The Department of English

RAJA NARENDRALAL KHAN WOMEN'S COLLEGE (AUTONOMOUS)

GOPE PALACE, MIDNAPORE, WEST BENGAL

Offers

BRIEF COURSE MODULE ON:

Evolution of the Cinema

(Section 2)

For

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Paper- SEC 2: Film Studies

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1. Colour Film:

Though early on, most movies were shot on black-and-white film stock, it was always possible to introduce colour to film; colour film has been around almost as long as moving pictures. Photographers in the nineteenth century had been retouching their black-and-white portraits and landscapes to make them look colourful and more realistic. So within a very short time after the invention of cinema, filmmakers started adding colour to their own film stock.

The various schemes for injecting pigment into the picture before the introduction of Technicolor include-i) Hand-colouring, ii) Stenciling, iii) Tinting and iv) Toning.

1.1 Hand-Colouring:

Hand-coloring was the earliest kind of film colouring technique. Painters coloured each part of each frame of each copy of the reel by hand. This labor-intensive technology was only possible because the earliest films were very short at length.

1.2 Stenciling:

Used in such landmark films as *The Birth of a Nation* (1915) and *Intolerance* (1916), stenciling was markedly easier than hand-coloring, though still very labour-intensive. Primarily used by the French Pathé company and marketed as PathéColor, it involved etching glass plates with the outline of the main photographic shapes, and then using these plates as master stencils, that covered portions of the film so that coloured dye could be applied to appropriate sectors of each frame.

1.3 Tinting:

The most common colouring technique was tinting. This relatively inexpensive way of producing colour in the film stock involved dyeing the entire frame of a shot or sequence to match the shot's mood or activity: a yellowish-sepia for a lantern-lit cabin, a lurid red for the flames of battle or hell, dark blue for night, and so on. This technique was used from very early on—in films like *The Great Train Robbery* (1903)—until relatively late, in productions like *Portrait of Jennie* (1948).

1.4 The Technicolour:

By 1929 there were more than 20 companies holding colour patents. Most of these methods, however, were very expensive because they tended to be extremely labour-intensive, requiring many workers in what amounted to an assembly line factory, painting each frame of each film—or portion of film—that was coloured. And the results were not as natural as audiences and the industry desired.

Technicolour had been invented and reinvented since 1916, when Herbert Kalmus cofounded the Technicolor Corporation. It was an unusual company in the Hollywood scene because, though a major player in the film industry, it was not (except very early in its career) a studio but an engineering firm. Except for some very early experiments it did not make films but hired out its technology and technicians. The Technicolour Corporation went through a two-strip additive process (mixing two colors on the screen for an approximation of the spectrum), and finally, in the 1930s, a three-strip subtractive process that

required a very expensive and temperamental camera through which three strips of film ran simultaneously, each emphasizing a different color of the spectrum.

Technicolour is the technology behind the classic colour films like *Gone with the Wind* (1939), *The Wizard of Oz* (1939), and *An American in Paris* (1951). But though representing the spectrum, Technicolor was not often used to represent "natural" colours. It was a world of heightened colours: the fantasy world of Oz, the romance world of *Gone with the Wind*, the cartoon world of Disney.

1.5 Post-Technicoluor Moves:

Though the results of Technicolour were spectacular, and added considerably to the production value of a film, it was a cumbersome and expensive technology. Further, the Technicolour Corporation insisted that a Technicolour expert be present in the filmmaking process, determining colour schemes and so heavily affecting the look of a film. The co-inventor's wife, Natalie Kalmus, was often used as this expert, and was sometimes seen as an unwanted kibitzer.

So, after Technicolour's supremacy in the 1930s and the 1940s, other companies came forward with easier technologies. By the 1950s, Eastman Colour's "monopack" color film contained all colour on one strip of celluloid, a much less cumbersome technology than Technicolour's three-strip process. In part because of Eastman Colour technology, and in part because of some government trust-busting of Eastman and Technicolour in the 1940s, a host of other colour companies emerged, beginning in the 1950s: DeLuxe, TruColour, and Warner Colour, for example. In fact, Technicolour went unused for several years in the 1960s, until resurrected in a spectacular manner by Francis Ford Coppola for *The Godfather* (1972).

