

# Repainting the mechanical ballet. Restoration of colours in 'Ballet mécanique' by Fernand Léger

## 1. INTRODUCTION

This paper comes from a research [1] carried out two years ago during the Haghefilm Foundation internship programme.

Haghefilm Foundation was a non-profit international organization created by the laboratories Haghefilm Conservation in order to improve research and support activities related to techniques and technologies of film preservation and restoration [2]. Into this framework, Haghefilm Foundation's main goal was to promote results of the research, but this often leads to deal with copyright holders instead of screening and proposing experimental researches in educational contexts just for free knowledge.

## 2. FILM RESTORATION

Since the Eighties of the last century, after UNESCO conference [3], film has been institutionally considered as cultural, rather than a commercial item. It has been given a systematic, academic and ethical disposal to film conservation and restoration practices.

Films required conservation policies and cold storage for their structural fragility [4]. They have got a number of unchanged features and other elements that we have tried to "improve" in order to preserve them. The films have a part called photosensitive emulsion, from the early years, when the supports were made of flammable cellulose nitrate films, and then when they were made of safety (non-flammable) cellulose acetate, until polyester bases introduced in the Eighties and currently used in the production-distribution market.

This emulsion may have a wide range of components, including salts such as silver nitrate or chromogenic couplers in the emulsions of colour film, but it is interesting to know that the function of emulsifier is given by the gelatine, an organic product. This "organic" dimension in the film, susceptible to degeneration, further guarantees its syncretic charm. Film is therefore an art that tremble of vivid emotions and has got in its own materials an animated, living element. Restoring an audiovisual text is always an operation on the formal setting and every different medium introduces different formal connotations. The restoration of an audiovisual support is the re-formalization

and the reactivation of the text according to its structure, examination of the text and of its gaps, hermeneutic activity which consents to recreate an identity opening to possible further interpretative operations [5]. Actually restoration is always an exegesis work, deep-rooted in practice, but there is always a philological research, exploring efficient methodologies to understand and interpret the work.

The problem of modernity, as historical dialogue and methodological customs, is a basic principle in any restoration. In fact resetting a text is always a dialogue with a past, near or far, and it becomes a comparison between two different ages. Every restoration is a liaison with a memory. A useful definition for the audiovisual restoration is proposed by Paolo Cherchi Usai:

*«Restoration is the set of technical, editorial and intellectual procedures aimed at compensating for the loss or degradation of the moving image artefact, thus bringing it back to a state as close as possible to its original conditions» [6].*

The audiovisual support is radically different from the artistic *unicum*, so also the idea of original can change if you consider a philological-textual level or a material level. It will be different also the gaps treatment: the video, as film and photography, has got intrinsically the concept of copy, related to the idea of technical reproducibility, giving also a different perception, not one and synchronous. The introduction of the numeric information among the images system allowed a wide flexibility of action on images, but a digital medium implies a trans-coding process which uses calculation by discrete, discontinue values, turning light waves into numeric units (from *digit* = decimal number). Even if digital system is a completely different structure of representation, these media are now in a transition age [7]. Thorburn and Jenkins wrote:

*«in our current moment of conceptual uncertainty and technological transition, there is an urgent need for a pragmatic, historically informed perspective that maps a sensible middle ground between the euphoria and the panic surrounding new media [...]» [8].*

Digital technology ensures data repeatability without alterations and a high potential of intervention on data. The technological advances, as the realisation of processors and more powerful computer buffer, make the digital arriving in cinema in higher standards.

### 3. A CASE STUDY: BALLET MÉCANIQUE

#### 3.1 THE FILM

The EYE Film Institute decided to commission the restoration of its hand coloured copy of *Ballet mécanique* (1924), Fernand Léger's masterpiece of the European Twenties Avant-garde, with Kiki de Montparnasse, Dudley Murphy and Katherine Murphy.

For EYE, the restoration lab Haghefilm acquired a 2k digital scan in order to produce a digital intermediate for both the colour and the black and white parts (requiring positive editing for the projection prints). But another experimental project has been proposed, i.e. to produce another, unique black and white positive copy with hand-painted or tinted sections matching, as closely as possible, the original nitrate. My duties consisted in running colour tests under the supervision of Paolo Cherchi Usai, Ulrich Ruedel and Daniela Currò. Furthermore, I pursued research about the history of this film and its moot authorship.

Sought by many film archives in all the world (New York, Paris, Mexico, Montreal, Bucharest, Havana, London, München, Wien, Berlin, Los Angeles, Berkeley, Belgrade, Stockholm, Turin, Cambridge, Washington, Canberra, Roma, Ottawa, Copenhagen), there are several versions of *Ballet mécanique*. According to Giovanni Lista, this film has to be regarded as a *work in progress*, whose drafting continued for years, without an original [9].

The nitrate coloured print owned by the Dutch Filmmuseum came from property of Filmliga, a cultural association born in 1927 in Amsterdam, focused on the collection and the diffusion of Avant-garde movies; it had a great season between the 1928 and the 1930, and broke up in the 1931. Then the collection of the association has been acquired by the Filmmuseum, that still keep those films and among them *Ballet mécanique* [10].

