



POLYGRAPH TEST AND ITS APPLICABILITY IN INDIA *

1. INTRODUCTION

The finding of truth in the criminal investigation is the crux of the matter and the methodology adopted for fact finding must be full proof. The task is not an easy one. The modern ways and techniques applied in committing crimes are to be met with equally effective tools. The application of scientific techniques has become a boon for investigators. Some techniques and tests such as lie detector or polygraph test, hypnosis, brain mapping, narcoanalysis, etc have been developed for effective investigation of crime.¹

According to Science and Technology, “lie detector” is a device intended to detect an involuntary physiological response that all persons exhibit when lying but never when telling the truth. Because there is no such specific lie response, actual “lie detector” tests used in the United States record breathing movements, blood pressure changes and electro dermal responses on a polygraph while respondent answers yes or no to a series of questions. From the recordings one can determine whether relevant questions had greater impact on the respondent than the interpolated control questions. The term polygraph literally means “many writings” therefore, the name refers to a process in which selected physiological activities.²

2. Historical Development of Polygraph

Earlier societies utilized elaborate methods of lie detection which mainly involved torture for instance, the Middle Ages used boiling water to detect liars as it was believed honest men would withstand it better than liars. Early devices for lie detection include an 1895 invention of Cesare Lombroso used to measure changes in blood pressure for police cases, a 1904 device by Vittorio Benussi used to measure breathing, and an abandoned project by American William Moulton Marston which used blood pressure to examine German prisoners of war (POWs)

* Mr.Suresh Kumar & Mr. Jitender Kumar, Asstt. Prof. (Law), IEC University, Plot no. & & 10, Atal Siksha Kunj (Kalujhanda) Teh. Baddi, Distt. Solan, H.P. 174103.

¹ Satyendra. K. Kaul, Mohd. H.Zaidi, *Narco Analysis, Brain Mapping, Hypnosis & Lie Detector Tests in Interrogation of Suspects*, Allahabad Agency, 2009, p.556.

² Dr. B.R. Sharma, *Forensic Science in Criminal Investigation and Trials*, Universal Law Publishing Company, 2003, p.447.

Marston's machine indicated a strong positive correlation between systolic blood pressure and lying.

Marston wrote a second paper on the concept in 1915, when finishing his undergraduate studies. He entered Harvard Law School and graduated in 1918, re-publishing his earlier work in 1917. Marston's main inspiration for the device was his wife, Elizabeth Holloway Marston. "According to Marston's son, it was his mother Elizabeth, Marston's wife, who suggested to him that 'When she got mad or excited, her blood pressure seemed to climb'" (Lamb, 2001). Although Elizabeth is not listed as Marston's collaborator in his early work, Lamb, Matte (1996), and others refer directly and indirectly to Elizabeth's work on her husband's deception research. She also appears in a picture taken in his polygraph laboratory in the 1920s (reproduced in Marston, 1938)

Despite his predecessor's contributions, Marston styled himself the "father of the polygraph." (Today he is often equally or more noted as the creator of the comic book character Wonder Woman) Marston remained the device's primary advocate, lobbying for its use in the courts. In 1938 he published a book, *The Lie Detector Test*, wherein he documented the theory and use of the device. In 1938 he appeared in advertising by the Gillette company claiming that the polygraph showed Gillette razors were better than the competition.

A device recording both blood pressure and breathing was invented in 1921 by Dr. John Augustus Larson of the University of California and first applied in law enforcement work by the Berkeley Police Department under its nationally renowned police chief August Vollmer. Further work on this device was done by Leonarde Keeler. As Larson's protege, Keeler updated the device by making it portable and added the galvanic skin response to it in 1939. His device was then purchased by the FBI and served as the prototype of the modern polygraph. Several devices similar to Keeler's polygraph version included the Berkeley Psychograph, a blood pressure-pulse-respiration recorder developed by C. D. Lee in 1936 and the Darrow Behavior Research Photo polygraph, which was developed and intended solely for behavior research experiments.

