

# Technical Symposium - FIAF Congress 2006 São Paulo: Film Archives in Transition

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Technical Column

Chronique  
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The accelerating pace with which the film industry is adopting digital technology was the prompt for FIAF and its Technical Commission to organise a technical symposium at the São Paulo Congress to explore the issues raised by this major transformation. With film production already heavily reliant on digital technology, and the industry pressing ahead with plans for conversion to digital projection in cinemas the world over, the expectation is that photochemical technology will rapidly become a specialist product, perhaps dropping out of manufacture altogether, and, as Alfonso del Amo said in his opening address, it is likely to become the sole preserve of the archives. This point was highlighted by one of the first speakers (and the main organiser of the symposium), Paul Read, with some apposite quotes from Antonio Perez, the CEO of Eastman Kodak, which quite clearly implied that film may be a useful product for the company in the short-term, but that once distribution becomes digital, the market for the large quantity of film stock currently used in release prints will effectively vanish. The move towards digital distribution is a worldwide phenomenon, as confirmed by Luiz Gonzaga de Luca, an expert in the local film industry, who indicated that Brazil was well advanced in preparing for digital cinema.

Mikko Kuutti, from Suomen Elokuva-Arkisto, led the audience through a tutorial explaining some of the technicalities of digital image technology, starting with the humble pixel, and covering such key concepts as resolution, bit depth, bit rate, compression and defects (or artefacts, as digital technicians prefer to call them). Paul Read then delivered a densely-packed lecture "How films are produced today" in which he explained how film production has been revolutionised by the advent of digital methods. Some of the details may have become lost in the blizzard of information (Paul Read's data-packed Powerpoint presentation, along with many others from the Symposium, is available to FIAF members for contemplation at a more relaxed pace), but the message was clear that the film industry is eagerly embracing the new technology, with all the freedom and flexibility it offers. They clearly cannot wait to be rid of film in post-production, and even film's supremacy for shooting is beginning to be eroded.

Another technical helping was served up by Torkell Saetervadet from Norway, who outlined the DCI (Digital Cinema Initiatives) specification, a joint venture backed by various major Hollywood players which has laid down voluntary (and still evolving) standards for digital cinema distribution and projection. The lengthy specification covers resolution, bit depth, encoding standards (JPEG2000), colour space (which defines the range of colours encompassed), audio encoding, file formats,

David Walsh nous livre ici une synthèse et quelques conclusions du Symposium technique du Congrès de la FIAF 2006 réuni à São Paulo sous le titre « Archives du film en transition ».

L'objectif du symposium était d'explorer les questions posées par la transformation profonde que signifie l'accélération du rythme auquel l'industrie adopte la technologie numérique. La production étant déjà largement tributaire du numérique et l'industrie étant impatiente pour se lancer dans la projection numérisée généralisée, la conversion de la technologie photochimique au digital devient imminente et le film photochimique est promis à devenir un produit spécialisé, probablement en marge de l'industrie, et comme l'a dit Alfonso del Amo dans son introduction au symposium, peut-être le seul élément à préserver dans les archives du film. L'imminence de cette transformation a été mise en évidence par plusieurs intervenants du symposium, notamment par le représentant de Kodak et des experts de l'industrie cinématographique Brésilienne. En effet Paul Read, l'un des principaux intervenants (et organisateur du symposium), a mis en exergue la position de Antonio Perez de Eastman Kodak, pour qui la pellicule photochimique reste un produit intéressant à court terme, mais qui est appelé à disparaître du marché une fois que toute la distribution sera convertie au numérique. Or, l'adoption du numérique est un phénomène mondial, ajoute Luiz Gonzaga de Luca, expert local, qui indique que le Brésil est résolument lancé dans cette direction.

