Three's Company
photo courtesy of Three's Company

THAT SOUNDS AWFUL, JACK!

THIS IS NOT THE TIME.

All Presidential speeches and press conferences are closed captioned.

OPENING CLOSED CAPTIONS

BEN TURKUS AND ANNIE SCHWEIKERT
@bturkus @aeschweik

6 DECEMBER 2019

NO TIME TO WAIT 4

Hi AMIA-list,
Does anyone have any suggested methods for decoding the closed captioned information off of digitized video, preferably in a way that keeps the relationship between the captions and the timecode. I've found this http://mac.softpedia.com/get/Video/MacCaption.shtml and assume that Google has their own version, are there others? Are any archives utilizing this data?

David Rice
Archivist
Democracy Now!
87 Lafayette St.
New York, NY 10013
Phone: (212) 431-9090 x811
Fax: (212) 431-8858
Email: [log in to unmask]

WHY CLOSED CAPTIONS?

The French Chef, WGBH, https://www.wgbh.org/foundation/julia-child

WHY CLOSED CAPTIONS?

The invisibly encoded captioning text, whether put there by online or offline laborers, is a digital trace hidden inside an analog television signal, information that can lurk within a videotaped program for years until that program is digitized, "repurposed," and revalued—with the closed captioning then serving as a crucial text-searchable time index to the tape's content.

Gregory J. Downey, *Closed Captioning: Subtitling, Stenography, and the Digital Convergence of Text with Television*, 2008, pg. 4

WHAT MATERIALS HAVE CLOSED CAPTIONS?

The North American analog caption format is called EIA-608, CEA-608, or "Line 21." It can be present in:

- NTSC broadcast television and home media
- ATSC broadcast television
  - The FCC still requires analog captions in digital broadcasts: "608 over 708"

Not the same, though related:

- Teletext (European analog captioning system)
- ATSC born-digital captions: EIA-708 or CEA-708
- Born-digital captions for streaming media

A BRIEF CAPTIONING TIMELINE

- 1971: Closed captions demonstrated
- 1972: First open captions broadcast (on PBS/WGBH)
- 1976: Closed captions approved by FCC
- 1980: First closed captions for prerecorded media broadcast
- 1982: First live closed captions broadcast
- 1990: Television Decoder Circuitry Act
- 1990: Americans with Disabilities Act
- 1996: Telecommunications Act
- 2010: 21st Century Communications and Video Accessibility Act

Exclusively at Sears! An important new development for the hearing impaired

TeleCaption TV Adapter lets any television receive sub-titled versions of many shows on NBC, ABC, PBS . . . at least 20 hours per week of captioned programs!

Television captions (sub-titles) are an invaluable aid to the hearing impaired. Captions can help insure that none of the dialogue gets missed so that a show's plot is easier to follow. But some hearing viewers find captions distracting, so broadcasters have been reluctant to use them.

Thanks to research and development by several concerned organizations, the technology exists to overcome this problem thru the use of "closed" captions. Closed captions can only be seen on TV's equipped with a closed-caption adapter. Sets not equipped with an adapter show the same program, but without the captions.

Sears is proud to be part of this effort by bringing you our *exclusive* TeleCaption TV Adapter. TeleCaption lets you use any television set to display sub-titled versions of many TV programs. These closed-caption programs will be carried by ABC, NBC and PBS starting in 1980. Between them, these networks will provide at least 20 hours of mainly prime time closed-captioned programming per week. More shows—and additional broadcasters—may be added in the future.

TeleCaption is more than a sub-title machine. The organizations who developed closed captioning envision many additional applications for this system . . . including the use of separate closed-caption channels for foreign language captions, simplified English captions and "text", which uses the entire TV screen to display printed material as in a book. TeleCaption has the built-in capability to receive and display those future broadcasts.

TeleCaption TV Adapter is easy to install . . . just hook up the adapter to your antenna lead in, then connect your television to the adapter. To operate, set your TV on channel 3 or 4 (whichever is not in use), then choose the captioned program you want to watch by using the adapter's channel selector. A few convenient switches control all of the functions described above. TeleCaption has dependable 100% solid-state construction and Automatic Frequency Control (AFC). The walnut-grained vinyl-on-metal cabinet measures 16¹¹/₁₆x4⁷/₁₆x9¹/₁₆ inches deep.

