



Fingerprint and Questioned documents

By

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Fingerprint

What is fingerprints -

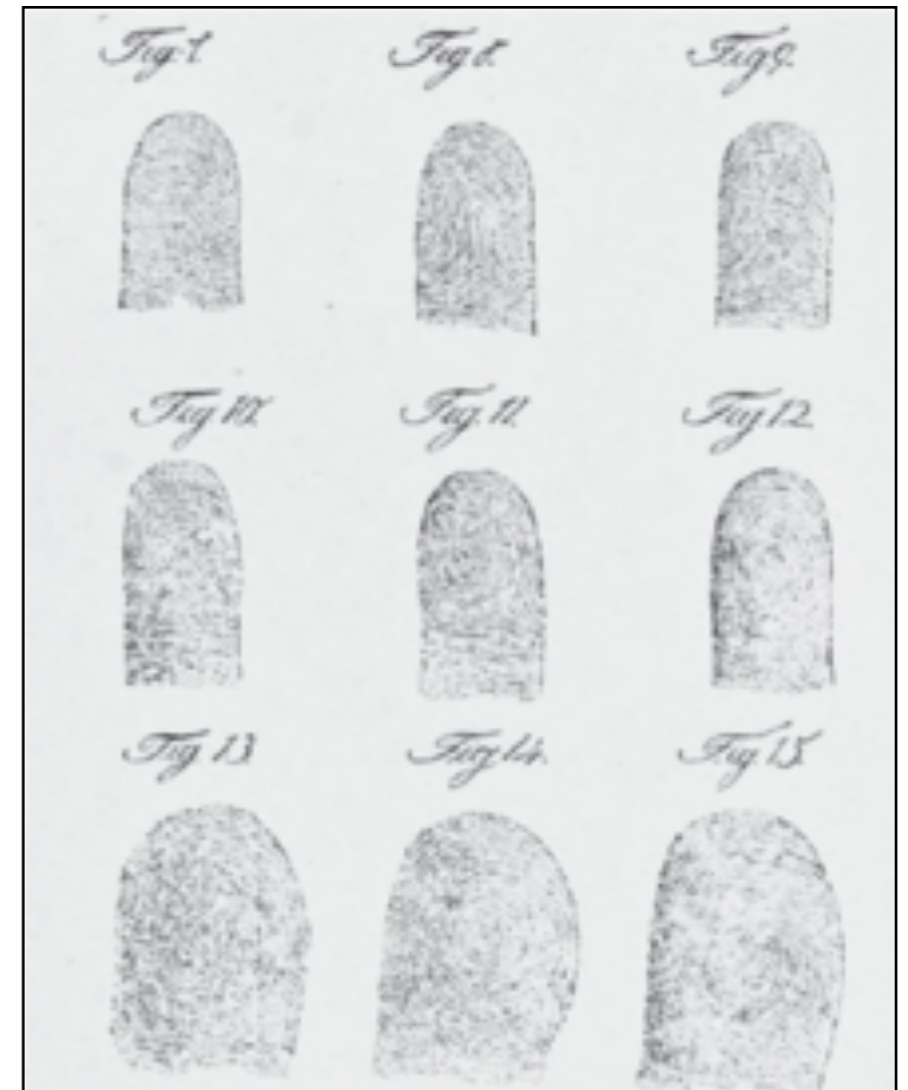
Fingerprint identification, known as Dactyloscopy. A fingerprint is an impression left by the friction ridges of a human finger. The recovery of partial fingerprints from a crime scene is an important method of forensic science. Fingerprint records normally contain impressions from the pad on the last joint of fingers and thumbs, though fingerprint cards also typically record portions of lower joint areas of the fingers.

Human fingerprints are detailed, nearly unique, difficult to alter, and durable over the life of an individual, making them suitable as long-term markers of human identity.

History

In 1892 Juan Vucetich, an Argentine chief police officer, created the first method of recording the fingerprints of individuals on file.

19th century - In 1823 Jan Evangelista Purkyně identified nine fingerprint patterns. The nine patterns include the tented arch, the loop, and the whorl, which in modern-day forensics are considered ridge details.