Lors de la table ronde finale, *Préserver l'expérience du cinéma*, introduite par Nicola Mazzanti ensemble avec Torkell Saetervadet, Roger Smither, José Manuel Costa et Michael Friend, la question de savoir ce qu'est ce le cinéma et comment envisager sa préservation a été abordée. Une discussion qui aurait facilement pu s'étendre sur toute une journée, s'est nécessairement réduite à quelques remarques sommaires de la part de chaque intervenant, telles que le maintien des connaissances adéquates en matière de projection (Torkell), la prise de conscience du fait que les spectateurs auront de moins en moins

encryption, file management, and so on. Of particular note is the fact that the industry is pressing for "better-than-film" projection standards (at "4K" resolution, that is, a horizontal resolution of 4096 pixels) for major releases in an effort to lure audiences with something bigger and better, and in recognition that technology continues to develop. In fact, industry has yet to catch up with DCI, there being only one 4K projector in production at the time of the Symposium.

Torkell was followed by John Graham of the European Digital Cinema Forum, an organisation whose aim is to establish European cooperation and standards for d- and e-cinema, d-cinema being the kind of feature film presentation covered by DCI, and e-cinema being everything else. EDCF provides a voice to European interests in countering Hollywood domination in d-cinema, and a focus for efforts to define alternative, and less elevated, e-cinema standards.

Occupying a guest slot in the Symposium was *The Reel Thing*, a familiar presence at the annual AMIA conference. This showcase for recent developments and restorations is run by Grover Crisp and Michael Friend from Sony Pictures, and on this occasion it was opened by a presentation of sound restoration work from Chace Productions, given by Robert Heiber. Once again reminding us of the importance of the soundtrack, so often the poor relation in preservation work, this interesting set of sound clips showed both what frequently is wrong in sound reproduction on films, and what can be done to improve this significantly, both by addressing every stage of the process and by applying digital restoration tools where required. Chris Bushman from Pacific Title and Art Studios then outlined their well-developed methodology for producing colour separation masters directly from digital intermediates. Production of such masters is the gold standard of film preservation, and deriving them directly from digital intermediates, now the customary route in post-production, offers substantial advantages over traditional film printing methods.

Grover Crisp then introduced STeM (Standard Test Material), a showpiece created by DCI and the American Society of Cinematographers, and made available in various digital formats as an evaluation reference for digital projection...and it is at this point that we must digress and reveal the Symposium's hidden agenda: as technologies such as HDTV and high quality digital projection have moved out of the laboratory and into the real world, priced at a level which even puts them in reach of (some) archives, there has been in a major shift in the thinking behind film presentation. The FIAF Technical Commission felt, in organising this symposium, that it was important for archives to judge for themselves the quality and character of digital projection, as compared to traditional film projection. Setting up such a demonstration in an untried venue with a very limited budget is necessarily a challenge, and there were some problems: most obviously with the quality of the film projection in the cinema chosen for the event, but also in the source of the digital images, High Definition (HD) video rather than the 2K (or even 4K) standards aspired to by DCI. The HD video was played out from HDCAM, itself a fairly highly compressed HD format, not generally considered to be the best. On the positive side, the actual digital projection was provided by a 2K digital cinema projector, courtesy of Barco, who also provided two experts to drive it. Thus the audience was treated to a good many screenings of film material using both technologies, allowing us a

de connaissances des possibilités et limitations de la production cinématographique traditionnelle (Roger), et la préoccupation de savoir si la projection numérisée pourra jamais remplacer avantageusement la projection des films sur pellicule, même si les images semblent les mêmes aux yeux des spectateurs (José Manuel).

Ce dernier point de la table ronde a été débattu plus en détail. A São Paulo, nous avons, certes, visionné de nombreux exemples qui démontrent qu'on ne peut plus refuser les projections numérisées pour des raisons de qualité de l'image. Lors de cette occasion particulière, la projection numérisée s'est même avérée supérieure à la projection traditionnelle. Très peu nombreux furent ceux qui prétendirent y avoir trouvé des défauts inhérents à la projection numérisée. Tout ceci, doublé d'une sombre discussion sur la cessation imminente de la fabrication de pellicule, plongea les délégués dans un état de mélancolie généralisée, ce qui incita plusieurs parmi eux à demander à la FIAF de lancer une campagne pour le sauvetage de la pellicule. Et à l'auteur du compte-rendu de conclure que qu'on le veuille ou non, le cinéma numérique est là, avec les immenses défis que cela comporte pour les archives et, en même temps, porteur de qualités exceptionnelles lorsqu'il s'agit d'offrir l'accès à des extraits de films d'archives comme ce fut le cas pendant les deux jours du symposium.

chance to try to spot the digital artefacts in compressed HD, and offering a comparison of good digital projection with indifferent film projection.

