Archival Ethics and Digital Film Restoration
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Introduction

      Skeptics abound in the field of digital film restoration. Whether challenging its supposed ability to summon a film's original state, decrying its erasure of film's material and technological history, or lamenting its frequent focus on tailoring films to contemporary audiences for optimal commercial exploitation, the contentions of restoration have generated a slew of theories and philosophies by which to question and understand the discrete choices made in its endeavors. Despite—or perhaps because of—these numerous contentions, no definitive set of ethics exists in the archival community as to how restorers might frame their decisions within a logic of preservation. Yet in an ever-digital world, with the specter of celluloid death looming over, it seems imperative that digital film restoration be considered for its great potential to salvage film content, a form of preservation which allows for both a respect of materiality and a hark back to a film's ideal state of being.

      Though film is widely considered to be the best preservation format, one would be far removed from reality to ignore the imminent transition to an all-digital world. Steadfast technological innovation, paired with a large-scale abandonment of film by manufacturers and artists alike, will continue to make this transition an unavoidable consideration in the preservation of analog forms. As Dan Bricklin notes: "With ever changing technology, in order to preserve many works we will need to constantly move them ahead, copying them to each new media form before the previous one becomes obsolete."[1]

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[1] Dan Bricklin. "Copy Protection Robs the Future." Dan Bricklin's Web Site. http://www.bricklin.com/robfuture.htm.

This essay will employ archival codes of ethics from the International Federation of Film Archives (FIAF) and the Association of Moving Image Archivists (AMIA) as frameworks for situating the myriad decisions in the digital film restoration process within a doctrine of preservation, drawing on an in-depth review of the literature for both contemporary restoration theory and practical example. For this purpose, the essay will work from an underlying hypothetical: faced with a fast-dying film and the threat of forever losing even a semblance of its ideal state of being, how might one carry out a definitive digital restoration which adheres to the principles of film preservation? Whether or not this essay generates more questions than answers, theoretical discussions of the sort are an essential foundation to one's ability to make appropriate decisions in what is ultimately a subjective process.

The Archival Framework

To foster an effective discussion of the ways in which restoration decisions can be framed within a logic of preservation, it is necessary to delineate those aspects of the archival codes of ethics—as well as theories and arguments made in the literature—that are pertinent for these purposes. Though both FIAF and AMIA feature language regarding restoration in their codes of ethics, these statements provide only the broadest of guidelines for archival digital film restoration. Still, they serve as a useful basis from which to expand a discussion of restoration ethics. In the FIAF code of ethics, three sections are relevant:

> **1.5**. When restoring material, archives will endeavour only to complete what is incomplete and to remove the accretions of time, wear, and misinformation. They will not seek to change or distort the nature of the original material or the intentions of its creators.

1.6. When providing access to material by programming, projection, or other means, archives will

seek to achieve the closest possible approximation to the original viewing experience, paying

particular attention (for example) to the appropriate speed and the correct aspect ratio.

1.7. The nature and rationale of any debatable decision relating to restoration or presentation of

archive materials will be recorded and made available to any audience or researcher.[2]

From the AMIA code of ethics, the following statement applies: "To restore and preserve

artifacts without altering the original materials, whenever possible. To properly document any

restoration/preservation decisions and to make decisions consistent with the intentions of the

creators, whenever appropriate."[3]

Working from this, it is possible to broach some arguments posed in the literature on film

restoration theory which both adhere to the abovementioned codes of ethics and work to

establish a more in-depth doctrine of archival digital film restoration. Paolo Cherchi Usai

provides a useful definition of film restoration from which to frame its contentions: "Restoration

is the set of technical, editorial and intellectual procedures aimed at compensating for the loss or

degradation of the moving image artifact, thus bringing it back to a state as close as possible to

its original condition."[4] Julia Wallmüller contends:

Restoration should reduce or remove damage and errors, while preserving defects inherent in the

work at the time of production as part of its individual characteristics [and] the outcome of a

restoration shall not be a commercialized, 'altered for the better,' or modernized product that

caters to the viewing habits of contemporary audiences.[5]

