

FINAL YEAR THESIS
Making of a Stop Motion Animation “Bioscope”

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Multimedia and Creative Technology

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APPROVAL

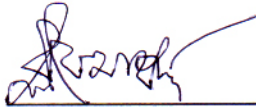
This Project titled “**Making of a Stop Motion Animation “Bioscope”** submitted by Uday Kallol Redoy to the Department of Multimedia and Creative Technology, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Multimedia and Creative Technology and approved as to its style and contents. The presentation has been held on 26th December, 2019.

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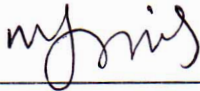
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I hereby declare that, this project has been done by me under the supervision of **Mizanur Rahman, Lecturer, Department of MCT**, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere forward of any degree or diploma.

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ABSTRACT

Nowadays our Bengali culture has lost many of its glorious events and traditions. In this project we are trying to show some of these lost events and traditions through a stop motion animated short film “Bioscope”. We choose this project to show our love and respect towards our culture and heritage and also to show our skills of crafting, recycling, stop motion animation making and visual arts in this project. As we know, stop motion is not so popular and well introduced in Bangladeshi animation industry. So, we took this challenge to show our skills in making this particular type of animation and want to introduce this technique in our animation industry and to remember our lost heritage. In our project, the story starts with a Puthi path ashor following with some other traditional events that we lost. So, our main goal is to introduce our lost Bengali cultural heritage and tradition through a stop motion animation named “Bioscope”.

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CHAPTER 1

Introduction

1.1 Genesis

Now a days, people of all ages like animation shorts and movies as it is both entertaining and educational. Animation by definition is created by generating a chain of drawings or pictures taken by some sort of simulation procedure for creating movement. It creates an optical illusion through which we are able to see still images or drawings moving. Among other animation techniques stop motion is very unique and full of different process and technique.

Stop motion animation is a technique used in animation to bring static objects to life on screen. This is done by moving the object in increments while filming a frame per increment. When all the frames are played in sequence it shows movement. Clay figures, puppets and miniatures are often used in stop motion animation as they can be handled and repositioned easily. Stop motion animation is almost as old as film itself. Originally, it was often used to show objects moving as if by magic. Film makers needed a way to animate objects on screen and the technique was devised.

Animation sector in Bangladesh is now experiencing a rapid growth. Few animation studios are producing animated short feature films. But most of them work with 2D and 3D animation. Stop motion animation is not so known till now. Some TV advertisement use this technique but as for animated short or film, it's far behind. In recent times some short stop motion animation is made and it's good news for Bangladeshi animation sector.

The story we developed is based on our Bengali culture, tradition and lifestyle. Our Bengali culture and tradition are very rich and colorful. We have a very proud history of our heritage. But it is a matter of sorrow we are almost forgetting these traditions. Our new generation are about out of touch from most of our traditional events such as village fair on different occasions, puthi path, snake play, music room ("ganer ashor" in Bengali) etc. These events were mostly held under an old large banyan tree in a village. We want to introduce these to our new generation and also a nostalgic feeling for the older as it will recall their childhood memories.

1.2 Project Goal

The main reason to choose this topic for our stop motion animation is to create awareness about how our rich Bengali culture and tradition are fading away day by day. The key part of our story is a banyan tree. This tree is considered as "The root of Bengali culture." Where ever there was a large old banyan tree, it became the center of civilization, cultural diversity. There used to be a gathering of different types of people from different region, religion, culture and tradition several times under this tree through different sociocultural occasion such as village fair, religious festival, musical gathering ("ganer ashor" in Bengali), puthi path, puppet show, jatra pala etc. These were like a public get together and a great source of enjoyment and joy for the rural people. But as the time changed these cultural events are being forgotten day by day. Many of these traditional and

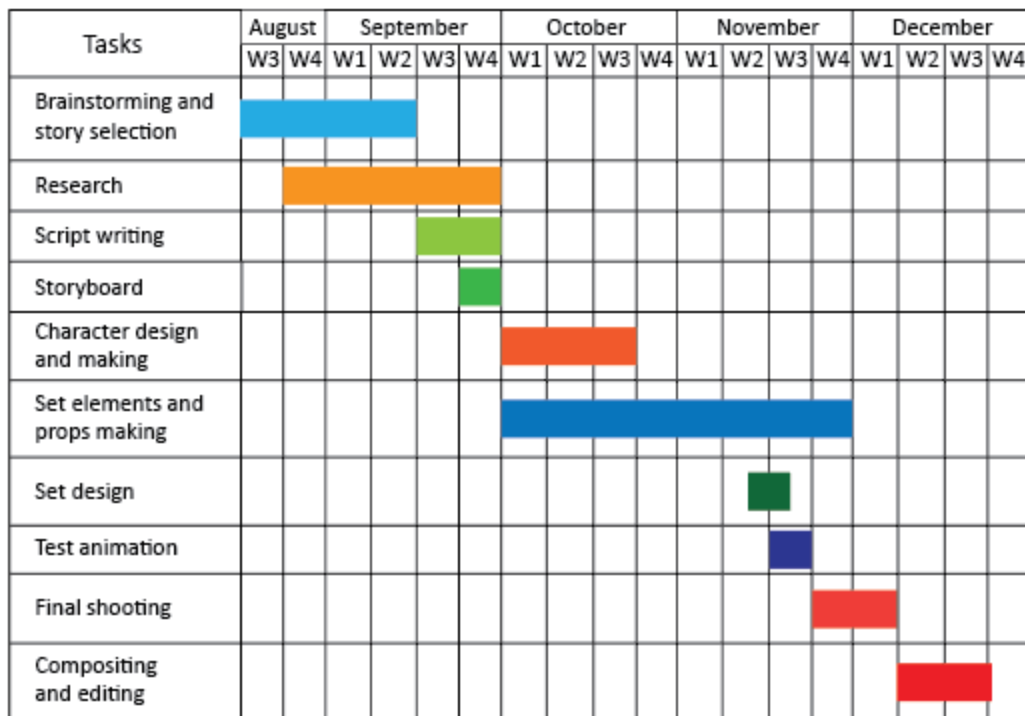
cultural events are now gone. Some are still celebrated but in a limited way. Our elders had seen and celebrated these from their childhood with their elder generation but we didn't get to celebrate or know that much. Our new generation don't even know about our culture and history as we know. Sadly, but true that our once famous cultural and traditional events are now become documented only. We get to see the pictures sometimes or read in the book. But the best way till now is to watch some old footage on internet or museum. But this doesn't create that much interest among the young generation now. So, our goal is to introduce our lost Bengali cultural heritage and tradition through a stop motion animation.

1.3 Target Audience

As people of all ages like and enjoy animation shorts and movies specially the young generation, it will create both awareness and interest among all about our own culture and tradition and call them back. And for the elder generation, it will recall their childhood memories.

1.4 Project Timeline (Gantt chart):

Table-1.1: Gantt chart of “Bioscope” working process timeline



CHAPTER 2

Literature review

2.1 Existing knowledge

Several stop motion animations have been consulted to offer an in-depth analysis of the best methodology for the film. In the film “Kubo and the two strings” director Travis Knight used a specific pattern for the environment in the film. The art took inspiration from such Japanese mediums as “Ink wash painting” and “Origami” among others. A particular influence came from the “Ukiyo-e” wood block style. The idea of selecting a pattern and stylizing all the props and environment according to that was inspiring. Some films use semi realistic background environment style such as “ParaNorman (2012)”, “Missing Link (2019)”. We have also made a stop motion animation before named “Boomerang” as a 5person group where we built the characters with jute thread inspired by a short “Zero (2010)”. As stop motion animations are made by using mostly handcrafted character, background and props, no other known stop motion animation used realistic background and character. After studying all of these films and more we choose the best combination of design and environment to create a good visual of our story.

2.2 Technical aspects

The Technical aspects of our stop motion animation are described below:

2.2.1 Pre-production:

Script writing: Script is the written document of the story sequentially. In other word, what is finally seen and heard in written form. After writing the script, a good storyboard was made.

Character design and making: In our previous work “Boomerang” we experimented character build up with different materials. This helped to design a character that suit with our story theme. It also helped to choose working friendly material for building our character.

Set element and props making: We made our set elements and props together by using natural and waste materials like clay, dry tree branches, carton board etc.

Test animation: After doing all the stuffs above, we did a test animating process where we could find out any problems and if any progress needed. It helped us avoiding any trouble while the final animation was captured.

2.2.2 Production:

Direction and shooting: Not like any live action shooting a stop motion animation shooting process is different. We used Dragon Frame 4 software connected with our camera for shooting.

It was done by capturing every tiny movement frame by frame and the whole animation is the combination of these images which will run as moving animation.

2.2.3 Post Production:

Compositing and editing: After shooting, all the sequential images was combined to make visible animation video by using Adobe Premiere Pro software. All other necessary process was done here including sound and color correction here.

CHAPTER 3

Specification of My Work

In our 2 members group project we had to do a lot of work in the shortest possible time. So, we divided our work between us as per our member's expertise.

3.1 Story

The main concept of the story for our project is all about our Bengali cultural and traditional events. I got this idea from the inauguration speech of famous actor and director Gazi Rakayet in 2nd DIU Club Carnival-2019 held in Daffodil International University. He said in his speech, “Banyan tree is the root of Bengali culture and tradition. (বটগাছ আমাদের বাংলা সংস্কৃতির শেকড়।)” I took the main idea from there and started making list of our almost forgotten socio-cultural and traditional events. I discussed about this with my honorable Department Head and built a storyline for our project.

3.2 Script

After finalizing the story a script was needed to start working. A good script helps to make a good animation and film. I made a script based on the storyline. This was slightly changed according to the sequence need. Then my group mate made a storyboard following the script.

3.3 Character Design

In making a stop motion animation one of the challenging part was character design. I took inspiration from traditional cloth doll with which we used to play in our childhood. I wanted to recall that memory by designing the character that would be like these cloth dolls. I designed the characters in way that we can move the limbs while shooting and it can remain stable in every frame capture.

3.4 Character Body Making

I used my previous experience of working for “Boomerang” a stop motion animation made by our five person group. I made the basic human figure skeleton using metal wire. Hot glue was applied on the chest part and then wrapped jute rope on it. The heads were made of Styrofoam balls.

3.5 Props Artist

Props are the main part of our project and as our story demands we needed a lot of props with a time limitation. So, we divided the props making part between us. I did half of the props in this project like:

1. Character body making
2. Clay elephant
3. Clay bird
4. Clay bank
5. Vegetables : Pumpkin , Eggplant, Potato
6. Snake whistle
7. Benches
8. Dotara
9. Drum
10. Kitchen equipment(Boti)
11. Cotton candy maker
12. Throne
13. Sword
14. Caps and Crown
15. Bicycle
16. Basket
17. Flower
18. Kula
19. Puppet show setup
20. Betel leaf
21. Jolchouki
22. Snake

There were some props where we both need to work on it like:

- Banyan tree
- Merry go round
- Village hut
- Village shop
- Backgrounds
- Props coloring

3.6 Set Designer

There were six scenarios in our story. I did the 3 scenes set designs here. Before I made a rough design of each scene, I fixed every prop's position and then designed the set. I did these three scenes:

1. Jatra pala
2. Village market
3. Baul gan

3.7 Animator

As we all know, in a stop motion animation, the animation part is done by hand. So, every tiny movement has been done by hand, frame by frame, following the script. I did half of the animation of this project.

1. Village market
2. Puthi path
3. Jatrapala

These three part scenes animation was done by me. It was the toughest part for me, though I completed it and I gave my best to do the animation in this project.

3.8 Composite and Sequence matching

After the shooting, I checked all the photos we took, made some minor changes where needed. Then I imported the sequential files in Adobe Premiere Pro software and composited these files as a video output. I checked the video file and made adjustments where any jerk I got. After compositing all the sequences, the video files were ready for final color correction and editing.

CHAPTER 4

Reference Images & Description of My Work

4.1 Props

Props are the main part of our project and as our story demands we needed a lot of props with a time limitation. So, we divided the props making part between us. I did half of the props in this project. I collected some references from the internet and social media which were very tough to find. Some reference images are given below:

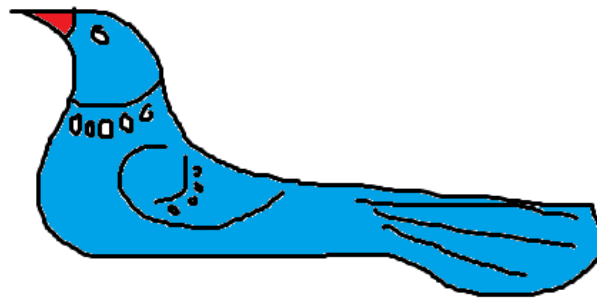


Figure: 4.1.1 Rough design of of clay bird



Figure: 4.1.2 Clay Bird and elephant used in Village fair scene



Figure: 4.1.3 Reference image of Dotara



Figure: 4.1.4 Dotara ready for the scene

4.2 Set Designing

There is six sequence of six different event in our story. I did the set design of three of them. Before I used the rough story board that my group mate made before as reference, fixed every props for the scenes and then designed the set.

I set the characters and other props in position maintaining the camera frame as well.



Figure: 4.2.1 Jatra pala set design

Here is the village fair set design where I set these props, characters using my rough story board.



Figure: 4.2.2 Village market set from a scene

I designed the whole village market design with these props with the banyan tree behind. I also made some village shops here.



Figure: 4.2.3 Reference image of Baul gan scene

I took some reference image of baul gan from the internet and designed the whole set following the story board. Here is the set design of Baul gan where I used some few props like Ektara. Dotara, Drum and characters.



Figure: 4.2.4 Baul gan set

4.3 Animating

Like other part of works we divided animating part also. I animated three scene here in this project. Each movement was done by hand and capture every single image in a rate of 15 frame per second. Here is some picture while I was animating given bellow:



Figure: 4.3.1 Animating Jatra pala sequence



Figure: 4.3.2 Animating a close shot of Village market scene

CHAPTER 5

Development Process

5.1 Pre-Production

5.1.1 Concept

We Bengali culture has a long and glorious history. Many of our tradition like: Puthi reading (Puthipath), Jatra pala, Village fair, weekly village market under a banyan tree, Palagan, Baulgan etc are almost forgotten. Some of these events still happen sometimes but lost its glory due to urbanization and city centered life.

5.1.2 Story

Our story is all about our lost Bengali culture and heritage. Many of our tradition like: Puthi reading (Puthipath), Jatra pala, Village fair, weekly village market under a banyan tree, Pala gan, Baul gan etc are almost forgotten. Some of these events still happen sometimes but lost its glory due to urbanization and city centered life. So, we made our story mainly based on these things.