Patterns

The fingerprint pattern, such as the print left when an inked finger is pressed onto paper, is that of the friction ridges on that particular finger. Friction ridge patterns are grouped into three distinct types—loops, whorls, and arches—each with unique variations, depending on the shape and relationship of the ridges:

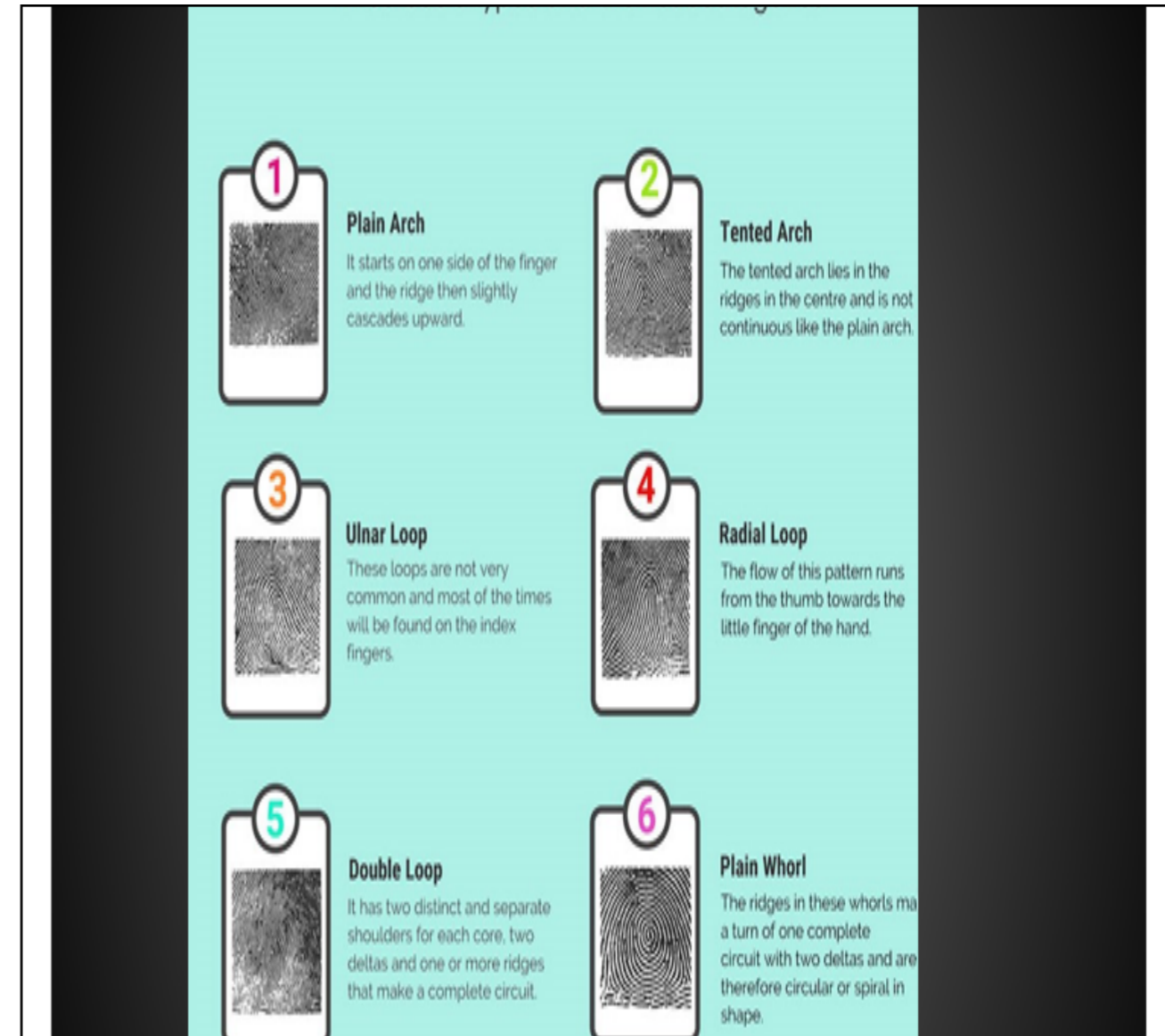
Loops - prints that recurve back on themselves to form a loop shape. Divided into radial loops and loops account for approximately 60 percent of pattern types.



