

time. A DVD that is a poor transfer of an awful print is not an adequate replacement for 16mm film projection, and, further, there is no reason to assume that much of the media that we are interested in teaching will ever turn up on DVD. It will always be easier to teach a class on the sit-com or the horror film than one on the films of Chantal Ackerman, Márta Mészáros, or Morgan Fisher.

The photos burned up in *nostalgia* aren't really destroyed; they can be "resurrected by rewinding the film." Frampton's optimism that images don't really die offers a palliative to the alarmism we may feel about the decline of 16mm film. "Here it is! Look, at it! Do you see what I see?" the voice-over excitedly intones at the end of *nostalgia*. But the joke's on us, because the narrator is talking about an image that he never shows us, an image that would appear, if only the film would go on for a few more minutes. Maybe the key to hanging on to 16mm is not nostalgia about the past but nostalgia about the future, a romantic looking forward to an image that is out of our grasp, but that we have to assume optimistically is just around the corner.

Notes

1. Scott MacDonald, *A Critical Cinema: Interviews with Independent Filmmakers* (Berkeley: University of California Press, 1988), 60.
2. Interested parties can call EmGee at 818-881-8110. Also, MacDonald and Associates (www.macfilms.com) is a major 16mm archive that is currently for sale. It is a truly massive collection of television, some mainstream films, and many precious non-theatrical films. If a private corporation buys the collection, scholars will never again be able to access its treasures. Interested parties should call 773-267-9899. Hundreds of dissertations and books could be fueled by this collection.
3. I have since learned that Image has released a different DVD version of the film, which is supposed to be better.

Archiving, Preserving, Screening 16mm



Jan-Christopher Horak

Teaching silent film courses on a regular basis, I'm one of the first to admit that the advent of DVDs has made my job easier. Trying to convince students that the film they are watching is not only a cinema classic, but also as sophisticated and modern as any film made in the sound era, is a particularly hard sell when the print in question is a "dupey," fifth-generation 16mm reduction from the 35mm nitrate original, and dead silent to boot. When shown DVDs produced from restored master materials, and including a full orchestral score or at least piano accompaniment, students are much more willing to give silent films a chance. Having said that, it is also true that far fewer silent film titles are now available on DVD than were once accessible on 16mm, so students are now being exposed to a much more limited canon. Since I

have discussed this issue in print in reference to film archives,¹ what I would like to do here is address the viability of 16mm as an archival preservation medium, and as a distribution and production medium.

While it may come as a big surprise to bean-counting university administrators hell-bent on divesting themselves of their 16mm film collections, the 16mm format is alive and well in other quadrants of the media universe. Indeed, improbable as it may seem given all the hype about the death of 16mm, Richard Utley of Kodak's Protek subsidiary reports "substantial" sales increases of 16mm negative film stock over the past several years—as much as 8 percent last year—due in part to the 2002 introduction of their 7218 film stock. According to the Kodak Sales Department, the resurgence in 16mm sales can be attributed to several factors, including the production of a small, inexpensive Super 16mm camera by Aaton, the A-Minima. Arriflex, Canon, and Cooke have also introduced new Super 16 cameras or lenses in response to the resurgence of 16mm film stock sales. Furthermore, improved scanner/telecine transfer techniques have meant that 2k digital masters (with a resolution of 2048 by 1080 pixels) can now be generated from 16mm negatives,² giving producers and distributors an added incentive to use the cheaper 16mm, rather than 35mm, as their production medium. In other words, the high quality digital image needed for a DVD transfer can be struck from a 16mm negative, and this reduces the incentive to shoot on 35mm.³ Even a director like Michael Bay, known for blockbuster entertainment, recently shot much of *The Island* (2005) with 16mm Eyemo cameras and then transferred to a digital platform.⁴

In 1923 Kodak introduced 16mm film, cameras, and projectors. As early as 1916, John G. Capstaff of Eastman Kodak had been experimenting with various amateur sizes and had come to the conclusion that 10mm by 7.5mm was the minimum frame size for acceptable image quality. The frame had an aspect ratio of 1.33:1. Adding perforations on both sides would add another 6mm, making a total of 16mm. Kodak eschewed the middle perforations used with Pathe's 9.5mm, because they could cause stripes to appear over the image. Moreover, if the projector claw failed to hit the perforation accurately the images could easily be damaged. Sixteen millimeter had an additional advantage over 17.5mm: flammable 35mm nitrate stock could not be slit in half to create it. Less flammable 16mm would thus be aptly nicknamed "safety stock." In the 1930s, a sound track was added on one side of the film, sacrificing one row of perforations. It was accepted as an SMPTE (Society of Motion Picture Engineers) standard in 1932. From that point on, 16mm negative was available in single or double "perf," depending on whether the filmmaker wanted to add a sound track or not. Sixteen millimeter film was also available with either an optical or a magnetic sound track.

