

Two-Color Technicolor, *The Black Pirate*, and Blackened Dyes

In 1923 Cecil B. DeMille had complained that “color movies diverted interest from narrative and action, offended the color sensitivities of many, and cost too much.”¹ For DeMille, color—even “natural” color processes like Technicolor—was a veil that concealed the all-important expressions on an actor’s face. Yet DeMille was attracted to color and repeatedly employed it in his films of the 1920s, combining tinting and toning with footage either in Technicolor or in the Handshiegl process. Douglas Fairbanks voiced a similar objection to color, likening its use to putting “rouge on the lips of Venus de Milo.”² Fairbanks argued that color took “the mind of the spectator away from the picture itself, making him conscious of the mechanics—the artificiality—of the whole thing, so that he no longer lived in the story with the characters.”³ At the same time, color motion pictures were said, by their critics, to cause retinal fatigue.⁴ Fairbanks had once written that color “would tire and distract the eye,” serving more as a distraction than an attraction.⁵

Indeed, a few years later, before deciding to make *The Black Pirate* (1926) in two-color Technicolor, Fairbanks hired two USC professors, Drs. A. Ray Irvine and M. F. Weyman, to conduct a series of tests to ascertain the relative amount of eye fatigue (as well as nausea and headaches) generated by viewing black and white vs. color films. Fatigue was calculated in terms of the decline in the viewer’s visual acuity as a result of these screenings. Those results were then, in turn, compared to the loss of acuity resulting from reading a book.⁶ These researchers discovered that viewers experienced a greater drop in visual acuity after viewing black and white as opposed to color films—and that reading a book for half the time spent watching a film resulted in even greater eye strain.⁷

Technicolor was so pleased with this report that its head of research in Boston, Leonard Troland, quoted it in an essay he wrote in an effort to combat arguments associating color film with retinal fatigue.⁸ Arguing that “natural colors [are not] any more responsible for ocular discomfort on the motion picture screen than [are colors] in every-day life,” Troland pointed out that color motion pictures actually reduced eye strain in comparison with black and white motion pictures.⁹

The test conducted by Fairbanks’ eye doctors assuaged his doubts about making a film in color. In spite of his initial reservations about color, Fairbanks felt that a pirate film ought to be made in color, arguing that “color is the very theme and flavor of piracy.”¹⁰ Even so, before Fairbanks began actual shooting on *The Black Pirate*, he conducted a series of color tests that lasted for six months and cost over \$125,000.¹¹ The tests included filming a series of sets painted different colors, ranging from blue, green, and pink to lavender, orange and mauve to see how they would look in two-color Technicolor. Similar tests took place to gauge

the color of costumes and make-up.¹² It was during this period that Fairbanks hired Drs. Irving and Weyman to conduct their experiments on color film and eyestrain. Fairbanks also engaged in lengthy discussions during pre-production with Herbert Kalmus, the president of Technicolor, regarding various color keys in which the film might be shot. Each key represented a different degree of color saturation from highly desaturated to highly saturated.¹³ Fairbanks chose to employ a highly restrained color key. Fairbanks' director, Albert Parker, explained the rationale behind this. From a study of Dutch paintings from the late 17th century—the era in which the film was set¹⁴, they concluded that the so called “color harmony” that they possessed resulted from no one color standing out in relation to the other colors. All the colors worked together in harmony. In other words, they sought a color quality that was more monochromatic than polychromatic. Fairbanks was also influenced by the color illustrations in Howard Pyle's *Book of Pirates* (1921).¹⁵ Pyle's drawings were also the inspiration for the sketches made by Swedish landscape artist Carl Oscar Borg that were used to design the production.¹⁶