A device which recorded muscular activity accompanying changes in blood pressure was developed in 1945 by John E. Reid, who claimed that greater accuracy could be obtained by making these recordings simultaneously with standard blood pressure-pulse-respiration recordings

According to definition of *Webster's Legal Dictionary* a Polygraph is “a device for measuring certain involuntary bodily responses, such as blood pressure and perspiration, from which an opinion is drawn as to whether or not the person being tested is telling the truth, also called, somewhat optimistically, a Lie Detector. The problem with it is that it may yield accurate opinions in many cases, it may take nervous or confused truth-tellers, and there is no way to know that which results are accurate and which are not. Accordingly polygraph results are excluded from evidence under most circumstances in most jurisdictions, and federal law prohibits employers, except in very limited circumstances, from using the device on employees and applicants for employment.”³

A polygraph (popularly referred to as a lie detector) measures and records several physiological indices such as blood pressure, pulse, respiration, and skin conductivity while the subject is asked and answers a series of questions.⁴

3. What is Polygraph?

In the olden times the term Polygraph referred to a set of different instruments that measured several physiological responses. In the olden days all recording were made manually. These responses are blood pressure, pulse rate, respiration, breathing rhythms, body temperature and skin conductivity through electrical resistance (Galvanic Skin Response or GSR) which are recorded while the subject is asked a series of questions, on the theory that false answers will produce distinctive measurements.⁵ It is presumed that these changes in the physiology are caused by the sympathetic nervous system during the questioning. It means that there is interaction between the body and the mind. These reactions of mind generate many reactions of human body which could be read through various kind of sensors attached to the polygraph machine.⁶ In fact the automatic nervous system of the liar becomes aroused as his emotionality increases. These arousals are recorded by polygraph.

In a polygraph test either conventional instrument, which are sometimes called analogue instruments or computerized polygraph instruments manufactured by various agencies are used. Along with the instruments or compact machines, as the case may be, there are other materials in the form of rubber tubes, small metal plates and cuffs, etc, which are also being used as fixtures on the human body, so that different kinds of activities may be measured. In a Polygraph test convoluted rubber tubes are placed over the examinee's chest and abdominal

³ Webster's Legal Dictionary, by James E. Clapp, page 197.

⁴ J P Rosenfeld (1995). "Alternative Views of Bashore and Rapp's (1993) alternatives to traditional polygraphy: a critique". *Psychological Bulletin*.

⁵ *Supra* note 3, p.64.

⁶ J.K. Mason, *Forensic Medicine*, p.467.

area which will record respiratory activity. Two small metal plates, used as sensors, are attached to the fingers, which record sweat gland activity, and a blood pressure cuff or a similar fixture senses and records cardiovascular activity.⁷

3.1.Application of Polygraph Test

It is based in the principle of psychosomatic interactions within the individual, which means that emotional experiences, as felt by the individual, causing certain types of physiological disturbances on lying, which again and always are found to go together; and, that the evidence for the occurrence of one can be used as evidence for the occurrence of the other.⁸ It is presumed that the activities of the body cannot be easily controlled by the conscious mind, thus the different reactions are being compared by different circumstances. These circumstances being that the subjects are being asked the control questions by the examiner, who knows the answers of such questions, and compare the changes to the later answers of the questions which are not known to the examiner.

3.2.Basic Theory And Process

- In theory, the polygraph examiner asks a series of questions, the answers to which may be known to the examiner from before, provided by the investigation or any other agency.
- The examiner then records the normal physiological changes taking place within the body of the subject. A baseline for these physiological characteristics is established by asking the subject questions whose answers are known.
- These responses are used as a standard to gauge the response changes on the critical question, asked later on.

Note- Deviation from the baseline for truthfulness is taken as a sign of lying. It must also be noted that the response of every normal or critical question differs from person to person because the degree of nervousness or generated fear which elicit physiological change and response can never be constant among all individuals. In some persons even a truthful response can elicit such physiological changes that can indicate a lie, if the question is related to some kind of emotion.⁹

4. Polygraph In India

⁷ *Supra* note 1, p.570.

⁸ *Supra* note 3, p.455.

⁹ W.M. Waid, E.C. Orne, M.R. Cook and M.T. Orne. Meproamate Reduces Accuracy of Physiological Detection of Deception. *Science* (1981) 212, pp. 71 to 73.

There is no Indian legislation which defines polygraph, but United States Employees Polygraph Protection Act of 1988 defines the term 'polygraph' as it means an instrument which-

1. Records continuously visually, permanently, simultaneously as minimum instrumentation standards; and
2. Is used, or results of which are used, for purposes of rendering a diagnostic opinion regarding the honesty or dishonesty of an individual.

