children

Every child - Different
abilities

Punching machine
~~Safety and~~
~~Redesign~~

Festive Techniques
Bags

Press for
Plates

~~Score for a new~~
~~product on~~
~~similar lines~~

Envelopes

Paper bags

Bags

Boxes

LED and simple electronics

Bamboo handicrafts

Decorative Items

Stereotype behaviour

Community at sraddha
is beyond an age.
Can't do much of
activities given to a
child.

COGNITIVE
DEVELOPMENT

USE UNIQUE
ABILITIES

ENGAGE

MOTOR SKILL
DEVELOPMENT

Product with market
value

Print media

Calendars

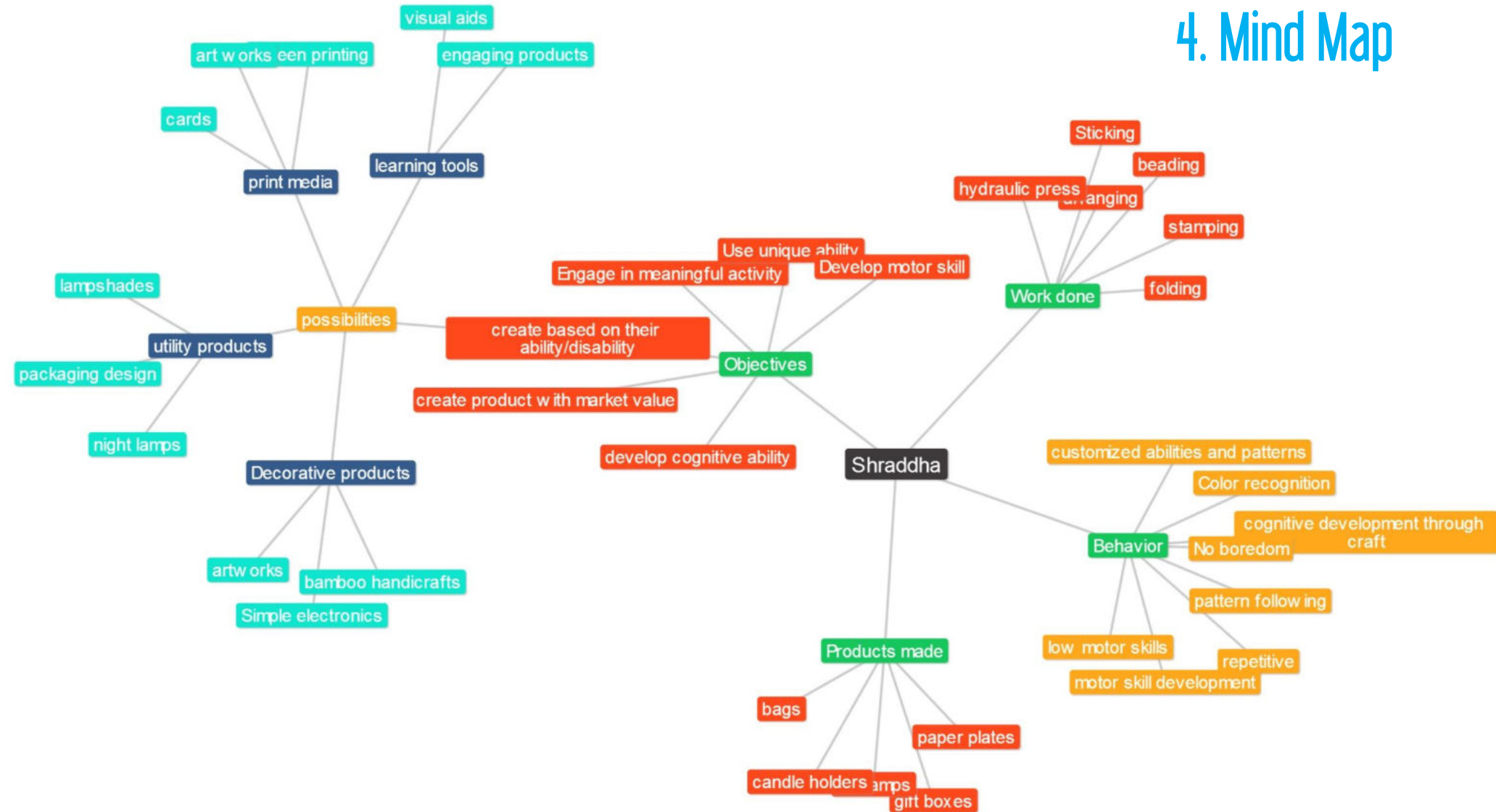
Gifts and
Wrapping

Screen Printing

Packaging

4. Mind Map

4. Mind Map



5. Scope of work

5.1. Approach 1 : Teaching and engaging aids

Visual aids and teaching kits are widely available online. These products and tools are very generic and non customizable. As reflected from the studies, each individual with ASD is different in terms of intellectual abilities. Thus a customised education kit is needed.

Toys and objects are things they can relate to easily than living beings. Thus creating something which is meant to teach them something or to simply keep them engaged can be a good possibility. Different toys and aids can stimulate various senses of the child like Visual, Touch, Smell, Audio and Taste.

This needs further research in collaboration with people or educational institutions who deal with autistic children. The cognitive science also states that leaning is more effective in early years. The product would be designed for a child or a teenager and the customer would be a care-taker or an educational institution.

5.2. Approach 2: Crafts and Decorative products

Insights from being with people at Shraddha indicate that the 'young adults' with autism spectral disorder can create craft products and other decorative products. The main key is to utilize the ability of an autistic adult to do repetitive activities without getting tired and bored. Scope exists in designing a process which can enable their repetitive style of working and invest this process to create a product in the Shraddha range of products.

The product can increase their cognitive abilities, help them develop their motor skills and coordinated movement and, moreover engage the Shraddha Children in meaningful activities than just some activity. Understanding their abilities and disabilities and designing a product and process to cater to their needs. This can help Shraddha grow as an institution. There is also scope for exploring various patterns, simple modular designs, thus bringing in a design intervention.

5.2.1. Benefits of craft

Research in cognitive neuroscience and psychology has found surprising benefits of practical, craft based curriculum which were previously unrecognised. Also, they help in development of more socially viable, productive and employable young adults.

A curriculum rich in craft based activities make the kid develop into a more functional and competent person in other areas.

An education based on manipulation and handling of material and craft activities develops a cognitive and tactile experience necessary for one's intellectual and overall growth. It helps in development of visual and also hands-on understanding of material properties.

It is believed by researchers that in the contemporary world where more things are going towards digital era, an understanding of tangible three dimensional qualities of any material and qualities is very important yet remotely ignored, because people spend more and more time in the virtual world which is replacing the hands-on learning experience and play-way education. [6]

5.2.2. Cognitive and Neurological Development

Using craft tools in education or learning process engages and empowers brain cell networks which in turn strengthens hand-eye and muscle coordination, it also involves and stimulates social, cognitive, perpetual and motor skills

The sensations and movements of hands give the learning brain an overall experience using movement velocity, direction and coordination skills. Hand-on exploration is critical for the development of innovativeness and is crucial for overall cognitive learning.

Craft based activities strengthens cognitive, social, emotional and intellectual functioning in kids. These factors are beneficial in remedial education, they are equally important as mainstream education. It provides an individual with creativity, independence, determination and problem solving skills which can be broadly used in other areas and challenges of life. [6]

5.2.3. Clinical And therapeutic benefits

It is said by researchers that people who are more involved with craft have greater sense of control over various things in their lives. For example they have lower level of family-work conflicts, they are more **emotionally stable** and their mental and emotional health is governed by their much evolved locus of control, increased ability to tolerate difficult situations. They seem to have **less anxiety** and reduced risk of depression and other behavioural disorders.

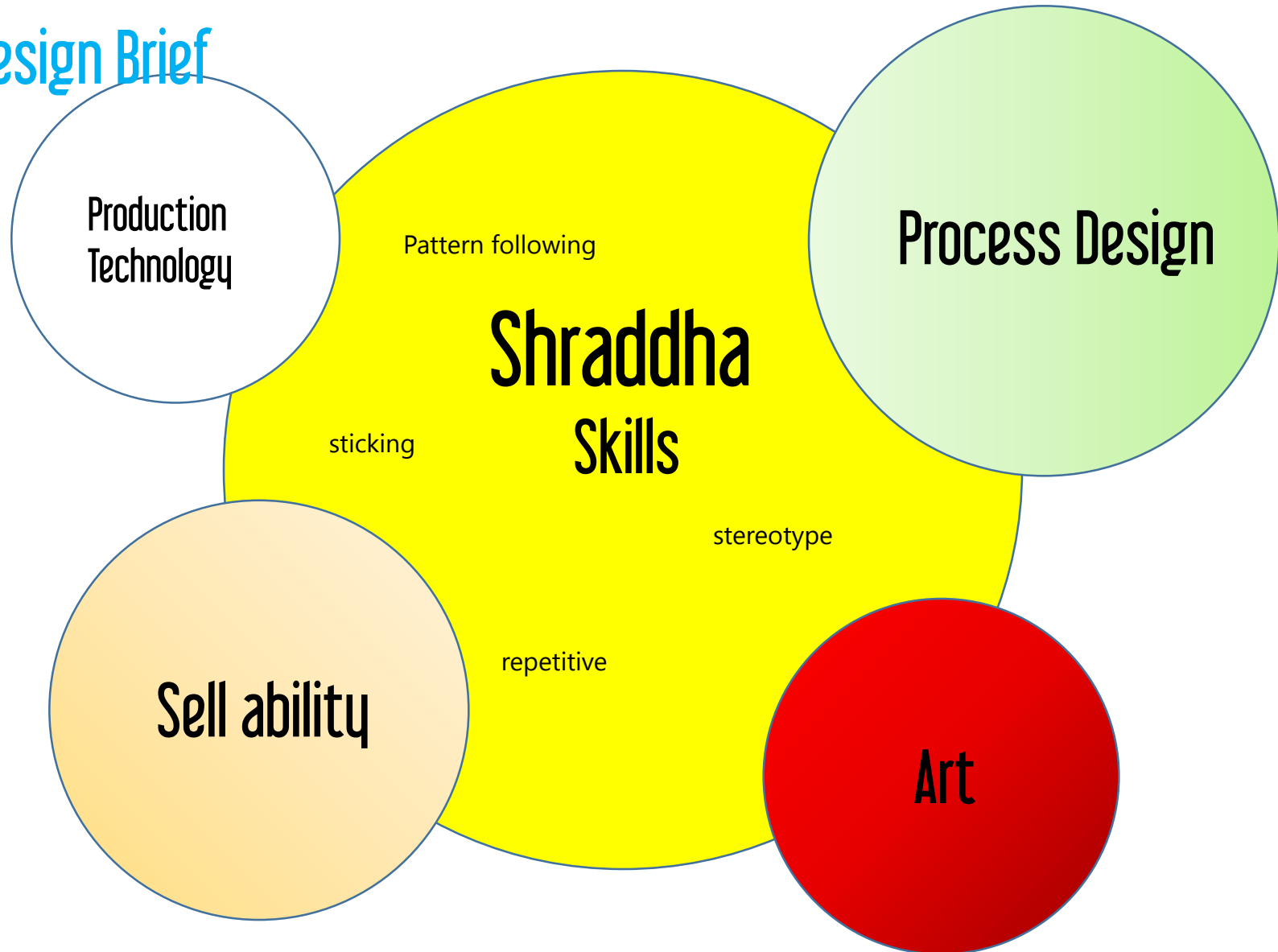
They tend to have more patience towards ending an activity they have once started and their decisions are more governed by a thought process rather than an impulse because doing craft based activities on a regular basis requires converting raw materials to finished products through a systematic process. [6]

5.2.4. Social and Emotional Viability

It has been found by cognitive researchers that learning crafts can help youngsters a great deal to develop into smarter adults. A curriculum rich in crafts, practical experiences and a relationship with the materials and the tools imparts a socialising process-life, **learning through doing**. [6]

On discussion with the guide and Shraddha faculty, the scope of work narrowed down to the craft based approach. Moreover, the area of developing visual aids needs further research in collaboration with people or educational institutions who are dealing with autistic children. The cognitive science also states that the leanings are more effective in early years. The crafts based approach is a better way to progress as Shraddha is already into the process of such work.

