Multimodality In Stop Motion Animation Films

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Abstract

Stop motion animation films use a complicated process of giving life to inanimate objects through visuals and cinematic experience that are created by using puppets made of clay, resin, silicon, wool etc. In the world of digital communication and technology, there has been rise of using multiple modes in order to give deeper meaning to the visuals of a film. Today, apart from language, stop animation film uses various semiotic modes of sound, music, visual metaphors, set design, camera angles, color theory, gestural, spatial and haptic illusion that helps in disseminating ideas, and concepts that are difficult to communicate through a film. The researcher has conducted a content analysis of three Oscar Nominated stop motion animation films including Negative Space, Sister and Lost and Found to identify the various semiotic modes used in the narrative of the film and a quantitative study was conducted to investigate the perception of the young adults including college students of undergraduate and post graduates and professionals between age group of (18-24) living in Mumbai regarding these modes.

Keywords: Stop motion, animation, semiotic modes, film, narrative, multimodality

INTRODUCTION

Animation films are a form of cinematic expression that brings stories, characters, and worlds to life through the art of animation. Unlike live-action films, which capture real-life performances, animation involves creating the illusion of motion by displaying a sequence of images, drawings, or computer-generated graphics. This allows filmmakers to explore fantastical and imaginative realms, transcending the constraints of reality.

Throughout the advent of technology, visual perception has evolved. Earlier it all started with simple animation like drawings that are flipped through pages at a speed. Then traditional animation came into being. With the rise of computers, 2D animations became three dimensional figures. Computer animation started getting lot of attention and popularity. Then came the rise of Stop motion animation that further allowed people to experiment with various materials like clay, wool, puppetry.

Principle Of Animation

The first principle of animation is persistence of vision. The way eye comprehends or rather understands, consecutive still images to make it a moving image. Generally, we find Film and video is projected at 24 and 25 frames per second.

Animators need to provide weight to non-living things, i.e. inanimate objects. They need to evaluate the duration of time an object will take to fall depending on its material property. For e.g puppets or cut aways who are portraying a living character should look as realistic as possible. Their movement should look realistic and smooth.

Types of Animation:

2D Animation: Traditional hand-drawn animation involves creating individual frames by hand. Classic examples include Disney's early animated features.

3D Animation: Computer-generated imagery (CGI) is used to create three-dimensional characters and environments. Pixar's films, such as "Toy Story," showcase 3D animation.

Stop Motion: Physical objects are manipulated frame by frame to create movement. Films like "Corpse Bride" and "Wallace and Gromit" use stop-motion animation.

Claymation: A specific form of stop motion using clay figures. "Chicken Run" and "Shaun the Sheep" are examples of claymation.

Uses Of Animation

Animation are there since 1960s. There are different uses of Animation.

Cartoons- Animation have been used in form of cartoons for entertainment, presentation, advertisements and films.

Simulations- All kinds of simulations use animation to train people to use machines in a virtual set up. It offers a feeling of real-life environment wherein speed is of utmost importance.

Graphic visualization in science- Scientific experiments can use animation to understand complex data.

Stop motion animation is an animation that is captured one frame at a time, in such a manner that physical objects are moved between frames. It feels as if the material objects are moving on their own.

LITERATURE REVIEW

Stop Motion Animation builds in a sense of touch through materials used for its storytelling, like paper, wood, wool, cut away etc. Unlike computer animation, there is use of textures, materials that create tactile perception that appeals to viewer's experience, their visualization through sense of touch.

Touch doesn't mean only contact. It goes beyond, it establishes a manner of being. This manner of being not only looks at the physical structure of the material, its properties and its interaction with physical environment. The haptic sense of illusion is created when the cinematic world interacts with viewer's physical world of perception and there is a connection that is built deeper, intimate and reciprocal sense of existence as well as connection (Bartley, 2016).

Haptic visuality means eyes themselves function as organs of touch. The sense of vision is experienced not due to optical vision but due to touch and kinesthetics. There is a relationship that gets developed between the viewer and the image (Marks, 2002)

Generally, in stop motion animation, it's difficult to fight gravity. Prefabricated custom rigs are used in order to support objects and move them easily during filming. Different objects are used in order to create visual effect as close to real world as possible. For e.g. bubble strap is used for boiling water. The set design is equally important for stop motion animation. Light, shadows, environment conditions, indoors, studio space. Voltage regulators are used to maintain temperature even in the indoor area. Element of sound is very important in a film (Gasek, 2011).

Color Psychology

Colors when used effectively can elicit an emotional response from the viewer. Colors are one of the most powerful and effective tools in the visual spectrum of perception (Talaei, 2013). The same color might have a different meaning associated with it. Different cultures associate different colors with different emotions (Khattak, D. S., Ali, H., Khan, Y., & Shah, 2018). . Westerners see black as a bold and classic color whereas some cultures perceive black as a negative and dark color. Indians look at white in the light of calmness and mourning whereas Americans view black as the mourning color. Another example is of the color red that is seen as danger and cautions in the Middle East, but on the other hand, the Chinese symbolize the color with happiness and luck. Green is the national color of Mexico and also stands to represent the religion of Islam, however, in South America is seen as the color of death and Indonesia regards it as a forbidden color that denotes exorcism and infidelity. Color does affect mood by producing certain chemicals and stimulating different feelings. Colors contribute to eliciting a certain response. Colors act as specific image builders based on how each color is used to convey an emotion, make an image / ad look attractive, set the tone or setting of the specific ad, etc. In fact, different cultures associate colors in a varied manner.

What is Multimodality?