ELECTRICAL INFO: UL listed; 120-v., 60 Hz. AC. 6 ft. cord. Draws 20 watts.

ORDERING INFORMATION: TV not included.
AVAILABLE FOR DELIVERY AFTER MARCH 15TH 1980
57 K 6430—Shipping weight 12 pounds 8 ounces $249.95

WELCOME TO TONIGHTS' SHOW

Image: Sears Spring/Summer Catalog, 1980, http://www.thecatalogblog.com/2017/07/20/sears-1980-20-hours-a-week-of-captioned-programs/
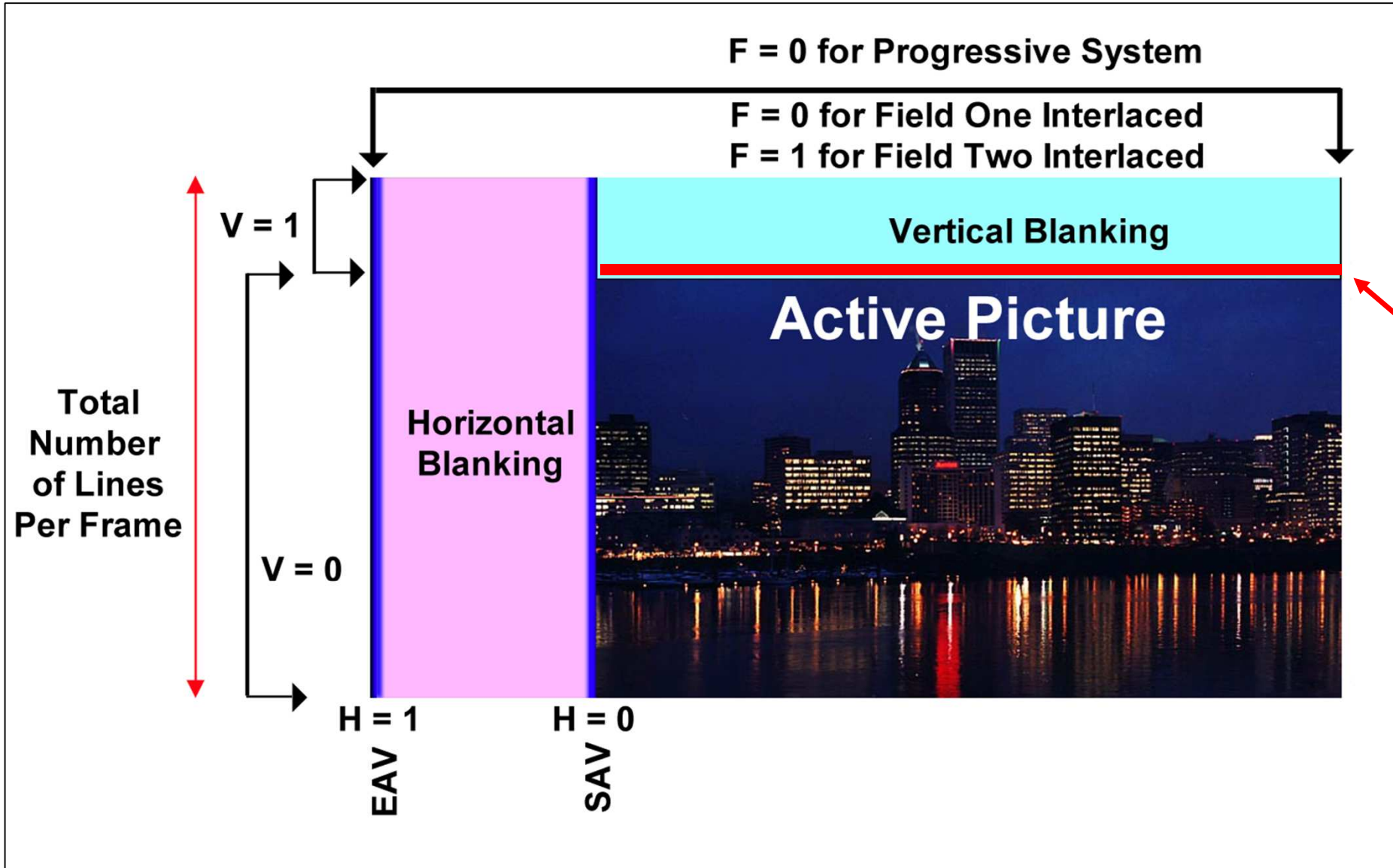
HONORING THE HISTORY OF CC

Television has become the eyes and ears of the world. It is one of the best ways we keep in touch and stay informed. But, for sixteen (16) million Americans who are deaf or hearing impaired, television has been a mute world. It has been a world with eyes, but no voice.

