Chapter 2

LAW ON FORENSIC EVIDENCE IN INDIA AND ABROAD: A COMPARATIVE STUDY

OVERVIEW

This chapter deals with the principles of admissibility of forensic evidence in the courts and a comparative study of the principles of admissibility of different countries with. The first topic regarding admissibility of scientific evidence in U.S. is studied under two headings, Laws on Expert Evidence in U.S. and The Basics of Admissibility. Firstly, different rules of evidence and their contents are studied in a tabular form and secondly, the principles of admissibility like relevance, reliability, helpfulness and fitness are discussed. The second topic deals with rules of admissibility in UK where the relationship of the four admissibility test i.e. Assistance, Relevant Expertise, Impartiality and Evidentiary Reliability are discussed, the background of the law commission report along with Law Commission Recommendation and Government Response are discussed. The third point is Principles of Scientific Evidence in Germany, whereby sections and contents of the section are studied in a tabular form. Then the admissibility of DNA evidence in Germany is discussed separately. Finally the principles of admitting scientific evidence in India is discussed. A Sum-Up points the end of the chapter.

This chapter has been broadly studied under the following headings:

2.1 Principles of Admitting Scientific Evidence in United States (US)

2.2 Principles of Admitting Scientific Evidence in United Kingdom (UK/EU)

2.3 Principles of Admitting Scientific Evidence in Germany

2.4 Principles of Admitting Scientific Evidence in India

2.5 Sum-up
2.1 PRINCIPLES OF ADMITTING SCIENTIFIC EVIDENCE BY UNITED STATES (US) COURTS

The purpose of this chapter is to see on what principles the criminal cases relating to forensic evidence are dealt with by the courts abroad. A revolution has taken place in the last decade for the admissibility of scientific evidence in federal courts\(^1\). *Frye v. United States*\(^2\) was the first important judgment in America regarding the admissibility of scientific evidence. The Frye test had two aspects. Firstly, the principle or scientific technique and secondly, the acceptance. The aspects of the test were criticized on two different grounds. i) That there will have to be a considerable time lag for the scientific method to be accepted by the community ii) More faith is reposed on the scientific community than in the Court of Law. Hence, the Federal Rules Of Evidence was enacted in 1975. Rule 702, of which 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\(^3\). But the enactment did not settle the dispute as it neither included the Frye standard nor made a mention of the general acceptance standard. So, the United States Supreme Court laid down the guidelines in the remarkable judgment of *Daubert v. Merell Dow Pharmaceuticals, Inc*\(^4\). The court concluded by saying that the Federal Rules of Evidence superseded the Frye Rule and that the rigid general acceptance rule should not conquer the way of a reasonable minority scientific opinion in the form of new and emerging research based on reliable studies. It also laid down factors for the basis of scientific evidence which are also known as The *Daubert Guidelines*. The Guidelines are as follows:

1) The content of the scientific testimony which has already been tested, can be tested using the scientific method;

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\(^2\) *Frye v. United States* 293 F.1013 (D.C. Cir. 1923)  
2) The technique has been subject to peer review, preferably in the form of publication in peer review literature;
3) There are consistently and reliably applied professional standards and known or potential error rates for the technique.
4) Considers general acceptance within the relevant scientific community.

Later the *Kumho Tire Case*\(^5\), expanded the Daubert Analysis, to technical and specialized subjects that do not fall within the category of “science” After the Daubert Guidelines were framed, the Federal Rules Of Evidence were then amended in the year 2000. The Rule 702 now provides: that scientific, technical or specialized evidence (i.e. “Expert testimony”) may be admitted if: (a) the expert is qualified; (b) the expert’s testimony will help the jury decide issues in the case or understand the evidence; and (c) the expert’s testimony is based on sufficient facts or data; is the product of reliable methods and principles, and if the expert reliably has applied the methods and principles to the facts of the case in trial\(^6\). As a result of this revolution, federal trial judges are now required to perform as so-called “gatekeepers” to determine at the threshold whether expert testimony will be allowed to be heard by the jury in civil and criminal trials before it helps the jury to decide issues in the case or understand the evidence according to Rule 702 of Federal Rules Of Evidence. In *Daubert*, Justice Blackmun, writing for the majority, expressed the Court’s confidence in the ability of federal trial judges to function as gatekeepers of admissibility of scientific and technical evidence to insure that only qualified experts are permitted to testify on these subjects, based on sufficient facts or data, and reliable methodology that properly has been applied to the facts of the particular case. He said: “Faced with proffer of expert scientific testimony, then, the trial judge must determine at the outset, pursuant to Rule 104(a), whether the expert is proposing to testify to 1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue. This entails preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and whether that reasoning or methodology properly can be applied

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\(^6\) Dr. M.P. Kantak, Dr. M.S. Ghodkirekar & Dr. S. G. Perni “Utility Of Daubert Guidelines In India” 26(3) *JIAFM* 110 (2004)
to the facts in issue. We are confident that federal judges possess the capacity to undertake this review\(^7\).