5.1.3 Script

After completing our story, both of us started to discuss about the script. Then we brainstorm and visualize on the story and one of us make a step by step short division. Here are showing some snaps of our script. It took almost 3 weeks to complete the script.

বায়োস্কোপ

দৃশ্য ১ঃ

১। বিশাল এক পুঁথি পাঠের আসরে এক বৃদ্ধ পুঁথি পড়ছে (ওয়াইড শট)

২। বৃদ্ধ লোকটা পুঁথি পাঠ করছে (ক্লোজ শট)

৩। বটগাছের দৃশ্য (টিল আপ-ডাউন)

৪। কুপি জলছে (ক্লোজ শট)

৫। মানুষ বসে আছে (প্যান শট)

৬। শ্রোতারা পুঁথিপাঠ শুনছে (ক্লোজ শট)

৭। একজন আয়েস করে হুকার টান দিচ্ছে (ক্লোজ শট)

৮। একজন মহিলা হাতপাখা নাড়ছে (মিড শট)

দৃশ্য ২ঃ

- ১। গাছের ডালে কাক বসে আছে (লং শট)
- ২। বটগাছকে কেন্দ্র করে বিশাল মেলা দেখা যাচ্ছে (ছেলের ও.এস)
- ৩। একজন সাপুড়ে সাপের খেলা দেখাচ্ছে (লং শট)
- ৪। ছেলেটা মেলার মাঝ দিয়ে হাঁটতে শুরু করল। (পিছন থেকে লং শট)
- ৫। একটি নাগোরদোলা ঘুরছে, নিচে অনেক ভীড় (লং শট)
- ৬। নাগোরদোলা ঘুরছে (ক্লোজ শট)
- ৭। একজন দোকানদার মাটির পুতুলের পসরা সাজিয়ে বসেছেন (টপ শট)

দৃশ্য ৩ঃ

- ১। যাত্রাপালার কিছু শট
- ২। দর্শকরা উল্লাসে ফেটে পড়ছেন (লং শট)
- ৩। ছেলেটার একটা মেয়ের সাথে চোখা চোখি হল (ক্লোজ শট)
- ৪। বটগাছের উপর থেকে যাত্রাপালার দৃশ্য।

দৃশ্য ৪ঃ

- ১। বটগাছের নিচে বসেছে পালাগানের আসর (লং শট)
- ২। গায়ক তার দলবল নিয়ে গান গাচ্ছে (ক্লোজ শট)
- ৩। চারিদিকে হৈ হুল্লোড়
- ৪। আলাদা আলাদা ক্লোজ শট (গায়ক, বাদক সবার)
- ৫। শোভার মনযোগ দিয়ে গান শুনছেন।

দৃশ্য ৫ঃ

- ১। হাটে বেচা কেনা চলছে (লং শট)
- ২। হাটের বিভিন্ন দোকানের আলাদা আলাদা দৃশ্য।
- ৩। শাক সবজির দোকানে বেচা কেনা চলছে।
- ৪। মাছ মাংসের দোকান দেখা যাচ্ছে

৫। গৃহস্থালি জিনিস বাসন কোসন বিক্রি হচ্ছে।

৬। ছেলেটা গৃহস্থালি কিছু জিনিস হাতে নিয়ে দরদাম করছে (লং শট)

৭। এক জায়গায় কিছু কথা কাটা কাটি আর হটগোল দেখা গেল।

৮। একজন হাওয়াই মিঠাইওয়ালা হাওয়াই মিঠাই বানাচ্ছে। (লং শট)

৯। দুটা বাচ্চা হাওয়াই মিঠাই খাচ্ছে। (ক্লোজ শট)

১০। কামারের দোকানে অনেক লোহার জিনিস দেখা যাচ্ছে (লং শট)

দৃশ্য ৬ঃ

১। বটগাছের নিচে বিশাল পঞ্চগয়েত বসেছে।

২। পঞ্চগয়েতে শালিসের কিছু দৃশ্য।

৩। কিছু মুরবি চেয়ারে বসে একজন আরেকজনের সাথে কথা বলছে।

৪। দুইজন পুরুষ পঞ্চগয়েতের মাঝে দাঁড়িয়ে আছে।

৫। আরেকজন লোক তাদের দিকে হাত তুলে নালিশের ভঙ্গিতে কিছু বলছে।

৬। পঞ্চগয়েতের মানুষজন হৈ হুল্লোড় করছে।

৭। পঞ্চগয়েতের বৃদ্ধ হাত উচু করে সবাইকে শান্ত হতে বলছেন।

5.1.4 Story Board

A storyboard is a graphic representation of how your video will unfold, shot by shot. It's made up of a number of squares with illustrations or pictures representing each shot, with notes about what's going on in the scene and what's being said in the script during that shot. We have drawn some rough drawings for set design and props settings. Some of our rough storyboard are given in the below-



Figure: 5.1.4.1 Snap of rough storyboard

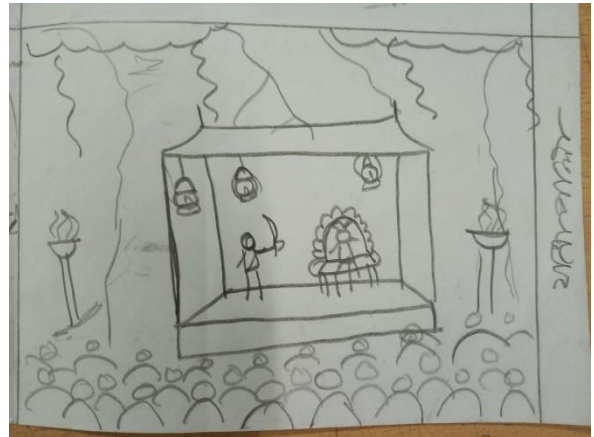


Figure: 5.1.4.2 Snap of rough storyboard



Figure: 5.1.4.3 Snap of rough storyboard

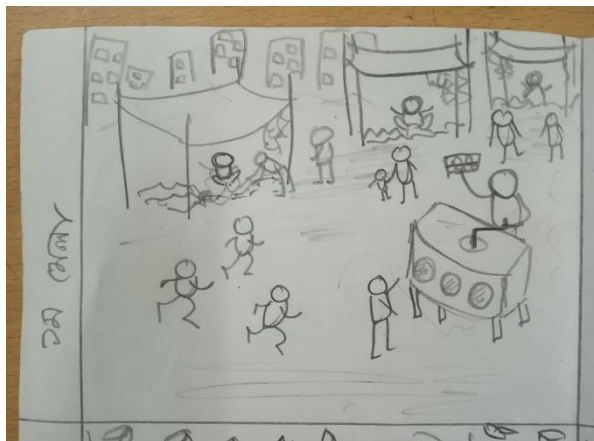


Figure: 5.1.4.4 Snap of rough storyboard

And here is the detail story board given below:



Figure: 5.1.4.5 Snap of detail storyboard



Figure: 5.1.4.6 Snap of detail storyboard

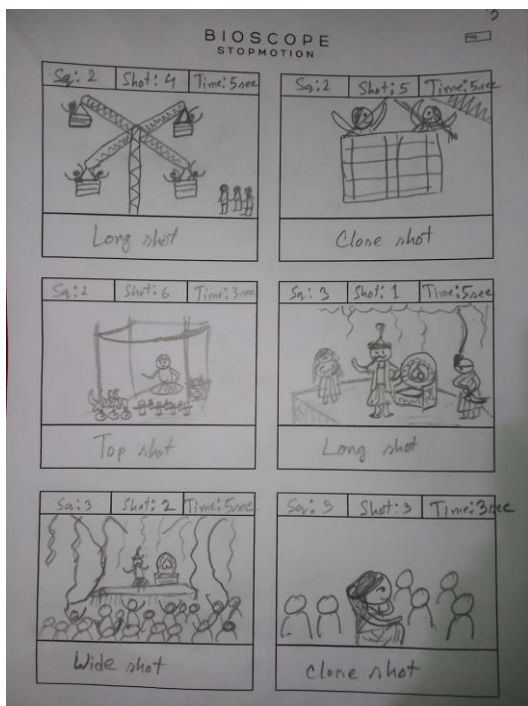


Figure 5.1.4.7 Snap of detail storyboard

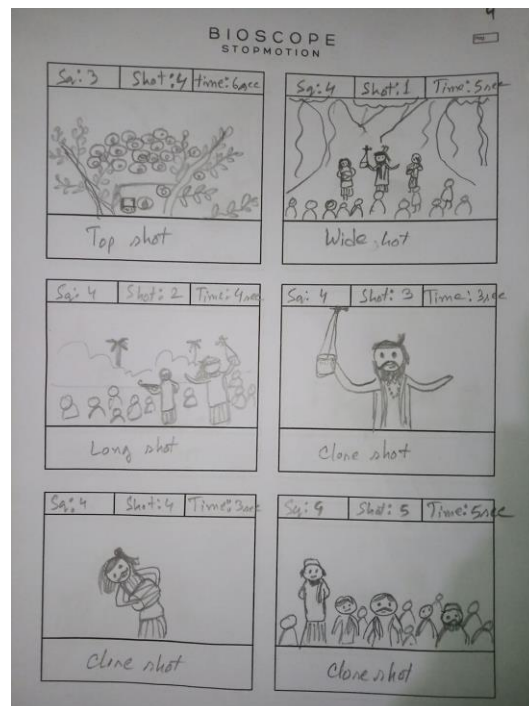


Figure: 5.1.4.8 Snap of detail storyboard



Figure: 5.1.4.9 Snap of detail storyboard



Figure: 5.1.4.10 Snap of detail storyboard

5.1.5 Location

Like any other film or short film, stop motion animation doesn't need different location for shooting. A room or room like space is needed to make the set. As our set was about 4.5*4.5 feet with 3.5 feet height it needed a big space. We did not get any good studio type room or space, we finally got a meeting room space in Niharika Residential Building near 60 Feet Road, Mirpur. We got 1-month time to complete our set and shooting here.

5.1.6 Equipment's Requirement

A good stop motion animation needs good quality equipment for shooting. We needed a good quality DSLR camera to capture the images and sufficient light set up matching the sequence. Here is the required equipment list given bellow:

SI No	Camera setup	SI No	Light setup
1	Canon EOS 7D DSLR Camera	1	Simpex 23 Digital
2	24mm Prime lens	2	Yongnuo 600L II Pro Led video light
3	50mm Prime lens	3	Soft box light
4	18-55mm Zoom lens	4	Candle
5	55-200mm Zoom lens		

Figure: 5.1.6.1 Equipment's Requirement List

5.1.7 Software Requirement

For making this project we needed some software to work with. These are:



Dragon frame 4



Adobe Illustrator CC 2015



Adobe Photoshop CC 2015



Adobe Primire Pro 2017

Figure: 5.1.7.1 Software requirement list

5.1.8 Props, Materials and Instruments List

We made a short list of our props as per our story for making some traditional props. Here it is:

Sl No	Prop item	Sl No	Prop item
1	Banyan tree	28	Sweets
2	Character	29	Bangle
3	Bioscope	30	Throne
4	Kupi lamp	31	Kula
5	Puthi book	32	Woolen hanger
6	Jol chouki	33	Vegetables
7	Chair & bench	34	Fish
8	Hukkah	35	Merry go round
9	Hat pakha	36	Matir putul
10	Snake	37	Clay bird
11	Basket	38	Clay elephant
12	Snake whistle	39	Clay pot
13	Umbrella	40	Bowl
14	Mat	41	Puppet show pandal & doll
15	Cotton candy maker	42	Sword
16	Jatrapala stage	43	New stage
17	Dotara	44	Flower
18	Bashi	45	Flower basket
19	Dhol	46	Betel leaf
20	Ektara	47	Areca nut
21	Kitchen equipment(Da, Boti)	48	Village hut
22	Cycle	49	City building
23	Palki	50	Background
24	Cow	51	Costume
25	Beads necklace	52	Clay bank
26	Caps	53	Bottle of Alta
27	Crown	54	Microphone

Figure: 5.1.8.1 Props List

For making these props we needed many materials according to those props types because we tried to give every prop its own texture that gives a realistic look in our animation. We did a material list also:

Sl No	Material and Instrument	Sl No	Material and Instrument
1	Styrofoam sheet	19	Mini glass bottle
2	Metal wire	20	Mustard oil
3	Rope (Jute and cotton)	21	Candle
4	Paper clay	22	Cloth
5	PVC Board	23	Plastic paint
6	Mount board	24	Acramin paint
7	Masking tape	25	Acrylic paint
8	Tissue paper	26	Brushes
9	Mat	27	Gloves
10	Hot glue gun	28	Alluminium Foil
11	Hot glue stick	29	Sand paper
12	Super glue	30	Scissors
13	Aica glue	31	Anticutter
14	Toothpick	32	LED bulb
15	Bamboo stick	33	Battery
16	Colored paper	34	Colored gel pen
17	Packing board	35	Color mixing palette
18	Popsicle stick	36	Wire cutter

Figure: 5.1.8.2 Materials List

5.1.9 Props Making

After collecting all those possible materials, we started to make props with some references. Props making descriptions are given below:

Banyan Tree: We made this banyan tree using Styrofoam as a base/body of the tree. Then we used mashed tissue paper to make the roots and body extension, jute rope for making prop, metal wire for making branches, colored both side of some A4 paper for making leaves of the tree and color the whole three times with three different shade of brown color to give an old banyan tree look. It took almost 1 and a half month to complete it.



Figure: 5.1.9.1 Materials we used for making the body of banyan tree

Attaching these Styrofoam's with glue to make the body part stronger. After this we let it dry for few hours.



Figure: 5.1.9.2 Gluing Styrofoam's

Resizing into a tree body shape with the help of a Styrofoam cutter and then rub on the surface to make smooth look with a sand paper.



Figure: 5.1.9.3 Resizing the Banyan tree into a proper shape

Shaping out the main branches of the tree using a cutter and a sand paper for smoothing the surface of the tree.



Figure: 5.1.9.4 Shaping out main branches

Making the sub branches of the tree using metal wire. We made a lot of sub branches to give a realistic feel.



Figure: 5.1.9.5 Banyan tree sub branches processing

Used this glue in a mixture of mashed tissue paper for making the extension part of banyan tree. Using this glue it makes the extension part stronger.



