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Moving Image and Sound: Basic Issues and Training

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Ferrania: The History and Legacy of Italian Film Manufacturing

Discussions surrounding midcentury moving image color film concern themselves primarily with the tower giants of Kodak and Technicolor, but the twentieth century saw numerous other film manufacturers and processes rise and fall, including companies outside the United States. Italy laid claim to their own, a manufacturer called Ferrania that today exists primarily as a footnote in these conversations—frequently lumped together with Agfa and Pathé as one of several European manufacturers.¹ In reality, Ferrania and its color moving image film branded as Ferraniacolor (the name itself referred to all color films produced by the company, both moving image and still) attained significant successful within Italy, yet struggled to do so on a global level.² While very little comprehensive English-language research exists on the subject of Ferrania film, the company itself has a long and storied history within its country of origin, one evocative of a postwar era in which the nation was grappling with economic and identity issues. Even today, Ferrania’s name and legacy holds significant weight within Italy, so much so that in 2013, two Italian businessmen launched a startup to resurrect film manufacturing in the province of Savona, using Ferrania’s name, factory equipment, and chemical formulas.³ This research effort brings together materials from trade publications, government records, memoirs, and studies of both the history of photography and Italian cinema history to form a

¹ Karen F. Gracy, “The Evolution and Integration of Moving Image Preservation Work into Cultural Heritage Institutions” in *Information & Culture* 48, no. 3, (2013): 371.

² Roderick T. Ryan, *A History of Motion Picture Color Technology*, New York: The Focal Press, 1977, 206.

³ “About,” *FILM Ferrania*, 2016, <http://www.filmferrania.it/#about-section>.

cohesive record and analysis of Ferrania's place within the larger context of European and twentieth-century photographic materials, with specific attention paid to their midcentury 35mm moving image color process, Ferraniacolor.

The Ferrania Company in the 20th Century

The company was named for the small town of Ferrania in the province of Savona, located within the northern Italian region of Liguria. To this day the Ferrania campus and factories remain in their titular village, including both that of industrial chemical producer Ferrania Technologies and the new incarnation of FILM Ferrania.⁴ Though sources conflict on the initial founding of the company, Ferrania has its roots in the production of explosive powders used in World War I, but ultimately made the switch to photographic and industrial film in 1923, using leftover stockpiles of nitrocellulose from the war.⁵ During the reign of fascist dictator Benito Mussolini, Ferrania became the compulsory film product for Italian photographers and filmmakers, and it was only after the war that the company's products became a choice for users.⁶ From this point onward until the early 21st century, Ferrania produced and exported film for a variety of personal and professional uses, cementing their legacy as a worldwide manufacturer.

Though the company's origins can be traced to World War I and the interwar period, Ferrania truly came into its own as a company after World War II, during the era known as the

⁴ "The Sensitive Factory: Ferrania 1917-2017," *Platform: Architecture and Design*, January 29, 2016, <http://www.platform-ad.com/the-sensitive-factory-ferrania-1917-2017/>.

⁵ Assanti, Paola, "Ferrania," *Storia della fotografia*, February 17, 2010. <http://www.storiadellafotografia.it/2010/02/17/ferrania/>

⁶ David Sax, *The Revenge of Analog: Real Things and Why They Matter*, New York: PublicAffairs, 2016, 53-54.

“Italian economic miracle.” Historian Vera Zamagni writes of the time in *The Economic History of Italy, 1860-1990*,

Industry, new constructions, exports, and investment all grew at a rate of between 9 and 11 per cent a year, thus increasing the industrial character of the country’s economic system, and opening it up further to exchange with other economies. The bigger companies, which had up to then been so only in relative terms, finally began to take on the size which had until then been only a dream.⁷

One of these bigger companies was Ferrania, who by 1964 had opened factories in Milan and Argentina, and employed over five thousand workers.⁸ This postwar period saw the rise of Ferrania exports, and with Europeans and Americans alike vacationing in Italy once again, Ferrania still 35mm and 120 film became attractive options for tourists. The company’s consumer-ready still film was unique in that the price included processing charges, which required purchasers to mail their unprocessed film to the Milan factory for processing rather than using an independent lab of their choice. A 1956 issue of American magazine *Popular Photography* reported that Ferrania’s 35mm reversal still color film (known as Ferraniacolor) closely resembled the American-produced Anscochrome color film, albeit with slightly higher contrast.⁹ It was during this same era that the company produced their 35mm moving image film also known as Ferraniacolor, a process which will be discussed further.