In the *Joiner Case*\(^8\) which discussed about the admissibility of scientific evidence, Associate Justice Stephen Breyer, has offered the following observation on the role of science in court cases:

“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”\(^9\). Justice Breyer, also noted that federal judges typically are generalists, not specialists and few are having training or experience in science and technology\(^{10}\).

Chief Justice Rehnquist, in his opinion concurring in part and also dissenting in part from the majority opinion, was not less confident about the ability of the federal trial judiciary, but was less certain that the Court’s ruling would provide them with the means to do the job assigned. He observed: “The 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. The Court then states that a ‘key question’ to be answered in deciding whether something is ‘scientific knowledge’ ‘will be whether it can be (and has been) tested.’ Following this sentence are three quotations from treatises, which not only speak of empirical testing, but one of which states the ‘criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.’ I defer to no one in my confidence in federal judges; but I

\(^{7}\) *Daubert*, 509 U.S. at 591 (emphasis added) (internal citations omitted)


\(^{9}\) Stephen Breyer, *Introduction to REFERENCE MANUAL ON SCIENTIFIC EVIDENCE* 1, 2 (2nd edn., 2000)

\(^{10}\) “[M]ost judges lack the scientific training that might facilitate the evaluation of scientific claims or the evaluation of expert witnesses who make such claims. Judges typically are generalists, dealing with cases that can vary widely in subject matter.” Stephen Breyer, *Introduction to REFERENCE MANUAL ON SCIENTIFIC EVIDENCE* 1, 4 (2nd edn., 2000)
Am at a loss to know what is meant when it is said that the scientific status of a theory depends on its ‘falsifiability,’ and I suspect some of them will be, too. I do not doubt that Rule 702 confides to the judge the gatekeeping responsibility in deciding questions of the admissibility of proffered expert testimony. 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.”

2.1.1 Laws on Expert Evidence in U.S.

### TABLE 2.1

Following are the laws regarding admissibility of expert evidence in criminal and civil cases.

<table>
<thead>
<tr>
<th>Rule of Evidence</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>104(a)</td>
<td>This rule requires the trial judge to determine as a preliminary matter before the jury hears the evidence whether experts are qualified and whether their testimony will be admitted.</td>
</tr>
<tr>
<td>401</td>
<td>This rule defines what evidence is relevant in a case. It defines evidence as relevant if it has any tendency to make a fact that is material to the outcome of the case either more probable or less probable than it would have been without the evidence.</td>
</tr>
<tr>
<td>402</td>
<td>This rule prohibits the admission of evidence that is not relevant.</td>
</tr>
<tr>
<td>403</td>
<td>This rule allows the trial judge to exclude evidence that is relevant, if its probative value (its value in proving issues that determine the outcome of the case) is substantially outweighed by certain adverse consequences such as unfair prejudice, delay of the trial, confusion of the jury, or if the</td>
</tr>
</tbody>
</table>

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11 Daubert, 509 U.S. at 600
evidence is unnecessarily cumulative. It requires the judge to balance the positive qualities of the evidence against the inimical consequences of admitting it.

702 This rule provides that scientific, technical or specialized evidence (i.e. “Expert testimony”) may be admitted if: (a) the expert is qualified; (b) the expert’s testimony will help the jury decide issues in the case or understand the evidence; and (c) the expert’s testimony is based on sufficient facts or data; is the product of reliable methods and principles, and if the expert reliably has applied the methods and principles to the facts of the case in trial

703 This rule identifies the types of factual information that an expert witness may rely on to support an opinion. Included are facts perceived by the expert through her own study or research, facts provided to her by others (including the lawyer), or facts learned of by the expert from other witnesses during the trial. The rule allows the expert to base her opinion on information that is reliable to practitioners in his field, even if it is not admissible into evidence. (For example, a neuropsychologist may rely on a report by the patient’s psychiatrist that might be inadmissible hearsay in forming opinions about the condition of a patient.) If the expert bases her opinion in whole or part on reliable but inadmissible facts, the trial judge must decide whether the jury is informed of these particular facts for the purpose of evaluating the weight to be given to the expert’s testimony.

704 This rule allows the expert to express opinions about “ultimate facts”—those that determine which party will win or lose the case. Thus, an expert could express the opinion that a
plaintiff’s emotional injuries were caused by the harassing conduct of the defendant in an employment discrimination case.

705 This rule allows an expert to testify to the jury about her opinions without first stating all the facts that underlie them, unless the trial judge requires them to be disclosed. Note, however, that under Rule 104(a), the party offering the expert’s testimony must already have demonstrated to the trial judge that the expert’s opinion was based on sufficient facts; otherwise, the expert would not be qualified to testify before the jury.

706 This rule allows the trial judge to retain an expert witness to act as a court expert, to help the judge deal with conflicts in expert evidence between the parties’ experts.

1101(d)(1) This rule allows the trial judge to disregard all rules of evidence except those dealing with privilege when deciding, outside the presence of the jury, whether to admit expert testimony.