At the same time as development proceeded on the 16mm gauge, Capstaff was experimenting with a reversal developing process which eliminated the need to have negative film copied onto positive stock, thus significantly reducing costs to the amateur filmmaker. By 1916, Kodak had a reversal process, but World War I briefly stopped research. By May 1920, Kodak had a prototype 16mm camera, and in early 1923 the company premiered its 16mm Ciné-Kodak camera. The 16mm format quickly became the gauge of choice, not only for amateur filmmakers, but also

for low-budget independents, avant-garde filmmakers, industrial, and documentary filmmakers. For many years these filmmakers had to make do with nonsynchronized sound, since sound equipment was too bulky to take on location. With the 1962 introduction of the Nagra III half-inch portable tape recorder (battery operated), which put an inaudible pulse on the tape that allowed the sound to be synchronized with the image, synchronous-sound 16mm production became a reality. This led to an explosion of cinema verité and documentary film production, as well as the use of 16mm film for television news.

In 1971 Kodak introduced Super 16mm as a negative film format. The single perforation negative featured an enlarged image by using the space normally taken up by the sound track. The larger frame made it possible to shoot film that could be blown up to a 35mm wide screen format (1.66:1 or 1.85:1). With the introduction of high quality beta video formats in the early 1980s, television news stations, as well as many industrial and documentary filmmakers, turned to video; more recently, of course, there has been a massive switch to digital video formats. Unfortunately, the rapid development of various videotape formats has guaranteed almost instant obsolescence, while the search for a viable archival electronic moving image format has proven elusive. A couple of years ago, Kodak stopped manufacturing 16mm reversal film stock which was primarily used by TV news producers, and amateur and avant-garde filmmakers without a budget to make negatives and prints. Interestingly, though, the trend seems to be reversing itself.

As noted above, the production of 16mm raw film stock, and the sale of that stock, have been rising for several years. According to Walt Rose at Fotokem, one of the only West Coast labs still processing 16mm film, his company is developing up to 300,000 feet a week of Super 16mm, much of it for television shows like *Law and Order*, which is shot on 16mm and then transferred to digital for editing and output.⁵ The reason why Hollywood production companies are increasingly turning to 16mm or Super 16mm comes down to dollars and cents: using 16mm film and equipment, rather than 35mm film, equipment and crews can mean savings in production costs of up to 25 percent.

TV producers are not the only ones still shooting in 16mm. Most film schools still have their students produce films in 16mm. Fotokem is processing 175,000 feet of film stock for University of Southern California's film school and almost double that for the Los Angeles-based New York Film Academy. Many independent and avant-garde filmmakers are also still shooting in 16mm for aesthetic, rather than economic reasons.

What about distribution? Back in the late 1920s, Kodak introduced the Koda-scope Library of commercial shorts and features for home projection on 16mm as a means of increasing sales of their 16mm cameras and Koda-scope projectors. Bell & Howell, as well as Universal Pictures (Universal "Show at Homes") and others followed suit with their own libraries. As a result, many Hollywood features from the silent era have survived in 16mm and are now treated as original masters from which 35mm dupe negatives and prints are generated. In the post-World War II period, distribution on 16mm expanded dramatically, as many libraries, universities,

museums, and other nontheatrical screening spaces either began building up 16mm film collections or rented 16mm from distributors.

