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The Application and Constitutionality of the Forensic Methods of Lie Detection

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ABSTRACT

Since the evolution of human beings in the world we have struggled to find our place in it. In this regard, the individuals try to find a place in the domain of comfort, relief and assurance, and in order to achieve that there needs to be a strong economic, political and cultural climate.

The criminal law system is no different and it is also continuously striving towards advancement.

This paper focuses on deception detection techniques, which are used by the investigating agencies for the extraction of truth in criminal investigation. The most commonly used lie detector tests are polygraph, narcoanalysis and brain mapping which are generally used by investigators all around the world.

The modern society as it stands today is complex and witnessing a continuous change and with the changing dynamics of society new criminal activities have grown up and criminals have started using new methods for the fulfillment of their objective. In such a scenario, it's very difficult for investigating agencies to solve such complex cases by using traditional methods.

Therefore, there's a pressing demand from the investigating agencies to allow the use of such methods of forensic science in extraction of truth and administration of justice. Also, forensic experts from all around the world have recommended the use of such technique to strengthen criminal investigation as such techniques not just help in investigation of already committed crime but it also helps in preventing the future criminal activities.

Although, there's a pressing demand for use of scientific methods in investigation of crime, but at the same time, there is question as to legality or constitutionality of these tests, as it raises various legal, ethical and medical issues regarding the use and implication of such techniques.

Keywords: *forensic law, forensic science, lie detection techniques, self-incrimination, legality.*

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I. INTRODUCTION

In the modern world, the society is becoming more dynamic day by day and there is a continuous change happening all around the world. With such rapid change in the society and by the development of science and technology, crime has become more complex in nature.

Since it is the role of the state to keep check on the law and order in a society, it has become very important to use scientific techniques for the investigation of a crime and thereby strengthen the justice delivery system.

If we look at the history of forensic science we'll find that in ancient times there were certain techniques which resembles the concept of lie detection but since it lacked a scientific backdrop they are not acceptable anymore anywhere around the world. Also, because the ancient world did not have a standardized forensic practice it resulted in criminals escaping punishments. Therefore, criminal investigators and trials relied on forced confession and testimonies which gave way to the biggest evil of the justice delivery system i.e. police brutality and abuse of power.

Forensic science, as the name suggests, signifies the application of scientific methods in solving crime. It covers different branches of science applicable to law. Originally, the techniques were borrowed from different branches of science like chemistry and biology. Since the latter part of the 20th century, it has developed itself into a separate field of study. In today's world, forensic science consists of advanced methods which are used in civil and criminal investigation, in order to get to the truth of the matter, and it forms an integrated part of the system.

For instance, polygraph which is the most commonly used lie detector test consists of an instrument which measures and records the physiological responses such as blood pressure, heart rate, bodily temperature, pulse rate and skin responses, while the person is subjected to a series of question. This instrument then calculates 'physiological' changes whenever a question is asked, as it works on the theory that wrong answers or a lie will produce different response of the body. It is for this reason that in U.S.A polygraph is also known as physiological detection of deception. Also, it is to be noted that, in some countries like USA, in addition to criminal investigation, the test was also used in private sector, where the employer used to make the employee go through series of question relating to his/her sexuality, previous employment, religious views etc. Therefore, despite being helpful in ascertaining the truth the

use and effectiveness of the polygraph is controversial and is subject to high end criticism.³

In various countries of the world like USA, Canada, Israel etc., such tests, which were conducted earlier, are now banned and therefore when it comes to our country the wide use of such tests raises the question of its validity, as to whether, there are any constitutional safeguards provided for these tests. One needs to be cautious in this respect as there are many factors underneath.

Article 20 of the Indian constitution, which talks about protection in respect of conviction for offences, in its cl. (3) provides that,

‘no person accused of an offence shall be compelled to be a witness against himself’⁴

Protection against self-incrimination is a broad protection which extends even up to the stage of investigation. This issue is very vital and needs to be settled at once as it involves the scuffle between the investigating authorities on one side and the personal liberties of the individual concerned, on the other. It raises question about the meaning and scope of the fundamental human rights of the citizens, given to them by the constitution, which is the supreme law of the land. There have been instances where individuals who are accused of an offence have been subjected to such tests against their consent and therefore we must examine the implications of such infringement of the basic human rights.

