

Some Bald Assertion by an Ignorant and Badly Educated Frenchman

*Technology, Film Criticism,
and the "Restoration" of
Vertigo (1996)*

LEO ENTICKNAP

Now it has been re-released for a second time, nearly 40 years after it was made, and it still retains all its old power and beauty, however much critics may quibble about the remixing of the soundtrack or the regrading of the print.¹

This remark, written by the well-known British critic Peter Wollen, was in response to a big-budget, highly publicized, and widely distributed rerelease of *Vertigo* (USA, 1957, dir. Alfred Hitchcock), which took place in the autumn of 1996 and spring of 1997. This occasion marked the convergence of two worlds. The academic and critical establishment related to the film industry has always taken an intense interest in Hitchcock, verging at times on idolatry. He is seen as a key figure in debates on the nature of authorship in cinema, in the evolution of European and American film styles, and in relation to psychoanalysis and spectatorship. Hitchcock in general and *Vertigo* in particular have been the subject of numerous monographs, articles, and university courses, most of them produced by people with a background in humanities academia, education, and journalism. It was thus inevitable that this establishment would take a particular interest in the rerelease, as evidenced by a plethora of articles such as the one quoted above. The *Vertigo* rerelease also had a special significance for the film archive community. As readers of this journal are acutely aware, the overwhelming majority of archival preservation and restoration work takes place behind the scenes and is seen only by a small group of archivists, media industry researchers, and individuals. *Vertigo* was a different case altogether: Hitchcock's name ensured wide exposure, and in this case the word "restoration" was an explicit element in the marketing campaign. Wollen, therefore,

was forced into the position of having to defend the humanities academic's characteristic disinterest in all matters technical.

His remark reveals much about how film studies as an academic discipline tends to approach the technical elements that constitute the material specificity of film as a medium. For Wollen, the "power and beauty" of *Vertigo* derives from the literary and stylistic elements relating to Hitchcock's adaptation of Boileau and Narcejac's 1955 novel and excludes any of the technical aspects of the film and its "restoration." By dismissing the technical issues raised specifically by the rerelease of *Vertigo* (let alone those relating to the film's initial production), Wollen is not just suggesting that they are unimportant; they are deliberately excluded from his reading of the film. In conclusion, he notes that "the cinema, after all, is an art of ghosts, projections of light and shadow, which seem while we watch them to have the substance of real beings."² It ("the cinema" in general and *Vertigo* in particular) "seems" to represent certain things, to retain power and beauty in a way that might almost be undermined by any serious examination as to how that representation *physically* takes place.

Thus the role played by technical processes in creating the film Wollen is analyzing is reduced to vague, abstract notions of "ghosts" and "projections of light and shadow" and thus deemed unworthy of further inquiry. While this is an extreme position, it is, I think, symptomatic of the fact that technology has traditionally been sidelined by film scholarship. This in itself indicates the extent to which academic film studies has evolved out of humanities scholarship, to the exclusion of other, vitally important forms of understanding. Cinema, radio, television, and (more recently) computer-based moving image media are cultural forms that quite simply could not exist without a complex range of interrelated technologies. Music and language can be created and communicated using nothing more than speech and human memory (although in practice, printing, book technology, and the design and manufacture of musical instruments have been a crucial factor in the development of both), and the only technology required for a dramatic performance consists of the performer(s), a space, and an audience. Even the most rudimentary

film requires mechanical, optical, film stock, laboratory, and exhibition technology and, in many cases, the means of recording, synchronizing, and reproducing sound. The exact form of that technology, and the way it is used, has a fundamental effect on the dramatic and aesthetic elements that Wollen and critics like him are more interested in. Therefore the issues raised by its use, especially in a high-profile archival restoration project such as *Vertigo*, deserve far more detailed attention.

One possible reason why the study of technology has not featured prominently on the agenda of humanities-based film criticism is the tendency of those few writers who have dealt with the issue to opt for an empiricist, historiographical line of inquiry as opposed to methodologies based on the Leavite conception of films as “texts” that can be analyzed and theorized about in isolation from the actual context of their production and reception. As applied to the history of film technology, the empiricist model has received perhaps its staunchest defense from Barry Salt, who notoriously described the theories of authorship associated with the journal *Cahiers du cinéma* as “some bald assertion by an ignorant and badly educated Frenchman.”³ He continues:

Eventually we will discover how the actual mental mechanisms involved in perception of the real world work, and then we will know how the perception of the representational part of the film medium works as well. But this will be done by scientists, and not by “theorists” sitting in armchairs in the humanities departments of universities.⁴

