





Part 3

H. LIMITATIONS OF FORENSIC DOCUMENT EXAMINATION

- a. Non-original evidence (such as photocopies or faxes)
 - i. Every time a document is subjected to a copying process, a small amount of information is lost.
- b. Insufficient quantity of questioned material.
 - i. If there is not enough material for an adequate examination, the examiner will most likely be unable to render a definitive conclusion.
- c. Insufficient quality
 - i. If the quality of either the questioned document or the known samples is not sufficient for proper examination, the examiner will likely be unable to render a definitive conclusion.



- ii. Examples include documents that have been **burned** to ashes or **cross-cut** shredded, documents that are multi-generation copies or faxes, or documents containing writing that is too distorted or disguised.

Strip Cut	Cross-Cut	Micro-Cut	High Security
Security Level 2	Security Level 3	Security Level 4	Security Level 6
			
39 -- 7/32" strips per 8.5" x 11" page	399 particles per 8.5" x 11" page	3,000 particles per 8.5" x 11" page	13,000 particles per 8.5" x 11" page
Ideal for: Non-confidential documents	Ideal for: Credit/College Applications, Insurance papers, Junk mail	Ideal for: Medical Records, Employee/HR Files, Bank/Financial Statements	Ideal for: Top Secret or Classified Government Documents

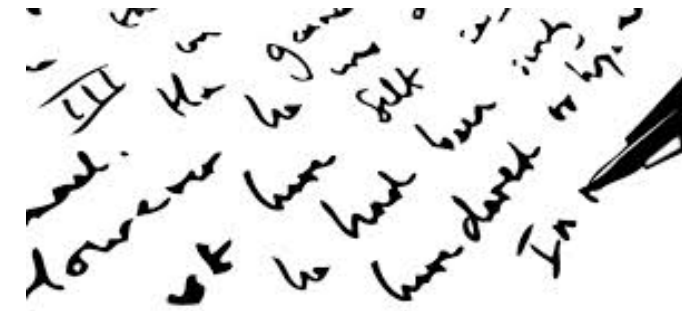


1. A cross-cut method of shredder keeps documents safer from identity theft than regular strip cutting. The Cross-Cut type or smaller are best for confidential documents and prevent you from **emptying** the bin as often.

d. Lack of comparability between the questioned documents and the known samples.



- i. The examiner must be able to compare “**apples to apples**” as the saying goes. For instance, the specimen material must be of the same type of writing as the questioned material; uppercase entries can only be compared to uppercase, and cursive writing can only be compared to cursive writing.



e. **Distortion** or **disguised** writing

- a. The writing on the questioned document or the known sample may be too distorted or disguised. For example, **graffiti** on a wall may be considered distorted and cannot be compared to a suspect’s normal handwriting.



f. **Graphology**

- i. Forensic document examiners do **not** make any determination of the psychological state or **personality** of a suspect from their handwriting.

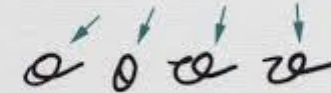
1. Graphology is the pseudo-science involved in producing a personality profile of the writer by examining the characteristics, traits and strokes of an individual's handwriting. This is a controversial practice conducted by a handwriting analyst called graphologist that is not usually associated with the practice of forensic document examination.

What does your
HANDWRITING say
about YOU?



Revealed by t and d- stems shaped like a tepee or upside down "V". The more this letter is braced, the more this person is braced to his own ideas. Stubborn people rarely admit they are wrong, and don't want to be confused with the facts after they have made up their minds.

stubborn



Circles within circle letters on the right hand side. The larger the inner loop is, the more secrets this person will withhold from others. If the inner loop is huge, this person will try to avoid giving you a complete answer.

secretive



Shown by the t-bar crossed very low on the stem. This person fears failure and fears change, thus sets goals with low risk. He remains in bad situations much too long and finds imperfections with himself. He is rarely successful in his own eyes.

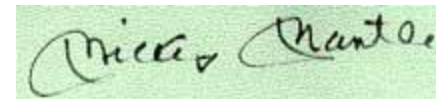
low self-esteem

FORGERY



- a. Forgery is a process used by criminals to make, alter, or **falsify** a person's signature or a document with the intent to **deceive** another person.

- Forged documents can include:
 - ✓ Checks
 - ✓ Employment records
 - ✓ Legal agreements
 - ✓ Licenses
 - ✓ Wills
 - ✓ Artwork
 - ✓ Autographs on sports memorabilia