Whorls - form circular or spiral patterns, like tiny whirlpools. There are four groups of whorls: plain, central pocket loop, double loop and accidental loop. Whorls make up about 35 percent of pattern types.



Arches - create a wave-like pattern and include plain arches and tented arches. Tented arches rise to a sharper point than plain arches. Arches make up about five percent of all pattern types.

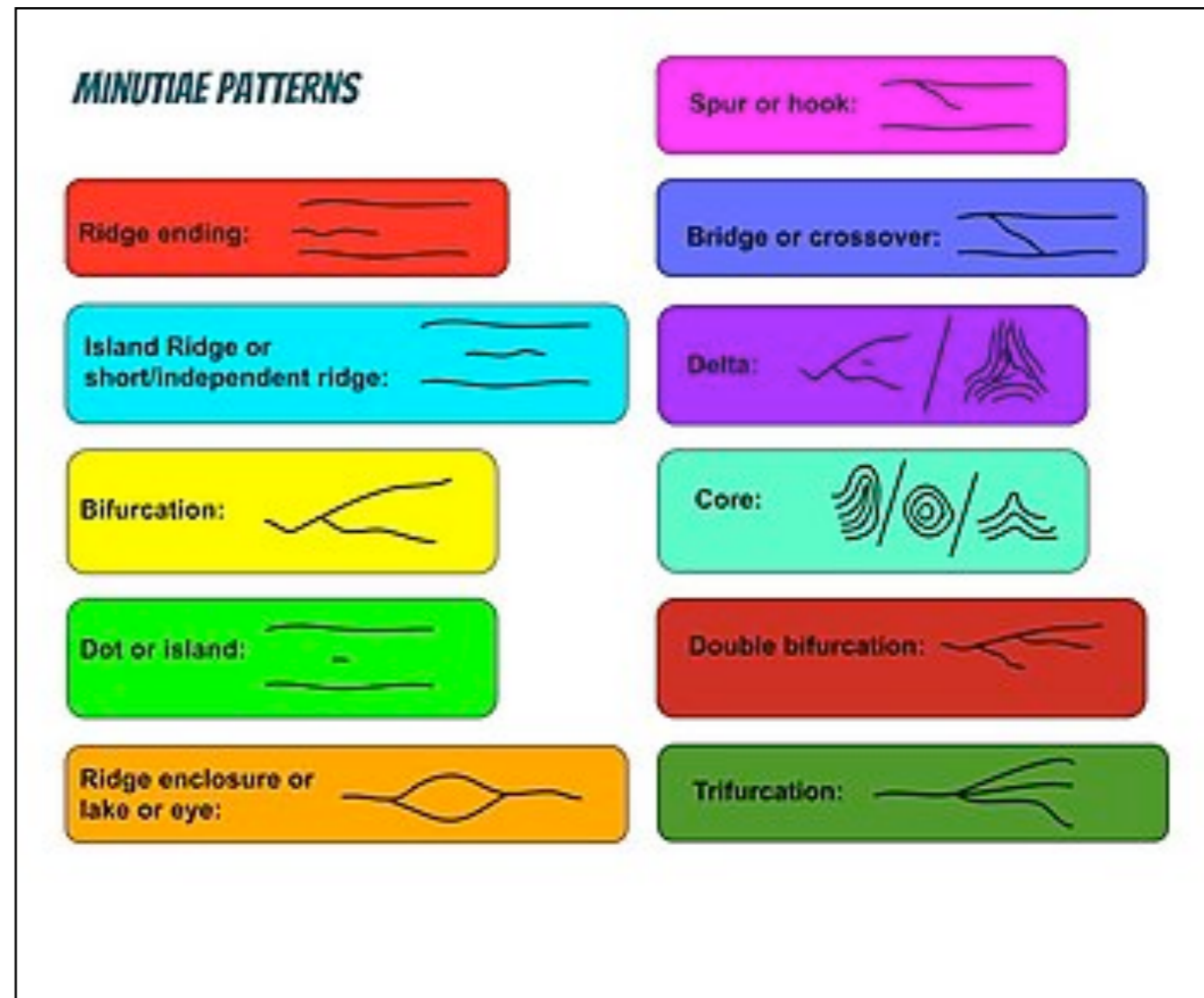


Minutiae features

Minutiae points are the major **features** of a **fingerprint** image and are used in the matching of **fingerprints**. These **minutiae** points are used to determine the uniqueness of a **fingerprint** image.

Features of fingerprint ridges, called *minutiae*, include:

- **ridge ending**: The abrupt end of a ridge
- **bifurcation**: A single ridge dividing in two
- **short or independent ridge**: A ridge that commences, travels a short distance and then ends
- **island or dot**: A single small ridge inside a short ridge or ridge ending that is not connected to all other ridges
- **lake or ridge enclosure**: A single ridge that bifurcates and reunites shortly afterward to continue as a single ridge
- **spur**: A bifurcation with a short ridge branching off a longer ridge
- **bridge or crossover**: A short ridge that runs between two parallel ridges
- **delta**: A Y-shaped ridge meeting
- **core**: A circle in the ridge pattern



Latent fingerprint detection

Latent prints are impressions — usually invisible to the naked eye — often left at crime scenes that are produced by the ridged skin on human fingers, palms, or soles of the feet.

