

Admissibility of Scientific Evidence in the Legal Systems of U.S. and India: A Critical Appreciation

*¹AnjumParvez, ²Dr Rajesh Bahuguna

¹Assistant Professor (Law), Law College Dehradun, Uttarakhand University, Dehradun (U.K.)

²Vice Chancellor & Dean (Law), Uttarakhand University, Dehradun. (U.K.).

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ABSTRACT: This article is based on the comparative study of US and Indian Legal systems approach on the admissibility of evidence obtained by use of science and scientific methods and techniques. Science and technology has an indispensable place in every human society, and the same have been contributing since the old time in the development of modes of comfort and welfare of human life, be it a medical science or engineering science or general science. However, evidence collected by using the scientific methods and techniques, so far, failed to achieve a concrete and conclusive place in the trials before the courts, both in US and India. But US Courts have shown some vigour for accepting the scientific evidence by laying the standards and guidelines, although mass mist in the form of confusion have still prevailing. Indian Courts are, yet to adopt this dynamic approach, as they still delivering the judgment depending on facts and circumstances of the cases.

KEY WORDS: Scientific evidence, science, trials, investigation, judicial approach, law

I. INTRODUCTION

Objective of each and every law, generally, is justice to mankind which is, discreetly, based on foundation of truth, impartiality, independence and expertise of the persons concerned with the responsibility of maintenance and execution of the law and order and, of dispatching the justice. Any assistance in attaining the justice from any sector of any field is always welcome, be it from history, philosophy, social science or science and technology. It is generally believed that science and scientific techniques are accurate and perfect because they are based on actual existing physical facts. Science has been in existence since time immemorial but in earlier ages science and technology were almost independent activities, having no inter-link with each other.

Often centuries or decades would elapse before a scientific idea could have useful application. Engineering developed basically itself and independent from science, and was, in fact, guided by experiences of the humans and tradition. But later on, in the modern time, gap between science and engineering filled up and become so narrow that, generally people consider the field of engineering as interlinked with science and rectified enormously later with emergence of diverse branches like chemical sciences, biological sciences, forensic sciences and many others that now, it is safe to say this modern age is indeed belongs to science and technology without any sort of skeptics. Role of forensic science has become vital now in the process of investigation conducted by the Investigation Officer of any crime and for proving a fact.

Proper criminal investigation plays the pivotal role in keeping law and order in any society. It establishes *corpus delicti*, helps in the identification of the culprit and trace out evidence to link the criminals with the crime and the innocence of innocent. Criminal investigation involves understanding the nature of the crime and criminal for effective results. The evaluation and interpretation of scientific evidence, which may be in the form of Narco-analysis test, or brain mapping test or lie detector test, or the pattern of shoe marks, and its effective and convincing presentation in a court of law before a judge, is substantial and crucial, to all the forensic scientists involved in crime investigation as an expert witness and to all others concerned with the interest of justice.

II. Scientific Evidence in United States of America:

At one time the use of forensic science in American Criminal Trials was relatively rare. Courts of United States of America, the world most scientifically and technologically advanced country, as it is known as to the rest of the world, were never curious to rely and admit the scientific evidence in the proceedings, whether civil or criminal, at the outset. When we strive to trace out the history of admissibility of scientific evidence in US, until 1923 not a single significant case decided by any US Court on this issue of the admissibility of such evidence by any US Court. However, a revolutionary step has been taken by a Circuit Court in the direction of admissibility of scientific evidence in the famous case of **Frye v. United States** which has been the first remarkable judgment in entire America relating to the admissibility of evidence of scientific nature before the Court of law.

Time has changed now and many US Jurists are immensely in favour of admissibility of scientific or forensic evidence which is reflected in the statement of Sally Q. Yates, acting Attorney General of United States when he says "Forensic Science plays a crucial role, in our Criminal Justice System". While elaborating the importance of science in the field of law and law administration, he further said "Using the tiniest shreds of evidence (which picked up by using the science and scientific methods), including a drop of blood or a shell casing of used cartridge found at the crime scene, forensic scientists and the investigation officers conducting the investigation with the aid and use of science and scientific methods can help the law enforcement agencies to learn who has committed a crime and how it was committed by him. Judges, generally, and juries, in those countries where jury system is prevailing, put great stock and credibility in this type of forensic testimony by the forensic scientists or investigators, and when presented at trial, such evidence of scientific nature can make a significant difference between conviction and acquittal".

