

STUDY ON SCIENTIFIC INVESTIGATION FOR CRIMINAL JUSTICE SYSTEM

Dr. Harish Kumar Sharma, Associate Professor, Deptt. Of Law, D. S. College, Aligarh
Email Id- harishdcollege@gmail.com

ABSTRACT

When it comes to scientific advancement, it is happening at an exponential rate right now, and forensic science, which is the application of scientific procedures to produce objective, circumstantial evidence, is a part of that expansion. As a result, more and more scientific data is being provided, and the language used to support it is becoming more and more sophisticated, making it all too often incomprehensible to those who are not scientists. Forensic science is not a single subject, but rather an umbrella phrase that encompasses a number of different scientific disciplines and crosses practically every boundary in the field of medical sciences. It is an exercise of common sense mixed with the experience and information already learned from other areas of medicine, obstetrics, and surgery. Forensic science has progressed dramatically over the past twenty-five years, with significant scientific advances occurring in the process (DNA typing, physical evidence databases, related scientific instrumentation). Forensic procedures are not used in the majority of criminal investigations due to a lack of available resources. Research on DNA testing, its expenses, and its effects on cold cases and property crimes have been conducted, but no studies have been conducted on the full range of physical evidence and the processing of cases through all stages of the criminal justice system. The examination of evidence may aid the investigator in determining how a crime has been committed and how it was committed. The purpose of this study is to investigate the application of forensic science in criminal investigation, as well as the role it plays in maintaining law and order in a society, in order to better understand the field. This research also sheds insight on the way forensic science is serving as a link between medical scientists and legal scientists in the field of litigation.

KEYWORDS: *DNA, Criminal Investigation, Justice, Forensic Science*

1. INTRODUCTION

Science is the systematic investigation of facts. Science is the investigation of evidence. Science is unbiased and cannot be influenced in any way. It cannot, in addition, be misrepresented as something it is not. Real science is the discovery and study of matter, energy, time, and space as they exist in nature; it is the finding of what is truly real. As a result, it just has one job, which is to discover the truth. The truth that can assist us in determining the veracity of statements made by human beings is known as objective truth. Science is tasked with determining whether those assertions are correct or incorrect. These facts have the potential to fundamentally affect how people interpret a certain fact or incident in their lives.

The initial scientific endeavours to demonstrate this were purely calculative in nature and incorporated Mathematics by Copernicus and Galileo, which were virtually incomprehensible to the general population at the time. The great explorer Ferdinand Magellan carried out the first amazing experiment to demonstrate the accuracy of this statement, and it was published in the journal Science. In the globe, his journey, which was financed by the King of Spain, is widely regarded as the first conclusive confirmation that the Earth is round in its shape. As time progressed, and the age of space travel came into being, it became increasingly clear what the physical shape of the Earth was.

Discovery of the structure of DNA and decoding of the genes that make up that DNA were two major accomplishments in the 20th century. DNA fingerprinting was developed within a short period of time. DNA profiling, also known as DNA typing, genetic fingerprinting, genotyping, or identity testing, is arguably the most effective means of determining an individual's identification in the contemporary environment. It is also the most expensive. It is being used extensively to determine paternity and as evidence in criminal investigations, among other things. Handwriting experts, tracker dogs, fingerprint testing, foot printing, histology, toxicology, and other related testing methods are available. All of these issues can be grouped together under the umbrella term "forensics."

Trials in the criminal justice system are conducted in a different manner than trials in civil courts. Very often, the major emphasis of a civil lawsuit is an issue of the law that applies rather than the proving of factual allegations. In other words, the facts are usually well-established, and the disagreement is largely limited to the interpretation and execution of the applicable

legislation. Contrary to this, a criminal trial involves more questions of fact than they do of law in most cases.

Criminal proceedings, on the other hand, differ in that the degree of certainty required for conviction of an accused is higher in criminal proceedings than in civil proceedings. For the simple reason that if an accused is found guilty, he or she will face punishment, which may include incarceration of various types and durations, as well as the death penalty. As a result, when an accuser's guilt is established "beyond a reasonable doubt," the criminal justice system condemns him. This explains the relatively stringent standards for evidence and proof, as well as the lengthy duration of trials in Indian criminal courts.

