Importance of Forensic Science in Crime Investigation

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Abstract

Forensic science has been used for justice delivery system since ages. However it started gaining ground in early fifties as an independent discipline and since then it has derived applications from every field of science and technology. Today it is well settled and much sought after and ever growing technology forensics and forensic investigations are fast changing their face as every other day new types of crimes are being committed. To cope up with the demanding nature of this profession, forensic services need up-gradation at every stage. This paper focuses on the applicability of Forensic science in criminal investigation and the role it plays in keeping law and order in a society, also throws light on how forensic science is acting as a bridge between the medical scientists and legal scientists.

Key Words: Criminal Investigation, Forensic Science, Justice, Medical Jurisprudence.

Introduction

Now-a-days crime pattern is fast changing due to easy availability of hi-tech tools. Criminals misuse benefits of technological developments. The new wave of hi-tech crime pattern is now a challenge to forensics. Some of the prevalent hi-tech crimes include misuse of doping through genetic manipulation, Voice over IP (VoIP), voice synthesizers, stem cell therapy, cloning of human, animal and mobile phone, nano-terrorism (nano-implant/ nano-explosives etc.), microwave weapons, dirty bombs, genetically modified food, etc.¹

Earlier criminals were mainly from poor illiterate sections of the society who took up the criminal activities because they either do not have the resources to lead a respectable life or to take revenge of mischief done to them by some sections of the society. But in these days, criminals too are highly educated class, they use a combination of their intelligence and hi-tech forensic tools to commit crimes and use anti forensic tools to get away with their evil intentions.² They are using anti forensic tools viz; degaussing to kill digital data, anti-forensic imaging tools like sweepers/wipers to clean digital data permanently, hydrogen peroxide and formalin to spoil blood and DNA evidence, camphor to mislead sniffer dog etc. meditation and use of narcotic drug will act against brain fingerprinting tools, scraping of firearm barrel, breech face, firing pin, etc. will act against forensic ballistic tools and malicious software are used to corrupt forensic data bank.

Meaning of Forensic Science

Forensic science embraces all branches of science and applies to the purposes of law. Originally all the techniques were borrowed from various scientific disciplines like chemistry, medicines, surgery, biology, photography, physics and mathematics. But in the past few years it has developed not only its own techniques but also its own branches, which are more or less exclusive domains of forensic science. The science of fingerprints, anthropometry, track marks, documents (especially the examination of handwriting) and forensic ballistics essentially belongs to forensic science alone. More recently significant advances have been made in serology, voice analysis, odour analysis, and in studies relating to pattern recognition through computers. The most important development of the 12th century however had been DNA profiling for identification of human beings.³ The term forensic comes to us from the Latin word forensic which means the forum. Forensic science is acting as a bridge between the medical scientists and
legal professionals. It is the science that comprises of the matters that provide a common platform to both scientists and legal professionals. In the ancient Rome, the forum was the site of debates concerning governmental issues, but it also was the court-house, where trials were held. Consequently, forensic science has come to mean the study and practice of applying natural and physical sciences to the resolution of conflicts within a legal setting. More broadly forensic science can be defined as “A scientific disciple who is directed to the recognition identification, individualization and evaluation of physical evidence by the application of the principles and methods of natural sciences for the purpose of administration of criminal justice system.” Moreover, it is one of most energetic, charismatic, contemporary and exhilarating branch of science used in identifying crimes and criminals. The role of forensic scientist is threefold: to collect vital physical evidence from the crime scene, to analyse them in the laboratory and to provide expert testimony before the court of law.

**Various Obstacles**

Problems of proof in linking the criminal with the crime include investigative, scientist and legal aspects. It shall be worthwhile to understand these problems and their causes to facilitate the utilisation of science and scientific techniques in the dissemination of justice. The evidence against the criminal may be the evidence of eyewitness or of the victim; it may be confession of the culprit, an incriminating statement of a co-criminal, circumstantial evidence and scientific evidence. Till recently the courts in India had to depend mostly on non-scientific evidence mainly on the eyewitness accounts. Problems of proof in scientific evidence can be divided in three main categories:

