

# Admissibility and Evidentiary Value of Scientific Evidence: Legislative and Judicial Approach in India

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## Abstract

Scientific evidence is one of the crucial and vital aspects to ensure the administration of justice. The involvement of forensic methods of investigations holds an important place in the investigation procedure and provides practical solutions to the existing criminal circumstances. Forensic evidence in the criminal justice delivery system is used as an influential instrument to inspect crimes and suspects so that cases are resolved as per authentic evidence and no innocent is punished. In the wake of recent developments in science and technology we cannot ignore the evidence of an expert in a criminal trial which is presented before the Court involving novel forensic methods. The judicial discretion vested upon the trial judges in admitting expert evidence is a major lacuna where the Courts are completely kept in dark on matters of science. The Courts are finding it difficult to assess the reliability of the techniques that are associated with the scientific evidence. It is therefore need of the hour a comprehensive law has to be brought in to regulate the scientific expert evidence and its admissibility in trials. *This paper deals with the Admissibility and Evidentiary Value of Scientific Evidence and the law and judicial approach relating to the admissibility of reports/opinion forensic experts and other experts in the Indian courts. The reference has been given to some important judgements on the subject concerned. The relevant discussion is regarding the relevancy and evidentiary value of the expert reports/opinions vis-à-vis law relating to the same.*

**Key Words:** Scientific evidence, Forensic Science, Criminal Justice System

## A. Introduction

In India, there has been a recent push by the Ministry of Home Affairs, Government of India to mandatorily use forensic techniques for all crimes where punishment is more than 6 years.<sup>1</sup> In order to increase the rate of conviction, forensic techniques must be integrated into the criminal justice system. Delhi Police in its Standard Order No. Crime/31/2022 has laid down guidelines for compulsory forensic investigation.<sup>2</sup> Scientific evidence, often referred to as "forensic" evidence, is widely used in the criminal justice system by prosecution and defense counsel alike. In general, scientific evidence are the results of scientific investigations used to prove or disprove a theory or hypothesis. In criminal cases, scientific evidence is used to help judges understand and determine the facts of a case. Some of the scientific evidence used in criminal cases includes Polygraph, Brain-Mapping and Lie Detection, DNA evidence, fingerprints, voice identification, bullet striations (markings), gunshot residue, hair and skin evidence, voice recognition, tire prints, and autopsy reports, which are all relevant to the finder of fact. Scientific evidence in law, is considered to be opinion evidence, which means that it is evidence presented in court by a witness of what he/she believes to be true in regard to the facts of the case. Expert witnesses are asked to come to court, based on their skills, knowledge, or expertise, to introduce their expert opinion of scientific evidence in a case, establish its reliability, and to help judges in their understanding of that piece of scientific evidence.

The Indian judicial system is built on the principle *Ei incumbit probatio qui dicit, non qui negat* which means a person is innocent unless proven guilty. In addition, our legal system promises to safeguard an innocent person even if the lives of a hundred offenders are on the line. As a result, it will need to enlist the aid of technology to accomplish this in a more efficient manner. The primary goal of using scientific evidence is to ensure that justice is administered fairly. This is done in order to punish the criminal rather than the innocent party. In the Indian scenario in many situations, forensic evidence has contributed in the identification of the actual culprit, who is then sentenced by the court. The forensic evidence produced in court is more valuable than the non-forensic evidence.

With the advancement of science and technology the scientific expert evidence is also rapidly increasing. In the recent past the criminal investigations and trials are mostly relying on the scientific methods used by the experts in collecting evidence. Scientific evidence thus arrived by technical means when produced before the Court of law leads to a pertinent question about its admissibility. The scientific evidence comes in the form of expert opinion during the trial. It makes the trial Court more responsible to scrutinize

<sup>1</sup> Government of India, Ministry of Home Affairs, Press Information Bureau, Forensic Science Capabilities: Strengthening for Time-Bound and Scientific Investigation  
<<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1837146>> accessed on 26-11-2022.

<sup>2</sup> *The Hindu*, "Delhi Police First Force to Make Collection of Forensic Evidence Mandatory", dt. 31-8-2022  
<. <https://www.thehindu.com/news/cities/Delhi/delhi-police-first-force-to-make-collection-of-forensic-evidence-mandatory/article65831296.ece>> accessed on 5-11-2022.

the expert opinion and scientific evidence very closely and to find out the basis upon which it was based. It is for the Court to evaluate the scientific evidence and to judge whether the expert opinion has been correctly reached based on the admissibility standard as laid down under law.

The advancement in Forensic Science has presented law enforcement authorities and the courts with a valuable instrument.<sup>3</sup>A scientific investigation into the crime and the justice system, with the assistance of forensic evidence, effectively and accurately determines the criminal evidence of an accused. Scientific case solving with the assistance of forensic science has been embraced all over the world, and good police investigation can be accomplished with the aid of forensic science. The foundation of a criminal prosecution is largely dependent on criminal investigation. Scientific investigating with the assistance of forensic science is much more effective, accurate, and fruitful than the criminal justice system based on eyewitness testimony. An offender cannot be left at the hands of a bystander. But, except the Indian Evidence Act, which deals with expert evidence, there is no specific law on the admissibility of forensic evidence in court, so we normally rely on the rulings and judgments of the higher courts or the Apex Court.<sup>4</sup>It is imperative that the evidence presented before the court is accurate and reliable and it helps the court in reaching a final conclusion. In India, cases like *Priyadarshini Mattoo, Naina Sahani, Rajiv Gandhi assassination, N.D. Tiwari* have been solved either based on the results of DNA testing alone or along with other corroborative evidence. In India Courts always give due importance to the opinion of the experts. But, the expert-evidence is not a substantive evidence; and it is generally used as a piece of evidence for corroboration or for countering veracity of oral evidence. The evidence of an expert only aids and helps the Court as an advisory material. The expert being not a witness of fact, his opinion is to be analysed objectively by the court. In this process, a Court is the expert of experts.

*This paper deals with the Admissibility and Evidentiary Value of Scientific Evidence and the law and judicial approach relating to the admissibility of reports/opinion forensic experts and other experts in the Indian courts. The reference has been given to number of case court has considered and placed reliance upon the reports of various experts. The relevant discussion is regarding the relevancy and evidentiary value of the expert reports/opinions vis-à-vis law relating to the same.*

## **B. Admissibility of Scientific Evidence in Criminal Trial: Issues**

Admissible evidence is a kind of evidence that cannot be objected or dismissed on the basis of any non-substantial or irrelevant arguments and statements. It could be holding a potential or a probative value in the court of law. Evidence has to be authentic, complete, reliable and believable in order to be admissible in the court of law. The scientific evidence referred to in Courts is founded on some scientific theory or hypothesis, and such evidence is expected to be empirical and adequately documented in accordance with the scientific method applicable to the specific field of investigation. The norms and criteria for proof may differ depending on whether the subject of study is in the natural or social sciences. Scientific evidence is demonstrative evidence, as opposed to oral testimony, which is dependent on the deposition of a witness. Various scientific procedures are employed to obtain scientific evidence, which must be both relevant and trustworthy in order to be admissible in court. An expert witness is called to testify regarding the credibility of the scientific evidence that will be used at trial.