Yet for all that Salt denounces the existing theoretical canon on the grounds that its conclusions are largely unquantifiable (for example, how could it ever be objectively proved whether or not male audiences of mainstream Hollywood films engaged with images of women in ways suggested by Laura Mulvey?), his own research achieves little more than to explore how its application can be understood in relation to the textual specificity of individual films. For example, he shows that the average length of shot used by Fritz Lang shortened from his European to his American period,⁵ but does not suggest how this information might

help us to understand the significance of a given Lang film or how Lang’s directorial style might have been evolving. Salt raises an interesting question—why are certain filmmakers, who are noted for their artistic individuality, strongly associated with specific technologies? For example, why did Powell and Pressburger choose to work extensively with the beam-splitting Technicolor process, Hitchcock with VistaVision, or Spielberg with the DTS sound system? But raising these sorts of questions is about as much as Salt is able to achieve, and, in the last analysis, his book reveals little as to the implications of this sort of research on the everyday practice of film criticism.

An alternative approach to the issue has been suggested by V. F. Perkins. Writing in 1972, he argued that it was necessary to relate an existing, largely historiographical understanding of cinema technology to the concept of “art”:

If we are to relate critical judgements sensibly to mechanical development, we must discover the extent to which an imperfect technology imposes artistic limitations; we must also assess the ways such limitations can aid or obstruct various kinds of artistic communication.⁶

While Perkins gives a rather negative impression of what film technology has to offer the medium—it is “imperfect” and “imposes limitations,” as distinct from a positive achievement that offers possibilities—his call for a historically specific understanding of that technology in terms of an artistic or aesthetic function certainly offers more scope for debate than the casual dismissal of Peter Wollen, or indeed Barry Salt’s approach, which is essentially a data-gathering exercise that appears to have few real-world applications other than to discredit the use of literary theory in film criticism.

However, Perkins’s belief that the aesthetic functions of film technology could only be fully addressed through the convergence of critical and historical approaches had little or no place in the prevailing academic climate of the 1970s and 1980s, which emphasized feminism, left-wing extremism, and other forms of ideological dogma as a means of overturning established practices in history, theory, and criticism. The proceedings from a conference

on “The Cinematic Apparatus,” held in February 1978, provide an indication of this. In an introductory article, Stephen Heath stated explicitly that the question of technological and textual specificity was not on his agenda, largely because the methodologies needed to address it were fundamentally incompatible with the Althusserian-Marxist conception of cinema as an institution that he was advancing. Thus, instead of suggesting how knowledge about technology could inform our understanding of the existence of specific films, filmmakers, and practices, Heath stresses

the necessity also to conceive that history [i.e., of cinema technology] is a political understanding, to imagine that it can be grasped critically from aspects of contemporary, avant-garde film practice, for example.⁷

Or, put another way, empirical arguments can be “grasped critically” away from established fact and made to fit a preconceived ideological or political agenda.

In fact, most of the articles reprinted in this collection consist either of theoretical waffle (so much so that one begins to understand the severity of Barry Salt’s reaction, although his belief that French males were primarily responsible would probably benefit from further elaboration) or empirical accounts that put forward straightforward, cause-and-effect models, drawing very similar conclusions to those of Salt without really considering the wider implications of their findings.⁸ Furthermore, they appear to have set a precedent for the small amount of work in this area that has taken place since. However, if it is possible to conclude from this state of affairs that no stimulus has thus far existed for considering the implications of technology on textual analysis, developments in recent years, particularly in the field of archival preservation and restoration, have brought Perkins’s claim to the fore. I shall argue that it must now be addressed with urgency.

NEW TECHNOLOGY, NEW DANGER: SCHOLARSHIP AND EXHIBITION PRACTICE

When *Film as Film* was published, the technical attributes of the medium were static and thus

taken for granted. Films were seen—and studied—through the medium in which they originated, the only significant departure from this practice being variations in gauge (usually this meant 35mm originals being seen in 16mm reduction prints). Then came video. Given its lower cost and ease of operation—no technician is needed to operate a domestic VCR—it is unsurprising that the use of this technology is widespread within film studies departments (however paradoxical that statement may seem), analogous with fine art students who regularly work with photographic reproductions of oil paintings. Moving into the twenty-first century, the increasing convergence of moving images with information technology is likely to exacerbate this trend. The now rapidly increasing availability of archival holdings in digital form off-line (on DVD) and online (either as streamed video or downloadable files) is increasing the gulf between the visual properties of the original film elements and the form in which their contents are viewed by the vast majority of students and researchers.

