Keeping It All in One Place:

Preserving, Presenting, and Digitizing Nitrate Film

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Cellulose nitrate was first introduced as a military weapon in the 1840s, colloquially known during its brief use as “guncotton”. Decades after the material was retired from weaponry due to its instability, it found new life as cellulose nitrate film, the earliest form of widely distributed 35mm film prints (Heckman 486). Despite its non-militaristic use in the twentieth century, the specter of flammability always haunted it. After a number of fires attributed to decaying nitrate stocks, the introduction of fire-proof cellulose acetate film, branded as ‘safety film,’ in the mid-twentieth century redefined nitrate film’s presence in the archive. For mid-twentieth century film archivists, nitrate material was far less valuable than the content on the reels. Both archival and exhibition practices regarding nitrate film treatment after the introduction of cellulose acetate revolved around defining nitrate by the qualities it did not share with acetate film. In contrast, the permanency and cleanliness of the digital image allows a visual abandonment of the original nitrate material, preserving the content while removing all of the features of the aesthetic material.

I. The Era of Nitrate-to-Acetate Transfers

American Film Institute archivist Sam Kula coined the phrase ‘Nitrate Will Not Wait’ at an International Federation of Film Archives conference in the late 1960s, a little over a decade after the introduction of 35mm acetate film (Gracy 146). Later modified to the snappier ‘Nitrate Won’t Wait’, the phrase gained traction in archival circles to the point where archivists distributed buttons brandishing the slogan at conferences (Kula 202). Looking back on the movement four decades later, archivist Heather Heckman argues that ‘Nitrate Won’t Wait’ came to represent the idea “that all nitrate films were both unstable and dangerous” and the only way the “contents” of nitrate film prints could “survive” was through nitrate-to-acetate transfers (489). The adoption of acetate in both film production and archives in the 1950s meant that

'nitrate film' could no longer be just 'film'. The language around nitrate at the time, which the popularity of 'Nitrate Won't Wait' as a slogan exemplified, provoked archivists to think of the content within a nitrate film print to be something that can be wholly separated from the original material without compromise. But creating that distance between material and content ignored nitrate film's aesthetic qualities and the material's historical value (Kula 198). With acetate safety film chemically designed to not burst into flames, no one had to think of 'film' as the root cause of the nitrate fires of the 50s and 60s, cellulose nitrate's designed-for-doom chemical composition could take full responsibility (Fletcher 10). 'Nitrate Won't Wait' offered archivists the binary, simplified choice between the inevitable destruction of the original nitrate print or, inaccurately, the eternal preservation of the acetate duplicate (Real 40).

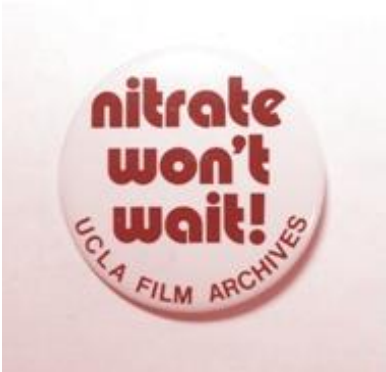

Fig. 1 UCLA "Nitrate Won't Wait" button from: "Roll Film/Cue Tape: the Legacy of Moving Image Formats." *UCLA Library* www.library.ucla.edu/events/roll-filmcue-tape-legacy-moving-image-formats.

A policy that prioritized transfers over preventative conservation, however, was not a particularly novel idea. The groundwork for nitrate transfer policies had been laid out well before the wide acceptance of acetate film. A 1933 report from the Committee on the Preservation of

Film, an offshoot of the Society of Motion Picture Engineers, advised archivists to transfer original nitrate "negative copies" to a "new master positive" if one of the inspections that took place "not less than one year or more than five years" revealed "marked shrinkage" in the print (Grimm 180, Heckman 497). Along with suggesting a laughably low number of nitrate film inspections, the Committee recommending transfers implies that a positive print can adequately replace an original negative, completely ignoring the long-term effects of the loss of the negative on subsequent generations of film prints. With no mention of preventative conservation, the Committee praised their own methods by suggesting that transference would allow "the pictures contained on the film" to forever "be available for future use" (Heckman 497). In referring to nitrate film as a 'container' for the images, the report imagines nitrate in total separation from the images. Several decades before 'Nitrate Won't Wait', the Committee's report reduces the original nitrate negative, the highest source material for any future duplication, to a piece of ephemera, ignoring its value in both enhancing the image laid upon it and as a historical object.