6. Design Brief



6. Design Brief

After considering the pros and cons of both possible outcomes, it was decided to progress in the direction of craft based approach and to design a range of products for Shraddha which is marketable among the Shraddha range of products. The products are to be created either entirely or partially by the Young Adults with ASD present at Shraddha with or without the help of a trained supervisor.

The approach would aim at:

- Utilizing their abilities creatively and gainfully in the process of making the product
- Designing the step and sequences based on their abilities and disabilities
- Engaging the children in meaningful activities
- Use of jigs, fixtures, templates and molds can be incorporated depending upon the complexity and necessity of the work

If through the process there is development in cognitive and motor skill, it is beneficial

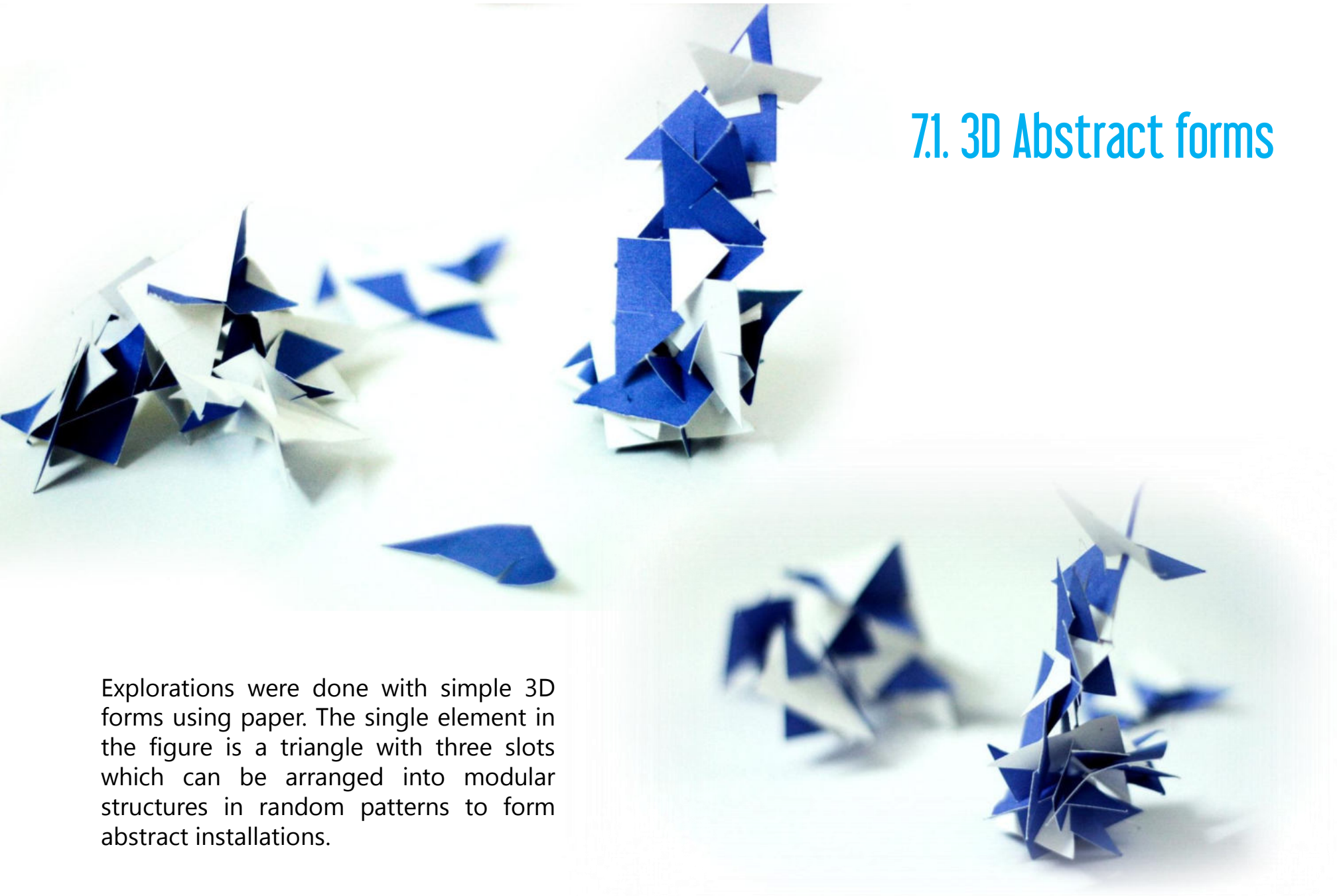
7. Ideations

Ideations were done keeping in mind that it should satisfy the design brief.

Various initial ideas like creating products out of materials such as bamboo, sheet metal craft, clay, etc. were thought about. After discussions with guide and faculty at Shraddha Ms.Parul and Ms. Arti, Paper-Craft and Origami were chosen as a possible directions to explore further. Due to the unavailability of either resource or absence of skills in Shraddha for the chosen area; or safety and other factors involved, many ideas were discarded in the early stages itself.

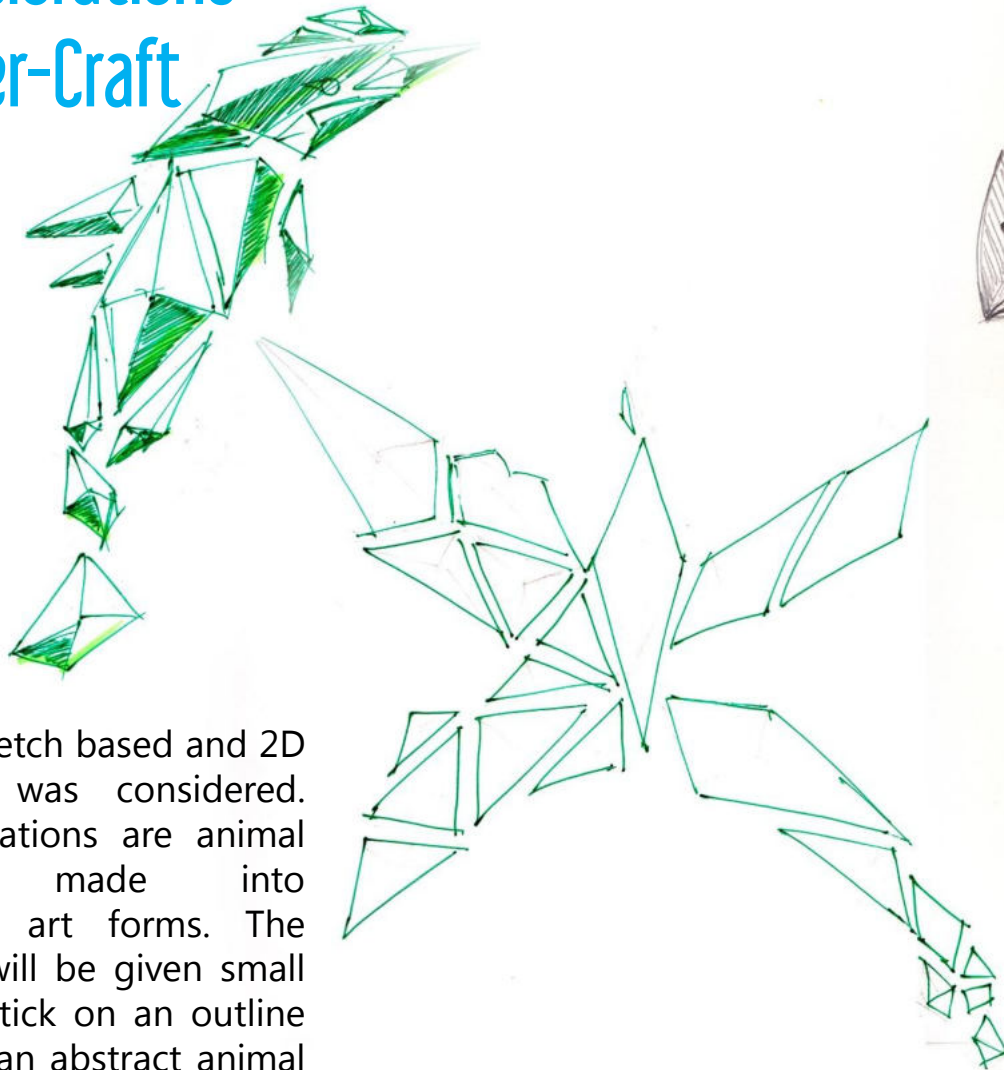
Thus paper was chosen also because the project can work with the existing inventory of Shraddha without much investment as well as skill for performing it was already existing in them.

7.1. 3D Abstract forms

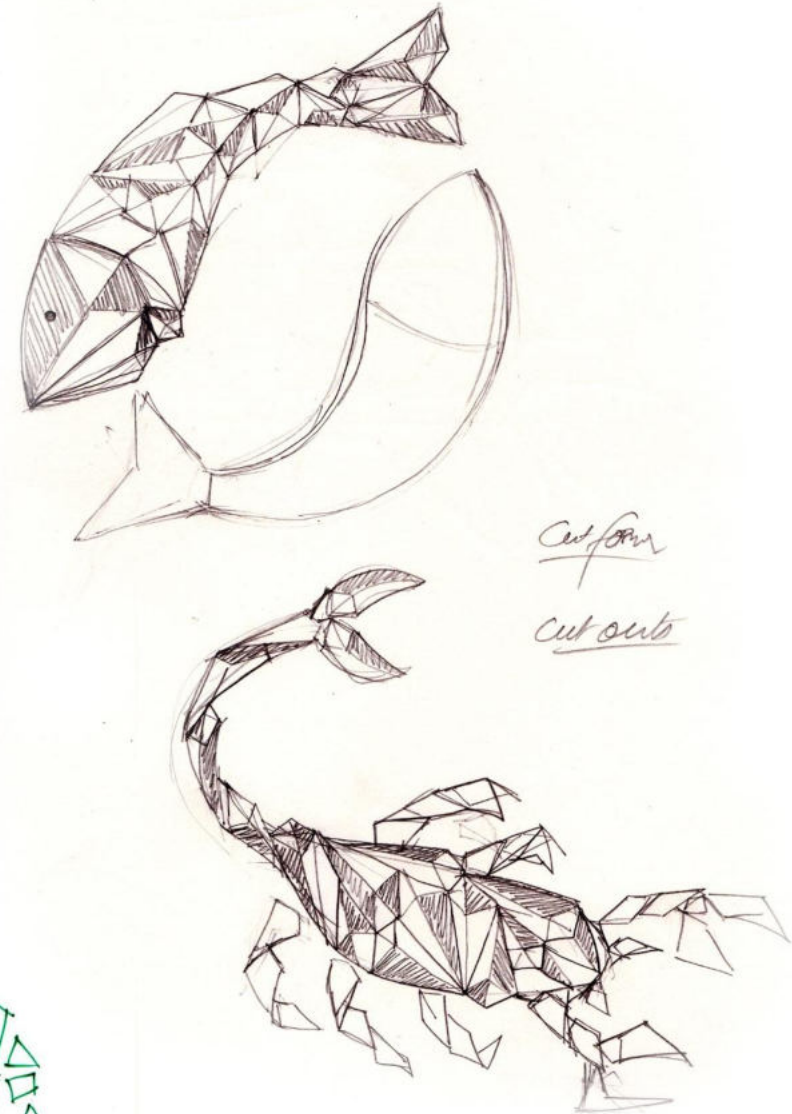


Explorations were done with simple 3D forms using paper. The single element in the figure is a triangle with three slots which can be arranged into modular structures in random patterns to form abstract installations.