Multimodal system or multimodality has many modes. A multimodal interactive system is a system which uses at least two different modalities for input and/or output. Different modes are being used easily with the help of affordances of new age technology making it possible for multiplicity of modes (Yus, 2006). Multimodality involves several semiotic modes that help in delivering information in the most comprehensive manner. Semiotic modes can be written, verbal, audio, visual, gestural, spatial patterns of meaning making materials.

Stop motion Animation is multimodal in nature. Models, figurines, made of clay, wool, cut-outs, their patterns, textures, lighting, motion, camera angles, colour tones used while filming, set designs, dialogues used, sound effects, music all try to complement each other in such a way that haptic illusion experienced by a viewer is wholistic and overwhelming.

Research Question

What are the semiotic modes and multimodality used by stop motion animated films?

What is the perception of young adults of Mumbai regarding the narrative structure used in stop motion animation films?

Hypothesis

Ho-Young adults are not able to understand complex narrative structure of stop motion animation films.

Ha-Young adults are able to understand complex narrative structure of stop motion animation films.

RESEARCH METHODOLOGY

The researchers have considered following Stop Motion Animation films namely: Negative Space, Lost and Found, Sister for their study. In order to get holistic perspective, researcher has used qualitative and quantitative research. Qualitative research includes content analysis of three Stop Motion animation films Negative space, Lost and Found and Sister that included color theory, camera angles, monologue/dialogue, text (subtitle), sound used in the film. Quantitative research was conducted after showing these three animation films to young adults between (17-25) in Mumbai.

CONTENT ANALYSIS

Oscar Nominated Film Negative Space. The duration of film is 5 minutes 30 secs.

Well lit room. Its bright with shade of blue all around the room. Well organised room. Sound of zip opening. Stop motion of clothing and accessories. T-shirt, pant, shoes, brush and toothpaste, undergarments, tie, watch, shoes, socks, mobile phone, wallet, belt, charger, cream, razer. Different kinds of packing has been shown. Cover half, roll all the things. Ensure wrinkle prone are kept above cotton clothes. Pants should be packet from waist to hem. Roll the socks and fill the nooks and corners. Top angle shot wherein all the clothes and accessories are assembled in a luggage bag. Belt is shown animated like a snake that slides across and occupy the space around clothes. Animation of shoe that walks all by itself and lands above the plastic placed on the luggage bag. The director has given importance to packing by providing all minutest details. Through the window pane, one can understand it's snowing. So the main protagonist gets ready covered fully for winter and goes away with his trolley bag.

Exterior shot of the protagonist outside home. The set design is created beautifully to capture winter in a city with parked vehicles towards the right of the frame and independent houses with their staircases. The protagonist is ready to travel. So uses the remote control to open his car. The sound effect of it is realistic and adds further depth and detail. Wide shot of cars moving across the street. The cars look very small, like miniature toy cars. The set design, of street, wall, fencing and green patch looks realistic. The car travelling through a tunnel, change of light on the protagonist's

face as he enters tunnel looks very real. Voiceover narration- We started when I was little was used to suggest flashback into the story narrative. The camera moves into the eyes of the protagonist and cut to the car moving across a zip.

Again top angle shot is used to suggest importance of packing. Clothes, accessories and daily utilities are placed across the floor. The protagonist is now shown as a young boy. Socks are shown double his size that he tries to roll up.

Dad puts boy in suitcase. Watch runs away like a crab.

The boy gets stuck with ocean of clothes. As clothes approach the boy, its shown as if they are ocean waves who are submerging the boy under the water.

Then we see use of blue color that signifies water. All the clothes, accessories submerge in water. Shirt is moving like a fish. Pants are moving like a sea weed.Belt is moving like a snake. Undergarment is also moving like a fish. The boy finally manages to reach top of the clothes with huge relief.

Father just picks his luggage and leave and boy just keeps looking on. He looks outside the window to see the yellow taxi. Narration of the boy stating that bonding with dads happen with shooting hoops, or talking about cars like Chevrolets. Yellow taxi that is escorting his dad is moving across the road, amidst small living dwellings wherein we can see boys spending quality time with their father. Its again a top angle shot showing a distance that the boy feels in

his relationship with his dad as opposed to the normal relationships that exist in the world. Only text message signifies or solidifies communication between father and son. Glow is seen when son receives dad message stating Perfect. Bonding of father-son relationship over luggage. That one word that meant a lot…. is narrated twice to get out of flashback to present

When son says look at all that wasted space shows us an open ending of the film. It suggests that son was so obsessed with packing and luggage that he could only think of the space thats left behind. It is also a symbolic suggestion to show that if the person doesnt bond too well, his funeral lacks the decoration of flowers, and people don't connect well with the person's family. Also, whatever one achieves in life cannot be taken along during death. So whatever one has has to be left behind.

2ⁿᵈ Film- Oscar Nominated film Lost and Found

Lost and Found Film - Duration 7 min

Wide shot- Suggests close bonding of two stuffed animals. Stuff toys.
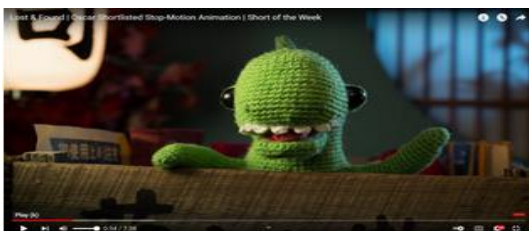
Zoom out

Establishment of coordial relationship between fox and dinosaur shot in a mobile phone.

The dinosaur has got from sleep and he was lying inside his toy carton. He takes a mega size glasses to look on.

The dinosaur sees fox standing near the well. Dino waves at him.