The study of the laws reveals that, expert witnesses are only allowed to testify about subjects that are scientific, technical, or that involved specialized knowledge that is beyond the ability of the jury to understand on its own. The lawyers and experts should understand that Rule 702, as interpreted by the courts which outlines the methodology that the trial judge must follow for resolving challenges to admissibility of expert testimony. The trial is required to evaluate whether the expert opinion: 1) is based on sufficient facts or data; 2) were reached by the use of reliable methods and principles 3) are the product of a reliable application of the methodology to the facts of the particular case. But to make the rulings, the trial judge is entirely dependent on the parties to furnish the information necessary to make the rulings which indirectly means that if the
parties want to be successful, lawyers and experts need to be well-versed for providing particulars to the trial judge\(^\text{12}\).

### 2.1.2 The Basics For Admissibility

While deciding admissibility of expert evidence, the trial judge must look into whether the evidence is “relevant” to the issues in the case, “reliable” as outlined in *Daubert/Kumho Tire* and Rule 702, “helpful” to the jury, and “fit” the issues of the particular case\(^\text{13}\). Although they are separate concepts, but do sometimes overlap. A summary of each point is discussed hereunder:

**TABLE 2.2**

<table>
<thead>
<tr>
<th><strong>Relevance</strong></th>
<th>Derived from Rule 401, this factor requires the court to insure that the expert’s testimony will help prove or disprove an important fact or issue in the case.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reliability</strong></td>
<td>Refers to “evidentiary reliability,” not “scientific reliability.” Evidentiary reliability means trustworthiness, and is analogous to scientific validity.</td>
</tr>
<tr>
<td><strong>Helpfulness</strong></td>
<td>Whether the expert testimony will help the jury to understand the evidence and or decide issues of fact relating to the claims the parties have raised.</td>
</tr>
<tr>
<td><strong>Fit</strong></td>
<td>Whether the expert testimony relates to the facts and issues of the particular case at hand so that it will assist the jury in doing its job.</td>
</tr>
</tbody>
</table>

From 1923 to 1993, Frye “‘general acceptance’ test [was] the dominant standard for determining the admissibility of novel scientific evidence”\(^\text{14}\). The test draws the line for

\(^{12}\) *Supra* note 1 at 14

\(^{13}\) *Daubert*, 509 U.S. at 589-91

\(^{14}\) *Daubert*, 509 U.S. at 585
admissibility based on whether the scientific principle underlying the evidence is accepted by a sufficient portion of the relevant scientific community:

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert 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 two subsequent cases, *General Electric Co. v. Joiner* and *Kumho Tire Co. v. Caemichael*, the Court broadened the reach of trial judges under Daubert by insulating their decisions from review, allowing them to consider conclusions instead of only methodology and extending the gatekeeping role to non-scientific evidence. In *Joiner*, the Court held that appellate court should review trial judge’s Daubert admissibility decisions under the abuse of discretion standard, and it concluded that the trial court could exclude testimony based on disagreement with the experts’ interpretations of studies, rather than with their methods alone, since “conclusion and methodology are not entirely distinct from one another”. In *Kumho Tire*, the Court extended the Daubert analysis beyond scientific evidence to the “technical” and “other specialized knowledge also referenced in Rule 702.” The Court supported this conclusion by noting the lack of distinctions made in the statutory language, the equal grant of latitude in testimony to nonscientific experts, and the difficulty of distinguishing between “scientific” and “technical” or “other specialized” knowledge. The most recent development in federal admissibility analysis is the amendment of Rule 702 in 2000.

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16 526 U.S. 137 (1999)
17 “Gatekeeping” means the federal courts act as stainers.
19 *Joiner*, 522 U.S. at 139
20 *Id.*, at 146
21 *Kumho Tire*, 526 U.S. at 141 (internal quotation marks omitted)
22 *Id.*, at 147-148 (internal quotation marks omitted)
The Supreme Court emphasized that the factors in *Daubert* are neither exclusive nor entirely dispositive of whether or not the testimony at issue should be admitted. Subsequent decisions have recognized that not all the specific *Daubert* factors can apply to every form of expert testimony\(^{23}\). For instance, lack of peer review or publication is deemed unimportant where the opinion is supported by “widely accepted scientific knowledge\(^{24}\)”

A review of the case law after *Daubert* shows that the rejection of expert testimony is the exception rather than the rule. When a trial court, rules that an expert’s testimony is reliable, it does not necessarily mean that contradictory expert testimony is unreliable rather it permits testimony that is the product of competing principles or methods in the same field of expertise. Expert testimony cannot be excluded simply because the expert uses one test rather than another, when both tests are accepted in the field and both reach reliable results\(^ {25}\). The Court in *Daubert* declared that the “focus”, of course, must be solely on principles and methodology, not on the conclusions they generate\(^ {26}\). Nonetheless, the Court later recognized, “conclusions and methodology are not entirely distinct from one another\(^ {27}\)” Under the amendment, as under *Daubert*, when an expert purports to apply principles and methods in accordance with professional standards, and yet reaches a conclusion that other experts in the field would not reach, the trial court may fairly suspect that the principles and methods have not been faithfully applied\(^ {28}\). The amendment specifically provides that the trial court must scrutinize not only the principles and methods used by the expert, but also whether those principles and methods have been properly applied to the facts of the case. As the court noted “any step that renders the analysis unreliable renders the expert’s testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology\(^ {29}\).

