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Neural Surveillance and Indian Evidence Law: Brainwave Data be Admissible as testamony?

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Abstract

Neurotechnology has crossed the line between science and law. So, the courtroom has become the stage for a new debate about the properties of knowledge in which the human brain is both a witness and a source of evidence at the same time. Neural Surveillance and Indian Evidence Law: Can Brainwave Data be Admissible as Testimony? investigates the extensive legal and moral issues that the use of neural data, particularly brainwaves, as acceptable evidence under India's changing evidentiary laws, will have. The introduction of the Bharatiya Sakshya Adhiniyam (BSA), 2023, which revises and substitutes the Indian Evidence Act of 1872, has provoked the debate concerning "relevance," "authenticity," and "testimonial compulsion" to take place urgently, at least in the light of the availability of neurotechnologies such as EEG, fMRI, and Brain Electrical Oscillation Signature (BEOS) profiling. The current work critically examines the position of brainwave data as testimony under the interpretive framework of BSA, 2023, a study that goes beyond the technicality of admissibility to probe into the constitutional morality of brain observation. It is based on the rights enshrined in Articles 20(3) and 21 of the Indian Constitution and raises the issue of whether the extraction of cognitive signals, mostly done without conscious will, violates the person's right against self-incrimination and the developing doctrine of mental privacy.Using a multidisciplinary strategy that combines neuroscience, evidentiary law, and human rights theory, the study reviews the reliability of the knowledge gained, the legitimacy of the methods used, and the worth of the evidence obtained from the brain. It argues that even though the BSA, 2023 wants to unify the standards of admissibility of evidence with the advancements in technology, the application to brainwave data still requires subtle judicial interpretation and strong procedural guarantees. The paper, in the end, proposes a new evidentiary model based on neuro-rights that supports cognitive liberty and human dignity, thus ensuring that the quest for truth does not infringe on the freedom of thought.

Keywords - Constitutionality, Middle-economies, Tax Policy, Socio-economic Rights, Social-Contract, Fiscal Laws and Public Participation

I. INTRODUCTION

In the 21st century we have seen a great coming together of neuroscience and law which has given rise to what scholars refer to as neurolaw a field that looks at how brain science may transform legal reasoning and evidentiary standards. Also we have seen the growth of technology in the courtroom which now goes beyond the use of fingerprints and DNA to the mapping of brain waves.[498] In this context courts are also dealing with the issue of whether the human brain itself may put forward as a proper piece of evidence. In India we have seen this issue come to

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[498] Stephen J. Morse, *Brain Overclaim Syndrome and Criminal Responsibility: A Diagnostic Note*, 3 Ohio St. J. Crim. L. 397 (2006)

the fore since the passage of the Bharatiya Sakshya Adhiniyam (BSA) 2023 which in turn amends the Indian Evidence Act of 1872 and puts in place a more modern framework for what is admissible and what is to be used as proof.[499] The Indian Supreme Court's historic ruling in *Selvi v. State of Karnataka (2010)*[500] represented a watershed moment in the ongoing discussion, when it held that involuntary narco-analysis, polygraph, and BEOS tests violate the right to mental privacy and personal liberty as guaranteed by Article 21.[501] However, the ruling allowed for the voluntary use of such tests, provided that the subject provides informed consent. This continues to raise jurisprudential and ethical questions, particularly as neurotechnologies become more sophisticated and invasive. In this framework, the Bharatiya Sakshya Adhiniyam, 2023 offers a way of thinking not simply about a procedural change, but as a normative instrument that relates to constitutional morality.[502] In its embrace of digital and scientific evidence, the Act represents India's effort to harmonize its evidentiary regime with global technological advances. Nevertheless, the admissibility of brainwave data cannot be engaged with simply through the technical criteria of relevance or reliability; it requires a more robust engagement with philosophical notions surrounding human dignity, cognitive liberty, and thought autonomy.[503] In this context, the Bharatiya Sakshya Adhiniyam, 2023 should be understood as not merely a change in procedure, but rather as a normative tool that functions alongside constitutional morality. The focus on digital and scientific evidence[6] indicates India's effort to align its rules of evidence with the technological across the globe and contemporary realities. However, the valid use of brainwave data must be based on more than a technical notion of relevance or reliability; it requires philosophical engagement with considerations of human dignity, cognitive liberty, and the autonomy of thought.

