

# Handwriting Analysis, Forgery, and Counterfeiting

## MASTER FORGERS

Frank W. Abagnale, a reformed master forger, describes in his book, *The Art of the Steal*, how a visitor from Argentina was issued a parking ticket on a rental car in Florida. Although the fine was \$20, he placed \$22 in an envelope and mailed it to the Miami city clerk. On receipt of the money, the clerk issued a \$2 refund. On receiving the check, the man scanned it into his computer, changed the amount to \$1.45 million, and deposited the check into his account in a bank in Argentina. The check was cashed, and the money was transferred. He was never arrested, and the money was not recovered.

According to Abagnale, the Argentinean example is not uncommon. Stolen money is often not recovered, and thieves are not caught. Abagnale tells of his own life of forgery and fraudulence in the book *Catch Me if You Can*. He began his life of crime as a teenager, when he changed a number on his driver's license to make himself appear 10



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Frank Abagnale, once a wanted forger, is now a leading consultant in the area of document forgery and fraudulence.

years older. After acquiring a small amount of money, he opened a bank account. He came up with the idea to print his account number in magnetic ink on deposit slips and return them to the bank counter. By the time the bank discovered his fraudulent scheme, he had made over \$40,000, and he had already changed his identity. Working with eight different identities, he passed more than \$2.5 million in fraudulent checks in 26 countries and throughout the United States.

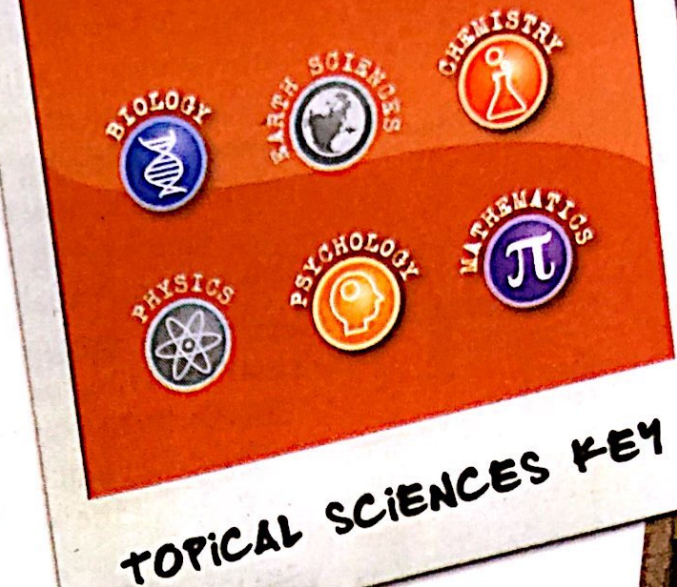
Frank Abagnale is now a leading consultant in forgery, fraudulence, and secure documents. For more than 25 years, he has consulted with many financial institutions, corporations, and government agencies, such as the Federal Bureau of Investigation (FBI). Today, he teaches and lectures on how to detect forgery, avoid consumer fraud, and prevent crime. Abagnale says that the best way to deal with fraud is to prevent it from happening in the first place.



## OBJECTIVES

By the end of this chapter, you will be able to

- ✓ Describe 12 types of handwriting exemplars that can be analyzed in a document.
- ✓ Demonstrate an example of each of the 12 exemplars of handwriting traits.
- ✓ Identify the major goals of a forensic handwriting analysis.
- ✓ Describe some of the technology used in handwriting analysis.
- ✓ Distinguish between the terms *forgery* and *fraudulence*.
- ✓ Identify several ways in which businesses prevent check forgery.
- ✓ Describe four features of paper currency that are used to detect counterfeit bills.



## VOCABULARY

**counterfeiting** the production of an imitation of currency, works of art, documents, and name-brand look-alikes for the purpose of deception

**document analysis** the examination of questioned documents with known material for a variety of analyses, such as authenticity, alterations, erasures, and obliterations

**document expert** a person who scientifically analyzes handwriting

**exemplar** a standard document of known origin and authorship used in handwriting analysis

**forgery** the making, adapting, or falsifying of documents or other objects with the intention of deceiving someone

**fraudulence** when a financial gain accompanies a forgery

**questioned document** any signature, handwriting, typewriting, or other written mark whose source or authenticity is in dispute or uncertain



