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# Introduction – Why Restoration Matters

On 2 December 2009, the British Broadcasting Corporation (BBC)'s flagship drive-time radio news programme broadcast a report on the centenary celebrations of what is claimed on its website to be 'the UK's oldest working cinema'.<sup>1</sup> The Electric Theatre in Birmingham was formerly a newsreel theatre, and a collection of prints of local topicals and other short films had survived in a rooftop film storage vault until their discovery by an archive film agency in the 1970s. Commenting on a screening of this material at the centenary event, the cinema's owner, Tom Lawes, told the BBC's interviewer: 'We've got some amazing archive film... They've managed to put it back onto DVD, digitise it, and it's pretty good, it's amazing to see the cinema in 1937.'<sup>2</sup>

That comment illustrates, in three short phrases, why this book is necessary. To start with, Lawes articulates a fundamental misconception as to the relationship between the technological specificity of the media to which he refers, and its empirical provenance. He talks of 'putting *back*' onto DVD content that was originated on 35 mm film, as if the act of making a relatively low-quality digital copy is a straightforward act of restoration. Secondly, he celebrates the idea of modernising archive film, opining that digitising is 'pretty good' and thereby implying that a viewing on a medium in which the film was originated is somehow second best. And finally, he expresses a conception of archive film as a surface-level entertainment spectacle, repeatedly using the adjective 'amazing' to emphasise the film's role as a commodified spectacle for uneducated consumers rather than an evidentiary artefact to be interrogated and understood by an informed audience.

As this story on a mainstream radio news programme, aimed at a non-specialist audience, indicates, critical and academic interest in, and attention paid to, our audiovisual heritage has ballooned in the

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last 15 years or so. There are a number of reasons for this, of which two are of particular note: the emergence of computer-based moving image technologies and their effect on the cost and quality of distributing and exhibiting archival content (usually referred to colloquially by that catch-all word ‘digitisation’); and a shift in the political climate in Europe and North America that has compelled its archive institutions to become far less inward facing and to prioritise access over all other activities. These issues will be discussed in greater detail in subsequent chapters.

It will suffice to note for the purposes of this introduction that the repackaging, remarketing and reinterpretation of archival moving images for contemporary audiences has, in a relatively short time, grown from almost nothing into a very big business. The scope of this activity can be represented by the widespread use, and in some cases misuse, of a single noun: restoration. The three approaches to archival film articulated in the Birmingham cinema broadcast – a misunderstanding of how the technology works and what it does, and the notions of modernisation and commodification – have, I will argue, dominated what little systematic debate in the public arena has taken place to this day on the subject of film restoration. The result has been a widespread misleading of the public as to how ‘old’ films are communicated to audiences by archive institutions (both taxpayer-funded and private sector), preservationists and curators.

Although this book is specifically concerned with archival practice, it is important to note the misunderstanding of the contribution of technology to the cultural practice of cinema in general terms, and the way it changed over time in specific ones, is the origin of the problem. This extends from the production and marketing practices of mainstream western cinema itself to the mainstream critical and journalistic infrastructures that grew up around them. Furthermore, it is not just mainstream journalists who are prepared to broadcast what I would argue is questionable information to their listeners (or more accurately in the case of the example cited above, to allow their interviewees to do so unchecked). It is not without justification that the few serious attempts to understand the role played by technology in shaping the function of moving images as cultural artefacts and historical source material have noted, to quote one recent example, ‘the common resistance expressed by many scholars to handle technology matters’.<sup>3</sup> Writing in the British Film Institute (BFI)’s journal *Sight and Sound* in March 2011, a group of 26 full professors of film studies in British universities modestly described themselves as ‘the root that has fostered

and sustained the UK's lively moving image culture'.<sup>4</sup> Their letter was protesting against the threatened closure of the BFI's reading room in Central London, claiming that this facility was vital to their fulfilling their self-appointed role as the leaders of public discourse and debate on the history and culture of the moving image in Britain – as the government report that proposed the establishment of the BFI in 1932 modestly put it, 'raising the standard of public appreciation of films, by criticism and advice addressed to the general public'.<sup>5</sup> If the professors' claim to being the root of British film culture is justifiable, it is highly problematic that they have enabled a situation to develop in which a national news programme produced by what its supporters would claim is an internationally respected broadcaster gave its listeners the impression that a DVD offers a superior viewing experience to 35 mm film.