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[2] "FIAF Code of Ethics" International Federation of Film Archives. 3rd Edition, 2008.
http://www.fiafnet.org/pages/Community/Code-Of-Ethics.html.
[3] "Code of Ethics." Association of Moving Image Archivists. http://www.amianet.org/about/code-of-ethics.
[4] Paolo Cherchi Usai. *Silent Cinema: An Introduction*. London, UK: British Film Institute, 2000, 66.
[5] Julia Wallmüller. "Criteria for the Use of Digital Technology in Moving Image Restoration." *Moving Image* 7, no. 1 (Spring 2007): 79.

Giovanna Fossati notes that a restoration should protect "the integrity of the original image and [restore] the original without denaturing the film."[6] Finally, Paul Read and Mark-Paul Meyer note the importance of ensuring reversibility for both improvements in technology and discovery of new information.[7]

However resolute these contentions may be, digital film restoration is a process which inherently relies on a degree of subjectivity in its efforts. In the words of Cesare Brandi, discussing fine art restoration: "The work of art conditions the restoration, and not vice versa."[8] As such, its ethical questions cannot be ignored. How to achieve an aesthetic that is loyal to a film's original version when reference is unattainable, or when the idea of what constitutes "original" is so elusive in the first place? How to address grain, defects, damage, and error without overwriting or dismissing film's intrinsic material nature and history? How to strive for complete and accurate reconstruction when the field is fraught with missing film sequences and decay beyond repair? These questions are, and will continue to be, at the crux of contemporary ethics and theory of restoration.

The following sections will attempt to bridge this archival framework of digital film restoration with both a more in-depth discussion of its ethical decisions, and practical examples and case studies to illustrate the ways in which contemporary restorations have, and have not, fit within this framework. Additionally, this discussion will unavoidably broach the ways in which this framework is complicated by specific restoration cases. The issues addressed will be situated within two broad categories: first, those issues which are relevant to working with film originals

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[6] Giovanna Fossati. *From Grain to Pixel: The Archival Life of Film in Transition*. 2nd ed. Framing Film. Amsterdam: Amsterdam University Press, 2011, 216.
[7] Paul Read and Mark-Paul Meyer. *Restoration of Motion Picture Film*. Woburn, MA: Butterworth-Heinemann, 2000, 75.
[8] Cesare Brandi. *Theory of Restoration*. Edited by Giuseppe Basile. Translated by Cynthia Rockwell. Firenze, Italy: Nardini Editore, 2005, 48.

and determining creators' intent; second, those which deal with addressing technical and aesthetic artifacts in their historical contexts.

Working with Originals and Determining Intent

The archival framework of digital film restoration outlined above privileges working with source materials as close to original camera negatives as possible, the goal of which is a digital reproduction of images which maintains original integrity to the greatest extent possible. In theory, this concept is rather straightforward. It is common knowledge in the archival world that each subsequent generation of a negative or print introduces loss to the image and, as such, working from a scan of the original elements implies a starting point as close to the true image of the film as possible. In practice, however, this goal is not so easily achieved, especially for early works of cinema. The issue this poses for restorers is how to proceed with a restoration project when a film's original negatives are either missing or no longer exist.

The simplest answer here would be to use the next best option, whatever existing element is closest in generation to the original, whether it be a duplicate negative, a preservation master, or a release print. However, the price of this simplicity is a significant caveat—in this case, a slew of ethical concerns surrounding a restoration's aim to reproduce, as accurately as possible, the original work when the original itself is no longer available. As Cherchi Usai notes: "Exactly where the print stands in the genealogical tree may make a world of difference, both in terms of its completeness and its visual quality," citing that, in broad terms, photochemical duplication presents a 15 per cent loss of image information from one generation to the next.[9] Working with

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[9] Cherchi Usai. *Silent Cinema*, 47.

a print derived from multiple generations would undoubtedly leave a restorer uncertain as to how the image was originally intended to appear, especially without other points of reference.