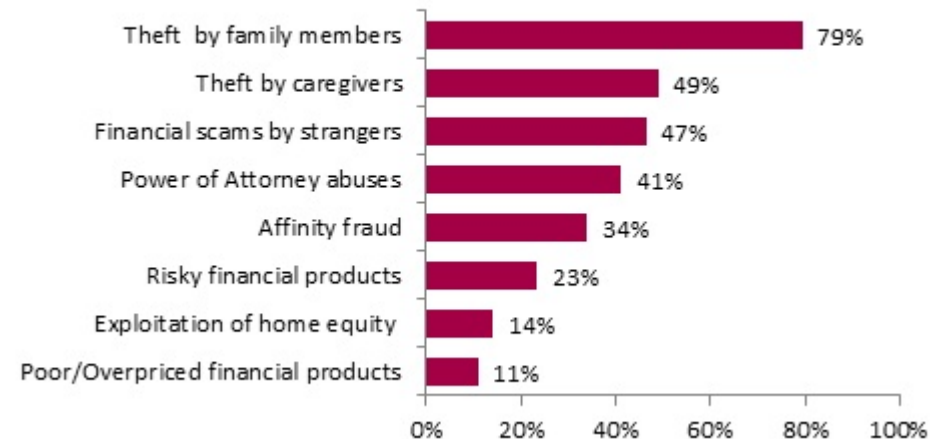


FRAUDULENCE

- b. When a material gain accompanies a forgery, it is called fraudulence.
- c. In cases of forgery, a document expert will determine whether the document is forged, then a judge or jury will determine if the writer's intent was to defraud.



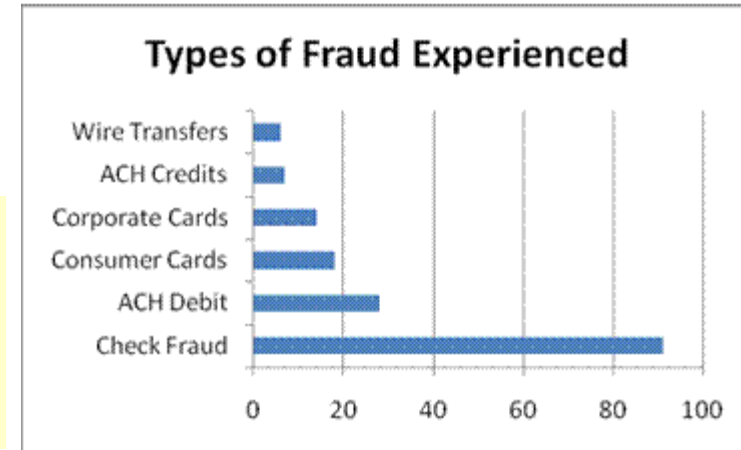
Common Types of Fraud Targets Americans 62+



COMMONLY FORGED DOCUMENTS

➤ CHECKS

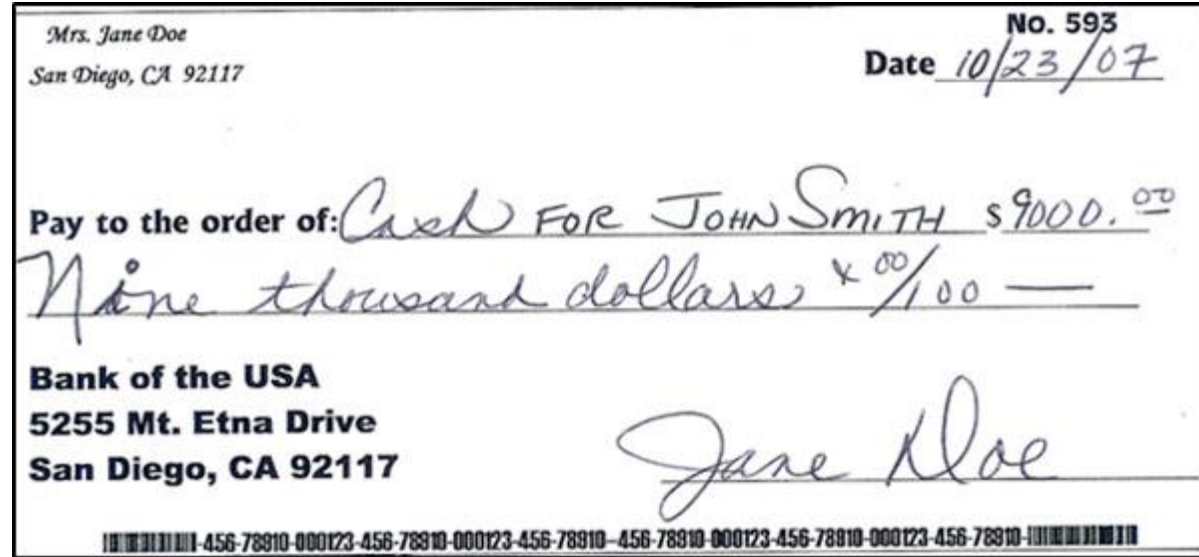
- It is estimated that **27 million** dollars in illegitimate checks are cashed daily!