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\(^{24}\) Kannankeril v. Terminix, International, Inc. 128 F. 3d 802, 809 (3d. Cir. 1997)


\(^{26}\) Daubert 509 U.S. at 595


\(^{28}\) Lust v. Merrell Dow Pharmaceuticals, Inc., 89 F.3d 594, 598 (9th Cir. 1996)

\(^{29}\) In re Paoli R.R. Yard PCB Litigation., 35 F.3d 717, 745 (3d Cir. 1994)
If the expert purports to apply principles and methods to the facts of the case, it is important that this application be conducted reliably. Yet it might also be important in some cases for an expert to educate the fact finder about general principles, without ever attempting to apply these principles to the specific facts of the case. For example, experts might instruct the fact finder on the principles of thermodynamics, or blood clotting, or without ever knowing about or trying to tie their testimony into the facts of the case. The amendment does not alter the venerable practice of using expert testimony to educate the fact finder on general principles. For this kind of generalized testimony, Rule 702 simply requires that: 1) the expert be qualified; 2) the testimony address a subject matter on which the fact finder can be assisted by an expert; 3) the testimony be reliable; and 4) the testimony “fit” the facts of the case\(^30\).

### 2.2 PRINCIPLES OF ADMITTING SCIENTIFIC EVIDENCE BY UNITED KINGDOM(UK/EU)

In England, the law dealing with the admissibility of scientific evidence is totally different from United States. The English precedential analysis shows that judges are reluctant to impose any stringent standards like ‘reliability’ test in U.S. The English courts are still following the traditional common law test “helpfulness” developed by Lawton, L.J. in the famous case \textit{R. v. Turner}. The four requirements of admissibility of expert opinion in England and Wales (common law) countries are i) assistance ii) relevant expertise iii) impartiality and iv) evidentiary reliability.

**Assistance**

The meaning of “Assistance” was explained by the leading case of \textit{Turner}\(^31\) that an opinion of expert “is admissible to furnish the court with ... information which is likely to be outside the experience and knowledge of a judge or jury. If on the proven facts a judge or jury can form their own conclusions without help, then an opinion of an expert


\(^{31}\) \textit{R v. Turner} [1975] QB 834
is unnecessary”32. In other words if the opinion of the expert is unnecessary, it becomes inadmissible33.

**Relevant Expertise**

The person claiming expertise must be an expert in the relevant field. This point has been explained in the South Australian case *Bonython*34. According to the explanation, expertise is a requirement that an individual “has acquired by study or experience sufficient knowledge of the subject to render his [her] opinion of value”. This description has also been favoured in England and Wales. In *R (Doughty) v Ely Magistrates Court*35 it has been suggested that the entry for representing expertise is not very high. The interpretation of threshold can be thus: Firstly, the entry point should not be lower than what is required to prove a fact on the balance of probabilities; Secondly, laypersons are not qualified to give some types of expert evidence. Thirdly, guidelines for determining expertise which are formulated for scientific fields must be followed36.

**Impartiality**

The evidence that is presented by the expert should be unbiased and purposive evidence. In *Field v Leeds City Council*37, Lord Woolf, the Master of the Rolls, said for an expert to be “qualified to give evidence as an expert” he or she must be able to provide an objective, unbiased opinion on the matters to which his or her evidence relates. In *Tooth v Jarman*38 expert evidence was recognized by the Court of Appeal (Civil Division) where it was held that expert evidence should provide independent assistance to the court by way of objective unbiased opinion and that where an expert witness has a material or significant conflict of interest, the court is likely to decline to act on his/her evidence, or indeed to give permission for his/her evidence to be adduced. This common law admissibility requirement has been incorporated in Rule

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32 Id., at 841
33 *R v. Mohan* [1994] 2 SCR 9, 10f (Canadian Supreme Court)
34 *Bonython* [1984] 38 SASR 45
35 *R (Doughty) v Ely Magistrates Court* [2008] EWHC 522 (Admin) at [24]
36 *Henderso and others* [2010] EWCA Crim 1269, [2010] 2 Cr App R 24 at [207] and [208] (medical experts) and *Weller* [2010] EWCA Crim 1085 at [49] (experts on DNA)
37 *Field v Leeds City Council* [2000] 1 EGLR 54
38 *Tooth v Jarman* [2006] EWCA Civ 1028, [2006] 4 All ER 1276
33.2 of the Criminal Procedure Rules 2010. It provides that an expert has an overriding duty to give opinion evidence which is objective and unbiased.

Evidentiary Reliability

The expert opinion evidence must in other respects satisfy a threshold (entry) of acceptable reliability. Except these some common law admissibility requirements has also been quoted by the Court of Appeal (Criminal Division) in different cases. They may be summed up as follows:

In Dallagher it was laid that the field of expertise must be sufficiently well established to pass the ordinary tests of relevance and reliability.

