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Electronic Enlightenment or the Digital Dark Age? Anticipating Film in an Age Without Film

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Film is not going to be a part of mainstream popular culture for much longer. I give it between five and ten years; some industry experts give it a lot less. Many will regard this as a startling assertion: am I really trying to suggest that within a decade, Hollywood, the estimated 120,000 theatres worldwide and all the infrastructure, economic activity and culture they support will be history? Of course not, but the specific technological form upon which that was all originally based probably will be. This paper will argue that the impending obsolescence of photographic film (i.e. a flexible, transparent solid coated with a photosensitive chemical compound on one side) as the principal medium on which commercially produced moving images are distributed and exhibited will force critics, scholars and (crucially) archivists to address the technical specificity of moving image media, if they wish to produce a reliable understanding of the historical and cultural specificity of moving images as evidence of human activity. This case will be made through four principal lines of enquiry.

In the opening section, I set out my reasons for arguing that after almost a decade of speculation as to when the mass rollout of digital theatre projection will begin to take a significant proportion of the market share from film, that moment is now upon us; and that it is this development specifically that will tip the economies of scale against the viability of film manufacturing continuing on an industrial scale, thereby signaling the medium's demise. I will then consider the cultural status and meaning of the product itself, arguing that the word "film" has made a gradual transition from referring to a specific form of photochemical imaging technology to describing, in a vaguer sense, the cultural processes involved in the production and consumption of moving images and synchronized sound. The third section asks if the loss of this technological specificity from the definition of the cultural form it was once closely associated with has any significant implications for the criticism, analysis and historical study of cinema. In conclusion I will argue that if it does, the role of the film archivist becomes a crucial and important one in seeking to reproduce the experience of an obsolete medium and promote the understanding of its relevance to the wider cultural form of cinema as it evolved in the past.

The demise of the technology on which cinema was based for the first century or so of its existence has been anticipated, feared, promoted and resisted, almost in equal

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measure. It could be argued that, ironically, both its most dedicated celebrant and its fiercest detractor both come from the same stable of filmmakers: Hollywood's "movie brats" of the 1970s. Martin Scorsese has campaigned tirelessly on behalf of archives carrying out photochemical preservation and lobbied film stock manufacturers to improve their product lines, while George Lucas has been professing his enthusiasm for digital imaging loudly and often since the late 1990s, describing film as "outdated Victorian technology" and famously declaring after the release of his first entirely digital-originated feature, *Star Wars Episode 2: Attack of the Clones* (2002), that he would "never make another film—on film—again."[1] In my recent book *Moving Image Technology: From Zoetrope to Digital*, I argued that the obsolescence of film will be predicated not on the whims of celebrity auteurs, but on the economics of the exhibition sector.[2]

Release printing is believed to account for between 80 and 90 per cent of all film stock manufactured, a proportion which has increased as computer-based imaging technologies have all but replaced film for still photography and related specialist imaging applications (e.g. aerial surveillance photography and medical x-rays). Furthermore, the quantity and scale of capital investment in studio production and post-production infrastructure (e.g. cameras, lenses and lab printers) is dwarfed by that of theatre projectors and associated hardware. At the time I made this prediction (writing in 2004), the industry was in an economic logjam. The technology of digital theatre projection existed and had been proved to be viable, but the economic models of mainstream distribution and exhibition then in use did not support its rollout on any significant scale. When a movie is distributed to theatres on film, the unit cost of each print is relatively high (typically between $1,000 and $3,000 per print), but capital, maintenance and depreciation cost of projection equipment in the theatre is relatively low (typically $40–60 k per screen, $1 k a year maintenance costs and a useful life of 40–50 years). The cost of the print is amortized as part of the percentage gross passed by the exhibitor to the distributor: it is not charged up front.

Digital distribution effectively reverses that model. The cost of manufacturing and shipping a digital "print" (typically a portable hard drive containing the digitized film) is negligible, but the projector and server can cost up to $250,000, incur higher maintenance costs and will probably require replacement every 5–10 years. Producers, therefore, saw digital as a way to save money, while exhibitors resisted it, for obvious reasons. Breaking this logjam required a resolution to two problems. Firstly, an agreed set of technical standards was needed to ensure industry-wide compatibility, equivalent to those that ensured that the 35 mm release print with combined optical sound was universally compatible with projection installations worldwide. Just as variables such as the aspect ratio, frame rate and the frequency response of the optical track had to be fixed for 35 mm, equivalent parameters for its digital replacement (e.g. resolution, bit depth and scanning rate) required a standard with which equipment manufacturers and content producers could ensure widespread compatibility. Having witnessed the cost implications of competing, incompatible systems both for television standards and domestic videotape technology, the importance of avoiding this pitfall was understood by the film industry at an early stage.

