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Digital Decay

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The fate of 35mm as an acquisition and exhibition medium is intimately connected with questions of future-proofing, archiving, preservation, and access, which are currently at the foreground of recent debates around screen heritage in the UK. In a recent article (Crofts, 2008), I explore the threat of digital projection to the viability of the 35mm release print, the impact of this on film stock production, and how this will affect film preservation.

The pace of contemporary technological change is accelerating, and, despite the relatively slow initial adoption of digital cinema projection, the rapid reduction in cost in relation to speed of computer processors, together with the impact of 3D projection, might mean there is a speedup in the adoption of digital technology. When we inevitably shift over to full digital projection, it may no longer be profitable for companies such as Kodak and Technicolor to manufacture and process film stock. Whilst the actual sales figures remain trade secrets, it is fairly safe to assume that the bulk of their trade comes from 35mm release prints, not origination stock. Whilst the cost savings for distributors and studios (and arguably to the environment) in the transition to the digital release print seem clear and, many would argue, desirable, this has not been properly thought through in terms of the impact it will have on the production of film stock for film preservation. More money is made from release stock than camera stock. When digital projectors finally replace 35mm film projectors release prints will no longer be required. It will not make financial sense for key industry players to continue to produce film, and it will cease to exist as a viable creative choice for the filmmaker, let alone the archivist. As Paolo Cherchi Usai (2001) argues, "the day will come (and sooner than you think) when 35mm film will no longer be made because Hollywood will no longer need it, and there will be absolutely nothing that anyone can do about it. What company would willingly maintain a complex and costly facility for a handful of institutions whose demand for archival film stock would not even meet the cost of its operation?" (123). With that, the science, technology, and expertise of over a hundred years will gradually disappear. Film will become a residual media, limping on as an acquisition format for several decades, like Super 8mm, still used by a few enthusiasts to create a particular nostalgic effect.

This is more than a sad loss for a few film aficionados mourning the passing of their preferred medium; it has wider moral and cultural implications for the art of film preservation, conservation, and screen heritage. During a panel on colour film restoration at the *Colour and the Moving Image* conference (2009), Giovanna Fossati spoke of her "bi-polar" relationship with digital as a restoration medium, with on the one hand an excitement about the possibilities that digital technology brings to the active restoration process (de-flickering, stabilization of the image, dust-removal and interpolation), and on the other an acknowledgement of digital as a rapidly changing and therefore unstable medium for early film preservation, arguing that digital technology compliments, but by no means replaces the photochemical duplication process. As Lionel Runkel at Technicolor attests, at the current moment the most

effective way to future-proof a film master is by making a colour separation master, but according to Usai, this is costly and storage-intensive: "a separation negative (consisting as it does of three masters, one for each primary colour) is far more stable, but it costs three times as much as a standard print and occupies three times the space in the vault. In an enterprise so costly in every way, no wonder so few colour films have been restored with the most adequate technology" (2001: 119). But, given the current instability of the Digital Intermediate, and the "unknown" of digital longevity, it is clear that at this time, even the cheaper option of a straightforward film negative is preferable as a storage solution, and some might argue that this is true even for contemporary films that are "born digital." If we do not recognize and articulate this threat, it could prove catastrophic for the endeavor of saving our moving image culture for posterity.

The issue of digital longevity has been of concern to many in the archiving community for some time, yet in some quarters, there is still a tendency to conflate access and preservation and a false perception of digital as coming to the rescue of the archive (see, for example, the UK Film Heritage Group, "Strategy for UK Screen Heritage" document). In fact, worryingly, the term "digital" is bandied about by bodies such as the UK Film Council and BFI without a thorough unpacking, or understanding, of the complexities of the plethora of new and emerging technologies that come under its umbrella. Sometimes the term "digital" is used to mean "online" or "interactive"; sometimes it is shorthand for High Definition (which is just another link in the broken chain of video formats); sometimes it refers to "HDTV" going "digital"; sometimes it stands for "digital projection." However, as Howard Besser (2000) points out, "though most people tend to think that (unlike analog information) digital information will last forever, we fail to realize the fragility of digital works. Many large bodies of digital information (such as significant parts of the Viking Mars mission) have been lost due to deterioration of the magnetic tapes that they reside on. But the problem of storage media deterioration pales in comparison with the problems of rapidly changing storage devices and changing file formats". With the increasingly fast-paced development of new technology, it is difficult to identify a stable, universally accepted digital format, codec, or compression rate and/or associated playback equipment that will be a safe repository for our screen heritage. Digital is just the latest duplication format, but with each new transfer, whether it be from nitrate to acetate or polyester to digital, the original master is subjected to yet more potential wear. The problem is that digitization is perceived as being the quick answer for preservation, when in fact more attention should be given to the less glamorous but more tried-and-tested and under-funded solutions, such as a unified strategy of stabilization, active conservation, passive subzero storage, and preservation by duplication. Bamboozled by digital "solutions," audiences and government bodies alike are putting too much faith in digitization. As Martin Scorsese asserts, "somehow, audiences are being led to believe that digital will take care of it all with no need for special storage conditions" (Usai, 2001: ii). The difficulty of digital recovery is even more of an issue with the advent of hard disk recording, and content that is "born" and/or stored digitally is not itself immune to decay.