In the legal field, arguments for and against the legality of such lie detector tests are extremely common all around the world. The investigating agencies defend their act by quoting its need to get to the truth of the matter and do justice, on the other hand, the subjects claim the violation of their right against self-incrimination, which is a fundamental human right and needs to be protected.

Now, in order to understand the legality and the constitutionality of these tests and their implication on our basic human rights we must first understand what are the different types of tests used by the investigating agencies, what they mean and how they are performed?

II. POLYGRAPH

It is a very well recognized fact that human beings all over the world have a tendency to lie. People lie for different reasons ranging from their own self-interest, for benefit of others and sometimes even for no reason at all. In such a scenario, it is the job of the investigating agencies to find truth for the administration of justice and in this regard, they work on various

³ Lisa Guerin, State Laws on Polygraph and Lie Detector Tests, NOLO.com (25th September, 2019, 3:45 PM), <https://www.nolo.com/legal-encyclopedia/state-laws-polygraphs-lie-detector-tests.html>

⁴ Constitution of India, Article 20 Cl. 3.

ways to distinguish lies from the truth.

In ancient times the system of oaths and ordeals were prevalent to find truth, thus, different techniques were used in different part of the world to find out whether the accused is lying or not on the basis of the common reasoning that whenever a person is lying certain physiological changes occur in him due to the fear of getting caught.

For instance, in ancient china, an accused was made to put rice powder in his mouth for a certain time and then spit it out and if the powder remained dry it meant that the accused is lying because whenever a person is lying, due to fear of getting caught less saliva is generated.

In this regard, several scientists and criminal investigators devoted their research and developed scientific techniques to measure physiological changes that occur when a person is lying. Cesare Lombroso was the first person to make an attempt in this regard.

He modified an instrument called hydrosphygmograph and used it to measure the physiological changes which occurs in blood pressure and heart rate, during an interrogation.

An Italian psychologist, Vittorio Benussi, in the year 1914 discovered a technique for calculating the quotient of the inhalation to exhalation time as a method of detection of deception, using a pneumogram, a device used for recording a person's breathing pattern.

In his research, he concluded that lying causes a change in the emotions which results in respiratory changes by which deception can be detected.

Further, in 1921, a Canadian psychologist John A. Larson developed a polygraph instrument by combining the respiration rate recorder with that of blood pressure.

This device was named by him as polygraph which means 'many writings', as it could read several physiological responses at the same time. John A Larson, by the help of this device was the first person to measure changes in the subject's pulse rate, blood pressure and rate of respiration, during an interrogation.

In 1925, Leonard keeler, while working with John A. Larson, created a less complex polygraph instrument that used inked pens to record the relative changes in blood pressure, heart rate and respiratory patterns.

Lastly, Leonard keeler, in 1938, further modified the instrument by adding a psychogalvanometer to measure change in the subject skins electrical resistance. All these developments made this branch of forensic science as we know it today.

(A) Modern Polygraph

The present polygraph instrument contains the following components;

- i. Blood pressure cuff, attached to the upper arm of the subject to record the variations in the blood pressure, when a question is put.
- ii. Pneumograph tube, which is in form of a chain tied around the chest and abdomen to record the changes in respiration.
- iii. Two metal plates attached to the index and ring finger through which weak current is passed in order to measure the galvanic skin reflex.
- iv. The chair which is designed in a way to measure the changes in the body movement and weight during interrogation.
- v. Lastly, a laptop to record the changes in the physiological patterns.

(B) How it is conducted?

The test begins with a simple interview in order to know the basic information about the subject and to see the usual variation in subject's physiological responses.

The subject is informed about the apparatus that since it detects lies he must tell the truth. After this, the questions are put which are generally answered in 'yes' or 'no'.