2. Digital Age:

We all are living in an era where digital ends are dominating almost every sphere of our life. Digital technology has changed a lot about how the world works. In the Digital Age, physical borders and limitations mean very little. It changed the nature and scope of film making too.

2.1 Steadicam:

A renewed interest in film realism influenced motion picture technology during and after World War II. In order to afford greater versatility and mobility, filmmakers took to using smaller cameras that could shoot on location without tripods or heavy equipment. Shortly after World War II, director Morris Engel (1918–2005), whose low-budget films shot in New York City would later influence John Cassavetes, helped Charlie Woodruff to construct a portable 35mm camera that prefigured the Steadicam.

By the middle of the 1950s, cinematographer Richard Leacock (b. 1921) and sound recording specialist D. A. Pennebraker (b. 1925) innovated a portable 16mm synchronized-sound camera that rested on the operator's shoulder. These light and highly mobile sync-sound cameras were instrumental in renewing a movement in documentary filmmaking during the 1960s.

Filmmakers such as Shirley Clark, Robert Drew, and Frederick Wiseman helped popularize the 16mm cameras, which were famously used in productions such as *Primary* (1960) and *High School* (1968). Thanks to new developments in film technology, and inspired by new waves of

filmmaking around the world, including Italian neorealism and cinéma vérité, handheld cinematography became not only feasible but also popular in both documentary and narrative movie production.

Beginning in the late 1970s, the Steadicam offered a new means of shooting handheld while maintaining steadiness of image. The Steadicam is a mount that stabilizes the camera by isolating it from all but the cinematographer's largest movements. In addition to absorbing shocks from movement, the mount also continually keeps the camera at its center of gravity.

The Steadicam enabled filmmakers to shoot in tight spaces and accomplish difficult shots (such as circulars, extensive pans, and crowd scenes), while providing a degree of steadiness previously attained only by dolly shots or zooms. More recently, Hi-8 cameras, camcorders, and digital cameras have increased personal (and occasionally professional) handheld filmmaking practices.

Director Martin Scorsese and his cinematographer Michael Chapman used the Steadicam quite effectively in a famous sequence in *Raging Bull* (1980), in which the camera follows Jake LaMotta (Robert De Niro) as he winds through a throng of fans and reporters on his way to the boxing ring.

2.1 Digital-editing, technology and film making:

Computer- and digital-based filmmaking technologies have picked up where the Steadicam left off, allowing for even greater portability and image steadiness. In addition, these new technologies are able to heighten special effects, intermix digital or virtual domains with live action, convey scale, and reduce the labor necessary in setting up difficult shots and constructing complex settings. Indeed, the new age of cinema signals the end of perforated film strips, 35mm cameras, and editing methods that have remained largely the same since motion pictures were born. While many of these changes are yet to be standardized and institutionalized, the technology has been around in some form since the early 1980s.

Disney's *Tron* (1982) was the first movie to include high-resolution digital imagery, but it did so sparingly. Several years later, in 1989, James Cameron took the technology to a new level, intermixing live action and computer graphics in *The Abyss*. Cameron proved that computer-generated imagery (CGI) could add complex yet realistic special effects while remaining cost-effective (Cook, p. 955).

Cameron's success invited further experimentation with digital technologies. Since the early 1990s, many productions have implemented CGI in some form. Cameron created digital replicas of Miami as background in *True Lies* (1994). In *Star Wars: Episode 1, The Phantom Menace* (1999), George Lucas's crew shot every scene with computer-generated technology, simulating entire battle sequences with digitally designed extras multiplied to fill the screen. These effects are especially suitable for action-adventure films, of course, but they are being increasingly used across genres to reduce costs and save labor time. Like previous phases of film technology, the digital age of cinema has had to weigh the advantages of spectacle with more practical matters of efficiency, economy, and realism.

