

# Image Based Digital Restoration of Optical Soundtracks

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## **On the Materiality of Audio-Visual Heritage**

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## Agenda

- Sources, Partners and History
- Different Flavours of Workflow – Their Advantages and Disadvantages
- The Digital Nightmare

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# Basics

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## Sources

- Anil C. Kokaram: Motion Picture Restoration. Digital Algorithms for Artefact Suppression in Degraded Motion Picture Film and Video. Springer, London 1998
- Patrick Streule: Digital Image Based Restoration of Optical Movie Sound Track. Swiss Federal Institute of Technology, Zürich 1999

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## What is Cinema?

Cinema is a very popular entertainment of the 20<sup>th</sup> century that needs:

- the correct projection of a film
- in a theatre
- on the screen
- to an audience

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## Printing Defects

- sound on wrong side
- sound backwards
- sound out of synchronisation

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## Sound Defects

- too low
- distortion
- sibilance noise
- high background noise

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# Methods

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## Printing

- vintage negative soundtrack
- release copy with optical soundtrack

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## Filtering

- vintage negative soundtrack
- **band-pass filtered sound**
- restored negative soundtrack
- release copy with optical soundtrack

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## Grading

- vintage negative soundtrack
- **graded positive soundtrack**
- band-pass filtered sound
- restored negative soundtrack
- release copy with optical soundtrack

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## Digital Intermediate (1)

- vintage negative soundtrack
- graded positive soundtrack
- **digital intermediate soundtrack**
- band-pass filtered sound
- restored negative soundtrack
- release copy with optical soundtrack

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## Digital Intermediate (2)

- vintage negative soundtrack
- graded positive soundtrack
- **digital intermediate soundtrack**
  
- restored negative soundtrack
- release copy with optical soundtrack

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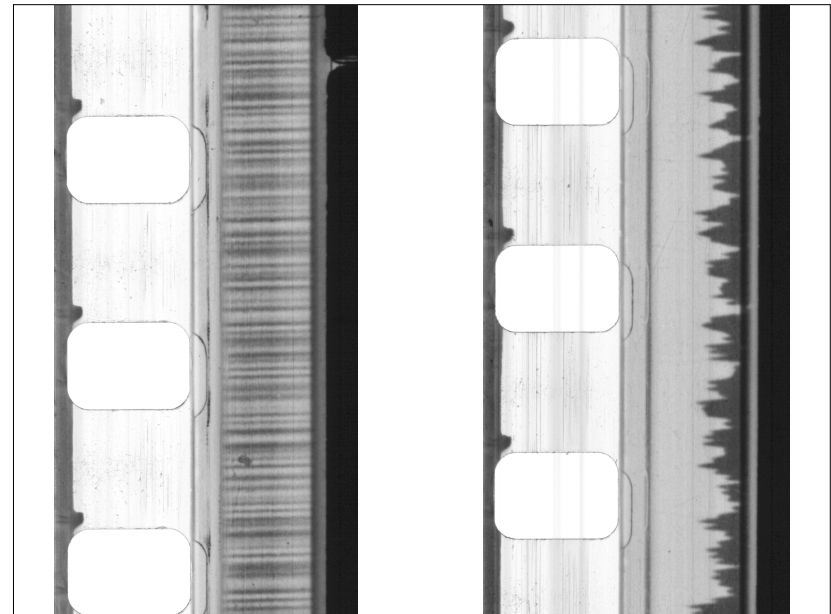
## Digital Intermediate (3)

