



A STUDY OF ROLE OF FORENSIC SCIENCE IN CRIMINAL INVESTIGATION IN INDIA

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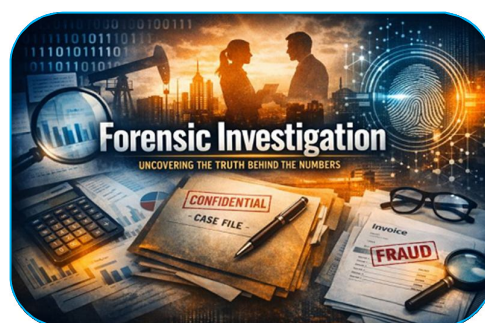
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ABSTRACT :

Science is moving at breakneck speed, and forensic science, which uses scientific techniques to give objective, circumstantial evidence, is part of it. As a result, there is more scientific evidence available, which is becoming increasingly complex and, far too often, incomprehensible to non-scientists. Forensic science is not a single field, but rather an umbrella term that includes a wide range of scientific disciplines and almost all medical specialities. It combines common sense and experience with knowledge from other medical fields, such as obstetrics and surgery. Over the previous 25 years, forensic science has made tremendous scientific achievements. Forensic science is one of the most critical components of any criminal investigation, since it may assist authorities with everything from positively identifying a suspect to determining when and how a crime occurred.

Forensic science is an important part of modern criminal investigation, serving as a vital link between scientific analysis and the legal system. It entails using scientific methods, such as DNA profiling, fingerprint analysis, and toxicology, to precisely identify suspects, link them to crime scenes, and recreate crimes. Trace materials are collected, preserved, and analysed to assist establish objective evidence, which leads to greater case resolution rates and supports the administration of justice.



KEYWORDS: FORENSIC SCIENCE, CRIMINAL INVESTIGATION, DNA, CRIME, EVIDENCE, RESOLUTION.

INTRODUCTION:

Justice does not come with a single click or blink for anyone. It requires an unbelievable number of moves. Many individuals are misled by Hollywood films or web series that depict issues being settled in one hour, including commercials. Reality is not the same. Serving justice to an individual requires a significant amount of time, patience, energy, and multiple processes. Beginning with the commission of the crime, police investigation, judicial hearings, and, finally, judgements and convictions. In a modern and democratic society, legitimacy has long been regarded as a hallmark of the justice system.

Forensic science is where science meets law. It plays an important role in both criminal and civil cases. Forensic evidence is physical evidence discovered at a crime scene. The scraps of evidence discovered at the scene of the crime are critical to the drive for fair judgement. They are considered secondary evidence, with the documents serving as primary evidence. The primary and secondary evidence are given in the court of law, allowing the court to understand the facts and render the judgement.¹

The concept of forensic science is not new in the legal system. Argentina was the first country to use forensic evidence in a criminal case in 1902. Sir William Herschel offered fingerprint evidence to

identify the suspect. Since ages, the Indian judiciary has relied on evidence like as fingerprints, DNA tests, and post-mortem examinations. Recently, there has been an increase in the use of advanced forensic tools such as narco-analysis, lie detectors, and others. Forensic analysis has strengthened the fundamentals of criminology, demonstrating that there is no ideal crime. It promotes equitability, i.e., convicting the wicked and pardoning the innocent.

History of Forensic Science in Criminal Investigation

The ancient world lacked standardised forensic methods, allowing criminals to avoid punishment. Forced confessions and witness testimony played a significant role in criminal investigations and trials. However, ancient literature offer multiple examples of techniques that predict notions in forensic science that were developed centuries later.

Forensic science has ancient origins. During the sixth century in China, a writer named Song Ci, often known as the father of forensic science, authored a work called "Xi Yuan Lu," or "The Washing Away of Wrongs." This book explained how to discern between accidental deaths and homicides, as well as how to examine wounds and determine causes of death. Song Ci's work was one of the first documented applications of forensic principles in criminal cases.²

In ancient Rome, forensic methods were also applied, albeit in primitive forms. Roman courts demanded evidence in public disputes, and compelling speakers played an important role in arguing cases. Methods such as analysing bloodstains, footprints, and handwriting were utilised at the fundamental level to connect suspects to crimes and establish the basic or early understanding of people for crime solving.³

The Origin of Modern Investigative Techniques

The nineteenth century was a watershed moment for investigative methods, with several significant advances influencing the future of detective work. In 1835, Frenchman Eugène François Vidocq founded the world's first private detective service, La Sûreté. Vidocq's revolutionary techniques, including as ballistics and undercover work, revolutionised the industry and inspired the establishment of Scotland Yard in London.

