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# Expansion of the Ambit of Neuro Law - Smt Selvi V. State of Karnataka A Milestone

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## ABSTRACT

*In the legal fraternity, deception detection tests (DDT) like narco-analysis, lie detector test, brain mapping, etc. have been one of the most debatable topics. In respect to the admissibility of evidence, rapid spurts in the field of science, law and technology have given rise to new complexities. There is dire need of sophisticated investigation and interrogation techniques. Therefore, various changes have been brought about in the field of investigation due to the major advancements in forensic science. Neuroscience helps in the realization of constitutional values like right against self-incrimination; right to life and personal liberty and right to privacy. In this paper, the author throws light on the concept of neuroscience which is a domain of neurolaw and highlights how this interdisciplinary study affects the scope of jurisprudence. The author also tries to elucidate the developments brought about in forensic science and neuroscience post the Supreme Court's judgment in Smt. Selvi and Ors v State of Karnataka.*

**Keywords:** Brain-Mapping, BEAP, BEOS, Right Against Self-Incrimination.

## I. INTRODUCTION

The German physician Einstein has justifiably said “*it has become appallingly obvious that our technology has exceeded humanity*”.<sup>2</sup> With the constant and continuous development in science and technology, there is a conspicuous and apparent transformation and modification in the modus of carrying out criminal investigations. The standard and traditional techniques of probing a crime have led the way for empirical and scientific systems of investigation. The dynamics of criminal jurisprudence i.e., brain-mapping, narco-analysis, neuroimaging, polygraph, etc. have undergone changes. Nowadays, crimes are perpetrated in highly technical as well as sophisticated and intricate form. The employment of advanced and newest scientific developments can be advantageous to the investigating agencies to correspond with the variegated and mystified “modus operandi” or the manner of crimes and misdemeanors. Regarding this matter, the courts can also take assistance of the expertise of science. Law being

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<sup>2</sup> Ken Makovsky, *Is Technology Exceeding Humanity*, Forbes (May 7, 2012, 3:48PM), <https://www.forbes.com/sites/kenmakovsky/2012/05/07/is-technology-exceeding-humanity/?sh=3ea271a66ea3>.

an instrument of social change is dynamic and therefore needs to keep in consonance with the changing civilization. The responsibility of interpreting the law is vested on the judiciary for a greater good. In order to counter and tackle an organized crime, the method of its investigation, detection and prevention have to be applied synchronously. Neuroscience, a chapter of biological science, works to help in this regard, having numerous inclinations towards law and this inclination results into a new discipline known as Neurolaw. It has inherent capacity to undertake a variety of complex questions of motivation of offences and aids law to realise its objectives. Yet, after considering the various factors, in the Supreme Court's ruling in *Selvi v State of Karnataka*<sup>3</sup>, one of such technique i.e., Brain mapping was not permitted. Nevertheless, the recent developments in the sphere of neuroscience, affects the discernment of the courts to permit brain mapping. The ambit of this paper is to highlight the recent developments in the field of neuroscience after the Apex Court's decision.

## II. THE CONCEPT OF NEUROLAW

The multifaceted study of law and neuroscience, Neurolaw, forms a linkage between brain with law. The augmentation of neuroscience along with law is a matter of neurolaw. The cognitive neuroscience roots out more significance and aptness in jurisprudence to augment its scope. The study calls on a more extensive, precise and comprehensive approach to the legal case taking into consideration significance of the brain that is analogous with for the conceptualization of judicious morality by a suspect or an accused and reasoning. It also reveals the mental element for perpetration i.e., mens rea which is sine qua non and absolutely necessary for conviction of the offender in the court of law. The justice delivery mechanism is made fairer through a scientific approach to mens rea. Neuro law as it is believed would induce a better judicial system. This discipline can radically bring a change to the customs, processes and legal provisions.

### (A) The technique of Brain mapping and right to silence

Recently, among the common masses and legal fraternity, narco-analysis, a psychotherapeutic technique has been one of the most debated topics. The narco-analysis test along with the development of new tools and equipment of investigation has brought about the inception of new tools of interrogation. In all aspects of life, criminal investigation is no more left out to its effects due to the recent advent in the technologies. The scientific forms of investigations like that of narco-analysis in which certain kind of statement is acquired from the person accused of committing the offence might be of evidentiary value. The Indian Evidence Act 1872 is

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<sup>3</sup> Selvi & Ors v State of Karnataka & Anr (2010), 7 S.C.C. 263 (India).