In Bonython, the admissibility of expert opinion evidence was cited although in England and Wales, it had not been properly analyzed.

In Gilfoyle a particular type of reliability test had been suggested.

In Bonython this admissibility requirement was described as being “whether the subject matter of the [expert’s] opinion forms part of a body of knowledge or experience which is sufficiently organized or recognized to be accepted as a reliable body of knowledge or experience. The common law reliability test was confirmed by the court of appeals in Reed for “expert evidence for a scientific nature” but the court did not move from the established position that there is no enhanced reliability test for such evidence. In Weller the Court of Appeal recognized the common law reliability test for evidence of a scientific nature. Here the Court of Appeal referred that it is the trial judge’s function to determine whether there is a sufficiently reliable scientific basis for [scientific] expert evidence.

2.2.1 The Relationship Between The Four Admissibility Test


40 [1984] 38 SASR 45

41 Gilfoyle (No 2) [2001] 2 Cr App R 5 at [25]

42 Supra note 34


44 Weller [2010] EWCA Crim 1085
The first limb i.e. “Assistance” of the common law admissibility test known as “The Turner Test” ensures that the expert evidence should only be admitted when it has sufficient probative value, which means that the evidence must help the court to resolve a disputed issue. The second limb i.e. “Relevant Expertise” and third limb “Impartiality” is to confirm that such expert evidence is admitted in criminal proceedings when a minimum threshold of general reliability which is called “reliability in the round” is satisfied”. The fourth limb known as “Evidentiary Reliability” is meant to deal with matters underneath the expert’s opinion, such as his/her soundness over the field of expertise and methodology and the validity of any assumptions relied on.

**Opinion Evidence And Evidence Of Fact**

In UK Expert Evidence has been distinguished as two types: One is called i) Opinion Evidence, the other is ii) Evidence of fact. Much of the expert evidence is heavily based on opinion, therefore special rules are required to ensure that it is to inform rather than mislead, particularly in criminal trials dominated by expert evidence. However, an expert witness may be called to give expert evidence of fact. When an expert is called to give an explanation of how an unusual piece of machinery operates, or evidence of a reading provided by an instrument or a symptom which was observed when a patient was examined. These are called evidence of fact as fact also means truth. If such factual evidence is required by the court, the first three limbs of the common law test must be applied in the same way as the limbs are applied to opinion evidence. The witness giving expert evidence of fact should provide such evidence to the court only if the court requires the expert’s assistance or help, the witness is an expert in the relevant field and the evidence provided by the witness is unbiased. Although in the case of *Meads* the expert Evidence Of Fact is not covered by the common law rules summarized above but in “Phipson on Evidence” it is stated to prefer the “Evidence Of Fact” as expert evidence where level of expertise required was of a very low order.

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46 (17th ed 2010) para 33-19
2.2.2 The Background Of The Law Commissions Report

It was found that the current law on admissibility of expert opinion evidence was unsatisfactory because in England a laissez-faire attitude exist in relation to evidentiary reliability\(^{47}\). The expert opinion evidence was admitted without adequate scrutiny because no clear test was being applied to determine whether the evidence is sufficiently reliable to be admitted. This problem was aggravated in two ways:

1. Firstly, the judges lacked experience particularly in scientific evidence so the possibility is that they either stick to the opinions of experts or may defer from the opinion.

2. Secondly, the advocates were unable to cross-examine the experts effectively in absence of a clear text to ensure the reliability of expert opinion to unveil the potential flaws in the expert’s methodology, data and reasoning. Juries may therefore base their decision on the basis of unreliable decision\(^{48}\).

So, for the purpose of promoting the reform of law in admissibility of expert evidence in criminal trials, The Law Commission of England and Wales had set up by section 1 of the Law Commissions Act, 1965, published a Consultation Paper on 7\(^{th}\) April 2009\(^{49}\), to address the problems associated with the admissibility and understanding of expert evidence in criminal trials. It was the first publication of the commission relating to this field of law. It was recommended by the Committee of the Law Commission that the Forensic Science Advisory Council, judges, scientists and other key players in the criminal justice system should work together to develop a new test for determining the admissibility of expert evidence in criminal proceedings.

Encouraged by the previous Parliament (House of Commons Science and Technology Committee report of 29 March 2005 “Forensic science on trial”), the Law Commission published in March 2011 the report “Expert evidence in


criminal proceedings in England and Wales” (Law Com No 325). The Law Commission report was largely based on a public consultation conducted in April-July 2009 and on the Forensic Science on Trial Report and used examples of four high profile appeal cases involving unreliable or conflicting expert evidence (Dallagher – ear prints; Clark and Cannings – sudden infant death syndrome; and Harris and others – shaken baby syndrome).

In short the Law Commission’s key recommendations were:

a. To introduce a statutory admissibility test, to be applied in appropriate cases, whereby expert opinion is admissible in criminal proceedings only if it is sufficiently reliable to be admitted (“the reliability test”);

b. To provide, by statute, judges with a single list of basic factors to help them apply the reliability test;

c. To codify (with slight modifications) the uncontroversial aspects of the present law, so that all the admissibility requirements for expert evidence would be set out in a single Act of Parliament and carry equal authority.

