**CHALLENGES IN USING FORENSIC EVIDENCE IN CRIMINAL INVESTIGATION WITH RESPECT TO NCT OF DELHI**

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**CHAPTER 1:**

**INTRODUCTION**

**1.1 RESEARCH BACKGROUND**

* + 1. Understanding the concept of Criminalistics/Forensic Science

Crime is a very old world and has evolved with the evolution of Homo Sapience. Generally, with the development of mankind there was a need generated when the human started living in the society. For giving equal rights and honor of the society certain do‘s and don‘ts was set for the people. Under these set parameters of rules it was observed and evaluated that none of the society member breach these set rules and if they do so then they use to punish and penalize to keep the society free from the evil. Therefore, this concept evolved into the process of investigation and discovery of crime and administration, later which also laid the foundation of various institutions for trial and investigation to impart justice to all impartially. There are many delivery systems which are primarily based on evaluating the truth and identifying whether the victim is actually speaking the truth or just putting wrong allegation with some evil motives. Relatively, the testimony from the ‘eyewitness’ found critical before penalizing any criminal. But it was observed that in many cases the eyewitness failed to be effective when they were forced to deny or give false statement under the pressure of threat to life or lure of money resulted the eyewitness reliability came on stake and cannot be completely relied upon, before considering a person guilty. Moreover, the investigators of crime then resorted to ‘third degree methods’ on criminal to extract or reveal the truth from them. But due to the values and cultural changes it was considered to be cruel, many a times innocent people have to face inadvertent consequences and suffer an irreparable loss. With the passage of time, due to much technological advancement and scientific researches criminal investigation also started using modern scientific techniques which helped in resolving the problems in swift and reliable manner which was termed ‘Forensic Science’.[[1]](#footnote-1)

The science which is used for the purpose of law to resolve the legal dispute, for such instances any branch of science which is used is known as Forensic Science. In 287 – 212 BC Archimedes, the father of forensic science exclaimed ‗Eureka‘ when he found that the crown of the king was not made of gold which was falsely claimed to be, on the basis of buoyancy and density. Since then the word ‘forensic’ is used and the same is derived from Latin word ‘forensis’ which means ‗connecting to court of law‘. However, in the legal terminology forensic science means the science which works on the practice and principles of various science branches, helping to resolve dubious questions in court to extract the true justice. It is a science which has a blend of both the scientist and the legal practitioners which makes it easy and effective in the legal senses. Consequently, forensic science has come up with the practice and study to implement physical and natural sciences to produce correct evaluation of legal and social problems. It is analyzed over the period of time that forensic science has laid a strong and active role in the regulatory and civil proceedings. In a broad perspective it would not be wrong to state that forensic has become an inseparable part of investigation whether any physical evidence ranges from macroscopic like a diesel truck or microscopic such as a pollen grain. These varies from the autopsy of a battered child, or as identifying some intangible brief vapors of gasoline, forensic actively participate and covers all criminal prosecutions in the broad sense to act as a protecting agent for the victim and extract the evidences and truth to charge the crime against the perpetrator. In simple terms forensic can be understood by saying that it is the application of science to law. Since its involvement this science has helped in investigating and identifying various cases which involved victims of civil cases such as fraud, forgeries, negligence etc. and criminal cases such as robbery, rape, murder, assault, kidnapping etc. For identification of any type of evidence which requires scientific testing to ensure correct recognition of crime or the substance used during the criminal act may comprise of bloodstains, drugs, body fluid, dead body, arson accelerants, various other unidentified materials and other chemicals. The object then undergoes through the standards, data base and establish criteria of information, for determining the examination all minute details are analyzed and evaluated on the basis of type, color, due composition, species or anatomical origins, class characteristics etc for performing scientific identification which signifies to specifically state that a particular meticulous object of evidence derived from the scene, precise locus or an individual. Evidences such as fingerprints and DNA evidences of an individual without ambiguity identifies the criminal relation of the culprit whereas other types of evidence needs to find the dependability from the meticulous site, resource or person.[[2]](#footnote-2)

