

# Questionable File Show and Tell

Much thanks to contributors

Anonymous, Eddy Colloton, Rebecca Fraimow, Shu-Wen Lin,  
Rebecca Fraimow, Blake McDowell, Crystal Sanchez Annie Schweikert

Julia Kim @jy\_kim29  
American Folklife Center | NTTW #4 2019





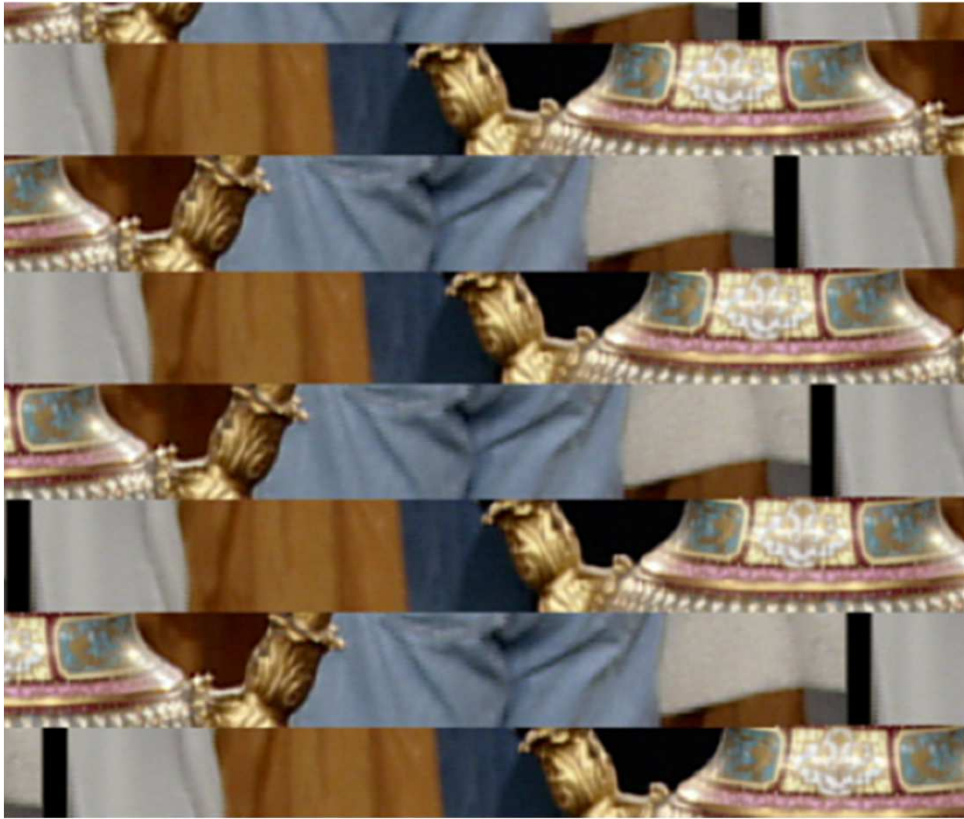
## 1. The Checksums verified but ... ..

General	
Complete name	: afc2010039_crhp0084_mv08.mov
Format	: MPEG-4
Format profile	: QuickTime
Codec ID	: qt 2005.03 (qt )
File size	: 27.9 GiB
IsTruncated	: Yes

General	
Complete name	: afc2010039_crhp0084_mv09.mov
Format	: MPEG-4
Format profile	: QuickTime
Codec ID	: qt 2005.03 (qt )
File size	: 31.0 GiB
Duration	: 19 min
Overall bit rate mode	: Variable
Overall bit rate	: 232 Mb/s
Encoded date	: UTC 2013-04-16 01:58:20
Tagged date	: UTC 2013-04-16 01:58:20

- Born-digital capture
- Checksums matched, but were created upon receipt at the archive.
- Failures detected at multiple levels
  - at Ingest
  - When transcoding
- Different levels of failure - from playable but corrupt frames to totally unplayable broken files missing header metadata ("moov atom not found")
- Issue affected 3 interviews, approximately 20 files

Thanks also to Crystal Sanchez @cristalyze, Smithsonian  
Blake McDowell, National Museum of African American History and Culture, Smithsonian