The deaf and hearing impaired here today know what that means. To the rest of us, understanding requires an act of imagination.

Imagine not being able to hear the local or national news. Imagine sitting down with your family to watch a movie. Everyone else is laughing or crying. Eager to be included, you ask what has happened, but your family, caught up in the movie, motions you to wait.

Doug Keltz, "Understanding & Troubleshooting Closed Captions," July 2014, https://www.smpte.org/sites/default/files/section-files/2014_July_Closed_Captioning.pptx

LET'S GET SITUATED

VITC 01:52:49;28
Line 28 0x8080 - Line 29 0x4040

EXTRACTED CAPTION FORMATS

SCC - recommended by many streaming services

```
Scenarist_SCC V1.0

01:02:53:14      94ae 94ae 9420 9420 947a 947a 97a2 !

01:02:55:14      942c 942c

01:03:27:29      94ae 94ae 9420 9420 94f2 94f2 c845 
```

WebVTT

```
3   00:01.000 --> 00:04.000
4   Never drink liquid nitrogen.
5
6   00:05.000 --> 00:09.000
7   - It will perforate your stomach.
8   - You could die.
```

TTML

```
<body>
    <div>
        <p xml:id="c1" begin="00:00:00"
end="00:00:10">
            Hello I am your first line.</p>
        <p xml:id="c2" begin="00:00:02"
end="00:00:10">
            I am your second captions<br/>but
with two lines.</p>
        <p xml:id="c3" xml:lang="fr"
begin="00:00:04" end="00:00:10">
            Je suis le troisième sous-titre.
</p>
```

SRT

```
168
00:20:41,150 --> 00:20:45,109
- How did he do that?
- Made him an offer he couldn't refuse.
```

[FFmpeg-devel] avfilter: add EIA-608 line extractor

Submitted by Paul B Mahol on Jan. 17, 2017, 7:43 p.m.

Details

Message ID	20170117194338.11992-1-onemda@gmail.com
State	Accepted
Headers	show

Commit Message

Paul B Mahol	Jan. 17, 2017, 7:43 p.m.

```
Signed-off-by: Dave Rice <dave@dericed.com>
Signed-off-by: Paul B Mahol <onemda@gmail.com>
---
 doc/filters.texi            |  70 +++++++++++++
 libavfilter/Makefile        |   1 +
 libavfilter/allfilters.c    |   1 +
 libavfilter/vf_readeia608.c | 268 ++++++++++++++++++++++++++++++++++++++++++++++++
 4 files changed, 340 insertions(+)
 create mode 100644 libavfilter/vf_readeia608.c
```

github.com/amiaopensource/sccyou

```bash
#!/bin/bash
# sccyou
# script to apply the readeia608 filter and interpret
  the results in order to create an scc (and
  optionally an srt) output from standard definition
  video files which contain EIA 608 data
# thanks to Paul Mahol, Ben Turkus
# Copyright (c) 2019, Dave Rice, see License.txt
```