- vintage negative soundtrack
  
- **digital intermediate soundtrack**
  
- restored negative soundtrack
- release copy with optical soundtrack

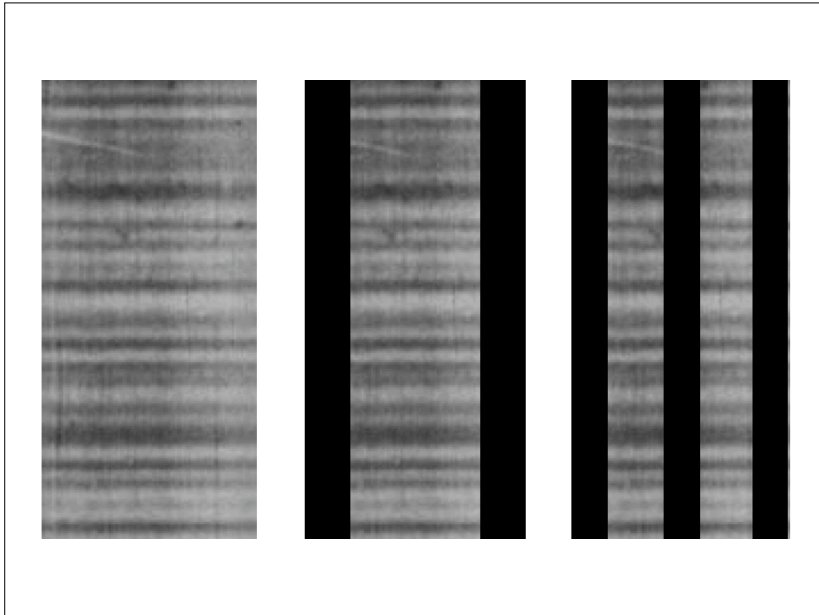
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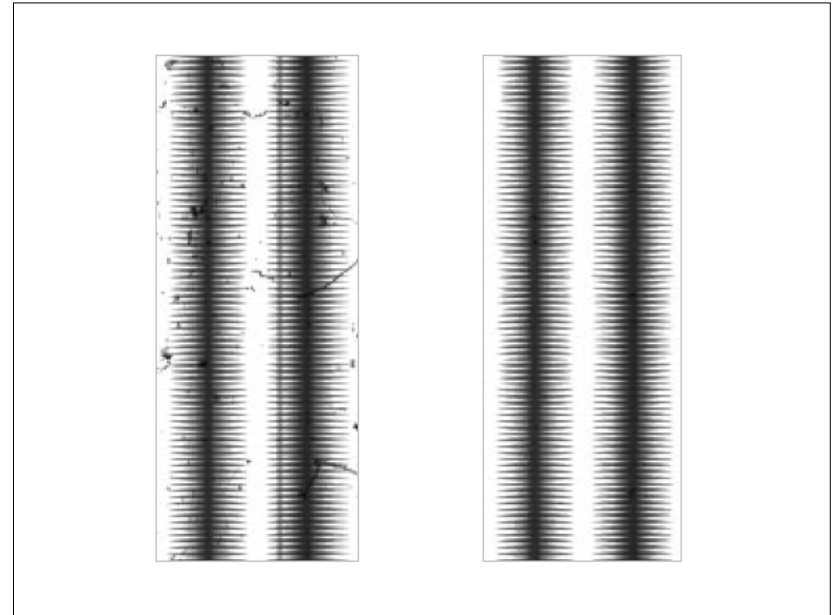
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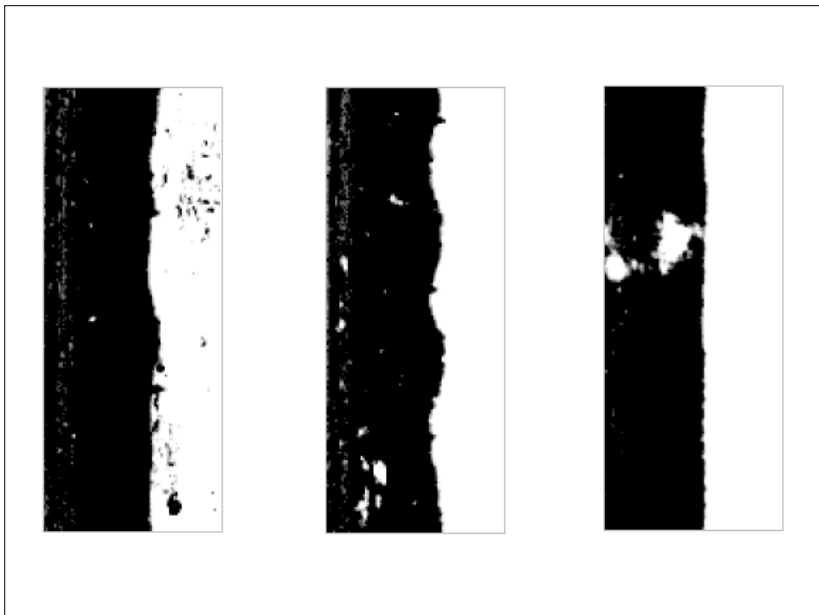
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