## static image for the expected duration

```
Input #0, mov,mp4,m4a,3gp,3g2,mj2, from 'Orlando_Seminole_Clothing_glitch.mov':
Metadata:
  major_brand      : qt
  minor_version    : 512
  compatible_brands: qt
  encoder          : Lavf56.15.102
Duration: 00:00:05.01, start: 0.000000, bitrate: 169301 kb/s
  Stream #0:0(eng): Video: rawvideo (2vuy / 0x79757632), uyvy422(bottom coded
first (swapped)), 720x486, 167793 kb/s, SAR 10:11 DAR 400:297, 29.97 fps, 29.97
tbr, 11988 tbn, 11988 tbc (default)
    Metadata:
      handler_name    : DataHandler
      encoder         : Uncompressed 8 bit 422
      timecode        : 00:59:51;26
  Stream #0:1(eng): Audio: pcm_s16be (twos / 0x736F7774), 48000 Hz, stereo, sl
6, 1536 kb/s (default)
    Metadata:
      handler_name    : DataHandler
  Stream #0:2(eng): Data: none (tmcd / 0x64636D74), 0 kb/s
    Metadata:
      handler_name    : DataHandler
      timecode        : 00:59:51;26
* * * * *
```

Born-digital migrated files

- static “frame” but expected duration and file size.

- Caught during a manual QC. Necessitated modifying QC protocols to create gallery thumbnails to catch other files with this problem
- Otherwise passed automated QC, no other discrepancies found
- Hundreds? of files found with this specific issue.

Thanks to Rebecca Fraimow @rhfraim  
WGBH





### 3. PAL AND NTSC

```
Width : 720 pixels
Height : 576
Height : 576 pixels
Sampled_Width : 720
Sampled_Height : 576
Pixel aspect ratio : 1.000
Display aspect ratio : 1.250
Display aspect ratio : 5:4
Rotation : 0.000
Frame rate mode : CFR
Frame rate mode : Constant
Frame rate : 25.000

Codec ID/Info : Advanced Video Cod
Duration : 20 s 640 ms
Bit rate mode : Variable
Bit rate : 1 488 kb/s
Maximum bit rate : 2 000 kb/s
Width : 720 pixels
Height : 576 pixels
Display aspect ratio : 5:4
Frame rate mode : Constant
Frame rate : 25.000 FPS
Standard : NTSC
Color space : YUV
Chroma subsampling : 4:2:0
```

- Digitized
- Failed visual QC - Horizontal "disruption"
- Both Standards:  
Made for PAL broadcast  
But Mediainfo also find  
NTSC Standard