sccyou
YOU SHOULD'VE ALREADY EXISTED

vertical bbbbblanking interval

open source sponsorship in action
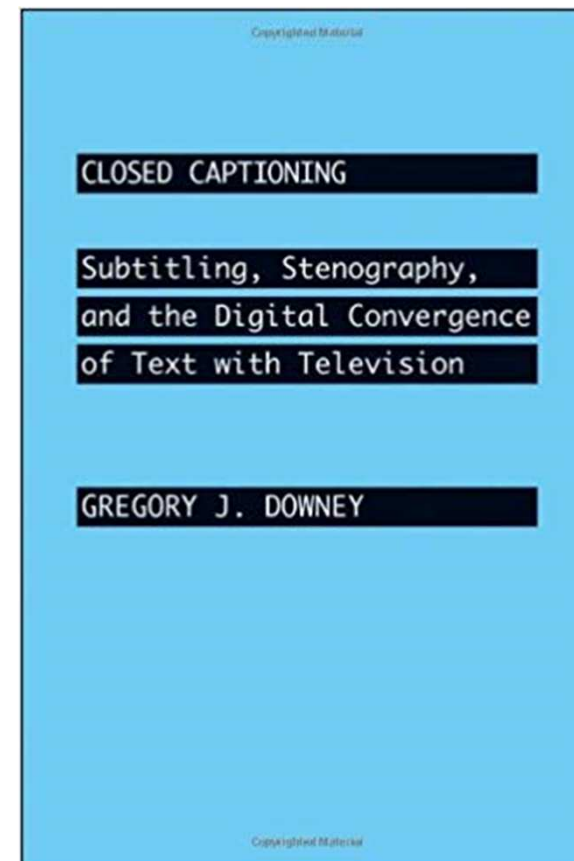
a free and open solution

PAIN

THE "VISIBILITY PARADOX" OF CLOSED CAPTIONING

A simple right of media participation long denied

"The very design of captioned text to be 'closed' instead of 'open'– that is, ever-present in the broadcast signal but invisible on the screen until the feature is turned on by the user–was meant to keep it out of sight of hearing television viewers" (4).

CLOSED CAPTIONING

Subtitling, Stenography, and the Digital Convergence of Text with Television

GREGORY J. DOWNEY

NYPL INNOVATION PROJECT

"MORE PEOPLE READING MORE...CAPTIONS"

A Greener World: Introducing Mid-Manhattan Library at 42nd St Seed Library

by Susen Shi, Mid-Manhattan Library at 42nd Street

April 26, 2019

The New York Public Library collections have grown far beyond borrowing books, movies, and music. We also offer a variety of programs including computer classes, storytimes, and English classes, across the NYPL system. Anyone with a library card can visit cultural institutions with Culture Pass, read e-books on SimplyE, and brush up on professional skills with Lynda.

On the heel of all these great resources, Mid-Manhattan Library at 42nd Street now offers a Seed Library: non-GMO, heirloom, and/or organic seeds for patrons to grow vegetables, flowers, or herbs from the comfort of their residences.

Lavender   *Sunflower*   *Marigolds*   *Lemon Balm*   *Zinnia*

Time to Dress Up: Introducing the NYPL Grow Up Work Fashion Library

by Michelle Lee, Young Adult Librarian, Riverside Library

August 6, 2018

If you are looking to get dressed up for a job interview, wedding, audition, graduation, prom, or other formal event, the Riverside Library can help.

With our **NYPL Grow Up** work accessories collection, you can now borrow:

Neckties and bowties

WHERE IS SCCYOU? HOW'S IT WORK?
www.github.com/amiaopensource/sccyou

sccyou

A script that interprets the results of FFmpeg's readeia608 filter to create scc (and optionally srt) outputs from standard definition video files which contain EIA-608 data.

Dependencies

ffmpeg 4.3 or later

Usage

To use sccyou, simply download the script from the repo, make it executable (`chmod 755 sccyou.sh`), and run one of the following commands:

```
./sccyou.sh -h           display the help menu
./sccyou.sh INPUT_FILE   create an scc output
./sccyou.sh -s  INPUT_FILE   create both scc and srt outputs
./sccyou.sh -y  INPUT_FILE   overwrite any existing outputs
```

The results of sccyou will vary based upon your specific command, but will look like sidecar `INPUT_FILE.scc` and `INPUT_FILE.srt` files.