However, the loss inherent to nitrate-to-acetate transfers that writings on the subject could afford to ignore became totally apparent when archives put those ideas into practice. The Library of Congress' (LOC) film preservation project in 1958 resulted in the LOC destroying a large number of their 35mm nitrate prints after the staff copied the images over to 16mm acetate film (Real 29). A decade before 'Nitrate Won't Wait', a major archive was normalizing 'transfer and destroy' methods in treating their nitrate film stock as disposable after the content had been preserved. To avoid the expenses of preventative conservation or wasting storage space on larger film stock, the LOC's transfer-and-destroy policy condemned 35mm films to forever exist in the 16mm film gauge's lower quality (Real 29). Kula's proclamation a decade later that 'nitrate will not wait' was not so much an announcement of change in the culture of film preservation as

much as it applied four words to a concept that had already been normalized in major institutions.

Official safety literature, existing outside of film archivist writing, took the 'Nitrate Won't Wait' stance of solely framing nitrate in terms of a material in need of copying, rather than taking steps to preserve nitrate so that it does not become a fire safety hazard. A 1979 guide from the National Fire Prevention Agency (NFPA) observes that there are "large quantities of nitrate motion picture film in various archives", advising archivists within them to "maintain" the nitrate at "an active NFPA standard until these... collections are reprinted on to safety film or destroyed" (Heckman 490). Strangely enough, the report advocates for some form of preventative conservation in referencing the "NFPA standard" for nitrate film archiving, but only as a temporary solution to the inherent problem of nitrate material. But it considers preventative conservation as simply a means to an end in keeping the content alive long enough until a transfer or total destruction of the material can occur. When looked at it in comparison to the 1933 Committee guide the two pieces, written forty-six years apart, showcase almost identical misunderstandings of nitrate's role within the archive and the inability to enact long-term conservation of nitrate material.

In contrast to "preservation" efforts like the LOC's, film historian Davide Turconi's preservation of the Joye Collection, occurring a few years before the mainstreaming of 'Nitrate Won't Wait', reflects a reverence of nitrate's aesthetic qualities. Abbé Josef Joye, seeking visuals to accompany his lectures, collected the 1,540 nitrate prints, the majority produced between 1896 and 1912, that comprised the collection in the early twentieth century (Fletcher 5). By the time Turconi found the material in the mid-1960s, nearly fifty years after Joye's death, it had already started to decay. Kept in Joye's "damp cellar" in Bamberg, Switzerland before moving to Zurich

in 1958, the Joye Collection's new home could not properly archive, let alone transfer, the decaying nitrate prints (Fletcher 4-6; Abel 324). Turconi thus attempted to find a new home for the Joye Collection. However, policies solely valuing of the film's content instead of viewing the entire collection as a historical artifact made finding an archive willing to take the burden of 1,540 nitrate prints impossible. With concerns over both nitrate's fire hazard status and the inability to explain the purchase of a collection that holds no relevance to national identity, it seemed like the collection was going to wither away in Zurich (Fletcher 10).

Turconi's difficulties in finding a space that would conserve the nitrate prints parallels with archival struggles in America during the 'Nitrate Won't Wait' era. Even if an archivist wanted to preserve original nitrate prints, "the grants" for film archives that "the National Endowment of the Arts (NEA) and the American Film Institute (AFI)" offered in the 'Nitrate Won't Wait' era "only funded the copying of film". Neglecting to provide funds for "the improvement of storage conditions of film collections", the NEA and AFI's policies enforced transference in order to keep archives in existence. Any steps that could have been towards improving preventative conservation would be kept out of the question (Gracy 146). In 1993 the LOC, National Archives, NEA, and AFI's policies on funding nitrate preservation still primarily focused on transfers, this time over to polyester film as opposed to acetate (Melville). Discouraged from looking at nitrate as a historical object, the funding policies from these major American institutions disabused any notion of assessing a mass produced object has being a work with a provenance as its own.

