**Admissibility Of Scientific Evidence And The Bias Against Lie Detection**

INTRODUCTION

The vigilant search for truth is the hallmark of our criminal justice system. Our methods of investigation, rules of criminal procedure and appellate process are designed to ensure that the guilty are punished while the innocent are protected. However, while ours is a system to be cherished, it is not a perfect system, and those charged with the administration of justice have a responsibility to seek its continued improvement.1

Science and law, two distinct professions have increasingly become commingled, for ensuring a fair process and to see that justice is done. The legal system today, has to deal with novel scientific evidence on several occasions, which has posed profound challenges for the law. At a basic level, many of these challenges arise from fundamental differences between the legal and scientific processes. The dilemmas are self-evident. On one hand, scientific evidence holds out the tempting possibility of extremely accurate fact-finding and a reduction in the uncertainty that often accompanies legal decision-making. At the same time, scientific methodologies often include risks of uncertainty that the legal system is unwilling to tolerate.2

Moreover, at every instance, scientific evidence tests the abilities of judges and lawyers, all of whom may lack the scientific expertise to comprehend the evidence and evaluate it in an informed manner. Lawyers must attempt to comprehend the complexity of scientific analysis and terminology if they are to fully understand testing procedures and results, and their impact in the legal arena. One recent development in the scientific community that has had a substantial and almost mesmerizing impact on the legal profession - is the development of lie detection and narco analysis in criminal cases.

FORENSIC SCIENCE

Forensic Science is an important branch of jurisprudence. It is a potent and powerful weapon in the armory of administration of justice. Forensic Science provides scientific study for investigation of crime. The growth development and use of Forensic Science in detection of crime in developed countries is tremendous and increasing with new techniques. The area of Forensic Science in India has, yet, not been fused, as it ought to have bee after more than five decades of post-independence era and more so when a average acquittal rate is alarmingly high. Therefore, in our country, also, the necessity and importance of Forensic Science hardly needs any emphasis.3

It cannot be gainsaid that there is lack of understanding and appreciation of the importance of specialists in general, by non-specialists, in all field. The field of Forensic Science is no exception. Many a time, neither the judge, nor the lawyer nor even the police appreciates fully, the advances (the extensive, promising potentialities of the science and the fusion of new technologies, methodologies, modalities and research. Multitask and multi professional nature of Forensic Science needs an inter professional approach, which is, many a time, lacking. Therefore, sincere and serious efforts are required to be made to eliminate personal and professional bias of the involved personnel and professionals.4

No doubt, Forensic Science in criminal investigation and trial is mainly concerned with materials and therefore, indirectly through materials, with men, places and time. Forensic Science embraces all branches of science and applies them to the purposes of law. It may be stated that earlier all the techniques were borrowed from various scientific disciplines like Chemistry Medicine, Surgery, Photography, Physics, Biology and Mathematics, but, in the recent past, this science has achieved its own faculties and branches which are more or less, exclusively the domain of Forensic Science.5

The operation of Forensic Science is nothing but application of techniques and methods of basic science techniques for various analyses of the evidence associated with crimes. The scientific examination by Forensic Scientists adjoins a missing link or strengthens a weak chain of investigation

The following areas and factors have given rise to the emergence of immediate need for use, study and application of Forensic Science:

(i) social changes,

(ii) hiding facilities,

(iii) technical knowledge,

(iv) widening field of criminality, and

(v) better evidence.

In the annals of police investigation, physical coercion has at times been substituted for painstaking and time consuming inquiry in the belief that direct methods produce quick results. Development of new tools of investigation has led to the emergence of scientific tools of interrogation like polygraph analysis, narco analysis and brain fingerprinting. Such tests are a result of advancement in science but they often raise doubts regarding their legal validity and authenticity.

ADMISSIBILITY OF SCIENTIFIC EVIDENCE- IN U.S.A.