This raises the question of what a restorer's reference should be in determining a film's original state. Leo Enticknap sheds light on an important point to this regard: "The definition of 'original' used as a default by the majority of restorers—on the medium it was made, and what the filmmaker wanted—is in reality just one of a vast array of potential definitions."[10] Though true that restorations work from a variety of philosophical grounds and are created for any number of purposes, a restoration which adheres to an archival code of ethics provides some clarity; both the FIAF and AMIA codes of ethics explicitly favor the original intent of the creators in the restoration process. For most restorations, this will ultimately hinge on what version of the film is being restored, a factor which further complicates the ideal of a definitive archival restoration and which will be further discussed below.

Regardless, the idea of original intent often blurs the boundaries of digital film restoration, especially in those cases for which a film's creator no longer exists to guide the process. For this reason, it is exceedingly important that historical research be carried out to understand as comprehensively as possible the film being restored, including its structural, aesthetic, and aural nature, as well as the historical context in which the film was made. Wallmüller provides a helpful guide:

> Historical research is indispensable to understanding all the hints moving image materials can give
> us. Learning about technical and aesthetic standards of a given work at the time of production,
> including image and sound recording technologies as well as postproduction and presentation, will
> reveal information that can be vital for the appraisal of what we see and hear in the work.[11]

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[10] Leo Enticknap. *Film Restoration: The Culture and Science of Audiovisual Heritage*. New York, NY: Palgrave Macmillan, 2013, 156.
[11] Wallmüller. "Criteria for the Use of Digital Technology in Moving Image Restoration," 83.

Absent any historical or contextual references of the sort will ultimately require a degree of interpretation on the restorer's part. Nonetheless, diligent attention to historical research proves an essential tenet of the archival digital film restoration framework.

This discussion raises another notable concern: How can one produce a definitive archival restoration of a film that exists in multiple versions, or whose "original" version is widely debated or unknown? As Lindsay Kistler Mattock notes: "Often films are deposited into archives in incomplete forms and without supporting documentation, and many different versions of the print may exist throughout the world."[12] This concern has great implications for decision-makers in digital film restoration. A pertinent example is that of the 2009 restoration of Jacques Tati's *Mr. Hulot's Holiday*. Though originally shot around 1951, Tati made a number of subsequent edits to the film in the decades following its production. A re-edit of the film, including a reworking of the score and sound mix, was carried out in 1962; in the 1970s, Tati shot new footage and edited it into the original footage to create yet another version of the film. Thus, restorers of the film were faced with a number of differing versions. Added to this, each version of the film was created by the director himself—any one of them would fit within the archival ethics' privileging of creators' intent. The issue of creators' intent having been complicated, one might then ask what constitutes the "original" version of the film. Is it the oldest conceived version, or is it the complete version as Tati intended, even if decades later? In this case, and as noted by an *American Cinematographer* article discussing the restoration, "Because the director had made all the changes to the movie himself, it was decided that the third and final version should be the basis of the restoration."[13]

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[12] Lindsay Kistler Mattock. "From Film Restoration to Digital Emulation: The Archival Code of Ethics in the Age of Digital Reproduction." *Journal of Information Ethics* 19, no. 1 (Spring 2010): 78.
[13] Stephanie Argy. "Post Focus: Celebrating *Mr. Hulot's Holiday* Anew." *American Cinematographer* 90, no. 9 (September 2009): 82.