Despite the ever more fearsome technical barrier, the academic establishment has some questions to answer. Fine art students are systematically taught about the changes in representation that take place when an oil painting is photographed and thus, crucially, are made aware of those elements in a canvas that are either absent from or reproduced differently in the resulting picture. Most undergraduate finalists in film studies (not to mention a frightening proportion of their lecturers) have never heard of a telecine machine, of the different visual properties in a photographically generated image as distinct from an analog or digital electronic one, or of material changes such as the increase in speed, minor variations in aspect ratio, and the rerecording of sound tracks. I am not arbitrarily denouncing the use of videotapes and digital media in film studies. Indeed, it has probably enabled the subject to grow to a level that would have been impossible fifteen years ago. But it is important to recognize that the image and sound on such a recording derived from a film differs substantially from that of the originating medium. More important, its use has further inhibited the inclusion of technical issues into research agendas and syllabi that

remain dominated by critical approaches based purely in humanities discourses.

A further trend has emerged in the last decade, one that could prove to be even more problematic. Studios have now started to re-release films, often decades after production, in so-called restored versions. While, given certain economic conditions, the periodic redistribution of films has long been an established practice (for instance, the Disney policy of re-releasing their animated features every seven years), it is only recently that this has regularly involved making substantial changes to a film as it was originally produced (although even this is not without precedent, an infamous early example being the 70mm wide-screen version of *Gone with the Wind* that circulated in the 1960s).

In previous generations, the phrase “new print” was often used to describe rereleased films. This meant simply that the copies in circulation had been made, usually by contact printing, from a negative that had been used to produce the prints distributed in a previous release. But the prints themselves were, as the phrase implies, new, and thus had not suffered from the wear and tear caused by handling and projection that would have been apparent had the original prints simply been recirculated. In the days when this was the commonest practice, the results were considered acceptable, and usually no further restorative work was deemed necessary.

However, there has been an increasing tendency among the rights owners of films, historians, and archivists (but much less so among critics and theorists) to question what constitutes originality and whether it is possible to attribute originality to a given component. A “new print” might derive from a negative of a shortened version, perhaps one that was prepared to conform to a local censorship regime. If a film had been changed by a studio against the wishes of its director or other individuals concerned with its production, which of the two versions should we regard as definitive? The film as released, as that was what the public actually saw, or the unmodified cut, on the grounds that it is a more faithful representation of the author’s intentions (however, and whoever, the author is defined)? When the

UCLA Film Archive “restored” John Ford’s dubbing preferences to *My Darling Clementine* in 1996 (the 1946 release had a more heavily orchestrated score and notably more intrusive sound effects), they argued in favor of the latter. On the strength of this argument, they even inserted a shot that had been digitally copied from another section of the film on the supposition of a mistake in Ford’s editing.⁹ There are many other similar instances. Authorial intent and, in the case of living directors, endorsement seem to be regarded without question as acceptable, even desirable, criteria in formulating production strategies for creating new versions of old films. If proof of this is needed, it can be found in a catchphrase now regularly used by studio marketing departments: the “director’s cut,” a phenomenon that made its first significant appearance at the 1992 London Film Festival when a revised version of *Blade Runner* (USA, 1982, dir. Ridley Scott) was premiered.

Therefore, one important aspect of film restoration practice as it is currently evolving is to address these and other issues in deciding what material generated at the moment of production should be included in the revised version, and, conversely, what should be left out. Other, purely technical factors play their part, and their significance will increase with time. The days of the simple “new print” are undoubtedly numbered. Part of the reason for this is that the inherently unstable nature of all pre-polyester film bases and many emulsions has necessitated the development of archival practices designed to rehabilitate material that would otherwise have been rendered inaccessible through chemical decay, often exacerbated by unsatisfactory storage conditions. Cellulose nitrate and cellulose triacetate film will eventually decompose to the point at which images and sound can no longer be recovered from it; thus the only way to preserve the material it holds is to copy it. The vast majority of tripack color film, used from when the Nazis developed it as a commercially viable technology until the advent of low-fade stocks in the early 1980s, is also prone to dye fading. In extreme cases an element will have assumed a uniform pink hue within a decade of processing. In 1996, shortly before the *Vertigo* rerelease, a

new print of *North by Northwest* was distributed in Britain by Artificial Eye. It was very badly faded throughout, as presumably the damage had been reproduced en clair from the source internegative.¹⁰

The duplication techniques that have been evolved by archivists in order to address the decomposition of moving images have generally been understood as straightforward technical procedures, to the exclusion of the ways in which they affect the physical attributes of a film as it is understood by an audience. As Mark-Paul Meyer has argued, this mentality is still widespread among archivists, and it certainly has not been questioned in any meaningful way by the academic sector:

Reproduction is an essential part of any film restoration which is dominated by practical and industrial standards and which is mostly discussed in terms of technical nature, not in terms of ethics.¹¹

It would seem that this situation is in need of review, as, in some cases, the duplication process can entail substantial changes being made from the source to the copy. For the purposes of this discussion, I will make a distinction between preservation and restoration. The object of the former is to treat and store the original component in a way that inhibits the degradation of image and sound as much as possible and, when duplication becomes necessary, to copy it as faithfully as possible; i.e., the image and sound characteristics of the duplicate film should resemble the source as far as can be technically achieved.

