

PRESENT AND FUTURE OF FILM IMAGES AND SOUNDS DIGITAL TREATMENTS

RBC Consultant for LABORATOIRES NEYRAC FILMS France

BUDAPEST FIAT/IFTA CONFERENCE 1997

Sunday 7th September

The introduction of digital techniques in cinematographic activities increased these last years, first in digital editing and special effects then in film restoration.

As concerns this last activity, the evolution went differently for image and sound.

During the first century of Cinema, sound did not succeed at the beginning of the story to match moving images but digital treatments of film soundtracks have already been used successfully for nearly 8 years.

SOUND

These techniques are generally derived from that used for music soundtracks restoration for audio CD market.

After selecting the best original element to start with, the sound is transferred on DAT, then on hard disk where the characteristics of the soundtrack are analysed in order to determine manual or automatic treatments for each category of defect : clicks, crackles and broad band noise. During these operations great care must be taken not to alter the nature of the sound signal by inadequate filtering or too deep cleaning

It is sometimes necessary to end in a mixing studio in order to check if the level and the tonality of the different elements of restored sound are compatible with modern playback equipment.

After several years of practice and experience it appears that these systems have their limits :

- 1- in some cases the customers find that the cleaning treatment is not sufficiently perceivable, where it is impossible to operate a further treatment without altering the signal
- 2- the results we obtain on the broad band noise are very often disappointing
- 3- it is not possible with the existing systems to avoid the printing of a positive soundtrack to start with. The necessary compensation shown by the cross modulations tests implies to print a positive of a negative sound track, which means a relevant cost for the archives.

New researches are at study now to obtain better results by considering the sound as an image and by trying to reconstitute the image of the theoretical ideal curve of the analysed sound.

Nobody seems to know how to suppress correctly the distortion of a badly recorded sound and the strong cyclic broad band noise.

It could be hoped that digitally reconstituting the image of a sound in order to restore it could produce better results. But it seems that we would still have to work from a positive soundtrack.

IMAGE

During the last years, the majors have extensively used special effects in motion pictures.

Different systems have been developed for that market. Then it has been decided to use them for archive film restoration. But the high cost of such processes could not permit to extend it and it was restricted to prestige operations such as « Snow White and the seven Dwarves ».

The increase of the demand for archive images and the setting of patrimonial policies have turned this into a significant market.

That explains the present coexistence of two research lines.

The 1st consist in adapting the systems developed for special effects in order to lessen the cost of such processes.

The 2nd tends to design specific systems fully adapted to archival image restoration.

In order to define the outlines of a specific digital restoration system, the principle of the complete chain of digital restoration have been recently studied by the Commission Supérieure Technique of the Centre National de la Cinématographie in France.

Compared to digital special effects the situation can be described as follows :

“More data, quicker, more precisely, less expensive”

More data :

It is obvious that film restoration deals with larger sequences (if not with the full length of a film) than in special effects operations.

Quicker :

A whole film must be restored in a reasonable delay that should not be too far from that of traditional photochemical labs.

More precisely :

It is not only a matter of getting a global aesthetic result but we have to detect some defects that are very difficult to describe in a software programme. And the corrections to be made are more similar to the highly sophisticated mathematical functions used in medical scanning or in astronomy than to the relatively simple treatments of special effects.

Less expensive :

The prices of digital special effects are incompatible with the economical context of film restoration : the budget for the restoration of a complete long feature film would be far beyond the limits.

Apart from this situation, digital restoration must comply with the ethics of archival procedure, and particularly it must take into account the notion of reversibility.

The European project LIMELIGHT is one major example of these specific applications to restoration. The partners are today JOANNEUM RESEARCH in Austria, LABORATOIRES NEYRAC FILMS in association with Laboratoire d'Informatique et d'Imagerie Industrielle de LA ROCHELLE, and the companies BERTIN and DEBRIE-CTM in France.

LIMELIGHT is now setting :

- a fast data transfers system permitting storage and fast access
- restoration softwares.

You will be shown examples of treatments during the coming days and you will get full information on the technical aspects of the project from JOANNEUM RESEARCH representatives who attend these conference days.

The future of digital restoration of images will be organised according to these 2 main lines of development.

Image digital restoration will separate between :

- prestige operations
- recovering and processing special formats (such as : MAREY stills)
- mass restoration for defects such as scratches and dust.

As has been done with Fox-Visnews archives, it is more and more question to generalise the digital storage of images on whatever format that would exclude a return to film, even though long term preservation is uncertain.

CONCLUSION

As a conclusion, we can say that the idea of digital restoration is now generally accepted even by the most conservative ones, but the economy of the system is not reached.

It is a paradox to discover that image digital restoration, though far more expensive than for sounds, is technically easier to understand and analyse. Sound is theoretically simpler.

Therefore we may think that technological evolutions will be more significant for images than for sounds in the coming years.