With the enhancement in criminal activities, thorough investigation of such criminal cases has generated the inextricable link of forensic science, between the crime, law and justice. The present picture of the criminals and their crime investigation is quite depressing because of the huge percentage of the murder trails ends at hefty acquittals which is probably on an average over Rs.10000 per trial is spent by the prosecution agency that is a huge amount of public currency which is getting wasted. During the criminal incidences the trials are mainly related with materials and indirectly through places, materials with people, time. Even the investigating officer plays a vital role in collecting all the related evidences without any delay, but the success or the failure of the forensic science application during the process of any criminal case only happens when the relevant evidences are not collected on time and properly or exhibits get contaminated or samples are not provided correctly for the comparison then the findings will not be accurate or can be useless.

There are various factors where the forensic science needs to find some appropriate way to eliminate their limitations:

1. **Social Changes** - Due to the advancement in technology even the forensic science also needs to be updated with the current technological and investigating needs. As the society is changing with the enormous speed to exist in the rapidly changing needs of the society. Many people are migrating from the rural to the urban areas to earn better source of livelihood and upgrade their standard of living. People now want to achieve easy money within a short time which forces them to commit crime using various new and advanced methods. Similarly to match the pace of the criminal mindset the evaluating and identification methods need regular up gradation, to create a fierce example in the society by curbing the criminals to commit crime.
2. **Hiding Facilities** – With the globalization and industrialization the transportation facilities have been revolutionized completely. Due to the densely populated cities and swift transportation facilities across the cities and countries it becomes quite easy for a criminal to escape to some other city and hide themselves. Additionally, it is observed in many cases that criminal take an advantage of other countries legislative rules and migrates to other countries to avoid their prosecution and apprehension.
3. **Technical Knowledge** – Technology have many advantages but considering it as a boon or bane totally depends on the person, how they use it. In the current situation where every knowledge or information is available by just a single click, people with a malign mindset uses such information to harm the well-being of the general public. In such cases when a criminal uses quite refined crime technique then the investigating officers along with the forensic investigators also need to be quite upgraded and sharp to evaluate every minute detail of the crime to reveal the criminal and link the criminal with the offence directly.
4. **Extensive Field** – Considering the increase in the crime rates the criminals and their crime does not limit to their territory or region rather it has expanded on the global levels. Many crimes such as drug trafficking, financial frauds, smuggling, child trafficking, forgeries, includes offers fertile and ever expanding fields from criminals across national and international boundaries which become tedious task to track and get hold on them.[[3]](#footnote-3)
5. **Lack of appropriate evidence** – The word ‗Corruption‘ is quite prevalent as a social evil in the society and jurisdiction along with the forensic investigation also is not away from such evil. Many a time evidences are forged or contaminated intentionally, due to some undue superior or political pressure, to help the criminals get away from the crime.

The thesis concentrates on the usage of forensic science and the studies of Forensic Entomology, Forensic DNA Analysis, Forensic Chemistry, Bloodstain Pattern Analysis, Forensic Art and is limited to these and doesn‘t cover Cyber Forensics or Computational

Forensics.

* + 1. **Role of forensic evidence in the criminal justice delivery system**

The forensic sciences over the past twenty five years have made drastic scientific breakthrough such as physical evidence databases, DNA typing, and new scientific instrumentations, by making various contribution in assessing the criminal case processing. Considering the major involvement and intrigue importance of forensic science in 2006, the National Institute of Justice funded the project considering addressing four major goals to upgrade the forensic science, such as describing and cataloging the various types of evidences which was collected during the crime scenes, a proper system to be maintained which can track the use and attrition of forensic evidences, including their laboratory analysis, justice processes etc., evaluate and estimate the percentage of crime scenes where one or more forensic evidences gets collected and categorize and classify frequent form of forensic evidence which helped in getting successful outcomes during the case. This will eventually help to create an appropriate bank of database which will be beneficial in the later cases. There are various roles and responsibility of the forensics to crack the case and levy an added hand in procuring accurate and speedy justice.