Restoration is a far more contentious affair, ethically speaking. It is undertaken when preservation is deemed to have failed, and a film is not known to have survived in the required form (however that may be defined, and by whom). One method of restoration involves assembling a completed film from a number of different source components, often in an attempt to reconstruct it in a form that is known to have existed in the past, the exact constitution of which can be established to a reasonable degree of accuracy from nonfilmic evidence such as cutting continuities and other written documentation. Probably the most celebrated and widely known example of reconstructive restoration to date is Kevin Brown-

low's version of *Napoleon* (France, 1927, dir. Abel Gance), released in 1981. *The Life Story of David Lloyd George* (UK, 1917, dir. Maurice Elvey) would run a close second: in this case 137 rolls of processed but uncut camera negatives were discovered in near-perfect condition seventy-seven years after shooting (due to a suspected act of political censorship, the film was never released at the time of its production). Using evidence written on tins, leaders, and spacing, staff at the National Screen and Sound Archive of Wales were able to reconstruct what they believe to be a reasonably accurate approximation of how the film would have been edited had the production ever got that far.¹²

Crucially, restoration can also involve attempting to enhance the visual or sonic properties of the source material being used in the copying procedure, but whether the end result can really be described as an enhancement is ultimately a subjective judgment. If a film is being copied for preservation purposes, the aim is to make the duplicate resemble the original in every possible way, and the two can thus be objectively compared to that end (using measurements of contrast, sharpness, color density, and so on). If, however, we are actually trying to *change* those characteristics, how do we decide what constitutes an enhancement, what makes it in any given sense better? Certain technical characteristics are historically specific—take, for example, the sequences made by the comedian Harry Enfield that imitate the style of wartime 16mm instructional shorts (as Enfield perceives the genre) by, among other devices, exaggerating midtones, flattening contrast in the image, and deliberately reducing the audible sound spectrum and introducing ground noise. Furthermore, users of archive film often introduce technical characteristics that *are not* historically specific or even authentic. Probably the most widespread instance of this is the common visual code among documentary producers to add electronically simulated dirt and scratching in order to signify that archive footage is “old,” despite the fact such defects would not have been present on a print that was new at the time of release.

So, what exactly is a “restoration” that involves actual technical intervention (as opposed to reconstructive restoration, the objective of which is simply an expression of what it

is the restorer is seeking to reconstruct) trying to achieve? This brings us back to the question of originality, central to our conception of a film as it existed at a given time, and thus to those characteristics from that existence deemed to have been lost and that need to be “restored” in the new version. A claim of originality, or authenticity, in a “restored” film is also an important element in the marketing and advertising strategies used to sell these new versions to the public, even though, in many cases, the film, taken as a complete textual system, may have been radically altered from previous versions regarded by many as original. Meyer asks:

How many concepts of the “original” are there? What is the status of a notion like “authenticity,” a notion hardly discussed among film archivists, or the notion of reconstruction? And aren’t archivists in need of a theory of reproduction?¹³

To provide one concrete example of how these questions have been addressed in practice, I shall consider the *Vertigo* restoration, undertaken by Robert Harris and James Katz, completed in 1996, and released in the UK on April 25, 1997. By comparing the technical specifics of the 1996 version against what is known about the film in the form that it existed and was shown in 1958, I hope to show that there are considerable differences, and that those differences have exerted a fundamental effect on what Perkins terms the “artistic communication” of the film as a complete textual system.

VERTIGO AND THE “RESTORATION” PROCESS

To start with, let us take Harris and Katz’s stated objectives for the project:

Our intent, at all times, was twofold.

1. Create preservation elements to take the film well into the next millennium.
2. Create an entertainment which would work well with modern audiences.¹⁴

What is being undertaken here was both preservation and restoration, in the sense that I have defined them, although it is important to bear in mind that only the latter was intended for immediate release at the end of it all. It

would seem that authenticity was by no means the key criterion. Harris and Katz were seeking to “create an entertainment” for 1996 audiences, not necessarily to re-create what the audiences of 1958 experienced.