Much thanks to Anonym



Jerome Martinez - 2018-09-08

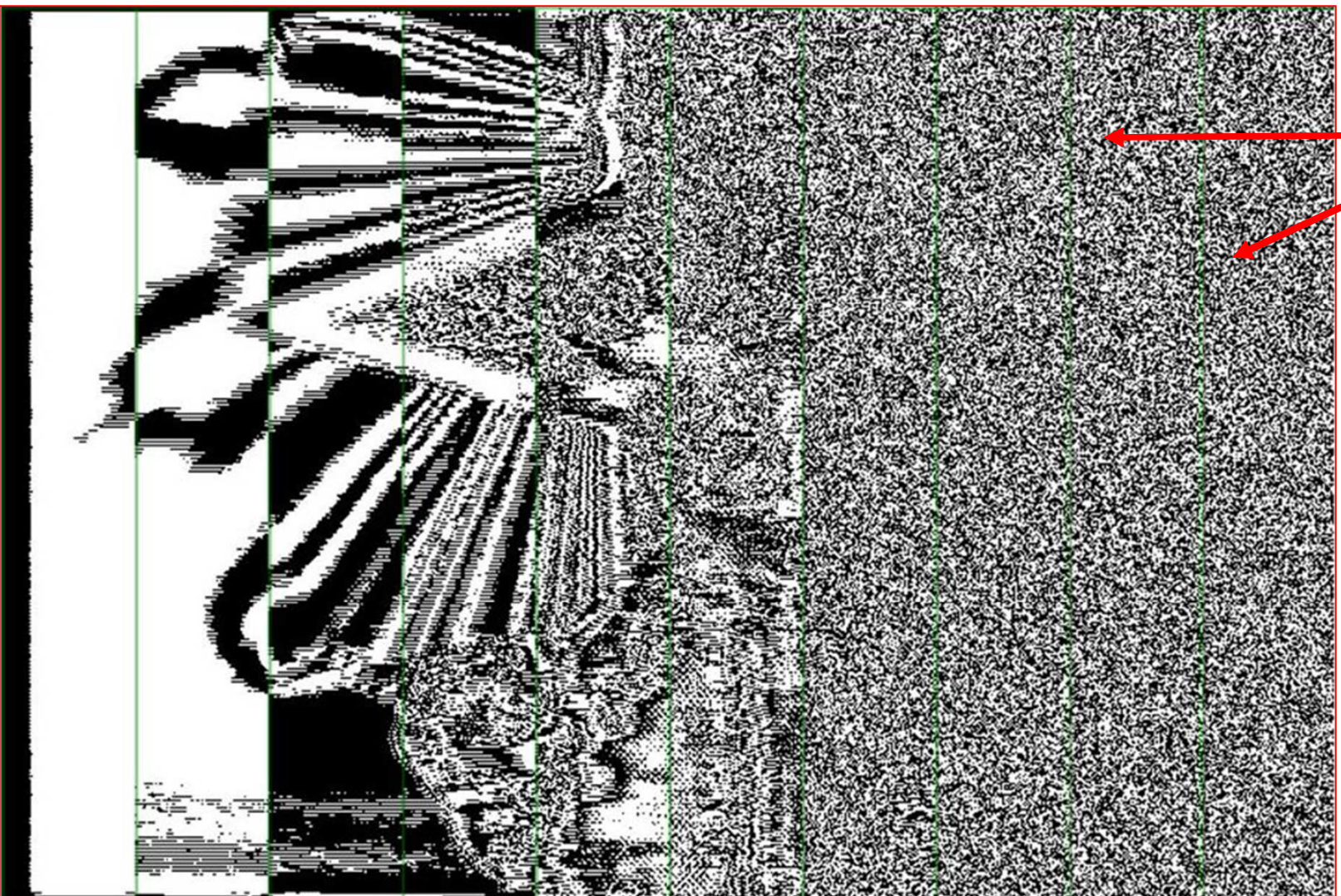


Late but an answer:

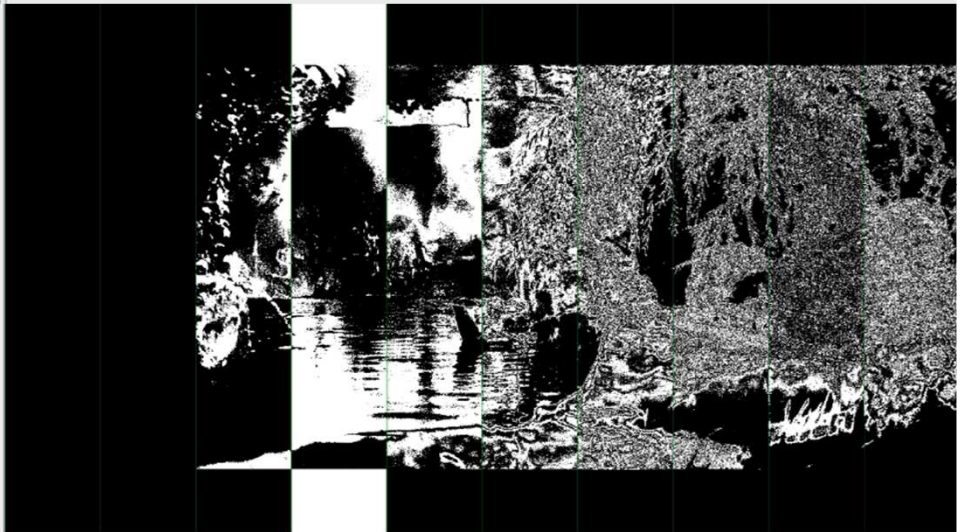
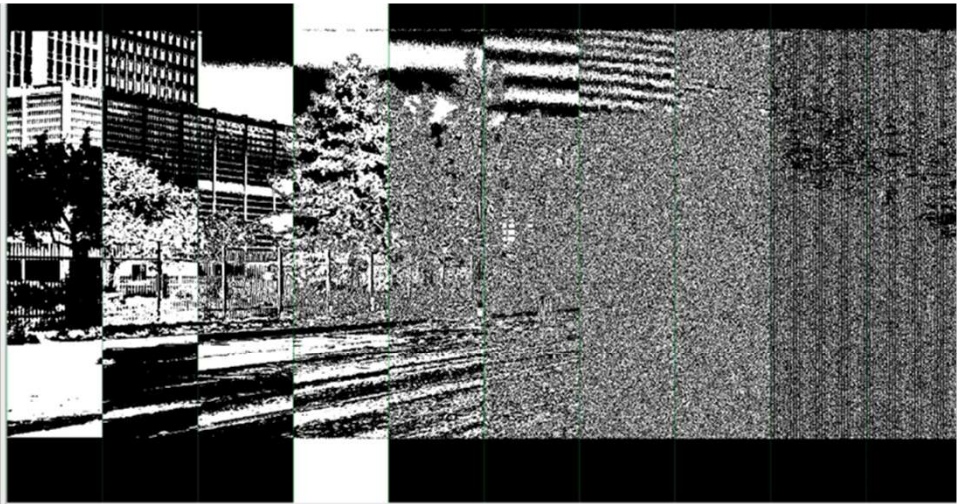
PAL or NTSC is indicated by either "autodection" of the feature (width/height/framerate) or by readout of a metadata in the file.