Thus, this paper aims to question if neural data can take the form of testimonial evidence under India's renewed evidentiary framework. It is argued that the utilization of brainwave based technologies can assist in the process of truth-finding, but the unquestioned use of such technologies threatens to erode the presumption of innocence, including the right to mental sovereignty. Therefore, it is important that a principled balancing of justice and cognitive freedom occurs to ensure technology responsiveness of the law, but grounded in ethics.

II. NEURAL SURVEILLANCE: SCIENCE AND THEORY

The recent growth of neuroscience has evolved our concept of the human brain from merely a biological organ to a complex storehouse of cognitive information (data). Neural surveillance, broadly defined, is the detection and interpretation of brain activity in a way that derives thought, intentions, or memories.[504] At the heart of this area of study is brainwave data that entails patterns of electrical activity in the brain, measured via various neurometric technologies, such as electroencephalography (EEG), functional magnetic resonance imaging (fMRI), and brain

[499] The Bharatiya Sakshya Adhiniyam, No. 46 of 2023, Acts of Parliament, 2023 (India).
[500] AIR 2010 SC 1974, (2010) 7 SCC 263
[501] Mukundan, C.T., *Brain Electrical Oscillation Signature Profiling for Crime Investigation,* 8(2) Indian J. Forensic Sci. 10 (2009).
[502] Constitution of India, art. 20(3).
[503] *Supra* n.3
[504] *Supra n.4*

electrical oscillation signature (BEOS) profiling.[505] EEG provides the electrical oscillation of ions generated by a firing neuron, producing a pattern of brainwave data. EEG reports patterns of brainwave data or rhythms, including alpha, beta, theta, and delta rhythms, mapped to mental states of consciousness ranging from alertness to deep sleep. fMRI reports localized change in blood oxygenation, therefore producing spatially accurate but temporally slow data to profile neural activation in association with thought.[506] BEOS profiling is a newer forensic approach that claims to produce a unique profile of brain wave data, or "signature," that indicates a person has recognized a stimulus and has memory of that stimulus. As such, BEOS is responsive to the detection of concealed memory or knowledge stored in the brain.[507]

Nevertheless, recording and interpreting data from neurons is not a simple process. Neural signals are probabilistic by nature and are always subject to physiological, psychological, and environmental effects.[508] Thus, drawing conclusions about cognitive states from brainwave activity relies on complex statistical modeling and expert interpretation, bringing into play issues of objectivity and dependence. In a legal context, this represents a new source of evidentiary challenge. While traditional evidence documentary, oral testimony, and physical objects is externalized and observable, cognitive evidence arises from the unique inner, subjective experience of the mind.[509] The difference between cognitive evidence and traditional evidence is conceptually significant.[510] Traditional evidence depends on voluntariness, deliberate form of communication, or some actual manifestation, whereas cognitive evidence can be involuntary, passive, and inextricably intimate. For example, a witness may consciously testify in court, but a participant in a BEOS test may involuntarily reveal neural responses that they do not consciously control, causing the line to blur between voluntarily testifying and involuntarily producing evidence. This raises important epistemological questions, including can involuntary neural responses meet established legal standards for relevance, reliability, and admissibility?[511]

The theoretical foundations for neural surveillance in law are emerging within the realm of ethical and human rights. Mental privacy that is, the right to regulate access to one's own mental states has risen to prominence as a foundational principle of U.S. constitutional and international human rights law.[512] Cognitive liberty, while a more specific term, encompasses one's freedom to think, engage in intentional action, as well as to choose whether and what mental states to manifest externally. Ethical schemes concerning neural surveillance garner attention toward values such as informed consent, proportionality, and harm minimization to suggest a fundamental tension between governmental interests in ascertaining truth and respect for the dignity of individuals.

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[505] Niedermeyer, E., & da Silva, F.L., *Electroencephalography: Basic Principles, Clinical Applications, and Related Fields*72–95 (6th ed. 2012).