2.3 PRINCIPLES OF ADMITTING SCIENTIFIC EVIDENCE BY GERMAN COURTS TABLE 2.3

The German Code of Criminal Procedure is termed as StPO. Let us study the laws at a glance:

<table>
<thead>
<tr>
<th>Sections</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>81a [Physical]</td>
<td>(1) A physical examination of the accused may be ordered</td>
</tr>
</tbody>
</table>

50 *Supra* note 48
51 *R v Dallagher* [2002] EWCA crim 1903
52 *R v Clark* [2003] EWCA Crim 1020
53 *R v Cannings* [2004] EWCA Crim 1
54 *R v Harris and others* [2005] EWCA Crim 1980
| **Examination; Blood Test** | for the purposes of establishing facts which are of importance for the proceedings. For this purpose, the taking of blood samples and other bodily intrusions which are effected by a physician in accordance with the rules of medical science for the purpose of examination shall be admissible without the consent of the accused, provided no detriment to his health is to be expected. 

(2) The authority to give such order shall be vested in the judge and, if a delay would endanger the success of the examination, also in the public prosecution office including the officials assisting it (section 152 of the Courts Constitution Act). 

(3) Blood samples or other body cells taken from the accused may be used only for the purposes of the criminal proceedings for which they were taken or in other criminal proceedings pending; they shall be destroyed without delay as soon as they are no longer required for such purposes. |
| **Section 81b [Photographs and Fingerprints]** | Photographs and fingerprints of the accused may be taken, even against his will, and measurements may be made of him and other similar measures taken with regard to him insofar as is required for the purposes of conducting the criminal proceedings or of the police records department. |
| **Section 81g [DNA Analysis]** | (1) If the accused person is suspected of a criminal offence of substantial significance or of a crime against sexual self-determination then, for the purposes of establishing identity in future criminal proceedings, cell tissue may be collected from him and subjected to molecular and genetic |
examination for the purposes of establishing the DNA profile or the gender if the nature of the offence or the way it was committed, the personality of the accused or other information provide grounds for assuming that criminal proceedings will be conducted against him in future in respect of a criminal offence of substantial significance. If the person concerned habitually commits other criminal offences, this may be deemed to be equivalent to a criminal offence of substantial significance by reference to the level of the injustice done.

(2) The cell tissue collected may be used only for the molecular and genetic examination referred to in subsection (1); it shall be destroyed without delay once it is no longer required for that purpose. Information other than that required in order to establish the DNA profile or the gender may not be ascertained during the examination; tests to establish such information shall be inadmissible.

(3) Without the written consent of the person concerned, the collection of cell tissue may be ordered only by the court and, in exigent circumstances, by the public prosecution office including the officials assisting it (section 152 of the Courts Constitution Act). Without the written consent of the person concerned, the molecular and genetic examination of cell tissue may be ordered only by the court. Persons who have consented are to be instructed as to the purpose for which the data to be obtained will be used. Section 81f subsection (2) shall apply *mutatis mutandis*. In its written reasons the court shall specify in relation to the particular case concerned

1. the determining facts relevant to ascertaining the
seriousness of the criminal offence,

2. the information giving rise to the assumption that the accused will be the subject of criminal proceedings in the future, as well as

3. an evaluation of the relevant circumstances in each case.

(4) Subsections (1) to (3) shall apply mutatis mutandis if the person concerned has been convicted of the offence with binding effect or was not convicted merely on the grounds that

1. lack of criminal responsibility has been proven or cannot be ruled out,

2. he is unfit to stand trial on the grounds of insanity, or

3. lack of criminal responsibility has been proven or cannot be ruled out (section 3 of the Youth Courts Act)

and the corresponding entry in the Federal Central Criminal Register or the Youth Register has not yet expired or been deleted.

(5) The data collected may be stored at the Federal Criminal Police Office and used in accordance with the Federal Criminal Police Office Act. The same shall apply

1. subject to the conditions listed in subsection (1), to the data obtained pursuant to Section 81e subsection (1), in respect of an accused person, as well as

2. to the data obtained pursuant to Section 81e subsection
(2).

The data may be transmitted only for the purposes of criminal proceedings, for threat prevention and for international mutual legal assistance in respect thereof. In the case of number 1 of the second sentence, the accused is to be informed without delay that the data has been stored, and is to be instructed that he may apply for a court decision.