Fairbanks understood the limitations of two-color technology and that also played a major role in this decision. The inability to two-color Technicolor to reproduce the full color spectrum, in particular, its inability to reproduce blue, purple or yellow, was in itself a narrowing of the color range. Two-color Technicolor was limited to red and green. Fortunately, red and green were able to reproduce acceptable flesh tones, a factor that somewhat compensated for the problems cited above. Troland discussed two-color Technicolor's rendition of flesh tints as one of its chief virtues, giving it an edge over black and white: “Another important case in which color adds realism is one which is practically universal in motion pictures. This consists in showing *flesh tints* in their normal hues and saturations. It is needless to say that proper rendering of flesh tints is a primary requisite of any color process, whether it use the two or three-color principle. In practice it is not difficult to get theoretically perfect flesh values on a two-color basis; in fact, it is much easier technically than in the case of a three-color system. Of course, there are many different flesh tints, ranging from the darkest negroid to the palest Caucasian, and this variation of flesh color is by no means without bearing upon the story-telling aspect of the pictures. The black and white picture is powerless to show the significant difference between the deep bronze tan of a rough outdoor character and the delicate bloom of the ideal heroine's cheeks. It cannot show a man either as red-faced or as ‘getting red in the face.’ The fact that we can witness a motion picture presentation without being positively annoyed by the imperfection and unnaturalness of black and white flesh values bears witness to the extent to which mental adaptation is possible.”¹⁷ Indeed, Technicolor's initial efforts at both two-color and three-color motion

pictures displayed its ability to capture a variety of skin tones, ranging from the Chinese-American coloring of Anna May Wong in *The Toll of the Sea* (1922) to the Latin look of Stefi Duna in *La Cucaracha* (1934), who was not Latin but Hungarian by birth. Duna's co-star, Don Alverado, was an American of Mexican extraction.

But the inability of two-color Technicolor to render blue or yellow remained a problem, especially in a film that required extensive shots of the sea and the sky. Fairbanks decided to work within Technicolor's more limited palette by using primarily brown and green shades and avoiding the brilliant greens or reds that were possible with Technicolor.¹⁸ Blue skies were impossible so Fairbanks and his art directed opted for white skies with "a tinge of warm brown."¹⁹ The seas were green. Red was kept to a minimum—there was a flash of red when one of the powder magazines exploded.²⁰ As Parker said, these decisions to narrow the color palette amounted to "taking the color out of color."²¹

The first step in attempting to control the film's color involved limiting the range of color placed in front of the camera. In a memo to Troland, Arthur Ball, head of research for Technicolor in Los Angeles, explained that "in the case of the "Black Pirate" the pressure from [Fairbanks] was all to remove color from in front of the camera." Ball went on to point out "that many directors are afraid of color, feeling that it presents too many additional problems in composition, good taste, etc. This frame of mind is greatly eased if the maximum obtainable color is not excessive. It gives them the feeling that they can't go far wrong. I am quite persuaded that at the present time dilution of color as a motive in itself is correct. As color gets more and more used so that we no longer have to contend with the novelty reaction and when producers get greater familiarity with it and lose their fear, we can then, of course, afford to raise the limits gradually." Though Technicolor was clearly delighted to have a major filmmaker such as Fairbanks making a big picture in their process, they clearly worried that, by "taking the color out of color," Fairbanks was engaging in a "dilution" of their product.

The next—and final—step in controlling the film's color came in the printing process in which Ball pioneered the use of so-called "blackened dyes," color dyes that had been mixed with black dye to "modulate" or limit their brilliance. Troland initially objected to the dilution of color that resulted from this procedure. Ball wrote Troland to explain his use of blackened dyes to provide Fairbanks with the color key he desired. "In the general matter of color dilution," he wrote, "I personally do not like the "Black Pirate" as well as I would if more color had been used; however, we must admit that it is the first color picture which has not raised the hue and cry that color interfered with the drama. It is very important to have cut under this criticism and to build up under it gradually. If,

however, the "Black Pirate" had not taken at the box office we would, indeed, have been undone."²²

Kalmus also wrote to Troland, making the case for blackened dyes. Kalmus pointed out that "The flesh tints seem to have an added smoothness and a better color value because the over- all redness is entirely or largely removed. This triple transfer product does have the reddish and purplish hue removed, is not less sharp in detail than the best double transfer IB thus far received and altogether indicates the characteristics which the black dye gives to the regular process. In fact, we are considering showing Mr. Fairbanks this triple transfer product to the exclusion of everything else for the present." . . . "Another point which is very striking to me is the extreme difference in clearness of facial expression on the screen between two prints, both made by the regular process at about the same time, but from different negatives. I have just viewed some [. . .] scenes recently photographed here, which were printed using the new black dyes, and which show a lack of graininess, a smoothness of texture and an apparent sharpness and clarity of faces which is highly satisfactory, although the faces in question are for –the most part not large close-ups."