Figure: 5.1.9.6 used glue for making body extension



Figure: 5.1.9.7 Tissue paper mash

Here is the making part of mashed tissue paper. We made this material with mashed tissue and glue for the roots and extension part of the body. First we attach the main branches and let it dry under sun light. The material was very sticky which takes almost 2-3 day to dry completely.



Figure: 5.1.9.8 Used tissue paper mash for making branches

Used jute ropes for making the prop. For this first we soaked some cutting ropes into a glue water mixture then out those in color. Then tied up these ropes with the sub branches of the tree.



Figure: 5.1.9.9 Banyan tree prop processing

Made three different color shades for the body color for the banyan tree. We did the color into three layers and tried to give a realistic look.



Figure: 5.1.9.10 Banyan tree color shades making



Figure: 5.1.9.11 Banyan tree color processing

Color processing of the banyan tree. In this picture we were giving the light and shade using the color that we made. Final touch of the color processing part. After complete this process we let it dry for one night.



Figure: 5.1.9.12 Color finishing process

Coloring both side of an A4 offset paper with a light and dark green shade for making banyan tree leaves.



Figure: 5.1.9.13 Banyan tree leaves color

Cutting these pages into a banyan tree leaf shape using a scissor. As we needed a lot of leaves for the tree we had to cut a large amount of leaves.



Figure: 5.1.9.14 Cutting leaves into shape

Separating the shaped leaves after the cutting part has been done. It takes a lot of time in making leaves because of the bigger size of the tree and we had to cut 2-3 times for more leaves.



Figure: 5.1.9.15 Separating leaves

Attaching leaves using glue in the sub branches of the tree. It takes 2-3 days to complete this process.



Figure 5.1.9.16 Attaching leaves using glue

Here is the complete look of our banyan tree. We made this tree using our very own technique and made with dedication. It took one and half month to complete the tree.



Figure: 5.1.9.17 Complete look of Banyan tree

Character: For character making our first experiment was successful. We wanted to make the characters like the cloth doll we used to play with in our childhood. We did some modification to make the character look like those dolls but still moveable body parts. First, we made a metal wire skeleton in a human body shape then fill the chest part with hot glue.

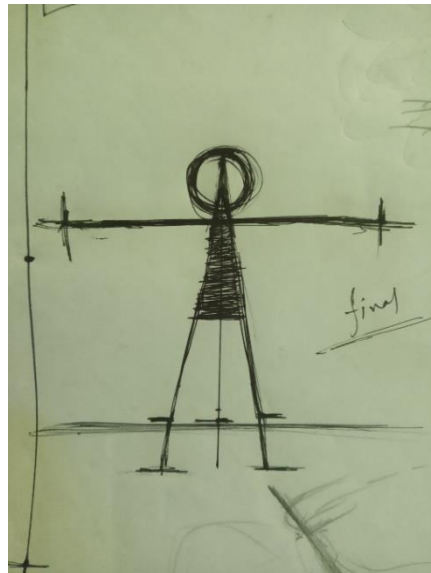


Figure: 5.1.9.18 Character rough sketch

Character figure with a base structure using metal wire, masking tape and then wrapped with hot glue for make it stronger.

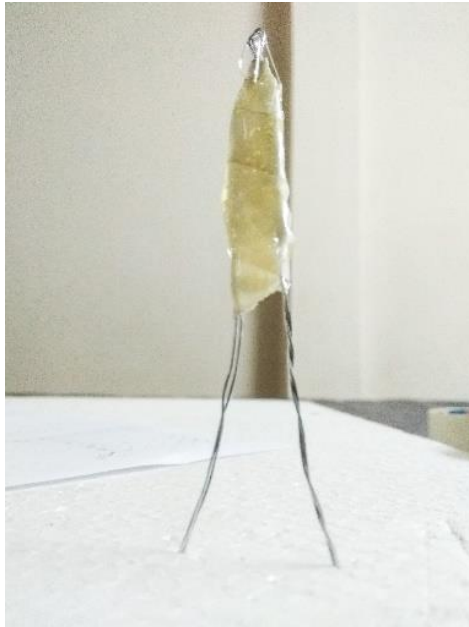


Figure: 5.1.9.19 Character figure base

After that I wrapped the full body with jute rope with the help of glue, which makes those character stronger.



Figure: 5.1.9.20 3-inch Character

Attached skin color cloth using glue for making the skin of the character. We used this skin on the hand, body and foot part of the character.



Figure: 5.1.9.21 Character skin processing

Character Head & Face: For making character head I used Styrofoam balls. After that we drew different faces with different expressions according to their character. We did research to give these expressions.



Figure: 5.1.9.22 Character face skin color making

We did the color of their head (Styrofoam) with a skin color and let it dry for few hours, after that we did the face.



Figure: 5.1.9.23 Character head coloring

After that we drew different faces with different expressions according to their character. We did research to give these expressions. We made some special faces too.



Figure: 5.1.9.24 Character face processing

Here are some of the complete faces of the character that we drew. We made male, female and baby faces here.



Figure: 5.1.9.25 Complete Character face

Character Hair: I did the character hair using black and white cotton sewing thread. First of all, twisted some thread and cut it in a specific size with the help of scissor then made the hair style according to those character faces. We have some main specific characters like: Puthi reader, Bioscope wala, Baul dol, Jatra pala actors and so on. For these characters I did different hair styles according to our references and rough sketches.



Figure: 5.1.9.26 Character hair processing

I attached every character's hair with the help of glue and a small comb needed for the hair setting of these characters.



Figure: 5.1.9.27 After attaching character hair

Made some different hair styles of the characters. Here in this picture I made buns by twisting threads and attached with using glue.



Figure: 5.1.9.28 Character hair bun

Costume design: First we did a rough sketch of every main character dress up of our project by following some reference link.



Figure: 5.1.9.29 Character costume design (female)

These sketches are for the general people character costume design. We tried to make rural dress up as our past generation used to wear.



Figure: 5.1.9.30 Character costume design (male)



Figure: 5.1.9.31 Jatriapala Character costume design (King)

This one sketch is for our one of main character we used in Jatriapala sequence. This one sketch is for our one of main character we used in Baul gan sequence. All of the members of baul gan ashor had the same type of dresses.

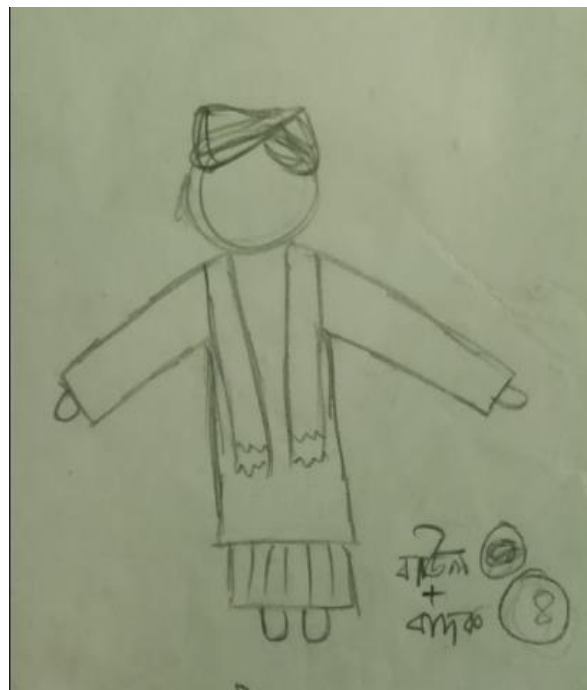


Figure: 5.1.9.32 Baul Character costume design



Figure 5.1.9.33 Character dress up processing

First, we collected clothes from a tailor and selected some of those for making costume. Then we sew those clothes according to their body size. We did it by hand sewing process and moat of those we did in a sewing machine.



Figure: 5.1.9.34 Hand stitch for character dress up

We tried those costumes after making on the character. First, we faced some difficulties and anyhow we make it possible to complete their dress up.



Figure: 5.1.9.35 Testing on a character

Biscope: I used PVC board for making the body of bioscope. I used hot glue for attaching the parts of the body, used mount board, bamboo sticks for making other parts of the body.



Figure: 5.1.9.36 Attaching (pvc board) parts using hot glue

We did the color and designing process here but couldn't use this prop because we had to cut some shots later in post-production time and we had some sound problem issue also.

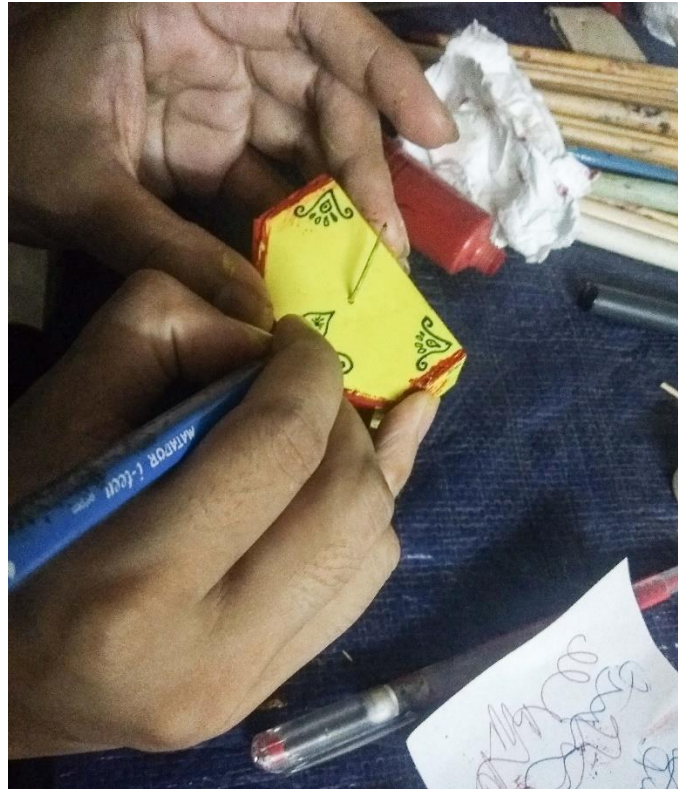


Figure: 5.1.9.37 Bioscope color and design processing

Here is complete look of our bioscope. We made this props using a reference picture which link was given in the reference section part.



Figure: 5.1.9.38 Bioscope final look

Kupi lamp: We were much tensed how we make a kupi in present time with a realistic feel. Then we did research about it and found some glass bottles.



Figure: 5.1.9.39 Kupi lamp processing with materials

We used mustard oil, thread and for the head of that kupi we used a still pen head and tried to make a functioning kupi and finally it works as we want to. At last did some color and design to give a realistic look.



Figure: 5.1.9.40 Kupi lamp final look

Puthi book: First we cut some paper and shaped in a small book. Then wrote on it and for giving old book look we used milk tea on it.

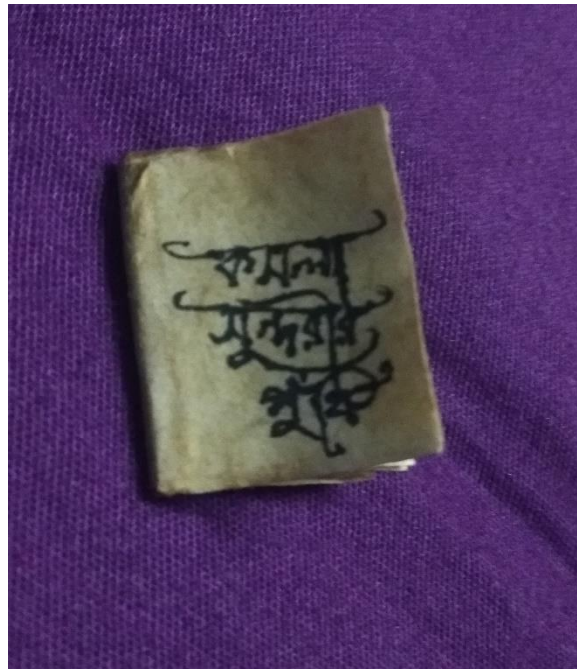


Figure: 5.1.9.41 Puthi book cover

I did iron it to give brown old look and let it dry, after few days it gave us an old, dusty look. For giving this look I repeated the process 2-3 times.



Figure 5.1.9.42 Puthi book pages with old antique look

Jolchouki: We made this jolchouki with Popsicle sticks. We cut the sticks according to our measurement and glued them together with hot glue. Here is the complete look of jolchouki with the material and instrument that we used.



Figure: 5.1.9.43 Jolchouki materials and instrument



Figure: 5.1.9.44 Jolchouki final look

Chair & Bench: This prop is also made with Popsicle sticks the same way as the jolchouki. We cut the sticks according to our measurement and glued them together using hot glue.



Figure: 5.1.9.45 Chair & Bench processing



Figure: 5.1.9.46 Chair parts attaching using hot glue



Figure: 5.1.9.47 Bench processing with materials and instrument

We made two benches for a scene. These were made the same way we made jolchouki and chair. Here are the final look of the chairs and benches after completing all the process.



Figure: 5.1.9.48 Chair & Bench final look

Hukkah: It was made with paper clay, air dried and then colored according to the reference image we got from old photos in google.



Figure: 5.1.9.49 Hukkah making

Here are the final look of hukkah after completing the color process. I used reference picture for making this prop.

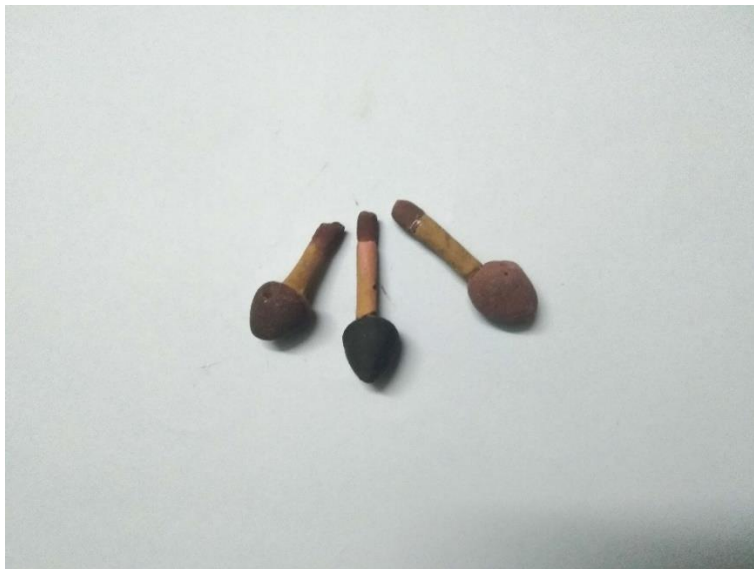


Figure: 5.1.9.50 Hukkah final look

Hand fan (Hatpakha): This prop was made in two variations. One is like made of palm leaf and other is like cloth stitched.