<table>
<thead>
<tr>
<th>Section 85 [Expert Witnesses]</th>
<th>The provisions concerning evidence by witnesses shall apply if experienced persons have to be examined to prove past facts or conditions the observation of which required special professional knowledge.</th>
</tr>
</thead>
</table>
| Section 91 [Suspected Poisoining] | (1) Where poisoning is suspected, the suspicious substance(s) found in the corpse or elsewhere shall be examined by a chemist or by a specialist authority appointed for such examination.  
(2) It may be ordered that this examination be performed with the assistance, or under the direction, of a physician. |

The court in principle in Germany has to choose an expert accredited by a public-law body at State level. The body known as ‘Kammern’ maintains a register of such experts who are appointed to avoid future problems in appointment of suitable expert in specific area. However, the court may also choose experts outside the experts those who have registered with the ‘Kammern’ according to the situation and circumstances,
in practice which happens very frequently. Experts are also retained by the public prosecutor in the preliminary judicial investigation. A request can be made by the defendant at the trial hearing, that the expert witness be allowed to furnish evidence. Such request of the defendant cannot be dismissed if the expert witness the defendant wanted to call is manifestly more knowledgeable than the expert retained by the court. An expert can also be challenged by the defendant on different grounds laid in the law. Before the expert is accredited by a ‘Kammern’ he must go through a selection procedure which covers his personal and professional ability to draft reports and tests whether the candidate has an above-average level of expertise. Accreditation is given for five years. Accredited experts are subject to regular screening by the Kammern for which they are registered. As long as they meet the criteria, their accreditation can be extended. The most frequently applied criteria are an above-average level of expertise in a specific field, the skills to draw up an expert report and the requirements of impartiality and independence. However, all expertise are found among accredited experts. The German Federal Criminal Office and the various State Criminal offices have a high level of expertise in specific fields, such as DNA analysis. In Germany expert registrations are not linked to criminal procedure.

The principles of admissibility of expert evidence in Germany are suitability of experts in the specific area. German evidentiary proceedings are governed by the principles of free evaluation of the evidence. With few statutory exceptions both the admission and weighing of evidence are within the discretion of the court. In accordance with the principles of free evaluation of the evidence, German courts do not follow certain evidentiary rules adhered to by the courts in the United States. For example, hearsay evidence is admissible in German courts and it is up to the court to determine whether or not the evidence is convincing. The ‘opinion rule’ which precludes the factual statement by lay witnesses and the ‘best evidence rule’ requiring original documentation to prove the contents of writing is not applicable in German Courts.

56 Section 73 StPO
57 Section 244 StPO
58 Section 74 StPO
60 ZPO § 286
Germany judges play an active role in selection of evidence and the court’s judgment on the question of admissibility is final. Mostly, expert opinions are submitted to the court in writing. When it is required, the court calls the expert into the court for a hearing to investigate specific aspects of expert’s opinion. Through this system of active role of courts demonstrates the more integrated evidentiary proceedings before the German Courts, allocating more responsibility and initiative to the court than the U.S. System61.

2.3.1 DNA Evidence in Germany

The taking of blood samples for genetic fingerprinting or DNA analysis was not recognized in Germany until March, 1997. The Code of Criminal Procedure (StPO) allowed the taking of blood samples from a suspect for the purpose of criminal proceeding. Originally section 81a of StPO was mainly used to establish the blood alcohol level of the accused in cases of traffic offences or to ascertain criminal responsibility at the time of crime or sometimes to ascertain the suspect’s competence to stand trial as well. The study of section 81a of the StPO reveals that the purpose for which blood could be taken is not specified, therefore the taking of blood samples in order to obtain genetic fingerprints was widely regarded as lawful among the police community. Although, the Federal Supreme Court and Federal Constitutional Court acknowledged section 81a as sufficient legal grounds for the taking of blood samples for DNA analysis in criminal proceedings, issues of constitutional law, as well as criminal law were raised from various sectors. The draft amendment of the Code of Criminal Procedure, dated 2 March 1995 improved the apprehension as it explicitly addressed the problem. The draft referred to a discussion paper submitted by the Federal Ministry of Justice on 20 December 1989 and a later draft by the Federal Ministry of Justice of November 1991, taking into account a commentary by the Federal Data Protection Authority in May 1991. The Parliamentary Group of the Social-Democrats of Germany (SPD) has had proposed its own draft code. On 6 December, 1996, StVAG 1997, was passed, which was based on the previous drafts by the Federal Ministry of Justice and the SPD, but was ultimately rejected as it did not

expressly prohibit the establishment of gene databanks. Subsequently, the Parliamentary Act, that changed the stop and the Administrative Offences Act, finally came into effect in March 1997.\(^62\)