Throughout their discussions of the project, Harris and Katz stressed that their approach to preservation and restoration was based on two separate concepts. To preserve, therefore, copies were made of all the surviving elements from the original production process that formed the sources for the restoration. But to restore, major changes were effected.

Straight reproductions from master material could not be used to form the picture element of the new version without substantial modification for two reasons. First, *Vertigo* was photographed in the now obsolete VistaVision system, which exposed 24mm x 36mm frames (with an aspect ratio of approximately 1:1.5) horizontally onto 35mm stock. The projectors needed to show VistaVision films in their original form were expensive, mechanically complex, and unreliable, were installed only in a handful of city center locations, and are now virtually extinct.¹⁵ Therefore, the vast majority of release prints made from VistaVision camera negatives had to be optically reprinted onto standard 35mm in one of a number of ways. It was these compatibility problems that led Paramount to abandon VistaVision as a production medium after the release of *One-Eyed Jacks* (USA, 1961, dir. Marlon Brando), although it is still in limited use for special effects and back-projection work in studios. The same optical concept (advancing the frame horizontally rather than vertically in order to maximize the frame area) is also used in the IMAX special-venue format, but the 70mm film is advanced pneumatically rather than by a mechanical intermittent unit.

Second, color loss had occurred. The single-strip camera negatives had suffered the extreme color dye fading that affected Eastman-color emulsions—Harris and Katz estimated that of the yellow, cyan, and magenta elements that constitute the negative emulsion,¹⁶ between 30 and 40 percent of the yellow and cyan dye and 10 to 15 percent of the magenta had been lost.¹⁷ Furthermore, the intermediate three-strip separations used as part of the Technicolor printing process, which are immune



**Figure 1. Robert Harris,
Jim Katz. Courtesy of
Robert Harris.**

from such fading, had shrunk to varying degrees, making it impossible to align, or register, the elements with the accuracy needed to make adequate copies in some sections.

The technical issues involved in remastering the *Vertigo* negatives were to retain the surface area (and thus the definition) of the VistaVision originals and to redress the color fading. The first problem was overcome by striking the new negatives on 70mm,¹⁸ which has a larger frame area than VistaVision and which is still in limited use as a cinema exhibition format. The color fading was a bigger problem. Harris and Katz, going through the film shot by shot, noted that in cases where both sources

would yield a duplicate they regarded as acceptable, a decision had to be made whether to copy from the camera negative, which would enhance sharpness and contrast, or to copy from the intermediate separations, which would favor color balance.¹⁹ In the absence of a definitive print, they sought nonfilmic evidence in order to make these decisions, such as paint samples from Kim Novak's Jaguar and a number of the costumes used in the film. Where the camera negatives were used, they were printed using filtered light in an attempt to achieve the desired color balance.

In remastering the sound track, the extent of the technical intervention is such that, arguably, the new version bears very little similarity to the one that was recorded and mixed in 1958. During the production process, three separate elements are recorded: dialogue, music, and effects (for example, the ambient sound in a city street or a car engine starting). In the case of *Vertigo*, all these were mixed during postproduction into one mono channel. In 1958, stereo sound was similar to VistaVision in that the equipment needed to play it was available in very few cinemas, so the majority of studio feature films, including *Vertigo*, were only released in mono (although some of Paramount's VistaVision films used the Perspecta pseudostereo system, this was not the case with *Vertigo*). When Harris and Katz came to remaster this track, the components they had available (as with the image) did not allow them to simply copy an existing print of the 1958 mix without suffering (judged by the technical standards of today's reproduction technology) considerable degradation in sound quality.

The sources used in creating the new sound were used release prints from 1958, a combined music and effects track, and the original music recordings, approximately half of which were in three-track stereo.²⁰ Harris and Katz stated that "once we heard the quality of the surviving mix elements [of the music] we felt that these had to be presented,"²¹ a decision that meant that the new sound track had to have multiple channels.

In contrast with the situation in 1958, the majority of cinemas can now reproduce multi-channel sound in one form or another. This is due primarily to equipment developed by the Dolby Corporation, available since the mid-1970s, which enables four channels of sound (left, right, dialogue, and surround) to be optically encoded onto a normal 35mm release print in a way that is also backward compatible (i.e., mono sound can still be obtained with non-Dolby equipment). In other words, multi-channel release prints now cost very little more to make and distribute than mono ones. Furthermore, digital optical sound-on-film has been gaining ground since its introduction in 1992. The most widely used systems can each carry six channels (left, right, dialogue, left surround, right surround, and subwoofer).