The Digital Cinema Initiative (DCI), established in 2002 as a consortium of the major Hollywood studios, published its first major standards document in September 2005.[3] This covers areas of encoding and distribution including the supported aspect ratios, resolutions, bit depths, speeds, number and configuration of audio channels, methods of data compression and the performance of the imaging device in the projector. At the time of writing DCI is rapidly gaining industry acceptance, with all the major manufacturers marketing DCI-compliant servers and projectors, and a number of theatre chains in the US and Europe

announcing large-scale conversion projects based on DCI-compatible technology during 2006 and 2007.

The other barrier to a mass-rollout of digital projection was the economic model through which the cost of equipment and installation could be amortized across the three sectors of the industry (production, distribution and exhibition). The change from a model in which the equipment in a theatre is comparatively cheap but each release print of a film is comparatively expensive to one in which the inverse holds true required a mechanism for subsidizing the purchase and installation of projectors and servers. The only broadly comparable precedent which exists for a mass equipment rollout in the exhibition sector on this scale is that of the conversion to sound. No other major technological development in film production and exhibition (most notably widescreen and color) required the same level of investment in the exhibition sector, or was achieved in such a short timescale.

The key to sound was an economic structure which shared many points in common to the one which is emerging for the conversion to digital projection at the time of writing. It was based on trading partnerships between major Hollywood studios and electronics manufacturers (principally Western Electric/ERPI and RCA), using what would now be called leveraged capital from the Wall Street banks (i.e. loans raised against the expectation that future profits from the converted theatres would significantly exceed the interest payments). As it became increasingly obvious during the late 1920s that synchronized sound films were likely to generate sustained profits, a way had to be found of raising the hundreds of millions of dollars needed for the initial investment, but without placing the burden entirely on exhibitors. As Douglas Gomery puts it, the conversion to sound "was an economic revolution, not a technical one."[4]

However, the rollout of sound differed from the emerging rollout of digital projection in one crucial respect. During the period of vertical integration, the "big five" Hollywood studios accounted for 70% of the total US box office take, either through the 15% of theatres they owned outright or the independently owned ones they effectively controlled through restrictive distribution practices.[5] The conversion was financed, therefore, from within the industry as a whole rather than one individual sector of it, and the research and development which supported it was mainly undertaken as jointly capitalized ventures between studios and the electronics industry.

As this industry structure no longer exists, another source of capital is needed to finance the installation of digital projection infrastructure in the theatre. Various solutions were proposed in the early '00s, all of which had one aspect in common: as with sound, exhibitors had to be shielded from the full, up-front cost of the hardware. The basic vehicle through which this is achieved is a subsidy to exhibitors, paid for by the savings on the distribution costs of 35 mm. The business model which, thus far, has gained the most resilient market foothold is that of the Virtual Print Fee (VPF). It is based on the up-front cost of equipment being borne by an independent third party, usually an equipment manufacturer or installation contractor.

As a *Screen Digest* industry report from 2006 notes, "at the heart of the virtual print fee model for the roll-out of digital cinema is the middle-man or facilitator between the interested stakeholders."[6] In a typical VPF model, the exhibitor enters into a fixed-term contract with the facilitator for a number of years, paying an annual screening and maintenance fee which is roughly similar to the maintenance and depreciation costs of a typical 35 mm installation. The VPF itself is paid by distributors participating in the scheme to the facilitator, per digital screening of their content. This replaces the money they would have spent on prints and print transport costs, hence the "virtual." At the end of the contract term, ownership of the equipment passes to the exhibitor. Christie/AIX and Technicolor

in the US have brokered several VPF contracts with Hollywood studios and major theatre chains since the start of 2006. Similar schemes, part-funded by government arts subsidy, have emerged in Europe, notably in the UK and Norway.[7]

An industry-wide move away from 35 mm as the core distribution medium is the writing on the wall for film manufacture. If proof is needed that film is in decline, it can be found in the slides of a presentation, "The New Kodak," given by executives of the world's largest film manufacturer (Eastman Kodak is estimated to have an approximate 80–85% market share) to its investors on 7 February 2008.[8] Under the heading "Key Messages from the New Kodak," the company emphasized the development of digital imaging technologies, but that "traditional business model generates strong cash flow, as a result of cost-cutting and accelerated depreciation."