# INTRODUCTION

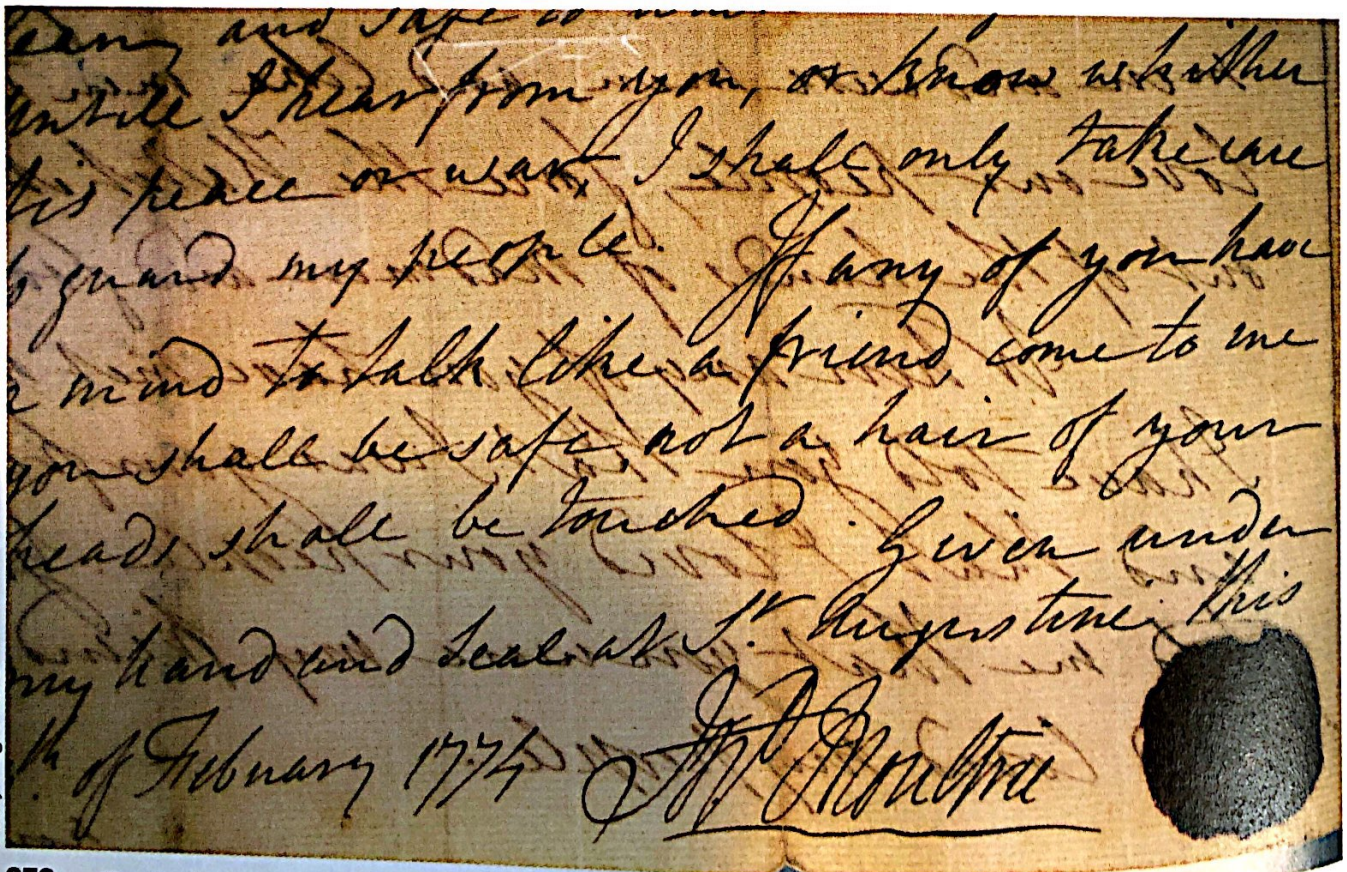
**Document analysis**, a very broad area in the field of forensics, is the examination and comparison of questioned documents with known material. Experts establish the authenticity of the documents and detect any changes, erasures, or obliterations that may have occurred. A **questioned document** is any signature, handwriting, typewriting, or other written mark whose source or authenticity is in dispute or uncertain. Checks, certificates, wills, passports, licenses, money, letters, contracts, suicide notes, receipts, and even lottery tickets are some of the questioned documents of interest. Experts in this field may examine handwriting, typewriting, commercial printing, paper material, and the type of ink in these documents. Figure 10-1 shows an example of a historical document.