Throughout much of the twentieth century, then, 16mm remained the primary medium of distribution for the nontheatrical film market. Companies such as Swank, Films Incorporated, and Audio-Brandon Films distributed 16mm prints of 35mm originals to schools, universities, libraries, and churches. It also became the format of choice for the production and distribution of most independent and avant-garde films, many distributed through Filmmakers Co-Operative (New York) or Canyon Cinema (San Francisco). In the 1950s and 1960s, 16mm was also the primary distribution medium for films and television shows shown on television. Such prints were shipped to television stations, where they were placed on a "film chain" for broadcast to the local market.⁶

Given the huge numbers of 16mm prints in circulation just fifteen or twenty years ago, it is not surprising that many of these prints survive and remain in circulation in the film collector's market. While many commercial distributors have forsaken 16mm, film collectors treasure them. Thousands of 16mm prints of Hollywood classics, European art films, industrials, educational films, and commercials are bought and sold every month by collectors through such publications as *The Big Reel* and *Classic Images*. No rights are implied or given with these sales, so although such sales of prints are technically in violation of copyright, the FBI gave up prosecuting collectors two decades ago.⁷ Such 16mm prints are shown in basements, but also at film festivals, like Cinecon (Hollywood, Labor Day), Syracuse Cinefest (March), and Cinevent (Columbus, Ohio, Memorial Day), where collectors gather to view films available nowhere else on the planet. With increasing frequency, collectors are also lending prints to legitimate nontheatrical screening spaces, since neither commercial producers nor distributors are making prints anymore of older, rarer titles.

Numerous 16mm prints from collectors (and libraries, universities, producers, and distributors) have also been donated to film archives, where they may be designated as "projection prints" or as "master positives." Projection prints are usually accessible to researchers or screening venues, since the archive has determined that material from that particular title has been preserved elsewhere. If a print is considered unique, or if the existence of other materials has not been ascertained, a 16mm print will be designated as a master and therefore becomes a candidate for preservation.

Some film archives have actually specialized in 16mm film. Collections at the Minnesota Historical Society and San Francisco State University, for example, owe their existence to the dumping of news film archives by commercial television stations in the late 1970s and early 1980s. The Chicago Film Archives stocked its collection when public libraries began de-accessioning their 16mm collections in the 1990s. The Donnell Media Center at the New York Public Library is not only acquiring 16mm collections from other libraries, they are also still purchasing new 16mm titles from filmmakers and 16mm replacement prints for titles that have been damaged.⁸ The Academic Film Archive of North America also specializes in 16mm and has become a primary site for educational films, the great majority of which were distributed in 16mm.

So how are film archives dealing with this collective patrimony in 16mm? Are films still being preserved in 16mm, or have the archives switched to film and/or digital video formats that promise to have a longer shelf life? The answer is mixed.

The archival rule of thumb is that a film should if at all possible be preserved in its original format. However, this proves impractical for both obsolete film stocks like silver nitrate and for obsolete formats such as 9.5mm, 17.5mm, 22mm, and 28mm. Given 16mm's questionable future, to preserve in 16mm is a judgment call that individual archivists must make. At Donnell Media Center and the Peabody Collection at the University of Georgia, archivists are still preserving 16mm originals, especially amateur and independent films in 16mm. Indeed, the National Film Preservation Foundation (NFPF), which over the past decade has funded film preservation at numerous film archives with 16mm film collections, requires that their grants be utilized to preserve in the original film formats, even though, as Executive Director Annette Melville admits, many of those institutions would rather use the money for digital transfers, since they are more interested in access than long term preservation.⁹ In fact, "preservation" is only possible on film, since to date no long-term archival medium is known to exist in digital form, so one must applaud NFPF's position.

At the University of California—Los Angeles (UCLA) Film and Television Archive, archivists prefer to preserve 16mm titles in 35mm for several reasons. First, numerous Hollywood feature films, especially from the silent era, only survive in 16mm (e.g. the Hampton Collection), so blowing up to 35mm actually restores the material to its original format. According to both Director Edward Richmond and film preservationist Ross Lippman, UCLA also believes that image quality is better in 35mm and that the format will be around much longer than 16mm. Lippman notes that unless "there is a strong and specific aesthetic/historical reason to keep a title in 16mm," he would rather blow up to 35mm. Thus, when the archive preserved the 16mm documentary, *The Life and Times of Harvey Milk*, a new 35mm negative was generated, because the filmmaker stated that he would have shot the film in 35mm, had he had the money.¹⁰ At the same time, UCLA is still generating projection prints in 16mm, because there is still a demand from screening venues that do not support 35mm.

