

ADMISSIBILITY OF FORENSIC EVIDENCE IN INVESTIGATIONS: A COMPARATIVE STUDY BETWEEN INDIA, UK & USA

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ABSTRACT

The present study discusses the standards of admissibility of forensic evidence in trials, as well as a comparative analysis of the principles of admissibility in four countries U.S.A, UK, Germany and India. First, various standards of evidence and their contents are tabulated, and then the concepts of admissibility such as validity, reliability, usefulness, and efficiency are addressed. The second issue discusses the laws of admissibility in the United Kingdom, including the relationship of the four admissibility tests, namely Assistance, Relevant Expertise, Impartiality, and Evidentiary Reliability, as well as the context of the Law Commission Report, Law Commission Recommendation, and Government Response. Finally, the standards governing the acceptance of scientific evidence in India are explored.

Keywords: Forensic evidence, admissibility, expert's opinion, law commission, relevancy.

INTRODUCTION

The introduction of forensic science technology has resulted in dramatic technological advances in the decision-making process in criminal trials, but further research is needed to determine the precise role of forensic evidence in deciding the rate of prosecution and acquittal. It was also necessary to determine which types of forensic evidence could be used in which types of cases. What kind of proof is forensic evidence, i.e. is it considered substantive evidence or corroborative evidence? In what conditions did the court consider the forensic evidence? Is it usually the case that accepting forensic evidence results in a verdict, or has an acquittal been confirmed despite the acceptance of forensic evidence? In this sense, the perspectives of various superior courts on forensic science have been reviewed as that evidence is referred to in the decision-making phase in criminal proceedings. The conventional approach of the eyewitness-based criminal justice system has proven to be almost impossible for effective criminal prosecution. This form of criminal prosecution degrades the criminal justice system. It becomes impossible for judges to determine a criminal case or corroborate a fact-in-issue solely on the testimony of witnesses who might lie or be untrustworthy (because witnesses fail to appear on the dates fixed by the courts or might not be subject to the process of the court, which delays justice). Furthermore, after scrutinizing the in-chief and cross-examinations, the judges are unable to draw a definitive decision about the incident. Nowadays, witnesses fail to come to testify in court, even though they believe or have seen the evidence, for fear of being victim to suspects or assaults, which can be fatal. Many times, crimes are committed in such a way that simply obtaining a single witness is difficult. In other cases, the decision-making process in forensic cases is entirely based on circumstantial facts such as DNA evidence, ballistic analyst reports, fingerprints, or chemical analysis reports. Many heinous suspects are convicted or go free on the grounds of even the slightest suspicion due to a lack of conviction or sufficient proof. Furthermore, the prosecution pays a significant amount of money on court criminal proceedings. As a result, most public funds are lost in traditional prosecutions, and suspects are acquitted on the grounds of the benefit of the doubt. Crimes are now committed technically and scientific crimes have arisen that can only be solved through forensic technology. To solve a cyber case, for example, cyber forensics must be used. The classification of crimes has also shifted from conventional to technical. Conventional crimes are often conducted in a scientific manner using computers, in which case cyber forensics is

the only alternative. Intelligent criminals began to use science in their illegal activities, although investigators are no longer able to rely on the age-old art of investigation, source creation, and surveillance to identify crime. As a result, the criminal justice system cannot function without the assistance of forensic science or advanced technologies. The advancement in Forensic Science has presented law enforcement authorities and the courts with a valuable instrument.¹ 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.

LITERATURE REVIEW

The Coming Paradigm Shift in Forensic Identification Science by Michael J. Saks and Jonathan J. Koehler in this book the author discussed the evidence of failures in proficiency tests and individual events undermine the method's central principle of infallibility. Changes in the legislation governing the admissibility of expert testimony in court, as well as the advent of DNA typing as a model for a scientifically defensible solution to the issue of mutual identification, are propelling the older process into a new science framework.

Forensic evidence in Criminal Trial: Need of the Hour by Adarsh M. Dhabarde attempted to illustrate the importance of understanding forensic testing in criminal courts in light of evolving criminal tactics and the remarkable development in research in this area over the last few decades. It has been reported that trials in India are performed with the assistance of two main criminal procedure rules, The Indian Evidence Act, 1872 and the Criminal Procedure Code, 1973, which provide expert testimonies from Medical Practitioners and other experts.

