CHAPTER 2
NARCO-ANALYSIS, POLYGRAPH AND
BRAIN-MAPPING: A GLIMPSE

The object of criminal law is in terms of order- survival, security, maintenance of conditions which permit the society to progress, experience of higher values and finally the good life which subsumes all the ideals of the world; in which a democratic society moves.

Justice Hall

2.1 INTRODUCTION

Justice is the basis of law. Speaking particularly about criminal law, it contains a set of rules for the maintenance of social order in society where change is constant\(^1\). Whether one examines the legal socialization process, the judicial process or the criminal justice process, the concerns about justice pervades in all these areas\(^2\). In a democratic country like India, the system of governance is based on the concept of ‘Rule of Law’ i.e. law is the supreme authority, all are equal before law and justice is to be achieved through it\(^3\). In the words of Justice S.R. Bannurmath, “The ultimate aim of criminal law is protection of right to personal liberty against invasions by others, protection of weak against strong, law abiding against law-less, peaceful against violent.” It would be correct to say that the human beings’ right to life and security has to be respected and protected otherwise it would defeat the very core of Rule of Law and would give rise to the ‘Law of Fishes’, the strong will swallow the weak.

Of all the branches of law governs every aspect of a man in a civilized society still criminal law is one that specific branch that has contact with an individual in his everyday routine. Yet the position of Indian criminal law is not satisfactory\(^4\). The basis

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of Indian criminal justice system is the investigation by the police. When an offence is brought to the note of police, it is their responsibility to investigate into the matter to find out who committed the crime, to ascertain the facts and circumstances, to collect and present whole set of these to the court to find the accused guilty or not. It is the duty of the police to apprehend the wrongdoer and present the case before the court of justice to meet the ends of justice. But this seldom happens in present scenario. The reason behind this is criminals have become classy, sophisticated, hi-fi and are simply cutting-edge as they are adopting new and enhanced techniques for commission of crimes. They hardly leave any sort of inkling or evidence at the crime site or otherwise and on the contrary country’s police and investigation agencies are still stuck on the longstanding tools, techniques for investigation of crimes. Police often use third-degree torture to extract information. In many cases they try to suppress the truth and make out fabricated cases for many reasons as political influences or corruption to name a few. Consequently, custodial atrocities, custodial deaths are on an increase with leaps and bounds and all this is nothing but a big blow on the ‘Rule of Law’. Also, where criminals leave no evidence of their alleged crimes, they escape punishments in the absence of direct proof sufficient enough to establish the guilt. Moreover, where victims turn hostile there is no way left for the judiciary except to give accused benefit of doubt and set him free which results in emboldenment of criminals and loss of faith in criminal justice system of victim, victim’s family and society at large.

Getting released on bail is not a big deal these days and thereafter accused persons get release due to above stated reasons. There are abundant cases where accused walked away freely for the want of evidence and victim who suffered trauma watched helplessly. It was aptly held by hon’ble Supreme Court in State of Punjab v. Karnail Singh, a judge does not preside over a criminal trial to see no innocent man is punished, but also to see a guilty man does not escape. Both are public duties. But the question arises what really a trial judge can do? He can only decide the matter based on the material presented before him. If investigation methods applied are not satisfactory, if witnesses turn hostile, if there is no evidence available, is the judge presiding over the

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6 (2003) 11 SCC 271
trial left with any other option except to give accused benefit of doubt as law requires proof and corroboration beyond reasonable doubt.

The problem of Indian society is that there are many to defend the rights of accused but none to think about victim. Our criminal justice system is value based conventional system of justice, but criminals today are wise so we need to modify the whole system because in recent past, alarming increase in terrorist activities, communal riots, gang wars and underworld activities have added fuel to the fire and tremendously affected the behavior and work culture of the police. The police handle these cases in their own way and by their own methods. That is to say by resorting to third degree methods, which a civil society governed by rule of law cannot permit. India has always postulated that evil could not be eradicated by evil in any respect. Therefore, all this must be within the legal frame-work. It is here that we can seek the help of scientific evidence for effective delivery of justice as it combines both science and the law. We use a number of scientific techniques like DNA, asphyxia, epiphysis, etc which have been discussed in the previous chapter. Here, in this chapter, the researcher has narrowed down the study to the use and admissibility of three specific techniques namely Narco-Analysis, Polygraph And Brain-Mapping. The cardinal principle in applying scientific aids to investigation is the rule of fair play, unbiased approach and openness of mind from collection, evaluation analysis and use of these scientific evidences both by investigators and forensic experts.

Forensic science plays a vital role in crime detection. According to Encarta World Dictionary, meaning of the word forensic, is “crime-solving relating to the application of science to decide questions arising from crime or litigation”. In present scenario, forensic science can be said to be an important branch of jurisprudence. It is potent and powerful weapon in the armory of administration of justice. The operation of forensic is nothing but application of techniques and tools of basic science for various analysis of evidence associated with crimes. The scientific examination by forensic

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scientists adjoins a missing link and strengthens the weak chain of investigation\(^\text{10}\). Now, when criminals are shrewd enough that they hardly leave any evidence, we need to bring into picture forensic science. In *Som Prakash v. State of Delhi*\(^\text{11}\), Supreme Court recognized the requirement, the necessity of scientific investigation. Law Commission also emphasized on the need of training of Police officers in using scientific methods of investigation.\(^\text{12}\) Narco-Analysis, Polygraph and Brain-Mapping are revolutionary tools of forensic science that can prove to be very fruitful in crime investigation.

### 2.2 NARCO-ANALYSIS: ORIGIN AND MODUS OPERANDI

Narco-analysis has become one of the most popular techniques of crime detection in India. It is a kind of psychotherapy which is conducted on a person by inducing by bringing that individual into semi-sleep with the help of scientific drugs. Human beings have the tendency of speaking lies from the time immemorial. A person is able to lie by using his mind’s eye. In this test, the subject’s self-consciousness is allowed to sink down by making intrusion to his nervous system. In such a state an attempt is made to extract information in form of clues about the crime as under the influence of drugs it becomes extremely difficult for the subject to lie.

It is believed that if a person’s way of thinking can be restrained without any affect on his memory. He can speak freely without any manipulations under the influence of drugs Some drugs have been found to create this “twilight state” in some persons\(^\text{13}\) and with the use of these drugs investigating agencies try to arrive at the truth.

Narco-analysis is a form of psychotherapy and an effective aid to scientific interrogation. It is a process whereby a subject is put to sleep, or into a state of half consciousness by means of dosage of scientific drugs and then interrogated while in a reverie\(^\text{14}\). The term Narco-analysis is derived from a Greek word “narke” which means anaesthesia and is used to describe a technique of diagnosing and giving the psychotherapy with the help of psychotropic drugs as Central Nervous System

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\(^\text{11}\) AIR 1974 SC 983

\(^\text{12}\) 14\(^{\text{th}}\) Law Commission Report.

\(^\text{13}\) Joshi, Nayan, “Medical Jurisprudence and Toxicology”, New Delhi:Kamal Publishers,2008,p267

\(^\text{14}\) Satyendra Kumar Kaul, 429
depressants and by virtue of this they produce a wide spectrum of effects\textsuperscript{15}. There are two most common drugs used to bring into play the Narco-analysis and these are Sodium amytal, which is also known as amobarbital or amylobarbition, and Sodium Pentothal commonly known as thiopental or thiopentone, is used by psychiatrist on the subject. Its effect is that it makes the subject relaxed and he/she becomes susceptible to suggestions. The subject becomes communicative and can easily tell the truth. It is said that after its use the subject loses inhibitions but does not lose his/her self-control and if he/she does not want to disclose anything he/she may do so. This statement is not correct. The person actually loses self-control.

2.2.1 HISTORY OF NARCOANALYSIS

Narcoanalysis is a test carried out on a patient or suspect when he/she, after administering barbiturates, comes in a sleep like state, and his/her repressed feelings are released. It is also called narcosynthesis. As the Webster’s Dictionary states the term was coined is 20\textsuperscript{th} century and is a combination of two words ‘Narco’ and ‘Analysis’. It means psychoanalysis in a state which is similar to sleep and this state is achieved by use of drugs. These drugs are nicknamed ‘truth drugs’ or ‘truth serum’.