So if you have "NTSC" and "25 fps" in a stream, that means that "NTSC" comes from the file metadata, the file is buggy.











## 4. Bit plane variability - deck variability variability

```
Format : YUV
Format : YUV
Commercial name : YUV
Codec ID : v210
Codec ID/Hint : AJA Video Systems Xena
Duration : 1330280
Duration : 22 min 10 s
Duration : 22 min 10 s 280 ms
Duration : 22 min 10 s
Duration : 00:22:10.280
Duration : 00:22:10:07
Duration : 00:22:10.280 (00:22:10:07)
Bit rate mode : CBR
Bit rate mode : Constant
Bit rate : 1105920000
Bit rate : 1 106 Mb/s
Width : 1920
Width : 1 920 pixels
Height : 1080
Height : 1 080 pixels
Pixel aspect ratio : 1.000
Display aspect ratio : 1.778
Display aspect ratio : 16:9
Rotation : 0.000
Frame rate mode : CFR
Frame rate mode : Constant
Frame rate : 25.000
Frame rate : 25.000 FPS
Frame count : 33257
Color space : YUV
Chroma subsampling : 4:2:2
Chroma subsampling : 4:2:2
Bit depth : 10
```

- Decks supporting both native 8 bit and 10 bit analog and digital input with SDI outputs
- Bit planes may show little to no differences in the higher bit planes - When is it bit - padding?
- When or how can you note bit quality across decks?

Thanks to Eddy Colloton, @EddyColloton  
Hirshhorn Museum and Sculpture Garden,  
Smithsonian

Thanks also to Kieran O'Leary, @kieranjol,  
IFI Dublin



**Eddy Colloton** @EddyColloton · Nov 19



This looks wrong tho - less info in 9 and 10? From a vendor, so I would have to check my notes about signal flow, etc...

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**Morgan O Morel** @av\_morgan · Nov 19

Replying to @EddyColloton and @kieranjol

I've found that analog to SDI converter in those decks puts out an 8bit signal. So if the tape is analog it'll do the bad conversion and the 9th/10th are 0s. However, if the tape is **DigiBeta** it wont have to do a conversion so the signal will be good (if it was recorded correctly)



Anyone prefer or avoid using a digibeta deck for betasp ingests?both look almost identical to me.

5:10 PM · Jan 20, 2016 · [Twitter for Android](#)

1 Like



**Dave Rice** @dericed · Jan 20, 2016



Replying to [@kieranjol](#)

[@kieranjol](#) I'd be curious what you see when you diff the two.



2



**Kieran O'Leary** @kieranjol · Jan 20, 2016



[@dericed](#) the diff was only noticeable me when isolating V channel in QCTools.digi looked cleaner.. Can send results?



