

# Criminology essays - fingerprints science crime



## **Fingerprints Science Crime**

“ Discuss the importance of fingerprints within forensic science citing appropriate examples”

Fingerprints have always been a form of identification. This is probably the reason why fingerprints have supplanted most methods of identifying criminals that deny ever being arrested or even committing the crime. Identifying fingerprints has become a science and it also stands out to many other forensic sciences ( [www. onin. com](http://www.onin.com)).

The science of fingerprints, has helped many governments around the world, presenting them with correct discovery of criminals ([www. onin. com](http://www.onin.com)). There are millions of people on this planet and never have 2 fingerprints been found that are alike within humans and automated computer comparisons ([www. onin. com](http://www.onin.com)).

No 2 humans have the same finger, palm or footprint. These parts of the human body have ridges that are constantly broken up by endings or forks, these are called characteristics ([www. south-wales. police. uk](http://www.south-wales.police.uk)). Every person has unique distributions of the characteristics that build up in womb and through out life in general, these characteristics stay the same for a time after death too so it makes identifying a body possible ([www. south-wales. police. uk](http://www.south-wales.police.uk)).

People have often tried to alter their fingerprints with different methods like cutting their fingerprints, burning the skin with acid but that doesn't work

because, superficial skin damage is repaired by the body so the same ridges come back with the new skin that forms (www. south-wales. police. uk).

Fingerprints are formed by our skin and our skin is made out of two layers, dermis and epidermis (www. south-wales. police. uk). The epidermis is a thin layer and it is a protective cover of the dermis which is the thicker layer of skin that contains sweat and sebaceous glands (www. south-wales. police. uk).

Now a sweat gland, consists of salt, water and urea and the sebaceous gland releases oils on the skin surface (www. south-wales. police. uk). When we come in contact with something, we leave a mark because of the products that are produced by the glands, resulting in a fingerprint mark (www. south-wales. police. uk). When our fingers are dirty or even oily, then our fingerprints can be visible (www. south-wales. police. uk).

When going to a crime scene, you often stumble upon fingerprints.

Fingerprints, are very valuable evidence when identifying a suspect. If the prints are in sequence, you can very easily identify the hand or finger of origin. Unfortunately, fingerprints collected at a crime scene are rarely in sequence and customarily incomplete as a consequence, it is very difficult to define which hand left the print. So these types of fingerprints are called latent fingerprints (www. south-wales. police. uk). Now latent fingerprints can be left on all surfaces including skin and there are different ways to detect and make them visible like different powders, alternate lights and lasers (www. south-wales. police. uk).

There are more types of prints like visible prints, that are also referred to as patent prints and these prints are apparent to the naked eye because they are normally found in blood or something that would make a mold of the print ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)). When a finger comes in contact with dirt, ink or grease and then the finger touches a smooth surface then there is a visible impression of the ridge ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)).

Another type of prints are called impressed prints or plastic prints, these prints are basically an indentation that is left in a soft surface like wax, paint or clay, they are visible prints that you can look at and photograph ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)).

There are different patterned fingerprints, one of these is called Arches ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)). 5 % of fingerprint patterns are arches, the ridges of the skin go from side to side without making a backward turn ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)).

Normally, there is no delta in an arch outline but where there a delta, no re-curving ridge must interfere among the core and delta points ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)). Even with in patterns, there are pattern, there are four kinds of arch patterns: plain arches, radial arches, ulnar arches and tented arches ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)). Plain arches have an smooth run of ridges from one area to the other of the outline, no “ major up thrusts” and the ridges go into on one part of the impression, and run out the other with a increase or wave in the middle ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)).

The ridges of radial arches incline towards the thumb; they have one delta and no re-curving ridges ([www. virtualsciencefair. org](http://www.virtualsciencefair.org)). On ulnar arches, the  
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ridges incline towards the small finger, they also have one delta and no re-curling ridges (www. virtualsciencefair. org). Tented arches have an angle, an up thrust, or two of the three basic characteristics of the loop. They don't flow the same way that plain arches do and above all have " significant up thrusts" in the ridges near the middle that position themselves on both sides of a spine towards which the bordering ridges meet and come out to form tents (www. virtualsciencefair. org).