Legal Provision of Expert Scientific Testimony

Federal Rule of Evidence 702 enacted in 1975 stated ‘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’

Earlier position- the ruling in Frye v. United States

In 1923, the United States Court of Appeals for the District of Columbia, in Frye v. United States, determined that any scientific theory that was not sufficiently accepted in the scientific community should not be admissible in court.6 Because this landmark case on scientific evidence centered on polygraph evidence and the Court determined that the technique did not meet this standard, the polygraph test was dealt a serious blow from which it has never recovered.7Even though the Court made clear that the polygraph was not admissible because it was not "sufficiently established to have gained general acceptance," and not because of an inherent flaw in the science, little re-examination was done over the years to determine whether the level of acceptance had improved.8

Post Daubert Ruling

The United States Supreme Court's decision in Daubert v. Merrell Dow Pharmaceuticals,9 however, changed the landscape of scientific evidence admissibility that in turn affected the polygraph analysis. The Court held that "the Frye test was superseded by the adoption of the Federal Rules of Evidence, that Rule 702 now governs expert evidence without reference to Frye's "general acceptance" doctrine. The court further held “Nothing in the Rules as a whole or in the text and drafting history of Rule 702, which specifically governs expert testimony, gives any indication that "general acceptance" is a necessary precondition to the admissibility of scientific evidence. Moreover, such a rigid standard would be at odds with the Rules' liberal thrust and their general approach of relaxing the traditional barriers to "opinion" testimony.”

The court laid down fresh standards: that the trial judge must make a preliminary assessment of whether the testimony's underlying reasoning or methodology is scientifically valid and properly can be applied to the facts at issue. Many considerations will bear on the inquiry, including whether the theory or technique in question can be (and has been) tested, whether it has been subjected to peer review and publication, its known or potential error rate, and the existence and maintenance of standards controlling its operation, and whether it has attracted widespread acceptance within a relevant scientific community. The inquiry is a flexible one, and its focus must be solely on principles and methodology, not on the conclusions that they generate. Throughout, the judge should also be mindful of other applicable Rules.

Cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof, rather than wholesale exclusion under an uncompromising "general acceptance" standard, is the appropriate means by which evidence based on valid principles may be challenged. That even limited screening by the trial judge, on occasion, will prevent the jury from hearing of authentic scientific breakthroughs is simply a consequence of the fact that the Rules are not designed to seek cosmic understanding but, rather, to resolve legal disputes.

Daubert Effect- Amendment in Federal Rule of Evidence 702

The Federal Rules of Evidence were then amended in 2000. The Rule 702 now reads : ‘ 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 if

1) the testimony is based upon sufficient facts or data,

2) the test is the product of reliable principles and methods, and

3) the witness has applied the principles and methods reliably to the facts of the case.

Admissibility of polygraph tests a view at US judgments

In United States v. Piccinonna10 the Eleventh Circuit Court of Appeals held in 1989 that the Circuit's per se exclusionary rule for polygraph evidence was no longer warranted. The court observed that polygraphs had gained increasingly widespread acceptance as a reliable science and did not unduly sway juries.11 The court noted that because of advances in polygraph testing, investigative agencies such as the FBI, the Secret Service, military intelligence, and law enforcement had come to rely on its use.12 As a result, the court said it was time to replace the per se exclusion with a rule "more in keeping" with advances in polygraph technology.13 The court cautioned that because polygraph testing was still "developing," however, it should not be treated like other forms of expert testimony, which are admitted at the discretion of the trial court.14 The court consequently decided polygraph evidence could be admitted in two separate situations: upon a stipulation; and to impeach or corroborate the testimony of a witness at trial. The court provided several conditions of admissibility. The first was adequate notice to the opposing party about the proposed expert testimony. The second was that the opposing party must be given a reasonable opportunity to have its own polygraph expert administer a similar test. Finally, the testimony must still comply with all relevant Federal Rules of Evidence, whether the testimony is used to corroborate or impeach.15

In United States v. Galbreth, 16for example, a defendant tried for willful income tax evasion took a polygraph test. The court held that polygraph examinations meeting the standard of Daubert v. Merrill Dow Pharmaceuticals, Inc. could be admitted.