But still US Courts don't admit scientific evidence as simply as they admit the eyewitness evidence due to the numerous reasons like accuracy of technique of collection, certainty of results of chemicals employed in such tests, whether all precautions were taken strictly while collecting such evidence by the investigators and scientists, whether investigators were adequately trained in dealing with such delicate clues or probability of misguidance, impartiality of an expert, human error etc. The rule of admissibility of scientific evidence is that the opinions of scientific experts or skilled witnesses, whom are none other than scientists or engineers themselves, are admissible in evidence only in those cases where the matter of material inquiry is of such characteristics that an inexperienced person found himself beyond his understanding of that subject-matter, and that material is unlikely to be proven by him as he lacks the capability of forming a correct judgment upon it, for the reason that the subject-matter in dispute so far as a sort of congregation of science, art, or trades like expertise needed as to require a previous habit or experience or study in it, in order to acquire an accurate expertise knowledge of it. When the disputes in question involved in the judicial proceeding before a court do not lie within the capacity and ambit of common ordinary experience or common ordinary knowledge, but specifically requires special experience or special knowledge, then the testimony in the form of opinions of those witnesses specifically skilled in that particular science, art, or specific trade, to which the question in dispute relates may be admissible in evidence in the Court.

While demarcating the particular mystified arena where scientific evidence can be accepted by the court, Associate Judge Van Orsdel in **Frye v. United States** observed:

"Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define". He further observed while vaguely pinpointing the area of force of scientific evidence that "Somewhere in this twilight zone (experimental and demonstrable stages) the evidential force of the (scientific or engineering) principle must be recognized, and while the court will go a long way in admitting the experimental testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be **sufficiently established to have gained general acceptance** in the particular field in which it belongs".

In 1960s US Supreme Court also emphasized on application of modern scientific techniques and methods in the investigation of crimes which awake the legislators and judges to rely more upon such evidence. In **Breithaupt v. Abram**, the US Supreme Court expressed its view that "Modern community living requires modern scientific methods of crime detection lest the public go uprooted".

The judgment in **Frye v United States** which is called Frye test and, from the year 1923 to year 1993, Frye "general acceptance" test had been the most influential and rigid standard for the determination of admissibility of novel and complicated scientific evidence in the US". The Frye test has drawn the major line for admissibility of scientific evidence based on parameter whether the scientific principle underlying the evidence is recognized and

accepted by the major segment of the concerned scientific community. Frye Test has two essentials for admissibility of any scientific evidence in the Court of law. Firstly, the principle or scientific technique used in the investigation on the basis of which evidence is proposed to be given, and secondly, for admitting such evidence by the court, the acceptance and legality of such principle or technique by the scientific community and jurists.

In other words, Court wants to ensure the accuracy of scientific method or techniques and the standards are “General Acceptance of its Genuineness” by the Scientific Community at large.

However, these essentials of this Frye test can be questioned on the following grounds i.e. (1) that it is an unending and lethargic process for any scientific method or technology to be recognized by world scientific community as perfect with hundred percent accuracy results and, that too, without errors, and (2) as many say that social problems are above the scientific or mathematical formulas or equations, there exist chances that courts might entirely depend on Scientists as they conduct the scientific tests, which yield the results.

Nevertheless, Frye Test was first approach where science got the recognition, though, on very tough and almost, unpractical standards. After a long gap, Federal Rules of Evidence were enacted by the legislature in the year of 1975 in US. Rule 702, which specifically deals with science and scientific evidence before courts, stated that: “If scientific, technical or other specialized knowledge will assist the Trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education may testify thereto in the form of an opinion or otherwise”.

But again, Rule 702 had failed to rectify the requisite admissibility standards because it merely authenticated the qualified and trained experts in the field of forensic science techniques and methods to give the evidence on the discretion of court without complying the Frye Test and General Acceptance of such techniques or methods by the major portion of community of science collectively.

So, the United States Supreme Court laid down the guidelines in the remarkable landmark judgment of **Daubert v. Merrell Dow Pharmaceuticals, Inc.** The US Supreme Court, in the instant case, while recognizing the contradiction arising from Frye Test and Rule 702, held that the Federal Rules of Evidence, through Rule 702 override and superseded the Frye Test and that the strong “General Acceptance” rule is no longer hold any validity. Reliable Scientific Studies can be accepted by the Courts for the determination of complicated questions in dispute, although such scientific studies may have different standards without getting any “General Acceptance” certificate.