Violations of Human Rights Through Scientific Techniques by Prarthana Banerjee Significant advancements in scientific techniques and their application in criminal investigations have also raised the important question of whether the mandatory administration of the three techniques (i.e. Narco-Analysis, Polygraph, and Brain Electrical Activation Profile) in criminal cases is legal under contemporary Indian law and whether it breaches human rights as well as fundamental rights.

The Role of DNA in Criminal Investigation – Admissibility in Indian Legal System and Future Perspectives by Dr. Nirpat Patel, Vidhwansh K Gautaman, Shyam Sundar Jangir the author in this article looked at the science of DNA detection and its use in criminal cases and prosecutions, such as criminal trials, lawsuits, and post-conviction proceedings. It emphasized the key benefits and costs of the growing role of DNA detection in the criminal justice system, with a particular focus on India. DNA profiling is a system for determining people at the molecular level. In recent years, there has been an increase in the use of DNA evidence in criminal investigations.

Medical Evidence v. Eye Witness Testimony by Anand Srivastava in this book the most plausible way to resolve the controversy between eyewitnesses and the medical proof is to increase the importance of medical evidence. Scientific techniques for detecting crime are constantly evolving and getting more reliable, adaptive, and precise. They can be seen. As a result, prosecutors and judges must become proficient in weighing contradictory expert facts and developing a harmonious construction of eyewitness testimony.

RESEARCH PROBLEM

Courts seem to be autonomous of their decision-making, but in fact, independence is based on a proper investigation. As a result, proving an argument without identifying the forensic materials is almost impossible. Previously, forensic experts measured pairs of markings to see how they fit and testified in court that whoever or whatever made one made the other. The method of comparing handwriting is still used in India, as mentioned in Section 73 of the Indian Evidence Act of 1872. The experts' evidence was scarcely called into doubt because cross-examination tended to overcome the forensic analyst's conviction. According to research, there is a uniform change in Forensic Identification Science. The convergence of legal and scientific

powers is driving radical progress in the conventional forensic identity sciences. The foundation of this field's presumption regarding its distinctiveness has been undermined by evidence of mistakes in adeptness research and real cases. Reforms in the legislation governing the admissibility of specialist testimony in court, as well as the introduction of modern methods, are pushing the old techniques to meet a new requirement.

RESEARCH QUESTION

Whether forensic evidence in India aids Judicial Decision making?

EXISTING INDIAN LAWS

Section 45 of the Indian Evidence Act of 1872 deals with 'expert opinion, where applicable.' However, the expert's opinion is admissible as proof only after it has been scrutinized under Articles 21 and 20(3) of the Indian Constitution, as well as Section 161(2) of the Code of Criminal Procedure, 1973. Section 293 of the 1973 Code of Criminal Procedure outlines the conditions in which such findings of Government science consultants can be used as evidence. Sections 53 and 53A of the 1973 Code of Criminal Procedure are both very useful for DNA profiling of the convicted. The legislation about 'fingerprints' is expressly protected by several provisions of the Identification of Prisoners Act, 1920, Section 73 of the Indian Evidence Act, 1872, and Section 293 of the Code of Criminal Procedure, 1973, in addition to the general laws related to other forensic techniques. Toxicology rules are expressly addressed in some clauses alongside general laws. Section 284 of the Indian Penal Code imposes a penalty for "negligent acts concerning a toxic drug." The Sale of Poisons Act of 1919 prohibits the importation of any prescription poison unless accompanied by a license and, by statute, limits the issuing of licenses.

PRINCIPLES OF SCIENTIFIC EVIDENCE ADMITTED BY US COURTS

This chapter aims to examine how criminal trials involving forensic evidence are addressed by courts around the world. In the past decade, there has been a shift in the admissibility of factual facts in federal courts.ⁱⁱ **Frye v. the United States**ⁱⁱⁱ was the first significant decision in the United States about the enforceability of scientific evidence. The Frye test consisted of two

segments. Then, there is the theory or scientific technique, and then there is acceptance. The facets of the test were questioned for two reasons.