The expert will present the scientific evidence in court after it has been analyzed in the laboratory. The expert's work may ultimately be used to determine a person's guilt or innocence, forensic scientists may be called to testify at a trial or hearing about their procedures and findings. When it comes to accepting someone as an expert witness on any given issue, trial courts have a broad discretion. Generally, a witness will be allowed as an expert witness if he or she can establish to the satisfaction of a trial judge that he or she possesses a skill or has expertise in a profession that will assist the court in assessing the truth of the matter at hand. Depending on the subject matter, the court will often consider expertise gained via experience, training, education, or a combination of these to be adequate grounds for expert witness qualification.

The court has the final say in how expert evidence is evaluated and used. Courts have a wide range of attitudes about evidence. The judge is the one who cares about true justice. As a result, he must ascertain the facts, assimilate them, and apply them to the administration of justice. Generally, third parties, or people who are unfamiliar with the facts and circumstances of the case, are usually not called upon to testify, give an opinion, or be a witness in a criminal trial under the law of Evidence. This is a fundamental principle of the law of evidence. The exception to this rule is "Expert Opinion," in which an expert of a specific field is called to express his or her opinion on a relevant issue that is relevant in deciding the case, notwithstanding the fact that he or she is unfamiliar with the facts and circumstances of the case.

Regarding the issue of admissibility there are many challenges before the Indian judiciary. It is not easy for the judiciary to evaluate the multifarious aspects of expert evidence which has the bearing either on science or technology. Within a short span of time the expert opinion testimony has flooded into the criminal justice system. For the past three decades legal scholars are confronted with the important question that who will evaluate the scientific evidence; whether the judge or the scientific community. If the job is completely assigned to the scientific community, then it would definitely affect the traditional role of the judges to ascertain the truth. At the same time, the judges are not suppose to act as amateur scientists.<sup>5</sup> Basically, in criminal jurisprudence the trial courts are entrusted with the duty not only to determine the relevancy of the evidence proffered by an expert but also to fix its reliability

<sup>3</sup>Stephen Breyer, *Introduction to Reference Manual on Scientific Evidence*, (2nd edn., 2000).

<sup>4</sup>RiditaDey, "Law of Forensic Evidence in India and Abroad: A Comparative Study", 4 (2) *IJLMH* Page 2879 - 2894 (2021), DOI: <http://doi.one/10.1732/IJLMH.26627>

<sup>5</sup>V.R. Dinkar, *Scientific Expert Evidence* (2013), Eastern Law House, Kolkatta, p.140.

by assuming the role of real “gatekeepers”<sup>6</sup> based on the admissibility standards. It is unfortunate to mention here that like other jurisdictions, in India there is no specific standard either fixed by law or guidelines of the Supreme Court for evaluating scientific evidence in criminal cases. The evidence to be admitted at the threshold in a criminal trial should be determined on the basis of the legal reliability coupled with logical relevancy. When it comes to forensic evidence, the gatekeeper role<sup>7</sup> assigned to trial judges may find its most important function not in an evaluation of the reliability or general acceptance of new scientific theory, but rather in the very traditional functions of insuring that proffered evidence meets basic standards of authenticity, relevance, and reliability in the particular application of a scientific theory.

### C. Laws Regarding Evidence

Laws related to Scientific evidence in India are found in the Indian Evidence Act, compared to Code of Criminal Procedure, Indian Penal Code and other statutes.

#### i) Indian Evidence Act, 1872

The Indian Evidence Act contains rules, regulations and legislations regarding the admissibility of scientific evidence in the court of law. This Act is classified into 3 parts with a total of 11 chapters.

1. The first part deals with relevancy of facts. It has 2 chapters.
2. The second part has chapters 3 to 6 and each has its own peculiarity. Chapter 3 describes about facts that need to be proved before the court of law. Chapter 4 deals with oral evidence. Chapter 5 gives in details of documentary evidence and Chapter 6 provides you with circumstances where documentary evidence has or should be given preference over oral evidence.
3. The third part has chapters 7 to 11. Chapter 7 gives importance to burden of proof and how important it is to prove evidence and facts. Chapter 8, 9, 10 talks about estoppels, witnesses and examination of witness respectively. The final Chapter 11 defines improper admission and rejection of evidence.
4. The Indian Evidence Act, 1872 contains provisions related to relevancy and admissibility of the evidences. Moreover, the role of forensic scientist is also dealt under Section 45 of the Indian Evidence Act, 1872 as “expert opinion”.

**Section 45: Opinions of expert-** To form an opinion upon a point of foreign law or of science or art, or as to identity of handwriting [or finger impressions], the opinions upon that point 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. Such persons are called experts.<sup>8</sup>

**Section 46: Facts bearing upon opinions of experts-** Facts not otherwise relevant, are relevant if they support or are inconsistent with the opinions of experts, when such opinions are relevant.<sup>9</sup>

With regard to relevance of handwriting opinion, **Section 47** lays down that “when the Court has to form an opinion as to the person by whom any document was written or signed, the opinion of any person acquainted with the handwriting of the person by whom it is supposed to be written or signed that it was or was not written or signed by that person, is a relevant fact.”

**Explanation -** A person is said to be acquainted with the handwriting of another person when he has seen that person write, or when he has received documents purporting to be written by that person in answer to documents written by himself or under his authority and addressed to that person, or when, in the ordinary course of business, documents purporting to be written by that person have been habitually submitted to him.<sup>10</sup>

With regard to grounds of opinion, **Section 51** lays down that “whenever the opinion of any living person is relevant, the grounds on which such opinion is based are also relevant.”

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

An expert is a person who has specialised knowledge and expertise in a certain field of study and is thus qualified to express an opinion, whereas an ordinary person is not. The law on expert would, in general, include all disciplines of human knowledge. Medical men, artists, engineers, surveyors, engravers, mechanics, artisans, and many groups of exceptionally skilled workmen would all be experts under Section 45 of the Indian Evidence Act, 1872, of course, each in his own field.

#### a) Relevancy

The evidence is only admissible at trial if it is relevant, and it is only relevant if it makes the fact in issue more probable.

However, it may still be excluded if the judge determines that permitting the evidence to be admitted would cause more harm than good. It is based on the basic principle of relevancy under the Indian Evidence Act, 1872.