In 1997, one of the signatories to that letter, Professor Laura Mulvey of Birkbeck College, London, published some criticism and advice aimed at the general public, also in *Sight and Sound*, on the contribution of Sam Warner to the invention of film sound.<sup>6</sup> It reproduces, uncritically, the myth that grew up, encouraged by the Warner Bros. publicity machine itself, that Vitaphone and *The Jazz Singer* (USA, 1927, dir. Alan Crosland) were the defining factors in the conversion to sound and that the core technologies they embodied became the industry standard. They were not and they did not. The system championed by Sam Warner was, in fact, one of three competing sound technology packages that emerged during the mid-1920s. It was by far the least successful (if judged by the criterion of market share) and shortest lived. The variable area optical recording method developed by the Radio Corporation of America (RCA), which was technically superior to both its competitors and was dominating studios and post-production facilities in America and Europe by the early 1930s, is not even mentioned in Mulvey's article. Her rationale for lionising Sam Warner was that 'there should be a place for acknowledging the contingent, almost accidental factors which affect history such as personal obsession or subjective choice.'<sup>7</sup> Empirical evidence as to how the technology worked, what it did, how it developed and why would have been more useful.

Another of the signatories to that letter, Professor Sarah Street of the University of Bristol, between May 2007 and September 2010 undertook a research project she called 'The Negotiation of Innovation', on the use of colour film technologies in British cinema. Her abstract claims that manufacturers of early colour film systems 'often faced fierce opposition from competitors who had vested interests in preserving the status

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quo'.<sup>8</sup> Pre-chromogenic (dye coupler) colour systems were not widely used for precisely the same reason that synchronised sound was not used on any significant scale before the invention of optical sound-on-film in the late 1920s: compared to the *de facto* monochrome standard they were less flexible, more expensive, did not work reliably and in some cases all three. As the Phoebus Cartel demonstrated,<sup>9</sup> the protection of revenue by deliberately impeding the sale of newer, competing product lines that are perceived to be superior by their potential customer base is something that did occasionally happen. But it didn't in this case: the evidence suggests that as soon as colour film stocks that were almost fully compatible with equivalent existing black-and-white production workflows and imposed a negligible cost increase went on the market, the global film industry adopted chromogenic colour more or less wholesale for commercial feature film production within a few years.<sup>10</sup>

There has also been some misunderstanding with archival preservation and restoration, and it is here that the significance lies. In the first major output from her research project on colour, Street claims that 'it is seldom clear how the "look" of a DVD has been manipulated during the grading of a new print, or which decisions have been made in the transfer of the print to a digital format.'<sup>11</sup> Prints are not graded – intermediate elements during the film production or preservation workflow are. Except for showprints and other highly exceptional circumstances, release prints are printed 'one light'. Secondly, it wouldn't matter even if they were graded (i.e. the colour temperature and intensity of the printer light adjusted between shots during the release printing procedure), because release prints are almost never used in the digital capture process from which professionally made DVDs are derived. Being of much higher contrast than pre-print elements, they lack detail at the extreme ends of the visible spectrum that can be captured from earlier generations, and they are also likely to have physical defects from projection and handling. Fine grain interpositives are typically used in this process, and if they have been graded properly then only minimal (if any) further alterations to the gamma, contrast or chroma characteristics are needed in the preparation of DVD versions.

In August 2009, Professor Ian Christie of Birkbeck College, London, wrote an article on the restoration of *The Red Shoes* (UK, 1948, dir. Michael Powell and Emeric Pressburger). He claimed that 'film restoration today inevitably means going digital',<sup>12</sup> dismissing digital audio restoration as 'less controversial' than digital image manipulation. At the time Christie was writing, preservation projects still took place using entirely or primarily photochemical workflows on a widespread

scale. Even at the time this book was written, photochemical restorations were still taking place on a limited scale, though primarily in public sector archives.<sup>13</sup> The issue of *The Moving Image* published at around the same time as the *Sight and Sound* number in which he made that claim includes an article discussing the state of the art in photochemical restoration technique.<sup>14</sup> The *Journal of Film Preservation* issue from April 2009 includes an account of the photochemical restoration project of *Die Niebelungen* (Germany, 1924, dir. Fritz Lang) led by Anke Wilkening and largely carried out by PresTech Laboratories in London.<sup>15</sup>

Furthermore, certain practices in remixing audio elements for re-releases have proven every bit as ethically controversial as any digital restoration project, not least the standard industry practice of creating digitally synthesised 5.1 audio mixes of films that were originally distributed in mono final mixes only for DVD and BD publication, one that is a constant topic of discussion at archivists' conferences and technical symposia.