3. 3D Films:

The motion picture industry began taking shape in the late 19th and early 20th Centuries. Almost from the beginning, studios and filmmakers were searching for ways to display their movies in three

dimensions. 3D technology has added new paradigm in the art of film-making. The dominant technologies that we see in this era are Stereoscopic 3D, Space-vision 3D and Stereovision3D.

3.1 Stereoscopy or 3D imaging:

In 1840 Stereoscopy (3D imaging) is invented by Charles Wheatstone and used to view stills and make them seem to pop out at the viewer. The effect is usually produced by placing two images of the same subject inside a viewing box or Stereoscope - as introduced by David Brewster - which uses lenses to convert the images onto one another and allow the illusion to work. The idea is popularised by a famous 3D image of Queen Victoria on display at the Great Exhibition of 1851.

In 1890 British 3D pioneer William Friese-Greene files a patent for the first 3D motion pictures. His idea is for a stereoscope machine that rushes two strips of film through in synchronisation. The invention is successful but ignored for mass market because of being impractical for large scale theatre use.

3.2 'The Golden Era' of 3D Films(1952-53):

After a second lull in 3D film production, this time because of World War II, 3D films finally find their golden era as the cinema comes under threat from the invention of the television. With ticket sales plummeting from 90 million in 1948 to 40 million in 1951 , the industry looks for a new way to draw audiences back to the movies and Bwana Devil, as written and directed by Arch Oboler, is released heralding the new age. The film is shown in colour using the Land's two-print method with audiences wearing polarised light filter glasses and not the red/cyan anaglyph type mistakenly associated with this era.

In 1953, Warner Bros. releases House of Wax which becomes the first 3D film to come in stereo sound, but by the beginning of the following year 3D cinema's popularity begins to dwindle. The impracticalities of the medium become apparent. Audiences complain of eye strain and headaches when the projections are not aligned correctly. Worn copies of the film are difficult to repair with the two reels having to stay identical and often two projectionists are needed to play them. Worse still is that the silver screen has a poor viewing angle meaning that big films premiering in large theatres had to do so in 2D.

The final test comes with the release of Kiss Me Kate and the feedback concludes that audiences would rather see it in the flat. Finally, other innovations to lure people back to the cinema, such as the triple widescreen Cinerama, take over. The final full feature 3D film to go out is the Return of the Creature.

3.3 Space-Vision 3D:

After just one 3D film of note in the early 60s, Mask (1961), 1950's 3D pioneer Arch Oboler invents a single print solution to 3D film projection called Space-Vision 3D. The process involves having both images on the same strip with one on top of the other and an alternating polarisation lens on the front of the projector. The images are subsequently separated in the same ways as before with polarise filter

glasses. It's known as the "over and under" technique.

3.4 Stereovision 3D:

1970 Stereovision 3D is introduced and sees the two images squashed in side by side on the same reel instead of over and under. An anamorphic lens is put on the front of the projector to stretch the images and overlay them onto widescreen. The Stewardesses is released in this format costing just $100,000 to make and, grossing $27 million after showing at just 800 theatres, it becomes the most profitable 3D film of all time.

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*Note: I am hereby acknowledging my thorough indebtedness to the books, web links and portals referred in the preparation of the module. I would advise the students to go through these for better understanding of the issues discussed here.

Appendix

How Movies Went from Black and White to Colour

Christopher McKittrick

An often-repeated—but incorrect—bit of trivia is that 1939's "The Wizard of Oz" was the first full-colour movie. This misconception probably comes from the fact that the film makes great symbolic use of brilliant color film after the first scene is depicted in black and white.

Early colour film processes were developed very shortly after the motion picture was invented. However, these processes were either rudimentary, expensive, or both. Even in the earliest days of silent film, colour was used in motion pictures. The most common process was to use dye to tint the color of certain scenes — for example, have scenes that occur outside at night tinted a deep purple or blue color to simulate the nighttime and to visually distinguish those scenes from ones that took place inside or during the day. Of course, this was merely a representation of colour.