It also laid down the crucial factors as the basis of scientific evidence which is also known as The Daubert Guidelines. The Guidelines are as follows:

- 1) The contents of the scientific testimony which have already been tested can be tested by applying the scientific process and method;
- 2) The techniques have been subject to peer review (by those who are expert in that field, academically as well as practically), preferably in the form of publication in peer review literature;
- 3) There must be consistently and reliably applied professional standards for such scientific method and its known or potential error rates for the technique must be considered.
- 4) Such scientific method or techniques regarded as “general acceptance” within the relevant scientific community.

In that way, in Daubert’s case, US Supreme Court evolved the concept of Judge as “Gatekeeper” in the matters involving application of science, scientific methods and techniques in the determination of disputes.

Later the **Kumho Tire Co. Ltd. v. Carmichael**, the U.S Supreme Court expanded the Daubert’s Analysis, that was “the gatekeeper approach”, to even those technical and specialized subjects which do not fall within the category of “science”.

After the Daubert Guidelines in 1993, need of new approach in respect the use of science and scientific methods in judicial matters was felt. Consequently, the Federal Rules Of Evidence got amended in the year of 2000.

The amended Rule 702 allows opinion testimony by a witness who is qualified as an expert by knowledge, skill, experience, training, or education if:

(a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;

- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

Thus, now in US, scientific or technical or specialized evidence in the form of “Expert testimony” may become admitted by the court if: (a) the expert is duly qualified; (b) the expert’s testimony will be helpful to the judge deciding the “issues” in the dispute; and (c) the expert’s testimony is based on sufficient facts or data; which must be based on trustworthy scientific principles and methods, and if the expert has properly applied the principles and methods of science to the exact facts of the case in trial before the Court.

In the **General Electric v. Joiner**, which is yet another case about the admissibility of scientific evidence, Associate Justice Stephen Breyer, has made the following observation on the role of science and scientific methods before the courts:

“In this age of science, science should expect to find a warm welcome, perhaps a permanent home, in our courtrooms. The reason is a 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”. Justice Breyer, also noted that federal judges typically are generalist, not specialists and few are having training or experience in science and technology.

But learned Chief Justice Rehnquist of US Supreme Court, in his minority opinion concurring in part and also dissenting in part from the majority opinion, had expressed his skepticism to this invitation approach to science in courtrooms. He observed: *“The Court (US Supreme Court) speaks of its confidence that ‘federal judges’ can make a ‘preliminary’ assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.But I do not think it imposes on the either the obligation or the authority to become amateur scientist in order to perform that role”.*

And Chief Justice Rehnquist’s fear is not without any foundation, in fact, his doubts are more reasonable and practical. A judge of a Court is well versed with the laws of the land, substantial as well as procedural, but it is too much to expect from him to have that standard of scientific knowledge where he could admire the scientific evidence obtained by using the forensic science methods by the Investigating officer or by Scientific investigator. Nevertheless, we must appreciate the efforts of US Courts for their judicious efforts in logically bringing and recognizing the scientific evidence obtained through scientific methods and techniques, in the courtrooms

III. Scientific Evidence in India:

Coming on India, laws are basically working on the principles established by the Britishers whom once ruled India as Colonial Power. It appears that law in India on admissibility of scientific evidence is quite older i.e. Indian Evidence Act, 1872, (hereinafter referred as Evidence Act) and section 45 of which provides that “When the Court has 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”.

We need to understand that opinion of scientists in India, is merely relevant by virtue of Section 45 of Evidence Act, and question of its reliability is another thing which is entirely depends on the judge being the final adjudicator. Generally, Courts in India regard the Scientific evidence at the most of advisory character. Unlike US, no attempt has been so far made by the Indian Courts to lay down “General Guidelines” for the admissibility of Scientific Evidence.

Basically, the questions related to paternity often come before the Supreme Court of India where the issue, again and again, arise about the reliability of DNA Test. Since there is no support found in any legislation in India about the admissibility of DNA Test, hence, it appears that Court finds itself helpless, and often reject the DNA Reports. **GoutamKundu v. State of West Bengal** was the first case where it was argued that Court should rely on DNA

Test, but court, giving due importance to pre-historic legislative provision of Section 112 of Evidence Act, rejected the DNA Report because law presume the paternity in favour of married persons.

Again, in **Shard v. Dharmpal** the Supreme Court of India held that a Court cannot compel a person to undergo medical examination. If a person refused to undergo medical examination, then at the most court can make an adverse presumption of his guilt under Section 114 of Evidence Act. **Kanti Devi & Anr v. Poshi Ram** is yet another case where the Apex Court of India refused to compel a person to undergo medical examination for DNA Test.