Another example stems from Orson Welles' *Touch of Evil*. Upon viewing Universal Studios' first edit of the film, Welles reportedly sent a fifty-eight-page document to the studio chief expressing his discontents with the edit, shedding light on Welles' own vision of how the film should have been presented. In 1998, *Touch of Evil* was reconstructed and restored based on this document with the aim of presenting the film as its creator had originally intended it. This factor, considered in isolation, adheres to the archival ethics of restoration in its privileging of creators' intent. However, Ross Lipman makes a valid argument that "The result cannot truly be deemed Welles's work, and its creators would not presume it to be—it was hardly an objective process. However, it demonstrably contains strong traces of Welles's vision and can certainly claim at least as much validity as the original studio release of 1958."[14]

Whether or not these two examples took interpretive liberties in their decisions, they provide useful examples as to the ways in which ideas of original and creators' intent are fraught with caveats and complications. From an archival perspective, then, it seems crucial that each version of a film be considered as part of that film's history and that decisions on which version to restore both adhere to the larger principles guiding archival film preservation, and are made transparent to their audiences. Though Enticknap argues that Giorgio Moroder's 1984 version of *Metropolis* cannot in itself be considered a definitive archival version of the film, it is indeed a reinterpretation that has cemented itself in the film's history, however controversial it may be. As such, arguments can and have been made for preserving Moroder's reinterpretation as a valuable archival object, so long as its presentation does not purport to supplant whatever the original version might have been.[15]

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[14] Ross Lipman. "The Gray Zone: A Restorationist's Travel Guide." *Moving Image* 9, no. 2 (Fall 2009): 8.
[15] Enticknap. *Film Restoration*, 153.

Case Study A: *The Devil Rides Out* (dir. Terence Fisher; 1968/2012)[16]

The case of the 2012 restoration of Terence Fisher's *The Devil Rides Out* merits examination as a practical example of the decisions made regarding original version and creators' intent. The restoration was carried out at Cineimage in London, UK, working from a 4K scan of the film's original 35mm negatives, and was finished in 2K for its Blu-ray release.[17] The original version of the film was produced by Hammer Films in 1968.

Though often characterized by a certain degree of genre mastery, Hammer was notorious for its relatively low-budget productions, sometimes leading to unfavorable reviews upon their films' initial releases.[18] In the case of *The Devil Rides Out*, the low production budget resulted in the film being released with some unfinished visual effects; these effects would remain unfinished in all subsequent releases of the film until the 2012 rerelease. During the restoration process, a number of measures were taken to enhance the film by "finishing" five of the most prominent optical effects left behind in original production.

Using the 2004 Anchor Bay DVD release of the film for pre-effects reference, these sequences were comparatively analyzed.[19] The changes made in the 2012 rerelease are as follows:

1. A genie appears on screen. In the original version, the genie simply appears out of thin air and a small amount of smoke can be seen surrounding his feet. In the rerelease, a substantial amount of smoke was added to each shot of the genie, awarding a ghastly appeal.

2. In an attempt to deter a giant spider, a character throws water at it. In the original, a cut to the spider shows no water splash, leaving questionable continuity. In the rerelease, the missing splash of water is added digitally.

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[16] *The Devil Rides Out*. Directed by Terence Fisher. UK: Studio Canal, 2012. DVD.
[17] *The Power of Light: Restoring The Devil Rides Out*. Directed by Marcus Hearn. UK: Studio Canal, 2012. DVD.
[18] Andrew Leavold. "The Devil Rides Out." *Senses of Cinema*, March 2003.
http://sensesofcinema.com/2003/cteq/devil_rides_out/.
[19] *The Devil Rides Out*. Directed by Terence Fisher. USA: Anchor Bay, 2004. DVD.

3. The Angel of Death—a skeleton on horseback—rides into a room through a small opening in the door's threshold. In the original, the Angel simply rides through the opening. In the rerelease, a harsh beam of light is added to the opening for dramatic effect.

4. A close-up of the same Angel of Death. In the original, the Angel's head is posed against a blank background (the restorers claim this to be an unfinished bluescreen, but in the 2004 DVD it appears too dark for the average viewer to make this distinction). In the rerelease—and in what is perhaps the restorers' boldest move—a brilliant display of blue flames is digitally added to the background.

5. A lightning bolt strikes down on an altar. In the original, the bolt is rather dim and cheap-looking, not quite reaching down to the altar. In the rerelease, the intensity of the bolt is enhanced and extended to strike the altar.