By 2011, film manufacturing is predicted to be in significant decline, but "viable mid-term." "We know how to forecast, manage efficiently and generate strong cash flow from the declining traditional business," states another slide. Kodak envisages a "low, single digits" annual percentage decline in sales of film stock between now and 2011, noting that in the last year, stock sales from its Entertainment Imaging division decreased by 2%, while digital-related sales increased by 22%. Kodak envisages that by the end of 2011, between 55 and 60 per cent of cinema screens worldwide will be equipped for digital projection. If these predictions are even close to accurate, it seems reasonable to speculate that within a few years, camera origination and archival preservation will be the only remaining applications for film, which will be manufactured on a far smaller scale and at far greater unit cost than is currently the case.

Used in the context of moving images, the word "film" can essentially mean two different things. In a technological sense, it describes a flexible, transparent solid onto which is coated a photosensitive emulsion, which in turn records an image when exposed to light. In a cultural sense, it is widely used as a generic term meaning an edited sequence of photographically created moving images (whether originated on actual film or not), usually with a synchronized soundtrack and usually conforming to a set of narrative and cultural conventions that determines what a "film" should be (or it is conspicuous in refusing to conform to these conventions). The latter frequently contradicts the former.

For example, news reports of the investigations following the 7 July 2005 bombings in London describe the terrorists as having "filmed" themselves using a mobile phone while preparing for the attacks.[9] I have yet to see a mobile telephone the size of an Arriflex or a Bolex! A recent TV advertisement for Chanel perfume was referred to as "the film" by the agency which produced it ("'it's a film, not an advert', the Chanel publicist says, firmly"[10]), in an attempt to indicate higher aesthetic production values than those of an average commercial. Yet it was only ever screened electronically. As an alternative synonym, "celluloid" is frequently used, even though this material has not been used in the manufacture of photographic film since February 1950. For some inexplicable reason, "polyester" just doesn't sound right.

Within popular culture, therefore, "film" as a noun and a verb has become technically divorced from the medium it originally referred to. This phenomenon is not restricted to moving image technology. In an email message, for example, the field labeled "CC" is used to enter the address of someone who is being sent the message for information rather than as its principal intended recipient. The initials stand for "carbon copy," a method of producing multiple paper copies of a document using a mechanical typewriter. Yet very few people under the age of 30 would recognize a piece of carbon paper if presented with one, let alone know what it is for.

An album was originally a collection of multiple 78 rpm records sold in a bound book of sleeves, analogous to a photograph album. The term was technically obsolete even by the advent of the LP record, yet it is still being used as a generic noun meaning a collection of commercial music recordings lasting for about an hour, even if the means of delivery is now a digital download. And telephones don't have electromechanical pulse dials any more, yet we still talk of dialing a number. "Film," therefore, is just the latest in a long line of nouns and verbs that began with a technically specific meaning, acquired a culturally generic one and then the latter stuck, even after the technology itself had moved on.

There can be no doubt that the technical specificity of film was—and, to a limited extent, still is—a major factor in determining how moving images were produced and consumed during its heyday (an underlying assumption of this paper being that we can now refer to this in the past tense). In terms of production, the latitude and shadow detail made possible by panchromatic emulsions in the 1920s were famously exploited by Weimar Germany's cinematographers and art directors, and Flaherty's later documentaries some unique aesthetic values.

The production values of Technicolor turned a trademark into an eponym. Kodachrome became synonymous with the culture of amateur cinematography, while a generation of faster, grainier black-and-white stocks launched in the late 1950s, notably Ilford HP-5 and Kodak Tri-X Pan, inspired the European New Waves and Cinema-Vérité. The relatively high cost of release printing, the safety precautions needed with nitrate film, the evolution of new cinema technologies in the 1960s (notably the xenon arc lamp and the non-rewind platter) and the emergence of high speed panel printers in the 1980s all had profound effects on the way films were distributed and exhibited, and the culture and economic practices which went with those processes.