#### b) Subject Matters of Expert Evidence

According to the Indian Evidence Act, expert testimony can be given on foreign law, science, art, or the identity of handwriting or finger impressions. Other expert evidence areas include fingerprints, brain mapping, polygraphs, DNA, ballistics and many

<sup>6</sup>*Frye v. United States* 293 F 1013 (DC Cir 1923).

<sup>7</sup>*Daubert v. Merrell Dow Pharmaceuticals, Inc.* 125 L Ed 2d 469 (1993). The term ‘gatekeeper role’ refers that the duty of the trial judges is not only to determine the relevance of the evidence but also extending their role to fix its reliability.

<sup>8</sup> The India Evidence Act, 1872

<sup>9</sup>*Ibid*

<sup>10</sup> *Id.*, Section 47.

others. Medical opinions are admissible in cases involving insanity, the nature of the injuries, and the use of weapons to injure the victim, and so on.

### c) Value of Expert Evidence

Expert testimony should be seen as a piece of corroborative evidence to other evidence in the case, rather than as a piece of conclusive proof. For corroborative evidence to be of any value, it must be based on material particulars, and the facts relied on for corroboration must be established by trustworthy and independent evidence. Expert testimony is given the same weight as other evidence. The court is not compelled to accept an expert's opinion, but the grounds on which he bases his opinion are relevant to the evidence. Matters for consideration for the judge in this regard are:

- a.) Facts and circumstances of the case
- b.) The extent to which the accused's guilt is determined through expert testimony
- c.) The nature of the expert testimony
- d.) The credentials and qualifications of the expert
- e.) The circumstances in which he came to figure as a witness
- f.) The reliability of the information upon which the expert formed his opinion.

### ii) Code of Criminal Procedure, 1973

Scientific evidence is admissible in Indian law under some other laws also. Most important and widely known aspect of Forensic Science is DNA and its testing. There is no official legislation passed w.r.t. to DNA testing in India, but Sec 53 and 54 of Cr.P.C deals with examination of alleged person by a certified medical practitioner on reasonable grounds of inquest. In India, the current status is that there is no explicit legislation related to DNA evidence, however DNA testing became lawful in 1989. *Kunhiraman v. Manoj*<sup>11</sup> was the first paternity case in India to require DNA evidence. DNA evidence is being used in court by experts such as forensic experts, ballistic experts, biological experts, chemical experts, document writing experts, lie detector experts, serological experts and experts in toxicology, etc. The Indian government and the Law Commission also became aware of the issue, and the Indian Parliamentary Affairs Board has established an advisory committee to provide a complete report on all aspects of DNA testing.

Section 9 of the Indian Evidence Act states the relevancy of facts to establish the identity of a person or time or place or what happened at the scene. The 185<sup>th</sup> Report of the Law Commission specifically lays down the importance of DNA under this section.<sup>12</sup> Through scientific and forensic means, DNA has been used to identify people. Since its introduction in the law as a piece of evidence, it has been the most important element of forensic science. DNA samples are used to prove guilt, identify a person, perform paternity tests and study disorders.

In its 185<sup>th</sup> report, the Law Commission also proposed amending Section 112 of the Indian Evidence Act to include DNA testing. It was suggested that DNA test to be included in Section 112 of the Indian Evidence Act. The report examined if any exceptions, such as impotence to establish that a person is not a father as a perk blood test or DNA tests, should be added to the Section. In such instances, the Section deals with conclusive proof and defines "non-access" as the single exception. It was also determined that in the case of a DNA match, considerably more attention is placed on the data available, because if the DNA data is limited, a matching DNA will be regarded as weak evidence. Furthermore, the report concluded that three exceptions to the Section should be included: impotency, blood test, and DNA test.<sup>13</sup>

Section 53A and Section 164A were added to the Code of Criminal Procedure (Amendment) Act of 2005. Section 53A allows the investigating officer to obtain DNA samples from the individual accused of rape with the help of registered medical practitioners. With the consent of the rape victim, Section 164A allows the investigating agency to take DNA samples from her. However, these measures are insufficient to tackle the complex legal, social, and ethical concerns that would develop as a result of implementing this technology in our legal system for the following reasons:

- (a) The sections merely authorize the investigating agency to collect samples from the accused or victim in a rape case;
- (b) They do not provide for any procedural guidelines to safeguard the interests of people;
- (c) The said amended law does not totally ensure the authorization of taking samples by the senior police officer under judicial supervision;
- (d) Again different procedures for collecting intimate or non-intimate samples, detailed prescribed conduct not taking samples, disclosure of the results to the person concerned and also destruction of samples on discontinuance of proceeding or non-discharge or acquittal of the accused have not been provided in the said amended law;
- (e) Moreover the said latest amended Section 53A and Section 164A of the Criminal Procedure Code are only restricted to rape cases and thus insofar as the other offences are concerned these two provisions are not applicable;
- (f) Again both the sections authorize any medical practitioner within the meaning of Section 2(h) of the Indian Medical Council Act, 1956 to collect DNA samples. But any registered medical practitioner is not supposed to know the sophisticated complex procedure for collecting DNA samples. For this purpose a person having sufficient technical knowledge about the forensic genetics recognized by any Forensic Genetic Institute is desirable. Therefore, the amended Sections 53A and 164A instead of providing clarity create more confusion to the investigating agency and the court in handling DNA evidence in criminal prosecution and trial.

<sup>11</sup> II (1991) DMC 499

<sup>12</sup> <https://lawcommissionofindia.nic.in/reports/185thReport-PartII.pdf> accessed on 14.10.2021

<sup>13</sup> *Ibid.*

Section 164 A of the Cr.P.C. deals with the *Medical examination of the victim of rape*. Section says :

(1) Where, during the stage when an offence of committing rape or attempt to commit rape is under investigation, it is proposed to get the person of the woman with whom rape is alleged or attempted to have been committed or attempted, examined by a medical expert, such examination shall be conducted by a registered medical practitioner employed in a hospital run by the Government or a local authority and in the absence of such a practitioner, by any other registered medical practitioner, with the consent of such woman or of a person competent to give such consent on her behalf and such woman shall be sent to such registered medical practitioner within twenty-four hours from the time of receiving the information relating to the commission of such offence.

(2) The registered medical practitioner, to whom such woman is sent, shall, without delay, examine her person and prepare a report of his examination giving the following particulars, namely:- (i) the name and address of the woman and of the person by whom she was brought; (ii) the age of the woman; (iii) the description of material taken from the person of the woman for DNA profiling; (iv) marks of injury, if any, on the person of the woman; (v) general mental condition of the woman; and (vi) other material particulars in reasonable detail.

(3) The report shall state precisely the reasons for each conclusion arrived at.

(4) The report shall specifically record that the consent of the woman or of the person competent to give such consent on her behalf to such examination had been obtained.

