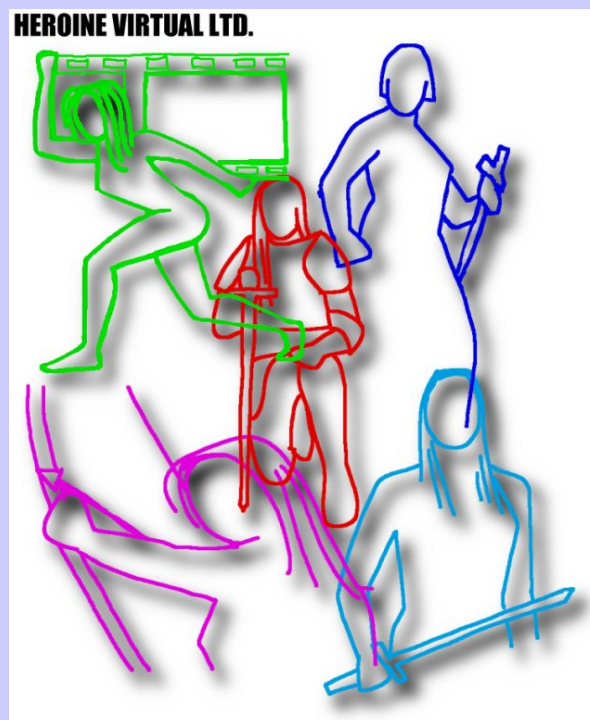


Cinelerra



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Foundations

- Knowing the basics of digital video
- Production process
- Cinelerra's abilities
- Linux and its problems

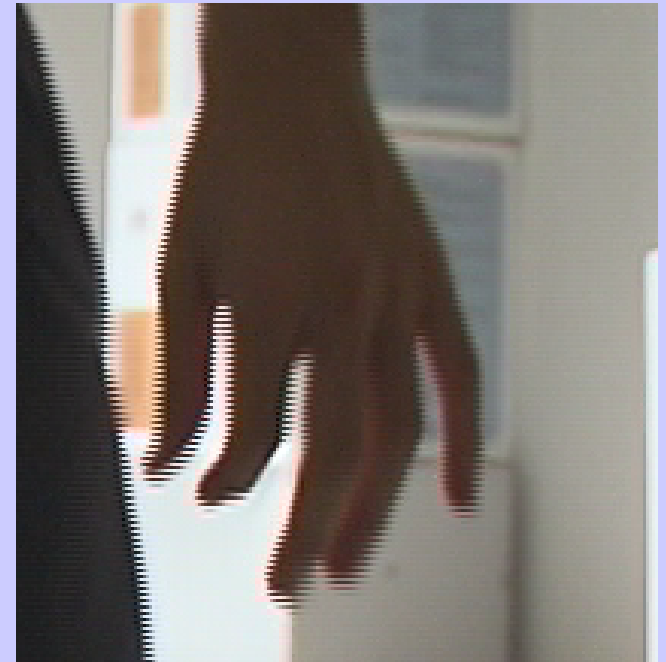
Standards

- PAL and NTSC
- interlacing
- color models
- sound
- DV format

PAL and NTSC

- analog PAL - 50 fields/s, 625 rows
- analog NTSC 60 fields/s, 525 rows
- digital PAL 50 fields/s, 720 x 576
- digital NTSC 60 fields/s 720 x 480
- pixels on TV and monitor are not the same
 - TV pixels are not squares
- 720 -> 768, when playing on computer monitor

Interlacing



- historical reasons
- field is half of a frame, taking every second row so we have effective 25 frames per second
- deinterlacing is complicated (especially on telecined material)
- combing effect
- solution: progressive capturing

