

# Reflectance Spectroscopy of Colored Overprints

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# A Difficult Problem

Souren (1939) noted:

“... no opinion will be advanced on surcharged stamps except as to the condition of the basic stamp. It will necessitate years of preliminary research before scientific proof of the true nature of overprints can be determined satisfactorily.”

**Not much has changed today!**  
**There are many technological challenges**

# Research Plan

If possible, develop a methodology to:

- Differentiate printers of overprints through colorimetric ink analysis
- Quickly determine counterfeit overprints based on color differences
- Determine counterfeit overprints based on precise size measurement

# The Stamps Used

The stamps of Szeged were used for testing

- Overprinted in red and green
- Overprinted by two different print shops
- Well-documented literature on counterfeits



a. *Harvesters*



b. *Parliament*



c. *Postage Due*



d. *Overprint*

# Print Shops and Counterfeits



a. Print Shop 1

b. Print Shop 2



a. Genuine Overprint



b. Counterfeit Overprint

# The Work Plan

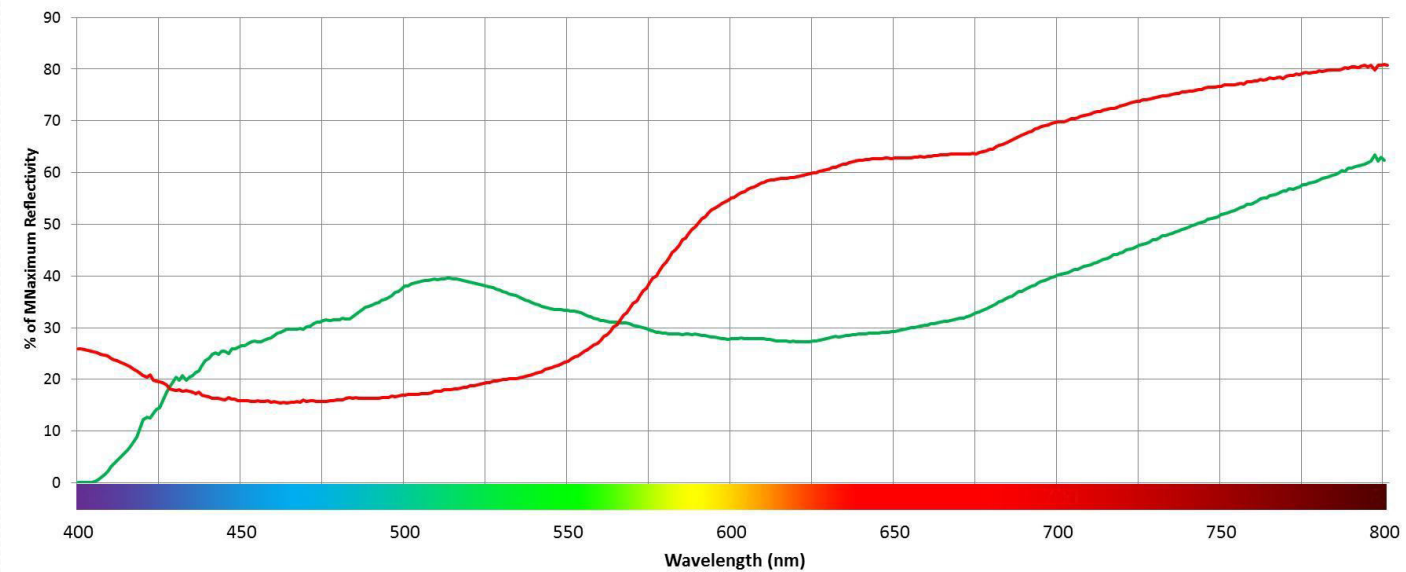
- For each test stamp, use the VSC 6000 to:
  - Measure the overprint precisely
  - Determine the reflectance curves for the overprint ink
- Use colorimetric modeling to group different overprint shades
  - Can counterfeit overprints be detected by measurements
  - Can counterfeit overprints be detected by color differences

# Precise Measurement



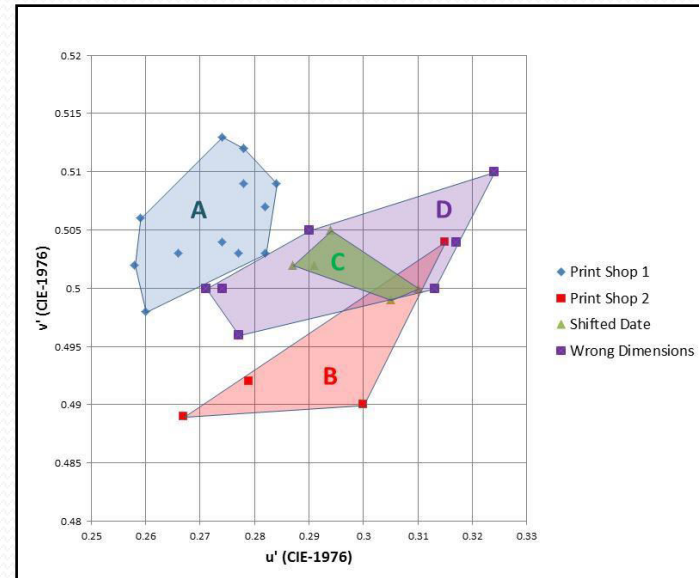
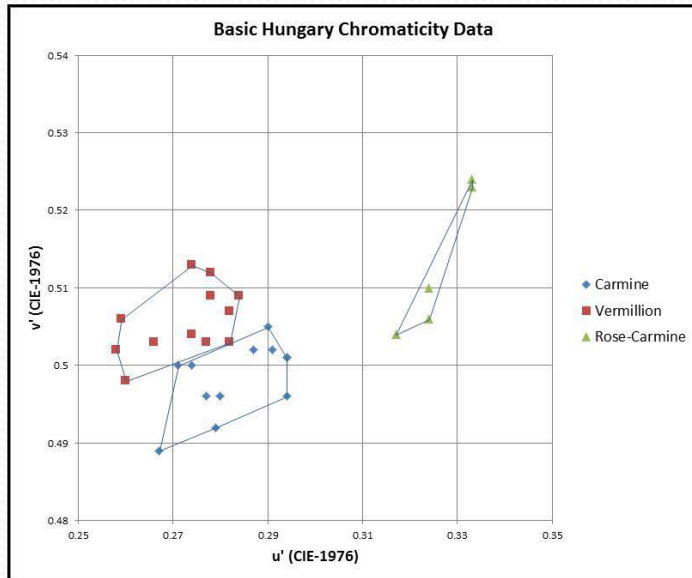
Stamp Design	Mean Horizontal Distance (mm)	Standard Deviation	Mean Vertical Distance (mm)	Standard Deviation
<i>Harvesters</i>	14.28	±0.19	9.31	±0.19
<i>Parliament, genuine overprint</i>	15.67	±0.21	4.86	±0.12
<i>Parliament, counterfeit overprint</i>	14.29	±0.11	9.29	±0.09
<i>Postage due, genuine overprint</i>	16.05	±0.06	9.66	±0.03
<i>Postage due, counterfeit overprint</i>	14.72	±0.14	9.71	±0.06

# The VSC 6000: Reflectance





# Colorimetry



# Conclusions

- A useful methodology includes:
  - Precise measurements which allow counterfeits to be identified
  - Colorimetry which allows bad inks to be identified
  - Colorimetry which may allow different printers to be identified
- This research effort:
  - Supported Brainard's theory of wrong dimension overprints being counterfeit

Questions?