The Rise of Criminal Profiling

Criminal profiling emerged as a critical investigative tool during the twentieth century. This technique, pioneered by FBI agents John E. Douglas and Robert K. Ressler, involves analysing and categorising criminal behaviours in order to predict and catch perpetrators. Profiling has now become a key component of current investigative procedures.

Digital forensics and cybersecurity

With the emergence of the digital age, enquiries have expanded into cyberspace. Digital forensics and cybersecurity have become critical abilities for modern investigators as they manage the complexities of cybercrime and internet-based offences. The advancement of digital technology has also resulted in the development of sophisticated tools and software to aid in crime investigation.

The Future of Investigation Techniques

As we progress, the field of study will definitely evolve to accommodate new technologies and approaches. Artificial intelligence, data analytics, and virtual reality are just a few of the advances that are expected to influence the future of criminal investigations.⁴

Forensic Science in Criminal Investigation

Forensic science is an integral part of the criminal justice system. Essentially, it is concerned with investigating the scientific and physical evidence gathered from the murder scene. Forensic science describes the specific nature of the suspect who committed the crime. The evidence plainly shows the substance of the crime that was done. The circumstantial evidence even mentions the timing

of the occurrence. The forensic evidence identifies the crime's location. The forensic investigation even tracks the offender's actions.

The motive behind the crime is finally revealed. Forensic analysts reproduce the unique characteristics of the suspect and victim. A forensic scientist's roles and responsibilities in a criminal case are critical because they include thoroughly evaluating the evidence to ensure that it is not falsified. For example, forensic pathologists are trained to do autopsies to identify the cause of death. An autopsy helps to determine the cause and manner of death by examining body fluids and tissues. To identify suspects, forensic scientists examine physical evidence obtained at the crime site, such as fingerprints, blood, and hair. Forensic professionals also utilise image alteration tools to track down long-term offenders who have evaded the law. This technology enables them to digitally age a photograph and predict how the elderly person will feel.⁵

Legal Provisions related to Forensic Science

The Bharatiya Nagarik Suraksha Sanhita (BNSS) 2023 replaces the CrPC.

Section 176(3) requires a forensic expert to visit the scene of a crime for offences punishable by seven years or more, including videotaping of the process.

Section 329: Allows reports of government scientific experts to be considered as evidence without the necessity for personal attendance, and extends this to any expert authorised by the state/central government.

Section 105 requires audio-visual documenting of evidence searches and seizures in order to protect its integrity.⁶

The Bhartiya Sakshya Adhiniyam BSA 2023 Replaces Indian Evidence Act 1872

- Definition of Evidence (Section 3 IEA) Sec 2(e) BSA): The definition now specifically covers electronic or digital recordings as documentary evidence, including forensic data.
- Sections 45 IEA and 39 BSA provide for expert views on foreign law, science, art, handwriting, and fingerprinting. It is important to note that it contains opinions on electronic evidence.
- The Electronic Records (Sec 65B IEA) and Sec 63 BSA strengthen the legal framework for producing electronic records, which is vital for digital forensics.
- Section 35 of the IEA and Section 33 of the BSA cover public records and electronic records generated by public servants, which are vital for forensic reports.
- Admissibility of Expert Evidence (Sec 293 CrPC, Sec 329 BNSS): Government scientific experts' reports are admissible without their personal presence in court.
- Electronic Focus: The new rule simplifies the process of admitting electronic evidence, recognising that current investigations rely significantly on digital forensics.
- Relevancy (Sec 9 BSA): Covers evidence that aids in determining the identify of the accused or the accused's location at a relevant moment, hence enhancing forensic linking.
- Definitions: Section 2 of the BSA clarifies the terms "document" and "evidence" to include modern digital formats.
- The BSA, 2023 keeps the IEA, 1872's essential ideas of relevancy and categories of evidence, but updates them to make scientific and digital evidence more easily presented in court.⁷

Constitutional Provisions

The constitutional rules governing forensic science in criminal investigations focus on balancing investigative efficiency with individual rights. Key clauses include Article 20(3) (protection against self-incrimination), Article 21 (right to life/privacy/fair trial), and Article 14 (equality), which ensure that scientific methods (DNA, forensics) are applied fairly and without coercion, informed consent is required, and legal procedures are followed.