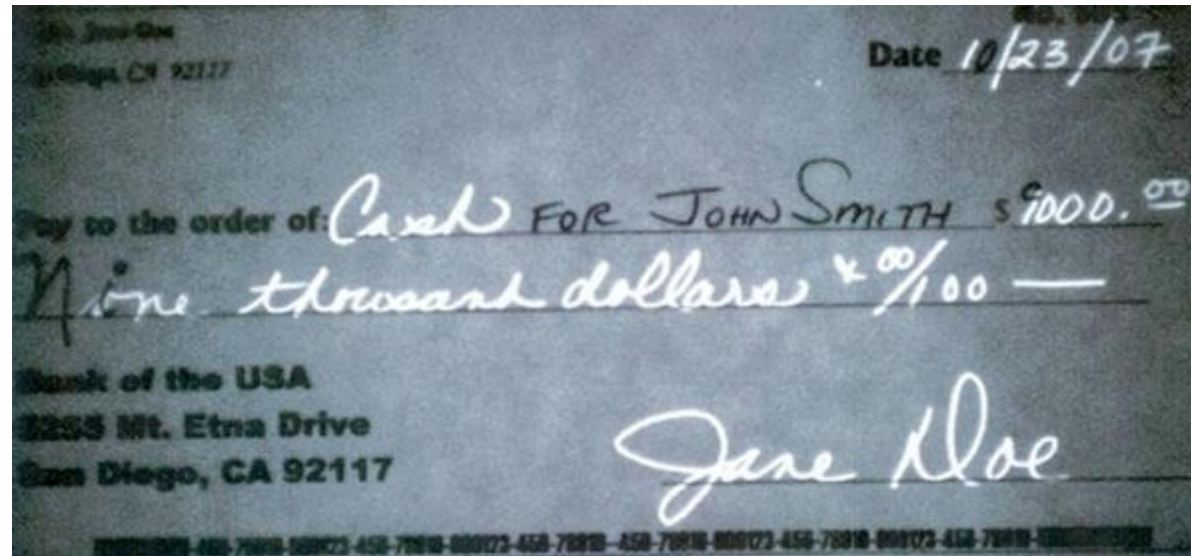
1. Criminals will order someone else's checks from a deposit slip, alter checks, intercept someone else's check to alter and cash, and can even create forged checks from scratch



**EXAMPLE
OF A
FRAUDULENT
CHECK**



Altered check viewed with Infrared radiation:



A check made out to "Cash" for \$1,000 has been altered by changing the "1" to a "9" and adding a recipient's name.

2. Gatherings of large numbers of people are ideal for the passing of fraudulent checks and counterfeit money.



a. It has been estimated that at the Atlanta, XXVI Olympic Games in 1996, there were over \$4 million fraudulent travelers checks alone, not to mention the printing of phony tickets for events.

“Buying tickets that don't exist from fraudsters is one of the most common online scams.”

- [U.S. News](#)



- ii. Credit card fraud
 - 1. Can include theft of cards or numbers
- iii. Identity fraud
 - 1. Social Security cards and numbers, driver's license, birth certificate, etc.



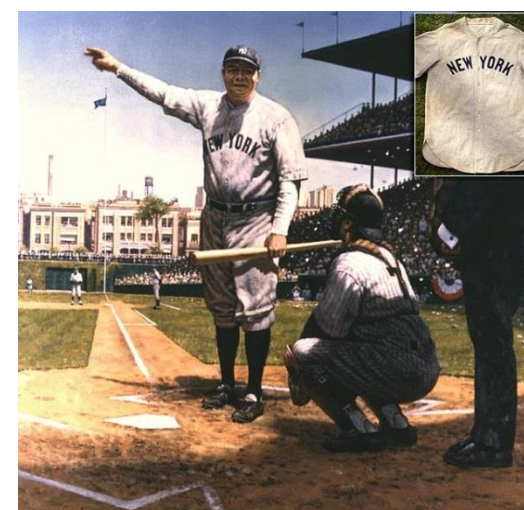
iv. Art forgery

1. Art forgery is the creating and selling of works of art which are falsely credited to other, usually more famous, artists.
2. Art forgery can be extremely **lucrative**, but modern dating and analysis techniques have made the identification of forged artwork much simpler.
3. The most faked artist in history is a French landscape painter, Jean-Baptiste-Camille **Corot** (1796–1875). In 1957 the Guardian in London noted that “Corot painted 5,000 works, of which 10,000 were in the United States”.



v. Sports memorabilia fraud

1. Sports memorabilia is a \$1 billion dollar per year industry and that explains why the fraudsters are interested in it; there is money to be made. The growth of the Internet and online **auction** sites make it easy to find and buy autographed sports memorabilia.
2. In general, the more **popular** the player is, the more fakes and forgeries there are.



Babe Ruth 1932 “Called Shot” Jersey \$940,000



Babe Ruth Bat from First Home Run at Yankee Stadium (1923) \$1,265,000



Mark McGwire’s 70th Home Run Ball (1998) \$3 million



Muhammad Ali’s Boxing Gloves from 1965 Fight Against Floyd Patterson \$1.1 million

3. The FBI has estimated that anywhere between 70 and 90 percent of all autographed sports memorabilia in the marketplace today is bogus. This statistic was recently collaborated on a 60 Minutes Sports segment in which Brandon Steiner, CEO and founder of Steiner Sports said that, in his estimation, collectors have a 35 percent chance of purchasing an authentic piece of autographed sports memorabilia online.