At the height of their global influence in 1964, the Minnesota Mining and Manufacturing Company—also known as 3M—purchased the entire Ferrania company. The entire company was purchased in exchange for \$50 million worth of 3M stock, but it was not Ferrania’s consumer film that 3M found most alluring.¹⁰ *Business Screen Magazine* reported at the time of

⁷ Vera Zamagni, *The Economic History of Italy, 1860-1990*, Oxford: Clarendon Press, 1993, 338.

⁸ “Minnesota Mining To Acquire Italian Photography Firm,” *Wall Street Journal* (New York). June 4, 1964. 3.

⁹ George Ashton, “European Color Films,” *Popular Photography* (New York), June 1956, 134.

¹⁰ “Minnesota Mining To Acquire Italian Photography Firm.”

the deal, “The primary value of the acquisition will be in photographic products for industrial markets,” referring to Ferrania’s output of products such as X-ray film and microfilm.¹¹ 3M sought to expand their global reach while also bringing Ferrania’s products to greater prominence within the United States. At the time of the exchange, Ferrania employed over five thousand workers, primarily in Italy but also in Argentina, the location of a major manufacturing plant. This 1964 transaction came on the heels of another by 3M, their acquisition of Dynacolor Corporation one year prior. Dynacolor, an amateur color film manufacturing and processing operation, marked the start of 3M’s foray into film and served as a precursor of sorts to the Ferrania acquisition, the largest in 3M’s history to that point.¹²

The Ferrania-3M deal was met with some trepidation from the Italian public and particularly among those thousands of workers employed by Ferrania at the time. As a publicly traded company with a strong corporate culture and national identity, there was fear among workers that the change would result in unfortunate consequences. Former employee of 3M-Italy Toni Muzi Falconi states in his memoir, “3M’s acquisition had raised preoccupations in the Italian cultural community as Ferrania was one of the very few companies directly involved in stimulating and supporting Italian film and photography.”¹³ Although the transaction facilitated significant research and development opportunities for the Italian company, those fears were not unfounded—as the 3M deal also led to a gradual decline of global name recognition and

¹¹ “3M Company Acquires 100% Ownership of Ferrania, S.p.A.” *Business Screen Magazine* (Chicago) 25, no. 4. 1964. 14.

¹² “Minnesota Mining To Acquire Italian Photography Firm.”

¹³ Toni Muzi Falconi, *Glow Worms: Biased Memoirs of a Global Public Relator*. Lulu Press, Inc., October 12, 2014. eBook.

influence for the Ferrania brand, per FILM Ferrania’s publicly-accessible company history webpage.¹⁴

Until the restructuring of 3M in the late 1990s that resulted in the dissolution of the partnership, Ferrania’s presence in the United States as a manufacturer of consumer film was relegated to producing generic store brand still film for grocery stores, pharmacies, and discount stores.¹⁵ Perhaps unsurprisingly, Ferrania failed to break through to mainstream United States motion picture filmmaking, due to several factors including a series of disputes between Hollywood studios and Ferrania during the 1950s, as well as 3M’s stated focus on industrial rather than consumer film products, and finally, Kodak’s stranglehold on U.S. large-scale film production. The Ferrania company went declared bankruptcy in 2003, and the Savona factory produced its last roll of film in 2011.¹⁶ As will be discussed in greater detail, a recent business effort has reignited the Ferrania name and legacy, as a result of the crowdfunding effort to begin reproduction of still and moving image film within Italy.

35mm Moving Image Ferraniacolor

Though the initial release date of 35mm moving image Ferraniacolor remains unclear—with various sources claiming 1941, 1947, 1949, 1950, and 1952 as accurate—the product soon infiltrated the Italian film market and gained a small measure of success elsewhere in Europe, reaching its height of popularity in the mid-1950s.¹⁷ Existing research on Ferraniacolor moving

¹⁴ “From Bombs to Bombshells,” *FILM Ferrania*. September 11, 2014.
<http://www.filmferrania.it/news/bombs-to-bombshells>

¹⁵ Ibid.

¹⁶ Sax, 55-56.

¹⁷ Sabrina Negri and Luca Giuliani, “Do you have any 16mm nitrate films in your collections? The Case of Ferrania materials in the San Paolo Film Collection at the Museo Nazionale del Cinema in Turin,” *Journal of Film Preservation* 86 (2011): 36.

Assanti.