completely silent on such usage of such scientific process. This type of process has often been lambasted against the tenets of the supreme law of the land i.e., the Constitution and nevertheless has been upheld as pre-requisite and fundamental to evaluate certain complicated issues. In a handful of democratic countries, like India, the use of narco-analysis still continues. In most developed as well as democratic countries, this process is not openly permitted for the process of investigation. In India, this test is done by a team which comprises of an audio-videographer, an anestheologist, a forensic or clinical psychologist, a psychiatrist and supporting nurse staffs. The reports regarding the revelations are prepared by the forensic psychologist along with a compact disc containing audio-video recordings. Further, if necessary, the cogency of the revelations is verified putting the person through brain mapping and polygraph tests. Collectively, the narco-analysis tests, polygraph tests and brain mapping tests are known as deception detection tests (DDT) which are advanced interrogation techniques and is a civilized and simple way to conduct investigation. Yet, simultaneously, an individual has to be conscious about its limitations. It contravenes and transgresses the fundamental rights guaranteed U/A 20(3) of the Constitution and also infringes the right to health, the right to privacy guaranteed U/A 21 of the Constitution. The legal principle, right to silence guarantees a person a right to refuse answering questions put forth by court officials and law enforcement officials. In many of the legal systems worldwide, this legal right is recognized either explicitly or by a convention. This right encompasses multiplicity of issues centered on the accused person's rights or the defendants right to refuse to furnish an answer or comment when questioned. Silence is a man's non-communicative aspect. In silence, an individual tries to don a calm composure. An individual in order to lower one's mental capacity, eludes communication and resorts to remain silent. Silence helps to regain confidence and encourages personal strength of conviction, aiding an individual to remain in his being. An extension of this legal principle is mental privacy, which is facet of Article 21 concerning an intrinsic part i.e. right to privacy and stems from Article 20(3) providing immunity against self-incrimination. The consciousness about the right to privacy, promotes right to life and right against self-incrimination. As a basic human right, the constituents of silence of an individual are esteemed and respected by a non- coercive law. This right provides that an accused cannot be forced and pressurized into to furnishing evidence against himself or incriminate himself in front of the court. During the process of investigation, the person accused is vested with this right because this extraneous process conditions the mind and makes the statement involuntary. During the investigation process, the accused is entitled to be silent and any statement procured by employment of coercive methods infringing the person's right to remain silence emanating

from Article 20(3), cannot be permitted to be cited as an evidence in front of the courts. Any statement amounting to a confession produced in front of police, an investigating agency is not acceptable in the courts although such statement of facts is relevant to the case. In India, the judicial pronouncements regarding the elucidation of custody have been expanded to protect the person accused from tyrannical and despotic interrogations. As a matter of fact, still, the investigating authorities are toiling under extreme pressure and arduous circumstances that to deal with and manage on one hand dreaded terrorists to the callous criminals and on the other hand sustain and conserve the security and safety of the common citizens, they make use of a simpler way of drawing out information from an accused by unleashing vicious and brutal techniques of custodial interrogation transgressing the sacrosanct rights and constitutional tenets. The State faces a challenge to maintain a balance.

The main challenge now is that by what means the facts inhabiting the minds of human beings can be extracted without infringing Article 20(3) and violating the fundamental right of an individual. Different branches of science are working towards its objectives which includes the emerging area, neurolaw. This assists the investigating authorities to adhere to the political ideology of rule of law and use scientific temper to conduct investigation. Taking into account, the significance of the 'Brain', which is connected to the formulation of mens rea and reasoning, which is absolutely necessary, a *sin qua non* regarding the conviction in the ambit of penal law, the association between law and matter of neurolaw i.e., neuroscience provides room for the interdisciplinary study of law and neuroscience known as neurolaw, thus establishing the connection of the brain with law. This interdisciplinary study is a new and futuristic endeavor to perceive assimilation between neuroscience, law, and the brain taking heed of the latest discoveries of neuroscience. The accuracy of the evidence is enhanced by Neurolaw and in order to make justice fairer, amplifies the weight of the evidence before the courts. It expands the horizon of jurisprudence and helps in better formulation of judicial decisions, thus making the judicial system fairer. The mind of a person is easily understood by the employment of neuroscience technique. Brain images in the discipline of neuroscience are developed for the purpose of understanding the mind of an individual. Brain mapping is a comprehensive examination of "brainwave frequency bandwidth", a higher manifestation of neuro-imaging. In this test, unique forensic techniques are applied by forensic experts to discover if an accused's brain apprehends things from a crime scene which an innocent man's brain will have no knowledge of. The Society of Brain Mapping and Therapeutics (SBMT) in the year 2013, defined brain mapping "as the study of the anatomy and function of the brain and spinal cord through the use of imaging, immunohistochemistry, molecular & optogenetics,

stem cell and cellular biology, engineering, neurophysiology and nanotech”<sup>4</sup>. The techniques of brain mapping constantly mature and are dependent on the refinement and evolution of image representation, analysis, retrieval and interpretation techniques. By making use of these techniques, facts are cautiously and carefully extracted from an accused person’s mind which otherwise the person is reluctant to furnish and which is often acquired by the investigating agency by the use of proscribed and unpopular third-degree method transgressing the right to silence and other fundamental rights.<sup>5</sup>