Yet these are rarely taken into account by historians and scholars who read film more from the perspective of cultural and theoretical criticism as things stand. On the comparatively few occasions that a mainstream review or scholarly article dealing with a published video recording does address its technical qualities, this almost never goes beyond comparing those qualities with what are perceived to be contemporary technical standards, as distinct from coming to a view as to how accurately or otherwise they communicate the authenticity of the contemporaneous viewing experience. A DVD review in a broadsheet newspaper or a magazine such as *Sight and Sound* will typically pronounce it to be a "good transfer" ("transfer" being used as a shorthand for "production of a DVD," even if the technical characteristics of the source film element are a more significant factor in the appearance of the final video image than the actual telecine process) if the image appears vertically stable, free of scratches and has a well-balanced gamma curve.

Very rarely does it criticize technical reformatting decisions which can severely compromise the integrity of the original viewing context (e.g. a mono soundtrack digitally reconstituted into 5.1 stereo, or foreign language intertitles in a silent film digitally removed and replaced with English translations), or attempt to engage readers in any meaningful discussion as to how accurately, or not, a fundamentally different viewing technology can simulate the characteristics of the original medium.

These debates are also often characterized by a degree of confusion between the technical form (photographic film) and the culture of its consumption (collectively, in a theatre). In respect of the arrival of the VHS tape in the 1980s, Frederick Wasser writes:

> The audience's experience of film as both a theatrical and video experience and the producer's attempt to make a film that serves both experiences leads to a further conclusion about video's impact. Film has lost medium specificity.

> The function of film has been expanded in several directions at once—changes that were triggered by television, accelerated, and were confirmed with the triumph of the VCR. Both the electronic and photographic versions of the film are equally authentic.[11]

There are potentially two elements to an argument that film has lost medium specificity. One would hold that the aesthetic differences between the photographic and electronic media are culturally insignificant, i.e. that the experiential difference between seeing a projected film print and a video recording of the same production (regardless of the origination medium) would have no significant effect on the viewer's ability to understand or form critical judgments about such aspects of genre, narrative, direction, performance style, or historical significance. The other would assert that the viewing context—whether you saw the film in a packed theatre, or alone in a living room, at the time of the film's initial release or half a century after the event—is also insignificant.

Wasser's argument is primarily concerned with demonstrating that in the 1980s, Hollywood studios began to design their productions to function as revenue earning assets across a number of media platforms, and therefore that the television broadcast or videocassette release of a given film should not be considered an afterthought, or inauthentic, in relation to the theatrical distribution. Conversely, an argument that film retains medium specificity has to be clear whether it refers to the aesthetic qualities of the projected image itself, or the communal experience of viewing it in a theatre. Taking these issues in combination almost inevitably leads to Wheeler Winston Dixon's position that "Is a digital copy of a film still a film? It is, and it isn't."[12]

But at least the original medium still exists in the mainstream for comparison, as yet, even if we can't bring back a 1930s audience from the dead to view it with. But if I am right and it won't for much longer, this raises the question as to how critics and scholars will meaningfully be able to assess the status of moving images originated and/or originally distributed and exhibited on film as a source of primary historical evidence if the only way they can see them is in the form of digital surrogates? As a comparison, would art historians ever be able to meaningfully research the cultural achievements represented by the Mona Lisa if the original painting was destroyed by fire and all that remained were photographs of it?

In *The Work of Art in the Age of Mechanical Reproduction*, Walter Benjamin asserts that "the presence of the original is the prerequisite to the concept of authenticity."[13] He was referring to the art that was being mechanically reproduced, arguing that, for example, the perceived visual accuracy, or otherwise, of a photograph of the Mona Lisa cannot be assessed if we don't have the original painting to compare it with, at least subjectively. But Benjamin's position can and should be extended to the technological specificity of the mechanical reproduction itself. Film scholars will continue to write and talk about films, even after film itself no longer exists, apart from in archives.