In United States v. Posado17 the Fifth Circuit considered the Daubert factors and held open the possibility that the polygraph could satisfy Rule 702 in some circumstances, although it did not in the case before it. The court first noted that the polygraph test had grown more sophisticated since Frye, now with "modern instrumentation" measuring more than just blood pressure.18 The court asserted that the error rate was measurable and attributable to a minimum number of factors. Furthermore, according to the court, the error rate lay between 70% and 90%, a variation that "exists in many of the disciplines and for much of the scientific evidence we routinely find admissible under Rule 702."Finally, increased standardization, peer review, testing, and general acceptance outside the courtroom all influenced the court to decide that the test is permissible under Daubert.

However it is to be noted that not all courts in USA admit polygraph results.

The Chicago Bar Association Committee of Criminal Law undertook a study on the polygraph and its role in the administration of criminal justice. The committee concluded as follows:

\* Polygraph has a place in the detection of crime because of psychological effect on persons, who are in fact guilty of crime.

\* There may be 5-30 % errors in the test results, depending upon the ability of the examiner and other factors.

\* Unqualified operators could cause unnecessary injury to innocent persons.

\* Refusal to take a polygraph test should have no bearing on the presumption of innocence.

\* The polygraph is not a substitute for the competent detection and investigation of crime.

\* Due to the fallibility of the results of polygraph examination, it should not be admitted as evidence in court cases.

The National Academy of Sciences Report

In January 2002, the National Research Council the research arm of the National Academy of Sciences, USA established a Committee to Review the Scientific Evidence on the Polygraph, Chaired by Dr. Stephen Fienberg, a professor of statistics at Carnegie-Mellon University, the panel comprised experts in psychology, psychophysiology, statistics, systems engineering, mathematics, neurology, signal detection, and issues concerning science and the law.

The Committee published its findings in a report titled 'The Polygraph and Lie Detection' (National Research Council, 2003). Regarding the basic science behind polygraph, the Committee concluded.

\* Almost a century of research in scientific psychology and physiology provides little basis for the expectation that a polygraph test could have extremely high accuracy.

• The theoretical rationale for the polygraph is quite weak especially in terms of differential fear, arousal or other emotional states that are triggered in response to relevant or comparison questions.

• Research on the polygraph has not progressed over time in the manner of a typical scientific field. It has not accumulated knowledge or strengthened its scientific underpinnings in any significant manner.

• The inherent ambiguity of the physiological measures used in the polygraph suggest that further investments in improving polygraph technique and interpretation will bring only modest improvements in accuracy

Estimating the accuracy of polygraph, the Committee concluded:-

Notwithstanding the quality of the empirical research and the limited ability to generalize to real-world settings, we conclude that in populations of examinees such as those represented in the polygraph research literature, untrained in countermeasures, specific-incident polygraph tests for event-specific investigations can discriminate lying from truth telling at rates well above chance, though well below perfection.19

Nonetheless in United States v. A & S Council Oil Co.20 the court held that per se exclusion of polygraph tests are now in minority.

ADMISSIBILITY OF SCIENTIFIC EVIDENCE- IN INDIA

Legal Provision of Expert Scientific Testimony

Section 45 of the Indian Evidence Act : It is the section dealing with the opinion of the expert. It states: ‘When the court has to form an opinion upon a point of foreign law, or 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 the identity of handwriting or finger impressions) are relevant facts.21

The Credibility of an Expert Witness

It is an ancient rule of common law that on a subject requiring special knowledge and competence, evidence is admissible from witnesses who have acquired by study or practice the necessary expertise on the subject. In Buckley v. Rice Thomas22 Justice Saunders exclaimed that it is an honorable and commendable thing in our law to apply the aid of science. The evidence is justified by the fact that the court would be unable, unaided, to draw proper inferences and form proper opinions from such specialized facts as were proved before it. The foundation on which expert evidence rests is the supposed superior knowledge or experience of the expert in relation to the subject-matter upon which he is permitted to give an opinion as evidence. The credibility of an expert witness depends on the strength of the reasons stated in support of his conclusions and the data and material furnished, which form the basis of his conclusions.23 The evidence of an expert is considered rather a weak type of evidence and the Courts do not generally consider it as offering "conclusive" proof and therefore, safe to rely upon the same without seeking independent and reliable corroboration.24 It has also been held that it is unsafe to convict the accused solely on the basis of expert opinion.25 Expert opinion evidence may be contradicted and cross-examined, like any other evidence. The position of an expert is that he must be regarded as any other independent witness, and although he enjoys such weight as may follow from his peculiar ability to assist the court, it will be a misdirection to direct the jury that his evidence could be accepted unless the witness himself betrays reasons for rejecting it. There will be occasions where the evidence may have to be rejected on procedural grounds and occasions where the court will have to choose between conflicting opinions from experts dealing with the same matters.