HOUSE TV 02



## 5. DV ...

Codec: DV Video PAL (dvcp)

Language: English

Type: Video

Video resolution: 720x576

Buffer dimensions: 720x576

Frame rate: 24.997588

Decoded format: Planar 4:2:0 YUV

Orientation: Top left

Chroma location: Top Left

### ▼ Stream 1

Codec: twos

Language: English

Type: Audio

Channels: Stereo

Sample rate: 48000 Hz

Bits per sample: 16

DV Analyzer v.1.4.2 by AudioVisual Preservation Solutions, Inc. <http://www.av>

/Volumes/afc2015048/HOUSE TV 02

Frame Count: 725

Frame count with stts fluctuation: 1 frames

Percent of frames with Error: 0.14%

Percent of frames with Error (including Arbitrary bit inconsistency): 0.14%

Percent of frames with Stts Fluctuation: 0.14%

Warning, frame count is maybe incoherent (reported by MediaInfo: 706)

*For example, a file consisting of a QuickTime wrapper and a DV stream may have metadata indicating that the stream is to be displayed as 16:9 aspect ratio, while the metadata in the wrapper indicates a 4:30 ratio.*

-excerpt from Dave Rice's "Audiovisual Adherence," Tate

```
Duration: 00:00:28.24, start: 0.000000, bitrate: 32855 kb/s
  Stream #0:0(eng): Video: dvvideo (dvcp / 0x70637664), yuv420p, 720x576 [SAR
6:15 DAR 4:3], 28797 kb/s, 25 fps, 25 tbr, 2500 tbn, 25 tbc (default)
Metadata:
```

```
<?xml version="1.0" encoding="UTF-8"?>
<dvrescue xmlns="https://mediaarea.net/dvrescue" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="https://mediaarea.net/dvrescue https://raw.githubusercontent.com/mipops/dvrescue/schema-
updates/tools/dvrescue.xsd" version="1.0">
  <creator>
    <program>dvrescue</program>
    <version>0.0.0.20191113</version>
  </creator>
  <media ref="/home/ashley/Downloads/HOUSE TV 02">
    <frames count="1" pts="00:00:00.000" end_pts="00:00:00.040" size="720x576" video_rate="25"
chroma_subsampling="4:2:0" aspect_ratio="16/9" audio_rate="32000" channels="2">
      <frame n="0" pts="00:00:00.000" arb="3"/>
      <frame n="724" pts="00:00:28.960" arb="7"/>
    </frames>
  </media>
</dvrescue>
```



▼ Audio	
Decoded	342 blocks
Played	147 buffers
Lost	24 buffers
▼ Video	
Decoded	321 blocks
Displayed	1401 frames
Lost	40 frames
▼ Input/Read	
Media data size	36823 KiB
> Input bitrate	663 kb/s
Demuxed data size	36708 KiB

DV Analyzer v.1.4.2 by AudioVisual Preservation Solutions, Inc. <http://www.av>

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Percent of frames with Stts Fluctuation: 0.14%

Warning, frame count is maybe incoherent (reported by MediaInfo: 706)

- Single dv file captured can support many contradictory significant qualities.
- 2005 era capture, probable Firewire transfer, QT wrapped.
- Potentially other issues lurking?
- Shiny new tools - **DV Rescue!**

Thanks to Annie Schweikert @aeschweik  
Stanford Library, UC Berkeley Art Museum and Pacific F  
Archive.

Thanks also to Dave Rice and Ashley Blewer

## 6. Dolby E proprietary encoding

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Access copy:

Audio	
ID	: 20 (0x14)
Menu ID	: 1 (0x1)
Format	: AC-3
Format/Info	: Audio Coding 3
Commercial name	: Dolby Digital
Codec ID	: 129
Duration	: 10 min 0 s
Bit rate mode	: Constant
Bit rate	: 448 kb/s
Channel(s)	: 6 channels
Channel layout	: L R C LFE Ls Rs
Sampling rate	: 48.0 kHz
Frame rate	: 31.250 FPS (1536 SPF)
Bit depth	: 16 bits
Compression mode	: Lossy
Stream size	: 32.1 MiB (1%)
Service kind	: Complete Main

- Dolby E created for production and broadcast environments.
- Encoded as data (not streams) in HDCam, bypasses HDCam stream limits
- Data is unreadable and unrecognizable.
- Access or exhibition copies from artist use proprietary lossy Dolby AC-3 (played sample noise)

Thanks to Shu-Wen Lin, Smithsonian American Art



## Discussion

- Yvonne Ng - WITNESS
- Everyone else

(Thank you !)