(5) The exact time of commencement and completion of the examination shall also be noted in the report.

(6) The registered medical practitioner shall, without delay forward the report to the investigating officer who shall forward it to the Magistrate referred to in section 173 as part of the documents referred to in clause (a) of subsection (5) of that section.

(7) Nothing in this section shall be construed as rendering lawful any examination without the consent of the woman or of any person competent to give such consent on her behalf.

Sec 293 of Cr.P.C lists some Government Scientific Experts for the admissibility of expert opinion in the court of law. The expert is examined as a witness for his/her opinion to be valid after cross contamination. Also Sec 45 of I.P.C. provides relevancy to expert opinion in any field of expertise in forensic science, to help the court in framing judgements considering technically complicated and sophisticated matters.

### iii) Indian Penal Code,1860

Forensic Toxicology has been the most active branch of Forensic Science where separate Statutes were introduced amending the existing laws and legislations. Sec 272 to 278, Sec 284, Sec 328 of I.P.C. deals with poisoning. Along with general description of poisons, corrosive substances, adulterants, chemicals and medico-legal aspects. Some other Statutes are :

- 1) The Poison Act ,1990
- 2) Drugs and Cosmetics Act ,1940
- 3) Narcotic Drugs and Psychotropic substance (NDPS) Act ,1985
- 4) The Pharmacy Act ,1948,
- 5) The Drug Control Act ,1950

Another commonly heard term w.r.t. Forensic Science is fingerprints. According to Sec. 73 of Indian Evidence Act, any person is compelled to give his/her fingerprints on orders from the court. The Hon'ble Supreme Court has given special mention that this section isn't a violation of their fundamental rights. Sec 5 and 6 of Identification of Prisoners Act has the same context and allows acquiring thumb impressions and handwriting samples. It also declares that these shall not be used against the person as personal testimony.

Forgery, fraudulence and cheating are quite common in current scenario and are gaining momentum to be the commonly occurring white-collar crimes. Indian laws have defined every term related to crimes related to documents.

- 1) Sec 29 of I.P.C. defines document.
- 2) Sec 29A of I.P.C. defines electronic records.
- 3) Sec 463 of I.P.C. and Sec 44 of I.E.A defines forgery.
- 4) Sec 420 of I.P.C defines cheating and Sec 417 defines punishment for the same.
- 5) Sec 47 of I.E.A. is for handwriting opinion and elaborates the circumstances under which the handwriting expert shall consider it to be a disputed handwriting.
- 6) Sec 67 of I.E.A. gives details of methods of how a signature in a document should be proved.

Though it's been neglected from a quite long time, psychology plays an important part in legal proceedings and Forensic Psychology is very crucial in the processing of a case. There are 3 specific laws related to admissibility of forensic psychology in court of law.

- 1) Sec 84 of I.P.C. is related to an act of a person of unsound mind.
- 2) Indian Lunacy Act, 1912 was introduced to amend laws related to lunacy and define certain terms.
- 3) The Mental Health Act, 1987 was enacted for improving hospitality and treatment towards mentally ill people keeping in mind to protect the human rights of individuals.

### iv) Identification of Prisoners Act, 1920

The Identification of Prisoners Act of 1920 allows Investigating Officers to acquire finger and foot print impressions from suspects. Specifically, Section 5 of the Act allows a magistrate to order that a person be measured or photographed.

**Section 5: Power of Magistrate to order a person to be measured or photographed** - If a Magistrate is satisfied that, for the purposes of any investigation or proceeding under the Code of Criminal Procedure, it is expedient to direct any person to allow his measurements or photograph to be taken, he may make an order to that effect, and in that case the person to whom the order relates shall be produced or shall attend at the time and place specified in the order and shall allow his measurements or photograph to be taken, as the case may be, by a police officer.

Provided that no order shall be made directing any person to be photographed except by a Magistrate of the First Class.

Provided further, that no order shall be made under this section unless the person has at some time been arrested in connection with such investigation or proceeding.

Here measurement means and includes finger impressions and footprint impressions.<sup>14</sup>

However, this Act is silent on the collection of other body fluids from the suspect's body, such as blood, semen, urine, and so on, for DNA analysis.

Indulgence of Forensic Psychology in court proceedings help in assessment of mental condition, prediction of violence and risk-management, assessment of child custody in divorce and competency to stand trial. Wildlife crimes are yet another commonly occurring crime, but are least noticed. It is because they take place at remote locations devoid of any witness and surveillance. The Wildlife Protection Act, 1972 places stringent restrictions on trade for protection and conservation of wildlife and the schedules of this act are dedicated to wildlife forensics in specific and protocols to be followed.

#### v) **The Information Technology Act, 2000**

The concept of "electronic evidence" has been introduced through the Information Technology Act, 2000. The IT Act, 2000 formulated on the basis of United Nations Commissions on International Trade (UNCITRAL) Model Law on Electronic Commerce was amended to allow the admissibility of digital evidence and also brought amendments to Indian Evidence Act, 1872, the Indian Penal Code, 1860 and the Banker's Book Evidence Act, 1891. The amendments carried out in these Acts provides the legislative structure for transactions which take place in the electronic world.

The Evidence Act was amended by virtue of Section 92 of the IT Act and the term "evidence" was amended to include "electronic record", thereby allowing for admissibility of the digital evidence. Prior to the legal recognition granted to electronic evidence, Sections 63 and 65 of the Evidence Act majorly dealt with and provided for the conditions for admissibility of electronic evidence. As per these provisions, the electronic evidence gathered through various means by applying cyber forensics was deemed as a "document" and the printed reproductions were considered secondary evidence, which required certification of authenticity from a competent signatory who was susceptible to cross-examination relating to the certified document. Regarding Section 59, which incorporates "documentary evidence", for the words "contents of documents" the words "contents of documents or electronic records" have been substituted. In addition to this Section 65A & 65B were inserted by way of amendment to provide for the admissibility of electronic evidence. Further, Section 79A of the IT Act has expanded the scope of Section 45 of the Indian Evidence Act. Section 45 of the IEA provides for Opinion of experts. It says that, When there is a requirement as to the formation of opinion by the Court of law on the points such as foreign law or of science or art or identification of handwriting or finger impressions, the opinions of such persons shall be relevant on that point who are especially skilled in the field of foreign law, science or art or as to identity of handwriting or fingerprints. Such persons are known as Experts and their opinions are relevant under this section.

By virtue of Section 45, any expert called to give opinion on "electronic form evidence" will be relevant in accordance with the Indian Evidence Act, 1872. Also, a separate Section i.e., Section 45A has been inserted by way of amendment in the year 2009 to specifically make the Opinion of Examiner of Electronic Evidence relevant before the court of law. As per Section 45A, during a proceeding if the need arises as to formation of an opinion by the Court on any matter which pertains to any information communicated or stored in any computer resource or in any other electronic or digital form, the opinion which is given by an Examiner of Electronic Evidence mentioned under Section 79A of the Information Technology Act, 2000 is a relevant fact. The explanation clause supplemental to section 45A states that the Examiner of Electronic Evidence is an expert for the purpose of this Section.