Lawder defined *Ballet mécanique* as

*«the classic example of a fully developed painting aesthetic transposed into film by a modern artist»* [9].

The film is one of the most contested artworks of the Twentieth century. Its genesis involved different persons: Fernand Léger, Dudley Murphy, Man Ray, Ezra Pound, Georges Antheil. Every

one of them worked on the film giving an artistic contribution. It has been a collaborative work but the question of the authorship is still now open to debate. Some art historians and film scholars have different interpretations: Standish Lawder considers Léger as the creator, and Murphy as an assistant; Judi Freeman and Susan Delson emphasize the crucial contribution of Murphy and involves Man Ray in the authorship. William Moritz minimizes Léger's contribution, ascribing the creation mainly to Murphy and Man Ray [11-14].

In the earliest known print of the film, the opening credit reads "F. Leger and Dudley Murphy present *Ballet Mécanique*"; and Léger's notes on the film, prepared as it was nearing completion in 1924, call it a "Film by Fernand Léger and Dudley Murphy" [14-15]. In *Ballet mécanique's* film credits Murphy's contributions disappeared. Neither Man Ray nor Pound nor Antheil was even appointed. Man Ray in his autobiography *Self Portrait* affirmed:

*«and that is how Dudley realized the Ballet mécanique, which had a certain success, with Léger's name»* [16].

#### 3.2 THE RESTORATION PROJECT

Haghefilm scanned both the Dutch 309m positive nitrate copy, coloured, and the Cinémathèque Française 291m positive black and white print, in order to get the best results comparing editing and sequences; the French 291m copy is denser, darker and less clear than the Dutch one, probably because the French print comes from later generation elements. The editing order is slightly different. Even if it is black and white, the French copy presents sections coming from a coloured source, with clearly denser frames.

I checked the entire Dutch copy shot by shot and frame by frame and I wrote accurate descriptions about the content of the shots, the frame-counting, the evenness of saturation, the kinds of applied colour, the splices and the damages. I found that every tinted section has been spliced and a lot of hand-painted sections were not spliced, but directly painted with many overlappings of colours at the frame lines. According to Paul Read, during the hand-painting period the dye used for hand colouring were quite similar to those used for tinting: paints or acid dyes in water, they were absorbed easily by the gelatine of the emulsion side [17].

Then we attended the digital grading. The Filmmuseum asked for a higher contrasted look in order to recreate the shocking effect of that famous and charming avant-garde feature. The experimental project proposed by Filmmuseum provided us with the opportunity to paint the coloured frames like they look on the nitrate copy. In the chemical lab of the Haghefilm I have tried many different tinting experiments in order

to learn how to work with tinting processes. I ran 62 tests in tinting and hand-painting, testing hues, concentrations, dipping time, mixtures, applications.

But the positive black and white print made by the digital intermediate presented a bad grey density which, overlapping the applied colours, looks quite different from the original.

We thought it was possible to work digitally taking out the colours and the brushstrokes, in order to underline the black and white image and to get a clear and vivid picture where applied colours could be visible and faithful to the original. Basically using the Hue/Saturation software tools for the RGB channels might work like a "reverse filter" for showing the colour subtraction. In this process, theoretically correct, we were not aware that the applied dyes were not pure colours. Furthermore, we did not consider the overlapping of colours, which mixes hues regardless of the frame line. Some colour data were mixed in the brushstroke marks and we were able to find it by looking at the Magenta sections visible in the Red frame, also visible by the Blue channel.

So we thought to compare the coloured sections, triangles and circles, of the Dutch copy with the ones seen on the black and white French element, in order to use those sections in the new black and white print that we will have to paint and tint. Those sections have been already scanned and we checked frame by frame analyzing the two copies in comparison and producing a new record about the differences. Many sections have been taken by this element reducing the digital intervention in compositing and the time spent in the digital work on the singles frames.

This restoration has not been finished: one of Haghefilm's requests (improving of research on film restoration and dissemination of its results) was that the hand coloured print of the film had to be made available by EYE to the Haghefilm Foundation for exhibition in educational, research, and outreach activities with mention of EYE as the source of the material. EYE could not agree to this claim because of the "copyright dilemma": the Dutch *cinémathèque* can't assign anyone the right to show the print because it doesn't own that right, which is true for almost every film they preserve and restore. In some cases, like the so-called "orphan films" (works that have been abandoned by its owner or copyright holder), it wouldn't have been a problem, but in the case of *Ballet mécanique* it actually was, because it is a film where the right holders are very well known, so it was impossible for Haghefilm to get the aforementioned rights. Of course this negative event should be a chance to think about the mission of films restoration, about the free spread of research and its results.

## 4. CONCLUSIONS

I believe that this unique experience will be useful to understand how to balance the digital technologies, helpful and favourable to get the best achievements, with the traditional and fashionable applied colours, rediscovered example of how film arts has been close to the fine pictorial art.

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