Narcoanalysis is combination of hypnosis and narcosis. The psychiatrist could collect more details of menial contents in a short period of time. Narcoanalysis produces sleep without large dosages of sedative drugs. According to Horsley through the use of post hypnotic suggestions the revealed mental contents could be reintegrated around the acute event for symptom relief.\textsuperscript{16}

The word Narcoanalysis had its origin in the 20\textsuperscript{th} century. Horseley coined the term Narco-analysis which means analysis of the knowledge of the individual in drug induced condition. Narco-analysis for the first times gained the popularity in the year 1922, when Robert House, who was an obstetrician in Texas used the drug scopolamine

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\textsuperscript{16} For further reading, refer following:

(1) www.legalserviceindia.com/articles/med000.htm.
(2) www.telegraphindia.com/1070124/asp/atlessure/story_7294907.asp.
(4) www.commerceindia.com/articles/2/2narcoanalysis.html.
on two prisoners whose guilt appeared clearly confirm\textsuperscript{17}. He arranged the interrogation of two prisoners in the Dallas country jail, with the assistance of drug called Scopolamine. Under the test both denied the crimes for which they had been detained and upon trial they were found innocent. Subsequent to the successful experimentation it was concluded by House that subject cannot lie in sleep like state under the effect of Scopolamine. It is only after this experiment that the phrase ‘truth serum’ came into limelight. The term ‘truth serum’ is a name given to hypnotic drugs that induce a person to speak the truth. The success of this experiment gave Robert House recognition as the ‘Father of Truth Serum’.

A person when in narcotized state of mind reveals the truth and those thoughts which he/she normally conceals. Thomas De Quirky had done 1804 experiments. With these experiences he wrote that “opium like wine makes the heart expanded and the person speaks out his/her concealed feelings”. Narcosis can be achieved by using drugs like cocaine, ether, alcohol, scopolamine, barbiturates, hallucinogens, etc. In 1918, by sheer chance sodium cyanide was used for narcosis.

In between 1903-1915, investigators used mild type of anesthesia commonly used in obstetrical practices. For extracting the truth or obtaining confession from suspects investigators used alcohol as a truth serum which depressed the central nervous system (CNS) because they believed on time-honoured aphorism \textit{in vino veritas} which means “when there is wine there is truth”. The alcohol produces a remarkable candor or freedom from inhibition and under the influence of this a person looses his/her tongue and eliminates repressive influences.

About a century ago with the advent of anesthesia it was observed that after administering drug the patients were prone to make extremely naive remarks about personal matters which in their normal state would never have been revealed.

In the late 19\textsuperscript{th} century ether, chloroform or hashish were used to induce person(s) and to deepen the hypnotic effect. In early 20\textsuperscript{th} century, barbiturates were administered for psychotherapeutic treatments. These experiments showed that most of the patients showed uninhibited flow of speech and expressed repressed thoughts and

\textsuperscript{17} P. Sivananda Reddy, SP, Cyber Crimes, in online Journal of CID visited on October 5, 2008
feelings. Intimate and private thoughts were revealed under its influence. In narcoanalysis barbiturate induced state of excitation is created and patient recalls forgotten and repressed conflicts, events and experiences. These details also help in treatment of traumatic combat neurosis. In 1931, Italian psychoanalyst for the first time used mixture of mescaline (a hallucinogenic drug that is extracted from the button shaped nodules on the stem of the peyote cactus—Bloomsbury’s Concise English Dictionary, 2nd Edition, p. 906) and Datura seeds for the purposes of psychoanalysis. It should be remembered that LSD (Lysergic Acid Deithylamide, C₁₆H₁₆N₂O₂) was discovered in 1943 and it was then effectively used for hallucinogenic experiences and later on this was used for psychotherapy. In 1953, it was observed that a single LSD application on neurotic patients was effective in abreactive memory activation. It was also found that by small dosages of hallucinogens useful images could be intensified and deepened. In 1960, the term “psycylolysis” was coined in “First European Symposium for Psychotherapy under LSD-25”. Psycholysis includes psychoanalysis with activation of unconscious memories, emotional impulses and conflicts with low dosages of hallucinogens. These experiences were dreamlike but at the same time it was a clear altered state of consciousness which could be processed.

The procedure adopted is that the patient is kept lying on a bed in a almost dark and is attended by a trained nurse who talks with the patient and dosages of drug are injected. The patient is reminded that he/she is under physician’s control and should surrender to the vision and images which appear before him/her without any reservation. His/Her remarks during these processes is either tape-recorded or written and then handed over to patient so that he/she may prepare a retrospective record. After that a drug free session of interview takes place. In this procedure drug affected experience has a supporting role. These session continue for several months and even up to an year. Psycholysis rogation Under Drug Influence is considered best for patients who were reluctant to use any kind of therapy. In 1960s, psycholysis was used in 18 European centers and more than 7000 patients were treated within a period of 15 years. In 1965, Alnaes and Grof suggested “a combination of psycholytic and psychedelic methods” and gave its name as ‘psychedelytic’. It is the most modern concept.
W.J. Bleckwenn in 1930 first introduced the use of amyta1 for treatment of producing narcosis for neuropsychiatric disorders. According to his definition ‘narcosis’ is a drug-induced state of deep sleep which has similar to general anesthesia but was not so profound. The patients of Bleckwenn were exited for long periods and were susceptible to physical exhaustion which might pose the threat of pneumonia or cardiac arrest, hence it was necessary to produce narcosis in them. Other drugs and agents were not that much effective as amyta1 which produced rest and sleep in the hyper phase of frenzied depressive psychosis, in agitated depression with insomnia and in excited schizophrenic catatonia. He found that intravenous amyta1 could produce regular natural cogent period with unplanned verbal communication. The drug effect produced mild stimulation, allaying of fear, relaxation of tension and release of inhibition.

In 1932, Erich Lindermann tested his hypothesis that “sleep could not be the only healing factor in psychiatric patients”\(^{18}\). He gave such dosages of amyta1 to his patients which were less than the dosages for producing the sleep. He found that a desire to communicate, a willingness to speak about very personal problems, an anticipation of future pleasant activities, and feelings of relief and freedom developed in normal individuals. Catatonic and depressed patients become warm and friendly. Previously hidden abnormal thoughts became evident. Inspite of these thoughts the patients enjoyed a feeling of well-being. Amyta1 made psychiatrists to study thoughts contents of stuporous patients which were earlier not possible. The drug proved to be a boon in psychotherapy. The patients were able to discuss the reasons for their fear and withdrawal from the outside world.

The main research work on amyta1 was done during World War II. The drug was used to treat “war neurosis”. In World War II a large number of allied troops were evacuated from Dunkrik (a port in North-East France) by sea (under constant enemy fire) and they approached British Hospitals for their treatment. The stress from which the persons were suffering was described by William Sargant and Eliot Slater by saying,

“\textit{It was an accumulation of strains, both physical and mental, of great intensity, bodily danger, continuous physical exertion, loss of sleep, insufficiency and}

irregularity of meals, intermittent but perpetually recurrent bombardment, and the sight of comrades and civilian refugees being killed around them. The necessity of continual withdrawal from the enemy and the impossibility of striking back produced a sense of frustration and contributed to the disastrous effect on mind.\(^{19}\)

For mild cases, Sargant and Slater found immediate treatment by rest, full diet and sedation to be effective. More severe cases were treated by continuous narcosis and the acute hysterical symptoms, which included amnesia, were treated by suggestions under hypnosis produced directly or by the use of barbiturates.

American physicians Roy Grinker and John Spiegel gave a new term “narcosynthesis” instead of “narcoanalysis” in 1942. Instead of adopting ‘war neurosis’ they found that acute symptoms were relieved when the repressed material of the precipitating event was abreacted until the patient could bear the accompanying affect. Concurrent psychotherapy, aimed at easing the super ego, strengthening the ego and incorporating the acute trauma into whole personality, showed good results. They laid the foundation of all subsequent uses of narcosynthesis in U.S.A.

After the World War II was over, the amylal therapy was used in civilians. In 1945, Adams used narcoanalysis in agitated and depressed patients. Freed used narcosynthesis to shorten the length of psychotherapy. In 1949, Hoch used narcosynthesis in patients with gastric ulcers, colitis and tachycardia. In 1947, O’Halleran used pentothal in chronic alcoholism.

Amytal in combination with sub-shock insulin was also used for treatment of anorexia nervosa. After 1950, with the development of tranquilizers use of amytal was reduced. During the American involvement in the Korean and Vietnam Wars soldiers suffering from “shell shock” were treated at bases near the combat zones by tranquilizers. Psychotic soldiers could be given 1000 mg of chlorpromazine at the battle site allowing them to be safely transported to rear bases. Now-a-days besides amytal hypnotics, narcotics and benzodiazepines are also used for the purpose.