The "triple-transfer process" that Kalmus mentioned to is a reference to experiments that Troland was conducting in the Boston lab which involved his use of Ball's new blackened dyes in imbibition printing. Though imbibition printing had not yet been perfected, Troland had made a few IB prints of *The Black Pirate* which were comparison-tested with the cemented prints. Ball and Troland referred to the use of black dyes for imbibition printing as the "triple transfer process." To the standard dye transfer process a third step was added. In addition to transferring the appropriate color dyes onto blank film using the "red record" and "green record" matrices, one of those matrices was used to transfer black dyes onto the blank as well, functioning to both improve the definition of the image and darken it at the same time.

After the release of *The Black Pirate*, Ball sought to reassure Troland that his goal to achieve accurate color reproduction was shared by Kalmus and himself and that the use of blackened dyes was a necessary step in the process of converting a major filmmaker such as Fairbanks to Technicolor. Ball explained that "it is impossible to interest anyone in Hollywood in making a picture entirely in color in the key which you and others in Boston like. There is an important difference in the point of view. You are looking at pictures as things in themselves, whereas producers, directors and other people out here look at our pictures as a means of conveying dramatic expression. The reaction on this point is so general throughout the industry that it must be recognized; it certainly cannot be ignored. The problem has been to find a superior method to that employed by Fairbanks. I am sure we have that in the color modulation principle At any rate, you must

bear in mind that you and Keininger and Oates are looking at color pictures continually and analyzing them for their color effect alone, whereas people out here in the industry and, to even a greater extent, the public see color pictures only occasionally and they look at all pictures (except scenics and the like) for the purpose of absorbing their dramatic content or of judging them as conveyors of dramatic interest. Possibly you realize all this, but perhaps you argue that there is no real psychological connection between the two. To this I would reply that, while we are in the novelty stage, there is at least an apparent psychological connection and that the industry is so conscious of it that it must be recognized.”²³

Admitting that color dilution might hamper efforts to display the full range of color that Technicolor could handle, Ball argued that blackened dyes were a necessary step in reaching their ultimate goal. He said, “Fairbanks’ approach to the matter has been entirely reversed; whereas, in the case of the “Black Pirate” the pressure from him was all to remove color from in front of the camera, he is now [in his color tests for *The Gaucho*] putting color into the scene. This insures that color values get into the negative. The extent to which these color values will be restrained in making the prints is then open to discussion and experiment. Furthermore, it eases up the production problem in that color can be used more freely in the scene, which is quite essential in the type of picture he is now planning. It will further enable him to possibly adjust the key of color in different sequences as he would the tempo of action. In summary then, Fairbanks, instead of approaching the matter with a negative and critical manner, approaches it in a positive and enthusiastic manner with full confidence in our ability to control the situation as he may desire. The importance of this cannot be over-stressed. I think we now have a good chance of landing his next picture; whereas, without the blackened dye control we would have had a rather small chance.”²⁴

And, although the restrained palette of *The Black Pirate* earned it singular praise from critics and from members of the film industry, Technicolor quickly reverted to what Scott Higgins, in his book on 1930s Technicolor referred it as the “display mode,” which was designed to display what the process could do by showcasing its full range of hues and saturations. In its return to a display mode, two-color Technicolor necessarily continued in its novelty phase. And, as long as it remained incapable of reproducing one-third of the full color spectrum and as long as Hollywood continued to resist the conversion to color, two-color Technicolor would remain nothing more than an occasional attraction in an industry that was becoming a montage of attractions with its on-going experiments involving the combination of silent black and white images with those in sound, color and widescreen .