Close up shot of stones. Dino gives flying kiss to fox. Fox is also giving back flying kiss. In excitement dino falls off. The friendship of Dino and fox is very evident. Suddenly water falls on fox tail and fox falls into well.

Camera zooms into dinosaur. The dinosaur looks worried. POV shot of the well as seen from the eyes of dinosaur.

The fox is trying to climb up the well. There is good build up of drama through use of sound effects and music. Dinosaur gets away from his box. The camera close up of the nail and wool thread gets entangled.
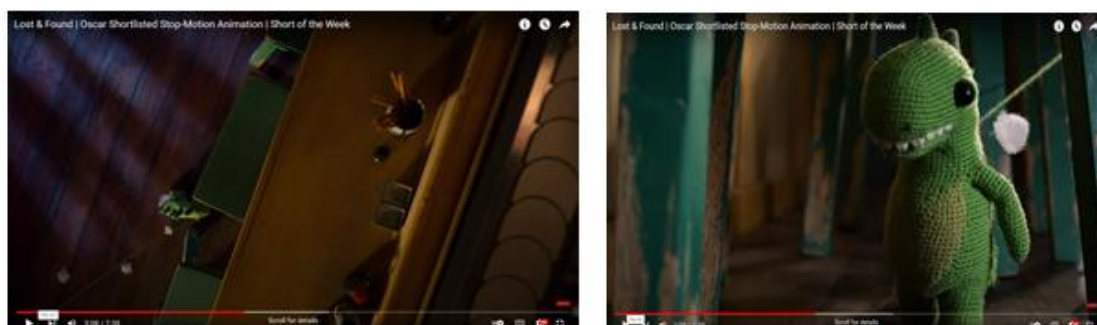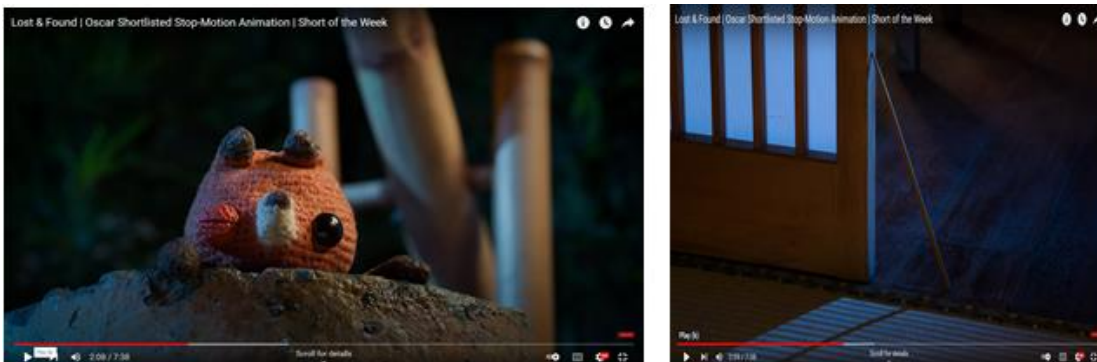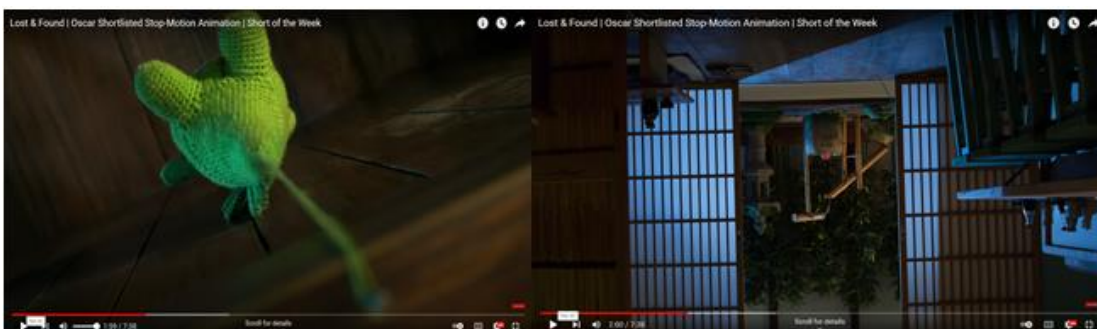
Use of mid shot of fox looking at the pebbles, trying his best to stay afloat, top angle shot of Dinosaur trying to maneuver around, and how the wool thread is getting entangled and he losing his cotton on his way, with highly intense music.

There is dramatic buildup. Finally, fox succeeds in throwing a pebble on to the stick due to which the sliding door is about to close. Zoom out camera away from the fox, dinosaur is trying his best to reach to his friend. The door closes and dinosaur loses his balance. Looks back.
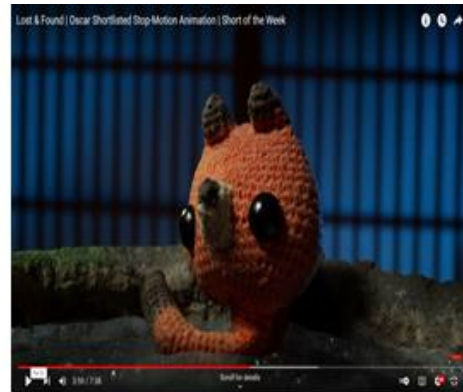
POV shot of his wool thread being entangled everywhere. Cut to mid shot of fox.

POV shot of fox looking at water being filled. Fox loses his hand grip and submerges into the water. There is absolute silence and mid shot of door. Suddenly we see shadow of dinosaur.