Each of these alterations was undoubtedly made with fair intentions based on the commercial nature of the restoration; this analysis should in no way suggest that a restoration which enhances and tailors a film to contemporary audience expectations has no value in society at large. However, considering this restoration within the archival framework renders most of these decisions rather complex and problematic, and one might even argue that it shouldn't be considered a "restoration" based on the truest definition of the word. Nonetheless, these decisions are worth discussion.

In *The Power of Light*, a supplementary feature of the 2012 Blu-ray which documents the restoration process, the restorers note that their decisions to enhance the unfinished optical effects were made on the assumption that the creators would have intended them to be finished but were constrained by finances. Though this concept falls within the archival framework in theory, it illustrates the limitations that must be inherent to any determination of original intent. For instance, the restorers' decisions are based almost entirely on assumption and speculation rather than historical evidence. However true it may be that certain effects were intended but

unfinished, the restorers show no significant evidence as to which sequences were left unfinished nor to how they would have looked had they been completed. *The Power of Light* makes a semblance of justification for these decisions by featuring interviews with the children of Michael Stainer-Hutchins—special effects supervisor for the film's original production—in which they argue that their father was restrained by budget but would have wanted the film to be finished to the highest degree, as he always did. However, these claims are once again mere speculation. As such, the argument of creators' intent is left mostly unsubstantiated, and the restorers' decisions left rather presumptuous.[20]

Considering this case within the archival framework, then, poses some difficulty. The decisions of the restorers to change the nature of the original with only speculative claims to support their choices, to commercialize and modernize the film to suit contemporary audiences, and to disregard the characteristic financial and technological limitations at the time of production all work against the archival framework of digital film restoration.

Addressing Technical and Aesthetic Artifacts in Historical Context

The second category deals broadly with addressing artifacts during the digital film restoration process. Included within this discussion are defects and errors introduced to the film material or image during original production, damage introduced to the film material over time, technical limitations at the time of production, and physical decay of the film material. Each of these factors presents its own unique set of concerns to be considered in developing an archival framework of digital film restoration.

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[20] *The Power of Light: Restoring The Devil Rides Out*. Directed by Marcus Hearn. UK: Studio Canal, 2012. DVD.

It is generally accepted that defects unique to a film's original production should be preserved in a restoration by archival standards, adhering to a respect for the original source materials. Wallmüller, for instance, notes: "*Restoration* should reduce or remove *damage* and *errors*, while preserving *defects* inherent in the work at the time of production as part of its individual characteristics."[21]

Certain aspects of this issue tend to remain rather murky and without clear solution. For instance, Cherchi Usai points out that for very early cinema, image stability was hardly guaranteed, both in camera and in projection. Thus, many audiences would have seen jittery images on screen. Cherchi Usai, though himself not posing a solution to this issue, brings to light an important factor to be faced in the restoration process: "In restoring an early film with this kind of defect we are faced with another unanswerable question: should we reproduce image instability just as it was […] or should we make it look stable, as if the problem never existed?"[22] Though an answer to this question within an archival framework might seem more clear than not, the contention stems from the presumption that filmmakers at the time would not have desired instability. Thus, reconciliation between creators' intent and technical limitations at the time will have to be achieved.

An archival approach to digital film restoration might tend towards preserving the technical limitations inherent to the original production of the film which, in the present case, would involve preserving a certain amount of image instability in the digital restoration. However, as Andreas Busche points out: "There is a decisive difference between a picture that is unstable due to the low quality of motion picture technology at the time of production and a

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[21] Wallmüller. "Criteria for the Use of Digital Technology in Moving Image Restoration," 79.
[22] Cherchi Usai. *Silent Cinema,* 60.

picture that appears unstable because of errors in a later duplication process."[23] Furthermore, Jon

Gartenberg notes the difficulties that arise when considering defects and damage for

experimental films which might be intentionally scratched or otherwise damaged by the creator,

relying on these qualities for a gritty aesthetic.[24] As such, a restorer would need to determine

through historical research, to the best extent possible, the original source of defects in deciding

how to proceed.