There are reasons for the misconceptions I have described. As I will argue in the concluding chapter, the academic study of moving images has had trouble dealing with the role of technology almost from its inception. This is somewhat ironic, given that cinema is virtually unique among art forms and recording media in the complexity of and extent to which it depends on the combination of technologies used in the creation, distribution and exhibition of its core product.

Literary narratives can be created, stored and communicated as theatrical performance using the human body alone (though the invention of the written word and subsequently the printed word vastly increased the scale on which this activity takes place). Drawing, painting, sculpture, basic forms of monochrome photography and other fine art practices are possible with chemically simple raw materials that do not require any post-Industrial Revolution technologies, and their reception requires no technological intervention at all. The same applies to musical composition and performance. Moving images and recorded sound are distinguished by the fact that they require an extensive combination of complex, post-Industrial Revolution technologies to create, store and communicate. These include inorganic chemistry, electricity, semiconductors, mechanical components cast from metal alloys, plastics, artificial light sources and more recently, microprocessors and mathematical algorithms. The cultural and evidential artefacts known as films and sound recordings require machines to create, and machines are needed to play them back. Unlike the written word, paintings, still photographs or music scores, moving images and recorded sound are

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not natively 'human readable': they require a mediating technology at every stage of the way.

The dynamic of the interaction between the creators of the technology, the users of the technology, and the creation of cultural and evidential artefacts using the technology that results from this necessity is something that critics, theorists and historians of film have struggled to cope with ever since their emergence as a profession. With reference to sound recordings, the cultural historian Mark Sterne argues that the technology 'does not preserve a pre-existing sonic effect as it happens so much as it creates and organizes sonic events for the possibility of preservation and repetition'.<sup>16</sup> Theorists and philosophers have discussed the mediating role of technology in creating and reproducing records of human activity in even more abstract terms. When Marshall McLuhan infamously asserted that 'the media is the message', he was arguing that understanding the characteristics of communications technologies and how they were used revealed more about humanity than the content they were used to communicate.<sup>17</sup> More recently, Friedrich Kittler has suggested that the creation and use of media technologies to perform interactive processes is in itself important evidence of human activity: in essence, that there is little cultural difference between a novel and a computer program. Applying this to the cinema, Kittler writes, 'from film technology to film tricks, knowledge only extracted what it had invested in the studies of optical illusions since Faraday'.<sup>18</sup>

The systematic study of cinema, as practised in the humanities departments of universities and the infamous 'criticism and advice directed at the general public', tends to take the opposite extreme. Its practitioners have, since its emergence, tried to treat films in more or less the same way that classicists and literary scholars have treated books and plays, historians have treated sources and evidence, theorists have treated cultural phenomena and art critics have treated paintings. One of the dominant analogies of mainstream film studies is that of the film as 'text', directly comparable, using a series of metaphors, with the written word. Adapted from techniques in literary theory, notably semiotics, structuralism and psychoanalysis, the close textual analysis of films, as the author of one of the most widely published undergraduate introductory textbooks on the subject put it, is 'the activity of testing a film or group of films for specific, pertinent language-system codes... the cautious, semiotic labour of explaining just how a film makes meaning'.<sup>19</sup> The empirical development and use of technology in a film's creation and communication to the viewer is by definition not considered a part of how it makes that meaning.