Similarly, Section 65A of the Indian Evidence Act has been incorporated with the intention to prove the contents of electronic records in conformity with the provisions of Section 65B of the Indian Evidence Act. Thus, Section 65B of the Evidence Act specifies the procedure for justifying any documentary evidence by way of an electronic record.

Section 65B states that, Despite the other provisions of the Evidence Act, any information which is contained in electronic record i.e., engraved on a paper, stored, recorded or copied in optical or magnetic media produced by a computer shall be considered to be a document, if it fulfils the conditions prescribed under this section 65B (2) to (5) in connection with the information and the computer in question, shall be admissible in any civil or criminal proceeding without the directive to present the evidence by producing the original document. The conditions laid down under Section 65B (2) to (5) should be taken into account while proving the admissibility of any electronic evidence.

#### **D. Scientific Evidence and Judicial Approach**

Forensic science plays a very important role in criminal and civil justice system. It acts as an aid/tool to the investigation process. It helps in determination of the guilt for a suspected criminal and ascertains various facts in a case by scientifically testing various types of evidences collected during criminal and civil trials. Forensic Science involves the collection, preservation, and analysis of

<sup>14</sup>Section 2 (a) of the Identification of Prisoners Act, 1920

evidence suitable for prosecuting an offender in the court of law. The legal system widely recognizes the role of forensic evidence in the trial of criminal offenders and plays an important role as an aid to the courts to arrive to justice. As far as, criminal law is concerned: ballistic experts, forensic experts, scientists, chemical examiners, psychiatrists, radiologists and even track-dogs are playing a very vital role in investigation of crimes and their evidence is admissible in the court of law. While acknowledging the importance of science in the area of justice, **Stephen Breyer**, said that “In this age of science, science should expect to find a warm welcome, perhaps a permanent home, in our courtrooms. The reason is simple one. The legal disputes before us increasingly involve the principles and tools of science. Proper resolution of those disputes matters not just to the litigants, but also to the general public—those who live in our technologically complex society and whom the law must serve. Our decisions should reflect a proper scientific and technical understanding so that the law can respond to the needs of the public”<sup>15</sup>

Importance of testimony of witnesses in judicial process cannot be ignored as: “Witnesses are the eyes and ears of justice”<sup>16</sup> During the trial before courts an interesting question often arises— which will prevail, in case of a conflict between oral evidence or scientific evidence? The answer will be that it depends upon the nature of the subject matter. In most of the cases we have seen that trustworthy and credible oral evidence get primacy status over the scientific evidence. It is on the principle that the scientific evidence is always an ‘opinion’ or ‘possibility’ only. By the advent of scientific techniques in the field of judicial investigation and enquiry, our judicial process began to assign due importance to scientific evidence. Still, the oral evidence has primacy over the scientific evidence. Concerns about scientific evidence in court have centered on three primary points discussed below :

First one is, *Is the evidence admissible in the court of law?* Admissibility is determined by a multitude of elements, including the status of the expert witness, the quality of the methodology, and the underpinning science, as well as whether the evidence is relevant to and so has value for the legal argument (probative value). The judge determines admissibility, which is categorical because the expert witness will either be allowed or not allowed to testify. According to certain legal authorities, the judge serves as a “gatekeeper” for expert testimony. The judge’s decision on admission, as well as the reasons for that decision, is important to the legal process.

The Second one is, *Is the evidence reliable?* Although reliability may contribute to admissibility, but it is a difficult notion with significant variation in how it is addressed among courts and jurisdictions. At the most basic level, the court must determine the validity of the scientific process and if the expert’s opinion is soundly based on the outcomes of their study. However, whether this adds to admissibility or whether reliability is a factor in determining the legal weight of the evidence is debatable. As a result, it is the degree of reliability, rather than whether the evidence is reliable or unreliable, that is important.

And the last one is, *has the significance of the evidence been properly assessed, then communicated to and understood by, the court?* The scientist is responsible for designing and carrying out experimental measurements, analyzing data, and interpreting what they imply in the context and conditions of the case. However, as an expert witness, one must offer his interpretation of this work to the court so that the judge, jury, and legal professionals fully appreciate its significance to their debate. The extent to which this may be accomplished and the manner in which it is accomplished varies greatly within forensic science sub disciplines, between individual scientists, and throughout courts and jurisdictions.

#### i) Admissibility

The admissibility of expert evidence was challenged under Articles 20(3) and 21 of the Indian Constitution. The basic argument was that by compelling a person to provide a sample of his handwriting or signature, or forcing him to undergo Narco-analysis, Polygraph Testing, and Brain Mapping, the Court was compelling a person to self-incriminate, which is a violation of Article 20(3) of the Constitution. This entire process also violated a person’s right to life and liberty as guaranteed by Article 21 of the Constitution. As a result, the constitutionality of the entire process was repeatedly questioned.

An eleven-judge bench of the Supreme Court addressed these questions in the case of *State of Bombay v. Kathi Kalu Oghad*.<sup>17</sup> The Court held that requiring the accused to give fingerprint and handwriting samples for expert opinion under Section 73 did not violate Article 20(3), and hence was lawful. Giving samples was not equated to being a witness against themselves in this case, as the samples were not evidences per se. Instead, the expert’s report would be utilised as evidence in this instance, and the expert would testify against the accused. Furthermore, this case narrowed the scope of protection under Article 20(3) by stating that “to be a witness” means imparting knowledge about facts about which the person has personal knowledge through oral or written statements, whereas giving specimens of fingerprints or handwriting do not fall under this because they have an intrinsic and unchangeable nature that can be verified. As a result, the distinction between “physical” and “testimonial” evidence was preserved in this case.

It has previously been observed that expert opinions have been limited to medical opinions. However, with the advancement of forensic science and technology, expert evidence is no longer restricted to medical perspectives, but increasingly includes specialists from other domains as well. In terms of criminal law, ballistic experts, forensic experts, scientists, chemical examiners, psychologists, radiologists, and even track-dogs all play important roles in criminal investigations, and their evidence is acceptable in court.

In addition to the provisions of the Indian Evidence Act and the Code of Criminal Procedure, the Supreme Court and the High Courts have passed some decisions regarding the value of expert testimony.