➤ LITERARY DOCUMENTS

letters from famous world figures, scientists, and authors



1. Quality forgeries aim to duplicate the materials found in the original

- a. Aged paper can be found in old books
- b. Materials can also be chemically treated to look older
- c. Inks from materials at that time
- d. Watermarks to add the appearance of age
- e. Use of styles and tools that were popular at the time



1983 German news magazine Stern issued a press release for what it promised was "the most important historical event of the last ten years" claiming it had discovered the personal diary of Adolf Hitler. Less than two weeks after *Stern's* initial announcement, forensics experts denounced the diaries as a "crude forgery." Careers were ruined and people went to jail. When all the dust settled, the diaries turned out to be one of the most expensive fakes in history.

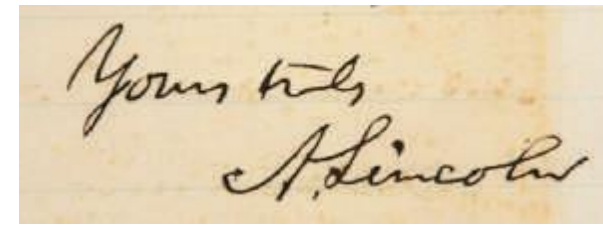
➤ Letters or other documents written by famous people can be very valuable:

- Adolf Hitler (signature: \$2000)
- Albert Einstein ([letter](#): \$404,000)
- Charles Darwin (letter: \$20,000)
- Abraham Lincoln (1864 [letter](#): \$3.4 million)
- Theodore Roosevelt (letter: \$8500)

Einstein Letter
wrote in 1954
to the
philosopher
Eric Gutkind
about God Sells
for \$404,000.

Auffassung der Naturreligionen wird im Prinzip durch Monopolisierung
nicht aufgehoben. Durch solche Monopole können wir uns zu einer
gewissen Selbsttäuschung gelangen; aber unsere moralischen Bestrebungen
werden durch sie nicht gefördert. Das ist das Gegenteil.
In dem ^{letzten} Briefe habe ich Ihnen nun ganz offen unsere Differenzen
in der ^{intellektuellen} Überzeugungen ausgesprochen habe, ist es mir doch
klar, dass wir uns nur Wesentlichem ganz nahe stehen,
nämlich in der Beurteilung menschlichen Verhaltens.
Das Trennende ist nur intellektuelles Beiwerk oder die
„Rationalisierung“ in Französischer Sprache. Deshalb denke
ich, dass wir uns recht wohl verstehen würden, wenn wir
uns über konkrete Dinge unterhielten.
Mit freundlichem Danke noch besten Wünschen
Ihr A. Einstein.

TYPES OF FORGERY



- i. **Freehand** – written with no knowledge of the appearance of the original; usually someone just writing and trying to pass it off as something else
- ii. **Simulation**- attempt to copy a signature or handwriting sample from a genuine article by trying to imitate the handwriting of the original
- iii. **Tracing**-placing a new document over the original and tracing it

Tracing a signature is a sure sign of forgery!

PRINCIPLE OF NATURAL VARIATIONS

- o *No two specimens of writing prepared by one person are ever identical in every detail. Thus a document forged by tracing an authentic sample of writing or a signature can often be detected even if the original and the tracing coincide exactly, because no one ever writes the same words or signs two signatures exactly alike.*

Chart 1: Illustration Showing that the Q1 Signature is a Reproduction of the Q2 Signature

Image 1: Q1: December 5, 1996

Francis Mc Neil
Signature of Life Insurance Annuitant

Q2: October 6, 1992

Francis Mc Neil
SIGNATURE OF MEMBER

Image 2: The Q1 signature has been enlarged by 107% to account for differences in size that result from facsimile transmission. The signatures have been off-set slightly to demonstrate the similarities between the original and the facsimile.