The Library of Congress film preservation center is technically also still preserving 16mm films in 16mm, although Ken Weissman admits that they have not done all that much 16mm in the past five years, other than some Margaret Mead films and some actuality footage.¹¹ They also blow up to 35mm, when the original format was standard gauge and when the only material available is 16mm, which means they are usually only utilizing the process for individual scenes or shots not found in their 35mm master material. The Library of Congress is also still generating 16mm projection prints from their 16mm originals. However, Weissman notes that when the Motion Picture Department completes its move to Culpepper, Virginia, ambitious plans are in place "for digital preservation of quite a bit of our 16mm collection." Since at this point in time digital preservation is an oxymoron, one can only assume that the Library is doing one of two things: either supporting a program of continuous migration of digital content to ever-changing formats, or assuming that a long-lasting digital preservation medium is an imminent reality.

In contradistinction to the policies of UCLA and the Library of Congress, the Academy Film Archives of the Academy of Motion Picture Arts and Sciences is still committed both to preserving 16mm films in 16mm and to generating 16mm projection prints. As preservationist Mark Toscano states, the archive wants to preserve films in their original format for as long as possible.¹² Many of the titles the archive preserves are independent avant-garde and documentary films, which were produced in 16mm with 95 percent being preserved in 16mm. Furthermore, Toscano notes, 16mm negative film stocks are today of such high quality that they can be scanned at some future date into a digital preservation medium with excellent results. More importantly, the independent film community and most avant-garde screening venues still demand 16mm prints as a matter of aesthetic policy.

Nevertheless, Dominic Angerame, Director of Canyon Cinema, reports declines in rentals over the past two years: "Rentals at Canyon were climbing higher consistently each year from 1996 until 2003. The last two years is now seeing a steady decline and I am convinced that this is due to the DVD factor."¹³ Angerame specifically notes that rentals of Brakhage films are significantly lower since Criterion released its Brakhage DVD set last year, while rentals of Bruce Conner films (only limited availability in video) are still moving like hot cakes. Overall, rentals in 2004 were down 7 percent at Canyon Cinema.¹⁴ Even though Canyon's contract strictly prohibits the use of DVDs in classrooms, i.e., DVD purchase only gives rights for home use, apparently many academics are using Canyon DVDs in the classroom. The loss of income from university rentals seriously jeopardizes operations at Canyon, as well as decreasing income that flows back to the filmmakers. Of course, as William Fisher and Jacqueline Harlow's essay in this section explains, classroom use of DVDs is legal. A court could, however, view screening Canyon DVDs as a *contractual* violation (where damages are much smaller than they would be than for violating copyright).¹⁵ Regardless, if we are to operate in good faith, we should insist that our institutions pay small distributors the fees they demand for public projection of DVDs.

While there are signs that 16mm film distribution continues to weaken, the outlook for 16mm in the archival and independent film world is hardly as bleak as assumed in some quarters. As a production, preservation, and exhibition medium, 16mm will be around for the foreseeable future unless the digital industry comes up with an archivally sound preservation format, which at the moment is not likely, even considering the lightning speed of developments in the digital realm. In the long term, of course, film archivists and producers realize that sooner or later all moving images will migrate to a digital medium. However, even at that point, there will still be romantic filmmakers, curators, archivists, and collectors who will continue to cherish 16mm, preserve it, and screen it, so that future generations may experience the unique beauty of chemically-based moving images.

Notes

1. Jan-Christopher Horak, "Old Media Become New Media: The Metamorphoses of Historical Films in the Age of their Digital Dissemination," in *Celluloid Goes Digital*, ed. Martin Loiperdinger (Trier: Wissenschaftlicher Verlag Trier, 2003), 13–22.