For the first 70 years or so of the profession's existence, film scholars were able to make a pretty convincing case for all but ignoring technology: indeed, a number of institutional and ideological factors positively encouraged them to do so. The cinema began life as a low-brow cultural form, integrated, both technologically and ideologically, with other working class entertainment practices, notably the fair-ground and music hall. At this point the medium and the message were completely intertwined: the film pioneers such as Edison, Pathé, Hepworth and Messter both manufactured the technology and made the films to exploit it with. The two roles diverged between approximately 1900 and 1920, with the creation of the technology and the creation of the films separated, but the lowbrow cultural associations remained. By the emergence of what Bordwell and Thompson termed 'classical' Hollywood in the 1920s, the dominant form of cinema had become firmly established as a potent combination of big business and low culture. Exceptions to that rule – Soviet agit-prop, German expression and the British documentary movement – were cast as explicit rejections of the Hollywood norm, and the 'serious' film criticism in which academic film studies has its roots was very much one of those exceptions. The first generation of film critics and historians, exemplified by Paul Rotha and Roger Manvell in Britain, or Iris Barry and Terry Ramsaye in the USA, saw their task as convincing a sceptical intelligentsia that film was more than just an ephemeral form of popular culture. The analysis of *technique* played an important role in this effort, but the analysis of *technology* did not. Rotha's *The Film Till Now*, for example, originally published in 1930 and generally acknowledged as the first significant monograph on film history to be published in Britain, organises the bulk of its coverage by country (USA, USSR, Germany, France and UK). Within these chapters, Rotha emphasises the ways in which American cinema pursued the mass audience, while European cinema 'discovered its aesthetic qualities',<sup>20</sup> attributing them primarily to the influence of contemporary fine and performance art movements. Manvell's *Film*, initially published as a 'Penguin special' in 1944 is divided into sections entitled 'The Film as a New Art Form', 'The Influence of the Film on Present-Day Society' and 'The Film Today'. In neither book is the role of technology really considered to be a source of that art or influence. Auteurism, the Marxism-inspired film theory of the 1960s and 1970s, the film and history movement in the 1980s and 1990s and the influence of postmodernism and media philosophy on film studies in the 1990s and 2000s all either consciously overlooked or failed to engage with the central function of technology in



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the creation and communication of moving images and their associated audio recordings. The few who have tended to be economic and institutional historians, rather than researchers for whom the analysis of actual films forms the focus of their research. Notable examples are Douglas Gomery's research on the conversion to sound and John Belton's on widescreen.

There have been a small number of honourable exceptions to this paradox in which the overwhelming bulk of efforts by academics to understand the function and significance of a technologically dependent culture have either ignored or misunderstood the technology itself. Barry Salt's monograph *Film Style and Technology: History and Analysis*, originally published in 1983 and extensively revised in 1993 and 2009, provides the definitive exposition of an idea Salt originally proposed in 1974:<sup>21</sup> that of 'statistical style analysis', the object of which, in Salt's words, is 'that the form of films noticeably differ from one to another, and that the variables used to study this should be based on the concepts that film-makers actually use'.<sup>22</sup> In other words, Salt set out to show how the empirical circumstances of production determined what filmmakers did or didn't do, to which end the capabilities and limitations of the technology involved – cameras, film stocks, lighting – sound recording and mixing equipment – were carefully researched and examined alongside his 'textual' analysis of actual films. The development of this approach led Salt to become arguably the most trenchant critic of humanities-based film studies in print. The detailed and extensive attack on orthodox film theory which opens his book concludes with the assertion that knowledge of how the perception of the representational part of the film medium works will be produced 'by scientists, and not "theorists" sitting in armchairs in the humanities departments of universities'.<sup>23</sup> David Bordwell's work in *On the History of Film Style* followed in a similar vein, seeking to integrate the influence of technology with that of other cultural factors on the aesthetics of mainstream cinema.

This emergence of humanities-based film studies took place during a relatively settled period in the development of moving image technologies themselves. It could be argued that between the mid-1960s (when the conversion to colour and widescreen was more or less complete) and the early 1990s (when computer-generated imagery – CGI – made its first appearance), there were no fundamental technological changes that had an immediate or primary impact on the viewer's experience of the medium, comparable to the invention of cinema itself, the conversion to sound in the late 1920s or the earliest mainstream exhibition

of photographic three-colour films in the following decade. Technical standards developed and 'behind the scenes' evolution changed industrial practices (e.g. the introduction of polyester film base and the stereo variable area soundtrack in the 1980s). But none of these new technologies entered the public consciousness as technological phenomena and forced a widespread, mainstream debate that encroached on the academics' turf.