Forensic is considered to be one of the essential blocks of a puzzle without which criminal investigation would not be complete.4 If the forensic science would not be applicable in the judicial system then it would be difficult to fetch appropriate justice when there is no eye witness or alibi. Apart from the various agencies and detectives which are continuously involved in the collection of criminal evidences whether it is digital or physical, forensic department supports them to analyze such evidences admissible in the court of law. Hence, it would be clearly understood that without the appropriate functioning of the forensic science all the criminals, thieves, drug traffickers, rapists, murderers would be roaming scot-free. The forensic scientist has a crucial responsibility and duty to perform careful examination without getting any evidence tampered or contaminated. [[4]](#footnote-4)To perform such examination they undergo various methods and techniques to come up with appropriate results. Few of such incidences are discussed in as under:

1. **Scene of Occurrence** – The ‘Scene of Occurrence’ is the place where all the people involved in the crime were present together for a particular reason. Additionally, during this meeting they exchange traces with one another along with the scene, leave marks, odds ends, and tools or apparels which they were wearing, or means of commutation or hand and feet marks and prints. Such information is very handy to identify and establish orpus delicti, identifying connections between the victim, criminal and the scene of occurrence, including evaluating the pattern of event if it matches with any previous incidence. The scene and its appropriate examination plays essential role in any success or failure of the case, hence, it needs appropriate care, diligence and planning. Majorly, the scene of occurrence has to be identified and evaluated immediately after the crime done as it changes rapidly and cannot be preserved forever. Few evidences disappears or changes soon after the occurrence, others get altered or contaminated as the time passes. The main hindrance at the crime scene for the forensic science is that they get an opportunity to examine the scene only once if it is not examined vigilantly and carefully much vital information can get lost forever.

In the case, ***Raghunandan v State Of U.P., 1974 Cri. L. J. 453 (S.C)*** the High Court and the trial court both had forgotten about the complaint that the blood recuperated from the spot of event was not sent for substance examination. The disappointment of the police to send the blood for compound assessment is a genuine instance of homicide, for example, the one preceding us, is to be devalued. In such cases, the spot of event is regularly questioned.

***Marachalil Chandra Tukaram Talekar v State of Gujrat. 1980 Cri. L.J.5 (Guj)*** The identity of the scene played a vital role in proving the justice. It was contested with extraordinary passion in the High Court just as it was in the court of sessions that there was the path of blood from the front entryway of the place of the Vakil into the passageway rooms checked H and H-1 in the arrangement and that upheld the safeguard hypothesis that the perished Kannan got the cut wounds not in or close to the house being referred to however some place far away close to the railway station. The High Court took the view that if Kannan had received the wounds some place outside the house it was incomprehensible for him to have come into the room considering the doctor's proof. It was concluded on the basis of the material put on the record, as forensic evidence that there could be no space for question that Kannan got the wounds in the room itself and not outside and that would have lead to the death of kannan, or kannan loosing his life while he was being carried or dragged to the room as accordingly there would have been continuous bleeding from the body throughout travel as the wounds were intense and vital arteries had been cut.

1. **Unique Identification of a criminal** – Fingerprints gave an exclusive breakthrough in orensic science in the identification of criminals. Initially, believing in the utility of the fingerprints as a scientific tool took time but later it became an essential tool for identifying and recognizing the culprit.

The basic fixes on account of harm are no longer in question. The issue was

closed due to a progression in Supreme Court decisions. According to the ***Anant Chintaman Lagu vs. State of Bombay (AIR. 1960 S.C. 500)***, the lordships articulated that the indictment set up three recommendations for a situation of harm: I) Death occurred by poison harming;

ii) Accused had the toxin in his ownership, and iii) Accused had the chance to oversee toxic substance to perish. Another similar instance exemplifies in ***Emperor vs ShetyaTimma( AIR 1926 Bom. 518)***, the death was occurred by Dhatura poisoning. Subsequent to assessing clashing choices on this point, the lordships held that where the alleged accused provided Dhatura, the toxic substance to five men so as to undertake the commission of an offence of burglary and as a result three men kicked the bucket, the charge must be attempted to have information that their demonstration was risky to such an extent that it was probably going to be an offence. A similar view was taken in ***Emperor vs. Chattarpal( AIR 1930 Oudh 502).***