The new release of *Vertigo* contains sound tracks in the six-channel digital DTS format²² as well as a stereo variable-area analog track designed to be reproduced using the four-channel Dolby SR system (for use in non-DTS venues). Preparation of the new sound track, therefore, involved creating six synchronous channels as opposed to the one-channel sound track released in 1958.

The judgments here were made purely by Harris and Katz, although their decisions were based on Hitchcock's original dubbing notes, the composition of the original mono mix, and additional sounds contained in the combined music and effects track. But in the last instance, the mixing is entirely new. The Foley track could not be recovered from the mono mix in a satisfactory state and thus was entirely rerecorded, although, yet again, Harris and Katz stress the authenticative nature of their methodology: in the laser disc commentary they describe having obtained contemporary recordings of a 1950s police revolver and of the exact cars used in the film. The music and effects were spread "where we felt the situation worked without making a circus out of it."²³

Lerouge and Billeaud observe that there are many different practices being used in sound restoration and argue that these are largely consumer-led. Whereas many public-sector film archivists would not advocate the approach taken in this instance, restoration work carried out on a commercial basis will often be geared to a very different set of priorities:

It seems that the ethical attitude differs between archives that are dedicated to preservation of the cinematographic heritage and other institutions whose activity is based on commercial exhibition of old time films to general audiences.²⁴

With respect to *Vertigo*, contemporary distribution practices probably ruled out a mono sound track on economic grounds. Almost three decades of Dolby stereo and the aggressive marketing of digital reproducers in recent years would have made such a release unacceptable to exhibitors and, by implication, audiences (*Sight and Sound* does not list a single Hollywood studio film released without multichannel sound in the last five years).

The 1996 version of *Vertigo*, therefore, can be seen as an attempt to reconcile the discourses of originality and authorial authenticity with the commercial prerequisites of theatrical and video distribution in the film industry of the late 1990s. Not that these two ideas are totally incompatible. Hitchcock's cultural status as an icon of popular cinema, as well as the significant volume of academic interest in his output, makes an "authentic" Hitchcock film into a lucrative economic commodity, as countless rereleases have demonstrated. Hence the "archaeological" research (car paint samples and so on) that informed many of Harris and Katz's decisions, the object being to establish a definite relationship with the film as it was produced in 1958.

Furthermore, almost forty years of critical interest in Hitchcock's career have resulted in the project receiving a great deal of attention, provoking controversy among those who feel that some of the changes in the new version amount to sacrilege. It is significant, therefore, that the laser disc release contains a number of testimonials from individuals concerned with the film, notably the associate producer Herbert Coleman, whose commentary endorses specific sequences in the new version (the grading of the final scene in the bell tower in particular).

This was purely a case of technical intervention as opposed to reconstructive restoration (there was no "missing" footage to find or incorporate, although an alternative ending shot for foreign censorship purposes is included on the laser disc and subsequent DVD releases), yet all of the key visual and aural properties apart from aspect ratio have been fundamentally changed from the properties apparent in the 1958 artifacts: color balance, sharpness, contrast, the number of sound channels, and their content. Harris and Katz feel entirely justified in doing this, and answer the doubts of historians by stressing that their source components were copied and preserved before any changes were made. Their stated objective in "restoring" the film was to create a commercially marketable product for 1996, and Universal, the film's owner, financed the restoration, which allegedly cost over \$1 million. Needless to say, they were not seeking to produce a museum piece, as Harris and Katz explain:

Does the film work as modern entertainment? Do viewers experiencing the film for the first time (or seeing it again) get more (or less) enjoyment or understanding of the multi-layered film or do the tracks detract from the pleasure of the film? Our feeling (after spending two years working to make this as true as possible to Hitchcock's intentions) is that the entertainment value is heightened.²⁵

This statement encapsulates the paradoxical nature of the restoration process. On the one hand, Harris and Katz acknowledge the magnitude of the material changes they have effected and justify them on the grounds of commercial prerogatives ("Does the film work as modern entertainment?"), yet they also cite authorial authenticity as a criterion by which they decided what changes to make. Both of these ideas come across strongly in the marketing campaign and trailers for the restored *Vertigo*, as was cynically noted by an Australian critic:

Anyone who has seen any of the supporting television material for the re-release will have observed an echo of the "before" and "after" fabrications of a weight-loss advertisement. Badly duped, garish and fuzzy footage (and few prints of *Vertigo* have ever looked this bad) is matched against the pristine and cleaned-up images of the restoration.²⁶

Here, therefore, we have the Hitchcock that the film studies academic establishment has spent the last three decades relentlessly canonizing, but repackaged through a complex and intricate set of technical processes that many of its leading figures neither understand nor consider significant.