The projection of the STeM footage immediately highlighted one of the pitfalls in digital cinema, something later hinted at by Rod Wheeler of Barco in his demonstration of the projector's impressive capabilities. Such projectors need to be able to cope with material conforming to a range of standards of frame rate, resolution, bit depth, colour space and so on, all of which need to be set correctly in order for the picture to look right. While this flexibility to alter the appearance of the source material might be an essential feature of such projectors, an ability to tinker freely with the appearance of the original material might also be a cause of some concern to many people. And of course there is the chance of simply getting it wrong, which is what happened with the STeM: an inadequately labelled HD tape resulted in the footage being shown with the wrong colour space setting (later corrected for a subsequent showing), to the puzzlement of an audience expecting to see some perfectly balanced material.

Continuing the *Reel Thing*, Mark Toscano of the Academy Film Archive described the difficulties in preserving the films of independent filmmaker Stan Brakhage. The massive difficulties in preserving and presenting artists' work in general was amply illustrated by these works, covering the period 1952-2003, where the artist had painted, scratched and distressed his films, and made, at various times, copies of varying quality. With degraded material of this sort, it is often impossible to determine how much of the degradation was part of the artist's original intention.

Alan Silvers and Michael Inchalik from DTS Digital then illustrated their work on the forefront of digital restoration processing with sequences from Frank Capra's *You Can't Take It With You* (1938). Here, the challenge was to match some soft and grainy duplicate inserts with incomplete preservation material of better quality. The presenters thoughtfully avoided the complex mathematics of the processes (which involve extracting the maximum amount of data possible from the source material), confining themselves to showing the results, which certainly appeared convincing.

It was then the turn of our hosts, for whose diligent work in staging this event we must be extremely grateful, the Cinematica Brasileira (Patricia de Filippi), helped in this presentation by Ewa Wawelberg from the local post-production firm Casablanca, to showcase some recent restoration work: two films were illustrated, *Limite* (Mario Peixoto, 1930) and *O Padre e a Moça* (Joachim Pedro de Andrade, 1965). Along with the familiar problems of scratches and dirt on the master material, the additional problem in the latter was acetic deterioration, which caused problems of stability when scanning the film. The examples demonstrated that digital processing is capable of correcting many of the problems entirely successfully, though at the cost of very long processing times for the huge amounts of data.

Finally, Thomas Christensen demonstrated the Danish Film Institute's work on two masterworks of Carl Theodor Dreyer, *Mikael* and *La Passion de Jeanne d'Arc*. Excerpts from the new versions of these films,

remastered on 35mm negative via 2K scans from original nitrate masters, were shown in both digital HDCAM versions and 35mm print, and looked very impressive in both formats.

Nicola Mazzanti began the second day by stretching the audience's imagination beyond the confines of digital cinema and restoration, towards a future world where the traditional model of film archive access has been replaced entirely by digital access, not only to the film but to all kinds of supporting documentation and data. In his proposed blueprint, such an all-encompassing digital archive would supply film content to every kind of user at any level needed, from low quality browsing to high quality cinema, but he pointed out that there is a daunting amount of work needed in establishing the necessary standards and protocols.

Paul Read then investigated, with the aid of some handy figures, the difference, from the perspective of the audience, between film and digital projection, and showed the level of resolution necessary in order for the underlying structure of a projected image to be invisible. His talk was illustrated by some interesting footage from recent restoration work by Digital Film Lab in Denmark on *Casanova* (1956), comparing the same scenes scanned at both 2K resolution and at HD (the former offering nearly twice the resolution at considerably more than twice the cost). The results, projected on film, were difficult to tell apart, perhaps reflecting both the inherently coarse quality of the colour originals, and the distraction caused by the intriguing difference between the Italian and the considerably less prurient French version.

