

Role of forensic science in criminal justice

Administration

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Abstract

Forensic substantiation is an order that functions within the parameters of the legal system within countries. The rationale being assistance in conducting criminal investigation and to contribute to courts truthful information upon which they can rely in resolving criminal disputes. The use of technology in crime investigation has been a step forward in the process of progress of criminal justice. Police utilize logical tools and techniques to detect a crime, reconstruct the crime scene, identify the suspected wrongdoer and ascertain critical links; the courts, on the other, take account of these substantial evidences, otherwise fool proof, and resolve with improved accurateness the innocence or guilt of the offender. Law dealing with forensics incorporates values for law enforcement agencies and the courts to have the best use of scientific advancements in the sphere of legal evidence to help the court to reach to exactness while administering justice. The forensic evidences, regardless of being the secondary evidence, are neutral in nature and hence have great corroborative value.

Key Words: Forensic Science, Legal evidence, Criminal Investigation, Law Enforcement Agencies

Introduction

Forensic science is the science in the service of the law. Analysis of forensic is used in the investigation and prosecution of civil and criminal proceedings. It can help to establish the guilt or innocence of possible suspects².

Its purpose is to provide guidance to those conducting criminal investigation and to supply to courts accurate information upon which they can rely in resolving criminal and civil disputes. An expert in forensic such as a scientist from any technical field will provide analysis of the evidence, witness testimony on examination results, technical support and even training in his or her specialised area.

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² "Innovative methods of forensic science", available at: physicspost.com.

Forensic evidence is also used to link crimes that are thought to be related to one another. For example, DNA evidence can link one offender to a number of different crimes or crime scenes or exonerate the accused.

Forensic evidence also helps in linking crimes and helping law enforcement authorities to narrow the range of possible suspects and to set up patterns of crimes, used in identifying and prosecuting suspects.

Definition of forensic science and law

Forensic Science is the application of science to the law. Mostly used in criminal cases, forensic scientists deal with search and examination of physical traces used in establishing a suspect of causing a crime at the scene of the crime or of the victim. This would include blood traces or body fluids, clothes and textures from clothing, hair, footwear and if any tools used etc³.

Forensic science also includes anything that assists in the collection, preservation and investigation for the purpose of evidence such as DNA identification, examination of structural design and to identify explosives⁴.

Techniques in forensic science and their usefulness in the administration of criminal justice:

Narco-Analysis Test- Narcosis is a state of unconsciousness induced by drugs. Narco-Analysis is a process whereby a subject is put to sleep or put into a drowsy state by means of chemical injection and then interrogated while in this state. This method has been utilized to add to the memory of a witness. During the process of Narco-Analysis test a person has no power to think due to the effect of drugs which is injected into him.

Polygraph or lie detector test-The term 'Polygraph means 'many writings' and refers to a method in which psychological activities are recorded. The principle is that when a person lies he becomes nervous, which in turn causes mental excitation. To cover up the excitement, adrenal glands are stimulated to secrete Adrenalin, which on entering the blood stream, sets

³“FORENSIC SCIENCE AND IT S TECHNIQUES”, available at: airwebworld.

⁴ DR K. MATHIRAN, MODI'S MEDICAL JURISPRUDENCE AND TOXICOLOGY, Lexis Nexis Butterworths, 23rd Ed.

up the blood pressure and rate of pulse and respiration. The psychological changes when recorded are jointly called Polygram, which is analysed to find out whether during the lie detection test, the suspect experienced emotional stress with questions asked.

Brain Mapping or P300 Test- This method is also known as ‘Brain wave finger printing’. By this technique, the suspect is first interviewed and interrogated to find out if he is concealing any vital information. Sensors are attached to the head and the person is made to sit in front of a computer monitor. The suspect is shown and made to hear certain images and voice. The sensor is attached to head monitors and records electrical activity and P300 waves in the brain, which is produced only if the suspect has link with stimulus. The suspect is not asked any question. This way the brain finger printing matches the information stored in the brain with that of the related crime and crime scene. If the person is innocent, no such P300 wave get registered during the test. In India, the first Forensic laboratory to use this technique is Forensic laboratory in Bangalore. The Court considers all other proofs available along with the view of the scientific expert, which is just one piece of evidence needed to be taken into consideration and appreciated for its evidentiary value.

