Animation: From Black Screen to Green Screen
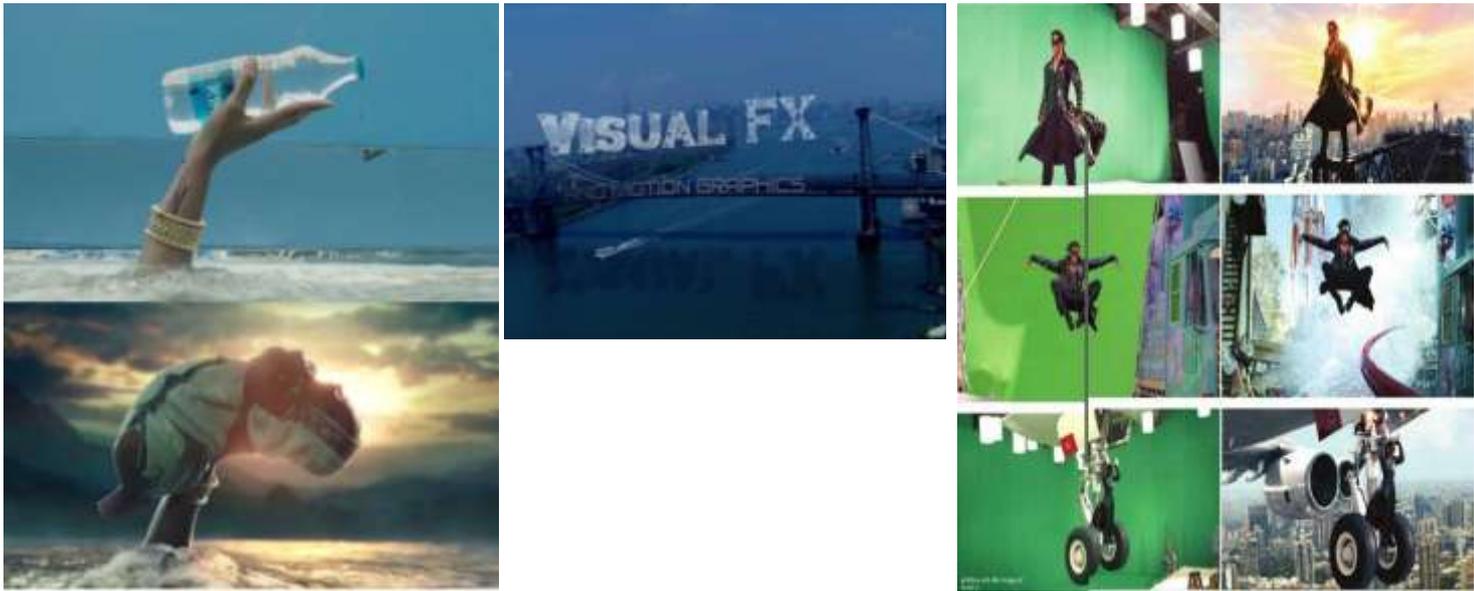
Deepak Sharma (Assistant Professor)
Animation department, Gyanarthi Media College, Kashipur.
Gyanarthi Media College, Kashipur.
Jaipur, India
deepaks.sharma20@gmail.com

Abstract— In my research proposal, this research is aimed to study the evolution of Green Screen/CHROMA and the techniques used for doing CHROMA. Second focus of the paper is to study the challenges faced by VFX industry in India.

Keywords- *Animation,VFX, Indian Film Industry, CHROMA, Green Screen.*

_____*****_____

I.   EVOLUTION OF GREEN SCREEN

A.   THE BLACK SCREEN

Georges Melies is known as the father of compositing green screen effect who discovered the technique of compositing background of a character with the help of matte in early's 18th century. He used matte technique to composite the film where he painted the glass block of the FRANCO so that no light would reach the film so it wouldn't get exposed.For each scene with different background the glass shot should have different paintings, but making of painting each time for different shot took time. So Norman Dawn solved the problem by painting the glass black treating the shot like a matte shot. Then the Matte transfer to second camera where Matte artists could take time for creating matte paintings.[3]

In 1918 Frank Williams introduced the travelling matte where in this process subject photographed against the pure white background. Then the film is copied to increasingly high contrast negatives until the black and white alpha is emerged. The black and white alpha is called the travelling matte. It's called the Williams process.[3]

