

# Criminal Justice System: Role of Forensic Science

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**ABSTRACT:** In present high-tech world, the crimes are on growing path. Laws are persistently being expanded and revised to counter the alarming rise in crime rates. The criminals are fast changing their modus operandi and in order keep pace with developments, it is necessary to improve present investigative measures which may prove a great support in case proceedings. The Criminal case proceedings comprises various stages like lodging FIR, investigation by police, court proceedings and final verdict. Several types of evidences including scientific evidence show significant role at all these platforms. Importantly, over the last several years, the forensic sciences have made dramatic scientific breakthroughs (DNA typing, physical evidence databases, and new scientific instrumentation) but studies are needed to assess the contribution of such advancements on the role and impact of scientific evidence in criminal justice system. In this paper the researcher will identify the role forensic science in criminal justice System.

**Keywords:**-Forensic Science, Criminal Justice System, Criminal Behaviour, Scientific evidences, Criminal investigation etc.

## I. INTRODUCTION:

Since the very inception of the mankind, man has always been interested in improving everything he has come across, everything which has come to his thoughts and that has been invented or discovered by him. All this has been because of man's ability to think which allows him to attain perfection in life. All the energies that are within man, he utilizes to achieve perfection in anything and everything.

Each civilised state establishes the criminal justice system which is the basis for maintaining peace and tranquillity in the society and upholding the „rule of law“. This objective could only be achieved with the co-ordinate aid and assistance of judicial system, prosecuting officers and the investigating machineries. Criminal justice is one of the most important areas of human rights,

where the legal system is put to the test on a regular basis in order to maintain social peace and security on the one hand, and to protect the human dignity of both victims and perpetrators of crime on the other. In India, the criminal justice system is based on an adversarial system, in which the court is more concerned with finding proof than with finding the truth and that poses most difficult problem in any criminal justice system, as the court is merely a spectator, and the prosecution is solely responsible. For evidences the prosecutor is reliant on investigating agencies in a sluggish and inconsistent work culture. On the other side, offenders undergo rapid changes in their criminal behaviour.

In many crimes, they leave little proof, especially in high-profile cases. Today in the scientific scenario where even the criteria of committing crime has also change from the traditional way of committing crime, it would rather be impossible for the end of justice that without involving science in law the justice can be achieved. Here now the scientific evidences play a very vibrant role which gives scientifically based information by analysing the circumstantial evidences present at the crime scene. There has been a huge gain in scientific knowledge, and devices are now being used to acquire circumstantial evidence to aid the prosecution. As a result, criminal investigation has become one of the most difficult areas of law enforcement, needing highly trained specialists with the necessary abilities and expertise to construct a case that can be prosecuted effectively. In all the criminal justice system the basic of fair trial depends upon the fair investigation and the fair investigation depends on the fair, effective and just procedure in its arts of investigating officers. Since the beginning of human race crime in someform or other has existed. With the progress of science and development of technology the notion of crime as well as the methods used by criminals in commission of crime has undergone a phenomenal

transformation. The very nature of crime itself has undergone complete transformation. There is a conceptual shift in the terms of the costs of the criminal behaviour and the forms of criminality. At present, most of the human activities are carried with the aid of modern technology as a consequence dependence of humans on technology is increasing. In the celestial cosmos, the scientific and technological advancement has assumed vast proportions, which were unimaginable a few decades ago. The last century has witnessed the maximum advancement in the field of technology leading to dependency of every governmental affair, business activity and masses around the world on technology. In such a scenario the threat of crime is among the worst fears. Criminals are getting sophisticated and take help of hi-fi technology in commission of crimes. They are taking help of scientific technology to such an extent that within the time period of few seconds they remove themselves from crime- scene and mostly with no- evidence at crime site.

**Role of Forensic Science :-** Forensic science is the application of scientific knowledge and technique to the resolution of legal challenges and they are vital tools in unearthing the truth in any legal proceeding. Science, technology and the law works together to reduce the risk of error and create a better functioning criminal justice system. Practitioners must first assess which issues in evidence analysis need to be addressed, then employ the most relevant scientific technique available. Such approaches necessitate a thorough understanding of the underlying science as well as a thorough comprehension of the relevant methodologies, technology, and databases, as well as their limitations. Some areas of science, on the other hand, are commonly used in the analysis and interpretation of evidence, and as a result, they have become necessary in criminal investigations at this time. For an enlightened and powerful criminal justice system the abrupt use of forensic science shows immense potential to speed up criminal investigation. Science and technology have transformed every element of human life and the court of law is no exception. The widespread use of a variety of scientific approaches and breakthroughs, which could provide investigators with potentially useful instruments. Therefore, in this technical climate, the law should not lag behind in adopting scientific methods in a lawful manner by lawful means. Observation and interpretation of physical evidence have been the fundamental tools in the investigation of forensic cases since the beginning. Science was first