Medical jurisprudence, also known as forensic, legal, or state medicine, can be defined as the science that teaches the application of every branch of medical knowledge to the purpose of law; as a result, its boundaries are defined by the requirements of the law on the one hand and the entire field of medicine on the other. Anatomy, physiology, medicine, surgery, and chemistry are all topics covered. Physics and botany provide their assistance when the situation calls for it, and in some instances, all of these areas of study are necessary to enable a court of law to make a proper verdict on a disputed subject involving the preservation of life or the acquisition of property. Despite the fact that medical jurisprudence, forensic medicine, and legal medicine are all terms that are commonly used to refer to the branch of medicine that deals with the application of the principles and knowledge of medicine to the purpose of law, both civil and criminal, they all have distinct meanings in their respective fields of study.

Medical jurisprudence encompasses all questions pertaining to an individual's civil or social rights, as well as cases of bodily injury, and brings the medical practitioner into interaction with the legal system. Medical jurisprudence encompasses all questions pertaining to an individual's civil and social rights, as well as cases of bodily injury, and brings the medical practitioner into interaction with the legal system. The legal aspects of medicine are dealt with by medical jurisprudence; on the other hand, the application of medical knowledge in legal proceedings is dealt with by forensic medicine.

Overall, forensic science is a relatively broad word that encompasses a wide range of disciplines. To give it its most general definition, forensic science is the application of scientific principles to the enforcement of criminal and civil laws by law enforcement agencies and courts. The term "state medicine," which was proposed by Dr. Stanford Emersion Chaille in 1949 and has since

been rejected by governments all around the world? The phrase "legal medicine" is frequently used in Europe and the United States of America to refer to this type of practise.

The following are some of the applications of forensic medicine, according to Duncan. Murder, infanticide, abortion, and rape were among the crimes for which the technology was used.

They were as follows: the other two sections were as follows:

1. A state of mind such as crazy, sad idiotism, or delirium.
2. Pregnancy: it is concealed or pretended to be.
3. Parturition that is veiled, faked, delayed, or occurs prematurely
4. The firstborn child of identical twins
5. Diseases that are concealed, pretended, or attributed
6. Age and expected life span.

1.1 NATURE OF FORENSIC SCIENCE

Forensic science is not a single discipline; it encompasses practically all branches of science and applies them to legal issues. Initially, all of the procedures were adopted from many disciplines of research, but forensic science has since matured and developed into its own discipline. It has also established a number of branches that are more or less forensic science domains. Fingerprinting, anthropometry, track marks, documents (particularly handwriting inspection), and forensic ballistics are all fundamentally forensic science. After breakthroughs in serology, voice analysis, scent analysis, and studies linked to pattern recognition, digital photography, the forensic field acquired more traction. The most important to the twentieth century is DNA Profiling for human identification. Technology is currently being applied to plants and animals as a result of advancements in the sector. The following are the two main pillars of forensic science:

- It is a multi-professional organisation.
- It's interdisciplinary.

For the proper transmission of justice when using forensic science, the forensic scientist must rely on the investigating officer on the one hand, and the presenting counsel and the judge on the other. The investigating officer must be an expert in the field of evidence gathering. Similarly, the court and counsel must have a thorough understanding of science in order to connect the scientific findings to the rest of the evidence. The second uniqueness is that the science is all-

encompassing, necessitating the establishment of comprehensive Forensic Science Laboratories with experts in all disciplines, equipment for all areas, extensive libraries, and other necessary amenities.

2. FORENSICS IN INDIA

The scientific analysis of evidence is classified as forensics, which is a different field of investigation. "Related to scientific methods of solving crimes, involving examination of the objects or substances involved in the crime," according to forensics. A fairly clear image may be discerned from the definition alone. However, it is necessary to first define the various types of forensic examinations carried out in India. The research will next go into great detail about the specific legal provisions that allow for forensic inquiry inside the criminal court system. In addition, how much scientific investigation is actually beneficial in India's criminal justice system will be explored in this paper. The implementation of science in the criminal justice system also has various limitations and obstacles. Case laws will be examined in order to gain a better understanding of them.

