film museum

Digital Film Restoration Policy / Österreichisches Filmmuseum

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1. Introduction: History and Approaches

Since the beginning of filmmaking, copying one film onto another has been common practice. The technical characteristics of the medium itself make this constant **duplication** of images from one support to another a fundamental part of cinematographic production and distribution. Since the early 1960s, the same – relatively simple – system has also been used by archives to preserve their films. As the historical research on cinema became more detailed, this procedure started to be discussed within a methodological framework and became increasingly standardized, while also giving rise to technical and ethical questions about best practices and possible improvements in motion picture film preservation.

The concept of **restoration** appeared relatively late in the world of motion picture film. It is based on the recognition that during a film's "lifetime" its visual and aural characteristics change to varying degrees (chemical instability, mechanical damage, etc.). Film restoration implies the idea of using various printing techniques to approximate a film's (assumed) original look and sound and return to it some of its "lost" characteristics. The set of techniques used in this process was mostly borrowed from commercial film production.

Film **restoration** should be distinguished from a film's **reconstruction**. The latter concept implies the re-editing of several existing sources (projection copies and/or production materials, like the original camera negative and the fine grain duplicate negatives/positives), using historical references. A reconstruction is a newly created version of a film which aims at matching a version that no longer exists (for instance, a director's cut, a festival version, or the distribution version in one specific country). A film reconstruction also implies wide-ranging historical research, based on evidence and documents, while a film restoration consists mainly of technical procedures. In both cases, however, an understanding of the medium's **technical history** is essential. In order not to compromise the characteristics and qualities of historical film material, the knowledge of film formats, stocks, coloration techniques, production and post-production devices and standards is mandatory.

2. Film and Digital Restoration: Duties, Risks & Potentials

As archivists and museum curators, it is our aim and our duty to preserve motion picture film for future generations and to enable them to experience and understand the film medium as a *functioning system* in which aesthetics, technology and social experience were intertwined in a unique manner, creating one of the most important cultural phenomena of the 20th century. At the same time, it would be a-historical to ignore the unfolding of film into several other moving image

media during the latter part of this same century. The "mutational era" we live in is as much part of film's history as the similarly mutational era around 1880/1900 that brought film into existence. A Film Museum, therefore, has the mission to **concretely represent** and **document** the specific capacities of film as well as the historical shifts that the medium has undergone (including its current "mutation" into what are uniquely different media and forms of expression). Part of this mission is also to contribute to a terminology of **differentiation** and to a **materialist understanding of cultural products.**

The **"digital revolution"** began less than three decades ago and has changed the entire technical milieu of commercial cinema. It has reshaped the chains of production, post-production and distribution; it set different standards, supplied filmmakers with new avenues of research, or allowed them to revisit technological innovations from the past (like 3D or chromakey). It has become a defining feature of contemporary moving image culture. Put in terms of "market evolution": As Lumière won over the other patents, as 35mm became the standard gauge in the early 20th Century, as the optical soundtrack pushed out the other audio systems, now digital solutions for cinema are rapidly replacing photochemical film in the commercial arena.

As film exits the main stage of the culture industry, its specific profile as a form of expression becomes more widely recognizable. It is no longer the common, "everyday", "self-explanatory" medium of choice for entertainment professionals and audiences. **It can now be perceived as a "historical" medium** (which it always was – like any other human practice, including the most current or most "advanced" digital ones). Against this background, museums and their stakeholders will attempt to preserve film both through its artifacts and as a technological-aesthetic system. As has been the case with many other "obsolete" art forms, it will be necessary to not let the techniques, tools and materials of the art form be discontinued. They will be needed specifically for museum purposes (restoration, duplication, exhibition) – and for those artists who choose to keep working with film. The contexts of its use will be highly specialized.

The mass production and mass exhibition of moving images will also continue – by fully entering the digital realm. And as they have done in the past, archivists, restorers and museum curators will continue to "borrow" from an evolving cinema industry some of its most recently developed techniques. This can and should not be avoided, as it enables museums and archives to continue to function as "bridges" or communicators between the commercial world (where much of film – or "film" – originates) and the non-commercial domain (to which we owe the concept of *film culture* and the awareness of film as part of human memory).

Digital technology not only offers film restorers additional means to achieve their aims, it also demands new forms of knowledge from them. **New instruments require new skills**. What does not change, however, is the basic archival understanding that this new knowledge will serve **a non-industrial and non-profit purpose**. Its main uses will have to be cultural – archeological, experimental, educational. The biggest risk for archives, when applying digital technology to photochemical film, is short-sightedness – focusing too narrowly on one level of the process: its present, short-term usefulness; for instance, to achieve funding or gain visibility. At the other end of the spectrum, the introduction of digital restoration in film archives may prompt a deeper discussion of what it is that we *produce* when we *restore* a film.