* + 1. **Importance of forensic evidence in criminal trials in India**

The Evidence Act that has been introduced by the governing body is followed by all the states and jurisdiction bodies uniformly across India. It includes uniform regulations for both civil and criminal cases. The degree of proof may differ in civil and criminal cases, but both are governed under the same rulings. While focusing on criminal jurisdiction, the principle of onus probandi is followed in India. It specifies that the accused must be presumed to be innocent unless the crime has been proved against him/her beyond reasonable doubts. Due to the adoption of the principle of onus probandi under the Evidence Act, the deployment of forensic evidence in criminal trials gets reduced.[[5]](#footnote-5)

Indian Evidence Act 1872 and the Criminal Procedure Code are the two vital procedural regulations that are essentially used to resolve or pass decisions regarding criminal trials in India. The Criminal Procedure Code includes passing judgment from the initial origin of crime to the final order of acquaintance or accusation. The judicial Magistrates look into every aspect of the case and pass the final verdict based on the evidence presented during the trials. Thus, it can be said that the Indian Evidence Act is limited to the use of evidence that is either produced by the prosecution or defendant. The Act also specifies rulings related to kinds of evidence that can be considered as relevant and evidential proof in the civil and criminal cases. For example, Section 45 specifies that the opinion that is given by the experts is to be considered as evidence, while Section 46 suggests the facts that are relevant and support or negate the opinions of experts are to be taken into consideration. Additionally, Section 47 specifies that the authenticity of facts regarding faulty handwriting or signature by the accused can be verified by comparing it with the actual handwriting of the person who is ought to sign or write the document.[[6]](#footnote-6)

While focusing on forensic science in criminal trials, certain processes such as Forensic Identification (DNA tests), Forensic Entomology, Forensic Odontology, Forensic Pathology, and Forensic Toxicology are used. The Forensic Identification (DNA tests) includes the Restriction Fragment Length Polymorphism (RFLP) technique in which DNA analysis of the sample is executed. However, with more advancement in modern technology, the RFLP analysis procedure has become outdated and used very rarely. Polymerase chain reaction (PCR) is related to making a million copies of DNA from the biological sample. It helps in preserving the evidence that has been acquired from the crime place. A short tandem repeat (STR) technique is used to analyze specific regions within DNA. It helps in identifying the difference between DNA profiles. Mitochondrial DNA analysis (mtDNA) analyzes DNA profile from the biological evidence such as s hair, bones, and teeth. Y chromosome analysis is used to identify the genetic markers or tracing relationships between the several male contributors.***[[7]](#footnote-7)***

Forensic entomology is included in death investigations and identifies the cause of death. It determines the location of the incident, detects the presence of poison or drugs, and length of negligence to health constraints that led to death. Forensic odontology or dentistry is associated with analyzing dental evidence. It helps in detecting the age and profile of an individual. It is also used as evidence in the case of bite marks left by the attacker or an object left in the crime spot. For example, in child abuse cases, Forensic odontology plays a major role in the identification of the accused through bite marks. Forensic pathology is associated with the examination of the dead body and detects the cause of death. It is linked with medico-legal authority and identifies reasons behind unexpected or sudden death. Forensic toxicology applies different techniques and procedures to obtain the outcomes. It is applied to different kinds of samples and support criminal investigations by identifying the cause of death. Thus, it can be summarized that by using different forensic investigative methods, there is the detection of human remains, mass fatalities, abuse, malpractice, bite mark injuries, and determination of age.[[8]](#footnote-8)

The forensic evidence has been used in several criminal cases such as Vasu vs Santha 1975 (Kerala), Tandoor Murder Case (1995) Delhi, Dinesh Dalmia v. C.B.I (2007), and Sister Abhaya murder case (1995) Kerala. While considering the case of Vasu vs Santha 1975 (Kerala), the legitimacy of the children was verified by conducting a blood test of the accused. The verification of legitimacy status in India has been given special protection. The judges are specifically very strict regarding the evidence that is produced in case of the legitimacy of a child. The proof that confides the adultery of a mother is not sufficient to suffice the legitimacy of a child. The presupposition of rulings related to the legitimacy of the child is to be strong and conclusive, held in the case of Morris V/s Davies (1837) 5 CL & Fin 163. The standard of proof is needed to be taken into account upon deciding the legitimacy of the child. Thus, the outcomes that were received after the blood test were accepted in the Vasu case as it was scientifically proven that Vasu was the biological father of the Santha‘s offspring. Based on the blood test verification, the Court summoned that Vasu was liable to

pay his wife for the maintenance and upbringing of the children.[[9]](#footnote-9)