CONCLUSION: TECHNOLOGY IS A KEY ELEMENT IN OUR UNDERSTANDING OF FILM HISTORY AND CRITICISM

Despite the far-reaching changes that this "restoration" has entailed, and the extent to which archivists and technicians understand how and why these changes were effected, virtually the entire academic critical response to the 1996 incarnation of *Vertigo* has implicitly

accepted its authorial status as the film that appeared thirty-eight years previously. In addition to Wollen's article, a piece by Royal S. Brown in *Cineaste* marking the release described *Vertigo* as "back from among the dead" (a reference both to the restoration and to the title of Boileau and Narcejac's novel on which the screenplay is based). Most of the individual textual examples he gives argue that the various aspects of the film described by critics in the 1950s and 1960s have been in some way enhanced ("we are in for a major shock when the back door of the flower shop voyeuristically opens").²⁷ Bernard Herrmann's score, we are told, "comes across with extraordinary depth and presence"—so much so that a number of performance errors are clearly audible. Finally, Brown concludes that Harris and Katz are "professionals who helped make the farthest reaches of Hitchcock's inner world visible and audible to audiences throughout the world." While I would not wish to undermine their achievement in any way, there is something distinctly worrying about an academic describing the executors of these huge changes as having simply and unproblematically rendered the ideas and images contained in the original film definitively "understandable." Compared with the critical reaction to, for example, Deryck Cooke's attempted reconstruction of Mahler's Tenth Symphony, or just about any contentious translation of a work of classical literature, such an uncritical acceptance seems very problematic. Even Charles Barr, in his major new analytical monograph on *Vertigo*, published six years after the restoration's release (therefore, unlike the other writers cited whose articles were published within a year or two of the release, Barr has had time to consider the long-term impact of the restoration project on the activities of humanities film scholars in relation to the film), barely mentions the restoration, commenting only that "for a film nearly forty years old, its box-office performance was remarkable."²⁸

I have examined the *Vertigo* restoration in an attempt to show that the decisions involved in such a project on technical processes and materials have profound implications for the authorial and aesthetic properties of a film in the ways that they are analyzed and discussed by critics and historians, and therefore

that an understanding of those properties, and the way they can change over time, must be placed at the core of the film studies agenda. As Meyer concludes, these considerations have largely been ignored by the academic sector. He notes, by comparison, the existence of "a long tradition of interest from art historians in the work of restoration," citing the example of two Vermeer paintings restored by a Dutch art museum, a project in which leading academics were closely involved. Where film is concerned:

It is at least surprising that the problems of film restoration or the history of film technology have hardly been incorporated in academic film studies. This won't be useful for archives alone, but also for film studies as the study of original nitrate prints in recent years has already demonstrated that several aspects of film history will need revision.²⁹

The crux of Meyer's article is that the evolution of digital techniques for image manipulation will soon broaden the ethical argument, as the technology needed to execute the sorts of changes described above will become cheaper and more widespread. At the time Harris and Katz were restoring *Vertigo*, digital technology was difficult to use and expensive: Harris and Katz noted that a full digital restoration of *Vertigo* would have cost in excess of \$1,000 per frame. Six years later, digital image processing to 2K resolution is a routine, cost-effective technology (and 4K is just around the corner), so much so that many feature films are routinely shot on 35mm and then digitized to a high-definition format for editing, with the result output to a laser film recorder to produce the internegatives. One notable example is *The Man Who Wasn't There* (USA, 2002, dir. Joel and Ethan Coen), which was digitally rendered to evoke the aesthetic properties of 1940s black-and-white stock.

"Restoration," the "director's cut," and other ways of reconstituting films, therefore, will become more common, due both to the film industry's marketing practices, which result in the practice of reconstructive restoration, and to the physical problems incurred by storing films over long periods of time necessitating technical intervention.

Lacking are the critical approaches needed to understand films as historically and technically specific textual systems, as Perkins called for. The absence of these approaches has resulted in an inability among film scholars to distinguish between elements in a film that derive from its original production process and those that derive from work subsequently carried out on components from it. This has long been a problematic area within film studies, as shown by the widespread and predominately uncritical use of video and digital reproductions in teaching and research and the reluctance of established critical orthodoxies to incorporate any technical conceptions of textual specificity.

For an academic of Peter Wollen's stature to casually dismiss any consideration of the technical changes made to *Vertigo* as "quibbling about the remixing of the sound track or the regrading of the print" shows just how insufficient many of those critical orthodoxies have now become. Indeed, his reference to "the print" in the singular and his apparent ignorance of the fact that preprint material is graded, not release copies, is a worrying indication of just how little the role of technology figures on the academic agenda of film studies, given that film itself is an art form utterly dependent on that technology. What is the use of implying, as Wollen does, that the visceral impact of the film was experienced *despite* the changes carried out on it ("it still retains all its *old* power and beauty") when the images and sounds he is describing are there primarily *because* of them?