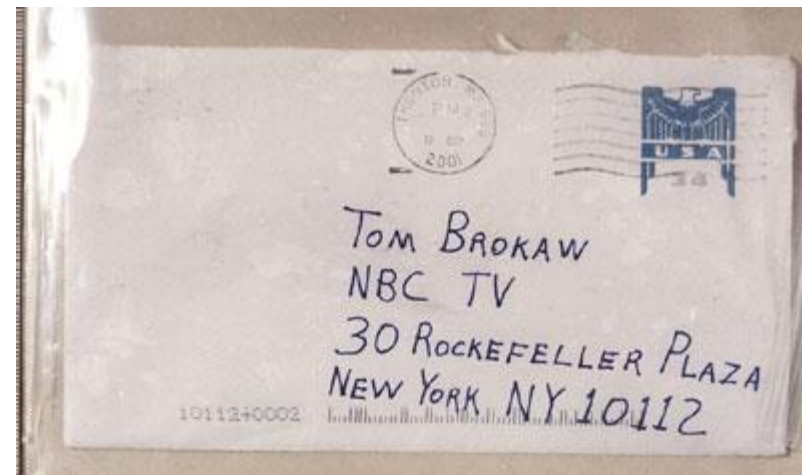
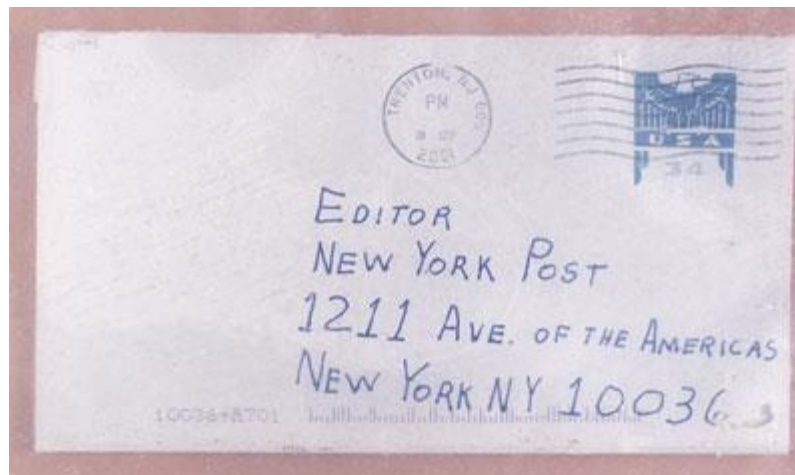
Francis Mc Neil
Signature of Life Insurance Annuitant

Image 3: The Q1 signature registers perfectly with the Q2 signature. Note that even the pre-printed signature lines align.

Francis Mc Neil
Signature of Life Insurance Annuitant

iv. Disguised writing- Attempting to alter writing so it cannot be traced back (Ex. Ransom note or threat)

THIS IS A HOLDUP!!
EVERYBODY BE CLAM-
I HAVE A GUN!!!
BE QUIET & NO ONE
GETS HURT!



2001 Anthrax Letters: Through handwriting analysis, the F.B.I. was able to conclude that each of the letters was written by the same person.

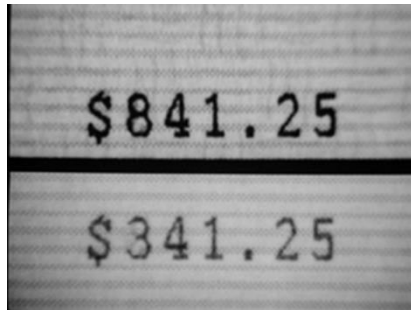
iv. **Alteration** - Removing, adding, or changing a portion of the original.

FOUR WAYS TO ALTER:

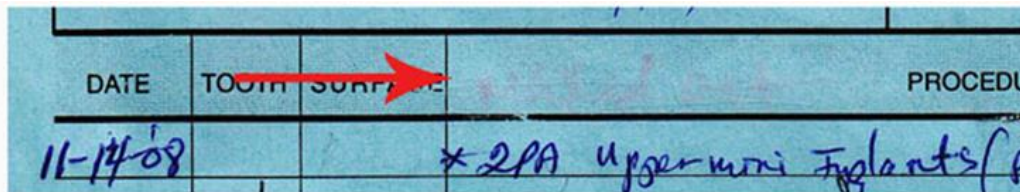


a. **Erasures**

i. Using an **eraser**, knife, **sandpaper**, or sharp tool to erase part of a document

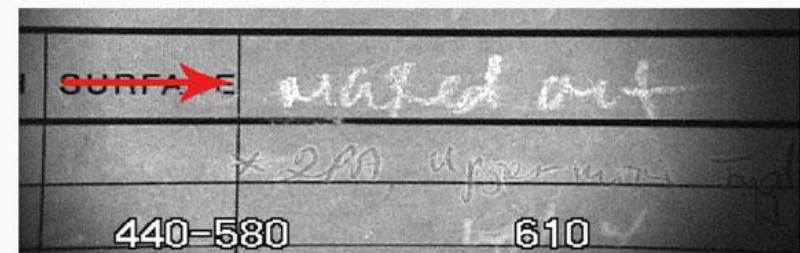


- This is the most common ways to alter a document .
- Erasures create a disturbance in the upper fibers of the paper and is apparent under a microscope.
- The original writing may not be visible but ink might still remain on the paper.



Erasure in dental chart - after the patient's insurance had "maxed out," he was told to find a new dentist

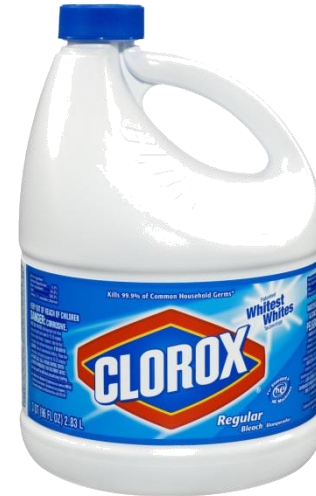
A scan of the original shows evidence of an erasure