Among the considerations here—though by no means considered a defect—is the film's

intrinsic grain structure. Grain is a distinct part of film's materiality and aesthetic, the

preservation of which is widely considered to be important for maintaining the integrity of the

film image. Simply preserving the grain captured in a digital scan of film elements, however,

might not always be sufficient within the archival framework. Read and Meyer point out that

when restoring a film from later generations of prints, heavy graininess might be a result of

inadequate film processing as opposed to an intended aesthetic quality intrinsic to the original

elements. The risks involved in addressing this factor cannot be ignored; Read and Meyer go on

to suggest:

> It is therefore necessary to use other parameters to assess the photographic quality of this film in
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> comparison to an industrial product of the same period […] Otherwise, one would run the risk of
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> carrying out a hyper-restoration, which might sterilize and flatten the rough finish which
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> represents one of the fascinations of this film.[25]

The simpler consideration within this discussion, though not without its own debates, is

addressing damage and error introduced to the film elements over time from over or improper

use. In broad terms, most restorers would agree that damage and errors introduced over time

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[23] Andreas Busche. "Just Another Form of Ideology? Ethical and Methodological Principles in Film Restoration." *Moving Image* 6, no. 2 (Fall 2006): 18.
[24] Jon Gartenberg. "The Fragile Emulsion." *Moving Image* 2, no. 2 (Fall 2002): 143-44.
[25] Read and Meyer. *Restoration of Motion Picture Film,* 237.

should be removed during the restoration process. Not having been introduced during the original production of the film, nor having been intended by creators (with natural exceptions to both), it follows that a restoration within the archival framework should digitally remove these artifacts and restore the film to an ideal, near-original state. Though simple in theory, a number of counter arguments are important to consider. Cherchi Usai, for instance, has argued that "the real problem with digital restoration is its false message that moving images have no history, its delusion of eternity."[26] With regards to this, Wallmüller notes that classical fine art restoration theory has often favored preserving a work's signs of wear as important manifestations of the work's history: "In this sense, restoration that aims to make a work spotless risks the loss of authenticity in favor of modern taste."[27] While these views are arguably important for any restorer to be aware of and consider, and while a digitization of a film which preserves the film's signs of wear certainly has value as a historical record, they ultimately do not apply to a framework of archival restoration. Wallmüller even goes on to refute these views, arguing that a work "cannot be reduced to being a historical document only. Its aesthetic value must be perceptible."[28]

In considering defects in the form of outdated visual effects, the case of the 2006 restoration of Stanley Kubrick's *Dr. Strangelove* is pertinent. The film features sequences in which model airplanes, suspended by wires, are used to give the impression of real planes flying through the air. During the restoration, it was agreed upon by both Sony (who commissioned the restoration) and Cineric (the lab which carried out the restoration) that the wires, visible in the original version, would be preserved in the restoration. According to Fossati:

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[26] Paolo Cherchi Usai. "The Lindgren Manifesto." Lecture, Ernest Lindgren Memorial Lecture, BFI Southbank, London. August 25, 2010. http://blogs.bl.uk/sound-and-vision/2010/08/the-lindgren-manifesto.html.
[27] Wallmüller. "Criteria for the Use of Digital Technology in Moving Image Restoration," 82.
[28] *Ibid.*

These are to be considered the state of the art special effects at the time the film was made, and

removing them digitally would mean 'improving' the film by means of current special effects'

techniques […] Such intervention would, for most restorers, go beyond what is ethically

acceptable since it would erase the signs of the film's original means of production and aesthetic

appearance.[29]

Whereas a restoration for purely commercial purposes might have elected to enhance the original

by removing the visible wires, the decision to preserve them falls within the archival

framework's respect for the film's original means of production.

In conjunction with visual effects, there is a need to address sound mixing technology.