B.   THE BLUE SCREEN
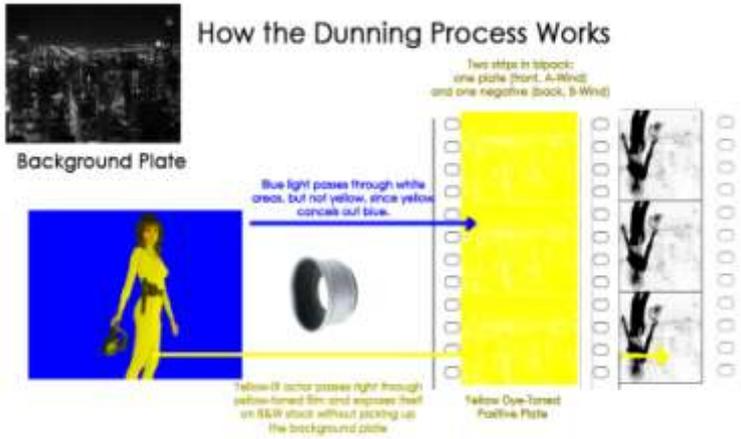
Then the blue screen came into being because the William process had the issue of shadow where the shadow on the subject was not visible due to high contrast.

Dunning process: It used the colored lights. The background turned to be blue and subject to be yellow. It was used in King Kong movie in 1933. They used dyes and filters to the travelling matte where light could be split apart. But it worked only with the black and white films.[3]
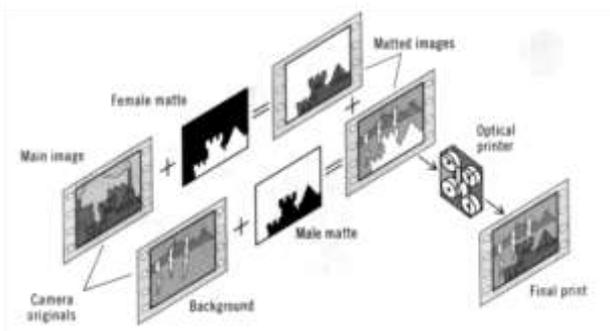

In 1940 Larry Butler came with the concept of techno color process he used blue color because the blue color was farthest away from skin tones and had smallest grains in the camera. He was first one to remove the subject from the background using optical printer which separated the blue color with Technicolor negatives.

C.   GREEN SCREEN

The introduction to digital camera with high resolution quality and better pixels mode took over the blue screen to green screen because green color contrast better than blue screen, it display brighter on electronic displays and worked well on outdoor keys. The modern digital cameras are much more sensitive to the green part of the light spectrum to pull the matte background from the subjects.Nowadays the software's like FCP, Premier and Adobe after Effects got fully controlled over CHROMA keying where the background is easily extracted by only one keying click.[3]

II.   BACKDAYS OF INDIAN CHROMA-
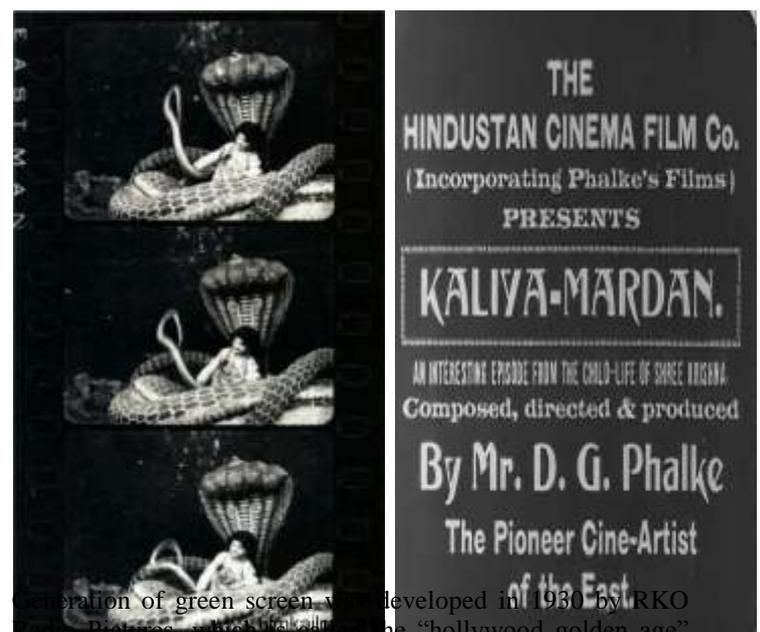
Generation of green screen was developed in 1930 by RKO Radio Pictures, which is called the "hollywood golden age" film studio.In the back days of Indian Animation Industry,

Indian Artists also chased the footsteps of Hollywood in terms of Black Screen and green Screen.The first movie kaliamardhan released in 1919 is an example of Black Screen used by bollywood artist Dada SahebPhalke, which included tremendous effects, a legend film of that time, which used the black screen effect.In 1913, Raja Harish Chandra released a silent movie, directed by Dada SahebPhalke which was a Marathi Film consisted of Motion Pictures and effects.Eventually with the growth in Indian Cinema the Black Screen turned into colored Blue screen to green screen. Now the Indian Cinema is turning on Green screen (CHROMA)[4]