In heroic way, dinosaur plunges through the door. Wide shot of dinosaur head with only little part of his body is visible. Fox has got submerged into water. Dinosaur is trying to jump somehow with his dilapidated condition.

Dinosaur jumps off. Lot of cotton fall off. Close up shot of only dinosaur head is visible. Slowly the wool thread is giving away.
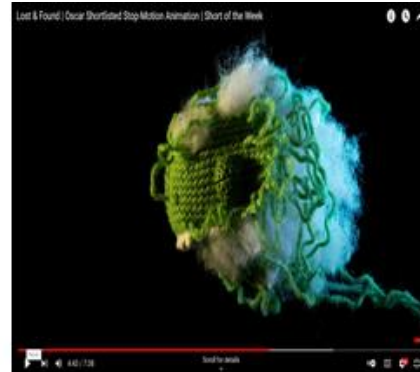
Flashback of precious moments of dinosaur and fox. Dinosaur perishing.

Intercut of flashback and present is beautifully used to create the pious friendship of dinosaur and fox. Dinosaur is completely losing his cotton as well as his thread. Dinosaur is now only a piece of wool thread. Close up of well water is shown. Wool thread reaches well. Water is gushing inside the well. Wool thread reaches bottom of the well. Mid shot of dinosaur and fox hugging picture is shown. Camera zooms into the picture. The mobile screen buffers and turns blank. Wide shot of the thread entangled everywhere and low angle shot of the thread of the table through which Dinosaur had jumped earlier. Grip of the wool thread gets firmer. The fox is able to grab onto the wool thread and rescue himself. Fox gets off the well. He hugs the wool thread.

The fox tries to weave back wool thread but he fails. All falls apart. He again begins from the beginning with a sense of hope. Camera zooms out.

Oscar Nominated film Sister- Duration 8:04

Midshot and then there is wide shot of family that's made of dad, mom and their son. Its in black and white. They are getting ready for family portrait.

Suddenly one young girl comes in. Then the narration begins that narrator wants to tell about his sister.

The year is 1991. There is cry of a baby. Girl baby is born. Sister was four years younger than narrator that's her brother. His sister cried all time. And then she turns bigger in size. She turns into a giant figure. Her size fills the entire room in such a way, her head hits the fan. The boy appears to be a miniature in front of the giant baby sister.

Top angle shot of giant sister with his brother, where brother looks too small. Baby starts grabbing his toys and eating it.

Brother looks very angry. Sister pokes her brother's cheeks irritating him further and giggles. In a fit of rage, he pulls off her navel, thread comes out and soon baby sister loses her size like a balloon and turns back into a small baby.Sister and brother fought all the time. Each wanted to use remote to watch their favourite TV show. Then sister throws away remote. Remote hits the tea set.

Sister breaks tea set and remote falls on the ground. She feels scared and goes away.

Her brother then is scolded and hit with a stick by his parent. Brother then pulls her nose then turn big. Then one day as he was eating his food, his tooth broke. Boy is worried and then gets convinced by mom it will grow back soon.

Then both brother n sister plant teeth into a pot of soil and then water it everyday.

Then stunning visual effect is created where camera goes into the soil and one finds baby tied to umbilical chord and soon tree grows with teeth around. Boy plucks one tooth. Then flashback to portrait of the family.

Sister was actually never born. This information is told via narration only.

Parents look upset. Although mother was pregnant she had to do an abortion. The baby was a girl. The boy didn't have a sister. It was his imagination that was leading him to wonder about his sister and how would life be like. Would she take toys or fight with him or do silly things?
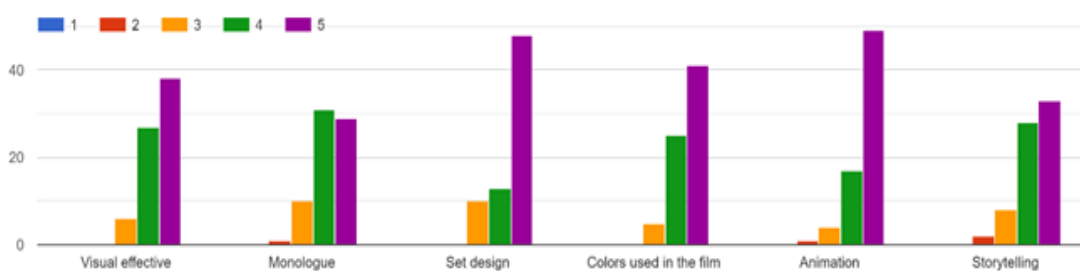
There is a symbolic representation of the boy like a bowl of fish. He keeps wondering how his life be like if he had his sister? But he would never know as he grew up alone.

Quantitative Research
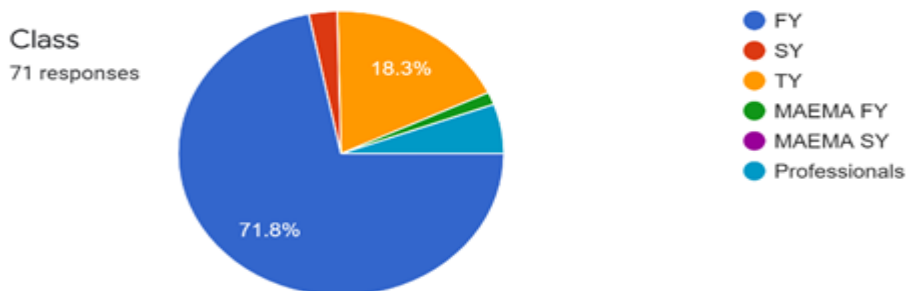
72% responses belonged to FY students followed by 18% TY students, 5.6% students who are professionals, 3% SY students and 1% MAEMA student.