[506] Huettel, S.A., Song, A.W., & McCarthy, G., *Functional Magnetic Resonance Imaging* 45–60 (2nd ed. 2009).

[507] Ibid; see also Farah, M.J., *Neuroethics: The Ethical, Legal, and Societal Impact of Neuroscience,* 16 Annu. Rev. Psychol. 187 (2005).

[508] Greely, H.T. et al., *Neuroscience and the Law: Brain Scans, Mind Reading, and Criminal Responsibility,* 36 J. L. Med. & Ethics 410, 414–15 (2008).

[509] *Ibid*

[510] Morse, S.J., *Brain Overclaim Syndrome and Criminal Responsibility: A Diagnostic Note*, 3 Ohio St. J. Crim. L. 397, 402–03 (2006).

[511] *Ibid*

[512] K.S. Puttaswamy v. Union of India, (2017) 10 SCC 1 (India); see also Ienca, M., & Andorno, R., *Cognitive Liberty and the Right to Mental Privacy*, 14 Life Sci. Soc'y Pol'y 5 (2018).

These values intersect with legal doctrines, such as self-incrimination and procedural fairness, which, when considered, show that even the technical introduction of brainwave information must reckon with broader normative concerns.[513]

Overall, the area of mind-reading neuroscience offers the technical capacity to obtain cognitive information, but converting it into evidence in the courtroom requires serious consideration of its conceptual and ethical implications. Although brainwave patterns may someday provide insight into cognitive processes, they are not transparent windows into the mind because they require interpretation, and all interpretation is subjective. It is important to distinguish cognitive evidence from normal evidence, and to examine neural surveillance through the lens of mental privacy and cognitive liberty, when analyzing it for admissibility under Indian law, specifically under the Bharatiya Sakshya Adhiniyam (BSA), 2023.

III. LEGAL FRAMEWORK IN INDIA

The Indian legal system has historically emphasized the role of physical and sworn testimony in trials and areas of adjudication, in furtherance of codified laws and protections provided for under the Constitution. The enactment of the Bharatiya Sakshya Adhiniyam (BSA), 2023 has transformed the landscape of evidentiary procedures, as it expressly articulates provisions to enable admissibility for scientific evidence, electronic evidence, or evidence provided by experts.[514] The BSA, 2023 strives to maintain continuity with the key principles of the Indian Evidence Act 1872, while also establishing nuanced standards for proof of relevance, admissibility, and authenticity for information derived from technological means, creating a possible pathway for where *"neural evidence"* could be admissible in proceedings.[515] The important sections on scientific and testimonial evidence are Sections 45 to 50, which entail the conceptual importance of expert opinion regarding reliability and probative value of complex data.[516] Section 45 states that if scientific, technical or specialized knowledge is useful to help explain the facts at issue, expert opinion may be admissible, both the reliability of the methodology and the expertise of the person giving the opinion are important.[517] Likewise, Sections 59 to 65 provide admissibility criteria for electronic and digital evidence which primarily concern the integrity, authenticity and continuity of chain of evidence.[518] Neural evidence, seized by EEG, FMRI or BEOS profiling, could likewise be treated similar to scientific or electronic evidence, which allows one to conceptualize the BSA as providing legal scaffolding for future admissibility upon sound validation and expert opinion.[519]

Constitutional protections function simultaneously to safeguard individual rights associated with new modes of evidence. Article 20(3) establishes the right against self-incrimination, requiring

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[513] Clausen, J., & Levy, N., *Cognitive Enhancement and Ethical Governance: Guidelines for Neurotechnology Use*, 18 Neuroethics 1, 8–9 (2025).

[514] *Supra n*.2

[515] *Ibid; see* also S.S. Shukla, *Modernization of Evidence Law in India*, 12 J. Indian L. & Soc'y 45 (2023).

[516]BSA, 2023, §§ 45–50

[517] *Ibid,* § 45.

[518] *Ibid,* §§ 59–65.