Failing to find a new home for the Joye Collection, Turconi adopted his own unique method in preserving the collection. After hanging up his selection of the Joye Collection's "sticky and wet" nitrate prints to dry, he laid the film strip upon a rewind bench and selected

certain frames to clip out of the reel. The frames often highlighted the film's aesthetic qualities, preserving the hand-tinting and color sketching on the reel. After clipping the frames, he would place the segments into envelopes that provided metadata on the film's title, country, and studio, if that information was available (Fletcher 11). While, in clipping the copies for preservation, he robbed the films of their function as moving images, Turconi preserved the aesthetics and textures of the original nitrate prints (17). Instead of content triumphing over material, the Turconi clippings, in turning the nitrate film print into a still image, present the two as eternally intertwined. Looking at the clippings and their physicality, with sprocket holes, fingerprint smudges, positive and negative cuts, a researcher cannot study one without focusing on the other. In the still image, the Turconi nitrate clippings have value as an art object independent of traditional projection mechanics. Through preserving the textures and markings, the original nitrate film clippings provide an aesthetic experience that cannot be captured on a safety film transfer (4).

The Joye Collection finally found a new home at the British Film Institute's (BFI) National Film Archive in 1976, after a documentary filmmaker discovered the collection and alerted the government-funded institution. A decade after Turconi clipped away frames from the Joye Collection's reels, the BFI worked to restore the original nitrate prints for preservation and copy the content over to safety film. The BFI's acetate transfers are "mostly black and white," losing the hand-stenciled colors and tinting in the access copies that Turconi was able to preserve in his clippings (Fletcher 12). In leaving the color behind on an inaccessible format, the dissociated acetate prints fail inaccurately present the film's content. Along with fundamentally reshaping the content, it also ignores the role of labor within early cinema. Despite their stillness, Turconi's clippings actually allow a researcher to imagine what the film would look like when

pulled through a projector, the black-and-white acetate motion picture uses its authority to stifle any visualization of what the original film could have looked like.

But the reason these loss-heavy transfers were performed was because archivists believed that cellulose acetate was somehow decay-resistant. Remembering the 'Nitrate Won't Wait' era in 2015, archivist David Shepherd recalls declaring that acetate "would last as long as the best book paper", the material having a lifespan of "four hundred years" when kept in the right conditions (Real 40). Raised to such lofty extremes, the cost of losing nitrate's unique qualities or the connection to the original source become moot when promised that the content could survive well beyond the archivist's lifetime. But it turned out to be wrong. 'Vinegar syndrome', referring to the smell acetate film emits as the molecular structure decays, was first noticed in the humid areas of India in the 1950s, at least a decade before 'Nitrate Won't Wait'. Acetate film began decaying in other archives starting in the 1970s, prompting major reconsideration over the use of the film stock in archives (Enticknap 27). With the threat of decay hanging over acetate stock, the premise of two decades of archival work was thrown in to question.

The discovery of 'vinegar syndrome' caused most film archives to switch over to polyester film as the archival stock of choice by the 1980s (Melville). A 1993 report on film preservation acknowledges that while "vinegar syndrome had not been detected in films duplicated under archival conditions and put into ideal storage immediately," the issue of vinegar syndrome and fading colors in acetate prints prompted "renewed consideration" amongst archivists of the potential for polyester film as an archival film stock. As far as polyester goes, the reconsideration came out of fixing an issue that occurred when it was first introduced where "the binder separat[ed] from the emulsion" and the introduction of 35mm intermediate stock (Melville). This would likely have created a whole new generation of nitrate-to-cellulose acetate-

to-polyester transfers. Long-running faith in acetate would result in greater distance from the image and the original material it was created on as the need for new transfers increases while acetate prints fall in to disrepair.