1. That there would continue to be a significant time gap before the scientific approach is embraced by the community.
2. That the scientific community is more trusted than the Court of Law. As a result, the Federal Rules of Evidence were adopted in 1975.

As a result, the Federal Rules of Evidence were adopted in 1975. “If science, technological, or other professional expertise will assist the trier of fact in understanding the facts or determining a fact in question, a witness qualified as an expert by knowledge, ability, experience, training, or education can testify thereto in the form of an opinion or otherwise,” according to Rule 702.^{iv} However, the legislation did not resolve the controversy because it did not contain the Frye standard or make any mention of the general acceptance standard. So, in the landmark case of **Daubert v. Merrell Dow Pharmaceuticals Inc.**, the United States Supreme Court established the rules. The court continued by stating that the Frye Rule was overridden by the Federal Rules of Evidence and that the strict general approval rule could not stand in the way of a fair minority scientific opinion in the case of recent and existing findings focused on credible studies. It also established factors for the basis of scientific evidence, known as The Daubert Guidelines. The below are the guidelines:

1. The scientific process should be used to assess the content of previously tested scientific testimony;
2. The procedure has been subjected to peer review, preferably in the form of publishing in peer review literature.
3. There are technical guidelines that are routinely and accurately followed, as well as proven or possible error rates for the technique.
4. Takes into account universal recognition in the related scientific community.

Eventually, in the Kumho Tire Case,^v the Daubert Analysis was extended to scientific and advanced topics that do not fall into the heading of “science.” The Federal Rules of Evidence were amended in the year 2000, after the creation of the Daubert Guidelines. Scientific, technological, or advanced evidence (also known as “expert testimony”) is now admissible if:

- (a) the expert is qualified;
- (b) the expert’s testimony may help the jury decide issues in the case or understand the evidence, and

(c) the expert's testimony is centered on appropriate facts or data; is the product of valid rules and techniques; and if the expert demonstrates the facts of the case in trial.^{vi}

As a part of this revolution, federal trial judges are now expected to act as so-called "gatekeepers" in civil and criminal courts and determine if expert testimony will be able to be considered by the jury before it lets the jury resolve questions in the case or understand the facts, according to Rule 702 of the Federal Rules of Evidence. In *Daubert*, Justice Blackmun, majority opinion, expressed the Court's belief in the quality of federal trial judges to serve as gatekeepers of the permissibility of scientific and technical evidence, ensuring that only eligible experts are permitted to testify on these issues, relying on sufficient facts or data, and appropriate methodology that has been properly applied to the facts of the case. He said, "When confronted with the proffer of expert scientific evidence, the trial judge must decide at the outset, according to Rule 104(a), whether the expert is proposing to testify to 1) scientific information that (2) would assist the trier of truth in understanding or determining a fact in dispute." This involves deciding whether the argument or procedure behind the testimony is scientifically valid, as well as whether the rationale or techniques can be applied accurately to the facts at hand.

Associate Justice Stephen Breyer made the following statement on the role of science in court cases in the *Joiner Case*^{vii}, which addressed the constitutionality of experimental evidence: "In this age of science, science should hope to find a warm reception, maybe a permanent home, in our courtrooms."^{viii} The reasoning is clear. The ideas and tools of science are constantly being used in court cases. The proper settlement of such cases is important not only to the litigants but also to the general population – those who live in our technologically diverse culture and whom the law is supposed to represent.

In two case laws, **General Electric Co. v. Joiner** and **Kumho Tire Co. v. Carmichael**, the Court expanded trial judges' reach under *Daubert* by shielding their rulings from scrutiny, enabling them to accept findings rather than the only methodology, and expanding the gatekeeping position to non-scientific evidence. In *Joiner*, the Court ruled that the appellate court could review trial judges' *Daubert* admissibility judgments under the violation of discretion standard and that the trial court could reject evidence based on dissatisfaction with the experts' assessments of studies instead of their procedures alone, because "conclusion and methodology are not entirely opposed."