A panel, convened by this author, then discussed the application of digital technology beyond the immediate topic of high-quality digital projection, something which will become increasingly important for archives faced with ever more demands for instant, downloadable, web-searchable, and alternative access. John Graham expanded on his earlier presentation on digital presentation in Europe by pointing out that, although there are dangers in running two systems, high-quality DCI cinema is not a cost-effective solution for a significant percentage of content in European cinemas, and that a common delivery system is needed for this other material. Dan Nissen of the Danish Film Institute made a plea for proper standardisation in the new technologies, and emphasised the need to keep the original cinema experience alive while still exploiting the new means of access now available. Grover Crisp, representing an archive already well-advanced in their plans for the systematic creation of a digital archive, outlined the decisions which they have already made towards this end. Finally, Nicola Mazzanti attempted to provide some answers to questions such as what do our users want, at what resolution and in what form?

Two presentations then dealt with the increasingly difficult (some would say, intractable) question of preserving film in the digital era. First of all, Thomas Christensen outlined established preventive and active conservation practices, and how they apply to both analogue and digital media, the latter of course requiring the extra dimension of a duplication plan which takes into account format and media obsolescence.

Then Eddy Goray of Helb-Inraci, Belgium, examined in a densely-packed presentation the future options for preserving digital assets. Among the detailed, and often depressing, figures he produced, was the fact

David Walsh nos ofrece una síntesis y algunas conclusiones del Simposio Técnico del Congreso de la FIAF de 2006, celebrado en São Paulo bajo el título «Archivos en tiempos de cambio.»

El objetivo del simposio era el de explorar los problemas planteados por la transformación profunda debida a la aceleración del ritmo con el que la industria está adoptando la tecnología digital. Puesto que la producción ya dependía en gran medida del digital y la industria se hallaba impaciente por lanzarse a la proyección digital generalizada, la conversión de la tecnología fotoquímica al digital se está volviendo inminente, con lo cual la película fotoquímica está destinada a convertirse en un producto especializado, probablemente al margen de la industria. Como dijo Alfonso del Amo en su introducción, el único producto que los archivos filmicos estén llamados a conservar. La inminencia de la transformación fue indicada por varios participantes del simposio, en especial por el representante de Kodak y los expertos de la industria cinematográfica brasileña. Uno de los principales ponentes (a la vez, organizador del simposio), Paul Read, ha subrayado la posición de Antonio Perez de Eastman Kodak, quien ha declarado que la película fotoquímica sigue siendo un producto interesante a corto plazo, pero está destinada a desaparecer del mercado una vez que toda la distribución haya pasado al digital. De hecho, la adopción del digital es un fenómeno mundial, agrega Luiz Gonzaga de Luca, experto local, quien recuerda que Brasil se ha encauzado firmemente en esta dirección.

En una mesa redonda final, *Preservar la experiencia del cine*, introducida por Nicola Mazzanti junto con Torkell Saetervadet, Roger Smither, José Manuel Costa y Michael Friend, fue abordada la cuestión de qué es el cine y cómo deberíamos enfrentar la tarea de su preservación. Una discusión que fácilmente podría haber durado todo un día, quedó reducida forzosamente a pocas y escuetas observaciones por parte de cada ponente, como, por ejemplo, la conservación de los conocimientos adecuados en materia de proyección (Torkell), la toma de conciencia del hecho de que los

that migrating the amount of data needed for a modestly-sized digitised film collection from data tape to a new storage format would literally take years of processing time. He pointed towards a number of developments in software and hardware which might ultimately offer some practical solution to preserving all this data, including the use of colour micrographic film to record digital data at high density, but clearly there is a long way to go, and he ended with a plea for FIAF to take an active role in the creation of an Open Standard for long-term data preservation.