Barbara Flueckiger. “Ferrania color / Ferraniacolor / 3M color.” *Timeline of Historical Film*

image film is scarce and murky, as it is often unclear whether sources are discussing the moving image color film or one of their still color films which were also branded as Ferraniacolor. After their deal with Ferrania, 3M made efforts to refine their newly-acquired color process (including a failed effort in 1968 in which a separate developer was needed for the optical sound track), but the process once known as moving image Ferraniacolor never succeeded in breaking through to filmmaking in the United States, and had all but dissolved by 1968.¹⁸

Technologies confiscated in the aftermath of World War II enabled numerous color films to flourish in the following years. Ferraniacolor was one of these, operating on principles originally found in the German process Agfacolor.¹⁹ Unlike Technicolor's famed three-strip process, Ferrania used single-strip film for their color effort. Ferraniacolor was a subtractive three color process, where layers of cyan, yellow, and magenta dye filtered colors from white light to produce a color image on the film.²⁰ In this process, the dye couplers were incorporated into the film itself, and Ferrania produced both three-color negatives and three-color print films which could be used either separately or together.²¹ Using triacetate 35mm stock from its inception, Ferraniacolor's initial releases lacked sensitivity, and the process of developing negatives required twelve steps.²²

Colors. <http://zauberklang.ch/filmcolors/timeline-entry/1312/>

H. Mario Raimondo-Souto, *Motion Picture Photography: A History, 1891-1960*, Jefferson, NC: McFarland, 2007. 274.

Ryan, 206.

James L. Limbacher. *Four Aspects of the Film*. Manchester, NH: Ayer Company Publishers. 1968. 65.

¹⁸ Ryan, 206-211.

¹⁹ Limbacher, 65.

²⁰ Flueckiger.

²¹ Ryan, 206.

²² Raimondo-Souto, 274.

The first feature film to utilize Ferraniacolor was the Italian film *Totò, a Colori*. While the process had been used experimentally in numerous shorts and documentaries, this film starring Italian comedian Totò brought Ferraniacolor to mass audiences for the first time.²³ The film's cinematographer, Tonino Delli Colli spoke in 2005 about the difficulty of working with early Ferraniacolor, citing its extremely low speed,

The ASA of the film was 6. No one else wanted to do it. They told me, 'You're under contract so you'll do what we tell you.' The only lights we had available were for shooting with black-and-white film; color lamps didn't exist yet. The lighting became extremely complicated. In short, what they wanted was an avalanche of light, and poor Totò was subjected to showers of light. Poor little guy—he was already prone to eye problems! As soon as the director called 'Cut,' Totò was off. He wanted to get out of that inferno as soon as he could.²⁴

The initial reaction to Ferraniacolor was mixed. H. Mario Raimondo-Souto writes in *Motion Picture Photography: A History, 1891-1960* that the quality of Ferraniacolor “fulfilled many expectations of the Italian film industry.”²⁵ While *Film Daily* and *Independent Film Journal* each praised the appearance of Ferraniacolor (specifically its use in the 1952 film *Aida*), *Variety* varyingly refers to the process as “generally satisfactory,” “almost too violent in intensity,” and “fair to good values...very uneven...color supervision is experimental at best.”²⁶ In a review of the 1956 British film *Man of Africa* (a quasi-documentary featuring an entirely Ugandan cast that used the color process for reasons of frugality over aesthetics), *The New York*

²³ “International: Ready 1st Italian Film With New Ferranicolor.” *Variety* (New York). January 9, 1952.

²⁴ David Heuring and Giosue Gallotti. “A Lifetime Through the Lens,” *American Cinematographer* 86.3 (March 2005) 34-40, 42-45.

²⁵ Raimondo-Souto, 274.

²⁶ Limbacher, 65.

“Pictures: *Aida*,” *Variety* (New York): October 13, 1954. 6.

“Pictures: *Canzoni di Mezzo Secole*,” *Variety* (New York): November 3, 1954. 11.

“Pictures: *Totò, a Colori*,” *Variety* (New York): May 28, 1952. 22.

Times referred to the process as “unimpressive Ferraniacolor.”²⁷ FILM Ferrania’s current website makes an unsourced claim that the initial Ferraniacolor was “pretty much hated.”²⁸ Other reports suggest that the process’ strengths lay in capturing pastels, but that it particularly struggled with reds.²⁹ This worked to the advantage of the 1954 film *La Spiagga*, whose color palette excluded reds entirely.³⁰

To keep up with the increasing worldwide demand for larger screens and inventive theatrical exhibition in the 1950s, Ferrania began producing color emulsions for use within anamorphic and wide-gauge filmmaking. Per film historian Federico Vitella, Italy maintained the highest number of anamorphic movie screens in all of Europe, thereby generating significant business for Ferrania’s widescreen efforts.³¹ In 1954, *Variety* reported that Italian newsreels were beginning to be exhibited in widescreen formats filmed in Ferraniacolor, but that the specialized process would likely remain limited to rare occasions.³² Similarly to the United States, many of these widescreen technologies in Italy were short-lived, and Ferrania’s efforts were no different. By the early 1960s, there is little recorded evidence of the continued production of anamorphic Ferrania emulsions, and it appears the company had transitioned back to traditional 35mm moving image Ferraniacolor.

