

Chapter 16

Document and Handwriting Analysis

**“The handwriting
on the wall may be
a forgery**

—*Ralph Hodgson,
british poet*



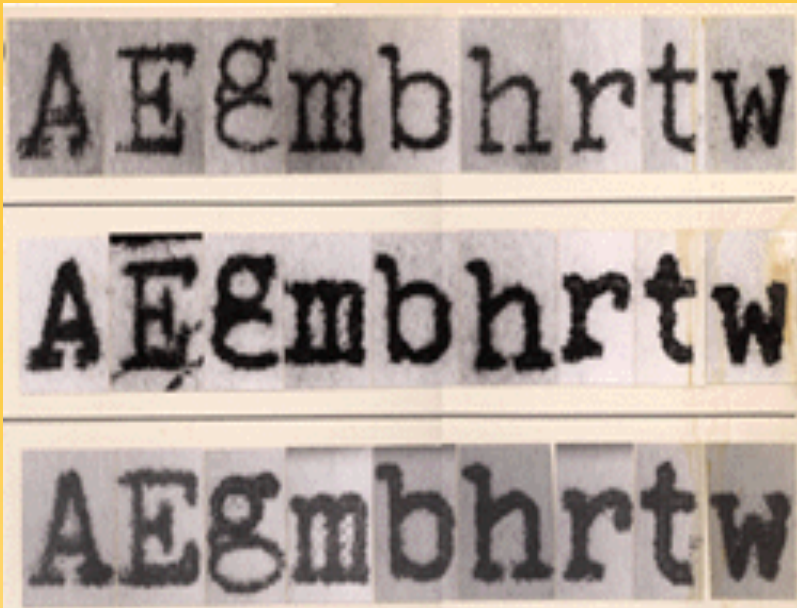
Objectives



You will understand:

- That an expert analyst can individualize handwriting to a particular person.
- What types of evidence are submitted to the document analyst.
- Three types of forgery.
- How to characterize different types of paper.
- The types and impact of computer crime.

Objectives, *continued*



You will be able to:

- Analyze handwriting using 12 points of analysis.
- Detect deliberately disguised handwriting.
- Detect erasures and develop impression writing.
- Design an experiment using paper chromatography to determine which pen altered a note.
- List safeguards against the counterfeiting of U.S. currency.
- Recognize some of the methods of internet fraud.

Questioned Documents

Involves the examination of handwriting, ink, paper, etc., to ascertain source or authenticity

Examples include letters, checks, licenses, contracts, wills, passports

Investigations include verification; authentication; characterizing papers, pigments, and inks

Related Fields

Historical dating—the verification of age and value of a document or object

Fraud investigation—focuses on the money trail and criminal intent

Paper and ink specialists—date, type, source, and/or catalog various types of paper, watermarks, ink, printing/copy/fax machines, computer cartridges

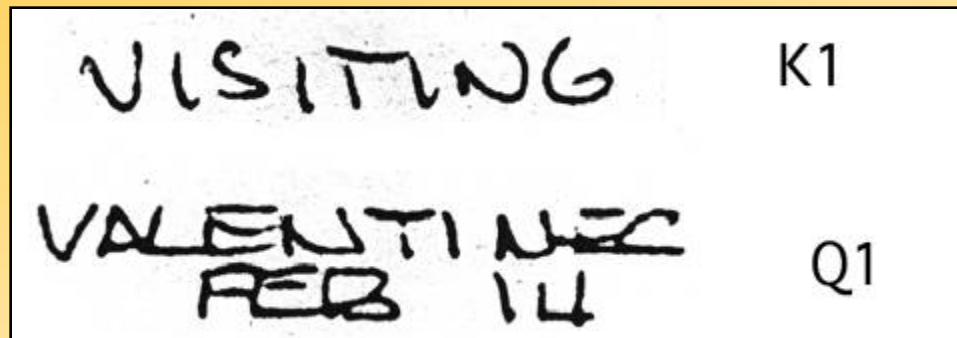
Forgery specialists—analyze altered, obliterated, changed, or doctored documents and photos

Typewriting analysts—determine origin, make, and model

Computer crime investigators—investigate cybercrime

Document Examination

Forensic document examination involves the analysis and comparison of questioned documents with known material in order to identify, whenever possible, the author or origin of the questioned document.



Handwriting

Handwriting analysis involves two phases:

1. The hardware—ink, paper, pens, pencils, typewriter, printers
2. Visual examination of the writing



Handwriting Characteristics

Line quality

Word and letter spacing

Letter comparison

Pen lifts

Connecting strokes

Beginning and ending strokes

Unusual letter formation

Shading or pen pressure

Slant

Baseline habits

Flourishes or embellishments

Diacritic placement



Handwriting Identification

Analysis of the known writing with a determination of the characteristics found in the known

Analysis of the questioned or unknown writing and determination of its characteristics

Comparison of the questioned writing with the known writing

Evaluation of the evidence, including the similarities and dissimilarities between the questioned and known writing

The document examiner must have enough exemplars to make a determination of whether or not the two samples match.