For newly produced "born digital" moving images, some would argue that this is of little significance (hence the reason I have largely excluded "born digital" cinema from consideration in this article, as it lies outside the scope of a debate as to the significance or otherwise of reproducing images which were originated using one technology through the medium of another). But in relation to those which were originated using a soon-to-be-obsolete medium, we potentially risk serious misinterpretation and misunderstanding, a scenario which was pessimistically warned against by Paolo Cherchi Usai, in a book ominously titled *The Death of Cinema*, as the "digital dark age."[14]

And this is where the archivist comes in. Film archivists are probably the only group of professionals who are trained both to recognize the cultural, historical and historiographical significance of the film medium, and the uniqueness of its technical characteristics. Thus far it has been precisely this combination which, paradoxically, has actually inhibited their communicating the importance of this combination to audiences of scholars and other professionals who deal with moving images. Archivists, by training, are taught to priorities the preservation of original elements and to create copies for viewing. Until about a decade ago, this generally meant distinguishing between preservation masters and viewing copies for access, all of which were made on film.

However, as computer-based imaging technologies have improved in technical capability and reduced in cost, the use of digital surrogates has grown to the point that it accounts for a far greater proportion of the total public and scholarly use of archive film than it once did. As with VHS in the 1980s, the emergence of the DVD in the late 1990s has been blamed for a decline in theatre audiences: but interestingly, this has been more in the area of art house, repertory, and re-release screenings than for mainstream popular cinema. Reflecting this, the move to digital is not confined to the commercial sector.

In Britain, for example, the Governments "Digital Screen Network" initiative has spent £15 million in the last three years, equipping 125 independent and chain cinema screens with 2k DLP projectors in order to enable non-mainstream product to be exhibited at lower cost to the producer and distributor. Evidence as to the success or otherwise of the project has been contradictory, but its existence (and that of similar initiatives in other Western European countries) demonstrates the belief among cinematheques and taxpayer-funded arts organizations that digital projection can overcome the perceived shortcomings and costly technical obsolescence of the film medium. This is not a view that is confined to Hollywood.

An added complication is that the process of archival preservation and restoration has acquired a mythology and a public image of its own, which is in many ways is at odds with what it actually does. This mythology probably has its roots in the emergence of digital consumer audio technology in the mid-1980s. Towards the end of that decade, iconic jazz and classical albums were republished on compact disc, with labels and slogans on the packaging such as "digitally remastered," "fully restored," "Multi-Stage Noise Shaping," "4D Audio," "Superbit," and so on and so forth. Consumers soon discovered that the perceived quality of these reissues varied widely, affected by such factors as the condition of the source tapes used for the digital capture, the use of software algorithms to remove tape hiss and other perceived defects (which often removed most of the music along with the noise) and even the quality of the customer's home playback equipment. But for the music companies, this technology represented a way of making new money out of old product.

When the technology became available to do the same thing with films, it too was embraced by the studios and distributors, for whom the arrival of DVDs offered to add value to their back catalogues on a scale matched only by the emergence of television in the 1950s. It also offered hope to not-for-profit archival preservation, too. Scratching, base shrinkage (which can lead to vertical instability in a film when projected), color dye fading and the ability to match the gamma curves between multiple elements used in a reconstructive restoration are just some of the functions which can now be accomplished by digital post-production technology more cheaply and easily than through photochemical duplication.

Both the commercial sector and the public archives have aggressively promoted and foregrounded their use of digital restoration, and the publication of the results using digital

access technologies: the studios in order to convince you to buy a DVD of a film you previously bought a VHS copy of only a couple of decades ago, and the public archives in order to justify their existence to the taxpayers who keep them in existence. Many senior archivists have come to the view that Usai's warning against divorcing medium specificity from cultural specificity is of secondary importance when faced with the practical advantages of digital technology for restoration and access purposes. Referring to the 2002 restoration of *Beyond the Rocks* (US, 1922, dir. Sam Wood) using digital intermediate technology by the Nederlands Filmmuseum, a former curator of Britain's National Film and Television Archive asserts that:

> Digital moving image technology has already revolutionized filmmaking and film exhibition. It has transformed access to archival collections, and it has helped to restore seemingly irredeemably damaged films. In the future, whatever form it takes, new technology will save the collections—because eventually it must.[15]

"Restoration of" documentaries, featuring archivists in white coats holding lengths of badly decomposed film in front of the camera, are now included on many DVD releases. Nathan Carroll's analysis of this phenomenon argues that the "before and after" comparison has become a trademark of these DVD extras, due to the perceived need for studios to be "adding value" to what customers believe is an old film and therefore should not have to be sold at the same price as the latest release.[16] The use of digital access technologies is now increasingly being seen as part of this process of adding value. A notable example is in the marketing of the British Film Institute's Mitchell and Kenyon collection.