²⁷ “‘Man of Africa’ Shown at the Embassy; The Cast.” *The New York Times* (New York): October 11, 1956.

²⁸ FILM Ferrania, “From Bombs to Bombshells.”

²⁹ Petr Bilík, “The Sneaky Victory of a Genre: The Story of One Czech Western.” *Moravian Journal of Literature and Film* 5, no. 2 33.

³⁰ Louis Bayman, *Directory of World Cinema: Italy*. Bristol: Intellect Books, 2011. 114.

³¹ Federico Vitella, “The Italian Widescreen Era: The Adoption of Widescreen Technology as Periodizing Element in the History of Italian Cinema,” *Quarterly Review of Film and Video* 29, no. 1, 27.

³² “Italo Widescreen Newsreel.” *Variety* (New York), November 17, 1954. 17.

Ferrania and their 35mm moving image Ferraniacolor faced significant hurdles in their efforts to infiltrate a global market that already consisted of several well-known color processes, including but not limited to Eastmancolor, Kodachrome, Ilford Color, and Anscochrome.³³ In early 1955, *Variety* chronicled a brief controversy in which Italian customs authorities imposed a temporary ban on the importation of Hollywood film prints, stating that any American films intended for distribution within Italy must be printed in Italian labs. One article implicates Ferrania in the ban, stating,

Impression in N.Y is that Ferrania Color outfit in Italy may have had something to do with last week's difficulties. Under the original agreement to print in Italy the companies understood that Eastman color positive would be available to the local labs. Quality of prints made on the local Ferrania color stock (from an Eastman negative) hasn't been so hot and the two impression persists that the two aren't compatible at the moment.³⁴

The ban was short-lived but surfaced again in 1958, which *Variety* saw as an effort by Ferrania to maintain a professional relationship with Technicolor.³⁵

Italian Film Culture, Preservation and Ferrania's Legacy

Even after the fall of Mussolini—once Italian filmmakers could again choose from a variety of film stocks and processes—a combination of nationalistic pride, ease of access, and product quality resulted in Ferrania remaining the film of choice for legendary directors such as Federico Fellini, Roberto Rossellini, Vittorio De Sica, and Pier Paolo Pasolini.³⁶ Fellini's *8 ½*

³³ United Kingdom. House of Commons. *The Monopolies Commission*. "Colour Film: A Report on the Supply and Processing of Colour Film." London: Her Majesty's Stationary Office, 1966.

³⁴ "Italians Zig-Zag on Color Issue; U.S. Distributors Will Print Locally" *Variety* (New York). March 16, 1955. 7.

³⁵ "Italy Wants All Color Print Work (For U.S. Features Showing There)," *Variety* (New York). May 28, 1958. 5.

³⁶ FILM Ferrania, "From Bombs to Bombshells."

was shot on Ferrania P30 black-and-white film, while the outdoor scenes of Rossellini's *Rome, Open City* were shot using Ferrania C6 film.³⁷ Most of these notable successes from Italy's top-tier directors shot on Ferrania film were black-and-white; even as Ferraniacolor gained success (with 39 Ferraniacolor features released in 1954), this top echelon of Italian filmmakers continued to work with almost exclusively with black-and-white stock.³⁸ This was in all likelihood a stylistic choice—black-and-white film stock undoubtedly fit the nature of neorealist works by De Sica and Rossellini in a way that color film could not achieve.

The preservation of Ferrania's moving image color process has been largely overlooked, with these efforts trickling in through the preservation of individual films of note or through unexpected finds as a part of a larger collection. One example of the latter came as a result of New York University's Moving Image Archiving and Preservation Program's 2015 APEX (Audiovisual Preservation Exchange) program in Buenos Aires, Argentina, where the group uncovered two Ferraniacolor negatives containing newsreel footage.³⁹ Though the discovery of a mildly successful Italian film process in Buenos Aires may initially raise questions, further research clarifies the find. The company maintained a successful factory and processing lab in Argentina during the 1950s and 1960s, thereby filling in some context for this surprising discovery. According to news reports of 3M's 1964 acquisition of the company, this lab employed roughly 350 workers at the time of the deal.⁴⁰ While no record could be located

³⁷ Christopher Wagstaff, *Italian Neorealist Cinema: An Aesthetic Approach*. Toronto: University of Toronto Press. 2007. 97.

³⁸ Limbacher, 65.

