



## NATIONAL FILM ARCHIVE ON THE DIGITAL RESTORATION OF MILOŠ FORMAN'S *THE FIREMAN'S BALL*

*The Firemen's Ball* (1967) by Miloš Forman is the second of two hundred Czech motion pictures selected to be digitally restored. The first film restored was *Marketa Lazarová*. The idea originated at the Karlovy Vary International Film Festival. The main goal of the project is to make the key works of the Czech cinema accessible to future generations in the form of an audio-visual experience as close as possible to the original. The National Film Archive in Prague was in charge of the digital restoration, which took place at Prague-based private companies Universal Production Partners (UPP) and Soundsquare.

A work group was set up to supervise the procedure in detail. Its members included from the NFA (Michal Bregant, Jitka Kohoutová, Vladimír Opěla, Jeanne Pommeau, Jana Přikrylová), UPP (Jiří Čvančara, Ivo Marák, Jan Zahradníček), Soundsquare (Marek Klasna, Pavel Rejholec), from FAMU and Association of Czech Cinematographers (Marek Jícha, Jiří Myslík) and outside of these institutions (Anna Batistová, Tereza Frodlová, Miloslav Novák). Throughout the process, Miroslav Ondříček, the director of photography of *The Firemen's Ball* supervised the results. The structure of the work group and the presence of one of the film's authors guaranteed that the intervention was in accordance with the up to date methodology and technology in digitization of audio-visual heritage with ethics of restoration of audio-visual works and also within the current legislation for the copyright domain.

The work group held regular meetings from April to June of 2012 to discuss the key questions concerning the process of restoration and the final appearance of the digitized work. During this time digitization and restoration of image (at UPP), sound (at Soundsquare), and historical research of the production and distribution of *The Firemen's Ball* (by NFA staff and by the members of the workgroup not connected to the above mentioned institutions) were under way.

The project's aim was to achieve the appearance of the film as it was screened during its first run in the Czechoslovak distribution in 1967 and 1968. This version was the subject of

historical research, which centred around three key questions: the film stock that was used for distribution copies, the aspect ratio of the screened image, and the initial title explaining that the film wasn't intended to offend firemen. Research found that the copies for distribution were shot on East-German Orwocolor, their aspect ratio was 1:1,37 and that the title was not present (it was added to distribution copies in March 1968).

The original source materials for the restoration were from the NFA and from the Film laboratory services of Barrandov Studios. The best sources were chosen for both image and sound quality. Then they decided the method and criteria for their digitization and restoration.

The data for the images was generally taken from the original negative, with few exceptions: when the technical state of the negative was too poor, the intermediate positive was used. Both elements were scanned in 4K and 10bit color depth. The resulting digital intermediate went through simulation of the original laboratory procedure for the setting of colors in distribution copies. The original 1967 Orwocolor copy served as a reference, and the work group and Miroslav Ondříček made the final assessment during a calibrated screening and comparison of the 35mm copy and the new digital version. The image was also erased of marks from mechanical damage and dirt – first automatically through the computer software, and then on a much greater scale manually.

Digitization of the sound started from the optical soundtrack on a copy from 2009 held by the film laboratories in Zlín and from the preserved magnetic tapes at Barrandov laboratories. While magnetic tapes are usually preferable as a source material for digitization, in the case of *The Firemen's Ball*, only one fifth of the whole film survived in usable form (i.e. as a complete sound mix), and so the optical soundtrack from the 2009 copy was used for the greater part of the restoration.

Both materials were cleaned before undergoing any more procedures. After transcription, the soundtrack underwent restoration in a digital environment. The parts that originated from the optical soundtrack were especially in need of considerable modification, which primarily consisted of noise reduction and elimination of sounds of mechanical damage. Sibilants and a few distorted points were treated individually. The final mix was spectrally and dynamically unified so that the use of different source materials was not audible.

The members of the work group and Miroslav Ondříček assessed the outcome of the restoration.

Image and sound were synced together in UPP and combined with metadata describing the whole process. From the point of view of the data configuration the outcome of the digital restoration is MAP (Master Archive Package), and from the point of view of copyright law it is DRA (Digitally Restored Autorizate). MAP is a standard configuration of digitized and restored image and sound and related metadata that comes recommended by EDCine for the long-term preservation in archival institutions. Unlike other formats used for digital storage and diffusion of contemporary films (DCDM and DCP), MAP is better suited to historical audio-visual materials, their safeguarding in memory institutions, and is the preferred form of

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access. DRA emphasizes the importance of digitally restored work that is supervised by a group of experts and authors of the original work, and also stresses that the final product respects the original appearance of the film. Other outcomes are constituted by masters for diffusion in digital cinemas, television and on home video formats, while the greatest possible quality and appearance of the work is preserved.

With the short life span and the relative format instability of the contemporary forms of digital data in mind, and from the point of view of long term preservation, the most important step of the whole procedure was focusing on restoring the image and sound for a new film copy (with Dolby Digital sound). Only this will ensure the survival of *The Firemen's Ball* for a long period of time and thus valorise the considerable financial and human resources dedicated to this whole process.

Digital restoration of Marketa Lazarová was sponsored by the general partner of the Karlovy Vary International Film Festival, the CEZ Group, and by the Ministry of Culture of the Czech Republic. From the very beginning, the principal goal of the organizers of the IFF was to initiate a long-term process that would facilitate continuous digital restoration of selected Czechoslovak and Czech films. The premiere of digitally restored Marketa Lazarová was a unique event and got attention and interest of other investors. The Foundation "České bijáky" was set up in order to make digital restoration of *The Firemen's Ball* possible. This Foundation is now planning further cooperation with the National Film Archive and the Karlovy Vary International Film Festival on financing the digital restoration of more classical Czech films.

#### Example of "before" and "after":





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