implemented in the second part of the nineteenth century by improving the methods of case study, which increased the validity of the results reached by responsible authorities. In the last part of the 19th century, the seeds of contemporary science were sown. Slow but steady progress has been made since then. For example, at first, identification bureaus employed Bertillon's identification method, which was based on anthropologic measurements supported by photographic documents, but was eventually superseded by the more precise fingerprinting approach. Now, fingerprint processing has been combined with additional duties for managing physical evidence such as biological stains, hair, soil, and other materials left at the scene of a crime, which are all analysed using DNA profiling techniques that yield trustworthy evidence with certainty.

Investigation is a very important component of the criminal justice system. Because it is through this process, the evidences are collected, which proves or disproves the charges on the accused person and ultimately results in the conviction of guilty person and acquittal of innocent. If the investigation is done by the investigating agencies properly in a scientific manner, then the guilt can be proven beyond a reasonable doubt in court. Investigation is the primary mode of collecting evidences of crime which has been or is being committed. The use of scientific means in investigation is gaining popularity and generally termed as scientific investigation. In investigation, evidences are collected with a view to establish them before the court. So, the evidences which are collected by using scientific means with the help of experts are known as expert evidence. For the purpose of providing evidence in the court, various fields of science are used. Forensic medicine, often known as medical evidence, is the discipline of medicine that deals with the application of medical knowledge for legal purposes. The evidence of the medical expert is taken either in oral or documentary form as to the questions relating to death, nature of injuries and their causation, determination of age, mental condition etc. The primary problem of criminology is the identification of individual. For this purpose the help of medical experts is required. If the investigating officer uses scientific methodologies to conduct the investigation. Then the evidences collected by such means will be known as scientific evidences. There are less chances of manipulation of these evidences. Hence such evidences are considered as infallible. Such evidences can have

more evidential value if the tests are conducted properly, the instruments are in proper condition and the tests are conducted by the qualified experts in that field. The judges will be in a position to give due weight age to such evidences if the judges are convinced about the reliability and infallible nature of the evidence. The scientific investigation can prove a boon to the criminal justice system if conducted properly. Now focusing on the scope of forensic science, the detection and identification of poisons is an essential element of forensic science. Every poison has its own chemical composition and symptoms and it can be identified and detected with the help of medical practitioners and chemical examiners. Generally chemical examiners will receive from doctors a sample of blood, urine, possibly vomit. All the specimens are examined and analysed and finally the report is submitted before the Court mentioning what poisons he found and to what extent it has reacted on body. Opinion of medical practitioners is required to judge the state of intoxication in those cases where a person has committed an offence under the state of intoxication. In the offences against body medical experts plays a very important role. Ballistics is another field which plays an important role in the criminal offences where the fire arms has been used. Ballistic experts after examination of fire arms, bullets etc. can give opinion with certainty as to nature of ammunition, the part played by the particular firearm in commission of offence. The Identification of Fingerprints and footprints has become most important branch of criminal investigation. A fingerprint is unique and individual mark of a person. If the specimen fingerprints are taken properly and compared by experts without any negligence, the fingerprint experts can draw unambiguous conclusions without committing any mistakes. The science of identification of footprints is not a fully developed science but it can be used to reinforce the conclusions as to identity of the culprit already arrived at on the basis of other evidences. With the exception of identical twins, DNA fingerprinting is an authenticating technology that can distinguish one individual from another. In criminal instances, a sample of evidence is taken from the victim's body in order to track down DNA from the defendant. The weight of DNA profiling match will be presented by means of a match probability and likelihood ratios. The other field which occupies an important place in the investigation is the identification of handwriting. Handwriting analysis allows for the detection of fraud and forgeries, among other things. Experts with technological expertise and the ability to use it properly can

present evidence to the court that can influence the outcome of a case. Now with the increasing use of the typewriters for the production of fraudulent writing of many kinds has certainly created necessity of identification of these documents by the experts in this field. The examination of the typewriting document is based on a scientific study of certain significant features of the typewriter. However, this evidence is not conclusive in nature. It only assists the court to establish the authorship of document and is only corroborative in nature. Over the last few decades, the fast advancement of information and communication technology has boosted the use of computers and other electronic devices for information, information storage and communication. Electronic records refer to the information recorded in computers or in any electronic devices.