Here, the type of question asked, must be noted, which are as follows;

- i. Relevant and irrelevant questions- relevant questions are those which have a relation with the case and irrelevant question are those which have no relation with the case, hence, the fluctuation between the two are recorded.
- ii. Control question- these questions are not related to the case but depicts a similar situation which creates a feeling of fear or anxiety in the subject, which gets recorded in the polygraph.
- iii. Peak of tension questions- these questions relate to the details of the case and if the subject is lying, he experiences high level of tension, which is portrayed in the polygraph.

III. NARCO ANALYSIS

The term narcoanalysis is derived from the greek word 'narke' which means 'anesthesia' or 'torpor' and is used to describe a diagnostic technique that uses psychotropic drugs particularly barbiturates to induce a stupor by which mental elements with strong association comes to the

surface, where they can be exploited by therapists.

The term narcoanalysis was introduced by Horseley. The test became very popular in the year 1922 when a medical practitioner Robert House used the drug ‘scopolamine’ on two prisoners.⁵

(A) How it is conducted?

In a narcoanalysis test a drug called sodium pentothal is injected in the body of the subject. The amount of the sodium pentothal which is used in the test is 3 gms. dissolved in 3000 ml of distilled water, and injected with the help and presence of anesthetist, over a period of three hours, by which the subject gets induced into a hypnotic state. After this, the subject is asked a series of question and the statement made by him are recorded.

In a narcoanalysis test the drug used hits the nervous system and thereby lowers the subject’s inhibitions and since the subject is not able to imagine, he is unable to lie, as it’s a recognized fact that all our lies comes from our imagination. In such a sleep like situation questions are asked to obtain the truth of the matter.

Here, because the test takes the accused into a state where he loses all his control and say something which is self-incriminatory, it is largely discredited in most of the democratic countries. It is for the above reason that the tests are not always admissible in law courts as it is believed that under the influence of such drugs the subject doesn’t possess the mindset to think and answer correctly, therefore it raises a question as to the accuracy of the tests. Also, there are studies to show that it’s possible for the subject to lie in a narcoanalysis test and therefore it’s validity is questioned more.

It is for this reason that in countries like India where narcoanalysis is used by the investigative agencies, it still can’t be used as evidence in the court as it violates the fundamental right against self-incrimination available under article 20(3) of the constitution, which says that “no person accused of an offence shall be compelled to be a witness against himself.”

IV. BRAIN MAPPING

Brain mapping or brain fingerprinting is a method of lie detection which uses ‘electroencephalography’ (EEG) to determine whether specific information is stored in a subjects brain by measuring electrical brainwaves and recording a brain response known as P-300 MERMER (Memory and encoding related multifaceted electroencephalographic response), in response to the pictures, videos or words shown in the computer screen.

⁵ Prof (Dr.) A.S. Deoskar, *Medical Jurisprudence, Toxicology and Forensic Science*, 85. (3rd ed. Veeraraghavan, Ashok H. Tank, A. Dutta, 2014)

Dr. Lawrence A. Farwell, Director and Chief Scientist 'Brain Wave Science' Iowa, developed and patented the test in 1995. In this test, a censor is attached to the subject's head and the person is seated before a computer screen. He is then made to hear certain sound and shown certain image by which the censors calculate the electrical activity in the brain and register P-300 waves, which are generated only when the subject is familiar with the image shown or sound heard.

In this method of lie detection there is no direct questions asked. It is to be noted that a MERMER is initiated in the accused when his brain recognizes certain information about the crime. Therefore, in a nutshell it can be said that this technique matches information stored in the brain with the evidence gathered from the crime scene.

Here, the hypothesis is that the brain processes known and relevant information differently from the way it processes unknown and irrelevant information. The brain's processing of known information such as details of a crime stored in the brain is revealed by a specific pattern in the EEG.

However, brain finger printing reveals what information is already stored in the brain, but it doesn't tell how that information got there. Therefore, if a suspect says that he has never been in the crime scene and thereby he has no reason for knowing the details of the crime, brain finger printing can provide useful evidence. On the other hand, if the suspect knows about the crime scene, by being an eye-witness and not the perpetrator, there would be no point of conducting the test as the suspect would already know the details of the crime. Similarly, the brain mapping test of lie detection is not applicable where the question is of 'intent', as this test only detects information but not the intentions of the parties concerned.