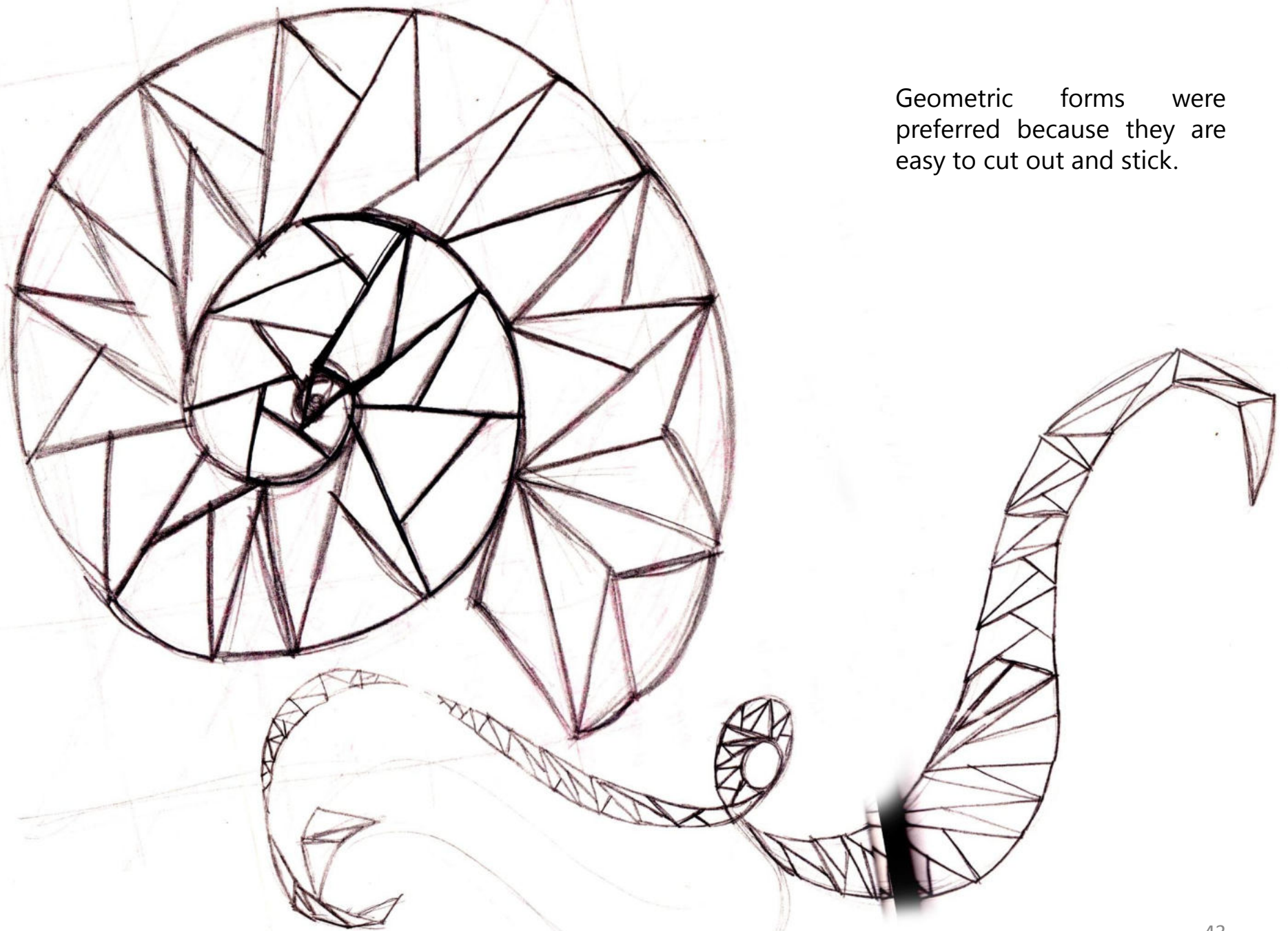
7.2. Explorations in Paper-Craft



Initially, sketch based and 2D approach was considered. The illustrations are animal patterns made into geometric art forms. The students will be given small strips to stick on an outline and form an abstract animal form or a pattern

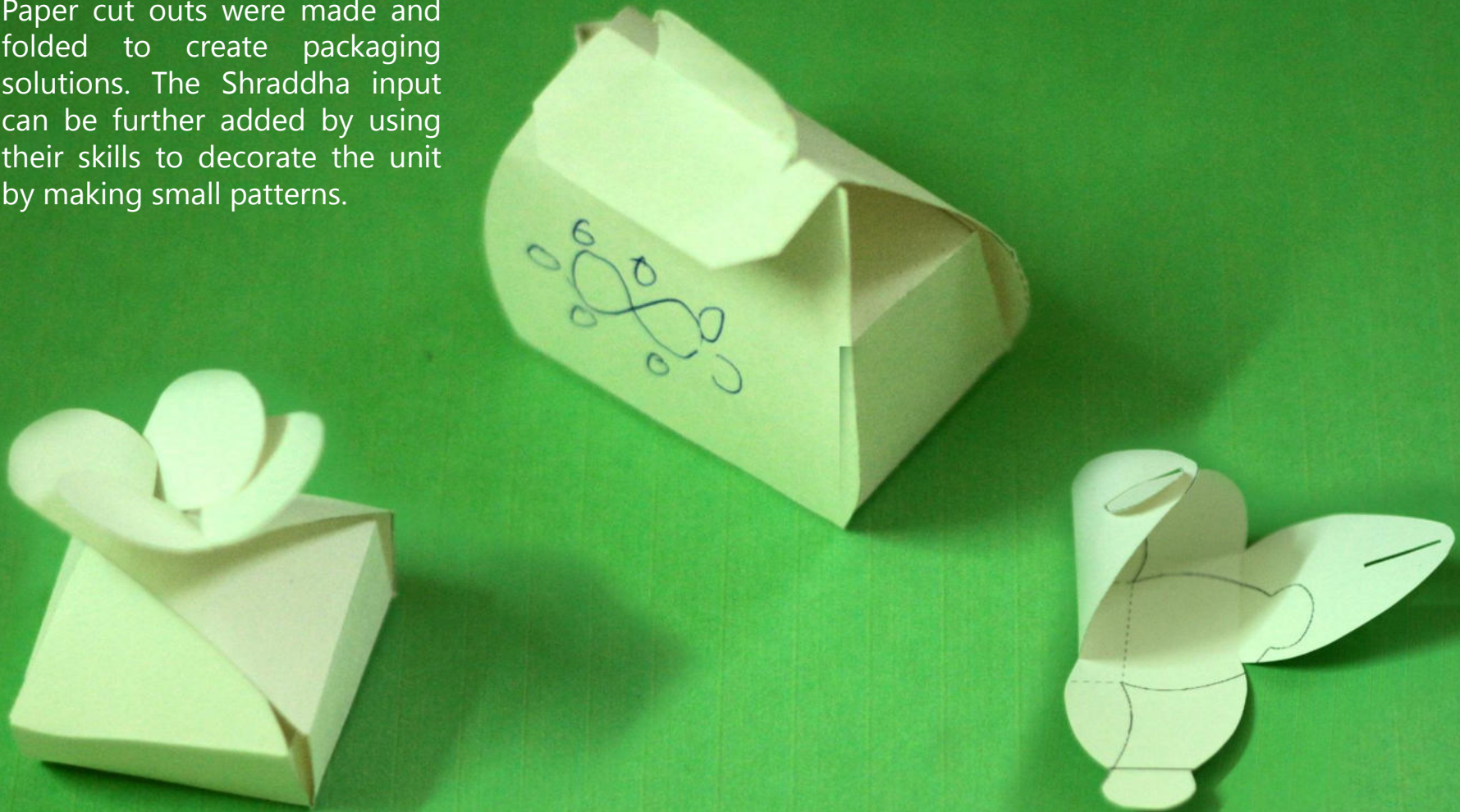


Geometric forms were preferred because they are easy to cut out and stick.



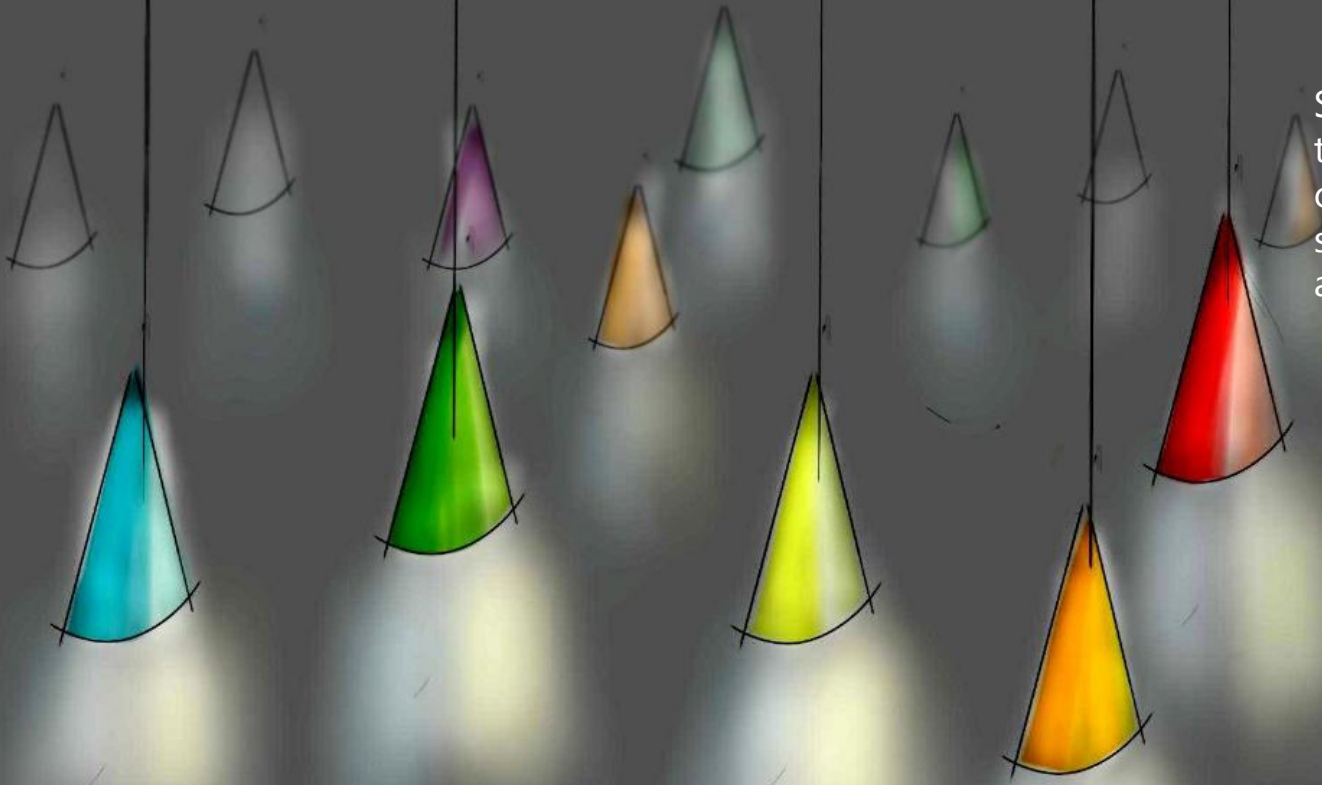
7.3. Packaging

Paper cut outs were made and folded to create packaging solutions. The Shraddha input can be further added by using their skills to decorate the unit by making small patterns.



