

**THE APPLICATION OF FORENSIC SCIENCE**  
**IN CURRENT CRIMINAL INVESTIGATION**  
**IN NIGERIA**

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## INTRODUCTION

The purpose of examining forensic evidence is to support the investigation of crime by identifying or eliminating individuals, testing investigative hypotheses and reconstructing events of investigative or legal significance. During the past years forensic science has moved from being an investigative option to a core aspect of criminal investigation, from being corroborative evidence to an inceptive tool. This shift is a consequence of the significant benefits to police investigations and criminal justice more generally deriving from the development and global expansion in the use of forensic science. This expansion cannot be wholly explained or understood with reference to science or technology alone, but must be considered in light of a complex web of social, political, legal, economic and professional factors.

## **Forensic science**

Forensic Science is defined as the science used in the detection and prosecution of crime; or as the application of scientific skills of examination and evaluation to the resolution of social and legal issues; or in its broadest sense, the application of science to our quest for justice.

**Criminal investigation**, ensemble of methods by which crimes are studied and criminals apprehended. The criminal investigator seeks to ascertain the methods, motives, and identities of criminals and the identity of victims and may also search for and interrogate witnesses.

Identification of a criminal who has left no fingerprints or other conclusive evidence can often be advanced by analysis of the modus operandi; professional criminals tend to stick to a certain technique (*e.g.*, forcing entrance), and to leave a certain trademark (*e.g.*, the means by which a victim is tied up), tricks made from deceptive phone calls, pattern of Social Media bully etc. At State Criminal-Investigation Department, Panti Lagos we compile such data which later assist Investigating Police Officers identify pattern and possibly the gang(s) responsible for the crime.

The ability to detect crime is an indirect way of preventing it, that is, nobody goes into a crime that is easily detected. The Forensic Science Laboratory is therefore, expected to assist an investigator in the detection of crime committed by identifying the individuals, group of individuals or organization responsible. A Forensic Science Laboratory, which is sometimes called a Crime Laboratory, is expected to assist an investigator in the following ways:

1. Establish an element of the crime
2. Link the crime scene to the victim or criminal/defendant
3. Corroborate or disprove an alibi or a confession.
4. Induce an admission or a confession
5. Exonerate the innocent or confirm the guilt of the accused.
6. Provide expert testimony in court.

The laboratory, by the use of scientific techniques and modern equipment, should be able to help investigators and the court in answering the following questions, which usually confront them:

1. Has a crime actually been committed?
2. When and how was the crime committed?
3. Was the fire accidental or was it started maliciously?
4. Was a gun, a knife or a blunt object used to commit the murder and what time did the victim die? (Forensic Pathology)
5. Was the shooting accidental, suicidal or homicidal?
6. What type of tool did the burglar use to break into the house or the safe?
7. Was the fire started with a stick of match and was kerosene or petrol used as an accelerant?
8. Was the voice recorded on the tape that of the kidnapper or terrorist.
9. Was the blood found at a scene of crime a human or an animal blood? If it is human, is it menstrual blood? If it is animal what type of animal? E.g cow, goat, dog, cat, chicken, horse, rat, sheep etc.
10. Was the glass on the door or window broken from outside or from inside? This will help to determine whether the suspect broke-in or broke out.
11. Is Mr. A or Mr. B the father of the baby in the paternity dispute?

# **COMMON AREAS OF APPLICATION OF FORENSICS SCIENCE IN CRIMINAL INVESTIGATION IN NIGERIA**

Because of the limited time allocated for this presentation, permit me to quickly look into some application of Forensic Science in Criminal investigation,

- ✓ **Ballistics**
- ✓ **Document examination or Disputed Document**
- ✓ **DNA**
- ✓ **Finger Print**
- ✓ **Geo-location and Tracking**
- ✓ **Hand Writing Analysis**
- ✓ **Toxicology**

**Ballistics** – Ballistic experts establish facts during shooting related crimes including the type of firearm, caliber of bullet, how many bullets fired, where the shooter was positioned during the crime, whether the weapon has been used in previous criminal cases.

