ADMISSIBILITY OF SCIENTIFIC EVIDENCE AND THE BIAS AGAINST LIE DETECTION: NATIONAL AND INTERNATIONAL PERSPECTIVE

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CONCEPTUAL ANALYSIS

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.

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.

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 nothing but development of lie detection and narco analysis in criminal cases.

WHAT IS POLYGRAPH?

Throughout history, it has often been assumed that lying is accompanied by a change in the body's physiological activity. The polygraph is a set of equipment that accurately measures various sorts of bodily activity such as heart rate, blood pressure, respiration, and palmar sweating. In recent years brain activity has also begun to be measured in this setting. This

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bodily (and brain) activity can be displayed via ink writing pens on to charts or via a computer's visual display unit. The polygraph (from the Greek 'poly' = 'many', and 'graph' = 'to write') is widely used by analytical staff in a variety of medical and scientific settings for purposes other than lie detection. In lie detection situations its use is based on the premise that lying is accompanied by changes in the activity measured by the polygraph.

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 been after five decades of post-independence era and more so when a average acquittal rate is alarming high. Therefore, in our country, also the necessity and importance of Forensic science hardly needs any emphasis.

It cannot be gainsaid that there is lack of understanding and appreciation of the importance of specialist 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 and efforts are required to be made to eliminate personal and professional bias of the involved personnel and professionals.

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 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.

The operation of Forensic Science is nothing but application of techniques and methods of basic science techniques for various analysis 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 factor 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 Rules of Evidence, Rule 702 says Testimony by Expert Witnesses:
A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

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

(b) The testimony is based on sufficient facts or data;

(c) The testimony is the product of reliable principles and methods; and

(d) The expert has reliably applied the principles and methods to the facts of the case

Earlier position-the ruling in *Fyre v. United States*

In 1923, the United States Court of Appeals for the District of Columbia, in *Fyre v. United States, determined* that any scientific theory that was not sufficiently accepted in the scientific community should not be admissible in Court. Because this landmark case on scientific

evidence cantered on polygraph evidence and the Court determined that the techniques did not meet this standard, the polygraph test was dealt a serious blow from which it has never recovered. Even 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 flow in the science, little re-examination was done over the years to determine whether the level of acceptance had improved or not.

POST DUBERT RULLING

The United States Supreme Court's decision in *Daubert v. Merrel Dow Pharmaceuticals*, however, changed the landscape of scientific evidence admissibility that in turn affected the polygraph analysis. The Court held that "the Fyre test was superseded by the adoption of the Federal Rules of Evidence, that Rule 702 now governs expert evidence without reference to Fyre'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 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 tested(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 breakthrough 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

(i) The testimony is based upon sufficient facts or data,

(ii) The test is the product of reliable principles and methods, and

(iii) The witness has applied the principles and methods reliably to the facts of the case.

ADMISSIBILITY OF POLYGRAPH TESTS: A VIEW AT U. S JUDGEMENTS

In ***United States v. Piccinonna,*** 925 F.2d 1474 1991 U.S, 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. 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. 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. 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. 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 us used to corroborate or impeach.

In *United States v. Galbreth,* for example, a defendant tried for wilful 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. Posado,* 57 F.3d 428 (5th Cir. 1995). The Fifth Circuit considered the Daubert factors and held upon the possibility that the polygraph could satisfy Rule 702 in some circumstances.

CONCLUSION

Advances in the neurosciences will, no doubt, continue. The law needs to be equipped to deal with them. This article has presented two such lessons. The first was that once proponents of these techniques move away from the paradigm set by the classic polygraph lie detector and utilise the full potential of modern brain-scanning technologies, they may become more relevant to legal decision-making. The second was that the concern with error rates which is a central feature of the

Daubert -style reliability test for scientific evidence, while commendable, does not go far enough. An awareness of how error rates are derived and what they mean is important at all stages of a trial.

SUGGESTIONS

In the present article, an attempt has been made to show under what circumstances scientific evidence is admissible, and when inadmissible. How brain-based lie detection is valid but it is pertinent to mention here that effective critical engagement with these techniques entails quite a lot. It requires some knowledge of the basic science and theoretical assumptions on which they are based; it requires knowledge of the circumstances in which these techniques are tested; and it requires detailed consideration of the error rates associated with them.