This test would not be valid wherein two suspects in an investigation were both present at a crime, but one was a witness and the other a perpetrator. The method can only detect information from their memory that would place both at the scene of the crime and it cannot decide what their roles were, thereby creating a distinct possibility of an innocent eye-witness becoming a suspect of the crime and giving a doubtful chance to the real culprit to create a condition of doubt.

DNA Profiling- One of the most reliable modes of investigation in forensic science is DNA profiling. DNA is the abbreviation of the term, “Deoxyribose Nucleic Acid”, an organic substance which is found in every living cell and which gives an individual genetic blue print. DNA is obtained from sources like, blood, semen, bone, saliva etc. DNA was first discovered by Fredrick Miescher in the year 1869⁵. DNA tests are highly effective because each individual’s DNA is unique except the twins. The possibility of DNA being same is one in three billion. And it is reliable because it cannot be tampered with. DNA test can be used in various cases in order to ascertain the parentage of a child, recognize mutilated dead bodies etc.

⁵LEON E. ROSENBERG, DIANE DROBNIS ROSENBERG, in Human Genes and Genomes, 2012.

Paternity- The Indian Evidence Act, 1872, is against the legitimization of a child and the public policy is that no child should suffer due to lapses on the part of their parents. It is well established that when certain fact is considered as conclusive proof of another fact, the judiciary by and large disables the party in disrupting such proof. The only exclusion occurs when the party is able to show that there was no access to the other party when the conception could have taken place. Whenever paternity is contested, the burden of proof is on the party pleading negative. Section 125 of the Code of Criminal Procedure, 1973 states that the natural and fundamental duty of a man is to maintain his legally wedded wife, children and parents so long as they are unable to maintain themselves⁶.

Fingerprints-Fingerprints have been used by the crime investigators as one of the most essential piece of evidence. Human beings are born with a distinguishing set of ridges on the fingertips. The ridges, which are rich in sweat pores, form a pattern that remains fixed for life. Even if the skin is separated, the same pattern will be evident when the skin regenerates. Usual patterns found in fingerprints are arches, loops, and whorls. The pattern left by these substances, which collect along the ridges on fingers, make up the fingerprints required by the police at the scene of a crime.

The role of forensic science in investigation of crime:

Forensic science describes the character of the suspect who committed the crime. The evidence indicates the type of crime committed. The situation explains the time of the occurrence. Forensic evidence proves the scene of the crime. Forensic study finds out the modus operandi of the offender. Lastly, it establishes the motive behind the crime. During an investigation, evidence is collected at a crime scene or from a person, analyzed in a crime laboratory and then the results presented in court. Forensic science plays a vital role in the criminal justice system by providing precise information through the analysis of physical evidence, the identity of the culprit through personal clues like fingerprint, footprints, blood drops or hair⁷. It links the criminal with the crime through objects left by him at the scene and with the victim or carried from the scene and the victim. On the other hand, if the clues recovered do not link the accused with the victim or the scene of crime, the innocence of the accused is established. Forensic science, thus, also saves the innocent. After the surfacing of

⁶PRASAD C.K, SAXENA NAMIT, RATANLAL & DHIRAJLAL, CODE OF CRIMINAL PROCEDURE, 22nd Ed, Lexis Nexis.

⁷ISHATYAGI AND NIVEDITA GROVER, DEVELOPMENT OF FORENSIC SCIENCE AND CRIMINAL PROSECUTION-INDIA, 2 IJSRP Vol.4 (2014).

DNA technology as a method of forensic science, it provides tremendous amount of information to the investigating officers that enable him to find the suspect from evidence which he has left at the scene of crime.

Legal provision of forensic science in India⁸-

The relevance of forensic science to crime investigation and trial has to stand the limitation of law. The major questions are: viz. a) What is the constitutional validity of such techniques? b) To what extent does the law allow the use of forensic techniques in crime investigation? Articles 20(3) of the Indian Constitution provide that no person accused of any offence shall be compelled to be a witness against himself. Article 20(3) is based upon the presumption that the accused person is innocent till proved guilty⁹. It also protects the accused by protecting him from the possible torture during investigation in police custody. Criminal law considers an accused as innocent until his guilt is established beyond reasonable doubt. The Universal Declaration of Human Rights, Article 11, states: "Everyone charged with a penal offence has the right to be presumed innocent until proved guilty according to law in a public trial at which he has had all the guarantees necessary for his defence."¹⁰ Article 20 (3) of the Constitution of India guarantees fundamental right against self incrimination and guards against forcible testimony of any witness. This right has been taken to ensure that a person is not bound to answer any question or produce any document or thing if that material would have the tendency to expose the person to conviction for a crime¹¹ c) What is the evidentiary value of the forensic information obtained from the experts? Sec.73 of the Indian Evidence Act empowers the court to direct any person including an accused to allow his finger impressions to be taken¹².