**CASE STUDY**: The fact of the case is that on 31<sup>st</sup> March, 2019 at the Onipetese Estate, Mangoro area of Lagos, the deceased one Kolade Johnson 'm' was shot by one Inspr Ogunyemi Olalekan 'm' attached to Anti-Cultism Squad of the Nigeria Police, Lagos.

**NOTE**: During investigation, suspect denied the allegation, ballistics linked the caliber of ammunition recovered from the scene to the types riffled booked by personnel for the operation.

**CONCLUSION**: All riffles used for the operation were subjected to ballistic examination, One AK47 Riffle with breech NO 55623 used by one Inspr. Ogunyemi Olalekan was found to match the ammonium that fatally hit the deceased Kolade Johnson to death. Justice Coker of Lagos High Court found the defendant guilty and sentenced him to life in prison.

**DOCUMENT EXAMINATION** The document division of Forensic Science is encountered with broad spectrum of problems pertaining to white collar crimes like examination of handwriting and signatures, detection of forgery, detection and decipherment of erased, obliterated writings, decipherment of postal cancellation seals, rubber seals etc. Examination of printed matter, type scripts, decipherment of invisible ink, examination of charred documents, determination of sequence (relative age) of two intersecting pen inks. The breakthrough in Forensic science has made Criminal Investigation easy for the Police both in Nigeria and outside its shores.

**HANDWRITING ANALYSIS** falls into the questioned documents section of forensic science. These documents are examined by expert questioned documents examiners or QDEs. QDEs look for forgeries and alterations and make comparisons if there is an original sample of handwriting available.

Handwriting is an individual characteristic. This means that handwriting is unique for each person. Each person has their own style. Handwriting analysts say that people could have a few writing characteristics that are the same but the likelihood of having any more than that is impossible. The similarity in handwriting would be due to the style characteristics that we were taught when we were learning handwriting in school out of a book. Thus, handwriting is as unique as a fingerprint.

Handwriting analysis is looking for small differences between the writing of a sample where the writer is known and a writing sample where the writer is unknown. Instead of beginning to look for similarities in the handwriting, a QDE begins to search for differences since it's the differences that determine if the document is a forgery. A QDE is looking at three things: letter form, line form, and formatting.

- **Letter form**– This includes curves, slants, the proportional size of letters (relationship between the size of short and tall letters and between the height and width of a single letter), the slope of writing, and the use and appearance of connecting lines (links) between letters. A person may form a letter differently depending on where the letter falls in a word – beginning, middle, or end. So an analyst will try to find examples of each letter in each placement.
- **Line form**– This includes how smooth and dark the lines are, which indicates how much pressure the writer applies while writing and the speed of the writing.
- **Formatting**– This includes the spacing between letters, the spacing between words, the placement of words on a line, and the margins a writer leaves empty on a page. It also considers spacing between lines — in other words, do strokes from words on one line intersect with strokes in words on the line below and above it?

Content, such as grammar, spelling, phrasing, and punctuation should also be looked at.

A problem that arises during handwriting analysis is a simulation, which is the attempt to disguise one's handwriting or the attempt to copy another's. Simulation is a huge problem because it can make it much harder to make a determination about a questioned document or it can make it impossible. It can be possible to determine simulation though. The following factors are to be looked at:

- Shaky lines
- Dark and thick starts and finishes for words
- A lot of pen lifts

All of these factors are present when someone is forming letters slowly and carefully instead of naturally which is done quickly and without a second thought. Simulation is only one factor that could lead to a handwriting analysis being inaccurate. Some other factors include drugs, exhaustion, and illness. Other factors are made by human error, like comparing uppercase and lowercase letters or by not having a good exemplar (sample from the suspect).

**Case Study:** A certain petitioner alleged that sometimes in 2017, the suspects forged the signatures of Beneficiaries of an estate belonging to Alhaji Kazeem (not real names) to their favour, hence the petition.