WHAT'S GOING ON UNDER THE HOOD?

www.github.com/amiaopensource/sccyou

```
_get_caption_settings(){
    # test ratio of width reserved for sync code detection at both 0.3 and 0.27
    SPW="0.30"
    _get_line "${MOVIE}"
    if [[ -z "${LINE}" ]] ; then
        SPW="0.27"
        _get_line "${MOVIE}"
    fi
    if [[ -z "${LINE}" ]] ; then
        _report -w "Sadly no caption data is detected in the first ${SEARCH_FIRST_X_SECONDS_FOR_CAPTION_LINE} seconds of ${MOVIE}."
        break
    else
        _report -d "Found captions in ${MOVIE}, using spw=${SPW} and line ${LINE}."
    fi
}
```

WHAT'S GOING ON UNDER THE HOOD?
www.github.com/amiaopensource/sccyou

avfilter: add EIA-608 line extractor

Signed-off-by: Dave Rice <dave@dericed.com>
Signed-off-by: Paul B Mahol <onemda@gmail.com>

master · n4.3-dev ··· n3.3

richardpl committed on Jan 14, 2017 · 1 parent 1bb192e

Showing **6 changed files** with **342 additions** and **1 deletion**.

∨ 1 ▣▢▢▢▢ Changelog

```
@@ -15,6 +15,7 @@ version <next>:
15   15        - QDMC audio decoder
16   16        - NewTek SpeedHQ decoder
17   17        - MIDI Sample Dump Standard demuxer
     18  +     - readeia608 filter
18   19
```

```
pkt_pts_time=11.044000
TAG:lavfi.readeia608.0.cc=0x9137
TAG:lavfi.readeia608.0.line=1
[/FRAME]
[FRAME]
pkt_pts_time=11.078000
TAG:lavfi.readeia608.0.cc=0x9137
TAG:lavfi.readeia608.0.line=1
[/FRAME]
[FRAME]
pkt_pts_time=11.111000
TAG:lavfi.readeia608.0.cc=0x942C
TAG:lavfi.readeia608.0.line=1
[/FRAME]
[FRAME]
```

WHAT'S GOING ON UNDER THE HOOD?

| {note} | ♪ | 9137 | 1937 | Eighth Note |

♪ JUMPIN' JACK FLASH,
IT'S A GAS, GAS, GAS ♪


```
00:00:10:11     9420 9420 94F2 94F2 91AE 91AE 9137 9137 20C2 D554 2049 54A7 D320
C14C 4C20 5249 C7C8 54AE AEAE 2080 9137 9137 942C 942C 942F 942F

00:00:13:18     9420 9420 9454 9454 C4C1 CDCE 2C20 CD49 43CB AE20 54C8 C154 A7D3
94E0 94E0 54C8 4520 4FCE 4CD9 2054 C849 CEC7 20C1 CED9 C24F C4D9 2043 C1CE 20D3
49CE C7AE 942C 942C 942F 942F
```

PLAYBACK PREVIEW IN TWO FORMS


```
Found captions in /Users/benjaminturkus/Desktop/line21test_1.mp4, using spw=0.27 and line 1.
```



```
Done with /Users/benjaminturkus/Desktop/line21test_1.mp4. Preview with:
    ffplay "/Users/benjaminturkus/Desktop/line21test_1.mp4" -vf subtitles="/Users/benjamintu
rkus/Desktop/line21test_1.scc"
 Or to zoom in on the captions try:
    ffplay "/Users/benjaminturkus/Desktop/line21test_1.mp4" -vf format=rgb24,crop=iw:1:0:1,s
cale=iw:4:flags=neighbor,tile=layout=1x120:overlap=119:init_padding=119,setdar=4/3,subtitles=
"/Users/benjaminturkus/Desktop/line21test_1.scc"
```

#trashcaptions

"Information on line 21, but not CC" 😔


```
"2/9/2018 TM: CC on line 21.  Video adjusted to content.   ; Video Picture Breaks up; Audio Hiss"
"4/11/2018 DW: Used the field 2 .srt because it was in English.  4/3/2018 JaV: Distorted lines on top of tape. Poor audio at top of tape.  CC in line 21.  4/1/2018 TVN
; Audio Hiss; No Bars and Tone; Analog Video Dropouts; Audio Distortion"
"3/22/2018 JaV: Information in line 21, but not CC. DVD menu at top of tape. Over exposed at times. Letterbox. Long tail with DVD menu looping. Poor audio.; No Bars an
"5/13/2019 RS: Poor switch point line present at the bottom of the frame. Information present on line 21. Scrolling lines on image. ; Video Picture Breaks up; No Bars
"3/24/2018 JaV: Poor switch point at bottom of frame. Information in line 21 but no CC.  Over saturated colors at times.  Low audio levels at times. Long black tail wi
"5/3/2019 CD: Some archival footage dubbed from analog media with artifacts at bottom of frame, and Information on line 21 at times. Black bars on Left/Right of frame
o Bars and Tone; Video Picture Breaks up"
"3/25/2018 JaV: Poor switch point at bottom of frame. Bearding on the sides of the frame.  Noise in line 21. Poor tracking at top of tape. Loses picture briefly 6min i

or tone on tape. Aligned video level to program. Closed caption line 21 successfully preserved with the master file as an SRT file. All audio channels mixed down for se
"2/13/2018 JaV: Poor switch point at bottom of frame. Information in line 21. Video drops out for a bit around 29 min in.; No Bars and Tone; Audio Hiss; Video Picture
or tone on tape. Aligned video level to program.  Closed caption line 21 successfully preserved with the master file as an SRT file.  All audio channels mixed down for
"2/12/2018 JaV: Poor switch point at bottom of frame. Information in line 21.; Audio Hiss; No Bars and Tone"
```