**Investigation problems**

Scientific evidence provides linkage of the criminal with the crime through clue materials. The criminal at the scene of occurrence either leaves these clue materials or they are picked up by him from the scene of occurrence. If the clue materials are properly collected, correctly preserved and sent to the laboratory for evaluation and their integrity and authenticity remain unquestionable, they can be strong evidence for the proof against the culprit. For example, a fingerprint is found at the scene of occurrence. The suspect has no legal access to the scene. The involvement of the suspect in the crime becomes certain if this fingerprint is identified to be that of the suspect. Authenticity of evidentiary clues, collected from the sources, has to be proved beyond reasonable doubt. They must be collected in the presence of the witnesses; they must be sealed after putting the identification marks on the evidentiary clues whenever possible at the scene. The collection and the sealing of the evidence must be authenticated by at least two independent witnesses. The sealing has to be done so as to prevent any seepage or contamination of the evidence. The evidentiary clue which are liable to putrefy or disintegrate, have to be preserved do that the evidence is not destroyed by the time it is examined by the experts in the laboratory. If the authenticity of the evidence is not proved beyond reasonable doubt, the courts do not accept the evidence as genuine.

**Scientific Aspects**

The use of science on a large scale in the dissemination of justice is comparatively new phenomenon in our country. There are many hurdles in its proper utilisation. The lay man considers science as something exact and definite. He, therefore, feels that forensic science should always provide a definite verdict whenever the question is put to the forensic scientist. The concept of an exact science is hazy among the non-scientists, even among the educated persons including lawyers and judges. There is no such thing as an exact science or perfect science. Every new scientific idea starts with a hypothesis. If this hypothesis holds good for a number of phenomena relating to that hypothesis, the hypothesis is called a theory. If there are no apparent contradictions or at least serious contradictions in the working of this theory, the idea receives a general acceptance. This general acceptance is reached after a lot of experimental and theoretical work. Before their acceptance, there is a twilight time zone where the idea receives a thorough investigation involving apparent contradictions and explanations thereof. Once the general acceptance stage is reached, the scientific idea is considered a law.
Legal Problems

The legal problems relating to Forensic Science involve Enacted law, Case law and certain conventions. Some practical problems are the following:

The number of matching points required for the identification of fingerprints was controversial. The Supreme Court has decided the issue that the rarity of the matching points is important rather than their number, to provide identity.8

The track evidence is believed to be ‘rudimentary Science’ by the courts. They do not place ‘much reliance’ on the evidence. This is most unfortunate. The identification of foot and footwear marks is as reliable as any other identification, though, because of the mechanics of registration of evidence it may not provide adequate identification data, as frequently. But it does not make it rudimentary science in any way.9

The identification of handwriting has always required high expertise, vast experience and heavy inputs to come to correct conclusions. The courts feel that the scientific field of handwriting identification is extremely dangerous and requires prudence and extreme caution. Miscarriage of justice, consequently, occurs frequently in cases involving handwriting. The courts have to change the attitude toward the expertise and experts; of course they have to distinguish between the charlatans from the real expert.

Law Relating to Expert Opinion in India

Following are the main legal provisions which govern the expert evidence:

The Indian Constitution

The main provision in the Indian Constitution is the article 20(3) of the constitution. It says “No person accused of an offence can be compelled to be a witness against himself.”

“The problems, which arose from this article, were legion. Could a person be forced to give fingerprints, footprints, photographs, measurements, handwriting, etc.? The constitutional Bench of the Supreme Court has solved the problems since through a landmark decision. It held that the above type of clue materials become evidence only after their evaluation. And the evaluation instead of helping the prosecution may help the accused.”10

The Indian Evidence Act

Sections 45, 73, 46, 51 and 159 of the Act deal with expert opinion. Section 45 is the most important section of the Act vis-à-vis forensics. It says:

“When a court has to form an opinion upon a point of foreign law or of science or art, or as to the identity of handwriting or finger impressions, the opinion upon that point, of persons especially skilled in such foreign law, science or art or in questions as to the identity of handwriting or finger impressions are relevant facts. Such persons are called experts.”

“This section permits only the opinion of an expert to be cited in evidence. The determination of question as to who is an expert is essential for the application of this section. The only guidance in the section is that he should be a person especially expert on the matter of Foreign Law, Art, Science, Handwriting, Fingerprints.”