The collecting of physical evidence, generally at the site of a crime, and then examining that evidence in an appropriate setup like a laboratory, is what forensic science is all about. Toxicology, pathology, fingerprints, handwritings, footprints, ballistics, narco-analysis, voice analysis, and tracker dogs are just a few of the forensic tools employed in India's criminal justice system.

3. ANALYSIS AND APPLICATION

Under Section 45 of the Indian Evidence Act, 1872, forensic specialists' opinions can be submitted as evidence to a court of law in the form of forensic reports.

Expert opinions (no. 45) —

The opinions of persons specially skilled in such foreign law, science, or art, [or in questions as to identity of handwriting] [or finger impressions] are relevant facts when the Court must form an opinion on a point of foreign law, science, or art, or as to identity of handwriting [or finger impressions]. Experts are people like this.

The term "expert" does not, however, apply to someone with only a high school diploma. It refers to a person having specialised knowledge or skills in the subject of study in which the evidence is examined, and such a person's view is regarded as a "expert opinion." Even the fine

arts, international law, and polygraph testing are considered expert fields. In Indian courts, however, an expert's opinion is typically treated as secondary evidence. In most circumstances, they're only relevant as a supplement to primary evidence. An expert opinion in the field of handwriting identification might be used as an example here to better grasp this. In the case of handwriting identification, Section 47 of the Indian Evidence Act of 1872 states:

Opinion on handwriting, if applicable.—

The view of any person familiar with the handwriting of the person by whom it is claimed to be written or signed that it was or was not written or signed by that person is a relevant fact when the Court has to develop an opinion as to who wrote or signed a document.

This means that a handwriting expert's assessment of the handwriting will not be considered more acceptable and satisfactory than the view of a witness who is familiar with the person in question's handwriting. The witness may have become acquainted with the handwriting either by directly witnessing it being written by the person himself or by receiving letters from him on a regular basis, according to the Section. In either case, it will be seen as a more credible view than that of a handwriting expert. This is where the Act's flaw appears. It has more faith in the testimony of a witness who may be personally or indirectly interested in the case than in the objective view of a third-party expert. In this approach, science takes a back place. The Court ruled in *Devi Prasad v. State* that the above-mentioned principle was applied in practise. It noted that the view of someone who is unfamiliar with the person's handwriting should not be taken into account.

Scientific evidence presented in court must be adequately documented, including the scientific rationale and the use of appropriate scientific methodologies, depending on the subject of inquiry. Scientific evidence differs from witness testimony in that the witness may not be completely truthful, bribed, or threatened. Even if the witness is truthful, he or she will answer the attorneys' questions. Attorneys are well-known for asking questions and forcing witnesses to respond in a way that may differ from the true truth of the case. In order to win the case, they force the court to hear what they want it to hear. This is not the case with scientific evidence. A scientific examination that is unbiased will reveal exactly what the evidence shows. As previously said, there are numerous scientific methodologies. An expert witness is frequently called to testify on the scientific approach that was requested to be used during the trial.

Footprints in blood leading to the restroom were discovered near the dead body in *Pritam Singh v. State of Punjab*. The prints were matched to the accused's footprints in printer's ink. The expert who was contacted in the case provided proof that there were nine similarities in the right foot and ten similarities in the left foot. Only three variances were discovered in each case, and the expert described how those differences originated as a result of the varying densities of blood and ink. The court decided that the accused's footprints in blood were proven to be his. Footprints have a distinct pattern of friction and ridges that are unique to each individual and thus can be deemed trustworthy. The flaws in scientific evidence, on the other hand, are identical to those we encountered in the case of handwriting identification.

The court has frequently ruled along the lines of *Mohd. Aman v. State of Rajasthan*, in which the scientific evidence of footprint identification will not be relied upon solely because the courts consider it to be an imperfect science to some extent, and such evidence will be accepted only when it is backed up by other types of evidence from a more reliable source. We see another situation in which Indian courts are hesitant to rely on scientific evidence, preferring instead to rely on witnesses or other traditional evidence rather than forensic evidence.