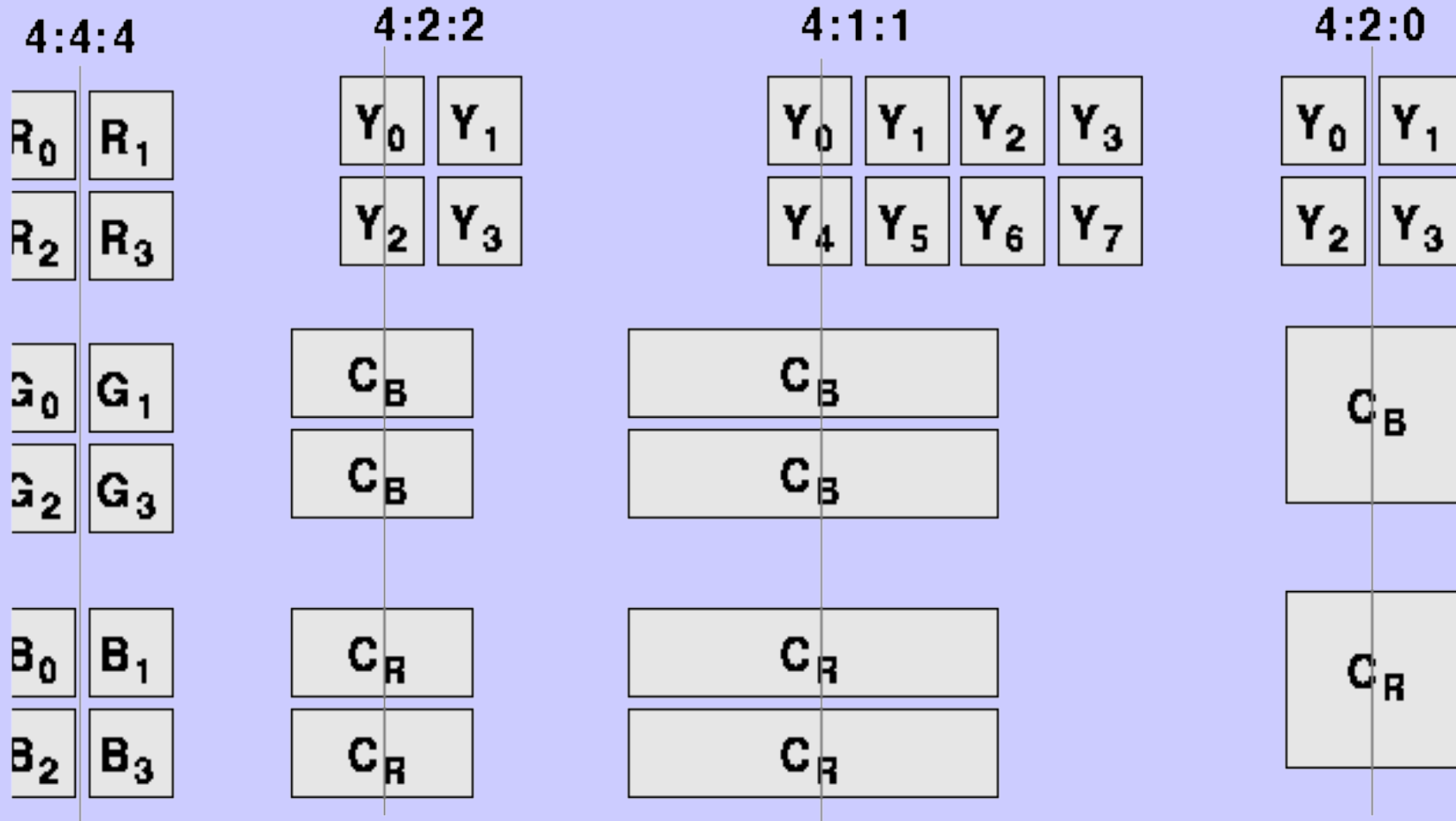
Color models

- RGB – Red, Green, Blue - as sensors in human eye
- we are most sensitive in green spectrum
- YUV – Luminance and two color components (Cr in Cb)
- We are more sensitive to luminance change than color change

Representation of color models

- we have to save space on disk, on tape...
- non-lossless encoding
- we preserve more info where we are more sensitive (for example mp3)
- NTSC 4:1:1, PAL 4:2:0, also 4:2:2 is used
- different number of bits for every color channel
- additional ways of compressing (motion detection, throwing away low-freq components)
- alpha channel

Sampling in PAL models



Sound

- for most practical (home, broadcasting) uses 48Khz, stereo is enough
- two modes of editing: by frames or by samples
- resampling
- when compared to video, the amount of data is small

DV codec

- Codec is a way of storing/compressing
- NTSC 4:1:1, PAL 4:2:0
- Stereo sound 16 bit at 48Khz or 4x 32khz x 12bit
- DV codec needs 25 Mb/s (approx. 3.5MB/s)
- Also DVCPPro at 50 Mb/s and others
- Cassettes MiniDV - LP in SP
- Transfer by Firewire = IEEE 1394 = iLink