³⁹ Lydia Pappas. "APEX Trip to Buenos Aires," *Moving Image Research Collections*. June 29, 2015. <http://library.sc.edu/blogs/mirc/apex-trip-june-2015/>.

⁴⁰ "Minnesota Mining To Acquire Italian Photography Firm."

regarding Argentinian news organizations using Ferraniacolor specifically, the factory's existence sheds some light on the matter.

Film preservation efforts involving Ferrania also led to an unexpected discovery regarding the nature of film stock itself. While conventional wisdom within film archiving communities suggests that 16mm nitrate film was almost never manufactured, archivists working with the San Paolo Collection (a Catholic film production company in Italy) at the Museo Nazionale del Cinema discovered 56 reels of 16mm nitrate negatives, most of which displayed Ferrania edge code. These archivists, Sabrina Negri and Luca Giuliani, were able to deduce that the films were in fact manufactured as 16mm, rather than as slit 35mm. Additionally, they narrowed the production date of the films to 1947-1952—during the heyday of Ferrania's output. Negri and Giuliani described this discovery as “this strange detour from the presumed linearity of cinematic technological evolution,” and it further cements Ferrania's place as an important organization within the history of film manufacturing.⁴¹

The 35mm moving image color process branded as Ferrania demonstrates preservation issues of its own. Barbara Flueckiger's *Timeline of Historical Film Colors* displays several stills from a Ferraniacolor print of the 1958 Czech film *Smrt v sedle*, produced from an Eastmancolor negative. Whether these stills are indicative of Ferraniacolor's typical fading pattern is unknown—as they are only scans of a single print of a single film—but the stills show fairly severe loss of the yellow and magenta dye layers, leaving a cyan-leaning image.⁴² This seems unusual, as the cyan layer is usually the first to fade in these color processes, leaving behind a

⁴¹ Negri and Guiliani, 33-37.

⁴²Flueckiger.

magenta image. Unfortunately, no one has undertaken the effort of documenting Ferraniacolor's stability in this manner aside from Flueckiger's timeline, leaving this issue inconclusive.

FILM Ferrania and the Future of Film Manufacturing in Italy

With conventional wisdom claiming the death of analog media in the 21st century, Ferrania has experienced a resurgence at the hands of a new company under an deliberately similar name. Film enthusiasts and businessmen Nicola Baldini and Marco Pagni launched FILM Ferrania in 2013, followed by a successful Kickstarter crowdfunding campaign in 2014 that received over \$320,000 in donations. Baldini and Pagni's effort is not exactly a reopening of the original Ferrania company, but rather a new company operating on the national goodwill and legacy associated with Ferrania. FILM Ferrania purchased the original Savona factory and currently works with former employees of the old company, with some assistance from the Ligurian government. The three original factories—one which handled the production of the triacetate base, another the various chemical emulsions, and the lab that synthesized the two—were scheduled for demolition at the end of 2014, and FILM Ferrania's Kickstarter funds enabled them to salvage the equipment that remained in each for use in their new, smaller factory on the same campus. This downsized operation, known as LRF (Laboratorio Ricerche Fotografiche, or Photo Research Lab), now holds all the necessary factory equipment to manufacture and process film from start to finish.⁴³ The Ferrania campus is also home to Ferrania Technologies, an adjacent but only tangentially-related company that produces chemicals for pharmaceutical and industrial use, such as fluorescent dyes, resins for electronic use, and medical imaging technologies.⁴⁴

⁴³ FILM Ferrania. "100 More Years of Analog Film." *Kickstarter*. October 29, 2014.

<https://www.kickstarter.com/projects/filmferrania/100-more-years-of-analog-film>

⁴⁴ "At A Glance." *Ferrania Chemicals: The Chemical Division of Ferrania Technologies*, 2012.

While FILM Ferrania has released no plans to begin production of 35mm moving image Ferraniacolor, the new company—after a series of setbacks including the discovery of asbestos in their factory space—is nearing the release of 35mm and 120 still film, as well as Super 8mm and 16mm moving image film for eventual sale within and outside of Italy. Their marketing strategy synthesizes the company’s long history and national pride with a nostalgic appeal to the idea of analog warmth, using terms like “old-school” and a conversational tone on their website and in press releases.⁴⁵

The efforts to begin reproduction of Ferrania film have been met with cautious optimism by filmmakers and analog enthusiasts. FILM Ferrania’s initial timeline has shifted significantly since the launch of their Kickstarter campaign in 2014—asbestos was just one of their many delays, and as of November 2016 the new FILM Ferrania products have yet to hit shelves anywhere in the world.⁴⁶ These delays resulted in significant trepidation among the film-inclined; the Association of Moving Image Archivists listserv was just one source of significant caution and skepticism in the months following FILM Ferrania’s campaign.⁴⁷ Yet some remain optimistic, citing the new startup’s measured and pragmatic goals as a reason for its potential success, in that they are hyper-aware that they are producing film for a niche audience and have scaled their production accordingly rather than attempting to emulate a time when a film manufacturing company could employ thousands around the world.⁴⁸ The outcome of FILM

<http://www.ferraniait.com/it/at-a-glance.html>

⁴⁵ “Ivano’s World.” *FILM Ferrania*. November 4, 2016.

