



# Preserving and Rescuing Heritage Information on Analogue Media

Fenella G. France PhD, MBA, FAIC  
Chief, Preservation Research and Testing Division  
Library of Congress

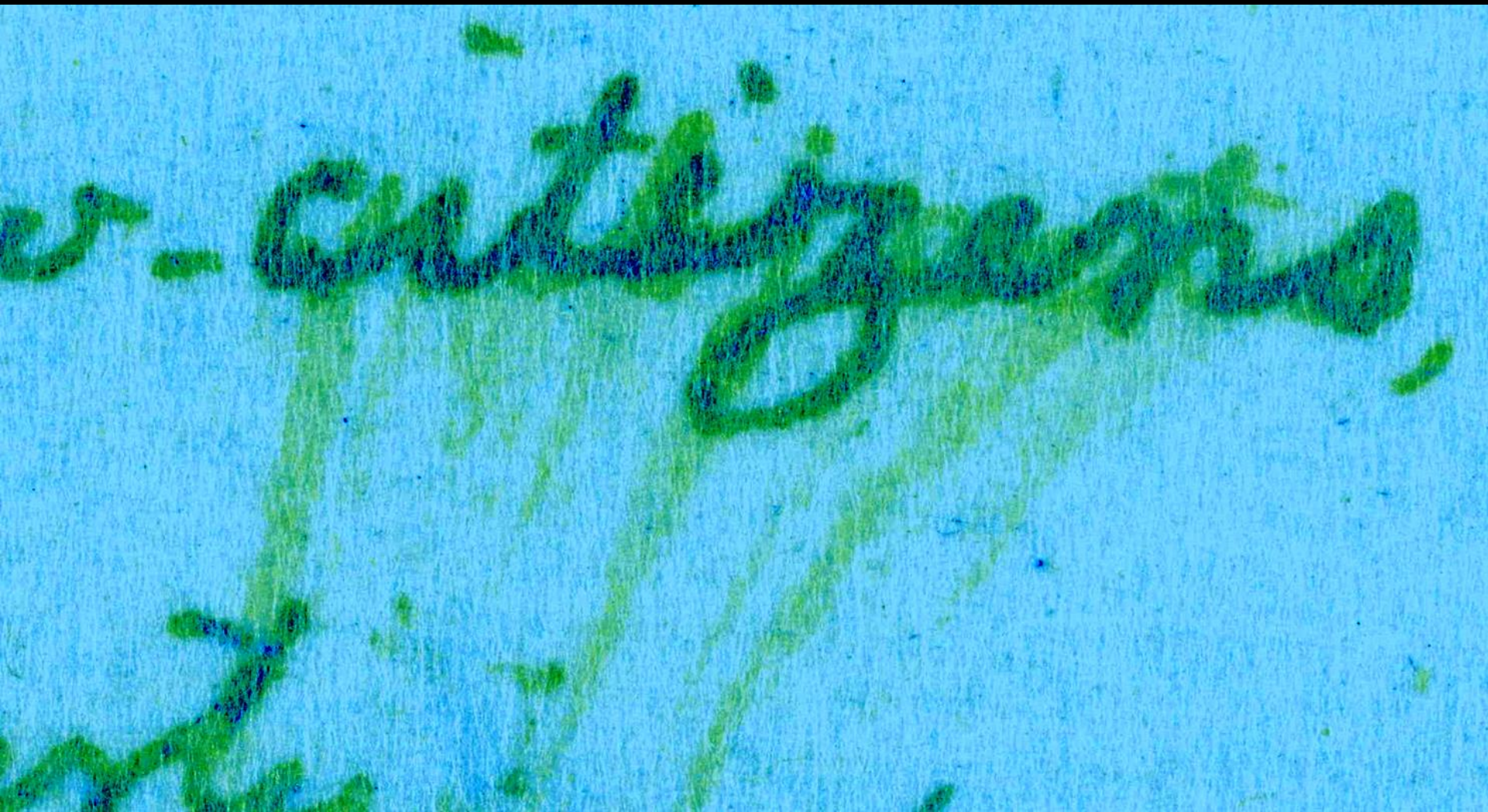
[frfr@loc.gov](mailto:frfr@loc.gov)