Admissibility of polygraph tests a view at Indian judgments

The High Court of Gujarat has held that “The legality, validity or evidentiary value of the lie detector test is again a question which has to be determined at the trial.”26

In yet another case the accused was subjected to lie detection test and the court held it admissible under section 293 of CrPC. The court observed as per the provisions of Section 293 of the Criminal Procedure Code, any document purporting to be a report under the hand of Government scientific expert, upon any matter, duly submitted to him for examination or analysis and report in the course of any proceedings under the Code may be used as evidence in any trial conducted under the Code. As per Sub-section (4)(e), the Section 293 applies to the Director of a State Forensic Laboratory. Therefore, there is no need to examine the expert unless the Court feels it necessary. However, it is only an opinion evidence, which requires corroboration.27

The High Court of Gujarat has observed that for detection of while collar crimes, it is expected for the State to undertake the investigation through ultra modern machineries like lie detector test, narco test etc.28

COSTITUTIONALITY OF THESE TESTS

The principle of immunity from self-incriminating evidence is founded on the presumption of innocence; the maxim “Nemo tenetur seipsum accusare” had its origin in a protest against inquisitorial and manifestly unjust methods of interrogating accused persons.29

As far as the Indian law regarding this is concerned the protection against self-incrimination continues to be more or less same as in the English common law.30 In India Article 20(3) of the Indian Constitution and section 161(2) of Code of Criminal Procedure protect the accused from self-incrimination. Article 20(3) and section 161(2) code of criminal procedure states, “No person accused of an offence shall be compelled to be a witness against himself” and “Such person shall be bound to answer truly all questions relating to such case put to him by such officer, other than questions the answers to which would have a tendency to expose him to a criminal charge or to a penalty or forfeiture” respectively. In the case of Nandini Sathpathy v. P.L.Dan31, it was held that no one could forcibly extract statements from the accused that have the right to keep silent during the course of interrogation or investigation. Freedom to tell lies is not within the protection of this clause.32

Under the lie detection procedure no force is used on the accused.

The idea behind the protection against self incrimination is to encourage a free atmosphere in which the accused can be persuaded to come forward to furnish evidence in courts and be of substantial help in elucidating truth in a case, with reference to material within their knowledge and in their possession.33 Anything caused, by any kind of threat or inducement by a person directed towards the accused or likely to be accused of any offence, which causes him to act involuntarily and further the case against himself in any prosecution against him or which results or is likely to result in the incrimination of that person qua any offence, is violative of the fundamental right guaranteed under clause (3) of Article 20 of the Constitution of India.34 Involuntary is defined as an admission, especially by an individual who has been accused of a crime that is not freely offered but rather is precipitated by a threat, fear, torture, or a promise.35

The phrase compelled testimony is read as evidence procured not merely by physical threats or violence but by psychic torture, atmospheric pressure, environmental coercion, tiring interrogative prolixity, overbearing and intimidatory methods and the like.36

The purpose of lie detection is to elicit the truth from the suspects devoid of any physical coercion.