<http://www.filmferrania.it/news/2016/ivanos-world>

⁴⁶ “The Timeline Has Changed.” *FILM Ferrania*. March 13, 2015.

<http://www.filmferrania.it/news/2015/the-timeline-has-changed>

⁴⁷ Jeff Kreines, email to [AMIA-L]. 7 January 2016.

Ron Merk, email to [AMIA-L]. 3 February 2015.

⁴⁸ Dino Everett, email to [AMIA-L]. 14 September 2014.

Ferrania's massive undertaking remains to be seen, but per their actively-updated website, the company is in the midst of intensive chemical testing and machine repair, with the hopes of release within the next year.

Conclusion

When read within the context of the numerous other color processes that emerged after World War II, Ferrania and their 35mm Ferraniacolor initially seem unremarkable—one of many, now largely forgotten. Upon closer inspection of the company's history and place within Italian culture, however, it becomes apparent that there is a great deal more to Ferrania than a single color process of disputed quality. Even if the crowdfunded effort to restart film production in Italy is eventually unsuccessful, the operation has undoubtedly worked to cement the legacy of Ferrania within the country. Regardless of their future success, the Ferrania company and products merit more comprehensive analysis than how it traditionally appears within film literature and history.

Annotated Bibliography

“3M Company Acquires 100% Ownership of Ferrania, S.p.A.” *Business Screen Magazine* (Chicago) 25, no. 4. 1964. 14.

- This article from a trade periodical details the acquisition of Ferrania by 3M in 1964, providing important figures such as the number of employees at the time.

“About.” *FILM Ferrania*. 2016. <http://www.filmferrania.it/#about-section>.

- This webpage gives a brief overview of the new FILM Ferrania startup, and was useful in gaining an understanding of their goals and progress to this point.

Ashton, George. “European Color Films.” *Popular Photography* (New York). June 1956. 134.

- *Popular Photography* appealed to everyday consumers rather than strictly industry members, which was useful in determining how Ferrania was viewed by the general public outside Italy. Additionally, this source differed from many of the others in that it addressed Ferrania’s still film, not its moving image film.

Assanti, Paola. “Ferrania.” *Storia della fotografia*. February 17, 2010.

<http://www.storiadellafotografia.it/2010/02/17/ferrania/>

- While this source contained a great deal of information regarding the history of Ferrania, that information had to be taken with a grain of salt for two reasons: the page is written in Italian and seems to be a personal website of some sort. While many of her claims were supported by my other research, I could not corroborate everything that she wrote and therefore did not rely on this source too heavily.

“At A Glance.” Ferrania Chemicals: The Chemical Division of Ferrania Technologies. 2012.

<http://www.ferraniait.com/it/at-a-glance.html>

- This website is the homepage of Ferrania Technologies, and was used to obtain basic information about the company’s current output and factory location. Though the website itself appears somewhat outdated, the information listed seems valid.

Bayman, Louis. *Directory of World Cinema: Italy*. Bristol: Intellect Books, 2011. 114.

- This book includes a brief section on the color palette of *La Spiagga*, an early Ferraniacolor film that was useful in supporting my research regarding the process’ strengths.

Bilik, Petr. “The Sneaky Victory of a Genre: The Story of One Czech Western.” *Moravian Journal of Literature and Film* 5, no. 2 33.

- Including a source about a Czech spaghetti western seems out of place initially, but this academic article includes a snippet on the strengths and weaknesses of Ferraniacolor, which was helpful in piecing together an understanding of this process about which little has been written.

Everett, Dino, email to [AMIA-L]. 14 September 2014.

- Emails are certainly not conventional sources and are not used to assert facts or history in this paper, but rather as a measure of feeling toward the new FILM Ferrania effort. In this email, Dino Everett expresses optimism and argues that the new company has the potential for success because of their intentionally small scale.

Falconi, Toni Muzi. *Glow Worms: Biased Memoirs of a Global Public Relator*. Lulu Press, Inc., October 12, 2014. eBook.

- This self-published eBook memoir is surely not the most reliable source on the history of Ferrania, but the author speaks in detail about the 3M-Ferrania deal in a way that no other sources did, and it felt important to include for that reason alone.