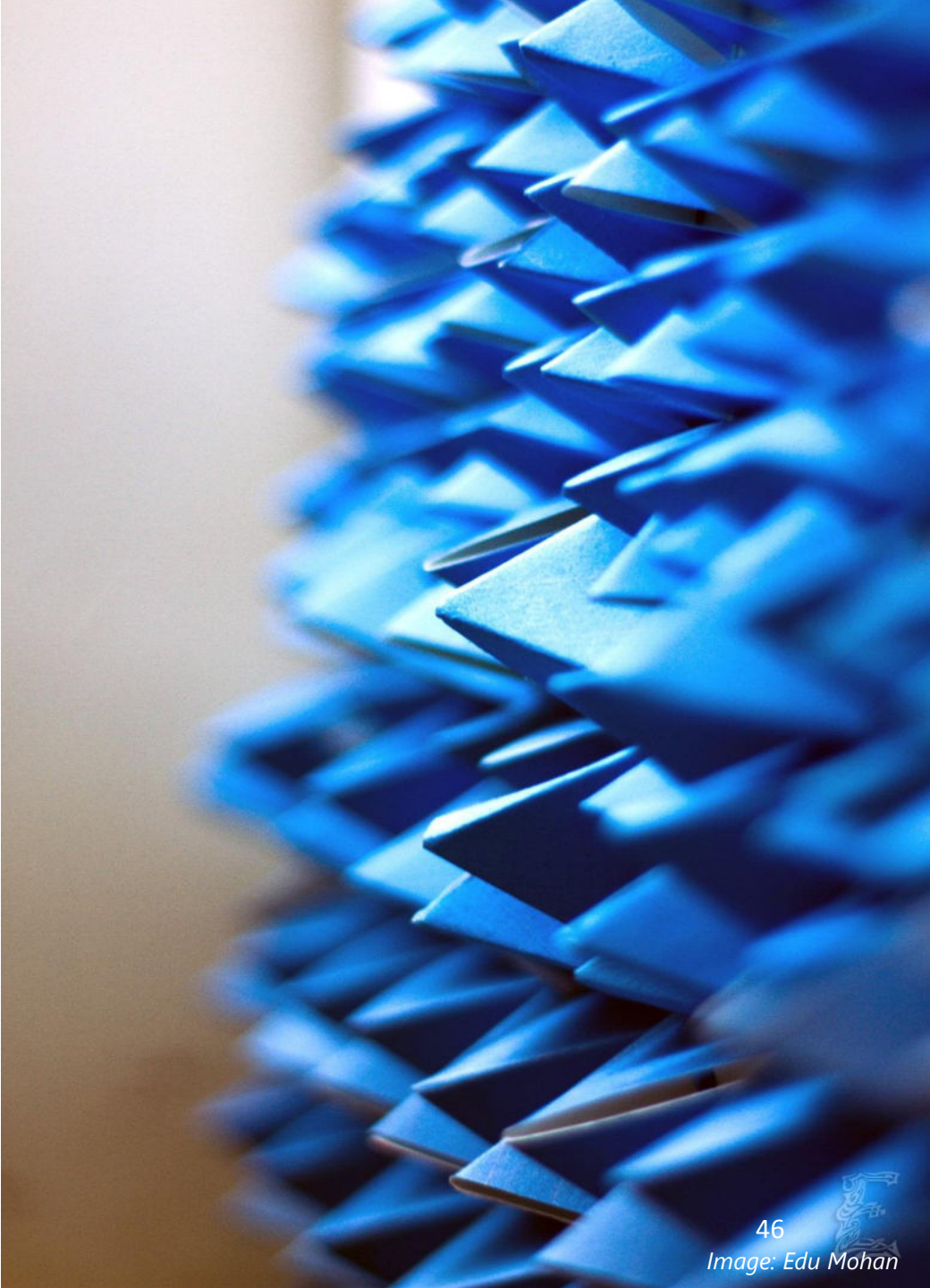
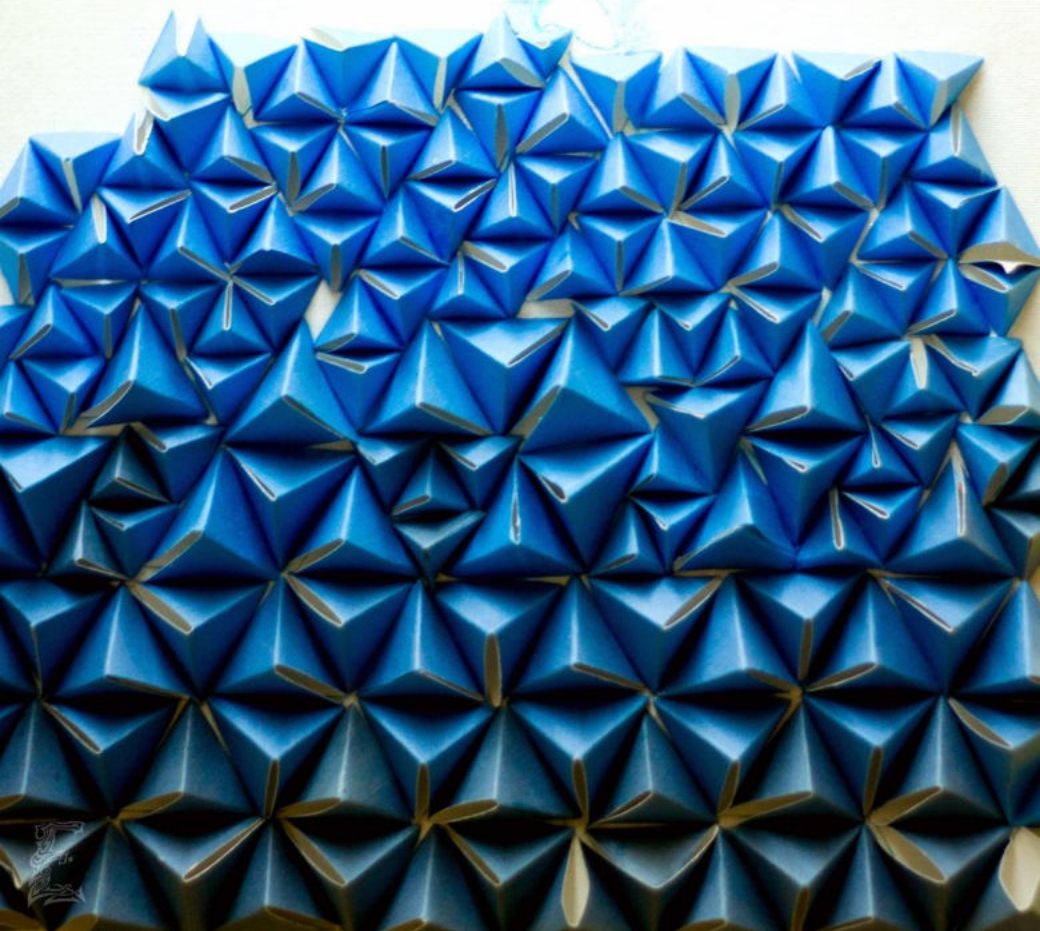
7.4. Lampshades

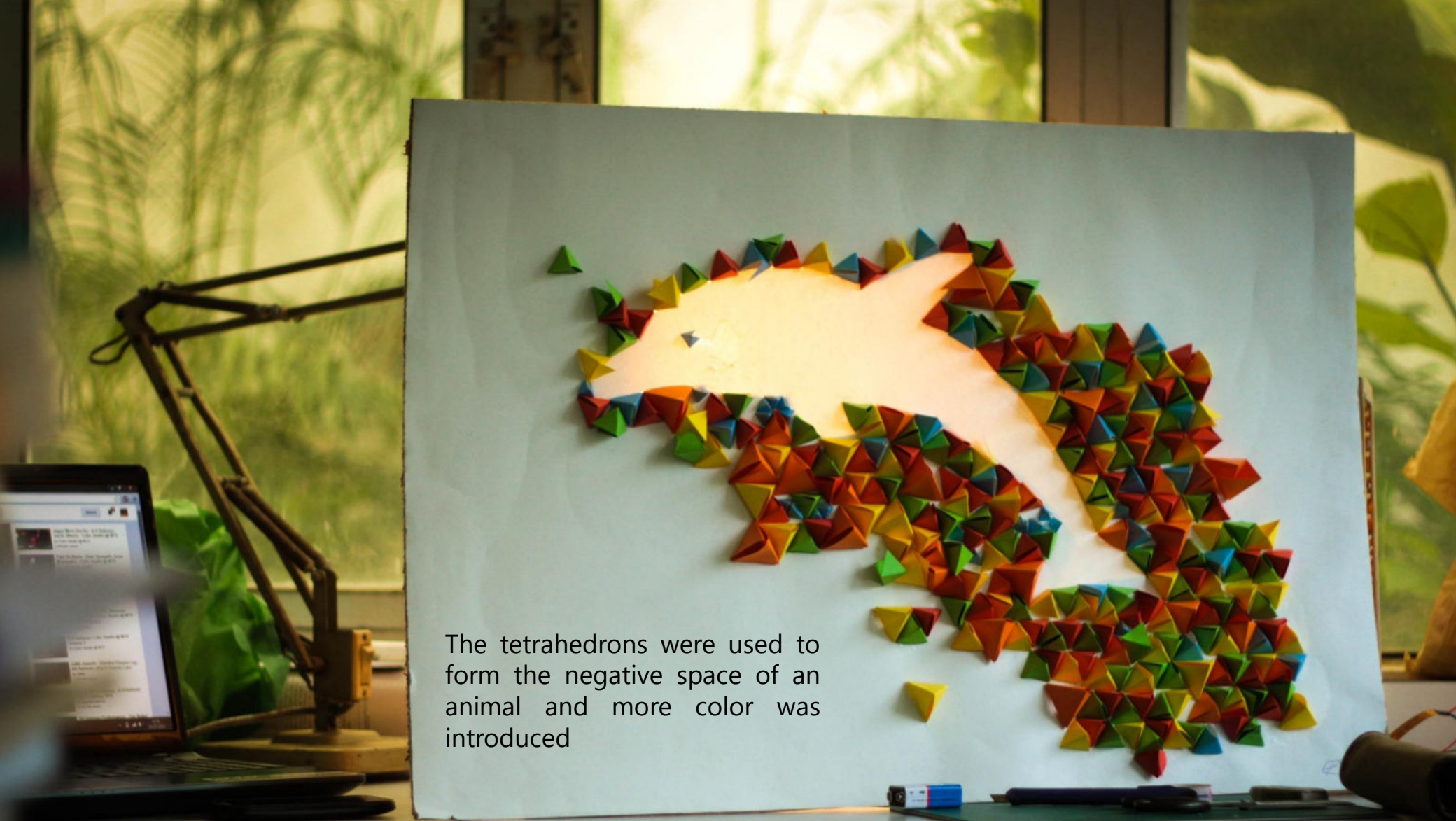
Small cones were folded and used to enclose hanging bulbs forming colored shades. The lamps can be sold together with the shades like a chandelier



7.5. Basic geometric shapes

Small strips of paper were cut and folded to form tetrahedrons. Various random and abstract patterns were made using them. These could be made into wall hanging art works