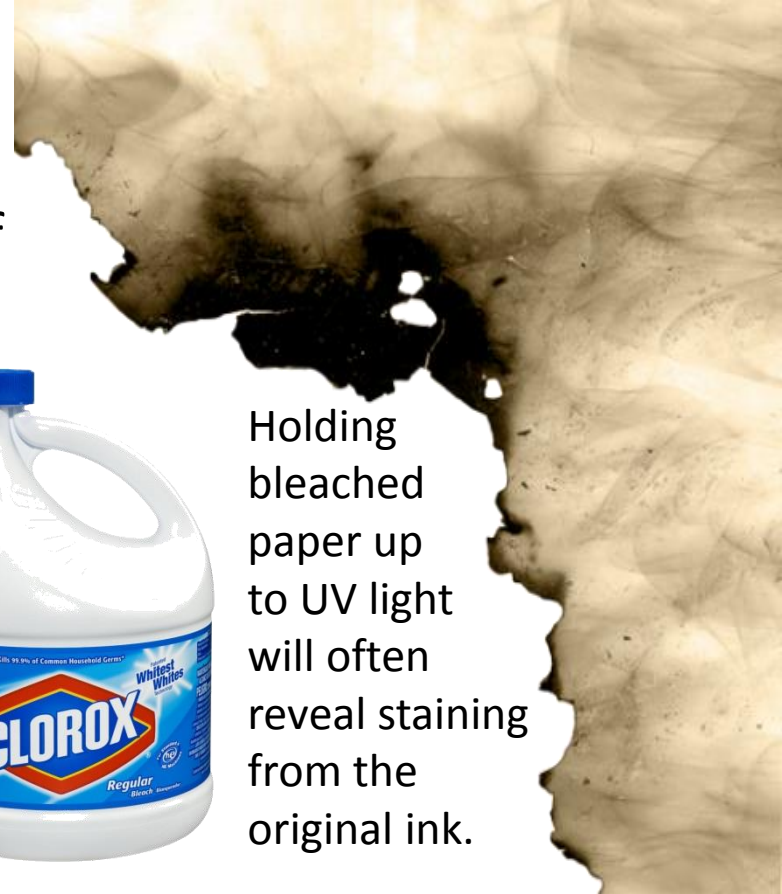
Examination with infrared light and an additional light source clearly brings out the erased words

b. Obliterations

i. Burning, bleaching, or using a laser to get rid of a document.



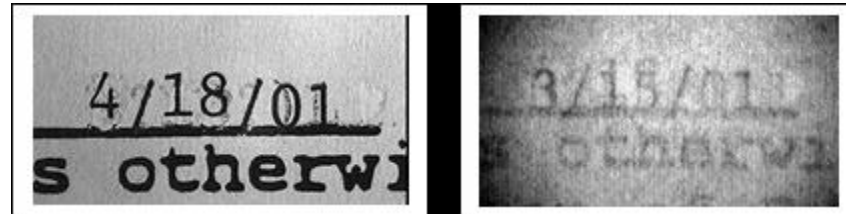
Holding bleached paper up to UV light will often reveal staining from the original ink.



- Obliteration can also include the crossing out or whitening out of original material to make it unreadable.
- Generally, obliteration does not signal fraudulent activity, since there is usually no attempt to disguise that an alteration has happened.

c. **Alterations**

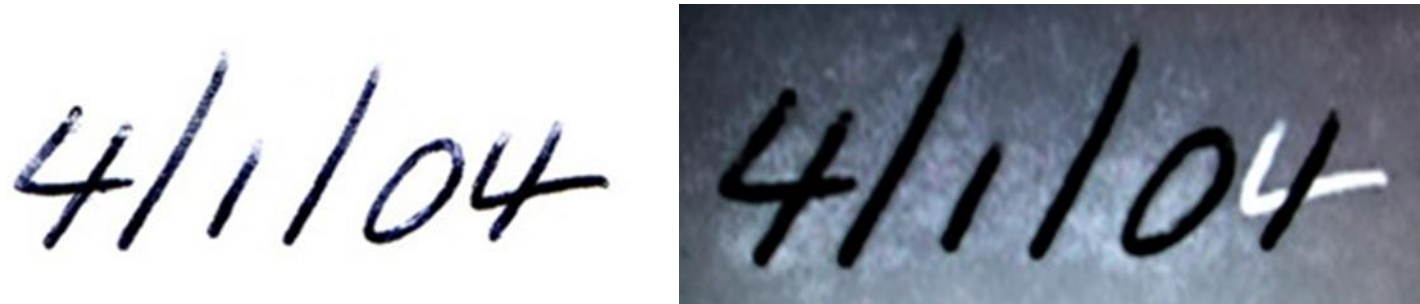
- i. Adding or changing words, dates, and numbers



Left is the questioned document which is clearly an overtyping of a previous date. On right the original date has been revealed. This case involved a contract dispute, and the difference in dates was significant.

d. **Overwriting**

- i. Overwrites a portion of the document, for example changing a **4** to a **9**



COUNTERFEIT

- a. Counterfeiting is the production of an imitation of currency, artwork, documents, and name-brand knock-off items for the purpose of deception.
- b. Common counterfeited items include currency, traveler's checks, food stamps, bonds, postage stamps, and birth certificates.