In today's Animation world CHROMA is been used in every featured film, Advertisements and news channels. It has taken the electronic media to the next level of generation as CHROMA is been used from 19[th]century as discussed earlier. But in today's world's green screen is been used in post production where two videos are combined by making a range of color through keying process. The actor and actressperform in front of the green or blue screen, where the background is removed later with the help of the CHROMA software's.[4]

III. WHAT IS CHROMA KEYING
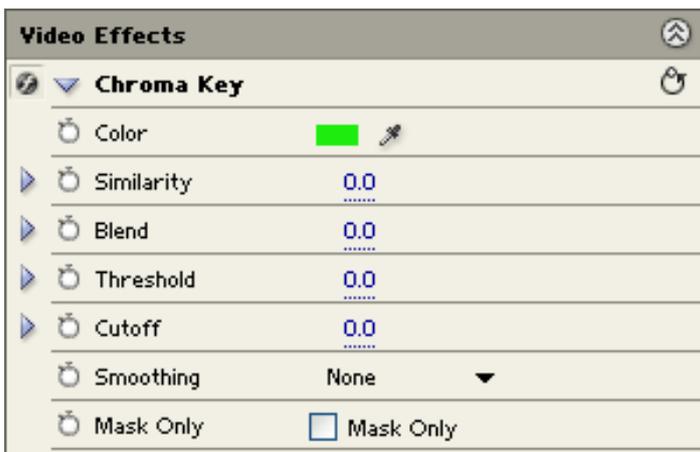
Extraction of a single color from the image by the mean software to make it transparent is CHROMA keying. It is sometimes called color keying also.Keying is done so that the single color gets isolated from the rest color of the images.

IV. WHY USED ONLY GREEN COLOR

Green and blue tone is not present in any skin tone. While keying on the CHROMA software you can extract any kind of color like Red, Yellow, Purple, Blue and green also. But green color is used because of its contrast. To isolate the character from the background the color must be distinctly differently and green color is usually not worn but in case of forest scene or environmental scene to be shot blue color screen is used because any color matching the background will key out and merges with the objects color to get transparent together. Blue color is less reflective to green color.

V. PROCEDURAL TO CHROMA

A. Need to setup a background
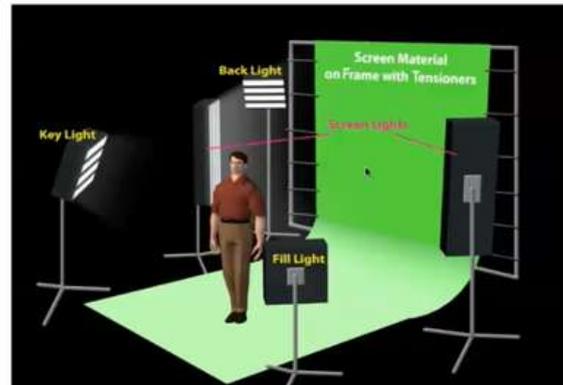
At first you need to setup the stage for your subject. You can use bright green or blue color depending upon the scene, usually green color cloth. Material is used for the CHROMA.

Remember avoid texture walls because it cause the shadows. Cloth you are using should be wrinkle free because wrinkle causes shadow and depth. Make sure your subject not wearing any siblings of green.

B. Setting up the CHROMA stage lights.
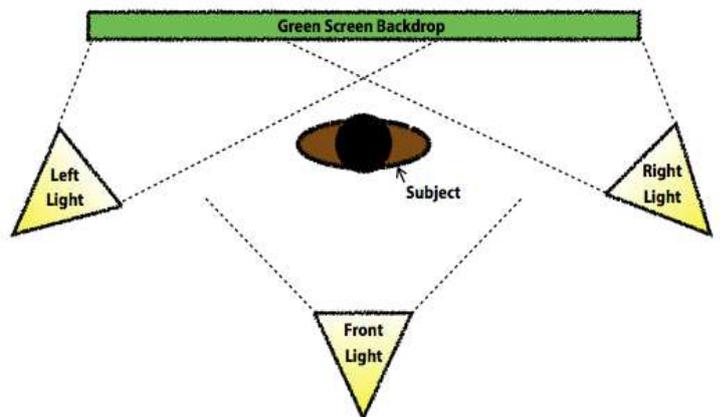
Smooth soft light set up is required for the CHROMA set up using of hard light create various variances in color that leads to gradient which tends to create difference in color mode. Hard sight creates a narrow and focused beams leading to hot spot in their centre. Hard light leaves the outer portions gradually darker so soft light are used.To the subject three point sighting is used, the key light and the fill light. The subject is independently subjected to light with few meters away from the green screen. This allows the shadows and reflection falling across it.Setting up the lights is the most crucial thing to achieve while shooting on a green screen because you have only one color to pick, not multiple CHROMA keys. You just have to pick one color and the background becomes transparent.