V. CONSTITUTIONALITY AND LEGALITY OF THE LIE DETECTION TECHNIQUES

The advancement made in the field of science and technology should be used to strengthen the justice delivery system as it'll be very helpful for the investigating agencies and also because it is a better alternative to the age-old method of investigation in which methods like third degree treatment were used on the accused, where sometimes even innocents who are unable to bear the torture often confess to the crime they have not committed. Thus, scientific tools of interrogation namely, narco analysis, polygraph, brain mapping are beneficial in this regard.

However, at the same time, it is also true that these tests are not fully reliable. The National Academy of Sciences, USA, reported that the majority of the polygraph tests are unreliable,

unscientific and biased. One can easily beat a polygraph test.⁶

Such tests have a little basis for their validity, not only because of its inherent unreliability but also because it's violative of some fundamental human rights such as;

- i. Article 20(3) of the Indian Constitution, which reads, 'no person accused of any offence shall be compelled to be a witness against himself.'⁷
- ii. Article 21 of the Indian constitution, which reads, 'no person shall be deprived of his life or personal liberty, except by procedure established by law.'⁸
- iii. Article 7 of International Covenant on Civil and Political Right, which reads, 'No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment. In particular, no one shall be subjected without his free consent to medical or scientific experimentation.'⁹
- iv. Article 14(3)(g) of International Covenant on Civil and Political Rights, which reads, 'Not to be compelled to testify against himself or to confess guilt'.¹⁰
- v. Article 6 of the European Convention on Protection of Human Rights and Fundamental Freedoms, which reads, Article 6(1);

"In the determination of his civil rights and obligations or of any criminal charge against him, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law."

Article 6(2),

"Everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law."¹¹

If we take the Indian scenario the right against self-incrimination is also linked with one of the dimension of personal liberty guaranteed under article 21 which includes in its ambit the right to fair trail and the substantive due process. Also, it should be noted that article 20 and 21 are fundamental human rights which enjoys a non-derogable status within part III of the constitution and the right to move any court for the enforcement of these rights cannot be suspended even during the proclamation of emergency.

⁶ U.S. National Security Agency, initial and supplemental responses to OTA survey, (2003)

⁷ Constitution of India, Article 20 Cl.3.

⁸ Constitution of India, Article 21.

⁹ ICCPR, UN General Assembly, Article 7 (1966)

¹⁰ ICCPR, UN General Assembly, Article 14 Cl.3(g) (1966)

¹¹ European Convention on Protection of Human Rights and Fundamental Freedoms, Council of Europe, Article 6 (1950)

Now, coming back to the evidentiary value of the polygraph, brain mapping and narcoanalysis test, chapter V of the Code of Criminal Procedure which talks about 'arrest of person' in its section 53, 53-A and 54 gives a hint as to the use of these tests by the investigating agencies. Here, Section 53 reads,

Clause (1), "when a person is arrested on a charge of committing an offence of such a nature and alleged to have been committed under such circumstances that there are reasonable grounds for believing that an examination of his person will afford evidence as to the commission of an offence, it shall be lawful for a registered medical practitioner, acting at the request of a police officer not below the rank of sub-inspector, and for any person acting in good faith in his aid and under his direction, to make such an examination of the person arrested as is reasonably necessary in order to ascertain the facts which may afford such evidence, and to use such force as is reasonably necessary for that purpose."

Clause (2), "whenever the person of a female is to be examined under this section, the examination shall be made only by, or under the supervision of, a female registered medical practitioner."

Explanation- In this section and in section 53A and 54-

"examination shall include the examination of blood, blood stains, semen, swabs in case of sexual offences, sputum and sweat, hair samples and finger nail clippings by the use of modern and scientific techniques including DNA profiling and such other tests which the registered medical practitioner thinks necessary in a particular case"¹²

Here, it is to be noted that, examination of blood stains, semen, swab in sexual offences, DNA profiling etc. are permissible under explanation to section 53, 53A and 54 of Cr.P.C. However, the use of the term 'such other test' is the root cause of all the controversy, as here it raises a question that what other tests can be conducted along with the ones mentioned in explanation to section 53, and does it include narcoanalysis, polygraph and brain mapping?