The failure of cellulose acetate as an archival material prompted a total reconsideration of the 'Nitrate Won't Wait' movement and the failure of the 'transfer-and-destroy' policies of the mid-20th century. In 2001, nearly three-and-a-half decades after coining 'Nitrate Will Not Wait,' Sam Kula published an article entitled "Mea Culpa: How I Mistreated the Nitrate in My Life". In the article, Kula acknowledges that he "exploited the weakness of nitrate film," which he repeatedly refers to as a "workhorse," even acknowledging that in the proper conditions it could "last at least as long as" triacetate film (201-202). If, as a phrase, 'Nitrate Won't Wait' defined nitrate material solely in the present tense as a dormant archival format, Kula's apology is reliant on historicizing nitrate, his narrative beginning with Eastman's patents for nitrate roll film, acknowledging the more notable nitrate fires and concluding with an observation of nitrate's then-current "reputation [as] a film stock from hell" (199-202). Kula asserts that it was the caretakers, not the misunderstood nitrate film material, that caused the disasters the 'Nitrate Won't Wait' movement stoked fears of (201). In his apology, he derives the value of nitrate not from the informational content necessarily, but how every surviving nitrate film reel contains its own history. In Kula's narrative, nitrate represents an era that a simple reproduction on to safety film cannot capture. To engage with the history, the audience has to engage with the original material.

II. Projecting Nitrate

However, while archivists and institutions were defining 'nitrate film' as an antiquated, dangerous material in relation to acetate, film curators and repertory cinema programmers

crafted a narrative of nitrate having a sort of ‘authenticity’ in presenting the original form of movies. However, Kula critiques the repertory nitrate screenings of the 50s and 60s in “Mea Culpa” for failing to showcase “the true glory of nitrate”. According to Kula, the shift from xenon to carbon arc lamps in film projectors fundamentally changed the way the nitrate print interacted with the stream, the new bulbs muting the “rich sepia tones” unique to nitrate film (199). With the “hotter” carbon arc lamps switched out for xenon a true ‘authentic’ presentation of the film in its original form cannot really be reached, an idea curator Dominque Païni takes to the logical extreme in questioning if a theater’s modern architecture or the screens also prevent a true authentic nitrate presentation from occurring (174). But Païni uses that argument to stress nitrate’s importance as a reference point for future restorations, not as a projectable art object. Kula’s nostalgia for nitrate seems rooted in how the material interacts with the mechanisms of film projection. An acetate transfer, assumedly color timed for xenon bulbs, cannot really capture those same machinations. In dismissing nitrate screenings, he approaches the appeal of them in the first place. The line about bulbs points to an instilled belief that technology molds the art, in contrast to duplicating images on to another, chemically different, film strip. The idea that nitrate film molded the tone of the images for film shot on the format drove the movement around nitrate nostalgia.

In contrast with Turconi’s preservation of the textures and aesthetics of the still nitrate image, French film curator and Cinémathèque Française operator Henri Langlois celebrated, to a destructive end, the nitrate image in movement. In her 2017 book *The Film Museum Practice and Film Historiography*, film historian Bregt Lameris described Langlois as “a curator who did not care about the state of the material as long as he could show the films” who “claimed it was better to project nitrate prints than to attempt to preserve them, as film was made to use, not to

lock away in a vault" (79). Kula describes how, at the beginning of his film archive career, he looked at the Cinémathèque Française in jealously as Langlois "project[ed] nitrate prints night after night to the delight of his audiences" (198). Langlois compared nitrate to a Persian rug, saying that a curator should "keep [nitrate prints] at their best by using them and they will last for generations" (198). To Langlois, the nitrate print has to be seen in order to derive value, creating a stark contrast to curators like Païni and skeptics over nitrate projection like Kula. It does not have value as a unique object, it only becomes valuable once it becomes a tool within the machinations of theatrical presentation. As screened to an audience, viewing the 'authentic' version of an old film, the nitrate film becomes a nostalgia object, its aesthetics, whether accurately presented or not, connecting the viewer to a past mode of film presentation and production.