\(^{19}\) Ibid.
The dosage of drug varies depending on the suspect’s sex, age, health and physical and mental condition. Normally, 3 grams of any truth serum is dissolved in 3000 ml of distilled water and then it is injected to the subject intravenously. By this subject’s imagination is neutralized and he is not in a position to manipulate things but can only answer specific simple questions.

It is established that 20% of the total individuals subjected for Narco-analysis are found to be innocent. Therefore, this technique not only helps to identify the real perpetrators of crime, motive and modus operandi, conspiracies, disfigurement and displacement of evidentiary items etc. but also to identify the innocents within a short period of time.

2.2.2 PROCEDURE FOR THE NARCO ANALYSIS TEST

2.2.2.1 Drugs used for the tests are commonly known as Truth Serum. Generally, the drug called “Barbiturates” or “Sodium Pentothal” is used for conducting narco-analysis test. It is also known by the name of “Penthol Sodium” or “Thiopenal” or “Thiopentone”.

2.2.2.2 Important things involved in the tests are:

(i) Video recording
(ii) Tape recorder
(iii) Disposable syringe
(iv) Distilled water
(v) Prescribed truth drug

Every test is video graphed. How the subject was given dosage, what questions were put to him, what was his response, each and every minute detail is recorded while conducting the test. Along with the video the whole procedure is also recorded on an audio tape. Disposable syringe and distilled water is used for the purpose of conducting the test. The drug which is to be used while conducting test is to be mixed with distilled water.
2.2.2.3 Dosage of Truth Serum

(i) The dose depends upon the suspect’s sex, age, health and physical and mental condition.

(ii) In normal condition 3gm of Truth drugs of barbiturate class like sodium pentothal, sodium Amytal etc. is required for the test.

(iii) 3gm of the drug is dissolved in 3000ml of distilled water. When the mixture (solution) becomes ready it is administered intravenously along with 10% of dextrose on interval of 3 hours to the suspect accused.

2.2.2.4 Presence of Authorities

At the time of performing test, presence of following person is necessary:

(i) Physician

(ii) Neurologist

(iii) Cardiologist

(iv) Anesthetist

(v) Lawyer

2.2.2.5 Precautions and Guidelines

The following precautions should be taken for fruitful result of test:

(i) The test should be conducted in a well-lit room which is otherwise quiet.

(ii) Prior consent of the subject has to be obtained and the person subjected to the test should be given an option if he or she wishes to avail the test.

(iii) Consent should be recorded and it should be done before a judicial magistrate.

(iv) The physical and emotional implication along with the legal implications of the test should be explained to the subject by the lawyer accessing him or her or by the police that he or she submits himself or herself to the test voluntarily.
(v) The person subjected to the test should be made clear during the hearing that his or her statements so made shall not be a “confessional statement” to the magistrate but a statement to the police.

(vi) The entire process should be videotaped.

(vii) The drug should be diluted at 8.66% and should be injected showing at intervals throughout the interview.

(viii) The drug should be administrated so that a state between sleep and wakefulness is maintained.

(ix) Caffeine should be used to prevent the subject from going into deep sleep.

(x) The interview should not exceed one hour of time;

(xi) The actual recording of test shall be done in the pressure of a lawyer.

(xii) Manner of information received must be completely narrated in full medical and factual terms and must be recorded;

(xiii) In India the test should be conducted as per norms of the NHRC of India.

(xiv) Narco analysis cannot be conducted without the consent of the subjected and order of the court.

2.2.2.6 Guidelines for Interrogating the Suspect during Narco Analysis Test

1. The suspect is not given food 5-6 hours before preceding the test and alcohol containing food and medicine should also be avoided.

2. The suspect must always be attended by the physician/psychiatrist from the time of injection until the initial narcosis worn off.

3. Careful observation is necessary if properly administered drugs dosages caused no alarming physiological effect on pulse rate as well as respiratory rate.

4. Larger dosages are too dangerous it may lead to-

   (i) Sedative stage

   (ii) Unconsciousness with exaggerated reflex (hyperactive stage)
(iii) Unconsciousness without reflex even to painful stimuli, and

(iv) Even death

Therefore, Narco analysis test should be performed with great care and caution and in the supervision of experts. The maximum dose must not exceed 1gm. over a long period of time. The normal dose is half of above mentioned quantity.

5. If the suspect goes to deep sleep then by the use of anti-narcotics stimulants the suspect awakes in a minute but feels drowsy and wants to sleep.

6. Emergency resuscitation equipments should remain available because in certain cases incident of laryngospasm do occur.

7. The quantity of drug depends upon the suspect’s sex, age, health and physical and mental condition.

8. The interviewee should be aware of the purpose of the drug and should be told that it is not a truth serum and it would not expose his or her thoughts secrets and whether he or she states will be confidential and if possible a family member of suspect should remain present during the test.

9. After intravenous injection of the truth serum the suspect should be involved in conversation on unconcerned topics.

10. When the suspect’s speech began to slur ask him or her to count the number backward from 100. When number begins to skip and intervals between the two speeches become long, questions may be asked.

11. Questions about known items and matters should be asked.

12. Ask the suspect to review some pleasant memories. So that negative materials may be balanced and meer experiences stored in suspect’s memory can be revealed.

13. After the procedure ends the suspect should remain on bed rest for about 5 hours.

14. The main objects of the investigation under intravenous administration of truth drug are to standardize the method of administration; to study the alternations of
blood pressure, pulse respiration etc. before and after the administration; to estimate time required; to reach the various stages of hypno-norcosis; to estimate duration of deep sleep following narcosis; and to investigate drugs which would extend the period for Psychiatric investigation.

2.2.3 PROCEDURE TO PERFORM NARCO-ANALYSIS TEST

Narco analysis test is carried out by an expert GABA (A neurotransmitter inhibitor) is a chemical that occurs naturally in his body. Truth drug binds GABA forming a complex at the B site which exerts pressure over the permeability of chloride ions into neutral membrane. Leading to the stage of disinhibition truth drugs cut to increase the action of GABA in the brain, thereby decreasing nerve activity nerve activity hi the brain which results in sleepiness.

3 grams of drug is dissolved in 3000ml of distilled water and this mixture along with 10% of dextrose is injected intravenously to antecubital vein in the body of the subject over a period of 3 hours with the help of an experienced anesthetist. It is injected in normal conditions 0.5 to 1 ml per minute till the subject becomes sedative. The drug depresses central nervous system (CNS) and makes the heart boat slower and blood pressure also lowers down. When the person’s speech becomes slurred and he or she behaves in a co-operative manner and also becomes more talkative it may pressure that he or she is under full control of the patient. The examiner satisfies himself by testing the subject’s eye-muscles with his fingers. Needle is left in the vein of the subject as different person need different dosages of the drug and also for continued narcotic state further administration of drug is necessary. Care is taken that only so much drug is administered which may keep the subject in semi-awake state and he does not go in deep sleep rate.In this hypnotic state the questions are asked and answers are audio and video-recorded.

Use of drug removes the conscious block under which hidden information is stored. When the block is removed the person becomes comfortable, conversant and facts free to reveal hidden information without any inhibition. The drug acts as a catalyst for catharsis. The following effects occur under the influence of truth drugs:
(1) After administration of truth drug suspect’s body becomes relaxed, his or her features slacken and full of excitement and few become silly and giggly.

(2) The drug blocks the impulses that usually pass through certain nerves and most subjects fall asleep which emerges later in disoriented semi-wakefulness.

(3) Under the influence of truth drugs the suspect, may be he or she, becomes incapable of telling a lie, and he or she will necessarily share any information that is asked of them.

2.2.4 USES OF NARCO ANALYSIS TEST

Narco analysis may be used in following purposes—

(1) **For Medical purposes**—Narco analysis has been used in mental health cases for diagnosing habiliment. In medical field Narco analysis is used—

   (1) for restoring speech to mute persons

   (2) in case of amnesia, for reviving memory, and

   (3) for expression of suppressed or repressed thought or conflict

(2) **In criminal investigation**.—Narco analysis is now being used in forensic field also. According to Dr. S.L. Vaya, Deputy Director of DFS, Gandhi Nagar, Gujarat, “In India, Narco analysis is a useful and non-invasive asset for investigation and for prevention of crimes and if used in a scientific way can be very useful for interrogation of Suspect”.

   In criminal justice system it is used for investigation purposes. Narco analysis test should be used only in the cases where large interest of society is involved. Narco analysis is usually used in cases of terrorism, crimes that are well organised, serial killings, in cases where no evidence is available etc.