COUNTERFEIT CURRENCY

- i. Counterfeiting money is one of the **oldest** crimes. Following the Civil War, it was estimated that 1/3 to 1/2 of the currency in circulation was counterfeit.
- ii. The **Secret Service** was established in 1865 to suppress counterfeiting. It is in charge of investigating counterfeit US currency, a crime that is punishable with up to **15** years in prison.
 1. In 1901, the Service was tasked to **protect** the President.

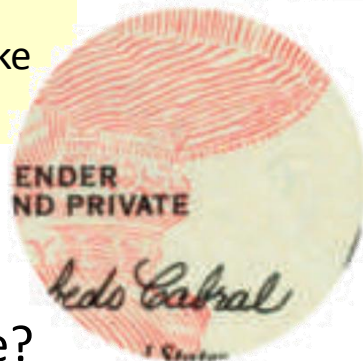


- iii. In 1996 the government started adding security features are added to paper currency that scanning cannot reproduce.

The U.S. government estimates that less than 0.01% of U.S. paper currency in circulation is counterfeit.

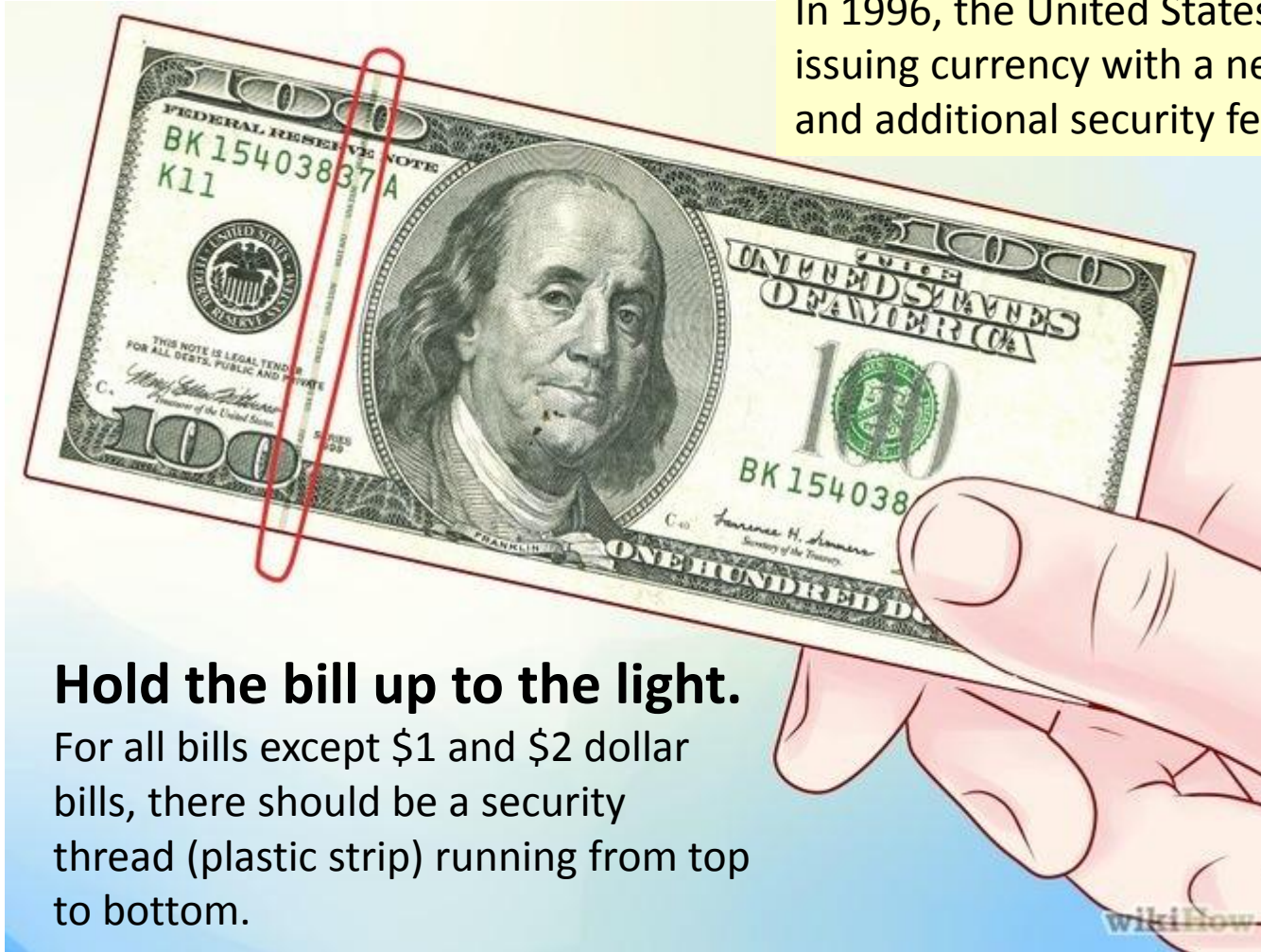
\$1 and \$2 bills have fewer security features than other bills because counterfeiters rarely try to make these bills.