For films produced monaurally, before the advent of stereo and surround sound systems, an

archival framework would suggest that the sound mix be preserved as it was originally produced.

However, as most contemporary cinemas are outfitted with state of the art surround systems,

there is a natural urge, especially for commercially-focused restorers, to optimize and re-mix

monaural sound for contemporary systems. One such example is the 1996 restoration of Alfred

Hitchcock's *Vertigo*, which originally featured three distinct sound tracks mixed into one final

monaural track. The restoration digitized the sound tracks and mixed them into a stereo-

separated version to obtain optimal output in cinemas. The restorers justified their decision here

by citing access to Hitchcock's original notes on the sound dub, as well as an intention of making

the film palatable for contemporary audiences.[30] Though certainly viable as a commercial

product, one might find difficulty situating this decision within an archival framework. Citing

Hitchcock's general mastery of state of the art film technologies at the time of his productions,

Fossati makes an important point: "In this case, only the re-enactment of such technological

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[29] Fossati. *From Grain to Pixel*, 224.
[30] Sean Patrick Kilcoyne. "You Shouldn't Have Been That Sentimental: Film Restoration Ethics in Hitchcock's *Vertigo*." *Journal of Information Ethics* 19, no. 1 (Spring 2010): 66.

aspects would be true to Hitchcock's intent."[31] In other words, an archival digital restoration

would aim to preserve the technological and aesthetic characteristics of Hitchcock's work at the

time of production, however outdated they may seem to contemporary audiences.

The final factor considered within this category is decay of film elements that has

progressed beyond repair. How does a restorer address decay that cannot be restored without

essentially generating images that were never part of the source materials? This is especially

pertinent to nitrate films which have undergone significant decay, often rendering entire

sequences of films indistinguishable. In Fossati's examination of the 2005 restoration of Sam

Wood's *Beyond the Rocks* it is noted that, when possible, severely decayed frames were

recreated using image elements from surrounding frames. Fossati acknowledges that extreme

cases of the sort are undoubtedly questionable in ethical terms, but will generally be accepted if

it does not significantly alter the original integrity of the film and if it is well documented. In the

more extreme cases—ones in which severe decay entirely prevents a restorer from digitally

restoring the image—the decayed frames are left as they are so long as a semblance of narrative

continuity is perceptible in the images.[32]

But what if narrative continuity is not perceptible in damaged or decayed frames?

Furthermore, what if entire sequences are simply missing? In other words, how does one carry

out a complete, archival restoration if sequences of a film that are known to have been in the

original cannot be included in the restoration? The restoration of Joseph De Grasse's *Triumph*

circa 2007, for which the final two of the five total reels had long been missing, addressed this

issue by using the original script to generate intertitles at the end of the film which would give

audiences a sense of how the film concludes, as well as a series of production photos for visual

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[31] Fossati. *From Grain to Pixel*, 125.
[32] *Ibid.,* 241.

reference.[33] This approach adheres to the archival restoration framework in that it aims for a reconstruction as close to the original version as possible, but rather than generating new images in lieu of missing elements, restorers compensated by including information to continue the narrative in a transparent way, without proclaiming a false authenticity. While some may argue this to be a distracting process for filmgoers, especially in those cases for which missing sequences are in the middle of the narrative action, recreating original audience experience—nearly, if not totally, impossible in its own right—is considered outside the scope of the archival restoration framework.

Case Study B: *Limite* (dir. Mário Peixoto; 1931/2010)[34]

Based on the discussions above, the 2010 restoration of Mário Peixoto's *Limite* can be considered a model example of a digital film restoration within an archival framework. The restoration was carried out by the World Cinema Project, in collaboration with the Cineteca di Bologna, working from the Cinemateca Brasileira's 2K scan of the film's best surviving elements—a duplicate positive and duplicate negative. The original 35mm nitrate negatives no longer exist; they were copied onto cellulose acetate stock in the 1970s and subsequently discarded. Though not generated from the original negative, the fact that the best surviving elements were used adheres to the aim of working from elements as close to original as possible.[35]