Article 20(3) - Right against Self-Incrimination: No person accused of an offence shall be compelled to testify against himself. Courts typically take this to suggest that, while physical evidence (fingerprints,

DNA) can be obtained, compelling a defendant to undergo narco-analysis or brain mapping breaches this right.

Article 21 - Right to a Fair Trial and Privacy: "No person shall be deprived of his life or personal liberty except in accordance with the procedures established by law." This requires forensic investigations to be fair, honest, and respectful of personal privacy, while also forbidding arbitrary or invasive searches.

Article 22 - Protection Against Arrest: Limits detention, which affects when and how forensic samples can be collected from a suspect.⁸

Judicial oversight

Right to Privacy: According to the Supreme Court, compulsory forensic tests violate the right to privacy guaranteed by Article 21.

Fair Investigation: The judiciary ensures that investigations are not "tainted and biased," hence a fair investigation is required for a fair trial.

Evidence Credibility: Courts assess forensic findings for correctness, transparency, and objectivity, rejecting testing from non-accredited labs.

Commonly used forensic methods

- DNA profiling is thought to be extremely reliable for establishing paternity and identifying crime scenes.
- When a fingerprint is extracted from a scene, it is referred to as the 'Chance Fingerprint'.
- Digital/Forensic Electronics: Critical in current investigations for tracking digital footprints.
- Forensic Chemistry/Toxicology: The examination of chemical traces, such as drugs or poisons, in confiscated materials.

Case Law Related to Forensic Science

Kishore Chand vs. State of Himachal Pradesh

In this case, the Supreme Court of India emphasised the significance of the chain of custody and accurate recording in forensic evidence. It held that forensic evidence's integrity must be maintained from the crime scene to the courtroom in order to be admissible.

The case emphasised the significance of maintaining a solid chain of custody and documenting forensic evidence to prevent tampering and ensure trustworthiness.⁹

Selvi vs. State of Karnataka

This lawsuit focused on the admissibility of narco-analysis, brain mapping, and polygraph examinations. The Supreme Court ruled that such practices violate the right against self-incrimination guaranteed by Article 20(3) of the Indian Constitution and cannot be enforced. However, if these tests are performed with the individual's consent, the results can be submitted as supporting evidence.

While scientific approaches such as narco-analysis and brain mapping provide investigative leads, their application as direct evidence is limited due to issues about constitutional rights and voluntariness.¹⁰

Murugan vs. State of Tamil Nadu

This case demonstrated the use of DNA profiling in criminal proceedings. The Supreme Court upheld the conviction based on DNA evidence, citing its ability to conclusively determine biological ties and involvement in the crime.

DNA evidence was recognised as very credible and scientifically sound, cementing its place in the criminal justice system.¹¹

State of Gujarat vs. Kishanbhai

In this decision, the Supreme Court emphasised the proper management of forensic evidence, as well as the importance of accurate and timely forensic investigation in criminal proceedings. The court found flaws in the investigation, including the improper use of forensic reports.

It emphasised the need of comprehensive forensic investigations and prompt delivery of forensic results in maintaining the integrity of evidence in criminal proceedings.¹²

Rafik Khan vs The State of Maharashtra (2023)

The Bombay considerable Court highlighted the considerable risk of contamination when custody records of forensic evidence are not adequately documented. Similarly, court decisions have emphasised the importance of forensic samples' seals remaining unbroken from the crime scene to the laboratory in order to be valid.¹³

Ravi Vs. State. (2023)

strong courts recognise DNA profiling, particularly the "Y STR" approach, as credible identification tools in sexual assault cases, concluding that "perfect matches" have strong probative value.¹⁴

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