#### ii) Corroboration of Expert Opinion

<sup>15</sup> S Breyer is the Associate Judge of the U.S. Supreme Court. His Views are published in “Reference Manual on Scientific Evidence” <https://www.fjc.gov/sites/default/files/2015/SciMan3D01.pdf> accessed on 20.8.2021

<sup>16</sup> State of U. P. Vs. Krishna Gopal, AIR 1988 SC 2154

<sup>17</sup>1962 SCR (3) 10

The prime question that arises is who can be called an Expert, what is the function of opinion given by expert in a matter before Court and further what is the character of opinion/advice adduced by an expert in forming opinion by the Court? . Hon'ble Supreme Court in **Ramesh Chandra Agarwal v. Regency Hospital Ltd.**<sup>18</sup> has broadly dealt and interpreted the scenario and held that, an expert is a person who devotes his time and study to a special branch of learning. However, he might have acquired such knowledge by practice, observation or careful study. The expert is not acting as a judge or jury. It was further held that in order to bring the evidence of a witness, as that of an expert, it has to be shown that he has made a special study of the subject or acquired a special experience therein or in other words that he is skilled and has adequate knowledge of the subject. The real function of the expert is to put before the Court all the materials, together with reasons which induce him to come to the conclusion, so that the Court, although not an expert, may form its own judgment by its own observation of those materials. An expert is not a witness of fact (like other witnesses) and his evidence is really of an advisory character. The duty of the expert witness is to furnish the Judge with the necessary scientific criteria for testing the accuracy of the conclusions so as to enable the Judge to form his independent judgment by the application of these criteria. No expert can claim that he could be absolutely sure that his opinion was correct.

Another important issue under consideration is that whether the Courts are bound by the opinion given by an expert on a particular fact in a case. Hon'ble Supreme Court has answered this question in **Malay Kumar Ganguly v. Dr. Sukumar Mukherjee**,<sup>19</sup> wherein it has been held that, a Court is not bound by the evidence of the experts which is to a large extent advisory in nature. The Courts have full powers to derive its own conclusion upon considering the opinion of the experts which may be adduced by both sides, cautiously, and upon taking into consideration the authorities on the point on which he deposes. The opinion could be admitted or denied. Whether such evidence could be admitted or how much weightage should be given thereto, lies within the domain and discretion of the Court. The evidence of an expert should, however, be interpreted like any other evidence.

In **State of U.P. v. Krishna Gopal**,<sup>20</sup> the eye-witnesses were found credible and trustworthy. Therefore, the medical opinion pointing to alternative possibilities was not accepted as conclusive. The Apex Court pointed out that witnesses, as Bantham said, were the eyes and ears of justice. Hence the importance and primacy of the orality of the trial process. Eyewitnesses' account would require a careful independent assessment and evaluation for their credibility, which should not be adversely prejudged making any other evidence, including medical evidence as the sole touchstone for the test of such credibility. The evidence must be tested for its inherent consistency and the inherent improbabilities.

Expert opinion is a rather weak type of evidence, and courts normally do not regard it as providing conclusive proof, thus they do not rely solely on it without getting independent and trustworthy corroboration. For instance, in **Siddheswar Prasad Singh v. Baba Sundari Pramanick**,<sup>21</sup> it is well settled precedent that a handwriting expert's opinion cannot be regarded conclusive proof unless it is supported by corroborating evidence.

In **Ram Chandra v. State of U.P.**,<sup>22</sup> the Supreme Court ruled that it would be unsafe to consider the handwriting expert's view as a sufficient ground for conviction, but it can be relied on when corroborated by additional pieces of internal and external evidence.

In the case of **Baso Prasad and Others v. State of Bihar**,<sup>23</sup> it was held that, while expert opinion is relevant, evidence appraisal is the Court's responsibility, and so it is up to the Court to select which expert opinion to consider in situations of contradictory medical and ballistic opinion.

### iii) Polygraph, Brain-Mapping and Lie Detection

In general, courts may refuse to accept the results of a polygraph test as evidence. While being questioned, a polygraph test examines a person's unconscious physiological reactions, such as breathing, heart rate, and galvanic skin response. It basically means that when someone lies, they experience stress, which is assessed by changes in their physiological responses. These tests are regarded as unsatisfactory since it is impossible to determine whether or not the stress detected during the test is induced by the test itself.

In **Selvi Vs. State of Karnataka**,<sup>24</sup> the Hon'ble Supreme Court, had clarified as under:

“ Earlier in this judgment, we had surveyed some foreign judicial precedents dealing with each of the tests in question. A common concern expressed with regard to each of these techniques was the questionable reliability of the results generated by them. In respect of the narcoanalysis technique, it was observed that there is no guarantee that the drug- induced revelations will be truthful. Furthermore, empirical studies have shown that during the hypnotic stage, individuals are prone to suggestibility and there is a good chance that false results could lead to a finding of guilt or innocence. As far as polygraph examination is concerned, though there are some studies showing improvements in the accuracy of results with advancement in technology, there is always scope for error on account of several factors. Objections can be raised about the qualifications of the examiner, the physical conditions under which the test was conducted, the manner in which questions were framed and the possible use of ‘countermeasures’ by the test subject. A significant criticism of polygraphy is that sometimes the physiological responses triggered by feelings such as anxiety and fear

<sup>18</sup>(2009) 9 SCC 709.

<sup>19</sup>(2009) 9 SCC 221

<sup>20</sup> AIR 1988 SC 2154

<sup>21</sup> AIR 1978 Cal 4

<sup>22</sup> AIR 1957 SC 381

<sup>23</sup> (2006) 13 SCC 65

<sup>24</sup> (2010) 7 SCC 263



could be misread as those triggered by deception. Similarly, with the Waves test there are inherent limitations such as the subject having had 'prior exposure' to the 'probes' which are used as stimuli. Furthermore, this technique has not been the focus of rigorous independent studies. The questionable scientific reliability of these techniques comes into conflict with the standard of proof 'beyond reasonable doubt' which is an essential feature of criminal trials."

"In light of these conclusions, we hold that no individual should be forcibly subjected to any of the techniques in question, whether in the context of investigation in criminal cases or otherwise. Doing so would amount to an unwarranted intrusion into personal liberty. However, we do leave room for the voluntary administration of the impugned techniques in the context of criminal justice, provided that certain safeguards are in place. Even when the subject has given consent to undergo any of these tests, the test results by themselves cannot be admitted as evidence because the subject does not exercise conscious control over the responses during the administration of the test. However, any information or material that is subsequently discovered with the help of voluntary administered test results can be admitted, in accordance with Section 27 of the Evidence Act, 1872

The Supreme Court of India with regard to these tests has held that it expressly invoked the right of privacy to hold these technologies unconstitutional. The court held that such techniques invaded the accused's mental privacy which was an integral aspect of their personal liberty. Following a thorough assessment of the issue, the Supreme Court ruled that "no individual should be forcibly exposed to any of the procedures in question, whether in the context of an investigation in a criminal case or otherwise. This would be an unwarranted encroachment into personal liberty."