In Tandoor Murder Case (1995) Delhi, the accused Shushil Sharma killed his wife Naina Sahni by firing three bullets on her head and chest. Sushil killed her suspecting that she was having an affair with Matloob Karim. After killing Naina, Sushil wrapped the body and took it Bagiya restaurant. The accused chopped the body into small parts and burnt them in the open air tandoor present in the restaurant. However, due to smoke and fumes, an alert was given by the constable in the area and the burning possession was interrupted in between. Upon investigating the case, the police recovered the revolver used by Sushil along with blood-stained clothes. Additionally, blood samples of Sahni‘s parents were taken and compared with the bloodstains that were obtained from the skull and neck of the dead body. As per the DNA analysis, the bloodstains on clothes and Sahni‘s parents, and it was found that the dead body was of Naina Sahni. Thus, based on the DNA reports and confirmation that the bloodstains on clothes, body, and sample of Sahni‘s parents matched with Naina, Sushil was convicted and ordered to be sentenced to death by the Court. However, in further appeals, the death sentence was changed to life imprisonment.[[10]](#footnote-10)

In the case of ***Dinesh Dalmia v. C.B.I (2007)***, Sh. Dinesh Dalmia was accused of carrying out fraudulent activities such as deceitful activities, contravene of trust, counterfeit, and using forged documents. The accused had gained INR 5,94,88,37,999 after misappropriation of assets and cheating the investors by establishing three companies such as New Vision Investment Ltd., United Kingdom, Dinesh Dalmia Technology Trust, and Dr. Suryanil Ghosh, Trustee - Softechh Corporation and selling the assets to M/s. DSQ Holdings Ltd., M/s. Hulda Properties and Trade Ltd. and M/s. Power flow Holding and Trading Pvt. Ltd. Thus, a case was file against Dalima based on the first information report to the Central Bureau of Investigation (CBI). However, in the meanwhile, Dalmia went to the United States and was asked to arrest by the governing body by issuing a non-bailable warrant. Thus, after the detention of Dalima, CBI introduced the narco analysis test to find the main reason behind the crime. As per the oral confessions by Dalmia, evidence was collected by CBI concerning self-incrimination and motive of the crime. Finally, the case was file against Dalima under Sub-section (2) of Section 173 of the Code in which Dalima was accused of forgery and infringement. Thus, it can be said that forensic evidence played a major role in resolving the case as the major evidence against Dalmia was collected based on the revelations made by him under narco test analysis.

In the Sister Abhaya murder case (1995) Kerala, the body of Sister Abhaya was found outside the kitchen compound in the church where she lived. Sister Abhaya was a 19 years old woman associated with St. Joseph's Congregation for women under the Knanaya Catholic diocese of Kottayam. She was preparing for her exam and used to get up early at around 4 am for studies. On her day when the un-fateful incident happened, as usual, she had got up early for studies but went to the hostel for water. Later, she was found to be missing and her body was recovered from a well outside the kitchen compound. Upon investigations by using forensic methods such as narco-analysis, polygraph tests, and brain fingerprinting, it was found that the girl was killed by hitting with an axe. Thus, under Section 302, Section 201, and Section 34 of the Indian Penal Code, two fathers were accused of killing Abhaya.[[11]](#footnote-11) By analyzing the cases, it can be said that the forensic evidence is of high importance and plays a significant role in resolving the cases in a logically and more significant manner. Therefore, the increasing practice of forensic evidence must be included in the court trials. The use of medico-legal work will help in reducing the gap between the crime and the investigation process. It will help in resolving the cases and identifying the culprit in less duration.

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