Watching the film, it is evident that all but the more severe generational artifacts (namely dust, dirt, and scratches) have been removed in restoration. The images that do not display

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[33] Susan King. "A 'Triumph' on the Lost Film Trail." *Los Angeles Times*, October 7, 2007.
http://articles.latimes.com/2007/oct/07/entertainment/ca-cinefile7.
[34] *Limite*. Directed by Mário Peixoto. USA: The Criterion Collection, 2017. DVD.
[35] *World Cinema Project No. 2: About the Transfers*. New York, NY: The Criterion Collection, 2017. 55-56.

significant decay appear mostly clean and clear for such an early film. However, in cleaning the images, the restorers have maintained the film's grain structure as best as possible. Even the clearest of images retain a texture faithful to the integrity of 35mm film. Though certain sequences may indeed have been given a degree of stabilization, many have preserved some instability in both camera movement and film transport, preventing the restoration from acquiring a denatured, modernized feel in the process.

A number of sequences throughout contain significant traces of film decay, all of which are kept in place. This fits within the archival framework on a couple levels. For one, the decay in these sequences does not substantially bar the viewer from discerning the narrative content of the image and, as such, the narrative continuity is preserved in the most complete form possible (more on this below). The other is that repair of each of these instances appears to be beyond what would have been ethically sound in digital restoration. In other words, these sequences are sufficiently decayed so as to prevent restorers from eliminating the signs of decay without essentially generating inauthentic images. Thus, the decision to keep these sequences in place for the finished restoration adheres to the aim of archival restoration.

The film contains one long-lost sequence which, to this day, has not been found. The restorers addressed this issue by inserting an intertitle which states: "This intertitle corresponds to a lost part of the film in which Man #1 helps Woman #2." By including this intertitle, restorers have preserved the film's completeness despite the missing footage, ensuring that the gap in the narrative is made clear to audiences. Furthermore, the restorers chose to design this intertitle following the aesthetic of the film's own intertitles, which arguably fosters a less obtrusive viewing experience by smoothly bridging the gap from one sequence to the next.

Finally, the film's soundtrack was remastered using archival gramophone records of the musical performances that were originally intended to accompany the film.[36] This practical use of historical research and archival sound elements results in a restored soundtrack that maintains an adequate degree of integrity to how Peixoto intended it to be incorporated into the overall film.

For these reasons, among others, the 2010 restoration of *Limite* proves a model example of a digital film restoration under an archival framework.

Conclusion

The degree of subjectivity involved in all of these decisions implies that the myriad debates surrounding digital film restoration will not likely subside. Yet the undoubted transition of moving images from analog to digital warrants a discussion of how best, from an archival standard, to digitize motion pictures and restore their visual and aural content to some ideal state of being. Faced with constant format obsolescence and widespread film decay, restoration offers a great preservation utility. As Fossati argues:

> Whereas [it is suggested] that the curatorial value is strictly linked to the original apparatus (e.g. a film projection of a film-born film), it can be argued that a proper digital restoration and exhibition can recreate much more thoroughly the experience of an archival film.[37]

Arguments as to film restoration's potential to erase a film's material history are certainly valid; indeed, in an ideal world, a digitized version of a film which keeps the film's signs of wear would be preserved along with its restoration. However, it seems reasonable to argue that most filmmakers would not have made films with the intention of degradation and death over time,

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[36] *Ibid.*
[37] Fossati. *From Grain to Pixel*, 144.

that they would certainly have hoped for some semblance of eternity in their art. To discredit the utility offered by film restoration in that regard would be a great disservice to filmmakers past, present, and future. Whether or not it is possible to achieve an ethical standard of digital film restoration, ensuring that the integrity of a film is maintained in the restoration process will ultimately hinge on a robust theoretical framework from which decisions can be based. Thus, continued discussion of how restorations past and present adhere to the greater principles of film preservation is essential to the advancement of the field.

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