Cinelerra

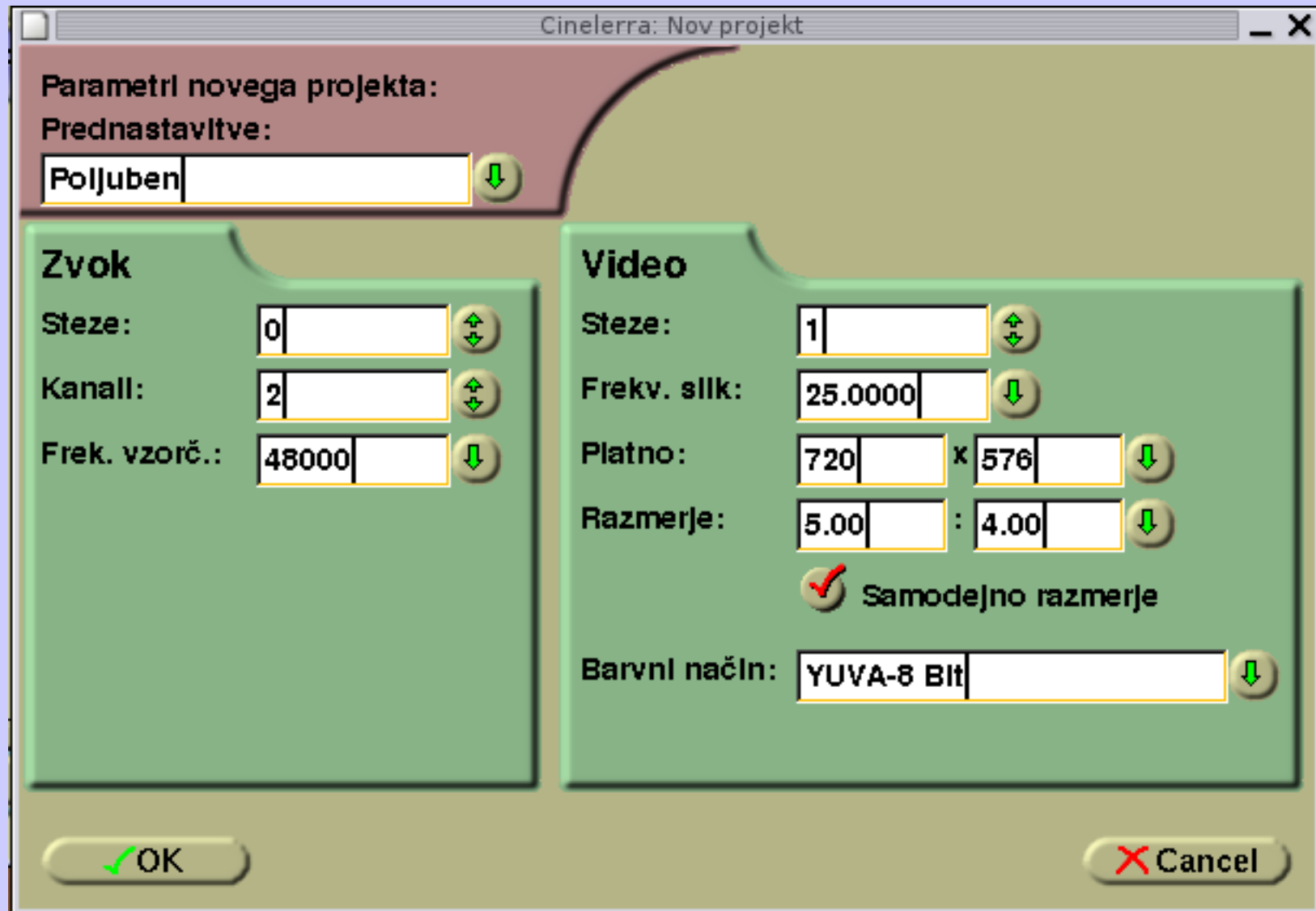
- Video authoring tool under Linux
- Unlimited number of audio and video tracks
- Editing and compositing
- I/O problems, no support for HW acceleration
- HD editing, renderfarms
- background rendering
- localized



Creation of video

- Recording/shooting of video material
- Capturing (dvgrab)
- Editing and compositing (Cinelerra)
- Export (kino)

Setup of the project



Editing

- We find regions of interest and cut out pieces we want to use
- we put them into clips or directly into tracks
- fine tuning of the results
- if we are editing interviews, we first edit sound!
- Multiple ways of editing – directly from viewer, drag&drop, copy&paste