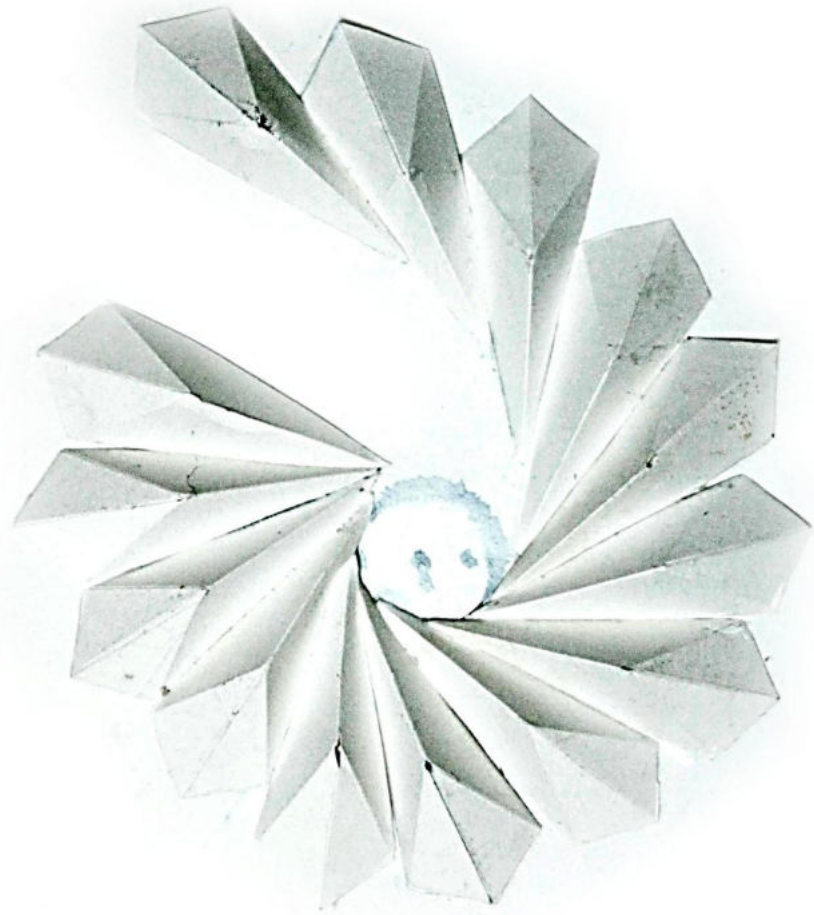


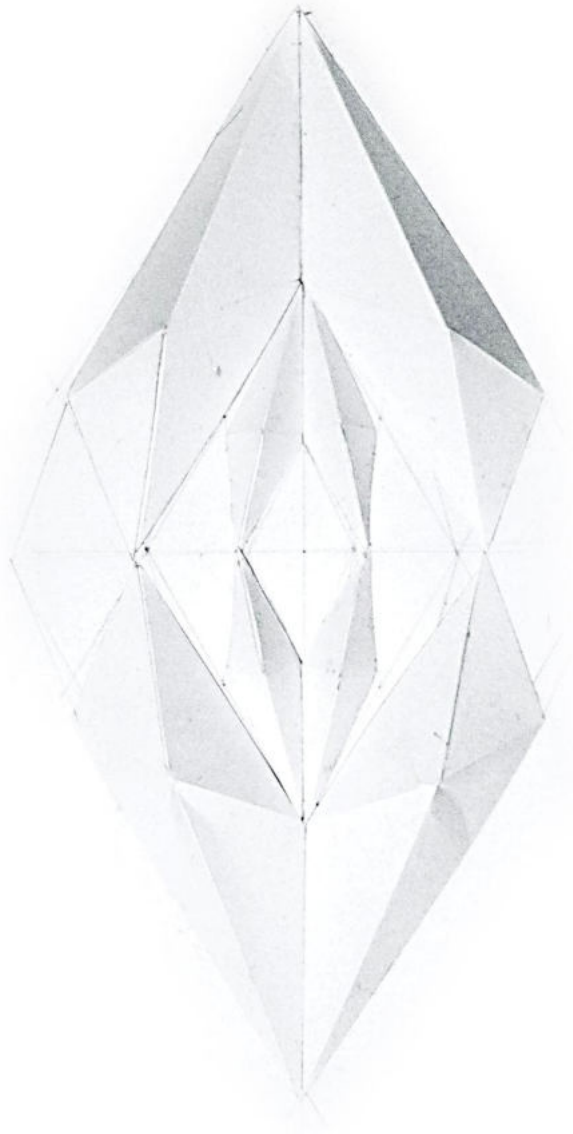
The tetrahedrons were used to form the negative space of an animal and more color was introduced



7.6. Taking inspirations from Islamic geometric patterns

Islamic art is rich in geometric patterns which has evolved over the years and years of practicing the art. It shows its roots from different cultures found all over the world such as Greek, Roman, Byzantine, central Asian and Persian. It consists of geometric depiction of foliage and linear geometric patterns or sometimes entirely abstract motifs and patterns for decorative purposes. The geometric patterns are repeated in such a way that they evolve to be a very intricately done, complex patterns which are used frequently in today's contemporary art as well.





The square and rectangle are repetitively seen in Islamic art and architecture, the facade built from rectangular bricks cast beautiful 3D effect against strong sunlight. A small central square turned 45 degrees inside a large square is a very recurring pattern found.

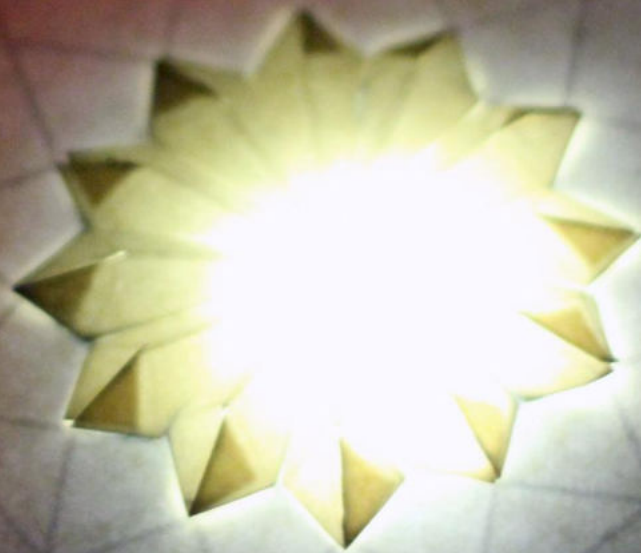
Instead of taking patterns directly, I've tried to take advantage of the geometric nature of the construction and work a bit of my own on the grid. Also adding the element of 3D to it resulted in interesting forms like spirals and other patterns [8] [9]

7.7 Adding “LIGHT”

It was seen that adding a simple technology element like a source of light creates a huge difference in the aesthetic appeal.

The source of light can be a Light Emitting Diode (LEDs) which can be easily sourced.

Further explorations were done using different sources of light varying the ‘color temperature’ as well as the position of lighting. This was done in order to understand the play of light and shadows on simple origami forms.





7.8 The test rig

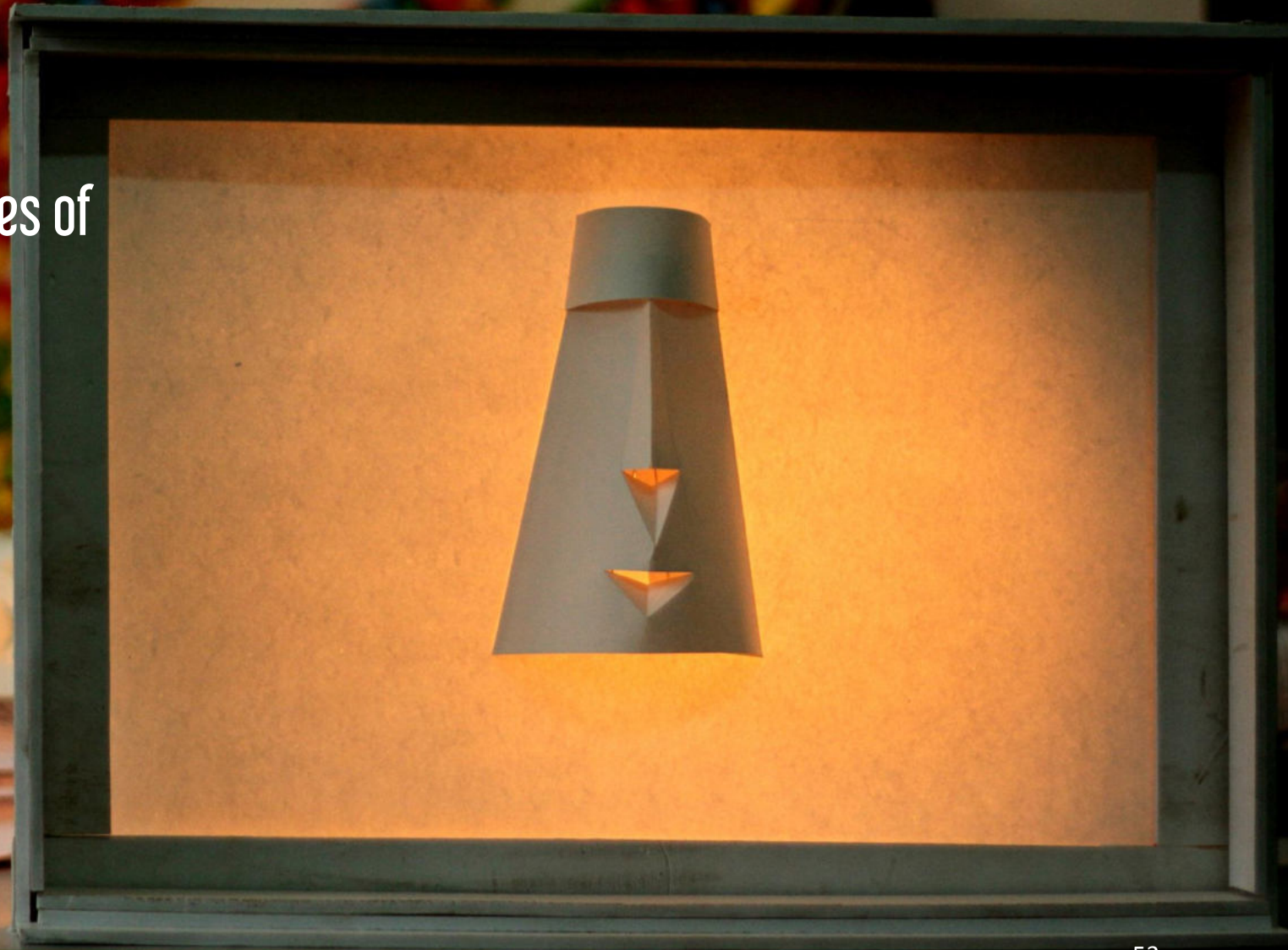
Two frames which could accommodate an A4 and A3 size sheet were built in such a way that it had LED strips along its perimeter. All the explorations were put up in this test rig to check the effect of light on the paper and the drama created by the play of light and shadow

7.9. International Monuments

The Opera house,
Sydney

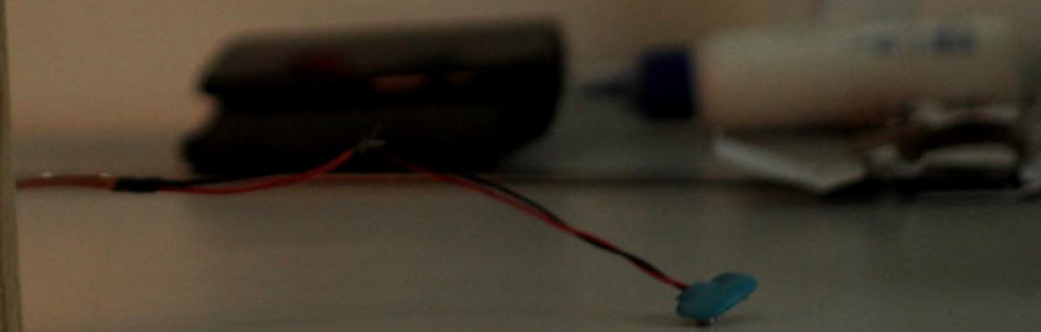


The Moai statues of Easter Island





The Leaning tower of Pisa



The Taj Mahal



8. Directions explored

The following directions have emerged from extensive experimentation in 2D and 3D origami structures. It also takes into account the special skills of autistic children viz. their knack for repeatability, crafts, etc. At this point of time, Shraddha is also looking for repositioning their products and try out new products using the existing inventory which furthers its brand value.