The Court in Kumho Tire case extended the Daubert analysis beyond scientific evidence to include “technical” and “other professional expertise” as specified by Rule 702. The Court backed this finding by pointing out the legislative language’s lack of differentiation, the fair award of discretion in testimony to non-scientific specialists, and the difficulties of identifying between “science” and “technical” or “other professional” expertise. The extension to Rule 702 in 2000 was the most recent advancement of federal admissibility review.

If the specialist claims to extend rules and procedures to the facts of the situation, this application must be carried out consistently. However, in some circumstances, it may be necessary for an expert to advise the fact finder on general principles without ever having to apply these theories to the particular facts of the case. For example, experts can advise the fact finder on thermodynamic principles or blood clotting principles without even knowing about or attempting to tie their evidence into the facts of the case. The amendment makes no changes to the long-standing practice of using expert testimony to educate the fact finder on broad principles. Rule 702 specifies the following for this kind of generalized testimony:

- 1) the expert is qualified;
- 2) the testimony presents a subject matter on which the fact finder may be supported by an expert;
- 3) the evidence must be authentic, and 4) the evidence must “fit” the facts of the case.^{ix}

PRINCIPLES OF ADMITTING SCIENTIFIC EVIDENCE BY UK COURTS

The statute in England governing the admissibility of empirical facts differs significantly from that of the United States. According to the English precedential review, judges in the United States are hesitant to enforce certain strict criteria, such as the “reliability” test. The English courts continue to apply Lawton, L.J.’s standard common law measure of “helpfulness” in the well-known case of **R vs. Turner**. In England and Wales (common law) nations, the four conditions for expert opinion admissibility are (A) Assistance (B) Relevant expertise, (C) Impartiality, and (D) Evidentiary Reliability.

(A) Assistance

The leading case of Turner clarified the definition of “Assistance” by stating that an expert opinion “is admissible to provide the court with... evidence that is likely to be beyond the expertise and understanding of a judge or jury. If a judge or jury can draw their conclusions depending on the evidence, an expert’s opinion is irrelevant. Or other words, if the expert’s viewpoint is superfluous, it is inadmissible.^x

(B) Relevant Expertise

The person who claims competence must be an expert in the relevant field. This point has been explained in the South Australian case *Bonython*.^{xi} According to the explanation, competence is a prerequisite that a person “has gained adequate knowledge of the subject by research or experience to make his [her] opinion of importance.” It has been proposed in *R (Doughty) v. Ely Magistrates Court*^{xii} that the entry for portraying skills is not very high. The criteria can be interpreted as follows: first, the entry point may not be smaller than what is needed to support a fact on the balance of probabilities; second, laypeople are not able to have those forms of expert proof. Third, criteria for evaluating competence must be adopted that have been established for research fields.

(C) Impartiality

The proof provided by the specialist should be objective and purposeful. Lord Woolf, the Master of the Rolls, said in *Field v Leeds City Council*^{xiii} that for an expert to be “qualified to provide evidence as an expert,” he or she must be able to have an independent, impartial view on the matters to which his or her evidence relates. The Court of Appeal (Civil Division) recognized expert testimony in *Tooth vs. Jarman*^{xiv}, holding that expert evidence can offer impartial assistance to the court in the form of objective unbiased judgment and that if an expert witness has a material or serious conflict of interest, the court is likely to fail to rule on his/her evidence.

This provision for common law admissibility has been introduced into Rule 33.2 of the Criminal Procedure Rules 2010. It states that an expert has an overarching responsibility to provide impartial and unbiased opinion evidence.

(D) Evidentiary Reliability

Besides, the expert opinion proof must meet a criterion (entry) of satisfactory reliability. Aside from these, the Court of Appeal (Criminal Division) has cited several common law admissibility provisions in various cases. They can be summarized as follows: Dallagher established that the area of specialization must be reasonably well established to pass the standard validity and reliability checks.^{xv} The admissibility of expert opinion testimony was quoted in Bonython, although it had not been thoroughly analyzed in England and Wales.^{xvi} Gilfoyle proposed a different form of durability measure.