Another technique utilized in films like "Vie et Passion du Christ" ("Life and Passion of the Christ") (1903) and "A Trip to the Moon" (1902) was stenciling, in which each frame of a film was hand-coloured. The process to hand-colour each frame of a film—even films much shorter than the typical film of today—was painstaking, expensive, and time-consuming. Over the next several decades, advances were made that improved film colour stenciling and helped to speed the process, but the time and expense that it required resulted in it being utilized for only a small percentage of films.

One of the most important developments in colour film was Kinemacolor, created by Englishman George Albert Smith in 1906. Kinemacolor movies projected film through red and green filters to simulate the actual colors used in the film. While this was a step forward, the two-colour film process did not accurately represent a full spectrum of colour, leaving many colours to appear either too bright, washed out, or missing entirely. The first motion picture to use the Kinemacolor process was Smith's 1908 travelogue short "A Visit to the Seaside." Kinemacolor was most popular in its native U.K., but installing the necessary equipment was cost prohibitive for many theaters.

Technicolor:

Less than a decade later, U.S. company Technicolor developed its own two-colour process that was utilized to shoot the 1917 movie "The Gulf Between"—the first U.S. colour feature. This process required a film to be projected from two projectors, one with a red filter and the other with a green filter. A prism combined the projections together on a single screen. Like other colour processes, this early Technicolor was cost prohibitive because of the special filming techniques and projection equipment it required. As a result, "The Gulf Between" was the only film produced using Technicolor's original two-colour process.

During the same time, technicians at Famous Players-Lasky Studios (later renamed Paramount Pictures), including engraver Max Handschiegl, developed a different process for colouring film using dyes. While this process, which debuted in Cecil B. DeMille's 1917 film "Joan the Woman*,"* was only used on a limited basis for about a decade, the dye technology would be utilized in future colorization processes. This innovative process became known as the "Handschiegl colour process."

Colour movies were being created more than 35 years before "The Wizard of Oz!" In the early 1920s, Technicolour developed a color process that imprinted the colour on the film itself—which meant it could be exhibited on any properly-sized film projector (this was similar to a slightly earlier, but less successful, color format called Prizma). Technicolour's improved process was first used in the 1922 film, "The Toll of the Sea." However, it was still expensive to produce and required much more light than shooting black and white film, so many films that used Technicolour only utilized it for some short sequences in an otherwise black and white movie. For example, the 1925 version of "The Phantom of the Opera" (starring Lon Chaney) featured a few short sequences in color. In addition, the process had technical issues that prevented it from widespread use.

Three-Colour Technicolour:

Technicolour and other companies continued to experiment and refine color motion picture film throughout the 1920s, though black and white film remained the standard. In 1932, Technicolour introduced a three-colour film utilizing dye-transfer techniques that depicted the most vibrant, brilliant color on film yet. It debuted in Walt Disney's short, animated film, "Flowers and Trees*,"* part of a contract with Technicolor for the three-color process, which lasted until 1934's "The Cat and the Fiddle," the first live-action feature to use the three-colour process.

Of course, while the results were terrific, the process was still expensive and required a much bigger camera to shoot. In addition, Technicolour did not sell these cameras and required studios to rent them. Because of this, Hollywood reserved colour for its more prestigious features throughout the late 1930s, the 1940s, and the 1950s. Developments by both Technicolour and Eastman Kodak in the 1950s made it much easier to shoot film in color and, as a result, much cheaper.

Color Becomes Standard:

Eastman Kodak's own color film process Eastmancolor rivaled the popularity of Technicolor, and Eastmancolor was compatible with the new widescreen CinemaScope format. Both widescreen film and colour movies were the industry's way of battling against the growing popularity of the small, black and white screens of television. By the late 1950s, most Hollywood productions were being shot in color—so much so that by the mid-1960s new black and white releases were less a budgetary choice than they were an artistic choice. That has continued in the subsequent decades, with new black and white movies mainly appearing from indie filmmakers.

Today, shooting on digital formats renders colour film processes nearly obsolete. Still, audiences will continue to associate black and white film with classic Hollywood storytelling and also marvel at the bright, vibrant colours of early colour movies.