FILM Ferrania. “100 More Years of Analog Film.” *Kickstarter*. October 29, 2014.

<https://www.kickstarter.com/projects/filmferrania/100-more-years-of-analog-film>

- Accessing the Kickstart campaign itself in discussion of FILM Ferrania’s effort was crucial, fortunately these materials stay up on Kickstarter site even years after the funding cycle has ended. This page was especially useful to see how the company initially branded itself to customers and how their outlook has shifted over the past two years.

Flueckiger, Barbara. “Ferrania color / Ferraniacolor / 3M color.” *Timeline of Historical Film Colors*. <http://zauberklang.ch/filmcolors/timeline-entry/1312/>

- This page served as an excellent starting point, providing a brief overview of Ferraniacolor and links to other sources that proved useful in researching the process. Additionally, this timeline contains some of the only images that could be conclusively verified as Ferraniacolor moving image film.

“From Bombs to Bombhsells,” *FILM Ferrania*. September 11, 2014.

<http://www.filmferrania.it/news/bombs-to-bombshells>

- This history of the Ferrania company was extremely useful, but its accuracy could not be entirely confirmed—coming from the FILM Ferrania startup, the history was almost certainly written in a way that highlighted the new company’s interests and goals, rather than for example a historical source that attempts an unbiased retelling of events.

Gracy, Karen F. “The Evolution and Integration of Moving Image Preservation Work into Cultural Heritage Institutions.” *Information & Culture* 48, no. 3. (2013): 371.

- A standard, no-frills film preservation text, this source served to demonstrate that Ferrania is frequently relegated to a brief mention or footnote when discussing film manufacturers and rarely warrants further discussion within these types of sources.

Heuring, David and Gallotti, Giosue. “A Lifetime Through the Lens,” *American Cinematographer* 86, no. 3. (March 2005). 34-40, 42-45.

- An interview with Italian cinematographer Tonino Delli Colli, this unique source provided a first-person account of working with Ferraniacolor in its earliest form. This piece gave a much-needed human voice among the dozens of news articles and secondary sources.

“International: Ready 1st Italian Film With New Ferranicolor.” *Variety* (New York). January 9, 1952.

- This trade periodical piece corroborated the release date of *Totò, a Colori* and demonstrated that the film and Ferraniacolor (though misspelled in the headline) did gain notice in the United States.

“Italians Zig-Zag on Color Issue; U.S. Distributors Will Print Locally,” *Variety* (New York). March 16, 1955. 7.

- A *Variety* article that details the brief controversy regarding printing in Italy vs. the United States—these disputes were not covered in any of the secondary sources used, but shed some light on one of the many potential factors why Ferraniacolor never broke through to mainstream filmmaking in the United States.

“Italo Widescreen Newsreel.” *Variety* (New York), November 17, 1954. 17.

- This source added to the discussion of Ferraniacolor and widescreen technologies in the 1950s. A seemingly insignificant event—the first widescreen newsreel shown in Italy—apparently (and thankfully) warranted coverage by *Variety*.

“Italy Wants All Color Print Work (For U.S. Features Showing There),” *Variety* (New York). May 28, 1958. 5.

- Two years after the initial dispute, this issue came up again, though this article does not mention that Italian customs officials and printing labs and the United States film studios faced this issue two years prior.

“Ivano’s World.” *FILM Ferrania*. November 4, 2016.

<http://www.filmferrania.it/news/2016/ivanos-world>

- This source demonstrates the sort of casual language and tone that FILM Ferrania use when updating their website—a successful marketing strategy, as their 2014 Kickstarter raised over \$320,000.

Kreines, Jeff, email to [AMIA-L]. 7 January 2016.

- In this listserv email, Jeff Kreines expresses uncertainty about FILM Ferrania’s efforts, stating “I doubt that Ferrania is going to amount to much.” The conflicting opinions in these listserv discussions of Ferrania provide a more comprehensive picture of how the moving image archiving field addresses an issue like that of FILM Ferrania.

Limbacher, James L. *Four Aspects of the Film*. Manchester, NH: Ayer Company Publishers. 1968. 65.

- Limbacher’s book, while nearing its 40th anniversary, proved extremely useful in nailing down some basic facts about the Ferraniacolor process.

“‘Man of Africa’ Shown at the Embassy; The Cast.” *The New York Times* (New York): October 11, 1956.

- Not only was this piece useful in providing information about a non-Italian film that was shot using Ferraniacolor, it also offered a negative critique of the process itself.

Merk, Ron, email to [AMIA-L]. 3 February 2015.