4.1. Diminished Credibility in India

Normally in India the suspects who are being taken by the police or other security agencies to forensic labs for the detection of lies and deception, and where it is said that such person is being taken for Narco test, generally also put to polygraph test, but it is not the strict rule. The polygraph test is so old and had become so infamous that it had diminished the credibility in the minds of general public; therefore the police in the west seldom publically say that the culprit is being taken for polygraph-test (rather they say and mention Narco-test in India.)¹⁰

5. The Testing Procedure

In the testing process, the examiners use two types of instruments, *i.e.* analog and computerized. In developed countries the computerized instruments are used. But the last opinion is that of an expert, who is a human being and who is supposed to analyze the data. The typical polygraph examination incorporates three stages namely-

- a) ***Pre test Examination-*** It starts with the examiner completing his paper work (that involves going through the background of the case and preparing questionnaire, etc) and after that starts talking with the examinee about the test. During this period the examiner discusses the questions to be asked and thereby familiarize the examinee with the testing, procedure. The purpose is two-fold, firstly the discussion would normalize the subject if some elements of anxiety has germinated in him due to unfamiliar atmosphere and people, etc. Secondly, the pre-test interview allows the examiner to gain some preliminary information which will later be used for formulating Control Questions or CQ. *The examinee is also told at this stage and explained that how the Polygraph is supposed to work, making an emphasis on the point that it can detect lies thus it would be important to answer every question truthfully.*

¹⁰ *Supra* note 3.

Then the actual test starts. There are following basic approaches to the Polygraph test-

- *The Control Question Test (CQT)*- This test compares the physiological response to “Relevant Question” or RO and “Irrelevant” (IR) questions for example ‘have you ever stolen money?’

Another type of Control Questions are called ‘probable lie’ control questions. These are such questions that most people will lie about for example, have you ever stolen money?

The examiner is always interested in “Relevant Questions” or RQ. These different types of questions are put alternately. Comparison is being made basically between Relevant Question (RQ) about the crime with the response of questions relating to prior misdeeds. The test is passed if the physiological responses during the Probable lie Control Questions (CQ) are larger than those during the (RQ). If this does not happen then the examiner attempts to elicit admissions during a post-test interview. Here the examinee is given an opportunity by telling him or her “your situation will only get worse if we do not clear this up”.

- *A Direct Lie Test (DST) or “Stim Test”*- When a subject is telling the truth, this test tries to detect lying by telling the subject to deliberately lie. The physiological responses are being compared. (The idea seems to contradict the basic theory underlying the polygraph test).
- *The Guilty Knowledge Test (GKT)*- This test compares physiological responses to multi-choice type questions relating to crime under investigation, one choice of which contains information only the crime investigators (and sometimes not) and the real culprit would know about.
- *Peak of Tension Test (POT)*- In the first place several questions of irrelevant type are being put to the subject and only then one pin pointed emotionally toned question is asked. In the process the first put irrelevant questions build-up the tension in the subject, which is supposed to be released when the relevant question is asked. The theory behind this technique is based on the principle that a guilty person may possess such knowledge which cannot be possessed by any such person who is innocent. The pertinent question would bring in the emotional reactions in a guilty person alone in comparison to an innocent person.¹¹

¹¹ D.L. Faigman, “*Modern Scientific Evidence: The Law and Science of Expert Testimony*” Vol. 2 Published 2002m pp. 448-451.

- b) *Chart Collection Phase*- After the examinee has gone through various kinds of polygraph tests and above mentioned, the examiner will administer and collect a number of polygraph-charts called Polygrams. Normally these charts are graph exposes, which are the result of physiological changes records from a baseline indicating a lie or truth.
- c) *Test Data Analysis*- The most difficult part of the entire process of polygraph testing is analyzing and interpreting the charts or polygrams. After evaluating each and every question and various responses, analysis, interpretation and finally opinion forming begins. Under this process following things are taken into account-
- If after a relevant question is asked, a heavy breathing is recorded after 15-20 seconds of reply.
 - After a question's reply comes, whether there are simultaneous suppressions in breathing accompanied with the increase in blood pressure has been recorded.
 - Whether blood pressure is decreased after few seconds of reply.
 - A general increase of pulse beats during the entire test and its slowdown after the test is over is presumed to be the indication of guilt.
 - Lastly they come to consider the most controversial factor *i.e.* Electro dermal response, which is received due to increase or decrease of electrical resistance of skin. This variation of skin is actually caused by perspiration (sweating), which moistens the skin and the resistance is decreased.