When it comes to medical evidence, DNA fingerprinting is the most well-known. The court has the authority to order blood samples be taken for paternity tests. DNA fingerprinting, according to experts, should be an infallible test. Deoxyribonucleic Acid (DNA) stands for Deoxyribonucleic Acid. It has a distinct chemical make-up and genetic material that may be traced back to the person being examined. Fingerprints can be surgically altered in some cases. However, DNA is contained within the cell and cannot be altered by any means. As a result, if a hair strand, skin tissue, drops of blood, mucus, or sperm is located at the crime scene, it can be sent for DNA testing and compared to the DNA of the person whose involvement in the crime is in doubt. If the DNA matches, the person is linked to the crime site.

The Supreme Court, on the other hand, has declined to provide complete access to blood testing for DNA sampling as a matter of routine. Individuals cannot be forced to submit blood for mandatory testing, according to the court in *Goutam Kundu v. State of West Bengal*. The court ruled in *Rohit Shekhar v. Narayan Dutt Tiwari & Anr* that eyewitness testimony takes precedence over medical evidence. The main disadvantage of this system is that eyewitness testimony is given more weight than medical proof. Human testimony is unquestionably less reliable than DNA evidence. Humans are prone to making mistakes. Humans are capable of

making mistakes. Humans can be forced to do or say things they don't want to. Humans have the option of not speaking the truth. Science is unstoppable. Science is unshakeable. Science is not a live being that can be coerced or tricked into doing things it does not want to do. Science reveals the current state of affairs. It's always about the truth in science. The fundamental objective of science is to uncover truth. When medical evidence, particularly DNA evidence, is ignored in the face of a contradictory assertion by a human witness, it is not in accordance with logical or rational decision-making. This is a significant disadvantage to the criminal justice system's operation, and tracker dogs are not an appropriate type of evidence, according to the Supreme Court of India. The Court stated in *Abdul Razak Murtaza Dafadar v. State of Maharashtra* that India has not yet reached the level of scientific progress where a ground tracker may be regarded as acceptable evidence. As a result, even if it is accepted, it is only of minor importance as proof. As a result, another type of forensic evidence is ruled out as fully admissible as solid evidence.

The decision in *State v. S.J. Choudhary* revealed the evolving nature of the term "science." The court said that typewriter evidence might be interpreted as an expert opinion and could be trusted. The case of the handwriting expert and the typewriter expert demonstrates that courts prefer to see any sort of art that requires expertise and may be provided as evidence as science. The criminal justice system considers any sort of expert evidence under the jurisdiction of scientific research, not simply medical evidence, fingerprints, and the like, which are commonly seen as science.

Polygraph and lie detector tests are also part of a scientific criminal investigation. Polygraph tests are typically based on biological changes in a person's body. It is assumed, for example, that when a person lies, he has some mental tension. The rate of respiration, pulse rate, and galvanic skin response all fluctuate in response to mental stress. In a court of law, this test is not accepted as definitive evidence. This is owing to the fact that the stress may or may not have been generated by the test. The Supreme Court ruled in *Selvi v. State of Karnataka* that these tests infringed on an individual's right to privacy. These exams invade an individual's mental privacy and are thus unconstitutional because they infringe on their personal liberty. The Supreme Court of India made it plain that the use of force in these tests was not permitted and could not be used as evidence. If someone volunteered to take these tests, they were allowed to do so under the National Human Rights Commission's 'Guidelines framed for the Administration of Polygraph

Test (Lie Detector Test) on an Accused,' which also noted that the same guidelines would apply to 'Narcoanalysis Technique' and 'Brain Electrical Activation Profile Test.'

Ballistic evidence is the next type of expert evidence that can be used in a criminal trial. Unlike the other types of scientific evidence previously addressed, the court placed a high value on ballistic evidence. In *S.G. Gundegowda v. State*, the court held that the ballistic expert's report was acceptable even if he was not called as a witness. The court stated in *Rchhpal Singh v. State of Punjab* that in situations involving weapons causing injuries, the opinion of a ballistic expert is of high evidentiary significance, and that failing to obtain such an opinion has a significant impact on the value of the evidence supplied.