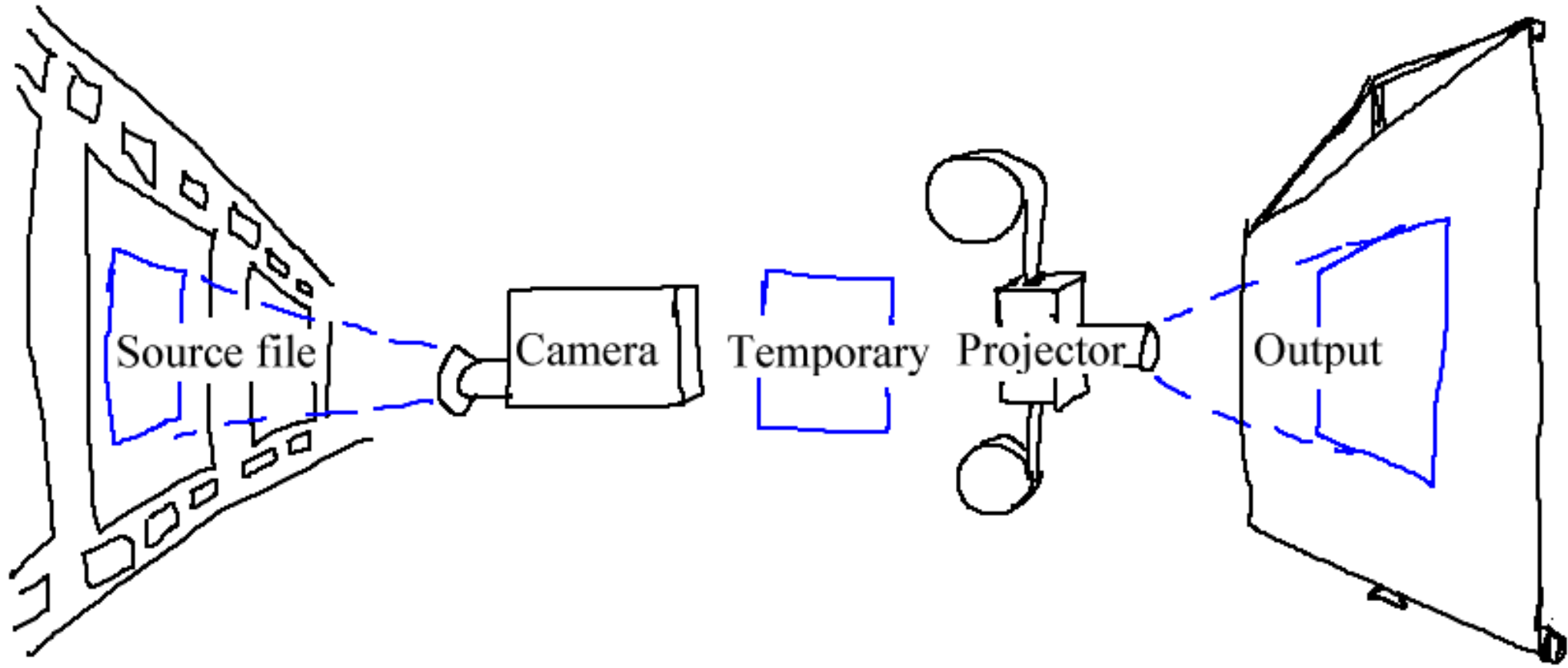
Types of input material

- DV in avi or QuickTime (mov) container
- mpeg2, mpeg4
- PNG, Tiff, JPG, TGA
- mp3, ogg, wav
- as good input as possible!