   There are two categories of -suspects who undergo Narco analysis test:

1. Where suspect willingly volunteers and co-operates with the interrogator.

2. Where suspect is forced to change the test under court orders.

   The advantage of Narco analysis is that this technique is helpful in saving the innocents from prosecution and eliminating the use of third degree method. In addition,
it has been used as a time saving device in criminal cases with the help of Narco analysis by a trained and skilled psychiatrist.

2.2.5 CRITICAL ANALYSIS OF NARCO ANALYSIS

Narco analysis has been criticized on number of grounds. They are following:

1. This test is not 100% accurate. Sriram Lakshman quoted that Dr. B.M. Mohan, Director of FSL, Bangalore claims that he has data to prove his contention that Narco analysis has 96 to 97 percent total screens rate. Sriram Lakshman is of view that Narco analysis should be discredited.

2. Dr. P. Chandra Sekharan, the highly regarded former director of the Forensic Sciences Department of Tamil Nadu, has characterized the practice as an unscientific, third degree method of investigation.

3. In Narco analysis by false tricks certain subjects made totally false statements. If the subject has been a drug addict or alcoholic his or her tolerance level will be high and he or she may false state of semi-consciousness and can tell lies.

4. It is very difficult to suggest an exact dosage of drug for a particular individual as it will vary from person to person depending upon the mental attitude and physical structure of the subject. It is said that if a wrong dose is administered to the subject, it may cost his life.

2.3 POLYGRAPH: ORIGIN AND MODUS OPERANDI

Polygraph is another important scientific tool of investigation. Polygraph is popularly known as lie detector and sometimes referred to as psycho-physiological detection. It is an instrument which measures and records physiological actions of human body as for instance blood-pressure of the subject, his pulse rate, respiratory system, skin conductivity while the subject is asked questions relating to the crime and he answers them. The polygraph tests measures all the natural changes caused by autonomic nervous system during questioning. The autonomic nervous system changes are beyond reasonable control of an individual and hence autonomic nervous system response changes transpires when the subject tries to tell a lie.

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20 Sriram Lakshman, “We need to talk about narco analysis”, the Hindu op-Ed May, 02 2007.
Polygraph is a device that records simultaneously tracing of several different pulsations, as arterial and venous pulse waves, and the apex beat of heart\textsuperscript{21}. According to Science and Technology encyclopedia, “Lie Detector” is a device intended to detect an involuntary physiological response that all persons exhibit when lying but never when telling the truth.

According to Encyclopedia Britannica, “Lie Detector” is an instrument for recording physiological phenomena (including blood pressure, pulse rate and respiration) of a human subject as he or she answers questions asked by an operator.

The polygraph is an instrument that records certain physiological changes in a person’s body going through the questions in an effort to get hold of the truth or deception.\textsuperscript{22} A definition of polygraph has not been found in any Indian Legislation. A definition of “polygraph” was given in the \textit{United States Employee Polygraph Protection Act of 1988}. In this Act, “Polygraph means an instrument that:

\textit{“(A) Records continuously visually, permanently and simultaneously as minimum instrumentation standards; and}

\textit{(B) Is used, or the results of which are used for the purpose of rendering diagnostic opinion regarding the honesty or dishonesty of an individual”}.\textsuperscript{23}

According to Science and Technology Encyclopedia, “lie-detector” is a device intended to detect on involuntary physiological response that all persons exhibit when lying but never when telling the truth.

The principle behind the polygraph technique is that the suspect fears detection of lie and creates in the subject an emotion of fear which consequently results physiological changes which are captured by various instruments. Polygraph test is basically based on the theory that generally a person telling a lie becomes nervous and shaky. Due to this position physiological changes occur in the person’s body\textsuperscript{24}.

\textsuperscript{21} Taber’s Medical Dictionary 17\textsuperscript{th} edition, p.1553
\textsuperscript{24} Satyendra Kumar Kaul, 578.
In polygraph test subject is asked a series of question. These questions are controlled questions. Some questions are asked generally even though the answers to them are already known. For instance name and address of the subject. While answering these questions no change transpires. After this, relevant questions are asked and if the subject tries to lie physiological changes takes place. Physiological changes may crop up in shape of increased or decreased blood pressure, change in pulse rate or heartbeats, sweating, dryness of mouth, etc. These changes are afar from the reasonable and practical control of subject thus whenever subject tries to lie polygraph machine apprehends the lie.

In India, since 1974 more than 3000 polygraph tests have been conducted. Lawyers in general were not aware of this test. It was a tele-serial ‘Sach ka Samna’ that brought polygraph test in glare of public. Indian Courts never objected to polygraph test until recently in May 2010 when Supreme Court in case of Smt. Selvi & Ors. V. State of Karnataka objected to these scientific investigation tools. Before this judgment, some lower Courts and High Courts have passed orders in favour of scientific tools.

Thus, polygraph test is a technique where normal bodily changes of subject are recorded and observed while subject is answering the question. These changes occur only if the subject tries to hide the truth.

2.3.1 UNDERLYING THEORY OF POLYGRAPH

The polygraph works on the principle that change in a person’s perception or consciously held feelings produces a reaction in the form of physiological changes, e.g. in the pulse rate, blood pressure, respiration rate and the electrical resistance of the skin known as G.S.R. when a person is truthful, the body functions within, its normal patterns with no significant or consistent changes. When a person is not truthful, the fear of detection and entrapment induces a person to lie, and this causes mental excitation and an attempt to conceal the excitation, adrenal glands are stimulated to secrete adrenalin which on entering the blood stream steps up the blood pressure and rate of pulse and respiration of the individual. All these recordings are collectively

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known as polygraph, which is evaluated to fine art during the lie detection test. It was held by the court in Ramchandra Reddy and Ors. v. State of Maharashtra26,

“In this test the polygraph is taken which gives this reaction and an expert would then explain these reactions in the court which would be his reading of the polygraph from which would flow his conclusion which are to be admitted or not admitted by a Judge on appreciation of the statement and the objections raised theret”

2.3.2 PROCEDURE TO PERFORM POLYGRAPH

Polygraph test is a series of psychological tests. In this test changes in blood pressure, pulse rate, respiration, muscle movement, skin conductivity are recorded. An expert and skilled examining will make assessment of following procedures—

1. as averment of examiner’s emotional state;
2. medical fitness of the examination
3. to identify overly responsive behaviour specialized tests be conducted;
4. to assess responsive capabilities of examination control question be asked
5. to do factual analysis of case information and
6. to do pre-test interview and detailed preview of questions.

In polygraph there aspects of human physiology are tested, viz -

1. Pneumograph tracing,
2. Electrodumal activity tracing, and
3. Cardiovascular tracing

The first relates to respiration, the second to skin conductance or skin resistance and the third with blood volume and pulse rate. If a person tries to conceal physiological changes like increase or decrease in blood volume, increase or decrease in

26 Cr. W.P (c) No. 1924 of 2003
heart rate and changes in respiration, perspiration takes place. If the person is truthful, the organs exhibiting such physiological changes function in normal pattern.

2.3.3 Polygraph Test Stages

Generally polygraph test is conducted in three stages

(i) The pre-test interview

(ii) The chart collection or examination proper or

(iii) The post-test-interview

2.3.3.1 Pre-test Interview

The first stage starts when the examiner introduces himself to the subject and tells “the subject about the procedure and legal aspects of the test and the consent of the test is taken and the subject is also told about his legal rights. One subject is made to believe that the examiner is an expert in the Field and deception will be obvious to the examiner. The examiner also questions about subject’s medical problems. All these are written in a form which the subject signs. He is told that no question would be asked about his political affiliation, religious or social beliefs or sexual activities etc. unless it is basically related to the matter for which the test is being carried out. Then the examiner tells about the polygraph technique to the subject and the queries are made from the subject in detail about the incident for which the test is conducted. Questions are asked to know “behavioral symptoms” which indicates symptoms of deception.

The pneumograph, the sphygmomanometers and electrode are placed on the subject during or at the conclusion of pre-test interview and after the interview concluded the –Sphygmomanometer is inflated and recording of responses begin and box-line is recorded.

2.3.3.2 Chart collection or examination proper

The second stage is the actual performance of test, i.e., examination proper. Different gadgets are attached to the body of the subject for measuring the changes in physiological conditions. A rubber tube is festered around the chest for measuring the respiratory changes, in the upper arm an inflated cut is wrapped for measuring the
change in the blood pressure and pulse rate, and for recording the electrodumal responses electrodes are attached to the finger tips. The subject is given a comfortable chair to sit in and the test is conducted in a vacant and calm room with only the examiner. Questions prepared in advance are put to the subject and he has to reply them in ‘yes’ or ‘no’. Some questions are irrelevant and some are relevant-One of the questions is stores provoking question. The measurement of blood pressure, perspiration, pulse and rate of breathing is recorded during whole of the question answer series. The examiner then compares responses of stress provoked question with other question and interprets the court to know whether lie has been spoken. The instrument records changes by means of a needle on the graph paper.