The court, however, left the option of voluntary submission to such techniques open and held that the National Human Rights Commission's "Guidelines framed for the Administration of Polygraph Test (Lie Detector Test) on an Accused" should be strictly followed, and the same guidelines should be adopted for "Narco analysis Technique" and "Brain Electrical Activation Profile Test," which are mentioned below:<sup>25</sup>

- a.) Lie Detector Tests should only be conducted if the accused gives his or her consent. The accused should be offered the choice of whether or not to take such a test.
- b.) If the accused agrees to a Lie Detector Test, he should be granted access to a lawyer and the police and his lawyer should explain the physical, emotional, and legal consequences of the test to him.
- c.) The consent should be recorded before a judicial magistrate.
- d.) During the hearing before the magistrate, the person alleged to have agreed should be duly represented by a lawyer.
- e.) At the hearing, the person in question should also be told in clear terms that the statement that is made shall not be a 'confessional' statement to the magistrate but will have the status of a statement made to the police.
- f.) The magistrate must take into account all relevant considerations, such as the length of imprisonment and the nature of the interrogation.
- g.) The lie detector test must be conducted by an independent institution (such as a hospital) and performed in the presence of a lawyer.
- h.) A thorough medical and factual account of how the information was received must be recorded.

#### iv) Foot Printing

Various scientific methods are used to obtain scientific evidence, which should be relevant and at the same time, trustworthy to become admissible in the courts. An expert witness is called to testify about the reliability of the scientific evidence sought to be introduced at trial. The validity of the scientific method used for fingerprinting and foot printing is accepted by the Courts. In *Pritam Singh v. State of Punjab*<sup>26</sup>; disputed footprints in blood near a dead body and going towards the bathroom, were compared with those of the accused taken in printer's ink. The expert gave evidence giving points of nine similarities in respect of the right foot and ten in respect of the left foot and three dissimilarities only in each case and explained the dissimilarities with reference to the different densities of blood and ink. It was held that the comparison stood the test well and under the circumstances these foot impressions in blood near the place of the incident, were proved to be those of the accused.

The Footprint identification is reliable as the bare feet contain friction ridge patterns which are unique to each individual. Hence, the finger prints and footprints found at the scene of offence can be used to help identify the offender and also the victim. As far as science of identification of foot prints are concerned, the court has held that it is not a well-established fully developed science, if in any given case evidence is found satisfactory, it may be used only to reinforce the conclusions as to identify the culprit already arrived on the basis of other evidence. Reference may be given to the case of *Mohd. Aman v. State of Rajasthan*<sup>27</sup>.

<sup>25</sup>Himanshu Setia, "Evidentiary Value of Forensic Reports in Indian Court" 4(6) *Research Journal of Forensic Sciences*4 (2016)

<sup>26</sup> *Pritam Singh vs State of Punjab*, Criminal Appeal No. 69 of 1955, Decided On 4.11. 1955

<sup>27</sup>*Mohd. Aman vs State of Rajasthan. SC 2960, AIR 1997 SC 2960*

## v) Graphology

People develop handwriting on their own. Everyone has a uniquely personal and individual handwriting. Even if a person is taught how to write, he/she will not follow that same handwriting pattern throughout the life. Our handwriting reflects a lot about us. Graphology is the study of handwriting to know a person on the basis of handwriting traits. Physiological state of a person can be known by the graphological examination of handwriting. It gives an idea about the nature, positive and negative traits of an individual. A forensic graphologist analyzes all the physical characteristics of the handwriting and frames an opinion to facilitate criminal justice in the court of law.

Forensic investigators use graphology to determine the personality traits of an individual. To do so, forensic experts have to study and analyse a large number of handwriting samples, control samples, unknown and suspected samples to frame an opinion. Handwriting reveals a person's emotional status while writing. Graphologists use different tools such as magnifying lens to observe the handwriting and specific features. Manual/ Physical analysis involves the study of various handwriting features such as slant, margins, word spacing, connections, pen pressure, line spacing, movements, formations, 'i' dots, t bars etc. Each feature has a specific meaning and helps to identify personality traits. Accuracy of which depends on the skills of a forensic graphologist.

Apart from manual/ physical examination, there are many technological methods for behavioural analysis that can analyse personality traits through the help of the computer. Automated handwriting analysis overcomes the prone and errors of manual analysis and assists the graphologists. Computer-Aided Graphology (CAG) is one such method used by graphologist to predict personality traits. It's an error-free and time saver method for graphologists.

In the case of *Ishawari Prasad v. Mohd. Isa*<sup>28</sup> the court held that the testimony of an expert is usually considered to be of light value. Since, they are proverbially biased in favour of the side which calls them. So evidence of an expert should be approached with considerable caution specially where much depends upon this evidence. The opinion of experts are not binding upon the Judge. The weights due to their testimony is a matter to be determined by the Judge and it will be proportionate to the soundness of the reasons. A Tribunal should not accept the mere untested opinions of experts in preference to direct and positive evidence as to facts. Evidence given by handwriting expert can never be conclusive because it is after all opinion evidence.

Thus, in light of the aforesaid judgments it is clear the expert opinion in case of handwriting analysis can only be considered of corroborative value.

In the case of *Godavarthy, In re*<sup>29</sup> It was held that when the court has to form an opinion as to writing, the opinion of writing expert is admissible but it should be borne in mind that the opinion of the expert is the weakest and least reliable evidence. It is thus not safe to base the conviction solely on the opinion of the expert.

## vi) Some Other Important Observations

In the case of *Gautam Kundu v. State of West Bengal*<sup>30</sup> it has been laid down that courts in India cannot order blood test as a matter of course and such prayers cannot be granted to have roving inquiry; there must be strong prima facie case and the court must carefully examine as to what would be the consequence of ordering the blood test.

In the case of *Sharda v. Dharmapa*<sup>31</sup> while concluding that a matrimonial court has power to order a person to undergo a medical test, it was reiterated that the court should exercise such a power if the applicant has a strong prima facie case and there is sufficient material before the court. Obviously, therefore, any order for DNA test can be given by the court only if a strong prima facie case is made out for such a course."

The court stated in *Amarjit Kaur v. Har Bhajan Singh*<sup>32</sup> that section 112 of the Evidence Act was enacted at a time when modern scientific developments with deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) tests were not done. A true DNA test is believed to be scientifically reliable. Even yet, it is not enough to avoid the conclusiveness of the legal presumption regarding the legitimacy of the child. For example, under Section 112 of the Act, if a husband and wife were living together at the time of conception but a DNA test indicated that the child was not born to the husband, the conclusiveness in law would be irrebutable.