Figure: 5.1.9.51 Hand fan (Hatpakha) materials

We made these out of packing board and made cuttings toothpick stick as handle and attached these handle using hot glue.



Figure: 5.1.9.52 Hand fan (Hatpakha) handle processing

In this picture there are both types of hand fan we can see. After attaching process we did the design on the cloth stitched hand fan.



Figure: 5.1.9.53 Hand fan (Hatpakha) final look

Snake: We made 2 snakes using paper clay and let it dry for few hours. Then we colored it and make a realistic look.



Figure: 5.1.9.54 Snake material

We colored this snake and made some designs on it. We used reference pictures for giving a realistic look.



Figure: 5.1.9.55 Snake final look

Basket: For different scenes we needed three types of baskets, two for snake playing and another one for village fair and market.



Figure: 5.1.9.56 Basket & snake basket material

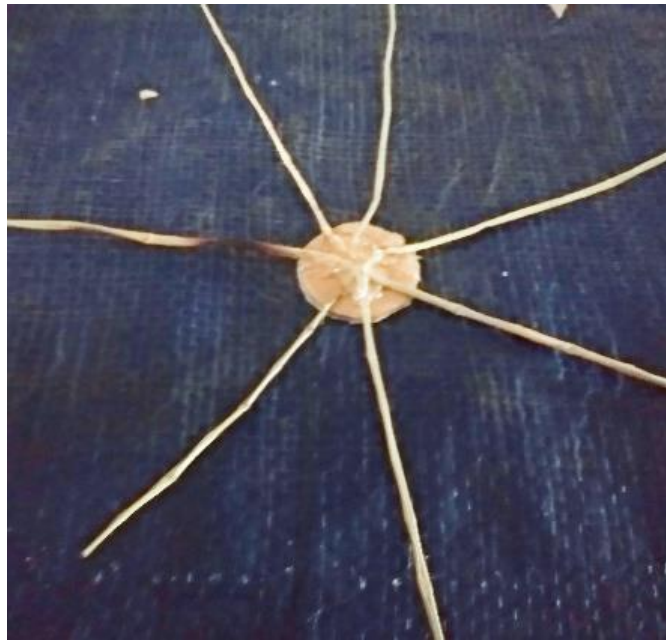


Figure: 5.1.9.57 Basket base

For making these rural baskets we used jute rope, straw mat and a small piece of cartoon board for its base. We woof these baskets with jute rope one by one that we can give a realistic look. Snake basket lid made with mat and card board piece. We attached it using hot glue.



Figure: 5.1.9.58 Snake basket lid processing

And for the snake basket we used straw mat and hot glue. We used only jute rope glued to make another snake basket.



Figure: 5.1.9.59 Snake basket making with jute rope

Here is the complete look of rural basket and snake basket we made for our project. One Snake basket made with straw mat and the other one is made with jute rope. The rural basket was the special one that we woofed for the first time without any experiences.



Figure: 5.1.9.60 Basket & snake basket final look

Snake whistle: We used paper clay for making these mini whistles. First we made the parts separately. Then we attached those parts using glue.



Figure: 5.1.9.61 Snake whistle processing

Same as other clay made items, we air dried this and then painted with color. We also made some design following some references.



Figure: 5.1.9.62 Snake whistle final look

Umbrella: We made three umbrellas for the village market. These were made with bamboo stick, metal wire, aluminum foil and black cloth. Used foil paper for making the base part of the umbrella. First we made a bowl shape with this paper.



Figure: 5.1.9.63 Umbrella processing



Figure: 5.1.9.64 Umbrella base using foil paper

First a metal wire frame was made, then we made a round bowl shape over it and black cloth was pasted with glue over it to make the traditional umbrella top. After that a handle of bamboo stick was added with hot glue to complete the umbrella.



Figure: 5.1.9.65 Umbrella handle processing

Mat: We made some mat (Chatai) from a big mat we bought from the market.



Figure: 5.1.9.66 Mat materials



Figure: 5.1.9.67 Mat processing

We cut it in small pieces of 4*5 inches and made border with thin cloth. We attached those cutting clothes and attached the both side border of these mats with glue and let it for hours.



Figure: 5.1.9.68 Mat final look

Sweets: We made different types of sweet like Monda, Batasa etc with paper clay. We air dried these and then colored as reference.



Figure: 5.1.9.69 Sweet processing

Here are the complete look of different sweets. We made these sweet using some reference pictures.



Figure: 5.1.9.70 Different Sweets look

Bangles: We made bangles shop for the village fair. We made the tray with mount board cutting and bangles with plastic straw cutting and then colored them like traditional glass bangles. Collecting the cutting pieces of straw in a metal wire then attached with a board.



Figure: 5.1.9.71 Cutting pieces bangles material (straw)



Figure: 5.1.9.72 Bangles processing

Attaching cutting pieces with the tray using glue because we need these bangles fixed with the tray and let it dry. Then colored these bangles with different colors.



Figure: 5.1.9.73 Bangles attaching with a board using glue

Here are the complete look of different bangles. We made these bangles with using our own idea.



Figure: 5.1.9.74 Bangles final look

Throne: The throne was made with PVC board cutting using scissor, compass and hot glue. We simply made this prop on our first attempt. After attaching all the parts using hot glue that we cut into pieces using a reference picture.



Figure: 5.1.9.75 Throne processing

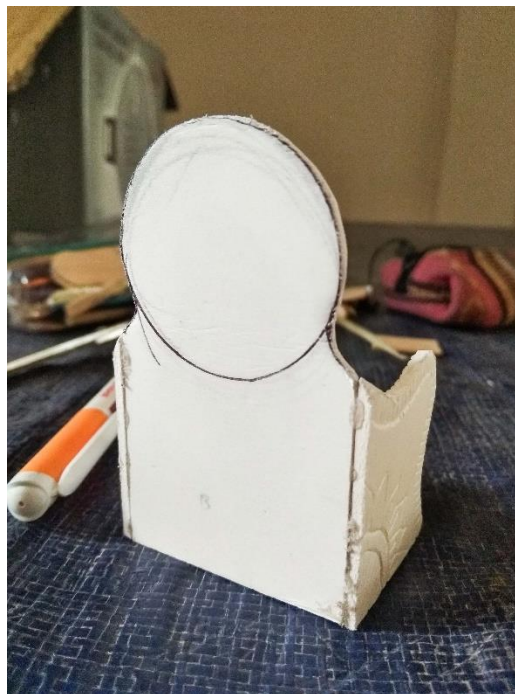


Figure: 5.1.9.76 Throne before color

Made a design all over the throne using a stick on the pvc board. After completing the process it gave a realistic look here.



Figure: 5.1.9.77 Designing Throne using a stick

Then colored the whole throne with gold paint and designed with red acrylic. It looks like a real throne of Jatra Pala. Here is the complete look of the throne.



Figure: 5.1.9.78 Throne complete look

Kula: 10 kula was made with straw mat cutting and mount board slices glued with hot glue.



Figure: 5.1.9.79 Kula materials

Attaching the borders of cutting mount board using hot glue gun. As we didn't find any way of making these kula. So we made this in our own possible way.

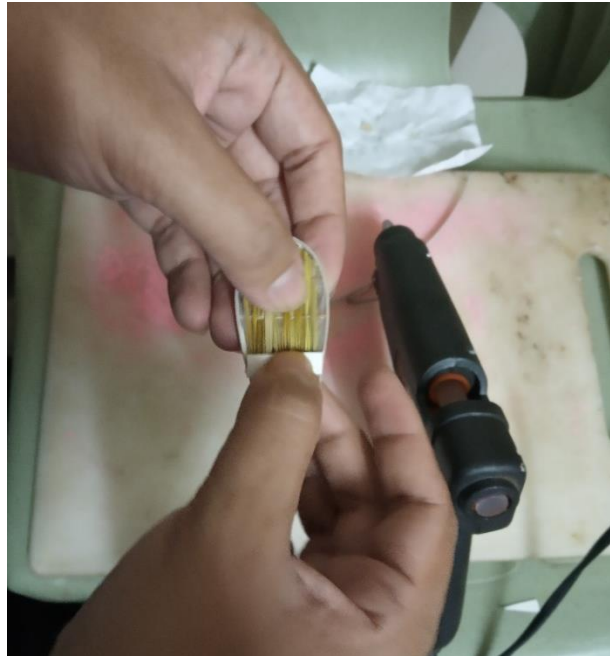


Figure: 5.1.9.80 Attaching borders (card board) using hot glue

Here is the complete look of kula which was made by straw mat and mount board pieces. We tried our best to give the main woofed texture in these props.



Figure: 5.1.9.81 Kula final look

Woolen Hanger (Sika): 10-12 sika were made with cotton thread. These were hand knotted one by one.



Figure: 5.1.9.82 Woolen Hanger (Sika) making knots

After making those knots these props looked like the pictures has shown here and this is the complete look of sika.



Figure: 5.1.9.83 Woolen Hanger (Sika) final look

Vegetables: Different vegetables like bottle ground, cucumber, pumpkin, potatoes, brinjal are made with paper clay.



Figure: 5.1.9.84 Vegetables using clay

We air dried them and then colored as the really look like. We used some pictures as references while coloring these props.



Figure: 5.1.9.85 Vegetables final look

Fish: Fishes were also made with paper clay and as the same process as other clay made items.

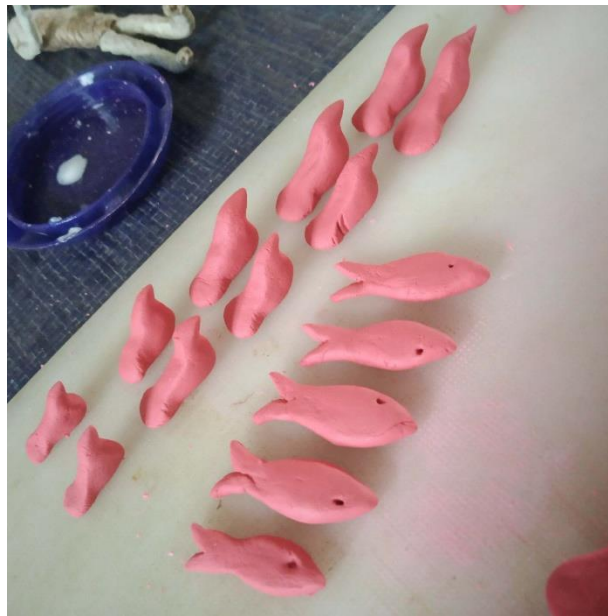


Figure: 5.1.9.86 Fish making

After completing the color process we designed on theses fishes to give a hilsha fish look and here is the complete look of clay fish.



Figure: 5.1.9.87 Fish complete look

Merry go round (Nagordola): This is the most iconic thing in a village fair. We took a reference image from google. We made our nagordola fully functional.



Figure: 5.1.9.88 Merry go round (Nagordola) materials

We made this boxes with PVC board cutting and card board then we attached these parts.



Figure: 5.1.9.89 Merry go round (Nagordola) processing

Attaching these individual parts using hot glue which makes the process easier. We made 4 boxes following the same process.



Figure: 5.1.9.90 Merry go round (Nagordola) attaching parts with hot glue

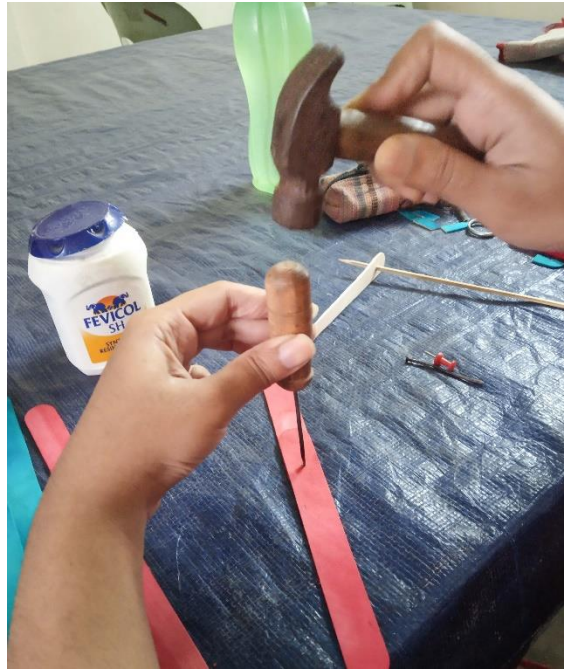


Figure: 5.1.9.91 Creating a hole on the middle point of base

Made a hole for the base where we would attach those 4 boxes with a movable technique. These are the individual parts of nagordola. The base and middle part where we would attach those boxes and those 4 boxes where the characters would sit when we made the animation.



Figure: 5.1.9.92 Merry go round (Nagordola) individual parts

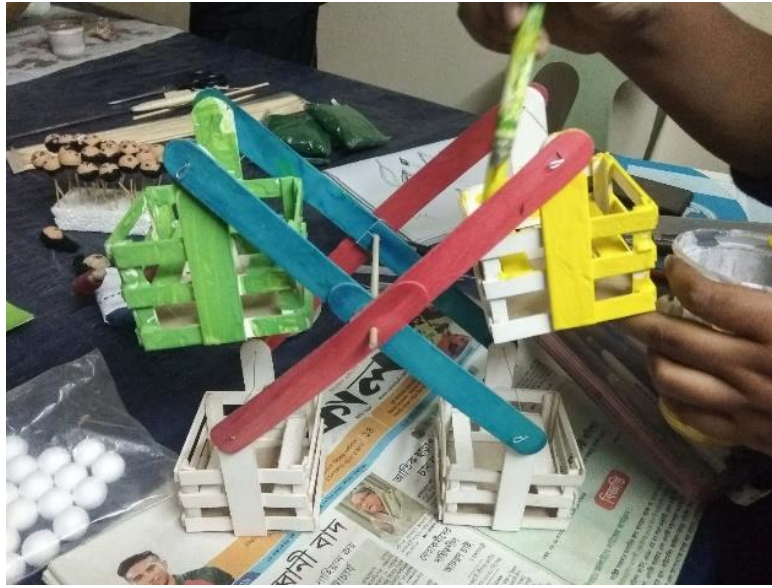


Figure: 5.1.9.93 Merry go round (Nagordola) color processing

Applying base color on the body part of Merry go round using the mixture of plastic and acramin color. Decorating on the body parts of Merry go round following reference pictures and giving the colorful look.