With the introduction of digital moving image technologies and the impending obsolescence of film-based ones in all but a few niche applications, that debate has now materialised. It has very significant implications, both for film scholarship and for more mainstream critical practice. Furthermore, it is a debate that those scholars and critics are ill-equipped to participate in, coming as they do from an almost exclusively humanities background. Yet, arguably for the first time since the transition to sound, its effect on filmmakers and the cinema-going public is so profound and immediately visible that the academic and critical establishment will lose all credibility if they fail to engage with it. The result is, as we have seen above, the assertions that all film restoration is now carried out digitally and colour grading only takes place at the DVD mastering stage.

The film studies establishment's response to the emergence of digital moving imaging technologies took a similar approach to the one it had used to marginalise and dismiss the role of technology in creating the cinema a generation earlier, only this time couched in the language of change and the new. It consisted primarily of identifying literary and/or ideological metaphors with which to argue for differences. Writing in the millennial issue of the journal which had been at the vanguard of the growth of film theory in the 1970s, *Screen*, Sean Cubitt downplays 'the distinctiveness of digital criticism', asserting that 'to some extent it is simply a call to expand existing paradigms in Film and Television Studies.' The difference, he argued, will come in understanding 'the semantic worlds in which the producers of digital texts operate'.<sup>24</sup> In another article in the same issue, Yvonne Spielmann proposes 'the reinforced concept of digital space', elaborated with some metaphors that quite simply defy empirical reality. For example, Spielmann argues that analogue cinematography consists of 'the automatic registration of light rays onto an image surface', whereas the digital image relies on 'calculation processes'.<sup>25</sup> Light focused onto a CCD by a lens is 'the automatic registration of light rays onto an image surface' in exactly the same way that light focused onto a photochemical emulsion by a lens is, and if the resulting data is stored uncompressed (which, in many high

end studio cameras, it is, or at least can be), no calculation takes place at the recording stage.

There were occasional lone voices in the wilderness, though it is indicative that, looking through some back issues of *Sight and Sound*, they are to be found in the letters pages rather than the editorial features. In July 1998, shortly after the first DVD video titles went on sale in the UK, a correspondent from Newcastle upon Tyne encouraged the magazine's editors to engage with what he predicted would be a profound shift in our film culture. Inadvertently, he articulated, once again, the extent to which the critical and intellectual efforts to understand and curate the significance of moving images by academics to the broader public ignored the role of technology. 'I'm not suggesting *Sight and Sound* develop a trainspotter's fetish for technical knowledge', he prefaced his call, before lamenting that 'in order to find out more about the advent of DVD, I had to buy a laddish, technophile magazine whose reviewer rated *Jumanji* [USA, 1995, dir. Joe Johnston] a better film than *Vertigo* [USA, 1957, dir. Alfred Hitchcock].<sup>26</sup> In the following issue, the journal's editorial, mentioning DVDs in passing while lamenting the decline of repertory cinemas, reproduced a widely believed error as to what the initials stood for.<sup>27</sup> The implication here is clear: that people interested in and engaged with audiovisual culture can be divided into two, mutually exclusive camps. On the one side we have 'trainspotters', interested in and knowledgeable about moving image technologies, and in some cases operating and maintaining those technologies for a living; who, it is implied, are incapable of high level critical judgement and thus are likely to consider *Jumanji* a 'better' film than *Vertigo*. On the other, there are critics and theorists who are capable of discovering cultural meaning and significance within cinema and presenting that agenda to a broader, interested public, and whose approaches and methodologies draw them to the conclusion that *Vertigo* is the masterpiece; but who either consider the role of technology in the creation of that meaning and significance to be non-existent or who have profoundly misunderstood it.

A response to this letter in the following issue offers a rare flash of insight, and a quite surprisingly accurate prediction of what would be the state of play in a decade or so. Another *Sight and Sound* correspondent argued that the launch of the DVD 'brings one step closer a digital theatrical medium, which has implications for the preservation of films. Digital technology offers the possibility of the relegation of film to the level of an origination medium, and ultimately, its demise.'<sup>28</sup>

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