The incriminating statements procured during narco analysis are not used in the court of law.37Moreover it is a scientific test conducted by a team of scientists and does not amount to custodial interrogation by Police.38

In 2004, the Bombay High Court ruled in the multi-corer fake stamp paper case that Statements made under narco analysis are not admissible in evidence however; recoveries resulting from such drugged interviews are admissible as corroborative evidence.39 In this case, The Narco analysis test submitted an immense amount of information but doubts were raised about its value as evidence. Abdul Karim Telgi the accused, under went narco analysis in Bangalore in order to aid investigation and facilitate the collection of evidence. The Karnataka Forensic Science Laboratory (KFSL) in Bangalore conducted a polygraph test, brain mapping, and a narco analysis procedure. The Bombay High Court recently in an important verdict in the case of, Ramchandra Reddy and Ors. vs State of Maharashtra40, the bench upheld the legality of the use of P300 or brain finger-printing, lie-detector test and the use of truth serum or narco analysis. It also upheld the admissibility of evidence procured under the effect of truth serum. The judgment also held that these tests involve minimal bodily harm. The Supreme Court has held that the right to life includes right to health but subjecting a person to a scientific test as part of investigation will not amount to denial of health. Therefore it will not amount to denial of reasonable and just procedure.41

Protection against self incrimination was instrument for the protection of the innocent and not intended for the acquittal of the guilty.42 The framers of the Bill of Rights believed the rights of society were paramount to the rights of the criminal. Believing in the same principle in a spate of high-profile cases, such as those of the Nithari killers, the Mumbai train blasts, Arushi Murder case, Malegaon blasts and the most recent Mumbai blasts case suspects have been made to undergo Narco Analysis, drugged with the sodium pentothal.

RECENT ADVANCES IN DETECTION OF DECEPTION

Lombroso, the founding father of criminology in 1895, was the first to experiment with a machine measuring blood pressure and pulse to record the honesty of criminals. He called it a hydrosphygmograph. A similar device was used by Harvard psychologist William Marston during World War I in espionage cases, who brought the technique into American court systems. In 1921, John Larson added the item of respiration rate, and by 1939, Leonard Keeler, one of the founding fathers of forensic science, added skin conductance and an amplifier, thus signaling the birth of the polygraph as we know it today. Polygraph (Lie-Detector) is based on the principle of psychosomatic interactions of an individual i.e. psychologically a change in a person's consciously held feeling produces a defence reaction in the form of physiological changes in his blood pressure, pulse rate, respiration and electro-dermal response(GSR).

The main innovation in the traditional polygraph has been the induction of computer to record and analyse the physiological response and data, though some innovations in the input devices to increase the number of recording, to decrease the discomfort and reduce the time for examination have also come up. Computerized polygraphs have the following advantages:

\* Operational training need less time

\* Provide better interpretable data

\* No frequent calibrations as in traditional polygraphs due to pen distortion

Moreover the successful operation of polygraph depends on the experience, personality, integrity of the examiner, proper operational environment, interrogation room.

CONCLUSION

By and large, lie-detector evidence has limited judicial recognition. In a few courts of America polygraph test results have been recognized for their value as an aid to investigation and in some cases the expert evidence relating to polygraph has been accepted. The experts in areas like fingerprints, firearms, identification questioned documents etc. have been widely acclaimed. But the polygraph experts have not received acceptance and recognition from the court. It is unfortunate because the polygraphists have established 95 to 98% accuracy of the lie detector in detecting deception or the truthfulness of the subjects in criminal investigations. On the basis of relevant scientific data on lie detector, it is strongly felt that the courts should accept deception test because it can furnish a fairly effective method and technique for the exposure of deception in a subject. Since polygraph interrogation is the best available method to detect deception, the time has come for the courts to admit this type of evidence.

The present position regarding the acceptability of lie detection test results is that in some of the courts of USA it has been accepted as legal evidence. There are instances where the courts have recognized and utilized the polygraph test to base its decision. In USA out of 23 States, 11 have enacted legislation to create a licensing authority for polygraphists to conduct certain type of polygraph examination. The other countries where polygraph has been put to extensive use in criminal justice system are Japan and Israel.

In India a beginning was made by the Central Forensic Science Laboratory, Central Bureau of Investigation, New Delhi by providing the facility of polygraph for crime investigation purposes. The tests have however not been utilized in the courts. However there is no law either which forbids the use of lie detector. In my opinion section 45 of the Indian Evidence Act is wide enough to accept the polygraph evidence. Lastly in the words of Wicker of the college of Law University of Tennessee “If and when convincing evidence is produced that reasonably reliable scientific methods of exposing falsehoods either in or out of the court room are available, these methods should be promptly utilized by the legal profession”43