At the conclusion of pre-test interview and after the interview is conducted the Sphygmomanometer is inflated on the subject. Then first question is asked. There is a gap of 10 to 15 seconds between each question so that responses to last question may be eliminated and physiological response comes closer to baseline. Time (if beginning of examination, question asked and when examination ends, it is all recorded by examiner in the chart then subject is asked about his reactions to the questions. It helps in refining the question. Question is revised and reformed and if necessary classified. The “stimulation test” is considered out. Stimulation test is designated to convince the subject about the accuracy of polygraph examination.

The “stimulation” or “stim” test is a number or card test. Our types of questions are asked to the subject, they are relevant, control, irrelevant and concealed information or guilty knowledge questions. Main questions are repeated three or four times and to avoid discomfort to subject pressure cult are inflated only for 10 to .1.2 minutes.

2.3.3.3 Post-test interviews

In the third stage the result of the test is discussed with the subject in order to analyze about deception of attempted unresponsive to any question.
2.3.4 RESULT AFTER POLYGRAPH TESTING

The result of the test is obtained on a chart known as polygram. The following changes are noted carefully, suppression in respiration and increase of blood pressure after the reply, decrease in blood pressure, behavior breathing, slowing of pulse rate and the course of blood pressure.

Polygraph does not directly detect whether the person is speaking truth or is deceiving but the examiner carefully analyzes the pattern of arousal responses and on that basis veracity of the individual is inferred. This inference or assessment is called ‘diagnosis’ of truthfulness or deception. In India, since 1974 at Central Forensic Science Laboratory, New Delhi more than 3000 polygraph tests have been conducted.

2.3.5 CRITICAL ANALYSIS OF POLYGRAPH

(1) The test does not tell as to whether the subject is lying or not. Results only show about the physiological changes which have to be interpreted by the expert.

(2) In asking the question no science is involved and it wholly depends upon trickery and on the expertise of the examiner.

(3) A person who can control his emotions to a great extent can still tell a lie, e.g., if a person has control on himself by practice of yoga or otherwise, this test is bound to fail.

(4) Nervousness may be exhibited by many innocent and truthful persons under the conditions of police interrogations. This nervousness may arise due to various reasons, e.g., fear of being involved in the crime, or the fear that his or her previous conduct may be shown to the police what is not related to the present crime. It may also be due to the fact of not properly understanding the procedure of polygraph, besides there may be fear of wrong interpretation of chart by the examiner and even the interrogator and examiner may be biased. If the examiner holds the subject guilty, he may interpret the chart with that bent of mind and vice versa he may be lenient in interpreting, chart of a person whom he considers innocent.
2.4 BRAIN-MAPPING: ORIGIN AND MODUS OPERANDI

Brain Mapping is one more valuable scientific tool for investigation of crimes. Brain Mapping is also known as Late Positive Complex or P3 or P300. It is a component of averaged brain potentials. In this test no questions are asked from the accused. He is made to sit in evoked potential recording machine and is shown objects relating to crime scene or is made to hear sounds pertaining to crime site. The sensors from his head pick the event related potentials in the form of Brain Mapping only if the person has been at the site of crime. The accuracy of Brain Mapping is almost 100%.

Brain Mapping is a response of the brain to a stimulus which is shown to the subject. In 1965, scientists were working on the research of Event Related Potentials and it was discovered by Sutton and his colleagues. It is very robust Event Related Potential. As soon as it recognizes the stimuli it sends the reaction within 300 milliseconds of seeing the stimuli. If the person is attentive to the stimuli its response would be the fastest. If more time is taken for making decision the more time is spent for the responses of P300. Its latency shows the amount taken by it in arriving at a decision27.

When the brain recognizes a person or a sound, it produces a precise electric wave which is called P30028. In this test sensors are attached to the head of the subject and the subject is seated before a computerized monitor. The sensors catch the electrical activity in the brain and record P300 wave, which is produced only if the subject has some correlation with the pictures shown to him and the sounds which he is made to hear.

Brain fingerprinting device was invented by a U.S. scientist Dr. Lawrence A. Farewell in early 1970’s. He is former faculty of Oxford University. He is the Chief Scientist and President of the Human Brain Research Laboratory founded by him in 1991. According to him, centre of every activity is brain and it not only plans activities but orders for its extension. The “Truth Detector” is based on the functions of brain. Every event is stored in the brain and when the same or similar event is shown to person

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27 Satyendra Kumar Kaul,249
the brain responses and response is recorded through computer. Through Brain fingerprinting it can only be known that the person was present or not at the place of occurrence. Only proof of his presence, inferences cannot draw that he has committed the alleged offence. The person may be present on the place of occurrence for some legitimate reason, e.g., for saving the victim. He may reach at that place as a stranger. The information relating to crime may come into his mind by receiving information through reading of newspaper or watching of T.V. According to Mr. A.A. Samdani, Ex Judge and Mr. Sharique Rizvi, Associate Prof. Indian Institute of Information and Technology, “information present” does not always mean that suspect is guilty. It is possible that the subject has been a witness to the crime or he or she has already read details in newspaper or seen in media which has been imprinted in his or her mind.

Processing of known information like elements relating to the crime deposited in the brains is exposed by identifiable pattern in the Electroencephalogram outline. “Technically explaining, Brain Mapping involves confrontation with a stimulus of special significance with electric signal known as P300 emitted from individual’s brain, beginning approximately 300 million milliseconds after the confrontation. Since it is based on EEG signals and graphs, the system does not require the subject speak at all and he in way continues to exercise his right to keep silent. The suspect wears a special hair band with electronic censor that measure the EEG from several locations on the scalp.” The subject views on the computerized screen or even directly anything consisting of words phrases, picture etc.

Brain has been the centre of attraction of neuro-scientists for decades. The brain is centrally involved in every human action and records everything that human beings do, including criminal acts. Due to this reason the brain has been the key point in inventing all equipments of lie detection be it polygraph or lie detection test, P-300 or Brain fingerprinting and Narco analysis. In these tests Brain fingerprinting is the latest scientific technique for measuring neural responses exhibited after an object is shown to

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the subject or on external stimulus is printed to the subject. It is a branch of neuroscience and deals with the study of neuroanatomy.31

Brain fingerprinting is used to determine whether a certain information is present in the brain of a person or not. In other words, brain fingerprinting is a scientific test by which guilty knowledge stored in one’s brain can be determined. Brain fingerprinting measures neural responses to images from crime scene. In short, the brain fingerprinting is the method of matching the fingerprinting information in the brain with that of actual crime scene.

2.4.1 PROCEDURE TO PERFORM BRAIN-MAPPING

When any information is given to an individual, which corresponds to prior knowledge or information in his brain about the activity or event it will emit responses in the shape of p-300 waves. It has also been possible to observe stimulus response up to 800 mili seconds. P-300 is an electrically positive component and has a peak literacy of about 300 to 800 mili seconds at the midline partial area of the head. Dr. Farewell has been able to test not only the p-300 but also a negative electrical component which is found at midline frontal area and has an asset latency of 800 to 1200 mili seconds through MERMER. The familiarity reaction of brain towards the activity or events is the midline partial area of the head. The familiarity reaction of brain towards the activity or events is recorded in MERMER (Memory and Encoding Related Multifaceted Electroencephalographic response) apparatus. For measuring EEG (Electro Encephalograph) from several place of scalp a special head band equipped with electronic sensors, is attached to the scalp and the test is presented with a series of relevant and irrelevant words, pictures, signs, Bounds etc. and responses of the two different types of stimuli is measurable to know whether the relevant material is known to the brain or not. If the brain is confronted with the stimuli, which is already in its store it will emit p-300 at the rate of 300 mili seconds. Since, those responses are recorded EEG signals no question has to be answered by the test. The apparatus works not on emotions but on Cognitive Brain responses. This is a major difference between a polygraph and brain fingerprinting.