Handwriting Samples

The subject should not be shown the questioned document.

The subject is not told how to spell words or use punctuation.

The subject should use materials similar to those of the document.

The dictated text should match some parts of the document.

The subject should be asked to sign the text.

Always have a witness.

Methods of Forgery

Simulated forgery—one made by copying a genuine signature

Traced forgery—one made by tracing a genuine signature

Blind forgery—one made without a model of the signature

Types of Forgery

Check fraud

- Forgery
- Counterfeit
- Alterations

Paper money

- Counterfeit

Identity

- Social Security
- Driver's license

Credit cards

- Theft of card or number

Art—imitation with intent to deceive

- Microscopic examination
- Electromagnetic radiation
- Chemical analysis

Contracts—alterations of contracts, medical records

Document Alterations

Obliterations—removal of writing by physical or chemical means can be detected by:

- Microscopic examination
- UV or infrared (IR) light
- Digital image processing

Indentations can be detected by:

- Oblique lighting
- Electrostatic detection apparatus (ESDA)

Famous Forgers and Forgeries

Major George Byron (Lord Byron forgeries)

Thomas Chatterton (literary forgeries)

John Payne Collier (printed forgeries)

Dorman David (Texas Declaration of Independence)

Mark Hofmann (Mormon, Freemason forgeries)

William Henry Ireland (Shakespeare forgeries)

Clifford Irving (Howard Hughes forgery)

Konrad Kujau (Hitler diaries)

James Macpherson (Ossian manuscript)

George Psalmanasar (literary forgery)

Alexander Howland Smith (historical documents)

Forensic Linguist

Expert who looks at the linguistic content (the way something is written) of a questioned document

Language that is used can help to establish the writer's age, gender, ethnicity, level of education, professional training, and ideology.

Ink

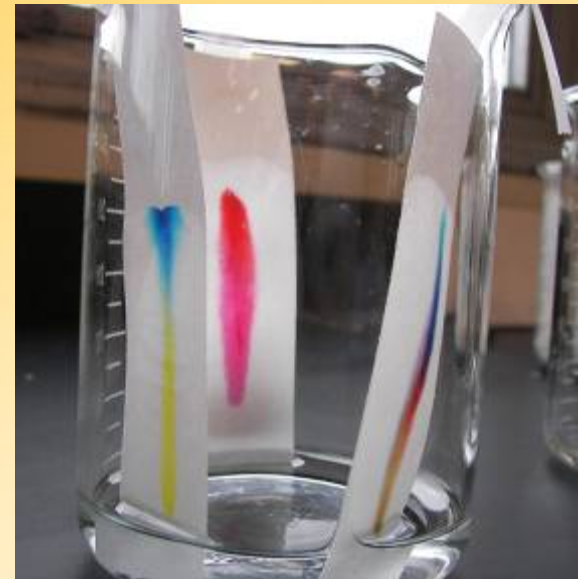
Chromatography is a method of physically separating the components of inks.