2) In the U.S., the decoding of line 21 depends on:

The playback VTR that is airing the CC program being properly phased up vertically.
The dub from the master CC encoded tape being phased up vertically.
The archive recovery VTR being phased up vertically.

When setting up a closed caption recovery, it is essential to have a waveform monitor looking at the vertical interval to determine if the line 21 information is present on the right line and if any of the wave form is being clipped (excursions to zero black were part of the standard).

As an example, when ABC Prospect used to do zone delay on their VPR-1's and 2's, they were regularly hopping vertically a few lines one way or the other. This of course messed up continuous line 21 phasing.

In summary: Before reliable line 21 recovery can be accomplished, one has to have monitoring set up to observe line 21 integrity.

AS THE vESTúOF THE SOUTH.
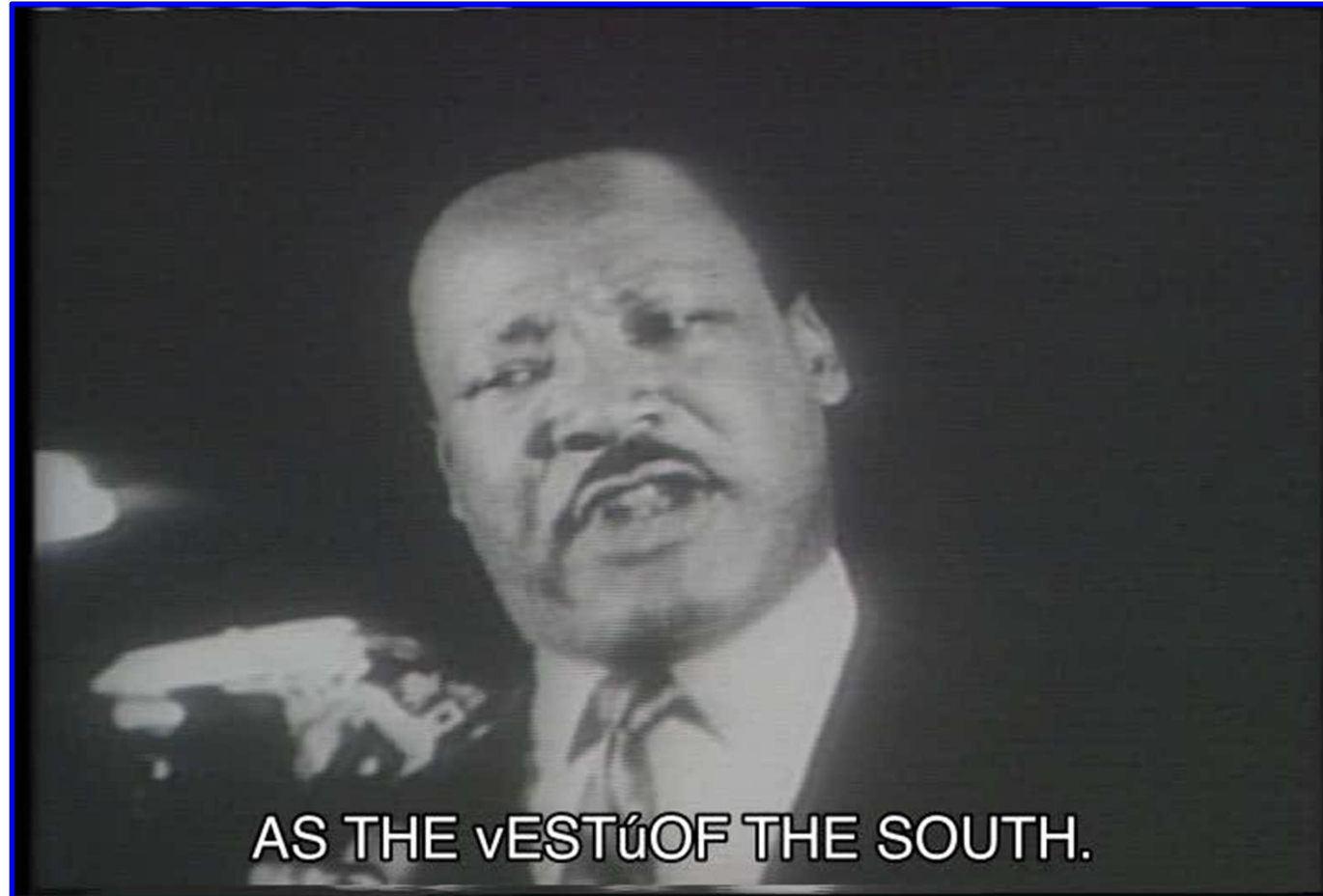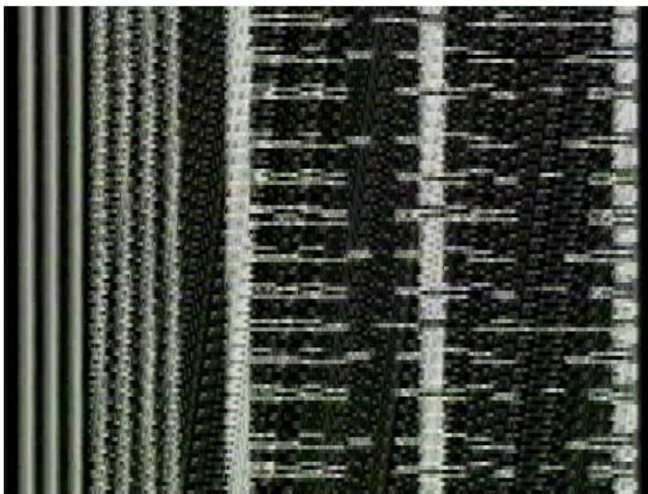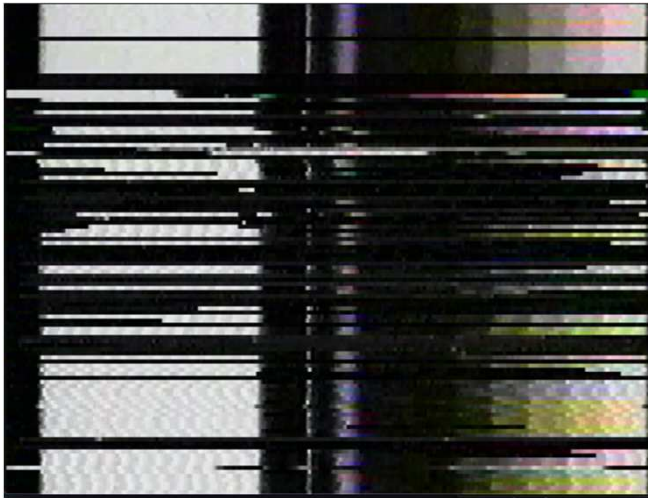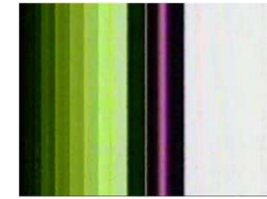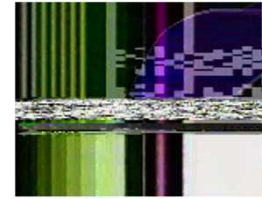
WHAT'S NEXT?

- Incorporation into vrecord
- Handling of multiple caption tracks (odds and evens, English and SAP)
- Refinement of testing for presence of captions (beginning, middle, and end)
- Development of quality control procedures for closed captioning
- Better reporting on trash captions