A **document expert** is a specially trained person who scientifically analyzes handwriting and other features in a document. For example, a document expert may be called into a crime-scene area or to the lab to examine the handwriting of threatening notes, ransom notes, or suicide notes. Investigators analyze and compare various traits, such as the appearance of letters, of suspicious documents with known samples to help identify the author of the document. Investigators might also be asked to detect changes that may have occurred in an original document.

A document expert is different from a graphologist, who studies the personality of the writer based on handwriting samples. The study of graphology is not necessarily accepted as part of forensic science, but it can be used as a possible indicator of the writer's personality type. The scientific analysis of handwriting is the focus of this chapter.



**Figure 10-1.** Historical documents are often targets for forgers.



©Getty Images News



# HISTORY OF FORENSIC HANDWRITING ANALYSIS

Like fingerprints, every person's handwriting is unique and personalized. Because handwriting is difficult to disguise and forge, handwriting analysis is a good tool for including or excluding persons when determining a match between known material, known as an **exemplar**, and a questioned document.

In the 1930s, handwriting analysis played an important forensic role during the trial of Bruno Richard Hauptmann for the kidnapping and murder of the son of world famous aviator Charles Lindbergh. Handwriting analysis of the many ransom notes, along with known handwriting samples and other evidence, led to Hauptmann's conviction and execution (Figure 10-2). Today, Hauptmann's involvement in the crime has come into question because of the manner in which samples were collected and how the evidence was handled.

The courts have not always accepted handwriting analysis as a creditable form of evidence. This changed in 1999, when the U.S. Court of Appeals determined that handwriting analysis qualified as a form of expert testimony. Handwriting evidence is admissible in court, provided that scientifically accepted guidelines are followed. Scientific analysis of handwriting is now an important tool for forensic document examiners. Scotland Yard, the F.B.I., and the Secret Service use handwriting analysis in solving important cases.



**Figure 10-2.** Comparative handwriting samples from Hauptmann used in the Lindbergh kidnapping case.

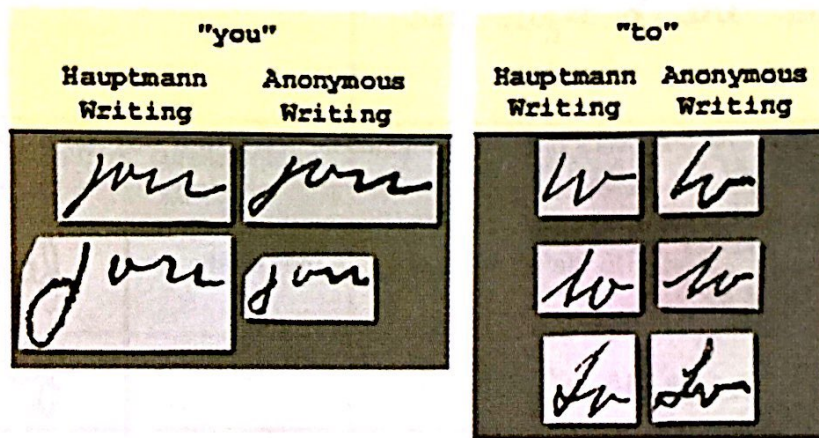


Photo courtesy FBI

## INTRODUCTION TO HANDWRITING

Everyone's handwriting exhibits natural variation depending on several factors. The use of different types of writing instruments, such as a pen, pencil, marker, or crayon, can affect our handwriting. Our mood, our age, and how hurried we are all contribute to the differences we notice in our own handwriting.

Despite these minor variations in handwriting, each person has a unique handwriting style. Characteristics such as the slant and curl of the letters, the height of the letters, or even how the page is filled with text can distinguish our identity. This is because the brain is doing the writing! Adults show only slight variation in handwriting, because as children we learn to write through basically the same method. However, once a person starts writing subconsciously, with characters formed as a result of habit, unique handwriting is formed.





## CHARACTERISTICS OF HANDWRITING

A person's handwriting exhibits unique characteristics that make it distinguishable from other samples. Handwriting experts examine 12 major categories of exemplars. These 12 characteristics are functions of letter form, line form, and formatting.

Letter form includes the shape of letters, curve of letters, the angle or slant of letters, the proportional size of letters, and the use and appearance of connecting lines between letters. It also includes whether letters are shown correctly, such as a dotted "i" and a crossed "t."

Line form includes the smoothness of letters and the darkness of the lines on the upward compared to the downward stroke. Line form is influenced by the speed of writing and the pressure exerted while writing. The choice of writing instrument can also influence line form.