Debates over color aesthetics were not the only problems faced by Technicolor during this period. Technological problems also made producers

reluctant to use the process. Several major problems hampered the release of *The Black Pirate*. Lab capacity limited the number of prints that could be made available, thus reducing profits. Lab costs remained quite high, cutting in to any profits a Technicolor film might make. For example, although *The Black Pirate* did quite well at the box office, earning over \$1.73 million, it proved to be the second weakest-performing Fairbanks picture (after the exorbitantly expensive *Thief of Baghdad*) due to the added expenses of color. Cemented two-color prints ran about 16 cents per foot.²⁵ It would not be until the widespread use of imbibition printing in 1928 that this price could be brought down to from eight to ten cents per foot. As a consequence of Fairbanks' decision to shoot in color, the film's budget came to \$676,886 with individual prints costing three times that of black and white prints.²⁶

At the same time, cemented prints suffered from emulsion scratches and cupping. Since the emulsions were on the surface of both sides of the film, they could be more easily scratched than black and white film. In dry or wet climates, the cemented prints separated or cupped which caused them to go out of focus. Cupped prints had to be returned to the laboratory for re-humidification, a process which de-cupped the print.²⁷ This problem would also only find its solution with the advent of imbibition printing.

But *The Black Pirate* remains an outstanding milestone in the history of color filmmaking. It provides a stunning example of a studio-produced film that was designed with color in mind in which color was not thought of as an attraction or employed to display color as such, but was carefully integrated into the story. In these respects, the film was years ahead of its time, anticipating the "restrained mode" that Scott Higgins writes about in connection with certain Technicolor films of 1936 and later. Though its dilution of color through the use of blackened dyes ran counter to Technicolor's eagerness to display the full spectrum of color that its two-color technology was capable of, it demonstrated that color could be made subservient to story and thus paved the way for color's gradual evolution from novelty to norm.

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- ¹ Cited in Robert Nowotny, *The Way of all Flesh Tones: A History of Color Motion Picture Processes, 1895-1929*. New York: Garland, 1983: 220.
- ² Dunham Thorp, "How Fairbanks Took the Color out of Color," *Motion Picture Classic* (1926): 29.
- ³ Edwin Schallert, "Yo, Ho, and a Bottle of Rum," *Picture Play* 1926?: 17.
- ⁴ The Film Spectator, "Exploding Myths about Making Colored Pictures," April 28, 1928: 5.
- ⁵ Quoted in Jeffrey Vance, *Douglas Fairbanks*. Berkeley: University of California Press, 2008: 204
- ⁶ James Layton and David Pierce, *Dawn of Technicolor: 1915-1935*, Rochester, NY: George Eastman House, 2015: 128-129. See orig. in Kalmus, 570.
- ⁷ A. Ray Irvine and M. F. Weyman, "The Effect on Visual Acuity of Viewing Motion Pictures," *Journal of the American Medical Association* (October 1926): 1123.
- ⁸ L. T. Troland, "Some Psychological Aspects of Natural Color Motion Pictures," *Transactions of the Society of Motion Picture Engineers* XI, No. 32 (1927): 693.
- ⁹ Troland, 693.
- ¹⁰ Layton and Pierce, 128.
- ¹¹ Thorp, 29. Layton and Pierce, 129, 130.
- ¹² Schallert, 17.
- ¹³ Kalmus, "Adventures," 570.
- ¹⁴ "The Black Pirate" entry by David Pierce, *Le Giornate del Cinema Muto* 33, Pordonone, 4-11 Ottobre 2014: 102.
- ¹⁵ Layton and Pierce, 129.
- ¹⁶ Layton and Pierce, 131.
- ¹⁷ Troland, 687.
- ¹⁸ Schallert, 17. See also Thorp, 28.
- ¹⁹ Thorp, 28.
- ²⁰ Thorp, 87.
- ²¹ Thorp, 28.
- ²² Ball to Troland, January 5, 1927, Troland memos, Technicolor Corporate Archive, George Eastman House.
- ²³ Ball to Troland, July 13, 1927. Troland memos, Technicolor Corporate Archive, George Eastman House.
- ²⁴ Ball to Troland, March 18, 1927. Troland memos, Technicolor Corporate Archive, George Eastman House.
- ²⁵ Layton and Pierce, 105.
- ²⁶ Layton and Pierce, 170.
- ²⁷ Layton and Pierce, 140-141.