However, Langlois' 'project everything' ethos lead to some reckless treatment of nitrate film. In preparation for the Cinémathèque Française's move in 1959, five thousand nitrate reels were left outside waiting for shipment in the theater's courtyard under "a glass canopy." Under the July sun, the canopy functioned as a "giant magnifying glass," heating up the nitrate until it burst into flames (Kula 201; Lenk 203). Yet, no one is actually sure what exactly was lost in the 1959 fire. Langlois kept "notoriously secretive and imprecise" catalogues, leading to claims that "virtually every 'lost' film in film history" has been listed as being destroyed in the 1959 Cinémathèque fire (Smither 250). Langlois' disorganization and lack of any coherent catalogue for his archive were second to his passion, which inspired a number of filmmakers to support him when France's Ministry of Culture unsuccessfully tried to remove him from his leadership position at the Cinémathèque (Menand). Langlois' framing of nitrate film as a nostalgia object, and himself as the primary guard of the material's legacy, turned him into a celebrity.

In a 1975 *New Yorker* profile, Langlois provides an anecdote that reads like an ideological inverse to Turconi's clippings. Years prior to his interview, he discovered a "film of [D.W.] Griffith's" on nitrate "that had an illness that was spreading like cancer" running through the print. When Turconi discovered prints with a similar issue, he cut out specific frames to preserve a sort of notion of the work, in contrast Langlois cured the film by "cut[ting]" the "fifty feet" of diseased film "out of it". Langlois does not specify which Griffith film he saved, but considering the director was most prolific during the early-20th century, the print and Joye's nitrate reels likely came from the same time period. If Turconi believed that nitrate-printed works could still retain their power in stillness, Langlois risked the "cancer" still remaining on the film after he sliced away the 'sick' segment in order to preserve the moving image. The print only had value if he could project it. To close out the anecdote, he mentions that "in Griffith's own country, they wanted to destroy the whole thing," implying that American preservation policies, like 'Nitrate Won't Wait' or the LOC's 1958 efforts, were outliers in global film preservation (Gilliat 54).

Other nitrate film screenings, striving for a more 'authentic' presentation, treated nitrate material as curio, defining the material and projection in relation to its benefits and shortcomings compared to cellulose acetate. In a 1993 interview, sound archivist Robert Gitt offhandedly mentions the BFI hosting the "occasional" screening of the 1938 movie *The Dawn Patrol* on a nitrate print projected, unlike the screenings Kula mentions, with the original exhibition equipment and the Vitaphone disc soundtrack (Belton 273). With that screening, the technology becomes just as important as the content. An audience in the early-90s can believe that they are watching the film the same way its creators and original audiences did. But the nitrate *Dawn Patrol* screenings become about what it is not. In the same way that 'Nitrate Won't Wait'

defined the form as ‘not acetate’ as opposed to a distinct material with its own history and aesthetics, the BFI’s screening, in reaching into an ‘authentic’ presentation of the work, defines the nitrate material by what it can or cannot do in relation to acetate. It turns the projection of a nitrate print, which has “644 projections before mechanical failure”, into a curiosity object (Enticknap 30). If the ideology behind transference was one that makes a clear distinction between the content and the material, thus making the material disposable, nitrate projection values the experience of watching a film as a technological experience, even if it harms the original material.

During the month of November 2019, the Egyptian Theatre in Los Angeles hosted a “Nitrate Nights” film series, screening canonized Old Hollywood classics on nitrate film. The web page advertising the screenings assure the reader that the Egyptian has a “specially built, fireproof projection booth”. Filmmaker Christopher Nolan, who introduced a screening of *Rebecca* for the series, remarked that Nitrate Nights provides audiences with the opportunity to “[see] a work the way a filmmaker originally intended to show it”, with modern viewers able to view *Rebecca* “the way audiences would have seen it”. Digital barely gets mentioned in the article covering Nitrate Nights, with only a line from the Egyptian’s projectionist saying that “Any time you’re projecting film... in 2019, it’s a rare object” (Lindahl). In the aftermath of the digital takeover of projection, both acetate and nitrate are valued for their physicality. Like the BFI’s *Dawn Patrol* screenings, Nitrate Nights attempts to re-enact a past mode of film exhibition for curious audiences. Future generations, as exemplified in the Nolan quote, assume that whatever tools the filmmaker had at their disposal at the time is the true way to experience the artwork. While venues like the Cinémètheque Française and the BFI were reacting against the

introduction of acetate film as the primary projection material in repertory cinema, the Nitrate Nights series maintains the importance of film as a physical medium.