### III. THE INTERDISCIPLINARY STUDY-NEUROLAW

The neuroscientific data might hold some significance for a precise and error-free understanding of legal issues. Worldwide, numerous cases with variegated legal concept which bear relationship with the neuroscientific data are growingly reaching to the courts. However, in India, such cases are very few in number, but the shrewd lawyers shield themselves from establishing facts by way of evidence which bear neuroscientific developments. Understanding the dimension of neuroscience having its implications with law is inexorable. This has increased because of the mapping technology employed by the neuro-scientists to recognize the details and facets of the brain’s functioning and its motivation. The method of brain mapping is fast developing. A broad-spectrum of methods and technologies are employed to have an understanding about the numerous “co-relates of the brain” and concepts like purpose, intention, knowledge, dereliction of duty, recklessness, laxity and other motivation of an individual’s mind. The nervous system as showed by the neuro-scientists is frequency oriented as against amplitude oriented.<sup>6</sup> P300 or P3 or “Late Positive Complex” or “Brain-Fingerprinting Test” is a type of brain mapping technique. In this kind of test, the accused is not subjected to questions, rather he is persuaded to sit in a “stimulated potential recording machine” and objects in connection to the crime scene is shown to him. The accused is also made to perceive sounds pertaining to scene of the crime. If an individual has been at the location associated with the crime, in the mode of brain mapping, the sensors from the accused person’s head collect the event-related potentials. The exactness of brain mapping technique is 100 percent.<sup>7</sup> As discussed earlier, this technology traps and pins down the frequency of the brain. “Technically explaining, Brain Mapping involves confrontation with a stimulus of special significance with an electric signal known as P300 emitted from an individual’s brain,

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<sup>4</sup> *Brain Mapping*, Wikipedia (May 16, 2021, 05:33PM), [https://en.wikipedia.org/wiki/Brain\\_mapping](https://en.wikipedia.org/wiki/Brain_mapping).

<sup>5</sup> Sidhartha Sekhar Dash et al., *Expanding Frontier of Neurolaw: Post Smt Selvi v State of Karnataka*, 7 JCR. 4907, 4908 (2020).

<sup>6</sup> Victor H Fischer, *Is Nervous System Amplitude or Frequency Oriented?*, 23 JAMA, 30-31 (1962).

<sup>7</sup> *Supra* note 5.

beginning approximately 300 million milliseconds after the confrontation. Since it is based on EEG signals and graphs, the system does not require the subject to speak at all and he in a way continues to exercise his right to keep silent. The suspect wears a special hair band with an electronic sensor that measures the EEG from several locations on the scalp”.<sup>8</sup> The computer screen is shown to the suspect or he is administered to view materials like certain objects, pictures, etc.

#### **(A) Background of *Smt. Selvi and Ors v State of Karnataka***

In *Smt. Selvi and Ors v State of Karnataka* <sup>9</sup>, among various methods of investigation, this technique of brain mapping was called into question. This case deals with the legal issues relating to the involuntary administration of various scientific techniques viz. narco-analysis, lie detector test and BEAP test (Brain Electrical Aviation Profile) for enhancing and ameliorating the process of investigation in criminal cases. The case emphasizes on crucial legal issues like substantive due process, right to privacy, right to life and personal liberty and right against self-incrimination. In the history of Indian judiciary, the Selvi case is a “milestone” judgment and on behalf of humanity, it gives a firm fight against humanity.

The major legal issues raised before the court of law were whether the ‘right against self-incrimination’ encompassed U/A 20(3) of the Indian Constitution is violated due to the involuntary administration of the impugned methods and techniques of investigation? Whether the usage of such impugned techniques of investigation gives rise to possibility and fear of incrimination for the accused? Whether such results obtained from the impugned techniques of investigation add up to “testimonial compulsion”? Whether personal liberty as understood U/A 21 is reasonably restricted by the employment of such impugned techniques?

The three-judge bench including K.G Balakrishnan, J. JM Panchal and RV Raveendran opined that such involuntary and forced administration of the impugned investigating techniques infringes the right against self-incrimination.