Formatting includes the spacing between letters, the spacing between words and lines, the placement of words on a line, and the margins a writer leaves empty on a page. Some characteristics studied by handwriting experts are shown in Figure 10-3.

**Figure 10-3.** Characteristics of handwriting. (continued on the next two pages)

| Specific Trait   | Description                                       | Example |
|------------------|---|---------|
| Line quality     | Do the letters flow or are they erratic or shaky? |         |
| Spacing          | Are letters equally spaced or crowded?            |         |
| Size consistency | Is the ratio of height to width consistent?       |         |



| Specific Trait              | Description   | Example  |
|-----------------------------|---|--|
| Continuous                  | Is the writing continuous or does the writer lift the pen?          | forensic science<br>forensic science                     |
| Connecting letters          | Are capitals and lower-case letters connected and continuous?       | The Right of the<br>The Right of the                     |
| Letters complete            | Are letters completely formed? Or, is a part of the letter missing? | the right of the people<br>th right of the people        |
| Cursive and printed letters | Are there printed letters, cursive letters, or both?                | Forensic Science<br>Forensic Science<br>Forensic Science |
| Pen pressure                | Is pressure equal when applied to upward and downward strokes?      | forensic science<br>forensic science<br>forensic science |
| Slant                       | Left, right, or variable?   | forensic science<br>forensic science<br>forensic science |
| Line habits                 | Is the text on the line, above the line, or below the line?         | forensic science<br>forensic science<br>forensic science |



| Specific Trait                              | Description   | Example                  |
|---|---|--------------------------|
| Fancy curls or loops                        | Are there fancy curls?  | Forensic Science         |
| Placement of crosses on t's and dots on i's | Correct or misplaced? Are t's crossed, crossed in the middle, toward top, or toward the bottom? Are i's dotted, dotted toward the right, left, or centered? | right right right rights |

## HANDWRITING EXAMINATION

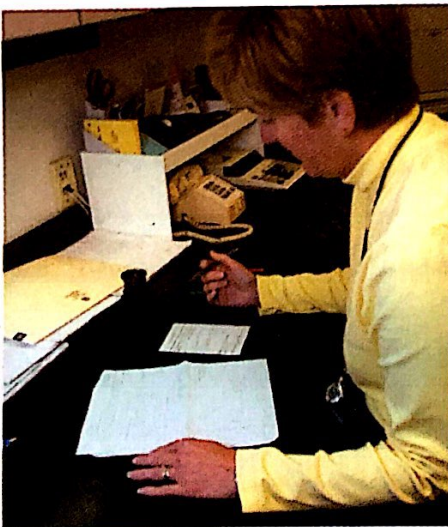
The goal of forensic handwriting analysis is to answer questions about a suspicious document and determine authorship using a variety of scientific methods. Methods are based on the principle of identification in that “two writings are the product of one person if the similarities . . . are . . . [unique] and there are no fundamental unexplainable differences.” Document experts often compare handwriting characteristics of a questionable document to those of a known sample or *exemplar* to try to determine if the same person wrote the document. These analyses can also help detect forgeries. **Forgeries** are documents made, adapted, or falsified with the intention of deceiving someone.

### ANALYZING A HANDWRITING SAMPLE

There are three basic steps in the process of analyzing a handwriting sample. First, the questioned document and the standards (exemplars) are examined and detectable characteristics are recorded. Obtaining a standard may require a suspected author to write a sample for the investigators under supervision. If possible, a handwriting sample should be obtained without first informing someone of the intention of comparison, such as asking for a written statement by the involved parties. The best exemplars tend to be letters, diaries, greeting cards, or personal notes. The obtained exemplar should also contain several of the words or letter combinations found in the questioned document. Next, the characteristics of the questioned item are compared with the known standard. For those samples that appear to be similar to the questioned document, there must be a thorough analysis addressing all of the handwriting characteristics in each document. Finally, experts determine which characteristics are valuable for drawing a conclusion about the authenticity and authorship of the questioned document (Figure 10-4).

If there are obvious differences between a standard and a questioned document, then it is likely that the documents have different authors. Those samples can be visually eliminated without even having to assess the list of handwriting characteristics. However, similarities do not necessarily guarantee common authorship, because it is possible that unique characteristics of a person's handwriting may occur in another's handwriting. Highly trained document experts must take into account a great number of factors and a statistically significant repetition of similarities in

**Figure 10-4.** A document expert scientifically analyzes the handwriting in a document.



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