**The History of Colour in Film**

Colour in film is an element in filmmaking that current audiences take for granted. But when colour was first being used in film, it revolutionised the industry like the addition of sound did. There is several process of film colouring that advanced and developed over the decades. The earliest form of colour was hand colouring. George Méliès had various sections of his pioneering short ‘A Trip to the Moon’ were hand painted, frame by frame, by women in Montreuil.

Another process of colour in the early 20th century was the stencil colour process. Pathé Frères introduced this type of colouring in 1905. This process, called Pathéchrome, involved sections of the film print being cut out by a pantograph, allowing for 6 colours to be added using dye-soaked rollers made out of velvet. This process was used throughout the 30’s and had 400 women working on the stencil process.

Tinting and toning were two other processes that were popular. Tinting involved the film base or emulsion being dyed which resulted in the film having a monochromatic colour. This means that the film had shades of limited colour or hues. Toning on the other hand replaced silver particles in the film with metallic salts and/or dyes. This would replace the dark shades of the image with colour. These two techniques of colouring were sometimes applied together and were used well into 40’s and the sound era.

Another technique was colour photography proposed by James Clerk Maxwell in the 1850’s. Then, between 1900 and 1935 there were many colour systems made but only a few were successful.

Additive colour was one of the successful systems and more practical because no special colour stocks were required. Mixing light of multiple colours creates additive colour; the primary colours used in the process were red, green and blue and colour filters were used on both the cameras and projectors. The recorded images had limited recording space because cameras could not record more than two strips of film resulting in early films consisting of only two colours, usually red and green or red and blue.

The other successful system was subtractive colouring. The first true system was the Kodachrome system. A colour was crated by dying the silver parts of film, which had been bleached away. The short film, ‘concerning $1000’ used this system. However this approach to colouring as not commercially successful and that led to William van Doren Kelley to invent the Prizma. Beginning as an additive colour system, Kelley reinvented the device as a subtractive system instead. Two films were shot at the same time; one strip being sensitive to red and orange and the other a cyan colour. The film negatives were printed on duplitized film and then emulsion was toned to the complimenting colour (red or blue).

One of the largest and most adapted motion colour process was that of Technicolour. Technicolour has been celebrated because of its rich and saturated levels of colour. This process was used to produce the first full colour motion picture that was a critical success ‘The Wizard of Oz’; hailed as a Technicolour masterpiece. Technicolour was mainly used to film musicals such as ‘Singin in the Rain’ but also animations like ‘Fantasia’ and ‘Snow White and the Seven Dwarves’. There were two different Technicolour, two-strip and three-strip Technicolour. Two-Strip Technicolour included 3 processes, the first of which used a prism beam splitter that exposed two frames of black and white negative at the same time. One frame was exposed behind a red filter and the second a green filter. However this became problematic, because a special projector was required when showing the film, the projector needed 2 different lenses for each colour to go through and then the images were aligned on screen by a technician. Because of the consistent need of a technician, only several frames from The Gulf Between exist using this process.

The Second process is virtually the same as the first process. The equipment and prism beam splitter were the same between the processes but instead of the two film negatives being aligned on screen during projection, the two different colour strips were printed onto separate negatives. Then, the strips were toned to the opposite colour present on the strip. Red on green and Green on Red. This process was successful but it faced technical problems. The image could not be focused properly at the same time, resulting in a slight blur in the projection. Also, each time the film was shown, the intense light would heat up each frame resulting in the frame to bulge slightly. Despite the frames cooling after, the bulge did not subside completely.

The third and final process for two-strip Technicolour was based on the Dye-Transfer technique. The process was the same as the previous process but instead; the red and green strips were printed onto gelatine prepared strips separately. Then, they were placed under UV lights that harden the gelatine and then the strips were soaked in the complimentary dyes, the gelatine would absorb the dye. Many films made using process 2 and 3 were lost when companies did not reclaim them during clear-outs to make room for new film prints.

Three-strip Technicolour enabled a full range of colours. This new camera shot three strips of film at the same time; a prism block beam splitter divided the passing light into two. One of the beams passed a green filter that blocks out red and blue colours. The second beam shone through a magenta coloured filter which blocks out the green colour. The former beam shone an image onto a panchromatic strip of film. The latter, shone an image onto a bipack strip of film which had two reels of film being run through the camera simultaneously. An emulsion on the film strips stopped blue light from reaching the panchromatic strip and was only recorded on the top strip of film and the bottom strip recorded red. All three films strips created a negative which was then used to print a superimposed dye, consisting of cyan, magenta and yellow, images on a single film strip. This created a full colour image when projected.

Colour became an important element in cinema and with the help of modern technology; colour in film is still being enhanced and experimented with. Using digital technology ‘Sin City’ was shown in black and white, however only certain colours would show up, enhancing the comic book style the film was imitating. Colour in film can be used to represent certain moods or carry a symbolic meaning i.e. The ‘Black Swan’ character Nina Sayers starts out in the film wearing pinks and whites, representing her childish side and as the film progresses and she becomes more unhinged, she wears greys and finally black when she becomes completely insane. These are just two examples of how colour has been improved and used in modern cinema.