31 Supra 20.
2.4.2 ADVANCEMENT OF TECHNIQUE IN INDIA

Dr. Farewell patented his technique of brain mapping in U.S.A. in 70s which was projected to be as a major breakthrough in Forensic Science as it involves and formulates probes, i.e., Keywords, or phrases or pictures collected and related to the crime arc mixed with irrelevant words and pictures and is flashed on screen and the subject is called to press button on the correct option. But the difficulty arises when the suspect presses wrong button or does not press any button at all. To meet this error Dr. Mukundan of Brainex (Brain Experience) Company at Bangalore has designed a special software called “Brain Electrical Activation Fingerprinting”. It is said to be modified version of Dr. Farevell’s techniques. In this technique the entire crime scene is created and is shown that the suspect and his or her reactions are recorded. There is another change sometimes information is gathered from frontal lake of brain and sometimes from posterior to be sometimes vice versa. However, this technique cannot be used on mentally ill or heavily alcoholic suspect and may not be helpful in cases of habitual criminals. But according to Dr. Mukundan. “it is so specific that one can even find out how much money was paid to a contract killer or what called him up the day before the killing”.

2.4.3 WORKING OF BRAIN- MAPPING

Human brain works like a Black Box kept in an aeroplane for recording every thing happening with the plane. There is an instinctive ability in the brain to identify person, places, objects etc. and is kept reserved in memory. This technique is used to determine whether certain information is or is not present in the brain of a person. Few electrodes are strapped on the scalp of a person and his or her involuntary responses are recorded through electroencephalogram.

When any information given to subject corresponds to the information already stored in brain it sends electronic signals and is recorded in KEG (Electro Encephalograph). If a person knows an event and it is shown to him the p-300 electrical brain wave responds to that fact. The MERMER is a mere longer and more complex

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33 Supra 25 at 295.
device than p-300. P-300 shows only a peak electrical response while MERMER shows both peak and valley. The MERMER not only responds to p-300 electrical waves but also additional data occurring more than 200 milliseconds after the stimulus.

The brain fingerprinting detects the presence of crime. If a person is not present at that he has committed the crime or present at the place of commission of crime. The act of crime is imprinted in the brain of the subject. This test only ensures that the subject is present at the place of occurrence. However, it does not ensure that the person concerned has committed that crime. He may be present at that place for any other purpose.

Brain fingerprinting is a boon for investigating agencies. In a planned commission of crime the physical evidences may vanish or made to vanish and sometimes it happens that no clue of the criminal acts is found. The investigating agencies have to grope in dark in order to catch a suspect. In such a case, the brain fingerprinting has prevented to be a boon in that regard. In commission of crime the brain of the preparer is always with him while planning, exciting and committing the crime. By this technique it is measured as to whether there is crime related information stored in the brain of the suspect or not.

2.4.4 CRITICAL ANALYSIS OF BRAIN MAPPING

1. This test has its own limitations. The test is conducted by a human being and it is possible that they fail to fully and truthfully analyze the brain wave.

2. An innocent person who has not committed the crime but has only witnesses of wound also react to the stimuli. Similarly, a person may be aware of the crime due to details published in media and the brain may store it. In that case also there chance is that the innocent can also be found guilty. Therefore, this test's utility is only to imprint the subject's brain, which makes it clear that the subject is innocent.

3. This technique is also criticized on the ground that it is violation of brain privacy. By this a person loses his right to keep his thought to himself.
4. This is also not useful in case of a person who loses his memory, e.g., old people easily lose memory and therefore can brain mapping on an old man accurately work? Similarly, a person suffering from deficiency in memory can exit normal p-300 brain waves?

5. The six-member committee headed by National Institute of Mental Health and Neuro Sciences (NIMHANS) Director Dr. Nagraj\(^{34}\) -concluded that Brain Mapping is unscientific and should not be used as an tool of investigation and an evidence adduced through brain mapping should be made inadmissible in Courts. He also said there is requirement of a methodical, systematic and meticulous examination of the procedure as it lacks ascertained principles.

2.5 **CASE LAWS IN WHICH NARCO-ANALYSIS, POLYGRAPH AND BRAIN-MAPPING HAS BEEN CONDUCTED**

These tests have been conducted in so many cases as for instance, on Godhra incident accused persons; on Abdul Karim Telgi, prime accused in stamp paper scam; in Arun Bhatt kidnapping case of Gujarat; on Nithari serial killers of Nithari, Noida (U.P.); on Selvi Murugesan, a sitting MLA of Tamil Nadu; on Abdul Rehman, Bechu Rehman and Iju Sheik; on Mumbai Police inspector Daya Nayak, on Naxalite Mallika; on Abu Salem a suspect of Bombay blast case; on Actress Preeti Jain, Naresh Pardesi, suspects of Malegoan blasts; on R. Venkateshwar Rao, prime accused of Krushi Bank scam; and on Nadeem Kashmiri in a fraud case. These tests were not used in India in the past, but lately these tests have been applied to so many persons.

2.5.1 **Polygraph test conducted in a child swapping case.**—In a sensational case of a child swapping in Hyderabad (AP), the five stagers Government Maternity Hospital subjected to polygraph tests. The story of case was that a young mother had alleged that her boy child delivered at the Nayapur Hospital on April 16 had been swapped. She had been given a girl child which she refused to accept. A DNA test revealed that the girl

child given to Latha was indeed not hers. The police started investigation into the case. Following which it was decided that the suspect would be subject to polygraph test.  

2.5.2 Polygraph test conducted in a rape case.—In Bangalore, Karnataka, one Pratibha Srikant, a woman employee of BPO was raped and murdered. The charge was framed on a driver hired by the company. The driver was subjected to polygraph test, brain mapping test, and narcoanalysis test.  

2.5.3 Polygraph test conducted in Shivani Bhatnagar murder case.—The Indian Express Journalist Shivani Bhatnagar was murdered at her East Delhi apartment on 23rd January, 1999. In this case murder charge was framed on a Haryana Cadre I.G. Police Mr. R.K. Sharma and five other accused persons. The polygraph tests were conducted on Shivani’s husband, her sister, brothers and brother-in-law.  

2.5.4 Polygraph test conducted on Nithari’s serial killing accused.— In Nithari, Noida (U.P.), a businessman Mohinder Singh Pandher and his domestic help Surinder Koli were accused of murdering 30 missing children. At the time of writing this book, the CB1 is investigating into the case. In scientific tests suspected killer admitted serial killing of missing children. In this case the investigating agencies used polygraph, brain mapping and narcoanalysis tests on both of them and also on a female servant who allegedly lured children who were killed by both duo.  

2.5.5 Polygraph test conducted on Mumbai serial killer.—One Ravindra Kantrolle, a suspect of serial killing of seven people in South Mumbai in Marine Drive and Azad Maidan Police Station, was subjected to scientific tests like polygraph, narcoanalysis and higher version of brain mapping tests [i.e., Brain Electrical Oscillation Signature (BEOS)]. During these tests he confessed his involvement in the crimes. BEOS (brain mapping) and polygraph tests were conducted at Maharashtra Forensic Science Laboratory, and narcoanalysis tests were conducted at Bangalore Forensic Science Laboratory on 14th February, 2007.
2.5.6 Polygraph test conducted in a murder case.—A young man was found dead in a causeway near Kaimbwala village in July 2006. After investigation police came to know that he was working as a waiter in a hotel. Police arrested five persons in this case and subjected all of them to polygraph tests. After the tests three of them were detected ‘positive’ which indicated that they were lying during the test.40

2.5.7 Polygraph test conducted on a film actress Preeti Jain.—In Mumbai, police arrested Preeti Jain, a film actress, and her associate Arun Gulab Gavali, a mafia don-turned-politician in a case suspected to kill a film maker Madhur Bhandarkar. In this case police wanted the polygraph, brain mapping and narcoanalysis tests of accused including Gavali. The lower Court ordered for these tests. And the Bombay High Court refused to interfere in lower Court’s order. Then a S.L.P. was filed in Supreme Court against the order.41

2.5.8 Polygraph test conducted in an abduction case.—In Imphal, a twelve-year-old girl Lungnila Elizabeth was abducted by unidentified man. After eight days her decomposed body was found inside a gunny bag at an isolated place. Police arrested two persons who had admitted their involvement in the crime. Following the public outcry this case was transferred to C.B.I. The C.B.I, requested the Court to conduct brain mapping, narcoanalysis and polygraph tests which is under consideration of the Court.42

2.5.9 Polygraph test conducted on a suspected terrorist.—In Andhra Pradesh, Gulbarga police arrested Shami Ahmed Shah, a suspected terrorist of a banned outfit Lashkar-e-Taiyba, He was subjected to polygraph and brain mapping tests. According to police officers the suspect was questioned about his association with Lasker-e-Taiyba and its network and activities. After the tests vital and incriminating information obtained from the suspect.43