30-Year-Old (1978) Murder Solved - Fingerprint Technology Played Key Role



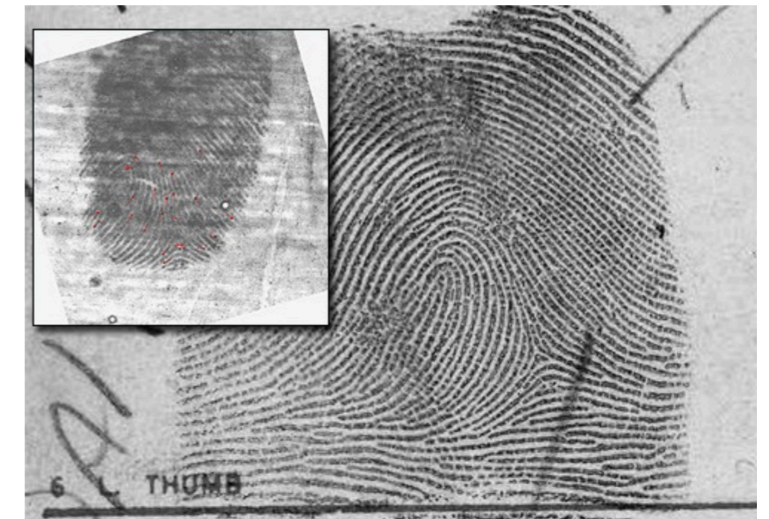
The crime: In 1978, 61-year-old Carroll Bonnet was stabbed to death in his apartment. Police collected evidence, including latent fingerprints and palm prints from the victim’s bathroom. The victim’s car was then stolen. The car was found in Illinois, but after collecting additional latent prints, investigators couldn’t develop any new leads. The crime scene evidence was processed, and latent prints recovered from the scene and the car were searched against local and state fingerprint files. Investigators also sent fingerprint requests to agencies outside Nebraska, but no matches were returned and the case soon went cold.

The re-investigation: In late 2008, the Omaha Police Department received an inquiry on the case, prompting technician Laura Casey to search the prints against IAFIS (which didn’t exist in 1978). In less than five hours, IAFIS returned possible candidates for comparison purposes. Casey spent days carefully examining the prints and came up with a positive identification—Jerry Watson, who was serving time in an Illinois prison on burglary charges.

The case was officially re-opened and assigned to the cold case squad’s Doug Herout. Working with laboratory technicians and analysts, Herout reviewed the original evidence from the case, including a classified advertisement flyer with “Jerry W.” scribbled on one of the pages. Watson was just days away from being released from prison.