Section 73

The second most important section relating to expert evidence is section 73 of Indian Evidence Act says:

“In order to ascertain whether a signature, writing or seal is that of a person by whom it purports to have been written or made, any signature, writing or seal admitted or proved to the satisfaction of the court to have been written or made by that person may be compared with the one which is to be proved, although that signature, writing or seal has not been produced or proved for any other purpose.

The court may direct any person present in the court to write any words or figures for the purpose of enabling the court to compare the words or figures so written with words or figures alleged to have been written by such person.” This section applies also, with any necessary modifications, to finger impressions. “The section specifies what comparison material for disputed handwriting, signature or seals or for fingerprints can be utilised by the courts i.e. any previous writing admitted
or proved to be that of the suspect and Specimens obtained by the courts from the person on orders.

**Section 46**

“Facts, bearing upon opinions of experts - Facts, not otherwise relevant, are relevant if they support or are inconsistent with the opinion of experts, when such opinions are relevant.

The effect of the provision is that when the opinion of an expert is relevant and has been cited, any fact which will either support his opinion or contradict it will also become relevant.”

**Section 47**

“This section deals with opinion as to handwriting. When the court has to determine the question whether a particular document was signed or written by a certain person, the court can, of course, admit the opinion of an expert. but, in addition to that, section 47 permits the court to admit the opinion of a person who is acquainted with that person’s handwriting. The section also explains as to who is considered to be acquainted with another person’s handwriting.”

**Section 51**

“Grounds of opinion, when relevant - Whenever the opinion of any living person is relevant, the grounds on which such opinion is based are also relevant.

An expert may give an account of experiments performed by him for the purpose of forming his opinion.”

**Section 159**

Refreshing memory: It is human tendency to forget things and likewise, it is pertinent to remember the entirety of the facts if someone is called as a witness. Section 159 of the Evidence Act says that a witness can refresh his memory while under examination. He may do so by referring to any writing made by himself at the time of the event taking place regarding which he has been questioned, or a while later as long as the Court considers it to be fresh in his memory. The witness can also refer to someone else’s notes prepared within the aforementioned time frame, and decide whether it is correct or not. The section further says that the witness may use a copy or photocopy of a document with the permission of the Court in order to refresh his memory.

**Code of Criminal Procedure, 1973**

The main sections of this code which are related to expert evidence are section 292 and section 293. Section 292 is applicable to only Mint Master and other currency officers. Its contents are similar to those of section 293, which has wider applications.

**Section 293**

“Any document purporting to be a report under the hand of a Government Scientific expert to whom this section applies, upon any matter or thing duly submitted to him for examination or analysis and report in the course of any proceedings under this code may be used as evidence in any inquiry, trial or other proceedings of the code.

The court may, if it thinks fit, summon and examine any such expert as to the subject-matter of the report.

When any such expert summoned by the court and he is not able to attend personally, he may, unless the court has expressly directed him to appear personally, depute any responsible person working with him to attend the court, if such officer is conversant with the facts of the case and can satisfactorily depose in court on his behalf.”

**The Identification of Prisoners Act, 1994**

“The five sections of the Act are relevant to the expert evidence. These sections 2, 3, 4, 5, and 6 of the Act provide legal sanctions for obtaining specimen evidence from the suspects/accused/convicts. Forensic Science is becoming indispensable in the dissemination of justice because of the failure of the old order, excellence and reliability of its tools and techniques and the ever availability of the wherewithal of its assistance. It should be adopted on a much larger scale that it is being adopted, if our criminal justice has to serve the society effectively.”

**Conclusion**

Any criminal investigation has to ultimately meet
its eventual fate in the court of law. If the forensic findings are not presented properly in the Court, the whole process of investigation will be futile. Hence court room forensic management is as important as crime scene management and subsequent laboratory examination and detection. The court room forensics not only depends on the ability of the expert to depose expert evidence but also on forensic awareness level of judiciary. If the hon’ble judge is not aware of the hi-tech forensic applications, the whole forensic proceedings are hijacked. Now regularly awareness programmes for judicial officers are being organised on new trends in forensic investigative techniques and their application areas. They interact with the forensic experts in their chambers and also, they visit forensic laboratories to know more on forensic developments. As a result of these awareness programmes, the judicial officers are taking the initiative to direct the central and state governments to improve the status of forensic science in the country. There is urgent need for the application of forensic science in the criminal justice delivery system.

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**References**