At the *Future of Screen Heritage in the UK* symposium (2007), at which representatives of the BFI, the British Library, archivists, and academics gathered to discuss these issues, there was a general consensus that whilst digital might be an

answer for access, it does not offer any easy answers for the preservation of material originated on film.¹¹² As Ian Macdonald reports (MeCCSA 2007),

Digital is a fresh set of problems. We don't even know the dimensions of these problems yet, because the technology is still being developed—indeed technology is *always* under development (emphasis original). What is clear is that digital may be an answer to access problems, but it is not an answer to preservation.

But even at a symposium aiming to bring all the UK stakeholders together, it seemed that there was a reluctance to discuss the specific issues: the problem of rapidly changing technologies, built-in obsolescence, the broken chain of (digital) video formats, the tension between lossless and lossy compression, the lack of agreed codecs or compression rates for both online delivery and digital cinema projection, and the vast differences between these two types of digital distribution. Furthermore, there was a lack of specific attention to what digital preservation actually means and precisely how this differs from the needs of digital access so that, whilst a difference was acknowledged, the details were not elaborated.

However, it is just as dangerous to throw the digital baby out with the bath water. It seems highly likely that whilst digital is not currently a suitable preservation “solution” as it stands, in the long term, it will have to become one. This being the case, there clearly needs to be structured debate and joined-up international strategic thinking, at the very highest level, for ensuring that future-proofing, back-compatibility, and format standardization are addressed from the perspective of the conservationist, and that any digitization for purposes of preservation involves no loss of information/compression. There is also a need for foolproof systems for backing up data in order to avoid the potential loss of digital assets. As Howard Besser (2000) argued in 1999, at the beginning of the digital revolution, “our community needs to insist upon clearly readable standardized ways for a digital object to self-identify its format and the applications needed to view it ... to develop a concrete set of guidelines that can be used by people and organizations wishing to make information persist ... understanding how reformatting these into another format may affect the understandability and the usability of those works”. There needs to be a strong public debate about these issues, particularly one in which governments, industry, and the media really slug out the implications. It is important not to allow digital hagiography or digital phobia to cloud our judgments here. As Usai attests, “the issue cannot be defined either in terms of a blind utopian faith in what the future will bring or in those of a purism so narrow that it rejects outright the intervention of electronics into areas where it has never existed” (2001: 121).

Instead, what we have at the moment is global corporations vying to become the market leaders, and built-in obsolescence creating an enforced culture of consumerism in tandem with the hype around digital fuelling a “prosumer” market hoodwinked by the promise of democratized access. Richard P. Crudo claims that “the marketing and journalistic coverage of digital technologies has been predominantly fraudulent from the very beginning. ... Corporate salesmen—shills and hucksters that they are—can't be blamed for doing their jobs. But judging from the flood of false perceptions and utopian expectations they've managed to etch into

stone, they need to be blamed for doing their jobs too well" (2006: 14). Not only that, but the media, governments, and the academy also believe and regurgitate the hype. As Crudo argues, "it has become more important than ever for us to ask the hard questions of our digital manufacturers—and to be more demanding of the answers they give us" (2006: 14).

The total shift to digital is coming. It is our responsibility, as academics and archivists, to be at the forefront of these debates, to unpack the various nuances and implications of digital technologies at all levels of the process, and not let the shift be driven solely by corporate technology conglomerates. Digital technology is not the demon here, we are. If we don't say something, it will be too late for film preservation.

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