# Analog and Digital Preservation

- Issues of “readability” of data from analog machine dependent technologies
- Impact of new technologies to recover historic scientific and scholarly information
- “Access” to open source non-proprietary file formats of scientific and scholarly data files
- Collaborative and cooperative preservation







Subtraction of bands 10-5 (NIR – green visible) image inverted, with overlay



a. Difference between 2 bands (IR and visible) difference imaging and ratios between wavebands

he has endeavored to bring on the inhabitants of our frontiers the merciless Indian savages, whose known rule of warfare is an undistinguished destruction of all ages, sexes, & conditions [of existence].  
[he has incited treasonable insurrections of **our fellow-citizens**, with the allurements of forfeiture & confiscation of our property,  
he has constrained them to become the executors of their own destruction, & to take up arms against their parents, friends, & neighbors, to wage cruel war against human nature itself, violating it's most sacred

b. Cropped version of (a)

our fellow-citizens,

c. "Otsu" multi threshold technique to enhance different intensity ranges

our fellow-citizens,

d. Assigning pseudo color (remove transition edges from (c))

our fellow-citizens,

e. Joining the dots - pseudo color (artistic interpretation)

our fellow-subjects,

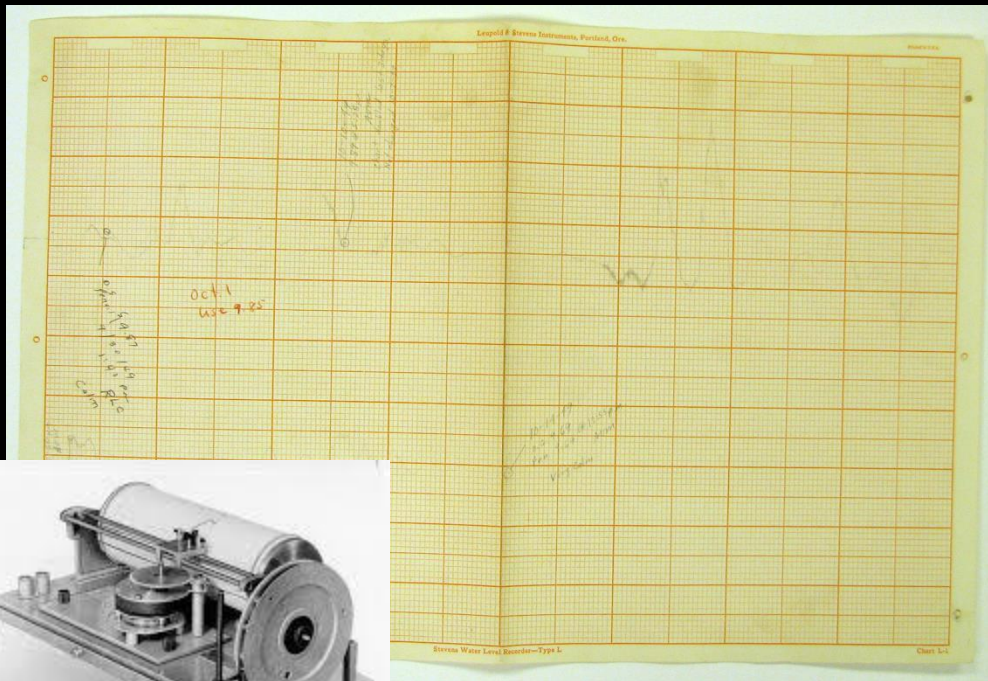
f. Removed citizen for clarity of viewing (make equal to background text)