92% felt the movie Negative Space was visually effective. While only 8% felt they couldn't take a stand.

With regards to Monologue narration, 85% felt it was effective but 14% couldn't decide and 1% didn't like narration. 86% liked the set design of Negative Space film while 14% couldn't take a stand.

Color tone used in the film, 93% felt it was very effective in the film. While only 7% couldn't decide. As far as Animation is concerned, 93% liked the overall stop motion animation used in the film. While 5% couldn't decide and 2% felt they didn't like the animation. Storytelling around 86% liked it while remaining 11% remained undecided and 3% didn't like it.

In the film Negative space what according to you means Look at all that wasted space?
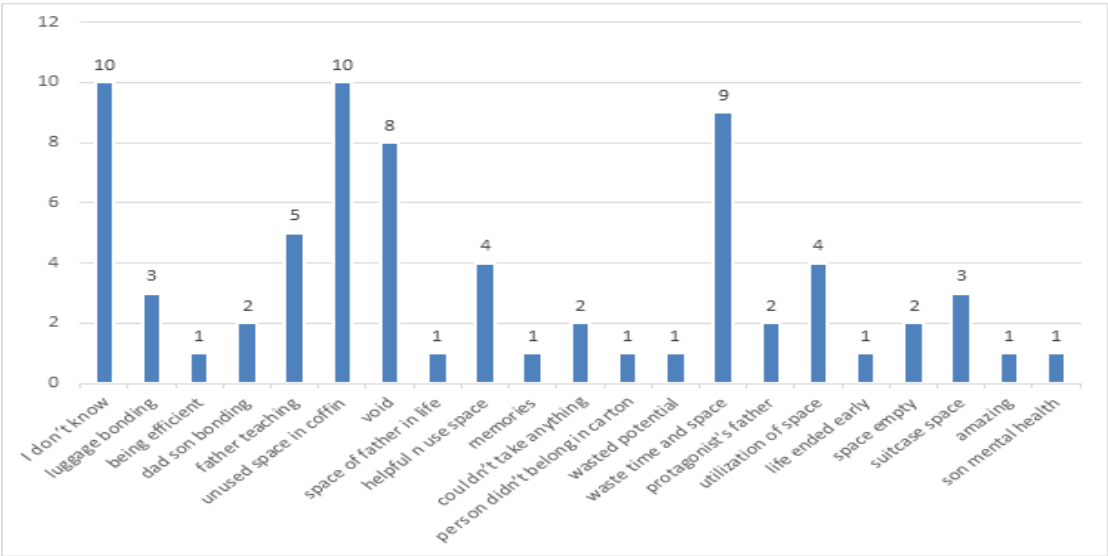

We had mixed opinion regarding the sentence used in narration Look at all the wasted space in the film Negative space. Around 14% couldn't answer the question. 14% felt it talked about unused space in the coffin. 13% felt it talked about wasted space and time. While around 11% felt it talked about void in the narrator's life. While 7% thought it talked about narrator remembering his father's teaching. While remaining 35% had different opinion. Some felt it talked about luggage bonding, being efficient, some felt it was about father son bonding, place of father in one's life, about being helpful and using space well or it was about memories. Some clearly couldn't get the message along. Some felt the person didn't belong in the carton, its about the wasted potential of the father, its about the protagonist's father. Its about using space well, may be life of father ended early, it talked about suitcase space. It talked about son's mental health. One person felt it was amazing but couldn't get the message behind the sentence Look at all the wasted space.

What is the overall message of the film Negative Space?
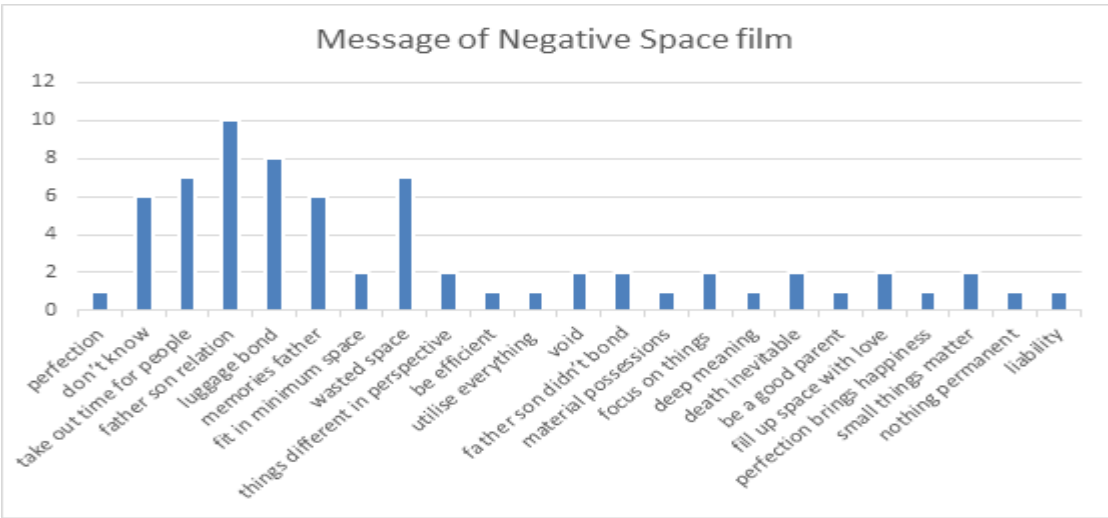
Overall message of Negative Space film- While 14% felt it was about father and son relationship, 11% felt the film talked about luggage bonding, 10% felt it talked about an important message that one should take time out for people. Other 10% felt it talked about wasted space. 9% couldn't really get the message of the film. 9% felt it talked about father's memories. 3% felt it talked about how one should fit in a minimum space. 3% felt it gave a vague message that things are different in perspective while remaining people had mixed response that talked about being efficient, utilizing everything, void, about lack of bond between father and son, material possessions, focus on things, death being inevitable, it has a deep meaning but difficult to comprehend, to be a good parent, fill up space with love, perfection brings happiness, small things matter, nothing is permanent and its about liability.