Although this word is widely used among archivists, there is no such thing as a single **original** in Motion Picture Film, and there never was. Reasoning in terms of **sources** and **versions**, instead, gives us a perspective: When we restore a film, we are simply producing another version, an interpretation of the past based on our knowledge, our research, and our personal relation to the film in question. It is necessary to keep these *implicit* parameters in mind: What we produce is another point of view, a historical interpretation and, hopefully, a philologically sound edition of an art work or document. This means that a restoration should always be conceived as a critical instrument to enlarge the debate around cinema and the archive's role in preserving and promoting it**.** Thus, the most crucial approach to digital restoration is twofold: **experimentation** (in order to understand its limits and discover the potentials for common practices in the future) and **documentation** (making the work transparent and opening it to further discussion). In order to share the results of our research and our experiences in an adequate manner with our colleagues and the public, and in order to improve our own practice and better understand its consequences, our work needs to be "traceable".

3. Resources, Principles of Choice & Workflow

The archival holdings of the Austrian Film Museum allow for a relatively clear perspective: The collection is rich in the field of independent, experimental, and small-gauge films, and there is a consistent body of early nitrate films. These two areas are primary, as far our restoration program is concerned, but the Film Museum is also open towards potential collaborations with other archival institutions.

The choice of films as candidates for digital restoration is governed by several factors.

a. The overall status of the film. Not every film needs to be restored with digital means. A film will be considered for digital restoration if the amount and type of damage necessitate a reconstruction of the images or of the color.

b. The urgency of preservation and restoration interventions. Some films preserved in the Film Museum collection are decaying more rapidly than others. Acetate films affected by vinegar syndrome, nitrate films in advanced decomposition, or rapidly fading color films receive priority over other items.

c. The uniqueness of the materials and the historical/technical relevance of the film in question. The historical relevance of a film in the collection is determined by the rarity of the print(s), by the role of the respective filmmaker(s) in the context of the Film Museum, and by an estimation of the film's value as a document, as an art work or as an example of a specific technical process. Stenciled, tinted and toned nitrate films, for instance, represent essential examples of the technical history of cinema. The Film Museum will always inquire with historians, researchers and other FIAF archives if further copies or material related to the film in question is known to exist.

d. The educational potential of the project for an eventual internship program. Each film presents peculiar characteristics and is the object of historical and technical research. This

research is a considerable part of our restoration program in agreement with the students involved in our projects. Therefore, films will be chosen for a digital restoration also on the basis of their educational and research potential.

Whenever archival material is worked on, this process must be widely **documented** to guarantee the **reversibility** of each of its steps. A detailed **plan of the restoration** is necessary before all technical operations begin. As the restoration progresses, this plan remains the reference for all interventions. Each step is conceived with the aim of **minimizing invasive activity**. Before digitization, the film is being repaired as minimally as possible. Digital retouch is applied **in accordance with the historical nature of the artifact**, keeping in mind that certain types of "defect" present on the film bear testimony to the production milieu that originated that precise artifact (as, for instance, the peculiar flickering of a film shot with a hand-cranked camera, the instability typical of some small formats, or the imprecision of some early coloration techniques, etc.). Our objective is to realize **a new version** of the film, which will always represent a **compromise** between the unattainable (and always already lost) "original appearance" of the film and the layers which time has inscribed on the artifact – including the newest layer, accrued during the digital restoration process.

At the end of each project an exhaustive **final report** is mandatory. A short version of the report is made available to the public on the Film Museum website. As long term preservation standards for digital data do not exist yet, the **periodical migration** of our data, stored on LTO tape and on magnetic hard drives, will be ensured. For long term preservation and for the museum's exhibition activities, it is also a basic aim to create **a new negative and a projection copy** of the work on Polyester motion picture film. To keep up with professional standards, and as digital workflow is subject to constant changes, the staff's **further training** is assured periodically.

4. Conclusion

The preservation of photo-chemical film as such will continue to be the priority of the Austrian Film Museum. At the same time, the museum accepts the invitation and the challenge posed by the newly increased range of film restoration methods. Digital film restoration partly sacrifices the photo-chemical lineage of motion picture film, but it enables restorers to simulate some of its characteristics which would otherwise be impossible to recover. While we are aware of the compromises that digital methods introduce into the practice of preserving films, we recognize this development as one of the ways in which archival practice always reflects shifts in culture and technology at large. As long as film museums and archives intend to play an active part in media culture and its historiography, their interpretation of processes and artifacts from the past can only be expressed in the shape of a dialogue with the media technologies of the present – both of which, past and present, need to be viewed as historical.