Over the course, I realised that there was a certain element of '**order, recall and remembrance**' to be followed by these special kids. Thus the final product should involve inputs from autistic children to maximum extent as possible ensuring positive engagement from their side. The discussions with Shraddha management were directed towards outlining the extent of the kids' involvement as far as their skills and possible cognitive development is concerned. Considering the above factors, the following directions were explored:

1. Packaging solutions: these involve simple bending, folding, tying, pasting operations to create innovative packages.
2. Technology based products: this is one sector that Shraddha has still not been able to explore. Possible ways to proceed could include lighting solutions.

3. Paper-Craft: this technique can be used to create basic geometry and shapes through basic procedures as folding, etc. and then can be further clustered, clubbed together to create interesting forms.

9. Final Design Approach

The discussions with Shraddha management, Ms.Parul, Ms.Arati and my guide led to the conclusion that perhaps the third option was a better direction to proceed in. Initially the products were envisioned in such a way that it could be a stand-alone or be part of a larger system as a game, a set of certain elements, etc.

Further, on discussion with Shraddha management, they said that they have recently formed an alliance with Mumbai tourism development corporation(MTDC). Hence the product made can be sold as souvenirs or memorabilia about Mumbai which they can take back after a visit.

There souvenir will be a wall hanging piece of artwork in paper. LED sources of light is incorporated for adding the drama element in it. The play of light and shadow on the paper cut-outs and pop-up shapes will add to the visual aesthetics. All further explorations were based on this final design approach.

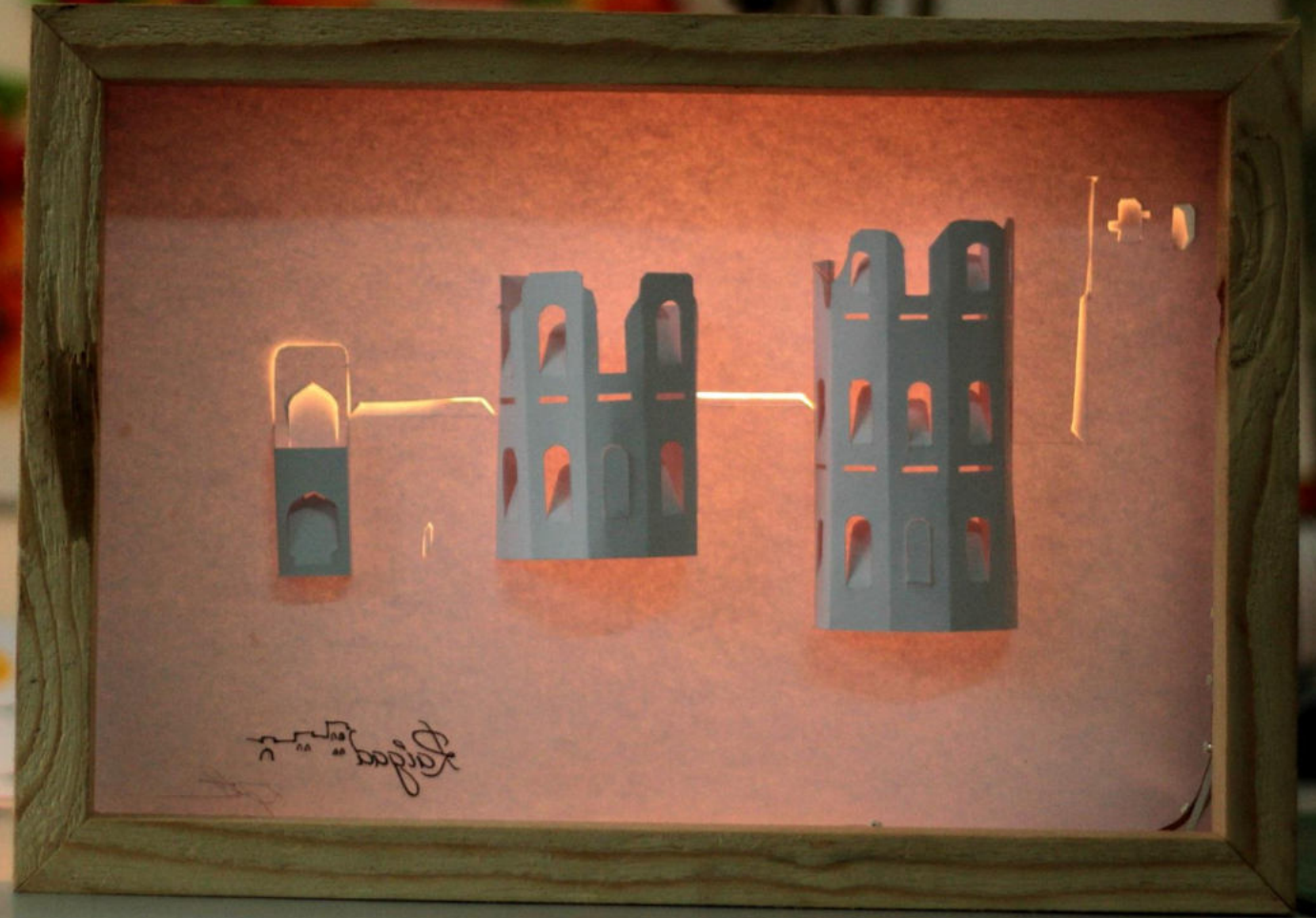
9.1 Explorations along the final design approach:

Monuments
and Landmarks
in Maharashtra

The Gateway of
India



The Raigad Fort





The Elephanta Caves



The Chhatrapati Shivaji terminus





The Nehru Center

10. Final design Directions

The final outcome will be a souvenir of a major landmark of Mumbai. Adding small elements such as clouds and trees for landscaping will visually enrich the final outcome. Use of such elements as additional parts detailing out and narrating the landscape visually, offer more scope for inputs from Shraddha students of various skill levels.

- A student with higher skill level can do the complex bending.
- A lower skill level student can paste the cut outs.
- One batch that has a moderate skill level can have a logo of Shraddha put on the artwork with a stencil.
- Another batch can print a write-up about the art using a designed stamp.
- A student with sufficiently developed mind can make aesthetic decisions in terms of placing the various visual elements in the frame, and thus creating a unique composition each time (if possible). This can be possible with necessary training and real time guidance by the supervisors as is currently done for many of the products.

10.1. The Bombay Municipal Corporation Building

The BMC was created in 1865. It is an epitome of the Gothic architecture done by F. W. The building was completed in 1893. It is known for 77.7m tall tower. [9]

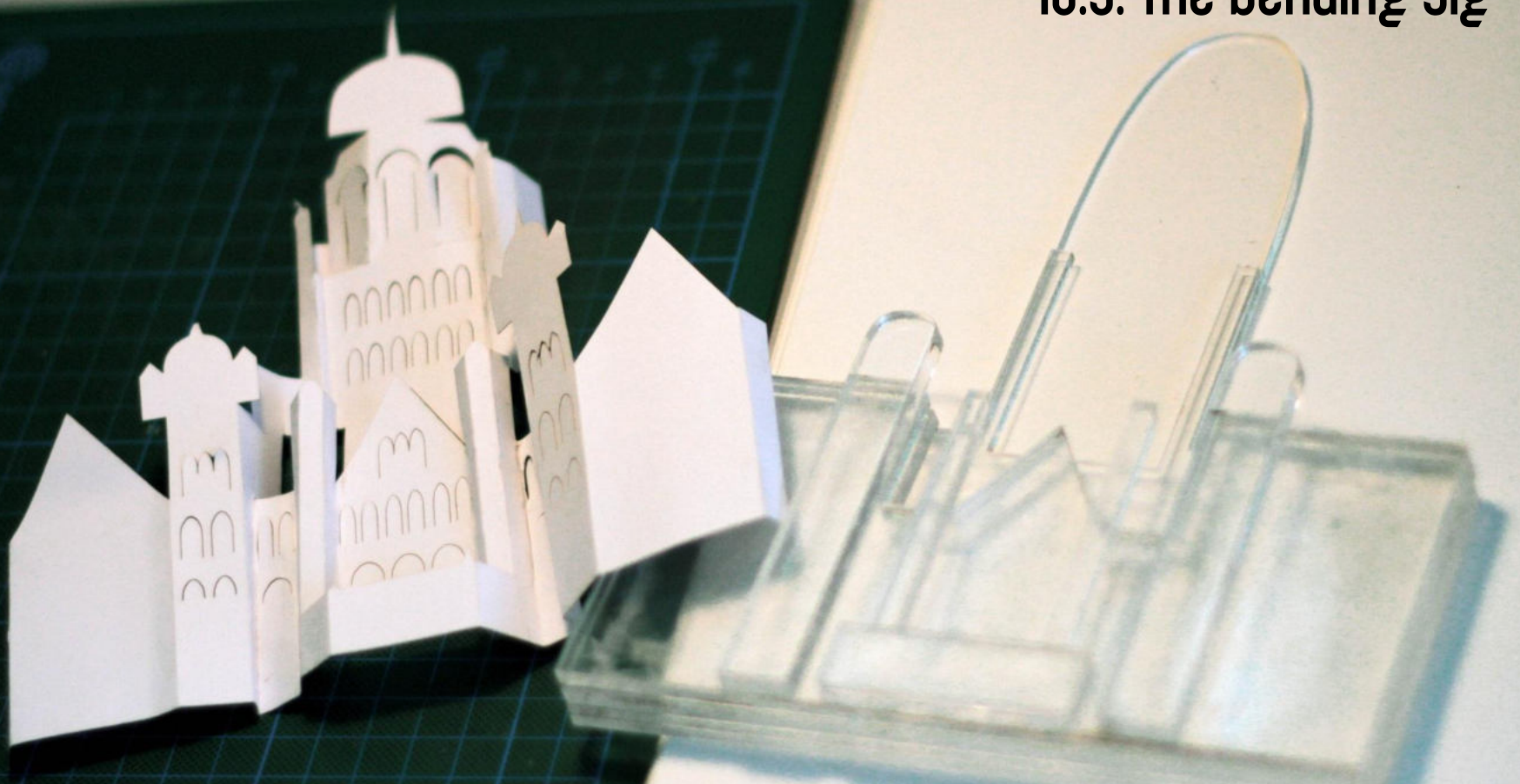


10.2. The Process

A generic process of training the students for making the products is proposed. The Students will be trained for the activities by the faculty at Shraddha.

- There will be a kit which would have cut outs from paper.
- The students will have to stick the elements on the base sheet aligned to the markings.
- The complex patterns and fine elements are precision cut on a 220-250GSM paper using a CNC laser cutting machine.
- Further extending possibilities of product design intervention, jigs for bending, stencils for painting and stamps for printing are incorporated.
- The finished piece will be framed.
- The frame with the LED lining will be done outside Shraddha.
- The page will be backlit using an LED array running along the frame.
- The LED source will be powered from the AC mains and there would be a driver which will do appropriate power management necessary for the LEDs to function.