After evaluating and analyzing the above mentioned factors, examiners form their specific opinion as to the truthfulness or untruthfulness of answers of specific questions asked. Sometimes examiners offer an opportunity to the examinee to explain his physiological responses in relation to one or more questions asked during the test. In fact that happens only in those untold circumstances where the examiner is not sure of himself in forming an opinion . This opinion forming exercise adds to a factor of 'human error', while evaluating, analyzing, interpreting and combining the data for the formation of opinion.¹²

6. Polygraph Uses

Polygraph is mainly used in the following sectors and they are-

- **Law Enforcement Agencies**- In India the use of Polygraph is restricted to central and State police or security agencies who use it in event-specific investigations after the

¹² P.C. Njemanze (2005) *Cerebral Lateralization and General Intelligence: Gender Differences in a Transcranial Doppler Study. Brain and Language* 92 pp. 234-239.

crime has already been committed. Since the enhancement of the frequency of terror and white collar crimes, Indian security agencies are using this technique in pre-crime stages also, through various Govt. owned Forensic laboratories, which are numbered and few.

- **Use by Legal Community-** In India its use is restricted to police and security agencies. Whereas in US, the US Attorney offices, District Attorney offices, Public Defender offices, Defence Attorneys, Parole and Probation Department use Polygraph techniques to use Polygraph techniques to obtain required information.

The different uses involve different kinds of information which have different kinds of implications, therefore specific utility of polygraph and tests of deception and lies detection can be laid down as under-

1. Used to detect deception.
2. It can replace third degree methods which are used during investigation.
3. It can narrow down the field of inquiry or investigation by police.
4. The statement of a witness may be verified.
5. In private sector it can ascertain honesty of an employee.
6. In pre-employment scrutiny of candidates for employment in any sector, previous unblemished character may be ascertained.
7. As per claims, guilty may confess his crime.

6.1. Nature of Questions Asked on Police Polygraph Examination

The most important principle laid down on the basis of maintaining ethical standards is that the asked questions must be only related to the job applied for. Typical questions that are asked are as follows-

1. Did you tell the complete truth on your job application form? 2. Have you deliberately withheld information from your job application? 3. Have you ever been fired from a previous job in the past? 4. Since the age of (), have you committed an undetected crime? 5. Since the age of (), have you been convicted of a crime? 6. During the past year have you used Marijuana? 7. Have you used any other narcotic drug in the previous year?
8. Have you sold marijuana or any drug in the previous years? 9. Have you ever used a system to cheat your employer? 10. Have you ever had your driver's license suspended or revoked? 11. Have you ever had any traffic citations in the past five years?
 - Have you deliberately lied to any of these questions?
 - a. *Most considered objective to use Polygraph*

- First and foremost use is that the law enforcement agencies and the private users think that the test will frighten away the liars and cheaters or the accused would be frightened to confess his or her wrong acts and guilt.
- The users of machines do not themselves believe that it can detect lies, but they know that the people on who, those lie detector tests are done think that the Polygraph can catch them in a lie.
- In countries like ours the people generally believe that if a person is put to the test by machine, the inevitable outcome would be the truth. This is because the scientific view about the authenticity and reliability of this test remains curtailed from the public view.

9. Criticism of Polygraph Test

The polygraph test is mainly criticized firstly, that it mainly checks the changes in heartbeat, blood pressure, respiration and perspiration (through GSR) which actually can be caused by many other factors such as fear, nervousness, etc. So also the claim that the polygraph expert can tell that whether the physiological change was due to a lie or that the change occurred due to some other factor has never been proved by scientific evidence. Secondly, that it neither has constant nor has controls because every individual has a different disposition. The end result is that the expert runs the risk of making hasty conjectural conclusion based on just one or two deviant responses, unless the expert himself is in possession of all the inside information through the investigators, and, if that is the case then what remains to be tested? The whole of the exercise would be wastage of time, money and energy.

10. CONCLUSION

After taking into account the aforementioned material it can be said that polygraph test is an old phenomena which has developed gradually and plays an imperative role in investigation and solving cases in developed as well as developing countries. But due to its limitations or criticisms mentioned above it cannot be solely relied upon as it is not accurate, it also is not universal and there is a great chance that it may incorporate some biasness or error in its final result because the same is given by an expert who is a human being. But because the public at large does not know about its limitations it can therefore come in handy in some cases if not all.