Figure: 5.1.9.94 Merry go round (Nagordola) designing and colored look

Clay doll (Matir putul): These were made out of paper clay also. First, we took some references of "Tepa putul" from internet and made our dolls. As our dolls are very tiny, we could not make exact same design. We had to modify according to our need.



Figure: 5.1.9.95 Clay doll (Matir putul) making

We air dried these dolls and then painted with acrylic color. We used white colored pen to draw tiny detail design on the dolls.



Figure: 5.1.9.96 Clay doll (Matir putul) complete look

Clay birds: These birds were also made out of paper clay. We used the same method as we did for clay dolls.



Figure: 5.1.9.97 Clay birds processing

Clay Elephant: We made these the same way as other clay items. Air dried these and then painted, decorated with colors.



Figure: 5.1.9.98 Clay Elephant material look



Figure: 5.1.9.99 Clay Elephant complete look

Clay pot (Hari): In the past, people used clay pots for cooking and keeping goods. We took some reference and made little pot (Hari) out of paper clay. We used the same techniques as we did for all clay items.



Figure: 5.1.9.100 Clay Pot (Hari) complete look

Cotton candy & Box of cotton candy: Cotton candy (Hawai mithai) were usually kept in a glass box to attract kids and people. We made this box out of clear plastic sheet cutting. The cuttings were glued together with hot glue.



Figure: 5.1.9.101 Box of cotton candy making & using materials

Making process of cotton candy using tissue paper. As we didn't find any alternative material suitable for this.



Figure: 5.1.9.102 Cotton candy processing

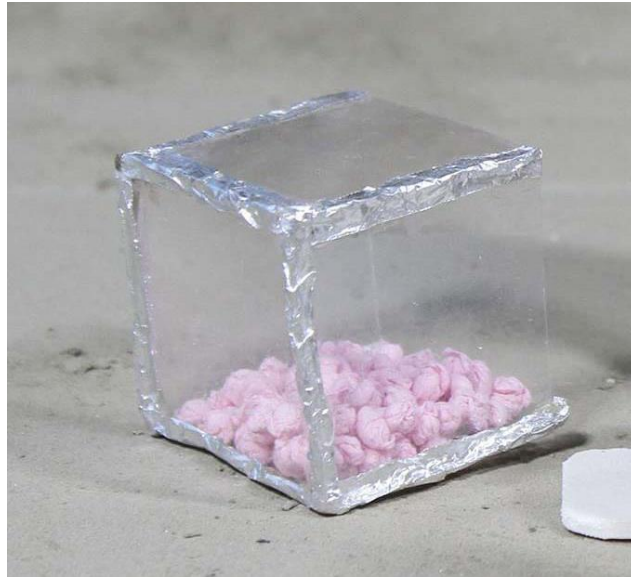


Figure: 5.1.9.103 Cotton candy & Box of cotton candy complete look

Puppets of puppet show (Putul nacher putul): We used paper clay to make the head of the puppet and toothpick to make it stand. The face was hand drawn and the body was wrapped with cloth that also made its dress.



Figure: 5.1.9.104 Puppets of puppet show (Putul nacher putul) making using clay



Figure: 5.1.9.105 Puppets of puppet show (Putul nacher putul) complete look

Puppet show pandal: The pandal was made out of PVC sheet cutting glued together and a black cloth on back. It was decorated by hand drawn design with colorful gel pens.



Figure: 5.1.9.106 Puppet show pandal complete look

Bowl of sweets: These were made of aluminum foil. We folded a piece of foil and gave the shape of a bowl.



Figure: 5.1.9.107 Bowl of sweets complete look

Jatrapala stage: The stage was made of Styrofoam sheet cutting. A piece of cloth was wrapped around to make a traditional stage look.



Figure: 5.1.9.108 Jatrapala stage complete look

Sword: This was made of aluminum foil cutting for making the upper part of the sword. We used a toothpick cutting to make a handle and attached the handle with glue. We tested the complete look of the sword with the character holding it on hand.



Figure: 5.1.9.109 Sword material



Figure: 5.1.9.110 Sword handle processing



Figure: 5.1.9.111 Sword complete look

Dotara: It is a two-string musical instrument used in Bengali folk song. Our prop Dotara was made out of paper clay the same way we made other clay items. Then a piece of rope was glued to make the hanger to hang it around the neck.



Figure: 5.1.9.112 Dotara complete look

Flute (Bashi): This was made of just a bamboo stick cutting.



Figure: 5.1.9.113 Flute processing & complete look

Drum (Dhol): We made the main shape of dhol with a piece of Styrofoam sheets cutting. Then it was painted black and white according to the reference. Some white rope cuttings were glued on it to complete the look. A thick rope then used to make the hanger to hang it around the neck.



Figure: 5.1.9.114 Drum complete look

Ektara: This traditional instrument is one of the most iconic musical instruments in our folk song. We used mount board cutting to make the ektara. We glued the cuttings and then colored it.



Figure: 5.1.9.115 Ektara complete look

Bi-cycle: We made a bi-cycle out of bamboo stick and PVC board cutting. The main body of the bi-cycle was made with bamboo stick cutting glued with hot glue and the wheels out of PVC board cutting. Thin Metal wire was used to make the wheels function able. Then it was colored in black paint.



Figure: 5.1.9.116 Bi-cycle processing



Figure: 5.1.9.117 Bi-cycle color processing



Figure: 5.1.9.118 Bi-cycle complete look

Cows: We had to make three cows for our village market scene. These were made out of PVC board cutting, aluminum foil, metal wire and masking tape. First, we took a PVC board cutting and inserted metal wire to make the legs, neck and tail.

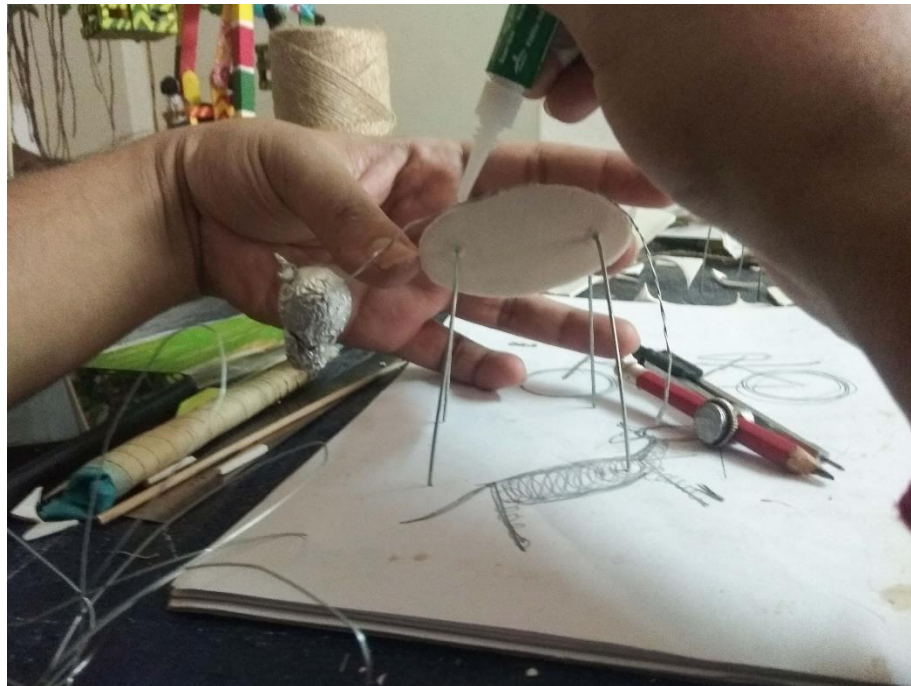


Figure: 5.1.9.119 Cow base making process

Then aluminum foil was wrapped around to make the full body and tried to make the body dimension of a cow. We made the tail with threads and tied up with a thread and wrapped with a masking tape.



Figure: 5.1.9.120 Cow body wrapping with foil



Figure: 5.1.9.121 Cow tail processing



Figure: 5.1.9.122 Cow body wrap with masking tape

After that we wrapped the whole body of the cow using masking tape for giving a smooth skin texture. Then we painted the cows and drew the eyes. We made the cows as its head and tail is moveable.



Figure: 5.1.9.123 Cow color processing



Figure: 5.1.9.124 Cow complete look

Kitchen accessories (Da-boti): These were made of mount board cutting and then painted with plastic paint. For the stand of boti we used metal wire cutting glued with it.



Figure: 5.1.9.125 Kitchen accessories (Da) processing



Figure: 5.1.9.126 Kitchen accessories (boti) processing

Attaching the metal wire as legs with the body part of the boti using hot glue. After attaching the parts and color processing of da-boti and this is the final look.



Figure: 5.1.9.127 Kitchen accessories (Da-boti) complete look

Beads necklace (Putir mala): 5 bead necklaces was made for bauls and a village girl. The necklace (mala) was made with tiny hydrogel balls pierced in a thin metal wire. Then it was colored with brown paint to make the mala for bauls.



Figure: 5.1.9.128 Beads necklace (Putir mala) processing



Figure: 5.1.9.129 Beads necklace (Putir mala) color processing



Figure: 5.1.9.130 Beads necklace (Putir mala) complete look

Cap and Crown: Total 3cap were made for two policemen and one political leader. The caps were made with simple masking tape bend and glued on a round hard paper cutting. Then these were colored with acrylic paint.



Figure: 5.1.9.131 Cap/Crown processing



Figure: 5.1.9.132 Cap/Crown color & design processing

The crown for Jatrappala scene was made the same way and then decorated with acrylic color and gel pen. Here is the complete look of all types of cap and crown that we made for the Jatra pala and other scenes.



Figure: 5.1.9.133 Cap/Crown complete look

Betel leaf and Areca nut: The betel leaves were made with green colored paper cuttings. The vein of leaf was hand drawn on those cutting with deep green colored gel pen.



Figure: 5.1.9.134 Battle leaf processing

The areca nut was made of small paper clay balls. These were kept in a basket we made before and then painted with color.



Figure: 5.1.9.135 Nuts processing



Figure: 5.1.9.136 Nuts complete look

Village huts: Four hut was made totally. These were made with packing box cutting glued together. The roof was made with one kind of dried grass called "Chon."



Figure: 5.1.9.137 Village hut material

Applying soil texture on the village hut walls using a mixture of soil and water and applied with a brush. The doors and windows were painted with color on it. The base of huts was made with cork sheet cuttings with a layer of clay on it.



Figure: 5.1.9.138 Giving soil texture of a Village hut

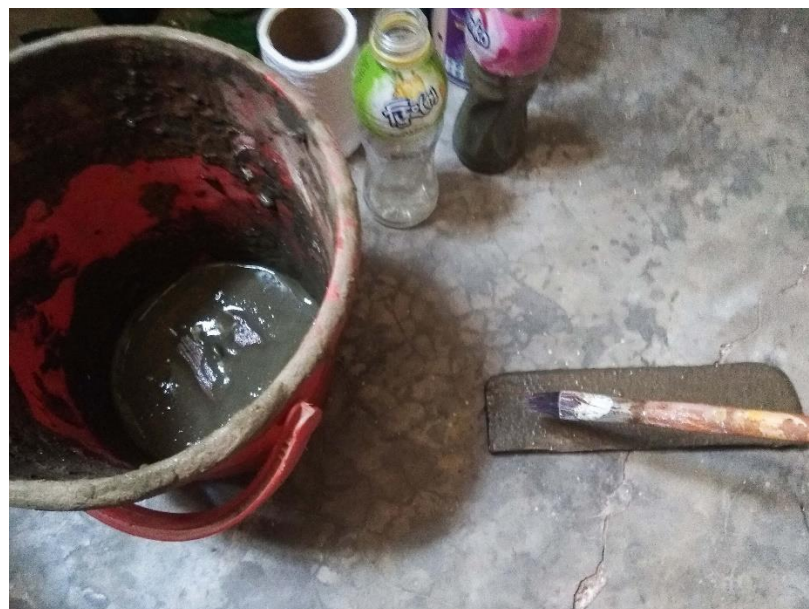


Figure: 5.1.9.139 Village hut extension part texture process



Figure: 5.1.9.140 Village hut roof processing

We used straw mat for giving the texture of “chon” and glued on the roof of the huts to make a real village hut look. Here is the complete look of our village hut. We didn’t find any good reference for making this huts.



Figure: 5.1.9.141 Village hut complete look

Hajak lamp: We made 4 hajak lamp setup with mini glass bottle, small LED bulb, a battery and some electric wire. But we did not use it while shooting as the light was not matching with another light setup. So, we decided to keep these aside.

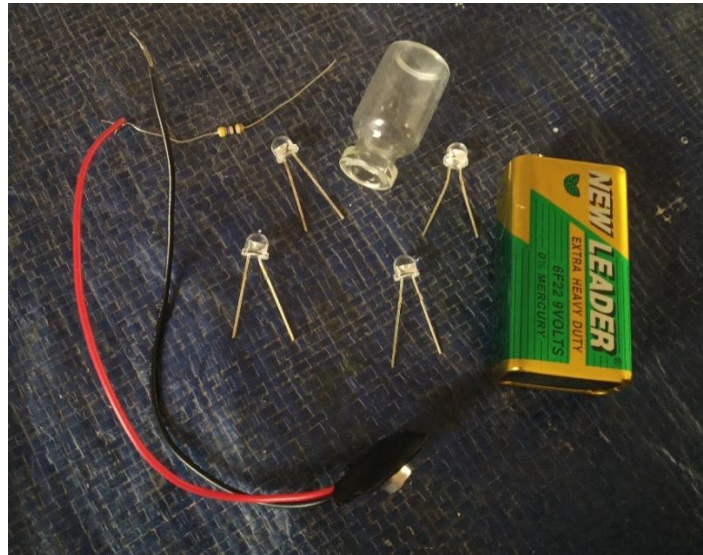


Figure: 5.1.9.142 Hajak lamp materials

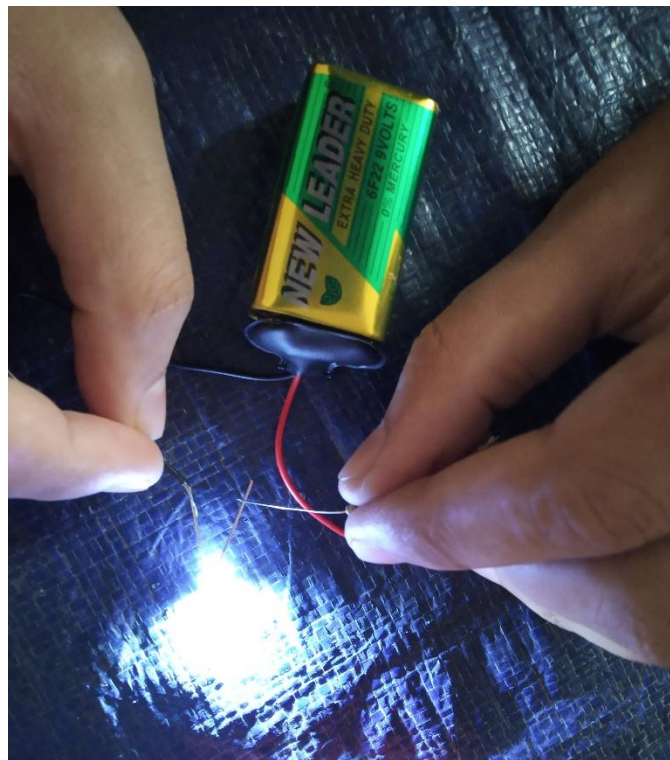


Figure: 5.1.9.143 Hajak lamp testing

Crow: Two crow were made with paper cutting glued together and then painted black. These crows were used in a transition scene.