Rate film Lost and Found for the following parameters (1- No at all, 2-no, 3- cant say, 4- yes, 5- definitely yes)
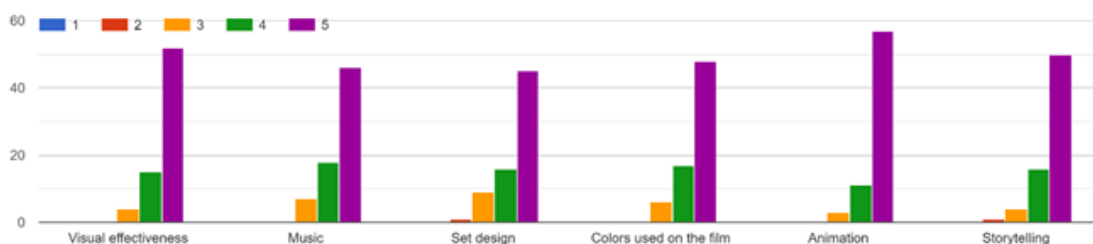

Lost and found, 94% felt it was visually effective and 6% couldn't take a stand. As far as music is concerned, 90% felt it was effective and only 10% remained undecided. 86% really liked the set design and backdrop for the film. 13% couldn't take a stand and 1% didn't like the set design. 91% liked the color tones used in the film while 9% couldn't take a stand. As far as stop motion animation is concerned, 96% felt it was impressive. While 4% remained undecided. 93% loved the storytelling. While 6% remained undecided and 1% didn't like it.

What according to you, is message of the film Lost and Found?

Lost and found film overall message- Around 37% felt it talked about true friendship, 20% felt it talked about love. 10% felt it talked about love and friendship. 9% felt it talked about walked extra mile in order not to lose someone. 7% felt it talked about sacrifice in love. While remaining had a mixed response, some felt one was lost and one was found, lose oneself to save other, relationship and love, strong bond with someone, keep trying despite failure, losing loved ones, memories and about two people fighting loneliness.

Rate the film Sister for the following parameters (1- Not at all, 2- No, 3- Cant say, 4- yes, 5- definitely yes
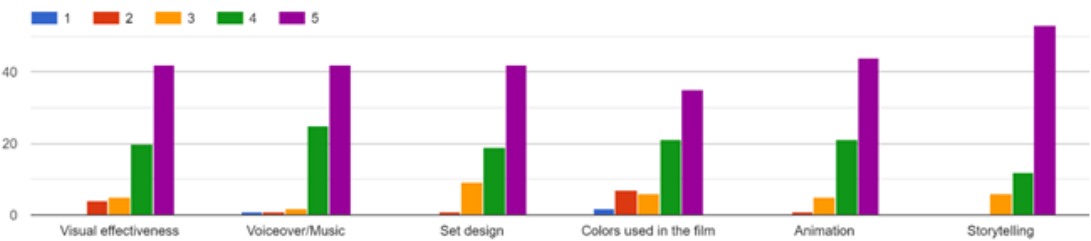
88% liked visual effectiveness of film Sister. 7% remained undecided and 6% didn't like it visually. As far as voiceover and music is concerned, 89% liked it. 3% remained neutral, 3% didn't like it.Set design around, 86% liked it. 13% were undecided and 1% didn't like it.

The color toned used in the film, around 79% liked it. But 9% were neutral and 13% disliked it. As far as stop motion animation is concerned, 92% liked it. 7% were neutral and 2% disliked it.Storytelling, around 92% liked it and remaining 8% were neutral.