In the case of "Selvi vs. State of Karnataka,"¹³ the Supreme Court explicitly cleared the doubts relating to the testimonial acts and physical evidence with special reference to the Narcoanalysis, BEAP and Polygraph tests.

In the abovementioned case, the argument made was that, the amended explanation to Sections 53, 53A and 54 of the Cr. P. C. contains 'and such other tests' which includes narcoanalysis technique, polygraph examination and the BEAP test, and although they have not been

¹² Code of Criminal Procedure, 1973, Section 53.

¹³ Selvi Vs. State of Karnataka, AIR 2010 SC 1974: MANU/SC/0325/2010

expressly enumerated, they could be read by examining the legislative intent. The Court observed that the results of the narcoanalysis, polygraph and the BEAP test should be treated as testimonial acts, as there is a distinction between testimonial acts and physical evidence and such lie detection tests can't be put in the category of physical evidence. The court further observed that, while bodily substances such as blood, semen, sputum, sweat, hair and fingernail clippings can be considered as physical evidence, the same cannot be said for narcoanalysis, polygraph and the BEAP test. This argument was supported by invoking the rule of 'ejusdem generis' which is used in the interpretation of statutes. This rule entails that the meaning of general words which follow specific words in a statutory provision should be construed in light of the commonality between those specific words. In the present case, the substances enumerated are all examples of physical evidence. Hence the words 'and such other tests' which appear in the Explanation to Sections 53, 53A and 54 of the Cr.P.C. should be construed to include the examination of physical evidence but not that of testimonial acts.

With the abovementioned reasoning in the case of *Selvi vs. State of Karnataka*, the Supreme Court in its judgment held that Narcoanalysis, Polygraph & BEAP tests are not included within the scope and ambit of the term 'and such other tests', used in explanation (a) of section 53 of the Cr.P.C. Therefore, a registered medical practitioner cannot conduct or prescribe to conduct these tests involuntarily.

There may be circumstances where the accused is framed falsely with heavy charges, or there is a malicious prosecution filed against him, and he is not able to defend himself against it, he may himself apply to be examined under such lie detection techniques in order to prove his innocence. In this regard, the case of *Selvi v. State of Karnataka* ruled that no individual should be forced to undergo any of the tests in question, whether in the context of investigation in criminal cases or otherwise and doing so would amount to an unwarranted intrusion into personal liberty. However, the Supreme Court allowed voluntary administration of such tests by the subject, provided that certain safeguards are in place. But it is to be noted that, even when the subject has given consent to undergo any of these tests, the test results by themselves cannot be admitted as evidence because the subject does not exercise conscious control over him during the administration of the test. However, any information or material that is subsequently discovered with the help of voluntary administered test results can be admitted, in accordance with Section 27 of the Evidence Act, 1872.

Legality of the lie detector tests with special reference to *Selvi vs. State of Karnataka*;