### 2.4 PRINCIPLES OF ADMITTING SCIENTIFIC EVIDENCE BY INDIAN COURTS

In India the principles of admissibility of evidence is relevancy. According to the Indian Evidence Act, 1872, section 45 of, deals with expert evidence. The principles of admissibility in Indian Courts are that evidence can be given only of relevant facts and facts in issue. A fact may be relevant but not admissible, like in case of documentary evidence, only under certain circumstances secondary evidence of a document can be produced. If it does not satisfy the legislative provision, although a document might be relevant but it would not be admissible. It might also happen that a document or an expert report might be admissible as it is an original one or otherwise but since it is not relevant, such evidence is not accepted by courts. Therefore, in India, the principle for accepting forensic evidence is relevancy and admissibility. Under, the broad principles of ‘relevancy’ comes reliability, helpfulness, fitness which are treated as separate grounds in US. Assistance, relevant expertise, impartiality and evidentiary reliability which are the principles for admission of expert evidence in UK, also comes under the requirement of ‘relevancy’. In India, the law regarding expert evidence is guided by sections 45 to 51 of the Indian Evidence Act, 1872. In the case of *Mahmood v. State of U.P.*\(^{63}\), the Supreme Court has defined the term expert and said that it would be highly unsafe to convict a person on the sole testimony of an expert. Although conviction based on expert evidence is unsafe, yet the incorporation of section 53 and 53A of the Code of Criminal Procedure, 1973, mandates that in certain cases the expert evidence is indispensible. In the case of *Selvi v. State of Karnataka*\(^ {64}\) the Supreme Court held that compulsory administration of forensic techniques like polygraphy, Narco-analysis and

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\(^62\) Jyotirmoy Adhikary, *DNA Technology in Administration of Justice* 178-180 (LexisNexis Butterworths, New Delhi, 2007)

\(^63\) AIR 1976 SC 69

\(^64\) 2010 (7) SCC 263
Brain-Mapping is unconstitutional if performed without the consent of the accused as it violates Article 20(3) and article 21 of the Constitution of India\textsuperscript{65}.

\textbf{2.5 CRITICAL ANALYSIS OF LAW ON FORENSIC EVIDENCE IN INDIA AND ABROAD}

In the United States jurisdiction Frye, Daubert and Kumho, had played a significant role in determining the standard for the admissibility of expert evidence. From 1923 to 1933, Frye’s general acceptance test was the dominant standard for determining the admissibility of novel scientific evidence, which insisted in two things: i) to determine the relevant scientific field in which the particular scientific technique belong ii) whether the community accepted the technique in issue. In fact, this standard was a helping hand to the trial judges in determining the reliability of the evidence. Prior to the judgment of Frye, the determinants for admissibility of scientific evidence was in a pathetic condition. A turning point occurred when United States Supreme Court decided the \textit{Daubert} case. In \textit{Daubert} court overruled the \textit{Frye}’s general acceptance standard as an exclusive standard in the light of the provisions in the Federal Rules of Evidence. Court vehemently declared that Frye’s general acceptance standard was superseded by r. 702 of the Fed. R. Evid. Furthermore, in \textit{Daubert} court also held that r. 702 is uniformly applicable to both scientific and novel scientific evidence. In a subsequent decision of \textit{Joiner}, court clarified the application of the factors provided in \textit{Daubert}. In \textit{Joiner} court held that appellate court can review the decision of the trial judges for any abuse. Court also declared that in evaluating the reliability of scientific evidence, trial judges can consider the conclusions based on methodology of a scientific technique. In the other decision of \textit{Kumho}, court extended the \textit{Daubert} factors to non-scientific expert testimony. Consequently, in the year 2000, the Congress amended the Fed. R. Evid. To make admissibility prong in consonance with \textit{Daubert} and \textit{Kumho}.\textsuperscript{66}

\textsuperscript{65} Article 20(3) prohibits self incrimination and Article 21 guarantees right to life and personal liberty
\textsuperscript{66} V.R. Dinkar, \textit{Scientific Expert Evidence} 162-163 (Eastern Law House, Calcutta, 1\textsuperscript{st} edn., 2013)
In U.K. in between 1980-2000, the appreciation of scientific evidence was in a pathetic condition. Numerous cases were decided without proper evaluation, which resulted in wrongful convictions. It seemed that the major problem in U.K. is the non-application of the evidentiary standard like reliability. The judges themselves have admitted that the judiciary had failed in formulating any stable evidentiary standard for the admissibility of scientific evidence. In *R v. Gilfoyle*\(^6\) court showed curiosity in applying the reliability test by citing *Frye’s* general acceptance factor. Explaining that in U.S. the “…evidence based on a developing new brand of science or medicine is not admissible until accepted by the scientific community as being able to provide accurate and reliable opinion.” However, unfortunately in a later decision *R v. Dallagher*, court reversed its view by criticizing the observation in *Gilfoyle*. Thus in most of the cases, court evaded from implementing the reliability test as a standard; instead court applied some other criteria which were based on the evaluation of the qualification of the expert. There are three important cases in which the convictions were quashed by the appellate court due to the improper application of scientific evidence. They are *Dallagher*\(^68\), *Clarke*\(^69\) and *Harris*.\(^70\) Considering the criminal law miscarriages of justice which occurred in some recently decided cases, U.K. Government entrusted the Law Commission in 2009 to study about it and to submit a report and it was presented to the Parliament in 2011\(^71\) which is discussed above.\(^72\)

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\(^6\) [2012]2 Cr App R 5
\(^68\) *R. v. Dallagher* [2002] EWCA Crim 1903
\(^69\) *R.v. Clarke* [2003] EWCA Crim 1020
\(^70\) *R. v. Harris* [2005] EWCA Crim 1980
\(^71\) *The Law Commission, Expert Evidence in Criminal Proceedings in England and Wales*
\(^72\) *Supra* note 66 at 174