**ACTION:** Case accepted and detailed for investigation

Statement were recorded

Document retrieved

Specimen signatures taken

Original signatures taken

Signatures subjected to examination

**Conclusion:** Signatures found out to be forged. Case charged to court for prosecution thereafter Fingerprints expert will give evidence in court during Evidence.

**DNA PROFILING:** DNA technologies support the collection of information that helps the criminal investigation, and DNA evidence is considered to have great value for judicial procedures. Forensic DNA analysis usually involves comparisons between genetic profiles extracted from biological samples collected from a specific site, object or person which is thought to be associated to a crime, in order to determine the likelihood that such samples come from a particular person (e.g., from a suspect, or victim, of a specific crime). Biological substances collected at crime scenes—such as blood, hair, semen, urine, skin, saliva, sweat and tears—all contain DNA. A DNA sample can also be obtained through a mouth smear from an identified person, or by collecting hair samples (including hair roots, since they contain the cells needed for analysis), blood samples (usually achieved nowadays by pricking the finger) or by scraping part of the body to remove a small sample of a person's skin.

## CASE SCENARIO

The fact of the case is that, on 09/03/2022, at about 0800hrs, the victim left home to his place of work at a construction site, located at Victoria Crest IV, Ajah, Lekki, Lagos but did not return home. All efforts made to trace his whereabouts proved abortive. Case was reported by the family members through a written petition to the office of the Deputy Commissioner of Police.

The scene of incident was visited by detectives, where a decomposing corpse was seen, recovered and deposited at the mortuary. Also, on 24/03/2022, DNA samples were collected from the corpse by personnel from the Lagos State DNA and Forensic Centre to establish the true identity of the corpse found at the scene. However, the DNA result came out inconclusive based on the fact that, the body was extensively decomposed and embalmed, prior to sample collection. It was recommended by Lagos State DNA and Forensic Center, that the DNA test be repeated using a new Skeletal remains of the recovered corpse. On the strength of the above, another sample was collected on 24/05/2022, for a repeat DNA test, the result of which is being presently awaited.

# FINGER PRINTING

The fingerprint as evidence plays a major role because of the following features:

- **Unique:**

The fingers have papillary ridges and which have complex patterns differing from one another. The patterns which are found not only vary from one individual to other instead they are different and unique within an individual. Duplication of the patterns has never been observed; nor expected.

- **Permanent**

Fingerprints are of permanent nature and they remain same throughout the life of an individual. The ridges which are found on the fingers appear before birth i.e. during the third, fourth month of pregnancy. Even the fingerprints remain after death of an individual until the first layer of the skin i.e. epidermal layer is destroyed by fire, insects, putrefaction or by any other creatures. Fingerprints are the nature identity card given to each individual.

- **Universal**

Fingerprints are of Universal Nature which means all individuals carry this medium of identification. A criminal uses his hands in committing any crime and hence leaves marks on the scene of occurrence or on any object, which come in contact with his hands while committing the crime. Hence, there are chances of occurrence of fingerprints in all crimes. There are many criminals who use gloves while committing crime and in these situations no fingerprints can be identified.

- **Inimitable:**

Imitation of fingerprints cannot happen. People have attempted but successful forgery of fingerprints is not reported so far. The investigating officer and experts can identify this; the advancement of science may bring forgery still closer to perfection but complete success is extremely difficult.

- **Classifiable:**

Classification of fingerprints can be done easily because everyone has different pattern of their ridges; hence different fingerprints. Records of millions and millions of persons can be classified and retrieved when needed.

It is important to note that the Nigeria Police is the only organization saddled with the responsibility of issuing Police Character Clearance to all Nigerians before travelling out of the country. This is issued after the applicant is found to be of good conduct without any Criminal record. All finger pattern are stored in the Central Criminal Registry Alagbon for future analysis.

There are several variants fingerprint patterns, but the commonest classifications used by the Nigeria Polices are: radial loop, ulnar loop, double loop, central pocket loop, plain arch, tented arch, plain whorl, and accidental.