2.5.10 Polygraph test conducted in a poetess murder case.—In Lucknow, Uttar Pradesh, a Former Minister Amarrmani Tripathi was arrested on 21st September, 2003

on the charges of conspiracy of a murder of a poetess Madhumita Shukla. He was subjected to polygraph tests after he had given his consent to undergo the test at CFSL of CBI headquarter.\textsuperscript{44}

2.5.11 Polygraph test conducted in an armed attack case.—In Ahmedabad, Gujarat, in connection with the armed attack at Dantali ashram of Swami Sacchidanand on July 17, 2006 the police subjected to polygraph tests two more office-bearers of the Swadhay Pariwar at FSL, Surat.\textsuperscript{45}

2.5.12 Polygraph test conducted in arms theft case.—In Muzaffarpur, Bihar, the disappearance of four AK-47 rifles and an Insas rifle had created an outcry in police department. In this case the sentries who were guarding the Bihar Military Police Armoury at Muzzafarpur were subjected to polygraph tests.\textsuperscript{46}

2.5.13 Ijju Sheikh’s case—face-to-face probe.—In the Mumbai Serial Blasts case in 1993 RDX was used which was smuggled from Gujarat coast to Mumbai. On 28th April, 2006 one Ijju Sheikh, an aide of Dawood Ibrahim, an Underworld Don, was arrested from Mumbai. Ijju Sheikh had smuggled RDX from Gujarat to Mumbai. He had given certain information to the police and the police would make him face-to-face with another Dawood aide Umar Miyan Bukhari who was deported to Mumbai from Dubai in December, 2005 and who was subjected to narcoanalysis and brain fingerprinting tests at Gandhinagar, Ahmedabad.\textsuperscript{47}

2.5.14 2006 Mumbai Serial Blasts —Identification of clues in terrorist mind.— In the case of serial blasts in sub-urban trains of Mumbai on 11\textsuperscript{th} July, 2006 (i.e., 11/7 serial blasts) the Anti-Terrorism Squad (ATS) of Mumbai Police had sought permission from the Court for conducting lie detection, brain mapping and narcoanalysis tests on the arrested suspects, viz., Kamal Ahmad Ansari, Mumtaz Maqbool Chaudhary, Faizal Sheikh, Mujammil Sheikh, Dr. Tanveer Ansari, Sohail Sheikh, Jameer Sheikh, Kalid Aziz Sheikh and Etesham Siddiqui. It is believed that the suspected persons have link with Laskhar-e-Toiba, a banned outfit. The tests would be conducted at Bangalore and

\begin{footnotesize}
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\item \textsuperscript{44} Retrieved from us.rediff.com, visited on December 15, 2012
\item \textsuperscript{45} Retrieved from in.news.yahoo.com, visited on October 6, 2012.
\item \textsuperscript{46} Retrieved from www.rediff.com, visited on October 12, 2012.
\item \textsuperscript{47} Retrieved from www.outlookindia/pti_news.asp?id=296155, visited on April 29, 2011
\end{itemize}
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it was proposed that the tests would be conducted first on Kamal Ansari, the prime suspect. In the incident about 200 persons were killed and over 600 persons were injured.\footnote{Retrieved from www.dnaindia.com/report.asp?NewsID=1049812, visited on September 1, 2011.}

2.5.15 Terrorist attack at Indian Institute of Science (IISc), Bangalore—Disclosure of facts by terrorist.—On December 28, 2005 a terrorist attack was made at Indian Institute of Science (IISc), Bangalore. The arrested suspect Abdul Rehman alias Raiz-ur-Rehman was subjected to nacroanalysis and brain mapping tests and he had admitted that he met the Laskar-e-Toiba top brass including Abdul Rehman Makki, Abdul Aziz, Abu Hamza etc. while he was in Saudi Arabia. He also admitted that he had worked for Hizbul Mujahideen. He also admitted his visit to Dhaka in 2003, earlier for which he had denied. He also disclosed that Naveed and Naushad had conducted the terrorist attack. Naveed is supposed to be Ghulam Yezdani like Rahman who native of Nalgonda, Andhra Pradesh and who operates from Saudi Arabia and Bangladesh for Harkat-ul-Jehadi-Islami.\footnote{Retrieved from (1) www.hvk.org/articles/0106/96.html; www.kashmirlive.com/full_story.php?content_id=85918, visited on July 12,2012.}

2.5.16 Bechu Rehaman’s case—Seeking for test.—Narcoanalysis, brain mapping and polygraphic tests on Bechu Rehaman, an accused of Sabarimala Thantri Kandararu Mohanararu assault case was refused by Ernakulam Court on the ground that accused was not physically fit to undergo the test. He was remanded to judicial custody after 9 days’ police custody. The case is related to the assault by Bechu Rehman by means of manhandling, forcible photography with a woman and threatening of Sabarimala of Lord Ayyappa temple.\footnote{Retrieved from www.newkerala.com/news4.php?action=fullnews&id=34784, visited on July 18,2012.}

2.5.17 Abdul Rehman’s case—Identification of terrorist.—A Gulbarga resident Shami Ahmed Saha alias Abdul Rehman, aged about 31 years was arrested by Gulbarga police and he was subjected to polygraph and brain mapping tests at Forensic Science Laboratory, Bangalore on 31 March, 2006. He is alleged to be an activist of Laskhar-e-
Toiba, a banned outfit. He was subjected to these tests to get information about the activities, movements and plans of this terrorist outfit.\(^{51}\)

2.5.18 *Goa Gutka Baron, J.M. Joshi’s case—Clues about smuggling.*—Goa Gutka Baron J.M. Joshi was subjected to polygraphic test by CB1 in March 2006 to ascertain his role in smuggling of gutka machine to Pakistan and his links with *Dawood Ibrahim*, an Underworld Don. Brain mapping was also to be conducted at Central Forensic Science Laboratory (CFSL), Gujarat.\(^{52}\)

2.5.19 *Abu Salem’s case—Fruitful investigation.*—Narcoanalysis test conducted on gangster *Abu Salem* at Government Bowring and Lady Curzon Hospital, Bangalore had given a new line and direction to the investigating agencies. The information sought by Mumbai Police has been obtained by conducting polygraph, brain mapping and narcoanalysis test on Abu Salem. The narco test was conducted on Salem which lasted for four hours in a closely guarded operation theatre. The whole process was video-graphed by a Forensic Science Lab Official. After the test Abu Salem was transported to Mumbai.\(^{53}\)

2.5.20 *Naxalite Mallika’s test—Investigation of further Naxal activities.*—Narcoanalysis test was conducted on a Naxalite Mallika who was arrested in November 2005 because even after intense and sustained interrogation Mallika did not reveal anything about Naxalite’s activities.\(^{54}\)

2.5.21 *Mumbai Police encounter specialist Inspector Daya Nayak’s case—To elicit information.*—*Daya Nayak* the dismissed cop of Mumbai police would be subjected to polygraph, brain mapping and narcoanalysis tests at Bangalore’s Forensic Science Laboratory according to officials of Anti-Corruption Bureau. The tests would be conducted in order to elicit the information from *Daya Kayak*.

2.5.22 Abdul Karim Ladsab Telgi’s case—Confession of crime.—In our country a multi-crore stamp paper scam was committed by Abdul Karim Telgi. About 300 brain mapping tests and also lie detection tests were conducted on him which showed that Telgi was guilty of the crime. In the brain mapping test Telgi was made to sit in the chair and was asked to close his eyes and then a headband equipped with 32 electrodes was attached to his scalp. The target words were presented to him and his changed brain activation pattern was recorded on EEG.

2.5.23 Narcoanalysis Test on Abdul Karim Telgi.—The prime accused in multicrore stamp paper scam Abdul Karim Telgi was subjected to Narcoanalysis test on 3rd March, 2004. A legal debate ensued over the test and the manner and procedure of the test. During the test Telgi revealed some names but his lawyer contested the results. The reliability of the test is to be heard by the Mumbai High Court where the hearing is to start from 24th February, 2007. Telgi was earlier subjected to lie detector test and P-300/brain mapping test. His lawyer was of the view that narcoanalysis should not be done as it may pose threat to life but Dr. S. Malini of FSL, Bangalore said that the drug used in the test is completely safe. In this case of multicrore stamp paper scam Antim Totla and his brother-in-law Prakash Takhete were also subjected to polygraph tests on 29th December, 2003. The aforesaid persons were close to the prime accused Abdul Karim Telgi, The tests were performed at Ahmadabad and they derived the charges. It was further proposed to conduct P-300 brain fingerprinting and narcoanalysis on them. The tests were conducted after seizure of certain documents from the residence of Totla. 55

2.5.24 Narcoanalysis test on Abdul Rehman for the identification of terrorist activities.—A Gulbarga resident Shami Ahamad Saha alias Abdul Rehman (31) was arrested on 31-3-2006 and was subjected to polygraph, narcoanalysis and brain mapping tests at Forensic Science Laboratory at Bangalore. He is alleged to be a member of Laskhar-e-Toiyaba, a banned outfit.