In the case of *Rohit Shekhar v. Narayan Dutt Tiwari & Anr.*<sup>33</sup> the Apex Court refused to dismiss the Delhi High court's decision ordering N.D. Tiwari to undergo the DNA test. In this case, Rohit Shekhar claims to be N.D. Tiwari's biological son, but N.D. Tiwari is reluctant to undertake such testing, claiming that it would be a violation of his right to privacy and would subject him to public humiliation. However, the Supreme Court rejected this argument, stating that there is no point in being humiliated when the results of the test would not be revealed to anybody and will be kept in a sealed envelope.

<sup>28</sup> AIR 1963 SC 1728

<sup>29</sup> AIR 1960 A.P. 164

<sup>30</sup> 1993 SCR (3) 917

<sup>31</sup> AIR 2003 SC 3450

<sup>32</sup> (2003) 10 SCC 228

<sup>33</sup> <https://indiankanoon.org/doc/170781909/> (accessed on 10/9/ 2021)

In the famous case of *Ranga Billa v. Union of India*<sup>34</sup> Geeta Chopra and Sanjay Chopra, two innocent children of an Army officer, were abducted at the ages of 16 and 18 and taken to a remote location where the girl was raped and the two were brutally murdered. Eight (eight) chance prints were obtained and processed from the crime scene. For comparison, these prints were submitted to the Central Finger Prints Record Bureau. All of the chance prints were confirmed to be identical to two habitual offenders, Ranga and Billa. Both were found guilty in this case and were sentenced to death.

In the case of *State of Madhya Pradesh v. Dharkole @ Govind Singh*,<sup>35</sup> it was held that if there is a contradiction between eye-evidence and medical evidence, the court must choose the evidence that inspires the more trust. When medical evidence and ocular evidence contradict each other, medical evidence does not take precedence.

In the case of *Ram Swaroop v. State of Rajasthan*,<sup>36</sup> it was held that,

*“A doctor is usually confronted with such questions regarding different possibilities or probabilities of causing injuries or post-mortem features which he noticed in the medical report may express his views one way or the other depending upon the manner the question was asked. But the answers given by witness to such questions need not become the last word on such possibilities. After all, he gives only his opinion regarding such questions. But to discard the testimony of an eye-witness simply on the strength of such opinion expressed by the medical witness is not conducive to the administration of criminal justice”.*

## E. Conclusion

Forensic Science is an important branch of jurisprudence. It is extensively used worldwide today. Forensic science is not an individual subject but it is an umbrella term that consists of other disciplines of science. It is a potent and powerful weapon in the armoury of administration of justice. Forensic Science provides scientific study for investigation of crime. The growth, development and use of Forensic Science in detection of crime in developed countries is tremendous and increasing with new techniques. The area of Forensic Science in India has, yet, not been fused, as it ought to have been after more than seven decades of post-independence era and more so when an average acquittal rate is alarmingly high. The notion of relevance has been incorporated in law in most jurisdictions for many years, a discussion has recently emerged regarding broader aspects of the presenting of scientific evidence to the court and the role of the scientist as an expert witness. There are numerous causes for this, including significant advances in scientific methods, the need for investigators to deal with more complicated and high-profile crimes, increased attention to these concerns, and the legal profession's and lawmakers' continuous responses to such occurrences. The law allows an expert witness to give the court with both factual and opinion evidence. Within the legal system, the judge has the authority to evaluate whether or not any evidence is relevant to the case. However, there is some variation in norms and practices, which is mostly driven by case law in many jurisdictions, where so-called landmark judgements by courts of appeal clarify questions of law, which then apply to subsequent cases.

Moreover, an expert's evidence is only advisory in nature. So, in most cases, expert opinion cannot be used as the sole basis for conviction, and other corroborating evidence must be used, but a conviction cannot be overturned solely on the grounds that expert evidence is not considered conclusive proof. As a result, the Courts must examine the facts of each case and make decisions on the basis of various circumstances in the cases. Although there is no provision in the Indian Evidence Act, 1872, that clearly specifies that expert evidence requires corroboration, courts normally do not rely only on expert evidence unless it is backed up by other evidence.

In view of the above, I would conclude this article by citing the relevant observations' of the Hon'ble Supreme Court of India, wherein the Hon'ble Court has opined the necessity to strengthen the Forensic Science for detection of crimes; in the case of *Dharam Deo Yadav v. State of U.P.*<sup>37</sup> which is reproduced herein below:

*“Criminal Judicial System in this country is at cross-roads, many a times, reliable, trustworthy, credible witnesses to the crime seldom come forward to depose before the court and even the hardened criminals get away from the clutches of law. Even the reliable witnesses for the prosecution turn hostile due to intimidation, fear and host of other reasons. Investigating agency has, therefore, to look for other ways and means to improve the quality of investigation, which can only be through the collection of scientific evidence. In this age of science, we have to build legal foundations that are sound in science as well as in law. Practices and principles that served in the past, now people think, must give way to innovative and creative methods, if we want to save our criminal justice system. Emerging new types of crimes and their level of sophistication, the traditional methods and tools have become outdated, hence the necessity to strengthen the forensic science for crime detection. Oral evidence depends on several facts, like power of observation, humiliation, external influence, forgetfulness etc., whereas forensic evidence is free from those infirmities. Judiciary should also be equipped to understand and deal with such scientific materials. Constant interaction of Judges with scientists, engineers would promote and widen their knowledge to deal with such scientific evidence and to effectively deal with criminal cases based on scientific evidence. We are not advocating that, in all cases, the scientific evidence is the sure test, but only emphasizing the necessity of promoting scientific evidence also to detect and prove crimes over and above the other evidence.”*

<sup>34</sup> (1981) 3 SCC 324

<sup>35</sup> <https://indiankanoon.org/doc/1003957/> (accessed on 8/10/ 2021)

<sup>36</sup> AIR 2004 SC 1747

<sup>37</sup> Dharam Deo Yadav v. State of U.P, 5 SCC 509-C (2014).

No doubt that the forensic evidence is more valuable than the general evidence produced in the court. But still there are certain issues which needs to be settled through suitable amendments in the existing legislations. Analysis reveals that Expert opinion is merely an advisory opinion. It is only corroborative and not a conclusive piece of evidence. The Evidence Act does not envisage any guidelines as to who can be termed as an expert? Another issue is that the law on expert opinion in India is not a comprehensive one. This is why the expert opinion is considered as weak evidence. No proper stress has been laid on the professional qualification. Experience and skill has only been given predominance. In India the expert witness is not given any protection and is harassed in most cases. Steps must be taken to ensure that they are given protection. There is an urgent need to evolve an independent witness protection measures. More experts should be recognized for always providing information and relevant evidence regarding the case, and hence the case can be solved on that basis. There can be more development in the country by making our forensic science grow. Scientific Evidence must be given more weightage than eye-witness as there are lot of possibilities for the eye-witness to have been exaggerating facts and providing a distorted version of the real incident.