C. Setting up for Camera

Camera framing is the important object to look upon. Focus and framing of subject, while framing a character the subject hand or any body part doesn't move outside the green

background and camera view, And any shaken in camera position can create a jerk when doing compositing until and unless you are doing motion tracking to the subject to set up in the 3D environment.

Software Preferences

Once you shot the successful Chromatic movie the movie for the compositing and editing on software's like final cut pro, Adobe Premier, Adobe Outer effect. These softwares are well known for its CHROMA Keying.

VI. TODAY'S VIEW ON CHROMA INDUSTRY.

In order to enhance the natural surroundings, an increasing number of Bollywood films are relying on VFX as it is cost effective and produce good shots.

Movies like 'Life of *Pi'* **(2012)** and *'Prometheus'* **(2012),** *Baahubali* and *BajiraoMastani*, every effort was made to make this animation look real. Every shot required the exploration of art and was shot where natural and stunning scenes were given.

I personally believe VFX does have a future in India. Disney's **The Jungle Book (2016)**earned around Rs. 235 crores in the Indian market which was more than the ShahRukh Khan starrer **Fan (2016)** in the same period.

Beyond movies there is growing demand for locally produced Animation shows in the long run for eg: 'ChhotaBheem', 'MotuPatlu' and few others. As per FICCI Reprtlocal content has seen a shift as it contributes approximately 16 per cent of the total shows (third largest contributor) from 13 per cent in 2014.

Not only movies, Star Plus, Zee TV, Sony, &TV, Life OK and SAB have launched more shows that require the proficient use of VFX for adding better quality for better viewing experience. In 2015, few shows that successfully used this technology include *ChakravartinAshokaSamrat, Maharakshak Devi* with about 250 VFX shots which include chroma shots, 3D modeling, 2D animation and matte paintings. Other shows that use VFX are Star Plus's *SiyaKe Ram*, Colors's *Naagin* and a more recently launched show *JanbaazSindbad*, as per FICCI Report.[1]

VII. THE KEY CHALLENGES THAT THE VFX/CHROMA INDUSTRY IN INDIA CURRENTLY FACES ARE:-

Developed countries outsourcing VFX projects to low-cost ones have been significantly on the rise. The incentives provided by foreign government, grants, labour tax credits and subsidies to domestic companies engaged in VFX work thus are very low in India. Digital problems like hard costs of equipment, electricity, staff costs, rent, and even depreciation are some of the major hurdles faced by the VFX industry today.But we are trying to overcome the same as, Currently the VFX industry is estimated to be of Rs 43.5 billion and will get a significant increase by 2020 and is estimated to grow up to Rs 87.1 billion. One of the key developments for the growth of the industry, is the fact that government has finally stepped

in to improve the training and job facilities in such industries. For eg: The Karnataka Government has come up with setting up of a Centre of Excellence for promoting AVGC education in the State, The Maharashtra Government has also come up with a number of provisions in its IT/ITeS policy to promote this sector and will be setting up a Centre of Excellence with state-of-the-art facilities. The Telengana Government is also actively promoting this sector by the announcement of the incubation centre IMAGE (Innovation in Multimedia, Animation, Gaming and Entertainment) in Hyderabad. In the year 2015, bit of quality outsourcing work done by Indian studios, included *Chronicles of the Ghostly Tribe*, a Chinese action adventure film, was completed by Prime Focus World's Mumbai VFX team. Moving Picture Company (MPC) delivered most of the major visual effects work on *X-Men Apocalypse* out of its facility in Bengaluru.

With these upcoming and constantly growing key trends, it is quite explanatory that the animation and VFX industry in India has gained considerable impetus in the past years and definitely there is an ever increasing graph ahead in the future. Growth and progress are always marked with milestones thus; if the key challenges are tackled with wise measures then the pace of growth can be fastened with no paramount hurdle in its way.

VIII. SUGGESTION

We Indians need to focus for content development and franchise-building, innovation, quality development and managing economics and budgets.Government needs to revisit the archaic laws to make cinema more accessible to the audience.

"We are one of those best kept secrets. We do all this amazing work and no one knows about it," said BirenGhose, who runs the Indian subsidiary of US firm Technicolor, which includes the India-based animation units that worked on *Maleficent*.

References
[1] FICCI Report
[2] www.filmmakeriq.com
[3] http://filmmakeriq.com/lessons/hollywoods-history-of-faking-it-the-evolution-of-greenscreen-compositing/
[4] https://rupertwan.wordpress.com/my-research/history-of-green-screen/