III. Presenting Digital Scans of Nitrate Films

Film archivist Richard Hincha's 1992 article "Crisis in Celluloid: Color Fading and Film Base Deterioration", which deals with issues of color fading and vinegar syndrome in acetate stock, briefly discusses the archival potential of LaserDisc. An early disc-based home video format, LaserDisc "may offer color retention superior to that of film", according to Hincha, but the format's "lack [of] sharpness" in the image and the chance that decay could render individual LaserDiscs unplayable keeps Hincha from declaring the format to be archival quality (129). While the format's low resolution prevented any serious consideration of film-to-Laserdisc transfers, Hincha underscores the format's "color retention", or the permanency of the image, as a significant positive. Unlike analog film transfers, digital files will not lose quality as studios and archives duplicate the material. Despite siding with cellulose film as the superior reference point for transfers, his observation on digital's permanency points to a transference ideology as the resolution of digital video improved over the following decades.

Fig. 2. Still from *The Man Who Knew Too Much – Restoration Demonstration* showcasing the digital restoration (left) in relation to the print source (right)

For the Criterion Collection's 2013 high-definition home video release of the 1934 film *The Man Who Knew Too Much*, the boutique home video label produced a short documentary detailing the digital restoration of the scan of the film's nitrate print. Before launching into a side-by-side comparison of an unaltered scan of the print with the digitally 'restored' image, the narrator emphasizes that the digital file was sourced from the nitrate master positive, one generation removed from the original nitrate camera negative. Visually, the side-by-side makes it seem like the restored image was masked under the original nitrate positive, with the Criterion Collection using digital restoration to scrub away the negative aspects of the nitrate print until the restoration team reached an 'authentic' pristine image (Lustgarten). In reality, the digital print is an entirely different product from the original film reel, the digital removal of the scratches and dirt that the scanner captured allow a more aesthetically digestible viewing experience while simultaneously removing any trace of the source's identity. It is a totally clean, totally lifeless image. The digital restoration is an access copy, not an adequate replacement for the original material as the documentary presents. The nitrate print is still somewhere, with its weaker black tones, less prominent shadows, and other flaws that come with age, but the documentary is not concerned with material as much as it is with presenting the digital restoration as the optimal way to view *The Man Who Knew Too Much*. In placing the 'superior' digital restoration next to the faded nitrate master positive, it presents the original print as an obstacle to overcome in presenting the best version of the film to the consumer. Like the earlier era of nitrate transfers, the digital restoration encourages audiences to look at a wholly different copy as being on equal, or even greater, grounds as the original material.

The Criterion Collection documentary is, however, a reflection on the ideas around nitrate film within the current digital era. In his 2008 article "How to Preserve Your Films Forever", film preservationist David Walsh observes that, for archives, "secure mass data storage [is] becom[ing] cheaper by the minute" and that it will soon be possible for the digital image to have a "superior quality" to film, which the Criterion documentary argues in its side-by-side framing. As a result of both the lower cost of digital storage and the ability to scan an image in a higher quality possible than with, say, LaserDisc, Walsh worries that archives will revert "to the old copy-and-destroy policy" of the 'Nitrate Won't Wait' era. But instead of treating nitrate with fear and revulsion, archives would just embrace "the idea that the film need not be kept", with the digital restoration of the film regarded as the ultimate version (40). As the Criterion restoration supplement, produced several years after Walsh's article, suggests, the digital image can offer a 'nitrate restoration' that laps the original nitrate print in terms of quality. However, a joke tossed off at the end of the article telling the reader to "start embossing those digits in clay tablets now" if they want to "ensure the existence of their footage" for the future points to a legitimate concern regarding the longevity of digital files (41).