Herout presented Watson with an order to obtain a DNA sample. Subsequent testing determined that Watson’s DNA matched DNA recovered at the crime scene, a finding that — combined with Watson’s identified prints — resulted in murder charges and a conviction. On October 17, 2011, 33 years to the day that Bonnet’s body was discovered and his killer was sentenced to life in prison.

It’s yet another example of the vital role that technology plays in getting dangerous criminals off our streets.



A latent thumbprint from the crime scene (inset) was matched to this IAFIS record.

Questioned documents

Forensic **Document** Examiners define a '**questioned document**' as any material that contains marks, symbols or signs intended to communicate a message.

A question documents is defined as the document whose authenticity is challenged on a number of grounds; or a document or. Part of document become a questioned document when its sources of origin is doubtful or under question. Such documents are also known as 'disputed' or 'contested' documents.

Legal definition - Both Indian Evidence Act and Indian Penal Code define documents -

Indian Evidence Act -

According to Section 3 of Indian Evidence Act (I) of 1872, a document may be defined as “Documents means any matter expressed or described upon any substance by means of letters, figures or marks or by more than one of those means, indented to be used or which may be used for purpose or recording that matter.”

Section 29 in The Indian Penal Code

“Document” - The word ‘document’ denotes any matter expressed or described upon any substance by means of letters, figures, or marks, or by more than one of those means, intended to be used, or which may be used, as evidence of that matter.

Most common questioned documents are - Letters, Cheques, Contracts, Wills, Lottery tickets, Historical documents, posters, books, burnt documents.

Cases involved - Forgery, Counterfeiting, suicide (Notes), Homicide, Serial Murder etc.

THE HOWLAND WILL CASE



Hetty Robinson (Green)
(the Niece)



Sylvia Ann Howland
(the Aunt)

The **Howland will forgery trial** (*Robinson v. Mandell*) was a U.S. court case in 1868 where businesswoman Henrietta "Hetty" Howland Robinson, who would later become the richest woman in America, contested the validity of the will of her aunt, Sylvia Ann Howland.

According to Howland's will, half of her \$2 million estate (equivalent to \$33,404,000 in 2019) would go to various charities and entities, the rest would be in a trust for Robinson. Robinson challenged the will's validity by producing an earlier will that left the entire estate to Hetty, and which included a clause invalidating any subsequent wills.

History - Case Study

Sylvia Ann Howland died in 1865, leaving roughly half her fortune of some 2 million dollars (equivalent to \$33,404,000 in 2019) to various legatees, with the residue to be held in trust for the benefit of Robinson, Howland's niece. The remaining principal was to be distributed to various beneficiaries on Robinson's death.

Robinson produced an earlier will, leaving her the whole estate outright. To the will was attached a second and separate page, putatively seeking to invalidate any subsequent wills. Howland's executor, Thomas Mandell, rejected Robinson's claim, insisting that the second page was a forgery, and Robinson sued.

The case was ultimately decided against Robinson after the court ruled that the clause invalidating future wills and Sylvia's signature to it were forgeries. The court ruled that Robinson's testimony in support of Howland's signature was inadmissible as she was a party to the will, thus having a conflict of interest. The case is one of a series of attempts to introduce mathematical reasoning into the courts.

Conclusion

Fingerprint identification is one of the **most important** criminal investigation tools due to two **features**: their persistence and their uniqueness. A person's **fingerprints** do not change over time. The friction ridges which create **fingerprints** are formed while inside the womb and grow proportionally as the baby grows. **Fingerprint** evidence can play a crucial **role** in **criminal investigations** as it can confirm or disprove a person's identity.

Fingerprint evidence rests on two basic principles:

- A person's "friction ridge patterns" (the swirled skin on their fingertips) don't change over their lifetimes.
- No two people have the same pattern of friction ridges. Even identical twins have different **fingerprints**.

One of the most **important** uses for **fingerprints** is to help investigators link one crime scene to another involving the same person. **Fingerprint** identification also helps investigators to track a criminal's record, their previous arrests and convictions, to aid in sentencing, probation, parole and pardoning decisions.