[Link](#): How is Money Made?



OBSERVING SECURITY FEATURES

In 1996, the United States began issuing currency with a new design and additional security features.



Hold the bill up to the light.

For all bills except \$1 and \$2 dollar bills, there should be a security thread (plastic strip) running from top to bottom.

- The printing should say "USA" followed by the denomination of the bill, which is spelled out for \$10 and \$20 bills but presented in numerals on the \$5, \$50 and \$100 bills.
- These threads are placed in different places on each denomination to prevent lower-denomination bills being bleached and reprinted as higher denominations.

- iv. Subtle background colors and other security features such as small nylon threads and plastic security strips have been added to discourage counterfeiting.



CROSS-CHECK Multiple security features—including a watermark, color-shifting ink, microprinting of "USA 10" next to the torch, and a plastic strip that glows orange in ultraviolet light—can be used to authenticate the newest \$10 bill.

Use an ultraviolet (black) light to look at security threads.

- **Plastic strips in high-denomination bills should glow a specific color.**
- The \$5 dollar bill should glow blue; the \$10 bill should glow orange; the \$20 bill should glow green; the \$50 bill should glow yellow; the \$100 bill should glow pink.
- If your bill remains white under a black light, it is likely a counterfeit.



- iv. Regular printer paper contains starch; Paper currency contains rag fiber instead of starch.
 - 1. Not only does counterfeit paper often feel different, but it can easily be tested with an iodine pen that turns bluish-black when in contact with starch in the counterfeit paper.

A counterfeit-detection pen can give false-negatives on real money that has been through the wash.



- 2. However some criminals will bleach \$1 bills and print higher values on them to beat this test so the government has added additional security features, including security thread, special fibers woven throughout, watermarks, and special designs that are hard to replicate.

Tilt the bill to examine the color-shifting ink. Color shifting ink is ink that appears to change color when the bill is tilted.

- Color-shifting ink can be found on \$100, \$50 and \$20 dollar bills series 1996 and later, and on \$10 dollar bills series 1999 and later.
- \$5 and lower bills do not yet have this feature. The color originally appeared to change from green to black, but it goes from copper to green in recent redesigns of the bills.



Examine the micro-printing. This includes small words or numbers that are hardly visible to the naked eye and cannot be read without a magnifying glass.

1. Beginning in 1990, very tiny printing was added to certain places on \$5 and higher denomination bills.
2. Don't worry about a specific location. Since micro-printing is hard to duplicate, counterfeits usually tend not to have any.
3. Counterfeits with micro-printing tend to have blurred letters or numbers. On a genuine bill, the micro-printing will be crisp and clear.



Check for watermarks. Use natural light to see if your bill bears an image of the person whose portrait is on the bill.

- Hold the bill up to a light to check for a watermark. A watermark bearing the image of the person whose portrait is on the bill can be found on all \$10, \$20, \$50, and \$100 bills series 1996 and later, and on \$5 bills series 1999 and later.
- The watermark is embedded in the paper to the right of the portrait and should be visible from both sides of the bill.



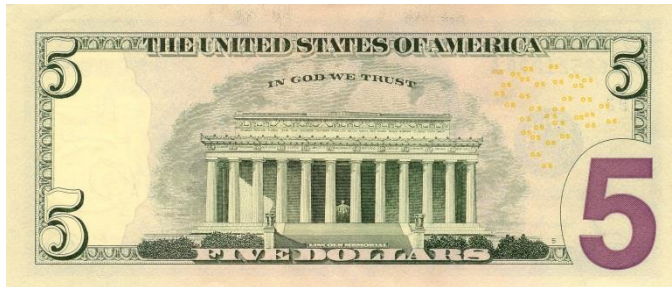
In 2008 the \$5 got a redesign with the portrait watermark replaced by a "5" and the security thread being moved from left of the portrait to the right.

Quiz: Who Fits The Bill?



Who is on \$1?

George Washington
(1st U.S. President)



Who is on \$5?

Abraham Lincoln
(16th U.S. President)



1. Alexander Hamilton



a. 4



2. Andrew Jackson



b. 1



3. Ulysses S. Grant

Large U.S. dollar bills (\$500+) aren't printed anymore, but a few of them still remain in circulation. [Link](#)



4. Benjamin Franklin



d. 2



5. James Madison



e. 3

Who is on our Currency?			
\$1		George Washington 1st U.S. President	The Great Seal of the United States
\$2		Thomas Jefferson 3rd U.S. President	Signing of the Declaration of Independence or Monticello
\$5		Abraham Lincoln 16th U.S. President	Lincoln Memorial
\$10		Alexander Hamilton 1st U.S. Treasury Secretary	U.S. Treasury
\$20		Andrew Jackson 7th U.S. President	The White House
\$50		Ulysses S. Grant 18th U.S. President	U.S. Capitol
\$100		Benjamin Franklin	Independence Hall