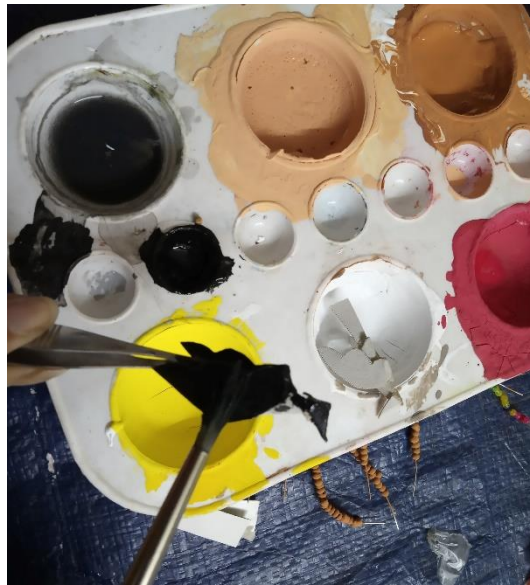


Figure: 5.1.9.144 Crow color processing



Figure: 5.1.9.145 Crow complete look

Background: 3 large pieces of cork sheet were used to make the main background for our animation. These were painted with deep and light blue plastic paint to make the sky look.



Figure: 5.1.9.146 Background color processing

1. Village background: Some cutting of green colored paper was glued on the bottom part of the cork sheet board to make trees and bushes.

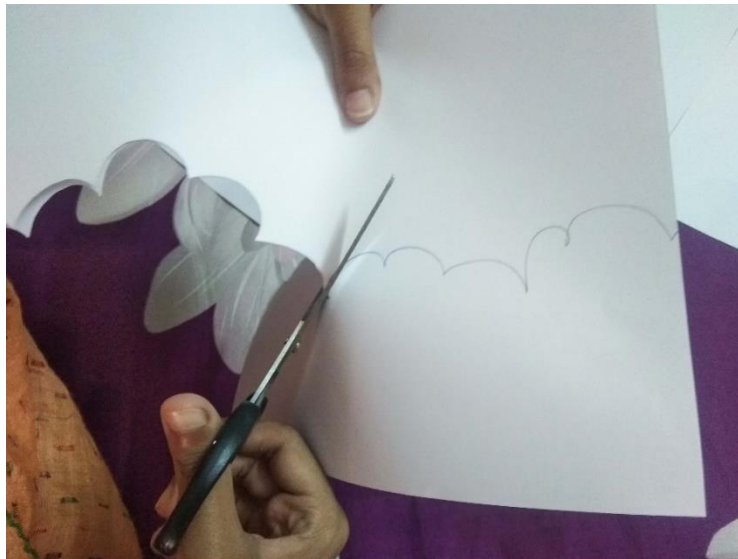


Figure: 5.1.9.147 Village tree background making

Applying color on A4 offset paper after making the cutouts of green bushes. We used two shade of green color (light and dark) to make the depth. We attached the cuttings on background board with glue and let it dry overnight.



Figure: 5.1.9.148 Background tree color processing

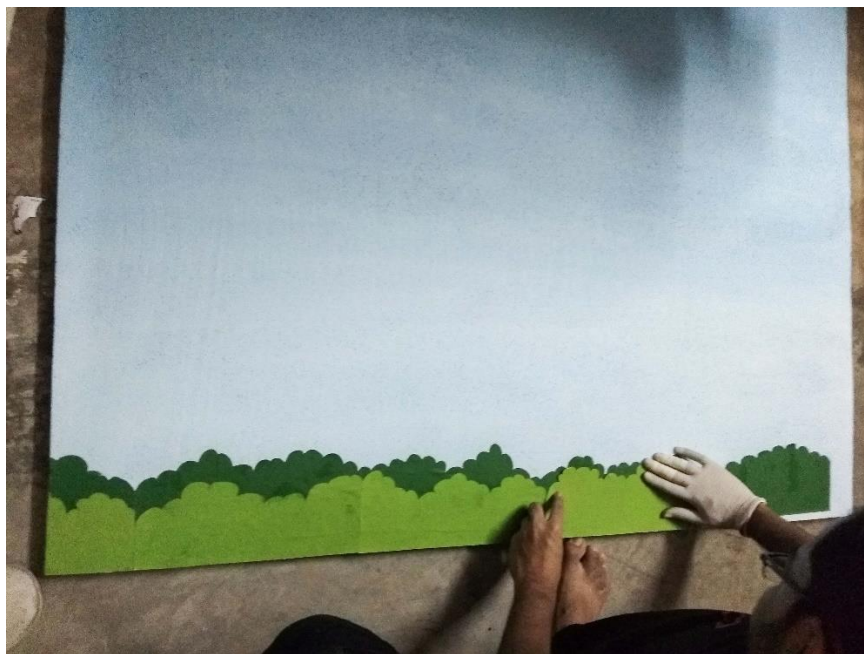


Figure: 5.1.9.149 Attaching trees using glue



Figure: 5.1.9.150 Attaching coconut trees using glue

We also attached some coconut tree cuttings randomly with the bushes we attached before. Some white paper cutting was used the same way as cloud in the sky.



Figure: 5.1.9.151 Attaching clouds using glue



Figure: 5.1.9.152 Village Background complete look

Clay money keeper (Matir bank): These were made out of paper clay. We airdried these and then colored with acrylic color.



Figure: 5.1.9.153 Clay money keeper (Matir bank) making



Figure: 5.1.9.154 Clay money keeper (Matir bank) complete look

Bottle of Alta: These bottles were also made the same way as other clay items. Then painted with red and white acrylic color to finish the look.



Figure: 5.1.9.155 Bottle of Alta complete look

5.1.10 Set Design

We started our set design according to the story board we made before. The base was basically a Styrofoam sheet measuring 4*4 feet dimension. We added two extended piece of Styrofoam sheet cutting as needed some extra space. Some of the pictures of this process are given below:



Figure: 5.1.10.1 Banyan tree base adjustment



Figure: 5.1.10.2 Attaching Set base using masking tape



Figure: 5.1.10.3 Soil coating on the base

We applied a layer of liquid soil on the surface of base sheet. We let it dry completely for over three days and then started working on it. First we made the night scene set up for Puthi path and Jatra pala scene. After taking the night shoots we made the set up ready for daylight shoot.

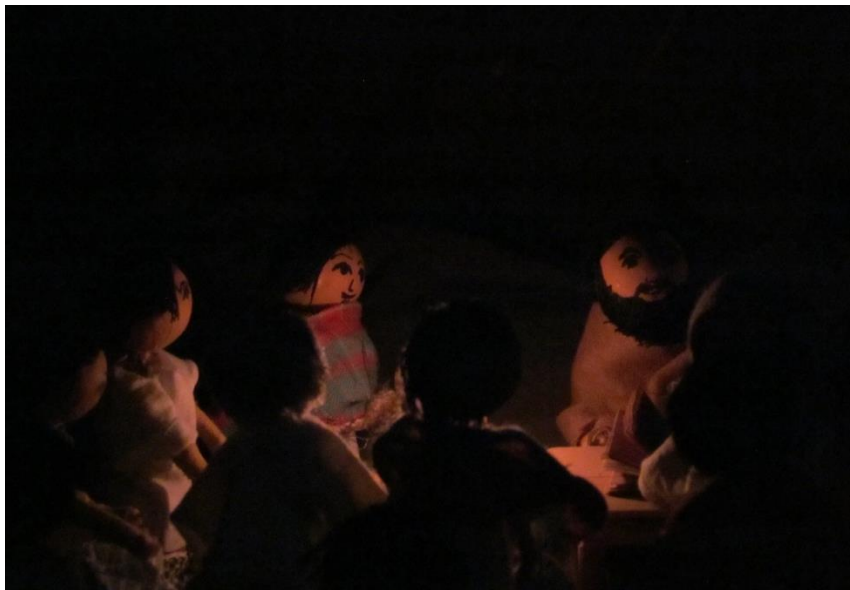


Figure: 5.1.10.4 Set design (night scene- Puthi path ashor)



Figure: 5.1.10.5 Set design test set up

5.2 Instrument setup & Production

5.2.1 Light setting

One of the most challenging parts was the light setup phase as it was a bigger set that we made. In our story we have both the day and night scene. So, we need different lights to show the day and night environment. Lights collecting was the toughest part for us like which one will match with our environment. Firstly, we needed three soft boxes for the day light scene. Two from the front and one for back which will make a depth and a difference from the background, but we could manage two soft boxes.



Figure 5.2.1.1 Simpex 23 Digital light

For the night scene we needed a dim light which will make a low light effect on the environment that we want to show on the screen. So, we managed three “Simpex 23 Digital” light for the night scene. In some of the special moments we used “Yongnuo 600L II Pro Led video light” to make some depth in the environment.



Figure: 5.2.1.2 Yongnuo 600L II Pro Led video light

5.2.2 Camera setting

In stop motion works, cameras play a vital role. So, a good lens can be of huge support. To operate the camera, we didn't really have too many instruments as this wasn't any commercial project. We used Canon EOS 7D DSLR camera.



Figure: 5.2.2.1 Canon EOS 7D DSLR Camera



Figure: 5.2.2.2 50mm Prime Lens

Three different lenses were used to capture the whole video, which are- 50mm Prime, 55-200mm Zoom lens and 18-55 Zoom lens. The place being quite small, we had changed the lens time to time according to our needs.



Figure: 5.2.2.3 55-200mm Zoom Lens



Figure: 5.2.2.4 18-55 Zoom Lens

5.2.3 Used Software

After finalizing the light and camera setup, we concentrated on a good computer, in which the software for image capturing was installed and used. We used two tripods and another monitor to preview the captures. We used software named Dragon Frame which needs to be connected with the camera. So, we installed the software in a laptop and took the captures with the help of it. This software is mainly built to work on stop motion videos. Work becomes easier through this software as it provides the benefit of seeing the preview and work accordingly.

5.2.4 Photo shoot

As stop motion animation is all about making videos with single captured pictures, we standardized it on 15 frames per second. Character animation was another challenge that we faced. We had to move the elements very carefully and neatly for a proper capture. Even in slight shake of the camera, we had to retake the whole shot.



Figure: 5.2.4.1 Camera framing check

The objects were moved frame by frame even the body parts of the characters were moved by our own hand with a lot of care. For this particular stop motion animation, we captured around 5000 images.



Figure: 5.2.4.2 Animating frame by hand (jatrapala)



Figure: 5.2.4.3 Day light scene (village fair)

We had to change camera position after every scene was shot. The set was also needed to move and rotate sometimes as necessary. We had to change the full set up of the events after completing shooting every scene according to the story board and make new set up for the next scene.



Figure: 5.2.4.4 Character animation (village fair)



Figure: 5.2.4.5 Setting characters

Continuous shoot and animate was as tough for us as we were only two person in a group for a stop motion project. We had to exchange our working role part by part as we divided the scenes we had to work on it.



Figure: 5.2.4.6 Character animation (close shot)



Figure: 5.2.4.7 Title animation photo shoot

5.3 Post Production

Post-production is part of the process of filmmaking, video production, video production and photography. Post-production includes all stages of production occurring after shooting or recording individual program segments.

Traditional (analogue) post-production has mostly been replaced by video editing software that operates on a non-linear editing system (NLE). [36]

5.3.1 Editing Software

We used three different software in the editing panel which are:

1. Adobe Premiere Pro,
2. Adobe Photoshop
3. Adobe Illustrator.

5.3.2 Composite

Through composite software, we turned the images into video. In that context, we used Adobe Premiere Pro. The settings for composition were frame rate 15fps, resolution 1920*1080. In case of small corrections, we used Adobe Photoshop 2017.

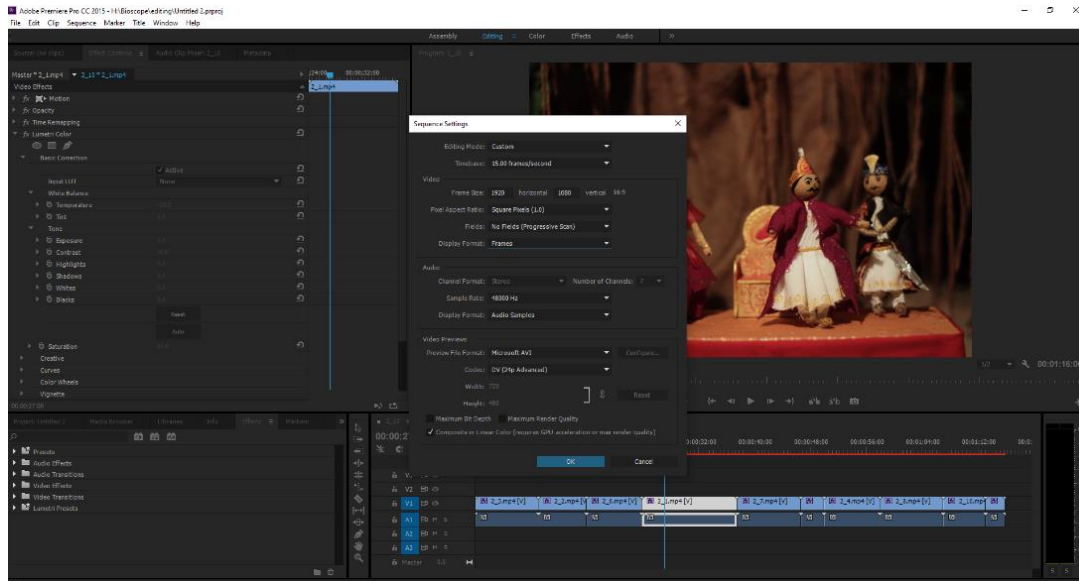


Figure: 5.3.2.1 Sequence settings

In this stage we dumped some images which had perspective, composition or lighting issues, so that those don't hamper the quality of the whole animation.