## **GEOLOCATION AND TRACKING:**

In recent times, the Police have changed its modus of arrest from random arrest to narrowing the search of a suspect to a particular suspect through the use of Mobile phone Numbers.

This will leave people with some questions like:

How do police track phones? Can police track your phone?

These are important questions that have to be answered.

There are many ways that the police can track your phone, but how are they able to find you without knowing your name or address?

The answer is through cell tower triangulation and your phone provider. Tracking a person's phone isn't always easy for the police, but it becomes much easier when they have legitimate causes. Multiple towers are used to track the phone's location by measuring the time delay that a signal takes to return back to the towers from the phone. This delay is then calculated into distance and gives a fairly accurate location of the phone.

## **In what scenario can the Police Track you?**

The Police could have multiple reasons to track you, from being a suspect in a serious crime to having genuine concerns about your safety in a missing person case.

In a missing person's case, if the Police feel there are concerns about your safety, or you could be at harm, they can track your phone, in order to find you and ensure your welfare.

If you are a suspect in a serious crime that is punishable by imprisonment. This information can contain phone calls made, text messages and location – in relation to cell towers. The Police can also apply for authorisation for intrusive surveillance, but this is generally only for extremely serious criminals in the community.

## Case Scenario

The fact of the case is that, on 26/11/2021, at about 2000hrs, at Ogunlewe Street, Igbogbo, Ikorodu, the deceased, Michael Akerele 'm' was shot dead by three fleeing hoodlums and his iPhone 11 was carted away. The deceased was rushed to Ikorodu General Hospital where he was confirmed dead by a doctor on duty.

Tracking of iPhone 11 commenced.

Tracking method was applied.

Akeem Akinwale 'm' was arrested on (6.619, 3.5105) the receiver of the stolen iPhone 11

He bought from one Francis Olamide 'm' who inturns bought from Olamide Francis 'm' who bought from Azeez Anjorin 'm', the last suspect in custody the suspect in custody.

Anjorin Azeez claimed that he bought the iPhone 11 from one "Bay" who is now at large.

## **TOXICOLOGY**

Toxicology is a strong tool in Forensic science that helps in the day-to-day investigative duties of a Police Officer. As we all know, toxicology is the analysis of biological samples for the presence of toxins, including drugs.

The toxicology report can provide key information as to the type of substances present in an individual and if the amount of those substances is consistent with a therapeutic dosage or is above a harmful level.

The Nigeria Police has in numerous occasions took the advantage of this Forensic tool to get break tough in investigation.

## CASE STUDY

On 04/06/2022 at an undisclosed facility in Lagos, one Gabriel Christabel 'f' (real names withheld) now late went to a particular medical facility for a Brazilian Butt Lift procedure. The operation was successfully carried out on 27/06/2022 and was under close monitoring at the facility. On 30<sup>th</sup> June, 2022, a friend of hers flew from Abuja to visit her. Immediately after the friend left, the patients' health became complicated, efforts to revive her became fruitless as she has already been pronounced dead by the doctor on duty.

Complaints from the family (Medical Negligence)

Complaints from the Hospital (suspecting Food poisoning)

NPF (Suspicious Movements and body language from the friend)

At the scene, Police recovered unauthorized drugs administered by the friend.

Samples taken

Blood samples

Bile samples

Gastric contents

Urine Samples

**REPORT:** Excess caffeine in the blood triggered the complications

Suspect arrested and arraigned at Yaba Magistrate Court, case is currently on going.

**Conclusion:** it is very difficult if not impossible to rule out the importance of Forensic Science in Criminal Investigation in this contemporary age. Since crime has changed its evolution, it is also very important for Police Investigators to adapt the modern tools in investigation to aid speedy and timely conclusion of investigation and prosecution of cases in court. It is obvious, almost all cases charged to court of recent times that went through forensic investigation became hard or even difficult to trash out in out because all evidences tendered in court have been screened and are directly linked to the commission of the crime. All thanks to Forensic Science