However, recently in 2014, Supreme Court of India, by taking the cognizance of indispensable advancement in science and technology delivered a landmark judgment i.e. **Vasudeo Nandlal Badwaik v. Lata Nandlal Badwaik**. In this case, the Apex Court recognized the admissibility of DNA Report over the mandate of Section 112 of Evidence Act, and held that time has come for the court to due importance to science and scientific methods.

However, section 112 of Evidence Act does not apply on unmarried persons, so, there is no difficulty for the court to order for DNA Test in order to ascertain paternity. In **Narayan Dutt Tiwari v. Rohit Shekhar**, court has passed an order for conducting the DNA test of a very famous politician of India, so that it can be made certain whether petitioner is the son of him.

It is an irony that till 2010, lie detector tests, Electro-magnetic brain mapping tests, and Narco-Analysis Tests were frequent in use, but since then, all the scenario has changed tremendously thanks to the extra-emphasis on personal liberties and constitutional protection available to accused. Like in many democratic countries' constitutions, India too have a provision in its constitution in the form of Article 20(3) where a person cannot be compelled to be a witness against himself, or in other words right against self-incrimination. For long, this provision has been so much stressed up in the numerous petitions before the Supreme Court, giving the reference of the dismal record of recurrent custodial torture and atrocities by the police on the accused in order to get the instant clue, to the extent of extracting the confession along with some recovery of weapons or instrument used in crime, legally or illegally, from the accused.

Sadly, on many occasions, application of gross custodial torture and atrocities on the accused persons have resulted in the death of such persons, which in itself violation of highest human right of life. To our misfortune, Indian police still bore the colonial mentality which insistently reflected in the form of use of third degree methods, inflicting custodial torture, inhuman and degrading behaviour, have now become the common feature. Had this attitude absent, much could be done, and still can be done by the police by getting the proper training, particularly, by learning the effective use of science and its various methods and techniques, not only in the field of crime investigation but also in preventing the commission of crime. However, the lose have already done, and common ordinary man don't have trust over the police. Much less one can expect that the Apex Court of India would be unaware from this state of affairs.

Thus, in **Smt Selvi v. State of Karnataka**, petitioner challenged the validity of abovementioned Tests i.e. Lie Detector, Electro-Magnetic Brain Mapping, and Narco-Analysis Tests that all these tests, if taken against the consent of accused, would amount to compelling the accused to give evidence against himself, which is illegal under Article 20(3) of the Indian Constitution, and the same is against the human dignity as enshrined in Article 21 of the Indian constitution.

Supreme Court, while agreeing with this argument of the petitioner, and reckoning the greater danger in the form of higher probability of forcing the accused by the police to undergo such scientific tests, declared that conducting all these tests viz Lie Detector, Electro-Magnetic Brain Mapping, and Narco-Analysis Tests, on the accused without his free consent, are the violation of Article 20(3) and Article 21 of the Indian Constitution. After this judgment, all these tests are banned in India save where accused himself wants to undergo these Tests.

Except some minor development, no major development has occurred neither on the part of legislature nor on the part of Apex Court, to bring some dynamism in the fields of crime investigation and judicial trials by laying the foundation for the admissibility of scientific evidence.

IV. Conclusion:

When we compare the US Supreme Court's approach and Indian Supreme Court's Approach in ensuring the solid place of scientific evidence, in investigation and trial, which, if clear and categorical, undoubtedly results in great help to Police in tackling the criminals, US Supreme Court has an apparent edge. They at least made attempts to

determine standards of admissibility of scientific evidence obtained by use of science and its methods and techniques. Indian Supreme Court, on the other hand, have yet to cover a long way which after the Smt. Selvi's case in 2010, appears as a distant dream. But it does not at all mean that Indian Supreme Court cannot come at par with US Supreme Court, but, it is submitted, giving its potential it can do better.

Coming on the laws, although in US Constitution, greatest possible protection have been made available to accused persons in order to ensure fair investigation and trial against them, yet, it does not forbid the Courts from considering the scientific evidence. Rule 702 is, though not exhaustive, but in fact, in itself ensure the recognition of credibility of scientific evidence and laid a firm ground for the court of legislative assistance, where they can admit the scientific evidence, if suitable. In India, as discussed above, the only provision deals with admissibility of evidence obtained by science and scientific methods, is Section 45 of Evidence Act, that merely makes expert's opinion relevant.

However, one cannot deny that science has so far failed to acquire the place in legal systems of US and India, which it deserves to get. Therefore, there must be positive efforts needed to be made by legislatures and the Judiciary of both the great nations, and, most importantly, by the scientific community as well to develop the scientific methods and techniques to that heights, where the credibility of science can be maintained beyond the shadow of doubts

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