The Bombay High Court in another significant verdict in the case of, *Ramchandra Reddy and Ors. v. State of Maharashtra*¹³, upheld the legality of the use of P300 or Brain fingerprinting, liedetector test and the use of narco analysis. The court upheld a special court order allowing SIT to conduct scientific tests on the accused in the fake stamp paper scam

⁸N. B. NAREJO, M. A. AVAIS, EXAMINING THE ROLE OF FORENSIC SCIENCE FOR THE INVESTIGATIVE- SOLUTIONS

⁹P.M.BAKSHI, CONSTITUTION OF INDIA, Universal Law Publishing 15th Ed,

¹⁰Universal Declaration of Human Rights, United Nations High Commissioner for Human Rights, http://www.icnl.org/research/library/files/Transnational/UNIVERSAL_DECLARATION_OF_HUMAN_RIGHTS.pdf.

¹¹JUSTICE U.C. SHRIVASTAVA, Immunity from Self-Incrimination under Art. 20(3) of the Constitution of India, JJTRI, U.P., <http://ijtr.nic.in/articles/art19.pdf>.

¹²Criminal Manual (CrPC, IPC and Evidence) 1st Ed, 2018, Universal Legal Manual.

¹³Ramchandra Reddy and Ors. v. State of Maharashtra, A.I.R. 1961 S.C. 1808.

including the main accused, Abdul Karim Telgi. The verdict also maintained that the evidence procured under the effect of truth serum is also admissible. The Code of Criminal Procedure, 1973 was amended in 2005 to enable the collection of a host of medical details from accused persons upon their arrest. Section 53 of the Criminal Procedure Code 1976 provides that upon arrest, an accused person may be subjected to a medical examination if there are “reasonable grounds for believing” that such examination will afford evidence as to the crime. The scope of this examination was expanded in 2005 to include “the examination of blood, blood-stains, semen, swabs in case of sexual offences, sputum and sweat, hair samples and finger nail clippings by the use of modern and scientific techniques including DNA profiling and such other tests which the registered medical practitioner thinks necessary in a particular case.”¹⁴ Section 164A Code of Criminal Procedure, 1973 provides for the medical examination of a woman who is an alleged victim of rape within twenty four hours and such examination includes the DNA profiling of the woman. Both the sections authorize any medical practitioner within the meaning of Sec. 2(h) Indian Medical Council Act, 1956 to collect a DNA sample¹⁵. Question is as to whether every medical practitioner is capable to collect and preserve DNA evidence. It is a well known fact that DNA evidence is entirely dependent upon proper collection and preservation of sample. Any simple mistake or unawareness can contaminate the sample and contaminated sample is of no use. Under Indian Evidence Act, 1872, forensic report is considered as “opinion” tendered by expert. An expert may be defined as a person who, by practice and observation, has become experienced in any science or trade. He is one who has devoted time and study to a special branch of learning, and is thus especially skilled in that field wherein he is called to give his opinion. The credibility of an expert witness depends on the reasons stated in support of conclusion and the tool technique and materials, which form the basis of such conclusion. However, the court is free to disagree with the conclusions drawn by the expert and rely on other evidences for the purpose of decision¹⁶.

Latest judicial pronouncements:

¹⁴GAURAV AGGARWAL, SMART STUDY SERIES FORENSIC MEDICINE & TOXICOLOGY 73 (ELSEVIER A division of Reed Elsevier India Private Limited, Gurgaon Haryana), 2009).

¹⁵ Overview and Concerns Regarding the Indian Draft DNA Profiling Act, Council for Responsible Genetics, http://www.genewatch.org/uploads/f03c6d66a9b354535738483c1c3d49e4/India_DNA_Bill_

¹⁶2004 All MR (Cri) 1704.