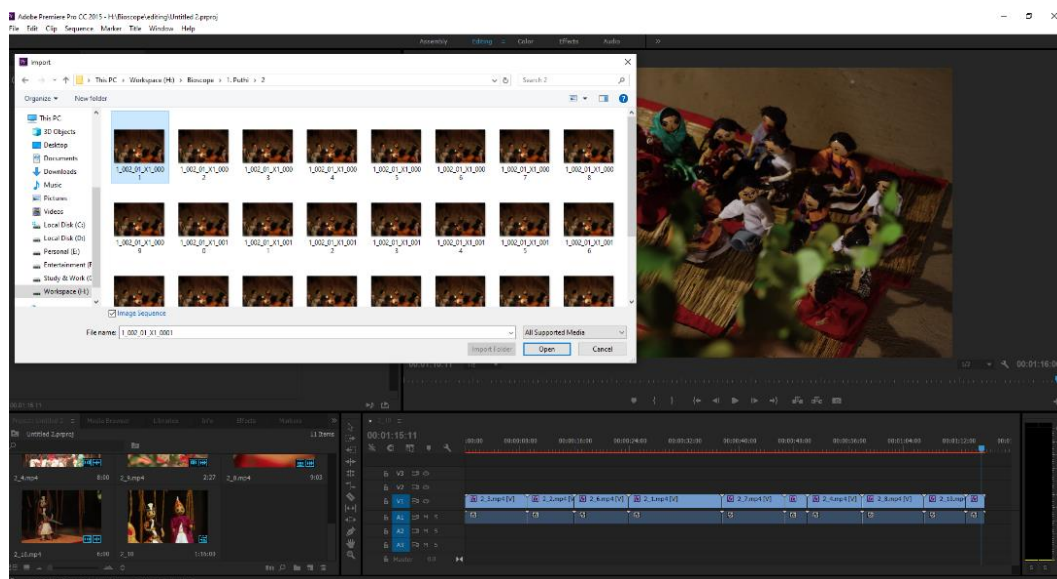


Figure: 5.3.2.2 Importing image & compositing

5.3.3 Color Correction

Composing the files in Adobe Premiere Pro 2017 we cropped them according to our needs. Here we did all the color corrections. We did manual color correction as well as we used Red Giant Plug-in software to do color correction.

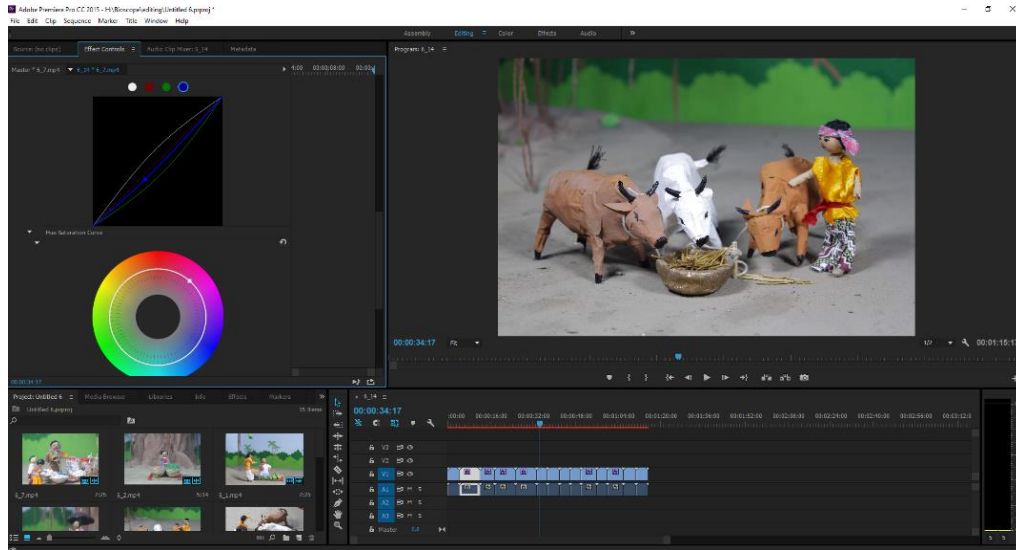


Figure: 5.3.3.1 Color grading check

Keeping specific environment for different shots in mind, natural colors were set. Our set being much colorful and because of the sensible light setup high level color corrections were not really needed.

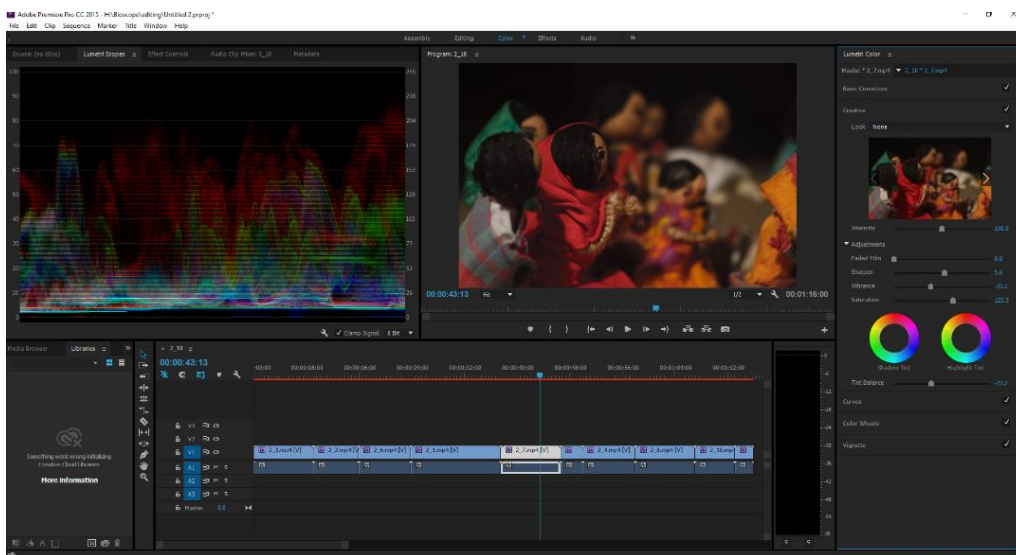


Figure: 5.3.3.2 Sequence wise light correction

5.3.4 Sound

Sound gives life to any kind of video production. In this project some sounds were taken from internet and some were made by us. We bought some copy right free music from internet and used them in the animation. We also added a voice over describing the story, one of our friend helped us by giving his voice over with content.

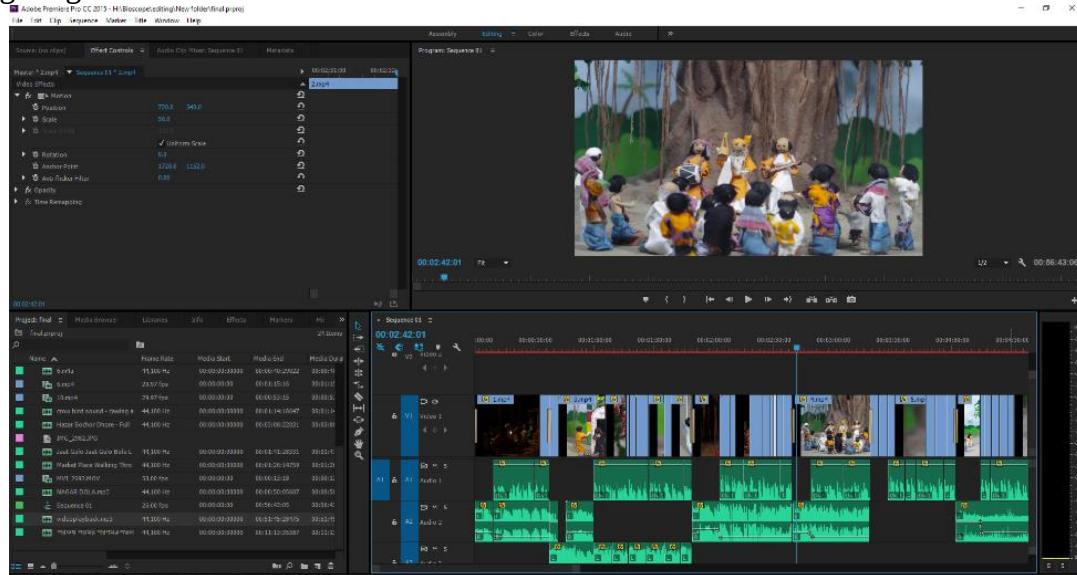


Figure: 5.3.4.1 Sound adjustment

5.3.5 Final Render

After the sounds were ready, we imported them to Adobe Premiere Pro and merged them with the video. We also made the title by using the stop motion technique, other intro and credit list of the short film was made by using Adobe Premiere Pro as well. After bringing all the things under one roof, we rendered the file for final output. The format which was set in the composition of Adobe Premiere Pro before, the render occurred in the same format. In the beginning we expected our animation will be 3:30- 4:00 minute long but after the final render we got 5:40 minute length output.

Chapter 6

Challenges & Limitations

6.1 Challenges

6.1.1 Location

Place selection was one of the challenging parts in this project. Because without a place it was impossible to complete this project. As we were doing stop motion animation so we needed a fixed place where we can work as much as we can without any disturbance. So, first of all We didn't find any suitable place for our project set and photo shooting. Then we decided to work at one of our group member's place where we got 1-month time limitation. The place was not perfectly okay but anyhow we completed our work within time.

6.1.2 Time

It was another challenge. A stop motion animation is a pretty long process. It needs long time to make a good stop motion animation from planning to execution. Pre-production time is the most vital part of the full making process. We got only three months for the full project. We had to do planning, set and props making, shooting, editing all the works in this short time. We had to research our history and culture from past time through different books, museum visit and Internet browsing. Our story was taken from this research output. This took almost 3weeks. Then we had to make a list of props we need. For making all these props we had to take reference and make the props almost same as the reference we got. We made each and every prop all by hand. This was the most time-consuming part of the full project. We had to make tiny things with details as far we can. The full props making process took almost two months but it was not enough. After this process, we started shooting and it took nine days continuous shooting started from 11am to over 11pm every day. The full project was done in such a short time that we could have done better if we got more time.

6.1.3 Materials

To find materials was another challenge for us. We made a material list for making our props but we didn't the exact materials that we need because some of them were not available and some of them were not suitable in proportion compared with the other props. So, we had to find alternative materials for making our props.

6.1.4 Props

We faced a lot of difficulties while making props like some of our characters hands or legs were not perfect because of using jute rope. We had to make tiny costumes which we couldn't stitch properly and it was very challenging for us. The making process of Banyan tree took a long time because of its materials. There were some more difficulties we faced through the whole project which also consumed a lot of time.

6.1.5 References

As our story demand the props and environment in this project, first of all we had to research about our tradition and culture. We needed some picture and video references from the internet, book or any live experiences from our predecessor which could help to make our props and environment more perfect and realistic. But unfortunately, we couldn't collect most of the references because of inappropriate conservation of our old heritage. So, it was the toughest part for us in this project.

6.2 Limitations

6.2.1 Equipment's

A good stop motion animation film needs good equipment for making it. Best quality camera, lens and light setup is mandatory. But we didn't have these things. We had to collect all this equipment from different people. Even after this, the light setup was not very satisfying but we had to work with it as far we can adjust. Besides we needed a 24mm prime lens to take some detailed shot but we did not get this.

6.2.2 Manpower

As a two persons group, it's quite hard to maintain all these sides of a stop motion animation. We have made another stop motion animation before called "Boomerang" in a five persons group. We could divide our works then and made a successful project. But in this time, we were only two to make the full project. We did get help from one of our junior students and a friend of ours. We needed more man power in our pre-production time that could make more detailed and good props.

6.2.3 Voice & Sound

For visualizing the story, a suitable voice over was needed with appropriate background sound. But it was very hard for us. We searched the sounds of the events we wanted to recreate but did not find good one. We got very limited sound reference that was also not useable in our project. Besides, we needed a good voice over and for this we needed a good writing. This also need long time to think and write a good background voice over writing. But we did not have enough time for this. We tried to make a voice over writing as far we can and use our own voice.

Chapter 7

Discussion

The History of animation has started long before think the development of cinematography. Humans tried to make the motion as far back the Old Stone Age. But now the animation industry is growing rapidly. There are different types of animation technique such as traditional hand drawn 2D animation, Paper cut animation, stop motion animation, 3D animation etc. But now a day's computer-generated 3D animation is more popular than other animation techniques. High graphical works and Vfx is adding a new level to the animation. This era began as early as 1940s and 1950s when people started experimenting with computer graphics. Photo realistic 3D graphics was started using in films by the end of 1980s. And the first mainstream film that used stop motion animation technique was way before this, in 1925. The movie was named "The Lost World."

This technique is less used in mainstream film industry now. Being a time consuming, budgeted and hardworking method people are moving forward to make computer generated 3D animation. But if stop motion technique is applied properly, the output becomes great. In 2016, an American animation movie "Kubo and the Two Strings" hit the level of 3D animation. This was done by using stop motion technique timing about 3 years only to capture all the pictures frame by frame to make the full animation. In this 3D animation era, it competed with other computer-generated 3D animation.

Animation industry in Bangladesh is still under development but these are mainly computer-generated 3D animation. Previously some successful 2D animation was made in Bangladesh like "Meena." But this technique is rarely used in mainstream film or short films. On the other hand, stop motion is not so well known in our country yet. Some TV commercial was made by using this technique in recent years but still it is not so popular here. Some people started working with stop motion in recent times but no complete work is seen. For the first time in Bangladesh we made a stop motion short film "Boomerang" in a five-person group. It is the longest stop motion animation in Bangladesh. It was awarded "Best Film" in Social film section at 12th International Children's Film Festival-2019 held in Dhaka and won 2nd prize in "Creative Work in Visual Media" category at UNESCO Meena Award-2019. Besides it was also screened in different film festival in both our country and abroad and appreciated thoroughly.

Here in our project we tried to keep that quality as we have done before. We took this as a challenge for both representing our lost culture and also to show our ability of design, crafting and skill in this section. Our University also offers a course in our Multimedia and Creative Technology department that helps students learning about stop motion making and development. We hope someday we will see good quality stop motion animation from our Bangladeshi animation industry.