Whenever the genuineness of these records is in dispute then the certifying authority/experts may be called before the court to give opinion over the genuineness of these records. The opinion of experts in all these fields has been made admissible under section 45 of the Indian Evidence Act, 1872. However, the evidentiary value of these fields depends on the fallible or infallible nature of science. Most of the fields of scientific evidence are not considered perfect science hence fallible. Sometimes the instruments, machines etc. are defective. In such cases though the test is conducted in correct way, but it does not lead to accurate result. The court has given different criteria for assessing the probative value of expert witness. In some fields the qualification is necessary, whereas in some other fields experience may be enough. The trend of the judicial decision shows that the probative value behind the piece of evidence depends on the procedure followed by the expert for coming to the conclusion and perfection of the particular field of science. There are some fields of science, which due to their perfect nature are considered to be more reliable than other scientific evidences like DNA tests, fingerprints identification etc. The Supreme Court ruled in Naina Sahani's case that DNA testing is very effective for verifying the identification of a deceased individual whose body has been recovered but is no longer identifiable due to decomposition. Similarly in various other case. These tests are very useful in establishing the paternity of a person or identity of a person. Like DNA evidence, the fingerprint evidence is considered as infallible evidence if proper procedure is followed for conducting the test. A particular field of science will have value in the eyes of law, depending upon the perfection of the

science and its acceptability in the Court. There are some sciences, which though very advanced, but are not acceptable in the courts as evidence, like lie detection tests. Because they fail to fulfil the conditions of law, as they are considered to be unconstitutional. As our laws amended many years ago and technologies are advancing with rapid speed therefore it should be essential to furnish FSLs with scientifically advanced equipment's and also the criteria of their acceptability much be relooked in accordance with the changing need of the society. Various synonyms are in use viz., forensic medicine, legal medicine, judicial medicine etc, in different countries but they all have one aim i.e. to help to punish the guilty and save the innocent from punitive action by applying the medical knowledge to legal matters. The medical science is a very vast subject and so is the subject of law. It is therefore, imminent that various crime situations demand the attention of medical profession to be in a position to interpret their findings in various legal situations. Citing an example how medical jurisprudence helps in meeting the end of justice, a man may die of heart attack while walking on a road; subsequently his dead body may be run over by a motor vehicle and the driver is charged with manslaughter. Histochemical and biochemical studies of injuries establishes whether the injuries are ante-mortem or post-mortem in nature and moreover the examination of coronary arteries clearly reveals the presence of disease. Again giving instances of several other situation, where an important decision has to be made as to whether the death of a person is due to homicide or suicide viz.; drowning cases, asphyxial cases, fire arm cases, poisoning cases etc. in such situations the aid of science is very essential and as such opinion of expert helps the court in reaching certain conclusion.

It is worth mentioning here that human beings are prone to making mistakes though not intentionally but sometimes due to negligence or lack of general interest. Same is the case with forensic jurisprudence, in our country the subject of medical jurisprudence is highly neglected due to lack of proper training in forensic medicine and general disinterest shown by medical professions, which poses frequent challenges to medico-legal reports in the court of law. Some of the worth mentioning short coming in medico-legal examination are-incomplete reports, scant regards for describing the symptoms observed on the body, overlooking some injuries inflicted on body, description of previous scars, photographs of the affected organs, X-ray of injured portions of internal organs, improper collection of viscera for chemical examination,

improper examination of body and clothes before conducting postmortem etc. A little care taken by the medico-legal expert at the time of examination goes a long way in imparting justice.

Scientific evidences has increasingly assisted Indian Judiciary for ensuring justice while adjudicating on both civil as well as criminal cases. The superior courts in our country has rightly emphasized upon fairness and quality control during forensic analysis and investigation. Failure to take advantage of modern scientific aids for collection and appreciation of evidence has many a times resulted in miscarriage of justice and further compounded the despair if an innocent person is falsely implicated and at times even made to face incarceration. But due to rapid growth of science and technology, the new techniques has provided a magical rod in the hands of criminals. The criminals are using science and the crime techniques are getting re-defined. The fastest means of communication and transportation has provided wide opportunities for committing crime and then hide themselves. The cybercrimes are example of use of latest technology in commission of crime. The offenders can commit crime by sitting at one corner of the world against any person in the other corner of the world. Due to these reasons it has become the need of the hour that the latest scientific means must be applied for detection of these crimes. Despite this fact our CJS is still lagging behind to cope up with the situation and therefore it requires to be reoriented to take use of modern scientific findings and advanced techniques to overcome the situation.