The critical and academic response to the *Vertigo* restoration, therefore, demonstrates the necessity for these professions to return afresh to Victor Perkins's edict, that our understanding of "artistic communication" in cinema must, first and foremost, be based on films as technically and historically individual phenomena.

NOTES

1. Peter Wollen, "Compulsion: Was Hitchcock a Closet Surrealist?" *Sight and Sound* 7, no. 4 (April 1997): 14.
2. *Ibid.*, 18.
3. Barry Salt, *Film Style and Technology: History and Analysis*, 2nd ed. (London: Starword, 1992), 19.
4. *Ibid.*, 30.

5. *Ibid.*, 219.
6. V. F. Perkins, *Film as Film* (Harmondsworth, England: Penguin, 1972), 47.
7. Stephen Heath, "Technology as a Historical and Cultural Form," in *The Cinematic Apparatus*, ed. Stephen Heath and Teresa de Lauretis (Basingstoke, England: Macmillan, 1981), 7.
8. For example, Douglas Gomery on the conversion to sound and Dudley Andrew on Hollywood's appropriation of Nazi color technology (J. Dudley Andrew, "The Post-War Struggle for Colour," in *The Cinematic Apparatus*, ed. Heath and de Lauretis, 61–75).
9. I am grateful to Jan-Christopher Horak for this information.
10. Martin Scorsese led a campaign in the 1980s to persuade film stock manufacturers to address the issue of color fading and to make studios aware of the necessity of effective archiving practice. See Scorsese, "Colour Problem," *Sight and Sound* (winter 1980/81): 12–13.
11. Mark-Paul Meyer, "Ethics of Archive Film Restoration Using New Technology," *Image Technology* 78, no. 8 (1996): 11.
12. See John Reed and Gwenan Owen, "Uncanning the Uncanny," in *David Lloyd George: The Movie Mystery*, ed. David Berry and Simon Horrocks (Cardiff: University of Wales Press, 1998), 85–104.
13. Meyer, "Ethics of Archive Film Restoration," 11.
14. These remarks were made by Harris and Katz, writing on the AMIA-L Internet list, October 30, 1996.
15. A detailed description and technical specifications of the VistaVision system can be found in Robert E. Carr and R. M. Haynes, *Wide Screen Movies: A History and Filmography of Wide Gauge Filmmaking* (Jefferson, NC: McFarland, 1988), 144–48.
16. The subtractive negatives of red, green, and blue—the three primary colors.
17. François Ede, "Sueurs froides pour une restauration," *Cahiers du Cinéma*, no. 511 (March 1997): 23.
18. Only the prints are in fact 70mm in width; intermediate material is 65mm as it does not carry any sound track.
19. This technique is described in a commentary by Harris and Katz on the U.S. laser disc release of the *Vertigo* restoration (Universal/MCA Home Video, 1997), side 3, 32'03" from start.
20. Harris and Katz, AMIA-L Internet list, October 30, 1996. Three-track stereo was a technique originally developed by engineers in the record industry for recording large groups of performers, such as an orchestra. When two microphones, picking up the left and right channels, were placed a long distance apart, a third would be situated equidistantly between them and its signal applied with equal modulation to both channels in order to maintain the spatial illusion of stereo.
21. *Ibid.*
22. One of three rival systems currently available to exhibitors (the others are Dolby SR-D and Sony SDDS). A time code is recorded on the film (35mm or 70mm) that is read in the projector and used to synchronize the reproduction of the six-channel sound, which is obtained from data on a CD.

23. Harris and Katz, AMIA-L Internet list, October 30, 1996.
24. Claude Lerouge and Richard Billeaud, "Steps, Techniques, and Ethics of Sound Restoration," *Image Technology* 78, no. 10 (1996): 13.
25. Harris and Katz, AMIA-L Internet list, October 30, 1996.
26. Adrian Danks, "Return of the Seldom Repressed: (Re)mastering Hitchcock's *Vertigo*," *Metro*, no. 113/114 (1998): 42.
27. Royal S. Brown, "Back from among the Dead: The Restoration of Alfred Hitchcock's *Vertigo*," *Cineaste* 23, no. 1 (1987): 9.
28. Charles Barr, *Vertigo* (London: British Film Institute, 2002), 13.
29. Meyer, "Ethics of Archive Film Restoration," 12.