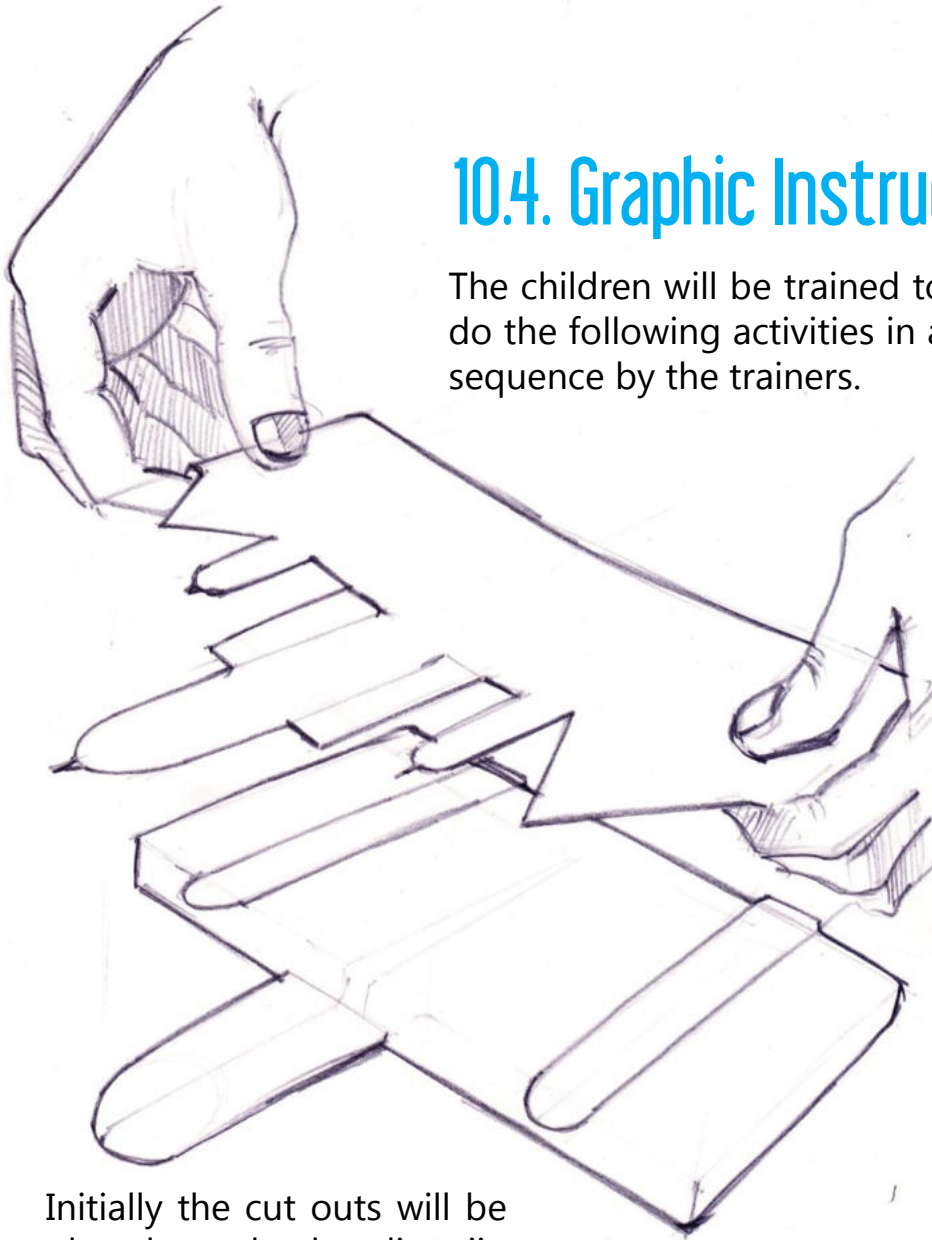
10.3. The bending Jig



The jig for bending was made by laser cutting acrylic. This came out to be the cheapest and easiest way to make in for a prototype.

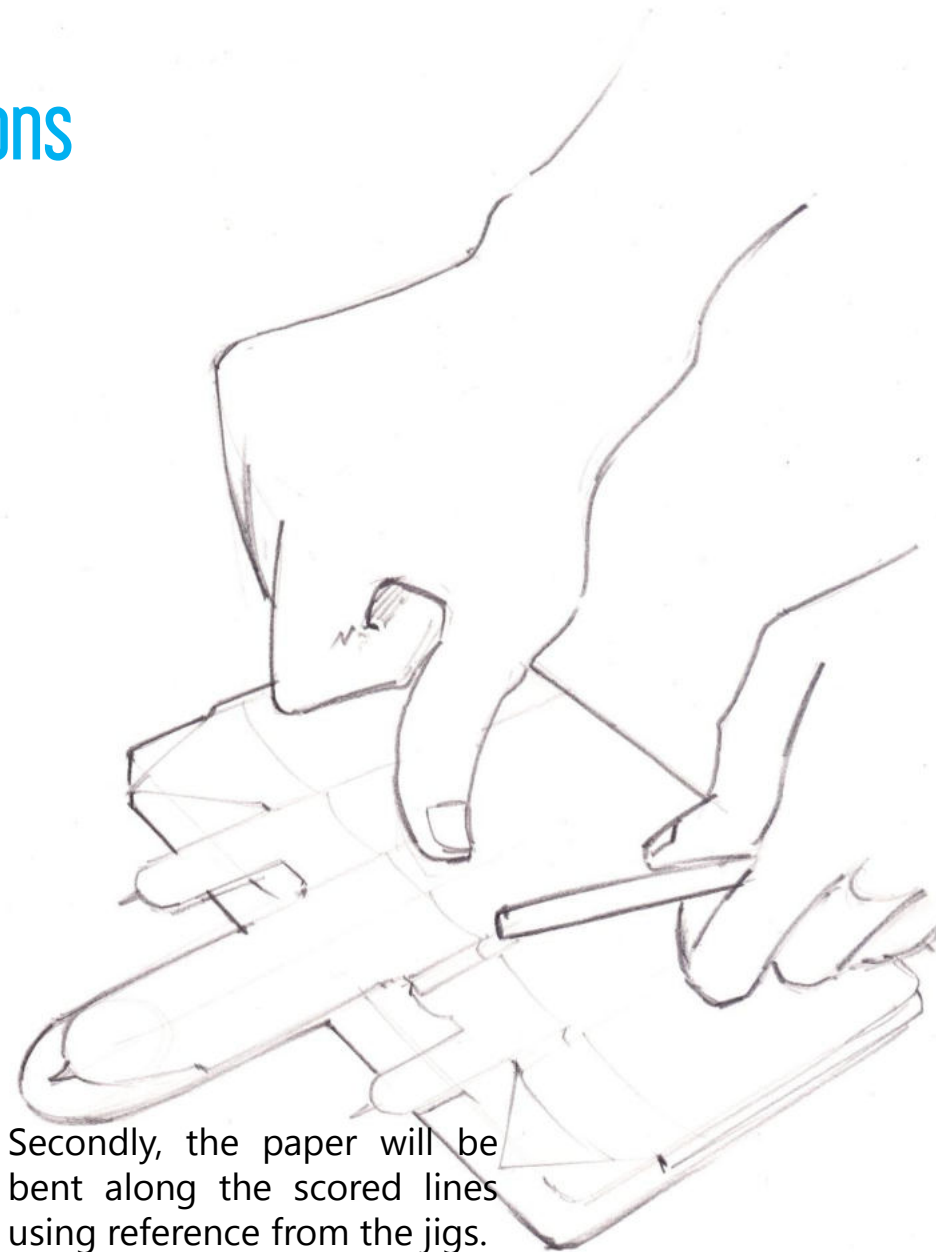
10.4. Graphic Instructions

The children will be trained to do the following activities in a sequence by the trainers.

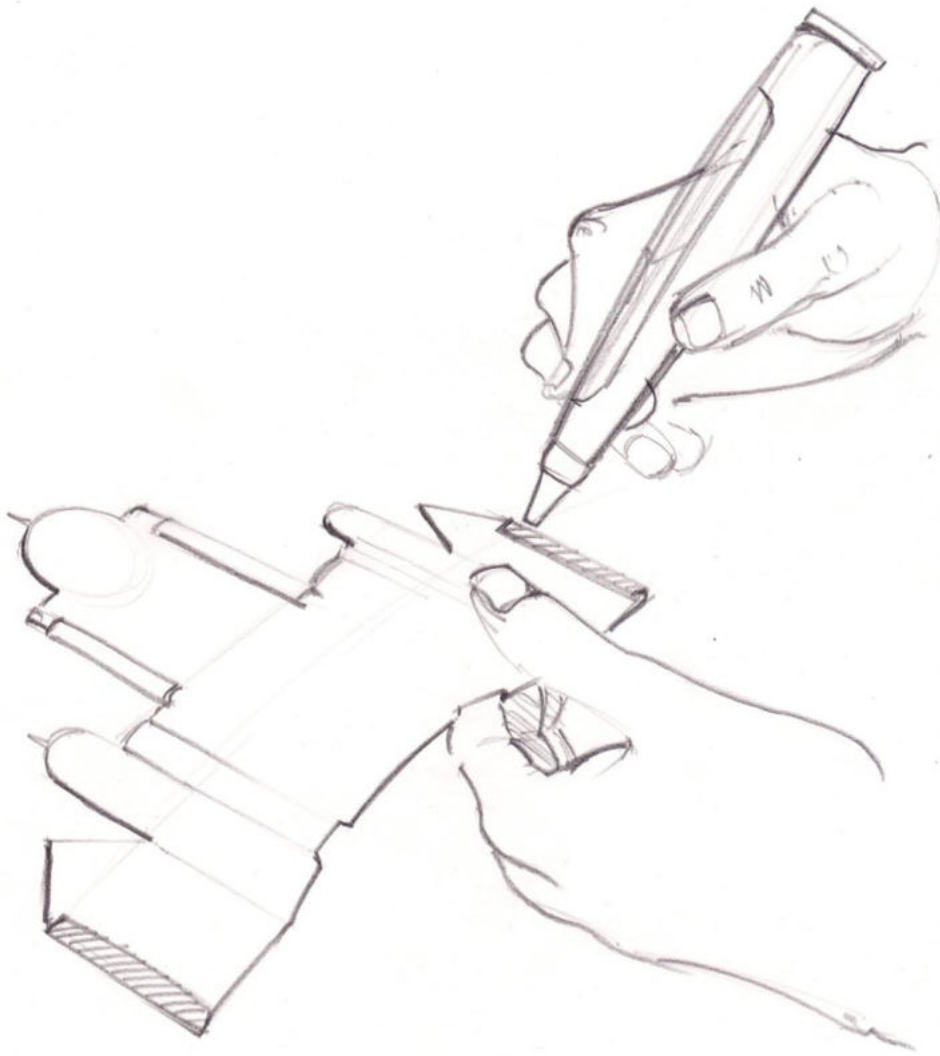


Initially the cut outs will be placed on the bending jig and clamped from one end.