Types

HPLC—high-performance liquid chromatography

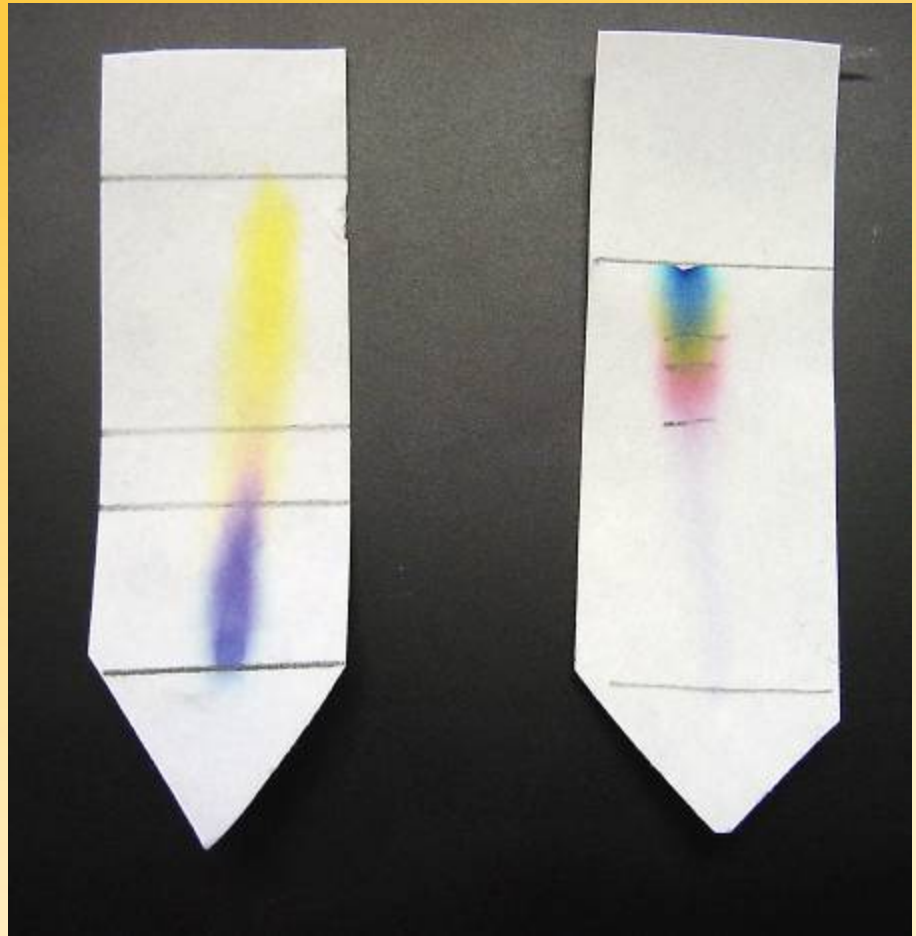
TLC—thin-layer chromatography

Paper chromatography

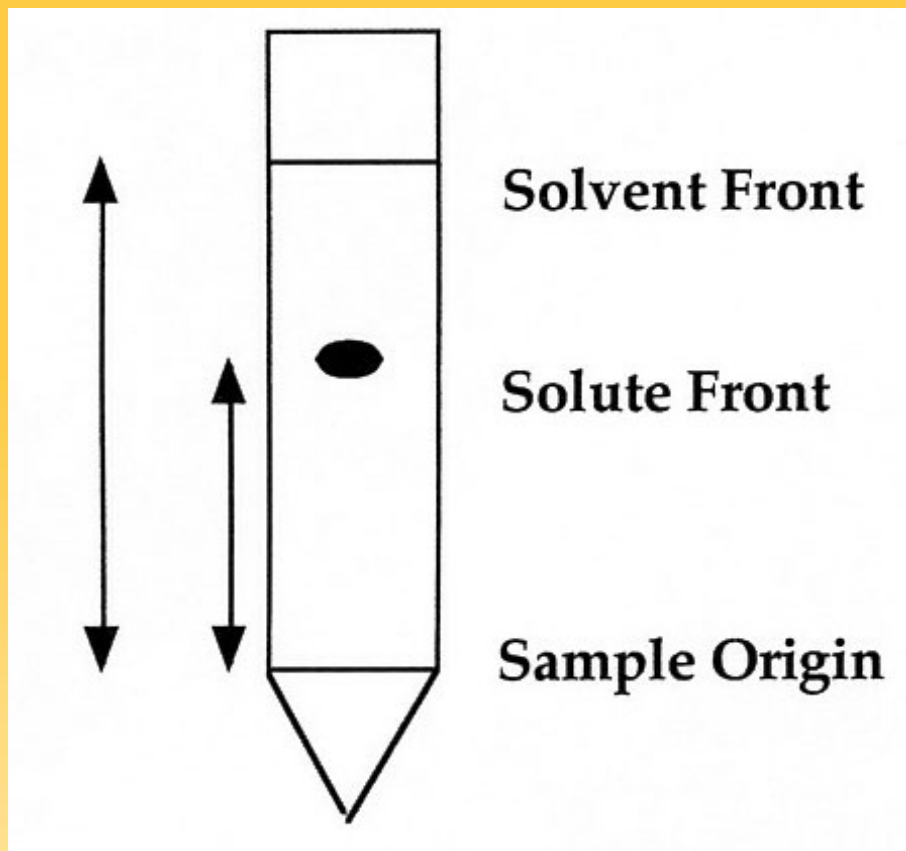


Paper Chromatography of Ink

Two samples of black ink from two different manufacturers have been characterized using paper chromatography.



Retention Factor (R_f)



A number that represents how far a compound travels in a particular solvent

It is determined by measuring the distance the compound traveled and dividing it by the distance the solvent traveled.

Paper

Differences

Raw material

Weight

Density

Thickness

Color

Watermarks

Age

Fluorescence



Pencils

Lead

Hardness scale—a traditional measure of the hardness of the “leads” (actually made of graphite) in pencils. The hardness scale, from softer to harder, takes the form ..., 3B, 2B, B, HB, F, H, 2H, 3H, 4H, ..., with the standard “number 2” pencil being of hardness 2H.

Evidence

Class characteristics may include general types of pens, pencils, or paper.

Individual characteristics may include unique, individual handwriting characteristics; trash marks from copiers; or printer serial numbers.

Counterfeiting

In 1996 the government starting adding new security features to our paper money due to the advanced copying technologies that have raised the incidence of counterfeiting. The \$20 bill entered circulation on October of 2003, followed by the \$50 in September of 2004, and then the \$10 in September of 2005. Subtle background colors have been added along with other features to discourage counterfeiting.



Internet Crimes

Computer intrusions

Identity theft

Transmission of illegal items

Extortion and harassment

Piracy

Cyberterrorism

More about Document Analysis

For additional information about document and handwriting analysis, check out truTV's Crime Library at:

www.crimelibrary.com/criminal_mind/forensics/literary/1.htm

Or learn about forgery cases at:

www.crimelibrary.com/criminal_mind/scams/lincoln_forgers/index.html