This admissibility criterion was defined as follows in Bonython: “unless the subject matter of the [expert’s] opinion forms part of a body of knowledge or experience that is sufficiently assembled or recognized to be acknowledged as a valid body of knowledge or experience.” The common law reliability test for “expert proof of a factual nature” was affirmed by the court of appeals in Reed, although the court did not depart from the existing stance that there is no improved reliability test for such evidence. The Court of Appeal accepted the common law credibility test for empirical proof in Weller.^{xvii}

The Court of Appeal stated that it is the trial judge’s responsibility to decide if scientific expert testimony has a reasonably credible scientific background.

1. The Relationship between the Four Admissibility Test

The first aspect of the common law admissibility test known as “The Turner Test,” namely “Assistance,” guarantees that expert testimony can only be accepted where it has ample probative merit, which means that the evidence must assist the court in resolving a contested question. The second limb, “Relevant Expertise,” and the third limb, “Impartiality,” are intended to affirm that such expert testimony is admissible in criminal trials where a minimum threshold of general reliability, known as “reliability in the round,” is met. The fourth leg, known as “Evidentiary Reliability,” is intended to address issues beneath the expert’s view, such as his/her soundness in the area of expertise and methodology of any assumptions relied on.

2. Opinion Evidence and Evidence of Fact

In the United Kingdom, expert evidence is classified into two types: One is known as i) Opinion Evidence, and the other as ii) Factual Evidence. Since much expert testimony is focused on opinion, special guidelines are needed to ensure that it informs instead of misleads, specifically

in criminal trials dominated by expert evidence. However, an expert witness can be called to provide factual testimony. When a specialist is summoned to explain how an extraordinary piece of equipment works, or to provide evidence of a reading given by an instrument or a symptom detected during a patient examination. These are referred to as proof of fact because fact often implies facts. If the court orders some credible evidence, the first three limbs of the common law test must be extended in the same manner as the branches are applied to opinion evidence. The witness providing expert proof of truth can do so only if the court needs the expert's support or support, the witness is an expert in the subject area, and the testimony presented by the witness is impartial. Although the expert Proof of Fact is not protected by the common law rules summarized above in the case of Meads, it is claimed in "Phipson on Evidence" to choose the "Evidence of Fact" as expert evidence where the level of competence available was of the most basic order.

PRINCIPLES OF ADMITTING SCIENTIFIC EVIDENCE BY INDIAN COURTS

The relevance theory governs proof admissibility in India. Section 45 of the Indian Evidence Act of 1872 deals with expert evidence. In Indian courts, the rules of admissibility state that proof can only be submitted of specific facts and facts in question. A fact can be true but not admissible, as in the case of historical testimony, where secondary evidence of a record may be provided only under such conditions. If it does not accommodate the legislative provision, a document may be relevant but not admissible. It is also possible if a text or an expert opinion is admissible whether it is original or otherwise, but because it is irrelevant, such documentation is not recognized by courts. As a result, the criterion for recognizing forensic evidence in India is relevancy and admissibility. Under the general principles of relevance, come durability, usefulness, and fitness, which are viewed as separate grounds in the United States. Assistance, applicable knowledge, impartiality, and evidentiary credibility, which are the principles for admitting expert testimony in the UK, both fall into the category of 'relevancy.'

Sections 45 to 51 of the Indian Evidence Act, 1872 govern expert evidence law in India. In the case of **Mahmood v. State of U.P.**^{xviii}, the Supreme Court described the term expert and stated

that convicting anyone solely on the testimony of an expert would be extremely dangerous. While prosecution based on expert testimony is risky, Sections 53 and 53A of the Code of Criminal Procedure, 1973, require that expert evidence be used in such cases. In the case of **Selvi vs. the State of Karnataka**^{xix}, the Supreme Court ruled that compulsory administration of forensic techniques such as polygraphy, was unconstitutional if conducted without the accused's permission, it violates Articles 20(3) and 21 of the Indian Constitution.

CRITICAL ANALYSIS OF LAW ON FORENSIC EVIDENCE IN INDIA & ABROAD

Frye, Daubert, and Kumho had played a major role in deciding the standard for the admissibility of expert testimony in US jurisdiction. Frye's general approval test was the prevailing criterion for deciding the admissibility of new science facts from 1923 to 1933, and it insisted on two things:

- i) determining the appropriate scientific area to which the specific scientific technique belongs, and
- ii) whether the society approved the technique in question. In reality, this standard aided trial judges in deciding the authenticity of the proof.