At present there are three methods being applied to know the state of brain of suspect by the investigating agencies in the process of interrogation of suspects, there are Polygraph test, brain mapping, narco-analysis test. Though these tests are proving to be great help for investigating agencies, these tests are not free from criticism. Brain fingerprinting testing is criticised on the ground that suspect might not remember all the details of crime, also person uses drugs or alcohol it may affect the reception and storage capacity of brain. Similarly, narcoanalysis is chastised since it is not infallible. It has been discovered in numerous occasions that subjects provided completely erroneous and fraudulent information. These tests are also criticised on the ground of violation of sanctity of mind and hence invades the privacy of person. Of course, such advanced scientific technologies are helpful in detecting lie, crime, and criminals and proves to be boon for criminal justice system. But our judicial system has not yet decided to accept scientific technologies completely and

therefore it allows such only after obtaining consent from the suspect. To conclude, it can be said that, in this age of science and technology, the law should not lag behind in adopting scientific methods in a lawful manner by legal means and attempts should be made to properly equipped the FSLs so that its utilization in effective investigation can be made. There should be an enactment of separate Act which deals exclusively with scientific evidences, keeping in mind all the repercussion of the adversarial system which our judicial system follows.

## II. CONCLUSION :-

The advances in science and technology are increasingly enhancing the role of science and scientific aids in criminal investigation. This is a passive trend as it strengthens the much-needed objective of criminal investigation thereby enhancing the credibility of investigation process and improving the probability of bringing offenders before court. The criminal investigation as a branch of criminal law is very sensitive and grave issue which strives for Public Justice, Public order and to subdue crime. Its main objective is to facilitate justice and it ends by supplementing the Indian Evidence Act, 1872. The evidences which are procured during criminal investigation are then brought before the court but before that it has to be analyzed that how for these evidences are relevant. The basic principle of admissibility that is the logical relevancy of the evidences with the facts in issue or other relevant facts. This is the first condition to be fulfilled by the evidence seeking admission. However, in some situations even logically relevant evidence may be declared inadmissible due to some technicalities. Since the inception of scientific evidence with the passage of time forms an integral part of criminal investigation. The rapid revolution in scientific techniques during criminal investigation process poses a constant challenge to our judiciary. Though, the utilization of new scientific procedures enables to enhance the quality and reliability of scientific evidence and facilitate the efficient processing of specific cases through the courts. The scope and importance of scientific evidences has been increasing over the year. In order to strengthen the investigation process, scientific investigation has to takes precedence. Over time, the application of scientific methods to criminal investigations has evolved into Forensic Science, a full-fledged field of study.

## REFERENCES:-

- [1]. Jamieson and Andrei Semikhodskii, Dealing With DNA Evidence: A Legal Guide (Taylor And Fransis, New York, 1st edn., 2007)
- [2]. Anna Barbora, Manual of Forensic Science: An International Survey (CRC Press, London, 1st edn., 2016).
- [3]. B.R Sharma, Scientific Criminal Investigation (Universal Law Publishing, Haryana, 2nd edn., 2017).
- [4]. Balwant Rai and Jasdeep Kaur, Evidence Based Forensic Dentistry (SpringesHeidelberg, New Delhi, 1st edn., 2013).
- [5]. K Johri, Forensic Science- Identification Of Finger Prints (Asia Law House, Hyderabad, 1st edn., 2018).
- [6]. Danielle sapse and Lawrence Kobilinsky, forensic advances and their application in judicial system (CRC Press, America 1st edn., 2012).
- [7]. Dorothy Gennard, Forensic Entomology: An Introduction (Wiley Blackwell P.)
- [8]. A. Moenssens (ed), Forensic Encyclopedia of the Social Science (John Wiley and Sons Ltd., London, 2009).
- [9]. Deepak Ratan and Mohd H. Zaidi, Forensic Science In India and the World ( AllahabadLaw Agency, Lucknow 1st edn. 2012).
- [10]. Evgeny Katz And Jan Halamek, Forensic Science: A Multidiciplinary Approach (WileyVCH Verlag Gmbh And Co., Germany, 1st edn., 2016).