- In this email on the subject of the FILM Ferrania Kickstarter, Ron Merk states that he is “cautiously optimistic” about their future film production goals.

“Minnesota Mining To Acquire Italian Photography Firm.” *Wall Street Journal* (New York). June 4, 1964. 3.

- This *Wall Street Journal* piece covers much of the same ground as the aforementioned *Business Screen Magazine* article does, but having both was important to corroborate facts regarding the acquisition.

Negri, Sabrina and Guiliani, Luca. “Do you have any 16mm nitrate films in your collections? The Case of Ferrania materials in the San Paolo Film Collection at the Museo Nazionale del Cinema in Turin.” *Journal of Film Preservation* 86 (2011): 36.

- This article came as a bit of a surprise, describing the discovery of 16mm nitrate in Torino, Italy—no other research mentioned the existence of 16mm nitrate produced by Ferrania, so this source was crucial in uncovering this pocket of information.

Pappas, Lydia. “APEX Trip to Buenos Aires,” *Moving Image Research Collections*. June 29, 2015. <http://library.sc.edu/blogs/mirc/apex-trip-june-2015/>.

- This was another unexpected research find and it was a pleasant surprise to be able to connect the dots as to why Ferraniacolor film was likely found in Argentina.

“Pictures: Aida,” *Variety* (New York): October 13, 1954. 6.

- A film review that comments on the use of Ferraniacolor in the 1954 film *Aida*.

“Pictures: Canzoni di Mezzo Secole,” *Variety* (New York): November 3, 1954. 11.

- A film review that comments on the use of Ferraniacolor in the 1954 film *Canzoni di Mezzo Secole*.

“Pictures: Totò, a Colori,” *Variety* (New York): May 28, 1952. 22.

- A film review that offers a negative critique of the Ferraniacolor process in its first feature film, *Totò, a Colori*.

Raidmondo-Souto, H. Mario. *Motion Picture Photography: A History, 1891-1960*. Jefferson, NC: McFarland. 2007. 274.

- This comprehensive historical reference text contained a paragraph about Ferraniacolor in the 1950s which was useful in obtaining some technical specifications and historical context.

Ryan, Roderick T., *A History of Motion Picture Color Technology*. New York: The Focal Press, 1977. 206.

- This book contained a great deal of technical specifications as they related to Ferraniacolor—both still and moving image film.

Sax, David. *The Revenge of Analog: Real Things and Why They Matter*. New York: PublicAffairs. 2016. 53-54.

- This pop culture non-academic text offers a significant amount of information on the subject of FILM Ferrania's new effort, but it almost operates as an advertisement for the startup, praising the bygone era of analog and hailing the new incarnation of Ferrania as a savior of some sort.

“Sensitive Factory: Ferrania 1917-2017,” *Platform: Architecture and Design*. January 29, 2016. <http://www.platform-ad.com/the-sensitive-factory-ferrania-1917-2017/>.

- This architecture and design website post about the Ferrania factory provided some basic historical context about the era in which Ferrania began.

“The Timeline Has Changed.” *FILM Ferrania*. March 13, 2015.

<http://www.filmferrania.it/news/2015/the-timeline-has-changed>

- This update from FILM Ferrania details the challenges they had faced up to March 2015, including a severe asbestos discovery.

United Kingdom. House of Commons. *The Monopolies Commission*. “Colour Film: A Report on the Supply and Processing of Colour Film.” London: Her Majesty's Stationary Office, 1966.

- This government document is an analysis of color films available for consumer and industry use in the United Kingdom, and contains a section that discusses Ferraniacolor. It was useful to have the perspective of a source from outside Italy to better understand their global reach.

Vitella, Federico. “The Italian Widescreen Era: The Adoption of Widescreen Technology as Periodizing Element in the History of Italian Cinema” *Quarterly Review of Film and Video* 29, no. 1. 27.

- An article that addresses the issue of widescreen technology in Italy—only briefly mentions Ferrania, but confirms that the company was making adjustments to appeal to these fad technologies during the 1950s.

Wagstaff, Christopher. *Italian Neorealist Cinema: An Aesthetic Approach*. Toronto: University of Toronto Press. 2007. 97.

- This book confirmed that Rossellini used Ferrania film when shooting *Rome, Open City* and provided some historical context about the era of Italian filmmaking during which Ferrania thrived.

Zamagni, Vera. *The Economic History of Italy, 1860-1990*. Oxford: Clarendon Press. 1993. 338.

- This book is unlike any of the other sources in that it does not directly address Ferrania or Italian film or color film processes, but rather provides an overview (as the title would suggest) of the major events in Italian economic history. This was important when attempting to understand the economic landscape that enabled Ferrania to thrive in the postwar years.