4. CONCLUSION

It is easy to deduce the current condition of scientific research in India's criminal justice system from the preceding analysis. First, courts usually always accept witness testimony, papers, and other traditional evidence as primary evidence, while scientific evidence (forensics, etc.) is treated as secondary evidence. There must be significant primary evidence to support the allegation. In other words, secondary evidence is rarely sufficient without main proof. In the case of corroborating handwriting, an expert's view has less significance than a witness's testimony who only saw the person's letters regularly, even if he didn't see the person write them. The court ruled that footprints alone do not suffice to convict someone when corroborated by scientific evidence. They claimed that because matching footprints was not a perfect science, it could not be utilised to convict someone without other evidence. Further, the courts are not happy with the use of the strongest type of medical evidence available, DNA fingerprinting, and put more weight to ocular evidence than clear scientific proof.

The court also found that DNA fingerprinting cannot be used as a normal tool due to concerns about the accuser's consent. These are the kind of scientific investigations where the court appears to rely on witness testimony rather than hard scientific findings. Although some judgements appear to be anomalous, the courts may have sufficient reasons. The fact that India is a developing nation should be emphasised. Witness tampering is commonplace here. Home Ministry or any other Ministry directly influenced by the outside world. Modifying test results will be easy in India. Similarly, as previously said, a police inquiry in India takes a long time and requires many formalities. In most cases, there is a dearth of proper forensic testing infrastructure. And there aren't enough forensic professionals to collect, store, cultivate, and

examine the forensic evidence acquired at the scene of the crime. These measures must be taken with considerable caution to avoid altering or damaging the evidence.

Delays in collecting evidence often result in evidence destruction or alteration. If forensic evidence like semen is not gathered promptly, it may decompose into various chemical components, significantly altering the direction of the investigation. Because those molecules could be a sign of something else when they weren't present and the facts should have been different. This type of court misdirection might entirely change the facts of the initial offence. So, with a flawed investigation system, the courts probably had no choice but to incorporate scientific investigation into the current criminal justice system. It was the only way to avoid a miscarriage of justice. Polygraph tests are unreliable, as the court found.

The physiological impacts differ from person to person, and it's a fine line to walk. In the criminal justice system, proof of guilt must be "beyond reasonable doubt." The Court further stated:

- In *Mahmood v. State of U.P.*, the court found that expert testimony alone is insufficient to convict. Other evidence must support the forensic evidence.
- To allow expert testimony, the court in *State of Maharashtra v. Damu Gopinath Shinde* required that the expert be examined as a witness.
- On the other hand, in *Malappa Sidappa Alakumar v. State of Karnataka*, the court declared that when medical and ocular evidence contradict each other, the ocular evidence will prevail.
- In *Ram Swaroop v. State of Rajasthan*, the court correctly held that a doctor's judgement about a finding cannot be used to discredit an eyewitness' testimony.

Aiming for quick improvement of the criminal justice system's performance by adding sufficient infrastructure and skilled professionals to compensate for the system's extreme inability to deliver timely and effective justice, only science can revolutionise criminal justice. The sooner the errors are fixed, the better.

REFERENCES

- Devi Prasad and Ors. vs State AIR 1967 All 64
- Pritam Singh vs State of Punjab AIR 1956 SC 415
- Mohd. Aman vs State of Rajasthan AIR 1997 SC 2960
- Goutam Kundu vs State of West Bengal AIR 1993 SC 2295
- Rohit Shekhar vs Narayan Dutt Tiwari and Anr (2012) 12 SCC 554
- Abdul Razak Murtaza Dafadar vs State of Maharashtra AIR 1970 SC 283
- State vs S. J. Choudhary AIR 1996 SC 1491
- Selvi and Ors v. State of Karnataka AIR 2010 SC 1974
- Research Journal of Forensic Sciences, Vol. 4(6), 1-7, June (2016)
- S. G. Gundegowda vs State Karnataka 1996 Cri LJ 852
- Rchhpal Singh vs State of Punjab AIR SC 2710
- Mahmood vs State of U.P. AIR 1976 SC 69
- State of Maharashtra vs Damu Gopinath Shinde. AIR 2000 SC 1691
- Malappa Sidappa Alakumar vs State of Karnataka AIR 2009 SC 2959
- Ram Swaroop v. State of Rajasthan AIR 2008 SC 1747