In *Anil @ Anthony Arikswamy Joseph v. State of Maharashtra*¹⁷, relying on scientific evidences including DNA profile and oral evidences, the accused was convicted and punished with death sentence and fined by the Sessions Judge, Nagpur for gruesome murder of a minor boy aged about 10 years after subjecting him to carnal intercourse and then strangulating him to death.

In *Vishal Yadav vs State of UP, Nitish Katara murder case*, the identification of the deceased victim was difficult due to availability of only a small portion of one un-burnt palm with fingers. DNA profiling helped in identifying the body remains by matching DNA profile with parents of the deceased which helped the High Court of Delhi to uphold the conviction of the accused¹⁸.

In *State by the Inspector of Police v Manoharan*¹⁹, the use of DNA technology paved the way to prosecute and convict the culprit to death, liable for kidnapping and killing after gang rape of a 10 year old school girl by auto rickshaw driver and throwing the corpse of the victim in a running canal .

In *Sushil Mandal v. The State* represented by CBI²⁰, the petitioner, father of the deceased boy, challenged the findings of DNA profiling. The deceased boy fell in the adolescent cusp of mutual infatuation with a school girl and parents of both were advised by school administration to keep a check on them. Later, the boy was found reportedly missing and, after a week, a fully decomposed unidentified body was fished out from a lake. The petitioner claimed of not identifying the body remains and clothes of his missing son. He preferred habeas corpus petition in the high court accusing the father of the girl and praying the high court for directing the investigation by the Central Bureau of Investigation (CBI). The DNA test of the body matched with the genetic profiles of the parents (the petitioner and his wife) of the deceased. Petitioner refused to accept the truth of scientific tests despite the fact DNA test was repeated for his satisfaction. The apex court placed reliance on scientific tests including DNA profiling for human identification and accordingly closed the matter.

In *State of NCT Delhi v Sujeet Kumar*²¹, the brutal rape and unnatural sexual act with a four year old girl child living in a slum dwelling was investigated by Delhi police and DNA

¹⁷Anil @ Anthony Arikswamy Joseph v. State of Maharashtra,(2014)4S.C.C. 69.

¹⁸Vishal Yadav v. State of UP,(2014) S.C.C. Online Del. 1373.

¹⁹State by the Inspector of Police v. Manoharan,2015 Cri. L.J. 1215.

²⁰Sushil Mandal v. The State 2014 S.C.C. OnlineMad. 7362.

²¹State of NCT Delhi v. Sujeet Kumar,2104 S.C.C. Online Del. 1952.

profiling was used to link the perpetrator with the ghastly act of sexual violence. The court after having examined the detailed analysis of the child's testimony and various methodologies involved therein agreed to the investigation findings based upon DNA reports and other evidences and held the accused guilty and set aside the order of the Trial Court acquitting the accused.

In *Dharam Deo Yadav v. State of Uttar Pradesh*²², a judgment which deals with the admissibility of DNA evidence, Supreme Court observed that "Crime scene has to be scientifically dealt with without any error. In criminal cases specifically based on circumstantial evidence, forensic science plays a pivotal role, which may assist in establishing the evidence of crime, identifying the suspect, ascertaining the guilt or innocence of the accused. One of the major activities of the investigating officer at the crime scene is to make thorough search for potential evidence that have probative value in the crime. Investigating Officer may be guarded against potential contamination of physical evidence which can grow at the crime scene during collection, packing and forwarding. Proper precaution has to be taken to preserve evidence and also against any attempt to tamper with the material or causing any contamination or damage."

Conclusion

Forensic science has undergone remarkable growth in recent years, including in the areas of DNA collection and analysis and the reconstruction of crime scenes. Nonetheless, too few professionals are capable of applying forensic science in legal matters.

Advance technology has given the world usefulness and accuracy tool for the purpose of criminal investigation. At present forensic science plays a vital role in crime and criminal detection.

The main dictum of criminal justice system is to afford fair justice. Undeniably, forensic evidence is more real than visual evidence. Forensic science as a scientific evidence is a benefit for criminal justice system.

Lastly, in the words of Wicker of the college of Law University of Tennessee "If and when convincing evidence is produced that are reasonably reliable, scientific methods of exposing

²²Dharam Deo Yadav v. State of Uttar Pradesh, 2014(5)S.C.C. 509.

falsehoods either in or out of the court rooms are available, these methods should be promptly utilized by the legal profession”.