In the landmark judgement of *Selvi v. State of Karnataka*¹⁴, the Supreme Court of India took note of the case of *Bombay vs. Kathi Kalu Oghad and Ors*¹⁵ and from various American cases to draw a distinction between physical and testimonial evidence. Selvi's case which relied on majority decision in *Kathi Kalu Oghad* is the guiding precedent, here it will be useful to restate the two main premises for understanding the scope of "testimonial compulsion". The first is that ordinarily, it is the oral or written statements which convey the personal knowledge of a person in respect of relevant facts that amount to "personal testimony" thereby coming within the prohibition contemplated by Article 20(3). In most cases, such "personal testimony" can be distinguished from material evidence such as bodily substances and other physical objects. The second premise is that in some cases, oral or written statements can be relied upon but only for the purpose of identification or comparison with facts and materials that are already in the possession of the investigators. In Selvi's case, Apex Court emphasized and clarified that the bar of Article 20(3) can be invoked only when the statements are likely to lead to incrimination by themselves or "furnish a link in the chain of evidence" needed to do so. A situation where a testimonial response is used for comparison with facts already known to the investigators is inherently different from a situation where a testimonial response helps the investigators to subsequently discover fresh facts or materials that could be relevant to the ongoing investigation.^[14] The court opined that the compulsory administration of the Polygraph, Narcoanalysis and BEAP test technique violates the 'right against self- incrimination'. This is because the underlying rationale of the said right is to ensure the reliability as well as voluntariness of statements that are admitted as evidence. Article 20(3) when read with Section 161(2) of the Code of Criminal Procedure 1973, protects accused, suspects as well as witnesses who are examined during an investigation. The test results cannot be admitted in evidence if they have been obtained through the use of compulsion. Article 20(3) protects an individual's choice between speaking and remaining silent, irrespective of whether the subsequent testimony proves to be inculpatory or exculpatory. The results obtained from each of the impugned tests bears a 'testimonial' character and they cannot be categorized as material evidence. Finally, the Court held that Polygraph, Narcoanalysis and BEAP test amounts to testimony because the person who is subjected to these tests is to communicate with something which was known only to him and if it is involuntary, it amounts to testimonial compulsion. If the tests were administered involuntarily it would be violative of article 20(3) and 21 and become unconstitutional.

¹⁴ Ibid.

¹⁵ *State of Bombay Vs. Kathi Kalu Oghad and Ors.*, AIR 1961 SC 1808.

In *Natvarlal Amarshibhai Devani Vs. State of Gujarat and Ors*¹⁶, the Gujarat High Court relying on *Selvi* case, held that apart from the apparent distinction between evidence of a testimonial and physical nature some forms of testimonial acts lie outside the scope of Article 20(3). For instance, even though acts such as compulsorily obtaining specimen signatures and handwriting samples are testimonial in nature, they are not incriminating by themselves if they are used for the purpose of identification or corroboration with facts or materials that the investigators are already acquainted with. The relevant consideration for extending the protection of Article 20(3) is whether the materials are likely to lead to incrimination by themselves or "furnish a link in the chain of evidence" which could lead to the same result. Hence, reliance on the contents of compelled testimony comes within the prohibition of Article 20(3) but its use for the purpose of identification or corroboration with facts already known to the investigators is not barred.

The case of *Selvi vs. State of Karnataka*, presided by a full bench of the apex court finally framed the guidelines as to the use of such techniques and held that no person shall be forcibly subjected to a narcoanalysis, polygraph and brain mapping test against their will, in a criminal case or otherwise, as it is violative of article 20(3) and 21 of the constitution and also of section 161(2) of Cr.P.C. Further, regarding the scope of voluntary administration of such test the court left the scope open for the concerned parties, provided that certain safeguards are followed. Here, it is to be noted that even where the consent is voluntarily given the test results cannot be taken as evidence because the subject does not exercise any control on him during the administration of the test. However, any information discovered on the basis of such tests can be admitted under section 27 of the Evidence Act, 1872.

In this regard, the NHRC, which stands for National Human Rights Commission of India, has published certain guidelines for the administration of polygraph test on an accused in 2000, and in any case where a polygraph, narco analysis, brain mapping is to be followed, the guidelines need to be strictly adhered to.

These are as follows;

- “No Lie Detector Tests should be administered except on the basis of consent of the accused. An option should be given to the accused whether he/she wishes to avail such tests.”
- “If the accused volunteers for a Lie Detector Test, he should be given access to a lawyer and the physical, emotional and legal implication of such a test should be explained to

¹⁶ *Natvarlal Amarshibhai Devani Vs. State of Gujarat and Ors.*, MANU/GJ/0200/2017.

him by the police and his lawyer.”