What according to you, is the message of the film Sister?
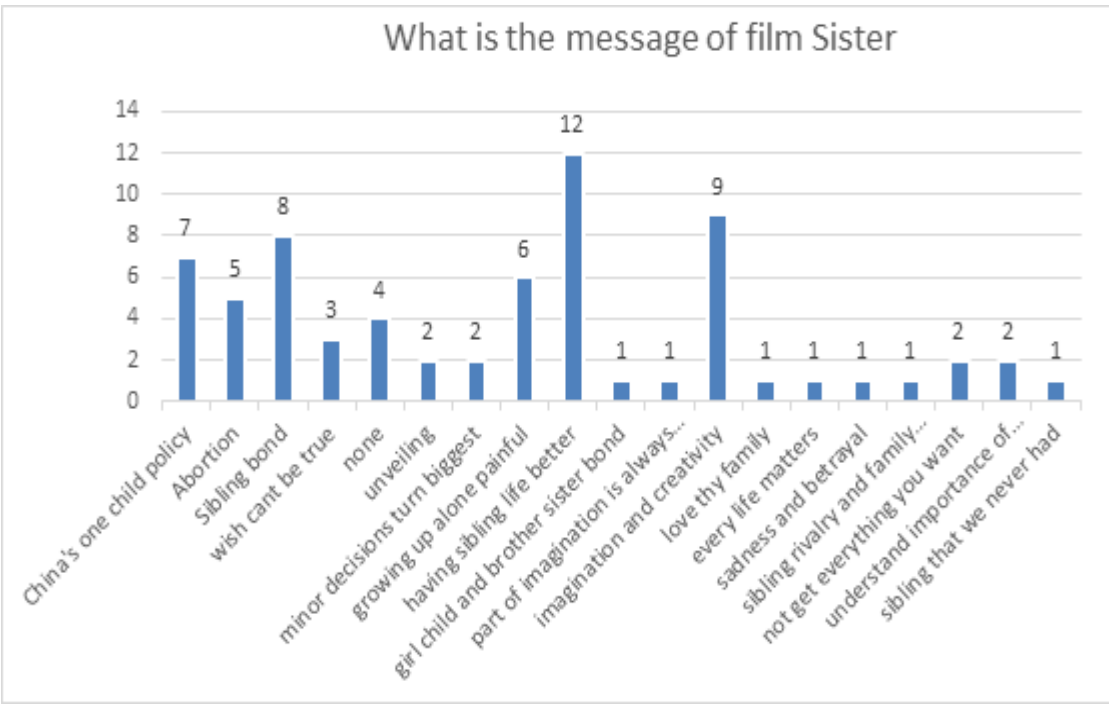
Message of film Sister, we had 17% who felt it talked about having sibling will make life better. 13% it was about imagination and creativity, 11% felt it talked about sibling bond. 10% felt it was about China's one child policy. 9% felt it was about growing up alone is painful, 7% its about abortion. 6% couldn't get the message of the film. 4% it was about wish that couldn't become true. Then we had mixed reaction that the film talked about unveiling, minor decision becoming major, girl child and brother sister bond, imagination can't be true, love one's family, sadness betrayal, sibling rivalry, not getting what you want, understand importance of family. It's about sibling that wasn't there.

Out of 3 films shown which is your favorite film?
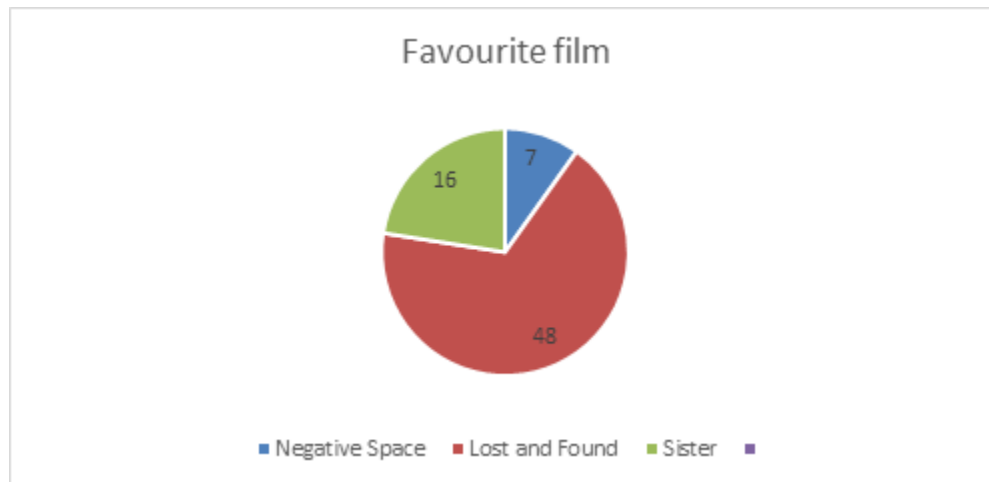
Clearly over 68% loved Lost and Found, 22% liked Sister and 10% liked Negative Space.

Did you like Stop Motion Animation films narrative structure?
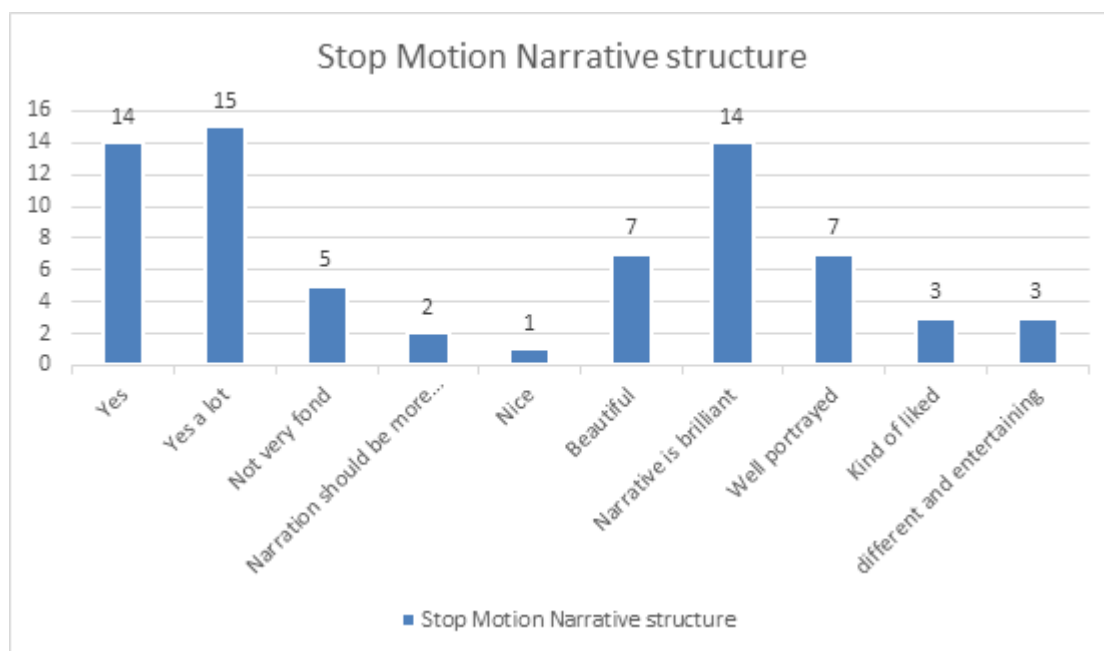
As far as stop animation narrative structure is concerned, 86% gave a positive response, while 7% didn't like the narrative structure. 3% felt it needs to be more clear and comprehensible.