Copositing

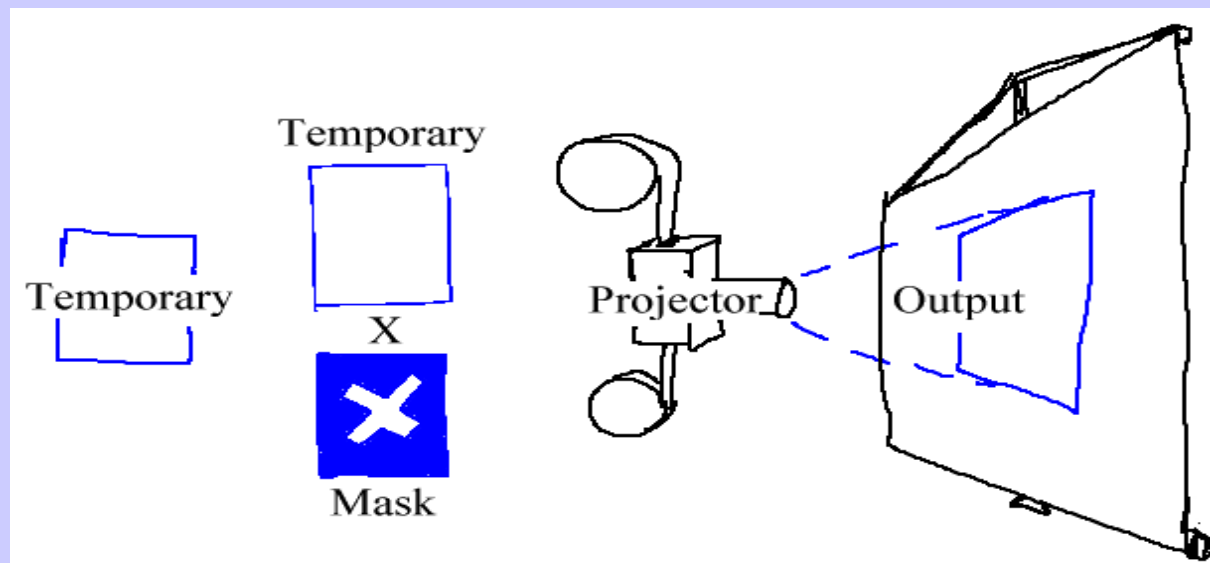
- Camera and projector
- Masks
- Transitions & effects
- Keyframes, keyframing