2.5.25 Narcoanalysis test in Bechu Rehman’s case,—Narcoanalysis, brain mapping and polygraphic test on accused Bechu Rahman was refused by Ernakulam Court on the

ground that accused was not physically fit to undergo the test. He was remanded to judicial custody after 9 days’ police custody.

2.5.26 **Narcoanalysis test on Mumbai Police Inspector Daya Nayak to elicit information.**—Daya Nayak, the dismissed cop of Mumbai Police would be subjected to brain mapping and narcoanalysis tests at Bangalore Forensic Science Laboratory according to officials of Anti-corruption Bureau. The tests would be conducted in order to elicit the information from Daya Nayak.

2.5.27 **Narcoanalysis test on Naxalite Mallika for extracting information about naxal activities.**—Narcoanalysis test was conducted on a Naxalite Mallika in November 2005 because even after intense and sustained interrogation she did not reveal anything about Naxal activities.

2.5.28 **Narcoanalysis test on suspects who attacked the Indian Institute of Science, Bangalore—Disclosure of facts by terrorist.**—On December 28, 2005 a terrorist attack was made on the Indian Institute of Science, Bangalore. The arrested suspect Abdul Rehman alias Raiz-ur-Rehman was subjected to narcoanalysis and brain mapping tests and he had admitted that he met the Lashkar-e-Toiyaba top brass including Abdul Rehman Makki, Abdul Aziz, Abu Hamza, etc. while he was in Saudi Arabia. He also admitted that he had worked for Hizbul Mujahideen, an terrorist outfit. He also admitted his visit to Dhaka in 2003, earlier for which he had denied. He also disclosed that Naveed and Naushad had conducted the terrorist attack. Naveed is supposed to be Ghulam Yezdan and Rehman is native of Nalgonda in Andhra Pradesh who operates from Saudi Arabia and Bangladesh for Harkat-ul-jehadi-Islami.\(^{56}\)

2.5.29 **Narcoanalysis test on suspects of Mumbai blast case for the identification of clues in terrorist mind.**—In the case of blasts in sub-urban trains of Mumbai on 11th July, 2006 the Anti-terrorist Squad of Mumbai Police had sought permission from the Court for conducting lie detector, brain mapping and narcoanalysis tests on the arrested suspects, viz., Kamal Ahmad Ansari, Mumtaz Maqbool Chaudhary, Faizal Sheikh, Mujammil Sheikh, Dr. Tanveer Ansari, Sohail Sheikh, Jaiveer Shaikh, Khalid Aziz

Sheikh and Etesham Sidiqui. It is believed that the suspected persons have link with Laskhar-e-Toiyaba, a banned outfit. The tests would be conducted at Bangalore and it was proposed that the tests would be conducted first on Kamal Ansari, the prime suspect. In the incident 200 persons were killed and over 600 persons were injured. Ahmad Sheikh and Tanveer Ansai were subjected to brain mapping test on 4 September, 2006 at FSL, Bangalore and were likely to be subjected to narcoanalysis test in Victoria Hospital, Mumbai.

2.5.30 Narcoanalysis test on Ijju Sheikh for face-to-face probe.—In the Bombay blast case in 1993 RDX was used which was smuggled from Gujarat coast to Mumbai. On 23rd April, 2006 one Ijju Sheikh, an aide of Dawood Ibrahim, an underworld Don, was arrested, Ijju Sheikh had smuggled RDX from Gujarat coast to Mumbai. He had given certain information to the police and the police would make him face-to-face with another Dawood man Umarmiyan Buknari who was deported to Mumbai from Dubai in December 2006 and who was subjected to narcoanalysis and brain fingerprinting test.\(^{57}\)

2.5.31 Narcoanalysis test on actress Preeti Jain and Naresh Pardesi.—Preeti Jain, an actress, alleged that the film-maker Madhur Bhandarkar promised film roles in exchange of sex but refused to fulfil his promises- It was alleged by Bhandarkar that Preeti Jain hired an assassin of Arun Gavali’s gang to kill him and in turn Madhur Bhandarkar paid Rs. 50,000 to Arun Gavali to file complaint against Ms. Jain. The hit man was Naresh Pardesi and he was put to narcoanalysis test and revealed that Rs. 50,000 was paid by Bhandarkar to Gavali to file complaint against Ms. Jain.

2.5.32 Madur Bhandarkar matter.—According to police version, actress Preeti Jain gave Rs. 2.5 lakhs to Naresh Pardesi, a former associate of gangster Arun Gavali. The police claims to have a sure-shot case. The contract killer was also identified according to police and his name is Sami, a person resident of U.P.-Bihar border. Preeti Jain was put to He-detector test and brain mapping test while Pardesi was put to a narcoanalysis test. Pardesi had hatched the plans as revealed under the influence of sodium pentothal, a drug injected while conducting narcoanalysis. Pardesi told that Preeti hired him for eliminating Bhandarkar, who wanted to kill Preeti after false accusation of rape by her.

The aforesaid confession was recorded in presence of an anesthetist, a general physician and a clinical psychologist.\textsuperscript{58}

2.5.33 Narcoanalysis test on suspects of Malegoan bomb blast.—In the case of Malegaon blast the Mumbai Police had arrested Nuoruhlodha Samsudoha and wanted a narcoanalysis test on him. The trial Court refused to give permission for narcoanalysis whereas the Sessions Court had allowed the police application for conduct of narcoanalysis test. Samsudoha moved Mumbai High Court for stay on the order of Sessions Court but the Hon’ble Judge refused to grant stay.\textsuperscript{59}

2.5.34 Narcoanalysis test on accused of Krushi Bank scam.—In the case of Krushi Bank scam in Hyderabad K. Venkateshwara Rao was the prime accused. Rao reportedly refused to undergo narcoanalysis test stating that it may pose a risk to his life. After his refusal he was again lodged in jail. Mr. G. Ashok Reddy, counsel for Rao, argued that the test may result in risk to life of Rao. The counsel said that before conducting tests on his client the requisite medical consent and the consent of his relatives should also be taken. Rao refused to give his assent. Rao was perhaps under the fear that if he reveals the names of the persons as revealed by Telgi, prime accused in multicrore stamp paper scam, there will be a danger to his life.

2.5.35 Narcoanalysis test on Nadeem Kashmiri to elicit information.—A Bangalore City Court had granted permission for narcoanalysis test on Nadeem Kashmiri, a HSBC employee, who has been charge-sheeted for BPO fraud. The Forensic Science Laboratory was granted permission to conduct the test. Earlier He detector and brain mapping tests had showed that Kashmiri was lying. The fraud involved scam of 2,33,000 pounds.\textsuperscript{60}

2.5.36 Narcoanalysis, Brain mapping and Lie detector tests of Nithari’s Serial Killers in U.P.—In a serial killings case of Nithari (U.P.) Police arrested two persons, Moninder Singh Pandher and Surendra Koli, for murdering 30 children and women who were sexually abused after and/or before murders. Police had recovered a sow and many

things which the two used to cut up the parts of the bodies and disposed of their bodies separately, never at one go or at one place in the sewer behind the house of the accused. A copy of Kinsey Report on sexual behaviour has also been found from the accused’s house. Both of the accused were subjected to narcoanalysis, brain mapping and polygraph tests. In brain mapping names of some Ministers of State of U.P. and doctors cropped up. Test was conducted at DPS, Gandhinagar (Gujarat). Audio and video props were designed to focus mainly on two subjects among a host of others—nature of their sexual perversion and whether this was the only reason behind serial killings and rapes. After the brain mapping both were subjected to narcoanalysis test. In the test sodium pentothal was administered as a truth serum. Both the accused had been cooperative before questioning. The narcoanalysis test showed Surendra to be a cannibal psychopath driven by sexual impotency.

2.6 CONCLUSION

These tests can be successfully used to fight custodial deaths. The investigating agencies have carried out these tests in a number of high profile cases. Rapidly and swiftly these scientific tools of investigation can become an alternate of third degree physical torture in police custody. As was rightly held by the Supreme Court in D. K. Basu v. State of West Bengal61, that there is need for developing scientific methods of investigation and interrogation of accused as custodial deaths and torture is nothing but a blow at rule of law.

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61 AIR 1997, SC 610