*“This Court has recognized that the protective scope of Article 20(3) extends to the investigative stage in criminal cases and when read with Section 161(2) of the Code of Criminal Procedure, 1973 it protects accused persons, 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*

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<sup>8</sup> Rajbir Deswal, *Supreme Court Ban on Narco test*, The Tribune, (May 9, 2010), <https://www.tribuneindia.com/2010/20100509/edit.htm#1>

<sup>9</sup> *Supra* note 3.

*speaking and remaining silent, irrespective of whether the subsequent testimony proves to be inculpatory or exculpatory.”<sup>10</sup>*

*The court opined that the forcible administration of such impugned techniques of investigation infringes the basic human right of a person, amounting to cruelty and encroachment on mental privacy. The bench ruled that Article 21(3) which talks about substantive due process is violated due to the use of the impugned techniques. The bench held that “we hold that no individual should be forcibly subjected to any of the techniques in question, whether in the context of investigation in criminal cases or otherwise. Doing so would amount to an unwarranted intrusion into personal liberty. However, we do leave room for the voluntary administration of the impugned techniques in the context of criminal justice, provided that certain safeguards are in place. 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 the responses during the administration of the test.”<sup>11</sup>*

*The Apex court spotlighted the guidelines laid down by the NHRC for administering the polygraph test or the lie detector test on the accused. Section 161(2) of the Code of Criminal Procedure deals with the right of the accused to remain silent and that the person should not be compelled to furnish any testimony that may yield penal provisions against the accused. The three-judge bench opined that “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. Article 20(3) aims to prevent the forcible conveyance of personal knowledge that is relevant to the facts in issue. The results obtained from each of the impugned tests bear a testimonial character and they cannot be categorized as material evidence.”<sup>12</sup> “The provision of Article 20(3) read with the provision of Section 161(2) of the CrPC safeguards against the compulsory extraction of oral testimony at the stage of an investigation.”<sup>13</sup>*

*The court held that the Brain Electrical Aviation Profile test infringes the right to mental privacy, a basic concept of right to silence emanating from the rule against right against self-incrimination or testimonial compulsion under Article 20(3) of the Indian Constitution.*

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<sup>10</sup> *Supra* note 3.

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*



#### IV. ADVANCEMENT IN NEUROLAW POST SELVI CASE

*“An individual’s decision to make a statement is the product of a private choice and there should be no scope for any other individual to interfere with such autonomy, especially in circumstances where the person faces exposure to criminal charges or penalties.”<sup>14</sup>*

*Neuroscience has progressed in the technique of brain mapping. An additional evolving type of brain mapping technique is “Brain Electrical Oscillations Signature Profiling” or the BEOS system. In this technique of interrogation, an accused or a witness, undergoing a non-invasive technique, is not subjected to any stress. Rather, the accused is made to listen numerous probing facts given to the accused by the system without asking any response. This system eliminates the apprehension of the Apex court most specifically, the false implication of an accused owing to the fact that he was exposed to the “test-stimuli” before by having of knowledge the facts from the media reports or the disclosure of the facts from investigating authorities or his link or association to the misdemeanor as a bystander.*

*This method of BEOS identifies remembrance. “The BEOS system was developed for examining a suspect with least amount of stress of being tested as the procedure does not require any response from the subject, except to listen to the probes presented by the system. The verbal statements presented by the system cue the remembrance of an original experience provided the person has had it. Otherwise, there will be no remembrance cued by the statements, even if the person knows about the episode.”<sup>15</sup> If an individual has experience-based knowledge, it can be differentiated from cognizance of familiarities. “The results of BEOS are obtained in form of electrical activity from the brain related to probes....the test expects the subject to remain silent and only listen to a narrative presented as short verbal statements (probes) in sequence, subject need not give any oral response to the stimulus, but the brain waves indicate that the brain has some information in regard to these items.”<sup>16</sup>*

#### V. CONCLUSION

Over the period of time, in the era of globalization, as technology advances, the laws also encounter developments. Technology along with law and science hold great relevance in our lives. The development in neuro-science is steadily expanding and broadening to understand the interconnection of the neuron to the behavioral aspects of a person as well as his mental

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<sup>14</sup> *Supra* note 3.

<sup>15</sup> C.R. Mukundan et al., *Brain Electrical Oscillations Signature Profiling (BEOS) for Measuring the Process of Remembrance*, 8 ECNE, 217-230 (2017).

<sup>16</sup> Anjali Yadav & M.S. Dahiya, *Brain Electrical Oscillation Signature Profiling (BEOS) - Effective as an aid to investigation*, J Forensic Res (2012).

aspect. The above findings throw light on the fact that neuro-science, a matter of neurolaw will bring changes in the nature and scope of jurisprudence, making positive contributions to the judicial system. The Supreme Court's decision in *Smt. Selvi and Ors v State of Karnataka*, is influenced by this recent development in the domain of neurolaw

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