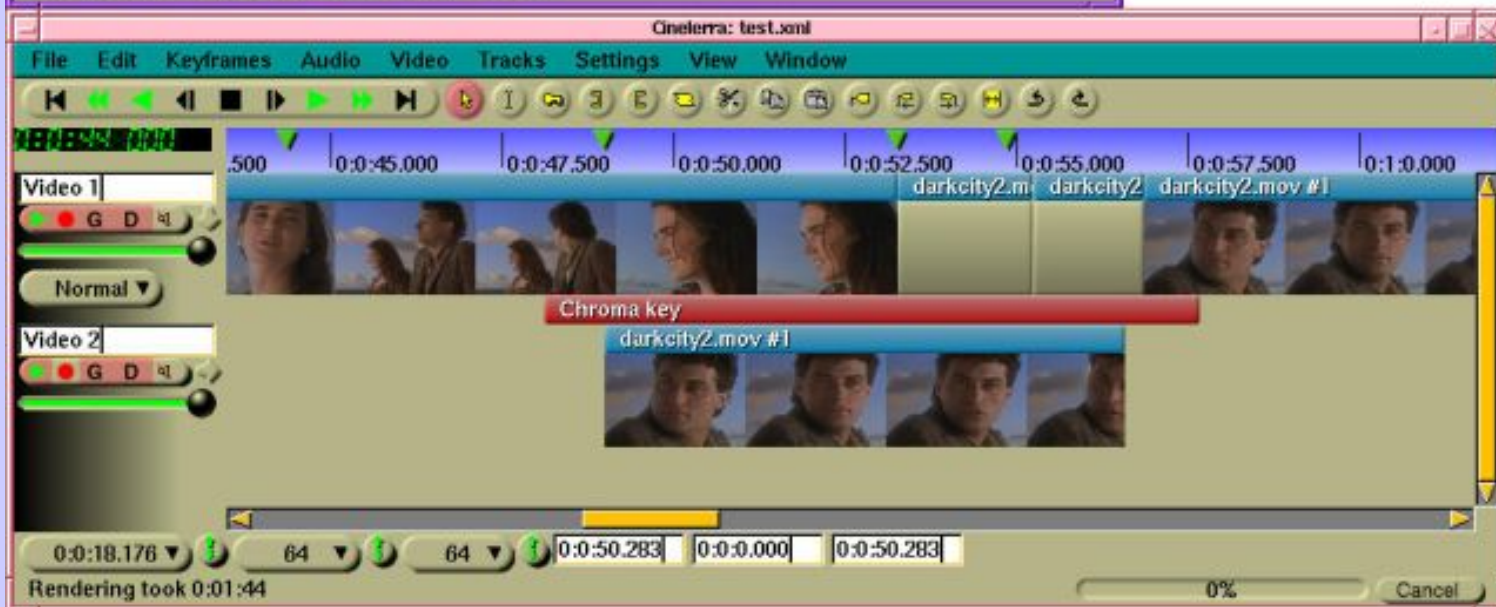
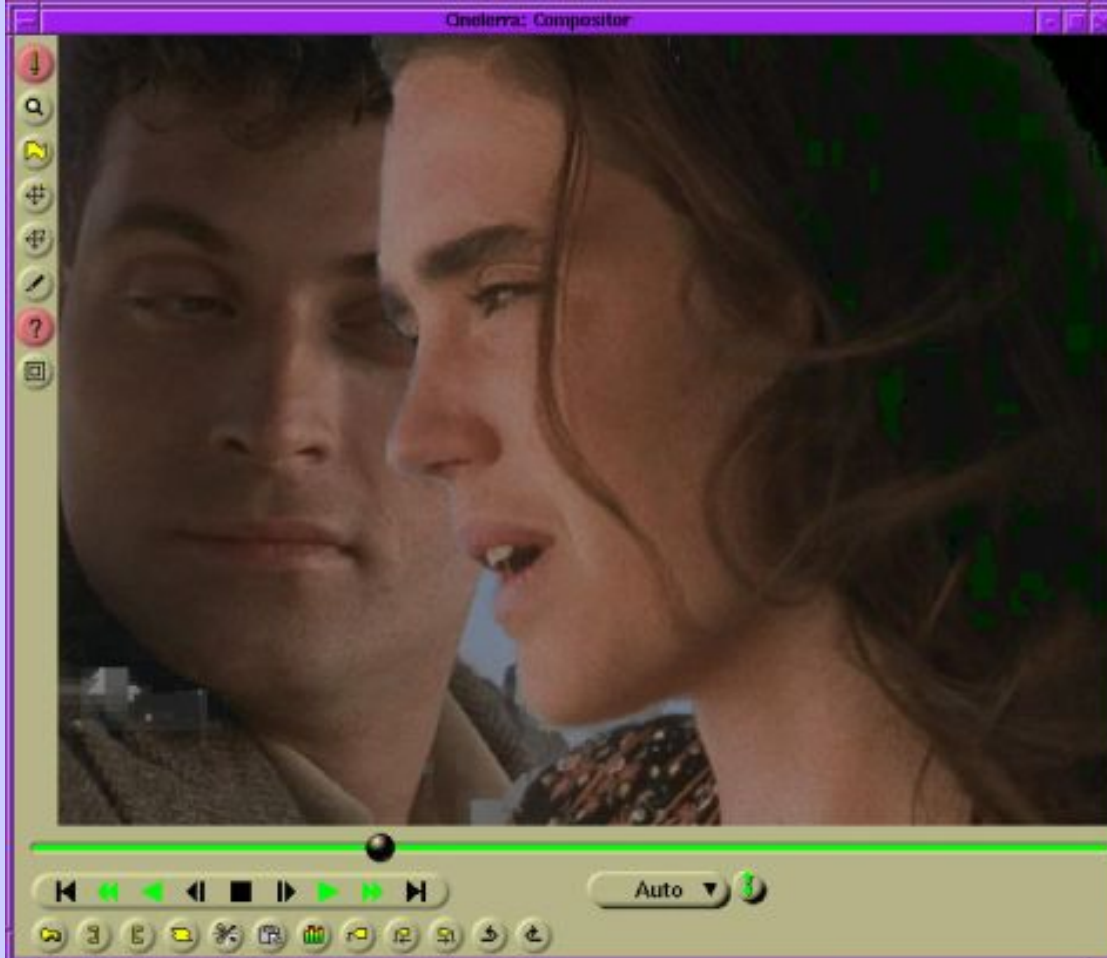
Camera and projector



Masks and effects

- All masks and effects work on temporary before it is projected
- Masks are made from bezier curves
- We attach effects, but we add masks in compositing window







Keyframes

- Keyframes are frames at which a value of specific parameter is set
- Values inbetween keyframes are changed in continuous way (in general)
- With keyframes we can control practically everything: masks, effects, camera, projector, fades, compositing mode, sending to output
- Cntrl/shift for setting the control points of keyframes

Rendering and output

- When project is finished, we render it
- Cinelerra's output format capabilities are poor
- for computer use: we export to as lossless format as possible (i.e. DV) and use ffmpeg afterwards
- to get to minidv: export to DV and record to tape with Kino
- for broadcast: we get special hardware
- for internet: OGG Vorbis/Theora

Hi-range capabilities

- 16 bit/floating point color depth – greater dynamic range
- background rendering
- renderfarm mode
- high definition – HD
- working with uncompressed video

End of the beginning...

- Cinelerra will crush and eat your nerves
- Use “Load backup”
- It is not always obvious why things are the way they are
- Sources of knowledge:
- <http://cvs.cinelerra.org/> and mailing list
- Share!

Share !

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