- “The consent should be recorded before a Judicial Magistrate.”
- “During the hearing before the Magistrate, the person alleged to have agreed should be duly represented by a lawyer.”
- “At the hearing, the person in question should also be told in clear terms that the statement that is made shall not be a ‘confessional’ statement to the Magistrate but will have the status of a statement made to the police.”
- “The Magistrate shall consider all factors relating to the detention including the length of detention and the nature of the interrogation.”
- “The actual recording of the Lie Detector Test shall be done by an independent agency (such as a hospital) and conducted in the presence of a lawyer.”
- “A full medical and factual narration of the manner of the information received must be taken on record.”¹⁷

The Apex Court while dealing with the involuntary administration of narcoanalysis, polygraph examination and the Brain Electrical Activation Profile test techniques for the purpose of improving investigation efforts in criminal cases, opined that the compulsory administration of the impugned techniques constitute ‘cruel, inhuman or degrading treatment’ in the context of Article 21.

VI. CONCLUSION

Maintenance of law and order and prevention of crime is one of the foremost responsibilities of the state and for this purpose they should be given as much leeway as permissible, so that they can provide for their citizens a crime free and civilized society. However, like any other field here also things are not as ideal as it sounds, and in the field of forensic science there is gross violation of human rights in the hands of the investigating authorities who reach up to any extent to conclude their investigation. Therefore, only in certain cases a suspect may be subjected to such tests, where there is no other alternative available, and that too in the stage of investigation, provided it is monitored properly by a procedure established by law.

If we draw an analogy among the three most commonly used forensic methods i.e. polygraph, narcoanalysis, brain mapping, in terms of their legality, we’ll find that brain mapping in which

¹⁷ Guidelines on Administration of Lie Detector Test, National Human Rights Commission, India (28th September 2019, 12:10 PM), <https://nhrc.nic.in/press-release/guidelines-administration-lie-detector-test>

the map of the brain is the result and polygraph in which the result of the test is displayed on a graph, stand on a different footing from the narcoanalysis. The accused on whom the narco test is administered actually makes a statement and that too under the influence of a drug which makes him unconscious. The mind gets selectively conditioned under the influence of the drug and therefore it's said that the subject is compelled to make a testimony. Therefore, article 20(3) of the constitution hits the validity of the narco test on a higher level because there is an element of compulsion involved. Also, it is argued that, in such tests, a drug is induced into the subject's body which can even cause coma in case of an overdose, and therefore, it violates the right of life and personal liberty guaranteed under article 21. Therefore, the courts have ruled that the permission for such test shall be granted only in exceptional cases and such tests shall be conducted in presence of qualified experts.

In *Selvi vs. State of Karnataka*, the legality of these three tests was decided by the apex court and it was held that these tests cannot be administered involuntarily considering the nature of the tests, the technicalities of the procedure involved and the legal position. The court observed that if the tests are conducted involuntarily it would amount to testimonial compulsion and then it would hit the bar of article 20(3), article 21 of the Indian constitution and section 161(2) of the Cr.P.C.

It's important to note the fact that, though the constitution makers may have intended to protect an accused from the hazards of self-incrimination, still they couldn't have intended to put obstacle in the way of efficient investigation of a crime, as it's as much important to protect individual freedom, as it is, to bring the offender to justice.

In every sector, there is a rapid speed of both technical and non-technical advancement and emergence of new ways of getting the job done. With the emergence of new technologies, the criminals have also come up with new methods of committing a crime and time and again the investigating agencies have proved to be ineffective in regulating such crime. In a country like India where the investigating agencies lack full-functioning weapons, flash lights and even enough fuel for patrolling activities, it is no exaggeration to say that they are majorly ill-equipped with the modern methods of investigation. If we look at the current state of law and order in the country it will make us loose our faith from the justice delivery system and hence it can be said for certain that if there's any field which needs reformation, the criminal justice system stands first in line and it's high time we ask our leaders to strengthen it. Lastly, it can be said that, arguments for and against the use of scientific techniques in the investigation of crime will always be there, and it's important to cater to the needs of both, the investigating agencies as well as the rights of the individuals concerned. Further, a middle path needs to be

adopted which is inclusive of both the fundamental rights of the people and the forensic methods of evidence gathering, for a refined, thorough and up-to-date criminal justice system.