Before the Frye decision, the determinants of admissibility of scientific proof were in a pathetic condition. The Daubert case, decided by the United States Supreme Court, marked a watershed moment. In Daubert, the court overruled Frye's general approval requirement as an exclusive standard in consideration of Federal Rules of Evidence requirements. The Court stated unequivocally that Frye's general approval criterion was superseded by Rule 702 of the Federal Rules of Proof. Furthermore, the Daubert court ruled that Rule 702 applies equally to both scientific and novel scientific facts. In a corresponding ruling by Joiner, the court explained the application of the Daubert conditions. The Joiner court ruled that an appeals court would investigate a trial judge's ruling for wrongdoing. The Court has stated that when assessing the credibility of science data, trial judges should consider the findings based on a scientific technique's methods. In another Kumho ruling, the court applied the Daubert factors to non-scientific expert testimony. As a result, in the year 2000, Congress changed the Federal Rules of Evidence to make the admissibility prong consistent with Daubert and Kumho.

Between 1980 and 2000, the acceptance of factual evidence in the United Kingdom was at an all-time low. A large number of trials were settled without adequate evaluation, resulting in false prosecutions. The main issue in the United Kingdom seemed to be the failure to apply evidentiary standards such as continuity. The judges have acknowledged that the court has struggled to develop a consistent evidentiary principle for the admissibility of scientific proof. The court in **R v. Gilfoyle**^{xx} demonstrated interest in extending the durability test by invoking Frye's general acceptance factor. Explaining that "...evidence based on an emerging new brand of research or medication is not admissible unless recognized by the scientific community as being capable of providing credible and authoritative opinion" is not admissible in the United States. Nevertheless, in a later ruling, **R v. Dallagher**^{xxi}, the court overturned its position by criticizing the observation in Gilfoyle. As a result, in the majority of cases, the court avoided using the reliability test as a standard; instead, the court used other standards dependent on the expert's qualification.

Three significant cases have had their sentences overturned by the appellate court due to insufficient interpretation of factual evidence. They are Dallagher, Clarke, and Harris. Considering the criminal law miscarriages of justice that existed in several recently settled cases, the United Kingdom Government appointed the Law Commission in 2009 to examine and deliver a report, which was submitted to Parliament in 2011^{xxii}, as discussed above.

CONCLUSION

This paper shows the standards upon which criminal prosecutions involving forensic evidence are handled by the judiciary. In the United States, when determining if expert testimony is admissible, the Judge must consider whether the evidence is valid, credible, effective, and appropriate. The criteria for admissibility of expert testimony in the United Kingdom (UK) are support, appropriate competence, impartiality, and evidentiary reliability. The suitability of expertise in the subject field is one of the standards of admissibility of expert testimony in Germany. The principles of free assessment of proof regulate German evidentiary prosecutions. With a few statutory exceptions, the court has complete jurisdiction over the admission and weighing of proof. German courts, in compliance with the standards of free assessment of proof, do not observe such evidentiary laws adhered to by US courts. In German courts, for

example, hearsay testimony is admissible, and it is up to the judge to decide whether or not the evidence is compelling. The ‘opinion law,’ which prohibits lay witnesses from making truthful statements, and the ‘best proof rule,’ which requires original documents to prove the contents of the text, are not available in German courts. In Germany, judges actively participate in the compilation of testimony, and the court’s decision on admissibility is final. The relevance theory governs proof admissibility in India. The Indian Evidence Act of 1872 states that evidence should only be provided of specific facts and facts in question. A fact can be true but not admissible, as in the case of historical testimony, where secondary evidence of a record may be provided only under such conditions. If it does not fulfill the statutory clause, a text may be valid but not admissible. It is also possible if a text or an expert opinion is admissible whether it is original or otherwise, but because it is irrelevant, such documentation is not recognized by courts. As a result, the criterion for recognizing forensic evidence in India is significance and admissibility. In other words, if the forensic evidence satisfies the requirement of relevancy, it is assumed that it will satisfy the requirement of superior proof or have more probative merit.

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