A diversion from the seemingly insuperable difficulties of preserving digits was provided by a panel chaired by Paul Read to investigate the preservation of film equipment and related documentation. With the likely loss both of the manufacturing base of film, and of expertise in film laboratories, there is a real need to address how we retain the equipment traditionally used in film production and post-production, and the knowledge of how it was used. The members of the panel, Patrick Loughney from George Eastman House, Alfonso del Amo of the Filmoteca Española, Noel Desmet from the Cinémathèque Royale de Belgique and Patricia de Filippi, variously talked about initiatives such as the efforts to digitise technical manuals and standard texts, the creation of a database of film stocks linked to copies of original documentation such as data sheets and stock labels (one of Alfonso's valuable initiatives), the preservation of laboratory equipment, some of it still very much in use in places such as the Cinémathèque Royale and the Cinemateca Brasileira, and ways of recording of how equipment works, as exemplified by an interactive DVD of film equipment in operation (introduced by Patrick).

*Preservation in Hollywood*, presented by Grover Crisp and Bob Heiber, was an insight into how the industry majors approach preservation in an age of digital intermediates. The big producers take the view (as indeed do most archives) that the best preservation medium is film, and so they are careful to preserve negatives of the final versions of films, and often the original camera negatives as well, rather than attempting to preserve the digital data itself.

Andrea Kalas of the British Film Institute then showed us the results of their struggle to create a presentable version of *The Open Road* (1926), a tour of Britain, filmed in a successive-frame two-colour system. Here is an example of a film which cannot successfully be shown in its original form, as demonstrated by the projection of a brief, eyestrain-inducing, sequence. The digitally combined version prepared by the BFI may have looked (thankfully) nothing like the original, but nevertheless was a very attractive rendering of the information captured by the filmmaker.

A final panel, *Preserving the Cinema Experience*, introduced by Nicola Mazzanti with Torkell Saetervadet, Roger Smither of the Imperial War Museum, Jose Manuel Costa of the Cinemateca Portuguesa and Michael Friend, pondered the question of what is cinema, and how should we approach the task of preserving it. A discussion which could easily have occupied a whole day was necessarily reduced to each speaker making a few salient points on aspects such as retaining the knowledge and expertise to project film in an authentic fashion (Torkell), accepting that a modern audience have little understanding of the limitations

espectadores tendrán cada vez menos conocimiento de las posibilidades y los límites de la producción cinematográfica tradicional (Roger) y la preocupación por saber si la proyección digital alguna vez podrá reemplazar ventajosamente la proyección de las cintas, aunque las imágenes parezcan las mismas a los ojos de los espectadores (José Manuel).

Estas últimas consideraciones de la mesa redonda han sido discutidas con mayor detalle. En São Paulo hemos visto numerosos ejemplos que demuestran, por cierto, que no es posible seguir rechazando las proyecciones digitales por motivos vinculados a la calidad de la imagen. Es más, en este contexto la proyección digital ha demostrado su superioridad respecto de la proyección tradicional. Pocos fueron los que afirmaron haber encontrado defectos inherentes a la proyección digital. Todo ello, unido a una discusión sombría sobre el cese inminente de la producción de cintas, sumergió a los delegados en un estado de melancolía generalizada, que hizo que más de uno instara a la FIAF a que lanzara una campaña para la salvación de la cinta. El autor de la reseña concluye que, quiérase o no, el cine digital ya existe, con los enormes desafíos que implica para los archivos y, al mismo tiempo, es portador de cualidades excepcionales cuando se trata de brindar acceso a extractos de películas de archivo, como se ha visto durante los dos días del simposio.

of traditional filmmaking (Roger), and concerns about whether digital projection can ever be an acceptable substitute for film, even if the on-screen images appear the same to the audience (José Manuel).

This last point was debated at greater length in the closing discussions. Certainly, we had seen numerous screenings which showed that it is no longer possible to dismiss digital projection as being of inadequate quality, and in this particular venue, the digital projection easily outclassed the film, with few people claiming to have noticed any digital defects. This, coupled with doom-laden talk about the imminent cessation of film manufacture, inevitably led to a degree of gloom among many of the delegates, and there were a number of contributions from the floor calling upon FIAF to rally to the cause of saving film. Like it or not though, digital cinema has arrived, bringing with it huge challenges for archives and, at the same time, as borne out by the outstanding quality of some of the archive footage we were shown over the two days, some quite remarkable benefits.