The language of digitization has even affected the way archivists understand physical media. Paolo Cherchi Usai's, a student of Davide Turconi, 2010 article "The Conservation of the Moving Image" critiques the use of the word "digitization" as a shorthand for "everything: conservation,...restoration,... and immediate and unlimited access" (252). The vagueness around digitization terminology that Usai fears is exemplified in a metaphor in Alicia Fletcher and Joshua Yumibe's article "From Nitrate to Digital Archive: The Davide Turconi" compares Turconi's clippings to the digital "thumbnails" on sites like YouTube. The writers refer to both Turconi's clippings and the digital thumbnails as highlighting "key frames", images designed to

"summarize the asset's content or communicate something distinguishing about the asset", from the work. Comparing management of the Turconi archive to the maintenance and accessibility of "digital moving image records" causes a distortion of both platforms, with the digital platform gaining some sort of authenticity through the comparison (11). While Turconi was saving the 'key frames' of the last extant prints of works within a larger cultural heritage, the 'key frames' of digital video are just another form of image duplication. The metaphor takes the clippings existence, and the continued survival of the Joye Collection, for granted. If the Joye Collection had been left to decay in Zurich after Turconi left, the majority of the "key frames" he preserved would be guides to nowhere. Comparing his work to that of a digital video database's assumes a permanency in both digital and nitrate-based media that is, at best, ahistorical.

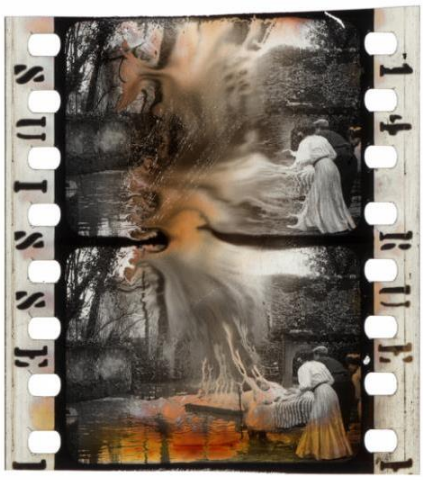

Fig. 3. Digitized Turconi clipping from "Dreaming in Color: The Davide Turconi Collection of Early Cinema." *George Eastman Museum*, www.eastman.org/dreaming-color-davide-turconi-collection-early-cinema#.

Yet, digitizing the Turconi clippings, while increasing access, removes their tactility, reducing them to "key frames" as they lose their physicality and become just a part of a larger

project. From 2000 to 2011, archivists at the George Eastman House digitized all of the surviving Turconi clippings, with the explicit intention of making the scanned clippings fully accessible to the public through the Internet (Fletcher 14). The clippings are presented as is, flaws and all, to let the viewer observe the effects of decay on the nitrate clipping. But the lack of tactility within these scans emphasizes that something will always be missing in any kind of digitization of nitrate material. The unaltered nature of the scans preserve the history of the physical material, unlike *The Man Who Knew Too Much*'s restoration, but the digital nature retains those qualities only through the act of seeing. In their digital flatness, they are "key frames" advertising what the George Eastman House has available in their archive. For viewers of the digital copies, the "material contours of early cinema" that the archivists behind the Turconi scans describe have to be taken as a given, as digital presents a flattened, lifeless image (16). Like the wave of transfers in the 'Nitrate Won't Wait' era, digitization as a primary access point reduces the role of film preservation to just cover the act of seeing, rather than an appreciation of the textures of nitrate film or the context that the original material was produced in.

Conclusion

The introduction of cellulose acetate, and later digital, meant that 'nitrate film' could not be defined as simply an artistic tool. It had to be defined either through what it was in relation to the other types of film exhibition or what it was not. However, nitrate's antiquated status allowed it to gain notoriety amongst repertory cinema's as a nostalgia object, allowing viewers to connect to past modes of film presentation and production through viewing the material. Modern day treatments of nitrate film, whether through an actual film print or a digital scan on to a Blu-ray disc, must operate from the confidence that their presentation is the 'authentic' way to view the

film, with the discourse of theatrical presentation defining ‘authenticity’ as exhibition in whatever past mode of film viewing the content was produced in. The notion of ‘authenticity’ in digital presentation of nitrate is rooted in ideas established in nitrate presentation during the cellulose acetate era, but instead of recreating the environment of nitrate presentation within a theater, digital restoration hopes to recreate the actual look of the original work for the viewer.

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