2. 2,000 pixel resolution has become the standard for digital projection equipment in commercial cinemas.
3. E-mail from Rick Utley to Jan-Christopher Horak, October 3, 2005. See also email James J. Minno (Kodak) to Richard Utley (Protek), October 3, 2005, forwarded to J.C. Horak.
4. E-mail Allen D.I. Glass to FRAMEWORKS listserv, August 22, 2005. Other recent features shot on Super 16mm, then transferred to a digital interface: Rob Zombie's *The Devil's Rejects* (2005) and *Da Penguins* (2005).
5. Telephone interview with Walt Rose, Fotokem, October 5, 2005.
6. A film chain allowed for the transfer of films to electronic images for television broadcast by marrying a film projector to a video camera. The first film chains were probably constructed prior to 1930.
7. In 1974 the FBI raided the house of actor Roddy McDowell and confiscated his extremely large collection of bootlegged Hollywood movies. The actor cooperated with the FBI and was not charged. Soon after, the FBI, probably with the acquiescence of the Motion Picture Export Association and Jack Valenti, gave up actively investigating film collectors in order to concentrate on a much more serious threat to the industry's financial well-being, namely video piracy.
8. E-mail from Elena Rossi Snook to Jan-Christopher Horak, September 29, 2005. On the other hand, New York Public Library's administration may have little allegiance to 16mm collection in the face of declining circulation. For a good historical overview of 16mm collections in public libraries, see Elena Rossi-Snook: "Persistence of Vision: Public Library 16mm Film Collections in America," in *The Moving Image* 5, no. 2 (Spring 2005) 1-26.
9. Telephone Interview: Annette Melville, Executive Director, National Film Preservation Foundation with Jan-Christopher Horak, September 29, 2005.
10. E-mail from Ross Lippman to Jan-Christopher Horak, October 2, 2005.
11. E-mail from Kenneth Weissman to Jan-Christopher Horak, October 4, 2005.
12. Telephone interview: Mark Toscano, Academy Film Archive, with Jan-Christopher Horak, September 29, 2005.
13. E-mail from Dominic Angerame to *Frameworks* listserv, August 21, 2005.
14. Telephone interview: Dominic Angerame with Jan-Christopher Horak, October 4, 2005.
15. E-mail from Jacqueline Harlow to Heather Hendershot, November 15, 2005.

Film and Media Studies and the Law of the DVD



William Fisher and Jacqueline Harlow

The emergence of digital versatile discs (DVDs) in 1997 revolutionized the fields of film and media studies, providing teachers ready access to an enormous catalogue of major and minor movies in a format that facilitates both classroom presentations and scholarly commentary.¹ As a result, today 16mm film is disappearing from the classroom.

But while many faculty now regard DVDs as essential to their work both as teachers and as scholars, recent adjustments in copyright law, motivated by an

understandable desire to curtail film piracy, have complicated matters for them significantly. Many teachers, knowingly or not, regularly violate new legal restrictions on classroom use of DVDs. To date, the studios that own the copyrights have tolerated what are technically illegal activities. But this truce is unstable. Copyright scholars and lawmakers must work to devise some way of enabling teachers to continue to exploit this new digital technology lawfully, while simultaneously protecting the copyright owners' legitimate interests in preserving the noneducational markets for their works.

DVDs are powerful pedagogical instruments. Their most prominent use by film and media studies professors is as source material for preparing movie or television clips, which are then compiled and incorporated into classroom lectures. Professors frequently use multiple clips from each of several films or television programs in a single class period. In one introductory film course offered at a major film school, for example, as many as twenty-five individual clips were screened during a single four-hour session.² The ease of navigating DVD compilations enhances their usefulness as instructional tools. DVD compilations preserve valuable class time by permitting instantaneous movement between excerpts, in contrast to analog VHS tapes, which require manual rewind and advance, and 16mm film, a clumsy format for the presentation of short clips. Moreover, unlike videotape and 16mm film, which deteriorate with use and can be damaged by freeze-framing, DVD content maintains its quality with repeated and varied use.

In addition, professors occasionally distribute excerpts of works to students as part of the course curriculum—either by handing out physical copies, or by posting content on the Internet—often on password-protected Web sites accessible only to their own students. The most efficient way of preparing these compilations is to extract them from commercial DVDs. DVDs are faster to copy and less expensive to create than other media. They produce higher quality, more durable copies than other formats. Finally, DVD players are ubiquitous on college campuses, available on computers, in libraries, and in dormitories.

Professors who wish to distribute clips on the Internet prefer DVDs to other formats for similar reasons. Posting analog content to the Internet is costly and time-consuming, as it is necessary to digitize analog content before putting it online. Moreover, some resolution is typically lost during the process of digitization. Clips taken from DVDs, by contrast, are easily compiled and posted to the Internet with the use of software tools. Unsurprisingly, the majority of film and media studies professors who post content on the Internet derive that content from DVDs.

In addition to showing clips, professors often offer screenings of entire movies or television shows for students enrolled in large courses. Sixteen-millimeter and 35mm film remain the formats of choice for many professors who offer full-length screenings in their film classes, but institutional support for these formats has declined in recent years, and many if not most professors now use DVDs for all screenings. The affordability and durability of DVDs contributes to their increasing popularity. And as movies in film formats grow ever more scarce, DVD screenings are only likely to increase.