Chapter 8

Conclusion

As we all know stop motion animation is not so well introduced in our country and we wanted to make something different with our story. So, we tried to show our lost tradition and culture of our country using this technique. We faced too many challenges here as we worked on our old culture, we didn't even find proper references but we tried our best to give the real feel that our past generation got in live. We also hope our animation will get to know about our lost tradition and culture and make the new generation understand the value of our lost heritage.

REFERENCE

- [1] Md. Wahid Zaman Raj, Nishat Tasnim Anika, Zakia Sultana Anandi, Saurav Sarker, Udoy Kallol Ridoy, “Creating awareness about traffic jam through engaged use of stop motion animation: boomerang”, Vol 7, July 2018
- [2] <https://study.com/academy/lesson/the-history-of-stop-motion-animation.html> [Last Access Time: 21st December, 2019 at 12:22pm]
- [3] https://www.prnewswire.com/news-releases/global-animation-and-vfx-industry-strategies-trends--opportunities-report-2019-market-was-valued-at-us-259-billion-in-2018-and-is-projected-to-reach-us-270-billion-by-2020-300816938.html?fbclid=IwAR0z2Y_s5VnPwwAHYcpA9Y5efls9SKpE3aARm0LBiIS3BxaJsuNLiiMKVsI [Last Access Time: 21st December, 2019 at 12:25pm]
- [4] Learn about Wikipedia, available at <<<https://en.wikipedia.org/wiki/Animation>>>, [Last Access Time: 21st December, 2019 at 12:15am]
- [5] Learn about Wikipedia, available at <<https://en.wikipedia.org/wiki/History_of_computer_animation>>, [Last Access Time: 21st December, 2019 at 12:20am]
- [6] Learn about Wikipedia, available at <<https://en.wikipedia.org/wiki/Kubo_and_the_Two_Strings>>, [Last Access Time: 18th November, 2019 at 8:35pm]
- [7] Learn about Wikipedia, available at <<https://en.wikipedia.org/wiki/Stop_motion>>, [Last Access Time: 21st December, 2019 at 12:10am]
- [8] Learn about Wikipedia, available at <<<https://en.wikipedia.org/wiki/Post-production>>>, [Last Access Time: 10th December, 2019 at 4:30pm]
- [9] <https://www.google.com/search?q=storyboard&oq=storyboard&aqs=chrome..69i57j0l7.2999j0j7&sourceid=chrome&ie=UTF-8>, [Last Access Time: 23rd December, 2019 at 12:42 am]
- [10] <https://www.imdb.com/title/tt1623288/> [Last Access Time: 10th August, 2019 at 11:30pm]
- [11] https://www.imdb.com/title/tt6348138/?ref_=nv_sr_srg_0 [Last Access Time: 11th August, 2019 at 9:45pm]
- [12] https://www.imdb.com/title/tt4302938/?ref_=nv_sr_srg_0 [Last Access Time: 12th August, 2019 at 8:30pm]
- [13] https://www.google.com/search?q=old+banyan+tree&sxsrf=ACYBGNQ-Zsa72OjkqoCeJN0vkoZyo_6OOg:1577081855781&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjpnK7ej8vmAhXEbX0KHfa9AS0Q_AUoAXoECBAQAw&biw=1366&bih=657#imgrc=5S-ZgTEBjRLBvM: [Last Access Time: 18th September, 2019 at 11:25am]
- [14] https://www.google.com/search?q=old+banyan+tree&sxsrf=ACYBGNQ-Zsa72OjkqoCeJN0vkoZyo_6OOg:1577081855781&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjpnK

7ej8vmAhXEBX0KHfa9AS0Q_AUoAXoECBAQAw&biw=1366&bih=657#imgdii=S1RQ9HfFrMfBoM:
&imgsrc=-fG2cwb0uRLxZM [Last Access Time: 18th September, 2019 at 11:26am]

[15] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNT0E0qxm_0W_GwM-RBQ7d8TQFyvQ%3A1577081867318&sa=1&ei=C1wAXpiGE5fcrQHDsLPABQ&q=village+market&oq=village+market&gs_l=img.1.0.0l10.484740.488844..490226...2.0..1.240.1767.10j5j1.....0....1..gws-wiz-img.....0i67j0i7i30j35i39j0i5i30.OtecfGrpDMo#imgsrc=N4k54Q1RSX9LRM [Last Access Time: 21st September, 2019 at 3:30pm]

[16] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNT0E0qxm_0W_GwM-RBQ7d8TQFyvQ%3A1577081867318&sa=1&ei=C1wAXpiGE5fcrQHDsLPABQ&q=village+market&oq=village+market&gs_l=img.1.0.0l10.484740.488844..490226...2.0..1.240.1767.10j5j1.....0....1..gws-wiz-img.....0i67j0i7i30j35i39j0i5i30.OtecfGrpDMo#imgsrc=1PRWTNDRmD7LVM: [Last Access Time: 21st September, 2019 at 3:31pm]

[17] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNT0E0qxm_0W_GwM-RBQ7d8TQFyvQ%3A1577081867318&sa=1&ei=C1wAXpiGE5fcrQHDsLPABQ&q=village+market&oq=village+market&gs_l=img.1.0.0l10.484740.488844..490226...2.0..1.240.1767.10j5j1.....0....1..gws-wiz-img.....0i67j0i7i30j35i39j0i5i30.OtecfGrpDMo#imgsrc=BXN1ZAKEHFRvxM: [Last Access Time: 21st September, 2019 at 3:32pm]

[18] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNQk9iF8Q965Z6KpmcSD44qmm1-YPg%3A1577082359698&sa=1&ei=910AXu6gKon_9QPEnKbQDQ&q=village+fair&oq=village+&gs_l=img.1.1.35i39l2j0i67l8.343898.343898..345029...0.0..0.233.464.1j1j1.....0....1..gws-wiz-img.....0.umoIpJ48mxE#imgsrc=k-UD5R_SOai3eM: [Last Access Time: 22nd September, 2019 at 9:45am]

[19] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNQk9iF8Q965Z6KpmcSD44qmm1-YPg%3A1577082359698&sa=1&ei=910AXu6gKon_9QPEnKbQDQ&q=village+fair&oq=village+&gs_l=img.1.1.35i39l2j0i67l8.343898.343898..345029...0.0..0.233.464.1j1j1.....0....1..gws-wiz-img.....0.umoIpJ48mxE#imgdii=2DC4xqi1u1ByEM:&imgsrc=OnN60jbkIIdXwM: [Last Access Time: 22nd September, 2019 at 9:46am]

[20] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNQk9iF8Q965Z6KpmcSD44qmm1-YPg%3A1577082359698&sa=1&ei=910AXu6gKon_9QPEnKbQDQ&q=village+fair&oq=village+&gs_l=img.1.1.35i39l2j0i67l8.343898.343898..345029...0.0..0.233.464.1j1j1.....0....1..gws-wiz-img.....0.umoIpJ48mxE#imgdii=l37MshRcMdt_SM:&imgsrc=DQyKlteSo1HyWM: [Last Access Time: 22nd September, 2019 at 9:50am]

[21] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsrf=ACYBGNQk9iF8Q965Z6KpmcSD44qmm1-YPg%3A1577082359698&sa=1&ei=910AXu6gKon_9QPEnKbQDQ&q=village+fair&oq=village+&gs_l=img.1.1.35i39l2j0i67l8.343898.343898..345029...0.0..0.233.464.1j1j1.....0....1..gws-wiz-img.....0.umoIpJ48mxE#imgsrc=k-UD5R_SOai3eM: [Last Access Time: 22nd September, 2019 at 9:45am]

[22] https://www.google.com/search?q=bangladeshi+old+age+people+face&tbm=isch&ved=2ahUKEwja_NDLku7lAhXBgUsFHDRCBMQ2-cCegQIABAC&oq=bangladeshi+old+age+people+face&gs_l=mobile-gws-wiz-

img.3...32131.37192..38113...2.0..0.366.3472.0j11j4j2.....0....1.....30i10j33i10.hCaJ82MtPKI&ei=vpzP
XdqlCMGDrtoP0KOjmAE&bih=559&biw=360&client=ms-android-
xiaomi&prmd=ivn&safe=active#imgrc=3fs22F3-VwXg2M[Last Access Time: 16th November,2019 at
12:54 am]

[23] https://www.google.com/search?q=bangladeshi+nagordola&safe=active&client=ms-android-xiaomi&prmd=vmin&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjQ0uak2fDlAhU1zDgGHSAuBhkQ_AUoA3oECAwQA&biw=360&bih=559#imgrc=ckujuIdnXrkJLM_ [Last Access Time: 16th October,2019 at 1:16 pm]

[24] https://www.google.com/search?q=Bangladeshi+8-10+year+village+kids&tbm=isch&ved=2ahUKEwjhgLmRk_bIAhUYG3IKHbOZD_oQ2-cCegQIABAC&oq=Bangladeshi+8-10+year+village+kids&gs_l=mobile-gws-wiz-img.3..30i10.27838.29488..29881...0.0..0.305.1389.0j4j2j1.....0....1.aRNw3MYRUU0&ei=Ds_TXeHBG5i2yAOzs77QDw&client=ms-android-xiaomi&prmd=vmin&safe=active#imgrc=SzYbDzRWBUfjM&imgdii=xtOI452uYlawyM_ [Last Access Time: 19th November,2019 at 5:18 pm]

[25] https://www.google.com/search?q=jatra+pala+photo&tbm=isch&ved=2ahUKEwit64-Ch4LmAhWgh0sFHTQZChIQ2-cCegQIABAC&oq=jatra+pala&gs_l=mobile-gws-wiz-img.1.3.0l4j0i5i30.2689.10831..15114...2.0..3.503.8520.0j25j5j7j1j1.....0....1.....31..41j0i131j0i67j0i131i67j41i67j41i10j0i24j0i13j0i13i5i30.RoG0vLxckZs&ei=9QzaXe2cOqCPrtoPtLKokAE&bih=559&biw=360&client=ms-android-xiaomi&prmd=vin&safe=active&hl=en#imgrc=-Bvk9ZAdnqETUM_ [Last Access Time: 16th November,2019 at 3:18 pm]

[26] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsr=ACYBGNQqgiUyEeYttfLUO31Sdskg8TFPYA%3A1577083404677&sa=1&ei=DGIAXv76KNW-9QPXsIDwBg&q=%E0%A6%AA%E0%A7%81%E0%A6%A4%E0%A7%81%E0%A6%B2+%E0%A6%A8%E0%A6%BE%E0%A6%9A&oq=%E0%A6%AA%E0%A7%81%E0%A6%A4%E0%A7%81%E0%A6%B2+%E0%A6%A8%E0%A6%BE%E0%A6%9A&gs_l=img.3..0i19l4j0i5i30i19.38862.43524..43697...1.0..0.166.1245.6j5.....0....1..gws-wiz-img.....35i39j0i7i30i19j0j0i30j0i8i30i19.4ukc2u08M_k&ved=0ahUKEwj-sPfAlcvmAhVVX30KHVcYAG4Q4dUDCAc&uact=5#imgdii=mIs-crteCcUVYM:&imgrc=mIs-crteCcUVYM: [Last Access Time: 13th October, 2019 at 12:05pm]

[27] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsr=ACYBGNQqgiUyEeYttfLUO31Sdskg8TFPYA%3A1577083404677&sa=1&ei=DGIAXv76KNW-9QPXsIDwBg&q=%E0%A6%AA%E0%A7%81%E0%A6%A4%E0%A7%81%E0%A6%B2+%E0%A6%A8%E0%A6%BE%E0%A6%9A&oq=%E0%A6%AA%E0%A7%81%E0%A6%A4%E0%A7%81%E0%A6%B2+%E0%A6%A8%E0%A6%BE%E0%A6%9A&gs_l=img.3..0i19l4j0i5i30i19.38862.43524..43697...1.0..0.166.1245.6j5.....0....1..gws-wiz-img.....35i39j0i7i30i19j0j0i30j0i8i30i19.4ukc2u08M_k&ved=0ahUKEwj-sPfAlcvmAhVVX30KHVcYAG4Q4dUDCAc&uact=5#imgrc=nDgw6XEJHE7AIM: [Last Access Time: 13th October, 2019 at 12:06pm]

[28] https://www.google.com/search?biw=1366&bih=657&tbm=isch&sxsr=ACYBGNQqgiUyEeYttfLUO31Sdskg8TFPYA%3A1577083404677&sa=1&ei=DGIAXv76KNW-9QPXsIDwBg&q=%E0%A6%AA%E0%A7%81%E0%A6%A4%E0%A7%81%E0%A6%B2+%E0%A6%A8%E0%A6%BE%E0%A6%9A&oq=%E0%A6%AA%E0%A7%81%E0%A6%A4%E0%A7%81%E0%A6%B2+%E0%A6%A8%E0%A6%BE%E0%A6%9A&gs_l=img.3..0i19l4j0i5i30i19.38862.43524..43697

...1.0..0.166.1245.6j5.....0....1..gws-wiz-
img.....35i39j0i7i30i19j0j0i30j0i8i30i19.4ukc2u08M_k&ved=0ahUKEwj-
sPfAlcvmAhVVX30KHVcYAG4Q4dUDCAc&uact=5#imgdii=Ma1p7rOSIFnKiM:&imgsrc=RIPyauFQF2
BB2M: [Last Access Time: 2nd October, 2019 at 1:30pm]

[29] https://www.youtube.com/watch?v=D7CfONd2zR0_ [Last Access Time: 4th December, 2019 at 10:45pm]

[30] https://www.youtube.com/watch?v=G2EJY52I-JE_ [Last Access Time: 5th December, 2019 at 8:20pm]

[31] https://www.youtube.com/watch?v=aVnq0NHykFY_ [18th November, 2019 at 12:45am]

[32] https://www.youtube.com/watch?v=xVzOSYWf6Nk_ [Last Access Time: 19th November, 2019 at 11:15pm]

[33] https://www.youtube.com/watch?v=LOMbySJTKpg_ [Last Access Time: 21st August, 2019 at 9:30pm]

[34] https://www.youtube.com/watch?v=0pGHkYix3wo&t=82s_ [Last Access Time: 21st August, 2019 at 9:45pm]

[35] https://www.youtube.com/watch?v=QxGM6QmFI5c_ [Last Access Time: 24th August, 2019 at 10:15pm]

[36] https://www.youtube.com/watch?v=dAuLOiO4WDw_ [Last Access Time: 25th September, 2019 at 8:10pm]

[37] https://www.youtube.com/watch?v=IeIS73oswUw_ [Last Access Time: 25th September, 2019 at 8:25pm]