Another fingerprint pattern are the Loops, they occur in about 60-70 % of the fingerprint patterns encountered (www. virtualsciencefair. org). The ridge enters on either side of the impression, re-curve, and touches or crosses the line that forms from the delta to the core and finishes on or in the course of the side where the ridge or ridges entered (www. virtualsciencefair. org).

Each loop outline has one delta and one core and has a ridge count (www. virtualsciencefair. org). " Radial loops are named after the radius, a bone in the forearm that joins the hand on the same side as the thumb" (www. virtualsciencefair. org). The run of the pattern in radial loops runs in the route of the radius (toward the thumb) (www. virtualsciencefair. org).

Radial loops are not very frequent and on most occasions radial loops will be found on the index fingers (www. virtualsciencefair. org). " Ulnar loops are named after the ulna, a bone in the forearm" (www. virtualsciencefair. org). " The ulna is on the same side as the little finger and the flow of the pattern in a ulnar loop runs in the direction of the ulna (toward the little finger)" (www. virtualsciencefair. org).

Whorls are found in about 25-35 % of fingerprint patterns dealt with (www. virtualsciencefair. org). “ In a whorl, some of the ridges make a turn through at least one circuit” (www. virtualsciencefair. org). Any fingerprint outline that has 2 or more deltas is considered a whorl pattern (www. virtualsciencefair. org). There are four types of whorl patterns, Plain whorls that have of one or more ridges which make a complete circuit with two deltas, and causes an imaginary line drawn and at least one re-curving ridge within the inner outline area is cut or touched (www. virtualsciencefair. org).”

“ Central pocket loop whorls have at least one re-curving ridge or an obstruction at right angles to the line of flow, with two deltas, between which when an imaginary line is drawn, no re-curving ridge within the pattern area is cut or touched” (www. virtualsciencefair. org). “ Central pocket loop whorl ridges make one complete circuit which may be spiral, oval, circular or any variant of a circle” (www. virtualsciencefair. org).

Double loop whorls are made of two separate and individual loop formations with two different and distinct shoulders for each core, two deltas and one or more ridges which make, a complete circuit (www. virtualsciencefair. org). “ Among the two at least one re-curving ridge within the inner pattern area is cut when an imaginary line is drawn” (www. virtualsciencefair. org).

Accidental whorls are made of two dissimilar types of patterns with the exclusion of the plain arch, they have two or more deltas or a pattern which have some of the requirements for two or more different types (www. virtualsciencefair. org).

Crime scene fingerprints need to be matched with fingerprints already in a file, if the suspect has never been convicted, then his fingerprints will not have been recorded so they cant compare them (www. south-wales. police. uk). For this reason, when a suspect is charged, they get fingerprinted and if there are 16 points of similarity with the prints at the crime scene it can be presented in court as evidence (www. south-wales. police. uk).

Serious issues of fingerprint fraud have started to come to light; many people have been facing jail time because they have told them that their fingerprints have been found at a crime scene.

In 2004 Brandon Mayfield was wrongly accused for the terrorist act in Madrid. They told him that his fingerprints were found on a explosives bag that was used to bomb a train in Madrid which resulted in the loss of 191 lives (www. news. bbc. co. uk). This news was shocking since the prime suspect hadn't left the country in 10 years and that he had never visited Spain (www. news. bbc. co. uk).

The suspect was at the time 38 years old and served 8 years in the military army (www. news. bbc. co. uk). He lived in Portland Oregon U. S. A (www. news. bbc. co. uk).

He had never been arrested until the day the F. B. I showed up at his house and took him away (www. news. bbc. co. uk). At the end of this, it was proven that the fingerprint did not belong to Mayfield but to an Algerian man said to have been linked to al-Qaeda (www. news. bbc. co. uk).

Fingerprints within forensic science is very important even though there is a very big debate on whether or not it is the right way to go about crime scenes. We have seen the different types of fingerprints, what they are made from, we have gone through a case where fingerprints were not substantial evidence and put an innocent man in prison for a while. So with this I conclude that fingerprints are important the art of fingerprints just needs to be perfect so that the real criminals get what they deserve.

### **References**

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