our fellow-subjects,

# Fugitive Media

## U.S. Geological Survey: Recovery of analog data from paper charts

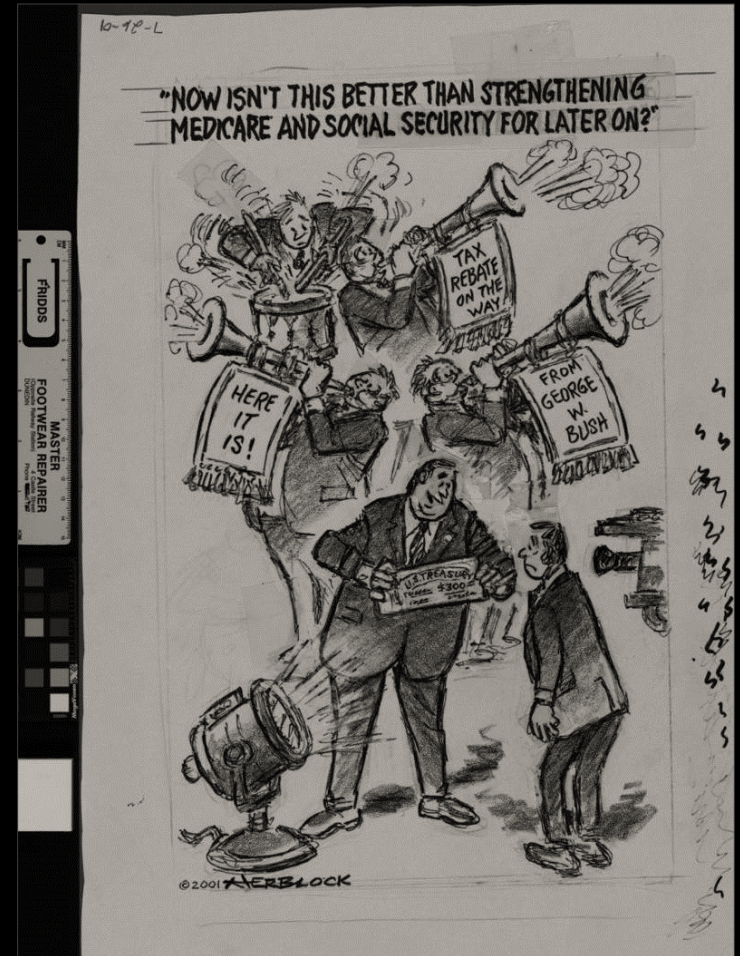
- 50-75 year old ink fading ink



Historic drum water level recorders

## Herblock Washington Post Political Cartoon Collection

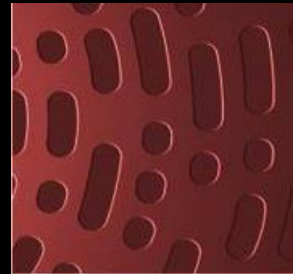
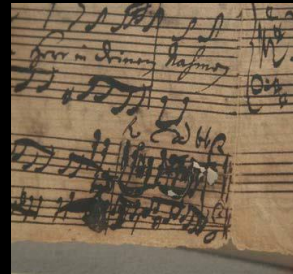
- 35-45 year old ink fading ink





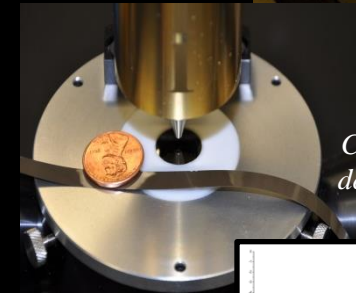
# Preservation and Transfer of Original Analog Record

- Historic versus twentieth century materials
  - *Modern and Fugitive media*
- Collaborative and cooperative effort of:
  - Information technology colleagues
  - Scientists
  - Curators, historians, researchers
  - Integrating new non-invasive technologies
  - Reaching out to industry

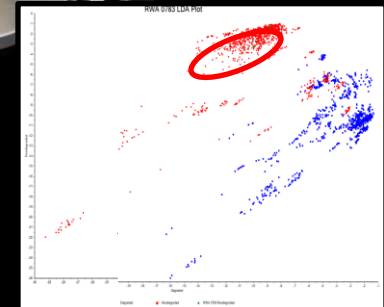


# Preservation of Modern Materials

- Develop a tool for libraries, archives and museums to detect (*before damage*) whether a tape can safely be played for transfer and access to content
- Rapid non-destructive identification of degraded magnetic tape
- Matrix of risk for storage media (*e.g. CD-ROM/CD-R/DVD*)
- Memorandum of Understanding (MOU) between LC and Fuji to utilize their accelerated aging laboratories to induce degradation of older tape formats



Classification as non-degraded or degraded





# Access: Data Organization and Integration “Scripto-Spatial”

*A GIS system for documents*

- Link data within and across collection items
- Temporal, spatial and layering of data
- Visualization and representation of scientific data to interpret:
  - Materials characterization
    - *Identification, Geographical, Chronological, Use of Materials*
  - Creation techniques
  - Enhancing lost / obscured information