During the year of road show screenings in Britain to mark its rediscovery, BFI press releases and booking officers repeatedly stressed the technical "advantages" of the digibeta and 2k d-cinema versions, principally the ability to screen the material at the correct speed and with a synchronized music score in high quality audio. While film prints were made available to some venues, the BFI's policy was, in effect, not to release them without a fight.

Yet the methodology of this high-profile archival access project failed to take any account of the technologies and technical context in which these films would originally have been screened. The color temperature of early twentieth century projector illumination, or the visual characteristics produced by the projector shutter blades in use at the time produced a very different viewing experience to that of xenon arc illumination and an array of DLP or LCOS chips. The justification for doing this is that the use of new technologies to view old content somehow "unlocks" information and detail in the image which previously would have been obscured.

This issue had surfaced before the use of digital technology to restore and screen material originated on film: one criticism of the restoration of Powell and Pressburger's Technicolor films in the 1980s, for example, was that the resulting prints probably offered better contrast and resolution than many of the 1940s IB prints used in the original releases, the quality control for which was notoriously unreliable. But such activity leaves unanswered the question of textual authenticity and historical accuracy in the viewing context.

If I am correct in that within a decade, the theatrical projection of film prints will have ceased in all but a handful of cinematheques, museums and archive screening rooms, it will become ever more difficult for historians and scholars to attempt to assess the

ways in which digital surrogates of productions originated on film inform the authenticity of the viewing experience. The terms of this debate are currently polarized between the position of archivists such as Jeavons, who argue that digital restoration and projection enable a level of objective authenticity to be achieved which is either technically or economically impossible through photochemical-based archive practice, to those of a scholar who, assessing the evolution of film technology in the 1980s, concluded that "just about every new product has been advertised as something that makes film-making cheaper and easier."[17]

When, in a decade or two's time, there emerges a generation of directors, critics and scholars who have *never* seen 35 mm or 70 mm film projected, the ethical burden on archivists to preserve and communicate an understanding of how this medium affected the productions it was used to originate will become even greater than it is currently. Given the economies of scale and complexity involved in the manufacture and processing of photographic film, we may never be able to reproduce it in the way that, for example, a replica of Shakespeare's Globe Theatre has been constructed, or the period instrument movement has performed Beethoven's symphonies.

One of the side effects of digital possibilities has been the development of a certain techno-lust, an adoration and advocacy of technology for its own sake. There's something about technology that goes into the human psyche, that lends itself to the enthusiasm of people who are single-mindedly bent on replacing film with digital formats.[18]

The disconnect between "film" as a specific technology and "film" as a cultural form is nothing new: it dates back at least to the emergence of consumer videotape technology in the late 1970s, and probably further. What makes it a pressing issue now is my belief that the former does finally stand on the verge of obsolescence as a distribution and exhibition medium, despite a number of "false dusks" in the last few years. If this is the case, we need to consider what the implications are for the historical and cultural status of a century-long legacy of moving images produced using this medium, and specifically the role of the film archives—possibly the last places where film will continue to exist in any shape or form—in safeguarding that status and our appreciation of it.

Although the notion of archival restoration which somehow improves on the original is nothing new, the aggressive and hyperbolic promotion of digital restoration and presentation, in combination with both widespread public and scholarly confusion around the issue of technical specificity, is largely unprecedented. As is illustrated by the rapidly evolving ways in which the terminology of media forms exists in everyday usage, there is a stark absence of methodologies and approaches needed to bridge the widening gulf between the form of mechanical reproduction used when a work of art (for want of a better term) was originally created, and the forms which are available to us today.

Put bluntly, most people who use the term "film" don't even know what a film is in terms of its technically specific connotation. What makes this issue especially pressing is that recent developments in this industry suggest that before long, as I have argued above, they won't even have the opportunity to find out. Usai's fears of a digital Dark Age stem from the potential loss of provenance, understanding of cultural context, artistic intent and aesthetic properties, which we acknowledge the existence of if we accept that specific methods of mechanical reproduction have their own cultural integrity. Unless archivists and scholars can find ways of accepting and integrating that into their criticism and methodologies, rather than just implicitly accepting that digital restoration and re-release somehow "improves" our access to images originated on film, or makes it "better" in terms of a simple comparison of the perceived aesthetic qualities of the image and sound, we are unlikely to see any light at the end of this tunnel.

Notes

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