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Visual Negative Space	71	4.45	.650	.077
Monologue Negative Space	71	4.24	.746	.089
Set design Negative Space	71	4.54	.734	.087
Colors Negative Space	71	4.51	.630	.075

Animation Negative Space	71	4.61	.665	.079
Storytelling Negative Space	71	4.30	.782	.093
Visual Lost and Found	71	4.68	.580	.069
Music Lost and Found	71	4.55	.672	.080
set design Lost and Found	71	4.48	.772	.092
Colors Lost and Found	71	4.59	.645	.077
Animation Lost and Found	71	4.76	.520	.062
Storytelling Lost and Found	71	4.62	.663	.079
Visual Sister	71	4.41	.855	.101
voiceover/musicSister	71	4.49	.754	.089
Set design Sister	71	4.44	.770	.091
Colors Sister	71	4.13	1.108	.131
Animation Sister	71	4.52	.694	.082
Storytelling Sister	71	4.66	.631	.075

One-Sample Test

	Test Value = 3						
			Significance			95% Confidence Interval of the Difference	
	t	df	One-Sided p	Two-Sided p	Mean Difference	Lower	Upper
Visual Negative Space	18.805	70	<.001	<.001	1.451	1.30	1.60
Monologue Negative Space	14.004	70	<.001	<.001	1.239	1.06	1.42
set design Negative Space	17.636	70	<.001	<.001	1.535	1.36	1.71
Colors Negative Space	20.170	70	<.001	<.001	1.507	1.36	1.66
Animation Negative Space	20.344	70	<.001	<.001	1.606	1.45	1.76
Storytelling Negative Space	13.965	70	<.001	<.001	1.296	1.11	1.48
Visual Lost and Found	24.349	70	<.001	<.001	1.676	1.54	1.81
Music Lost and Found	19.437	70	<.001	<.001	1.549	1.39	1.71
set design Lost and Found	16.142	70	<.001	<.001	1.479	1.30	1.66
Colors Lost and Found	20.780	70	<.001	<.001	1.592	1.44	1.74
Animation Lost and Found	28.527	70	<.001	<.001	1.761	1.64	1.88
Storytelling Lost and Found	20.598	70	<.001	<.001	1.620	1.46	1.78
Visual Sister	13.883	70	<.001	<.001	1.408	1.21	1.61

voiceover/music Sister	16.695	70	<.001	<.001	1.493	1.31	1.67
set design Sister	15.728	70	<.001	<.001	1.437	1.25	1.62
Colors Sister	8.573	70	<.001	<.001	1.127	.86	1.39
Animation Sister	18.468	70	<.001	<.001	1.521	1.36	1.69
Storytelling Sister	22.187	70	<.001	<.001	1.662	1.51	1.81

DISCUSSION

Young adults are able to understand complex narrative through stop motion animation films as we have got 86% confirming about it through the survey questionnaire. But when we look closely, we found that young adults were more connected to Stop Animation film Lost and found that is about love and friendship, sacrifice, and never losing hope till the end. But when we look at other two films Sister and Negative Space, although they liked animation of Negative Space, they gave high ratings to each factors but in open ended questions they weren't able express about the film clearly. As far as Sister film is concerned they did understand it's about sibling that one never had but only few could understand that it was connected with One Child Policy of China while others were only looking at the world of imagination and missed the deeper meaning of the film. Statistically when researchers used SPSS software to understand following factors of visuals, set design, monologue, depiction of colours, storytelling, music for Oscar Nominated stop motion films of Negative Space, Lost and Found and Sister, it was found the average mean score for all the factors was more than 4.4. One sample t test for all the factors of individual films was conducted, and it was found that p value is less than 0.001. Thus we fail to accept the null hypothesis. It can be said that young adults understood the narrative structure of stop motion animation films.

CONCLUSION

The researchers have selected only three of Oscar Nominated Stop Motion Animation films due to time constraints. Overall content analysis proves that Storytelling, Animation, Narration, Color Tone, Set design, music, camera Angles all are important for enhancing the overall viewer's experience. All these are different modes and when they are interwoven beautifully, the viewer relishes the overall experience. Young adults understood the narrative structure of these films and they preferred Lost and Found film more than other two films Negative Space and Sister.

Reference

1. Bartley, M. E. (2016). The Tactile Eye. In Afterimage (Vol. 44, Issues 1–2). https://doi.org/10.1525/aft.2016.44.1-2.54

2. Marks, L. (2002). Touch: Sensuous Theory and multisensory media. University of Minnesota Press.
3. Gasek, T. (2011). Frame-By-Frame Stop Motion: The Guide to Non-Traditional Animation Techniques.
4. Khattak, D. S., Ali, H., Khan, Y., & Shah, M. (2018). Color Psychology in Marketing. Journal of Business & Tourism, 4(1), 183–190. https://doi.org/10.34260/jbt.v4i1.99
5. Marks, L. (2002). Touch: Sensuous Theory and multisensory media. University of Minnesota Press.
6. Talaei, M. (2013). Study of Human Reactions than Color and its Effects on Advertising. International Journal of Accounting Research, 1(2), 18–26. https://doi.org/10.12816/0001130