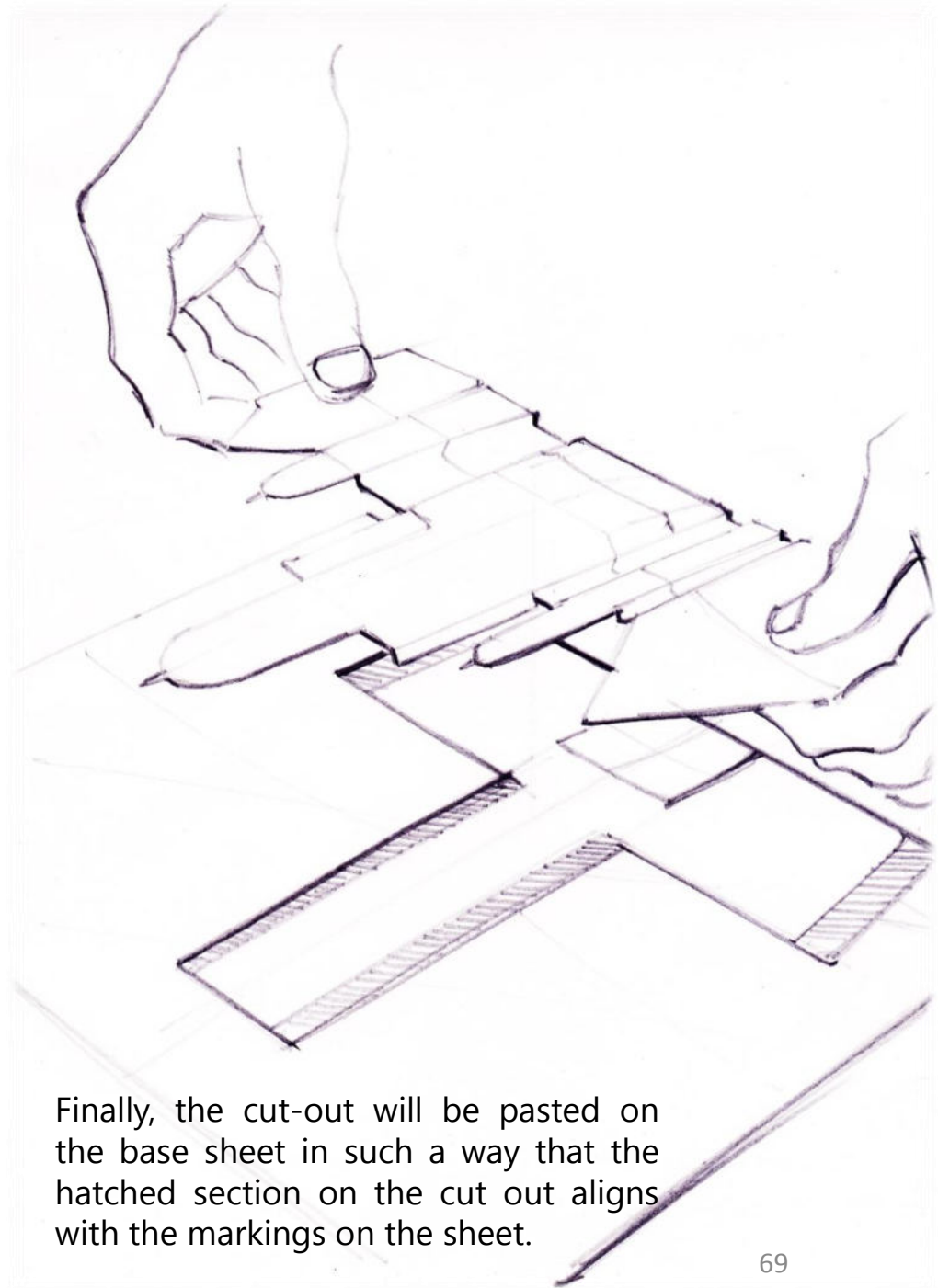
①



Secondly, the paper will be bent along the scored lines using reference from the jigs.



Once the pieces are bent to make a pop-up, another batch will apply glue on the hatched section of the cut-out.



Finally, the cut-out will be pasted on the base sheet in such a way that the hatched section on the cut out aligns with the markings on the sheet.

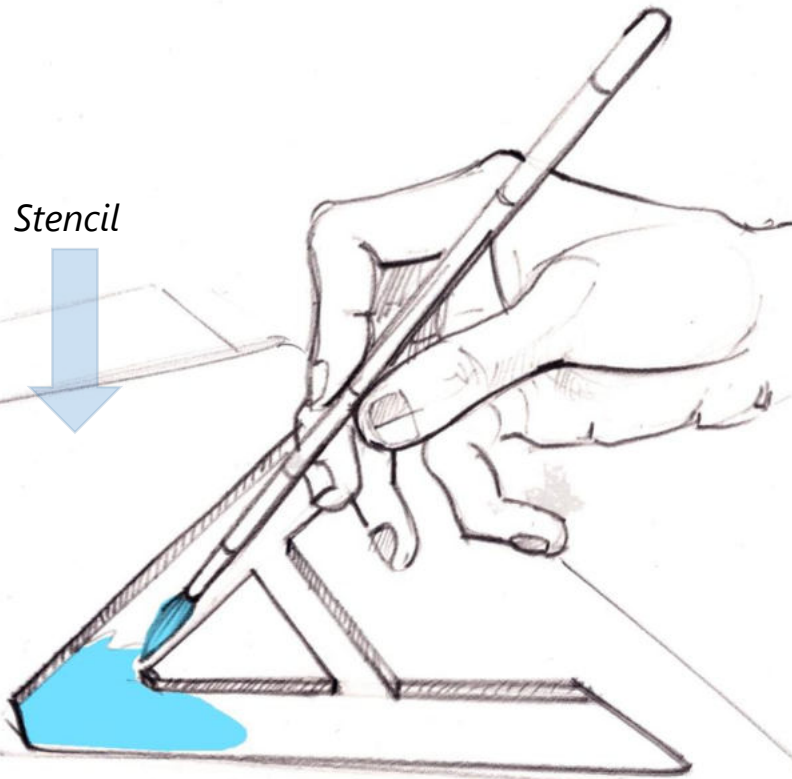
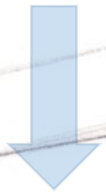


The final elements like the clouds, trees, etc. are taken and glue is applied on one side.

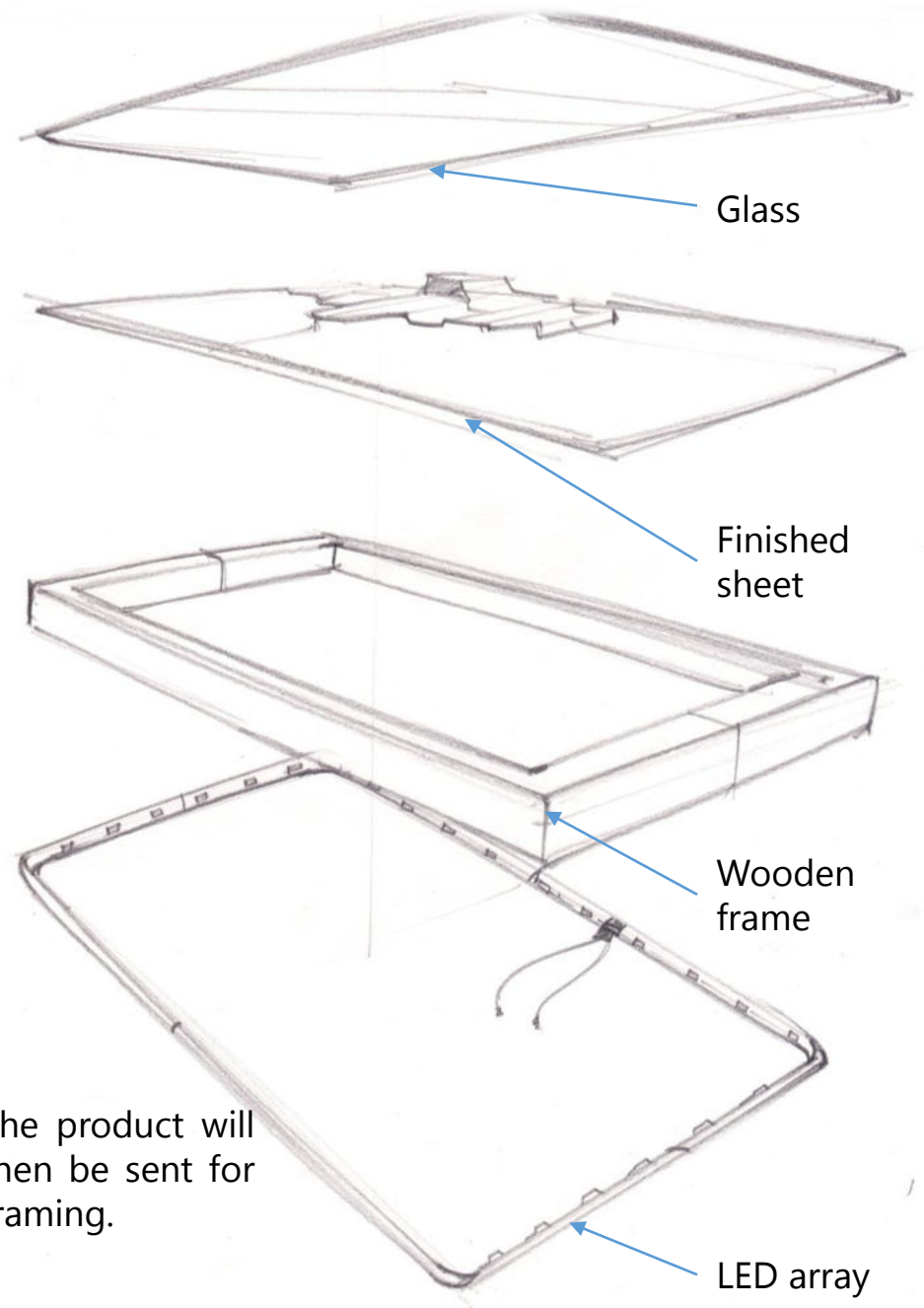


The cut-out is then pasted on the base sheet, with the help of the supervisor.

Stencil



The finishing touches like a write up about the product and Shraddha logo on the product can be done using a rubber stamp and stencils respectively.



The product will then be sent for framing.

10.4.1. Task Analysis of the considered process.

List of activities considered in the process are:

1. Separate all the cut outs.
2. Take the biggest piece in the cut out pieces.
3. Insert the cut out into the bending jig.
4. Put the left side fixed to the jig.
5. Start bending along the scored creases from the left side to the right
6. Use jig elements as reference for height and depth.
7. Apply glue on the hatched area in the pop up.
8. Place the hatched lines on the cut out piece matching the hatched area on it.
9. Stick the cut out on the base sheet neatly.
10. With the fine tool, poke into all the grooves.
11. Take all the small elements in the kit and keep it ready
12. Apply glue on the base sheet within one of the outlines.
13. Take the cut out having matching the outline and place it on top of it.
14. Make sure that the outline on the base sheet and the outline of the cut out is aligned.
15. Do the same with rest of the small elements.
16. Once done, pass the art to the framing area

10.5. Outcomes using the Final Design Direction



The Marine drive

The Marine Drive is a 4.3-kilometre-long boulevard in South Mumbai in the city of Mumbai. It is a 'C'-shaped road along the west coast. Nariman Point and Babulnath are on either ends of the road. Marine Drive is situated over reclaimed land facing west-south-west. A promenade lies parallel to this road

At night, when completely lit up, it is called queen's necklace as it forms a necklace shape in birds eye view. [10]

Gateway of India

The Gateway of India is a monument built during the British rule in Mumbai. "It is often referred as the Taj Mahal of Mumbai" It is a beautiful landscape consisting of sailing boats and sunset as a backdrop. [11]





11. Evaluation of Ideas

The primary evaluation of ideas were done with Mrs. Parul and Mrs Arathi who have been faculty at Shraddha since 1993 along with my project guide. The approach was appreciated. They were willing to handle the cost factor involved. They also liked some ideas which where the part of the explorations. They said that while creating intricate designs, one needs to put some level of tolerance so that the adjacent slots wont get cut accidentally. If one small cut gets wrongly made, the whole piece would go for a rejection.

12. Conclusion

The main aim of the project was to create a range of products which can be a part of the activities which the autistic adults do in Shraddha.

- In the process of making the product, a gainful and meaningful engagement was achieved.
- A possibility of development of their cognitive ability and gross motor skill is present as the design process was developed based on their abilities/disabilities.
- It takes input from students with various level of skill and IQ.
- The process was also designed in such a way that the nature of work is similar to the existing line of work at Shraddha, hence training required will be minimum.
- Even though Shraddha was ready to take up the cost involved, efforts were taken to keep it minimum, like using The existing inventory of Shraddha.

A level of understanding of creating a design approach was achieved through the project. Forming close relations with the students at Shraddha opened up a new door to level of empathizing and relating to people with special needs. There are factors like ergonomics which could not be considered in the manufacturing of the jig and molds. Refinement of the current issues and future work is possible.

13. Final models





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