[519] *Supra* n. 4

that an individual cannot be compelled to testify if it could incriminate them.[520] Brainwave data which is gathered involuntarily represents a novel concern to this constitutionally guaranteed right: involuntary neural activity can disclose information without verbal disclosure, raising the issue of whether permitting the utilization of brainwave data involves a form of indirect compulsion.[521] Article 21 protects the right to life and personal liberty, and this right has been defined broadly to encompass mental privacy and bodily inviolability.[522] If the judiciary finds that these concepts apply, as in the case of *K.S. Puttaswamy v. Union of India*, evidentiary attempts at using brain wave-derived cognitive state cognition without consent constitutes a breach of fundamental rights.[523] Article 14 ensures entitlement to equality under the law and to due process, requiring courts to seek to treat novel scientific evidence equitably and consistently.[524]

Incorporating neural evidence with the categories recognized by the BSA oral, documentary, and digital creates both conceptual and procedural problems. Oral evidence under the BSA involves articulation and control over what is conveyed through the spoken word; on the other hand, documentary evidence assumes a fixed recording of information. Neural data complicates classification however, as it is intangible, objective, and potentially involuntary.[12] One way to accommodate neural data is to categorize it similarly to digital or electronic evidence, such as recorded biometrics or physiological recordings, and use the procedural protections from the BSA, 2023, Section 63-65.[525] Expert interpretation would be the rough equivalent of *"testimonial mediation,"* and analysis of the neural data could serve to translate raw neural activation data into potentially admissible claims about recognition, lying, and memory. Subject to all this, the consideration of the neural evidence must be assessed closely by courts admitting it into evidence. The courts will need to assess whether: (1) methods employed have a scientific rationale for validity; (2) informed consent, if required, was obtained; and (3) the legal implications from relevant constitutional precedents and rights provide a fundamental protection for the probative value of the evidence. By codifying rigorous protection against scientific and digital evidence, the BSA, 2023, offers a principled framework for the accommodation of neural data, but implementation will require an equitable arbitral balance regarding innovation reliability, and the fundamental rights at stake.[526]

Ultimately, India's revised evidentiary regime under the BSA, 2023, allows statutory and procedural avenues to introduce complex scientific evidence, including neural data, to legal proceedings. However, this interaction with constitutional rights most notably those against self-incrimination and of protection against invasion of mental privacy will require principled and careful judicial interpretation in such a way to ensure that technological improvements do not create a gap in maintaining these key freedoms.

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[520] Constitution of India, art. 20(3)
[521] Supra n.1
[522] Constitution of India, art. 21.
[523] (2017) 10 SCC 1 (India)
[524] Constitution of India, art. 14.

[525] BSA, 2023, §§ 63–65.

[526] *Ibid,* §§ 45–50, 59–65.

IV. CASE LAW AND JURISPRUDENTIAL TRENDS

Whether brainwave evidence or neural data can be lawfully admitted in the Indian courts needs to be understood in light of judicial pronouncements, particularly *Selvi v. State of Karnataka (2010)*[527]. The Constitutionality of scientific techniques such as narco-analysis, polygraph tests, and Brain Electrical Oscillation Signature (BEOS) profiling were analyzed by the Supreme Court of India in Selvi. The Supreme Court held, among other findings, that compelling an accused to undergo a procedure that extracts mental data without consent is a violation of Article 20(3) of the Constitution which protects against self-incrimination.[528] The Supreme Court concluded that the involuntary extraction of mental data also violates the right to personal liberty and mental privacy protected by Article 21.[529] The Selvi judgement is significant to facilitate an exposition concerning the legal position of neural evidence in India. The Court indicated that there is a conceptual distinction between testimonial compulsion and physical evidence and cautioned that any procedure that probes into the mental processes of a person is testimonial compulsion.[530] This reasoning obviously has consequences for the admissibility of neural evidence and/or brainwave data, as all such technologies generate the cognitive or subjective states of subjects.

Viewed comparatively, jurisdictions like the United States and the European Union have been equally careful. The Fifth Amendment of the U.S. Constitution prohibits a person from being compelled to be a witness against themselves.[531] The U.S. Supreme Court made this clear in *Schmerber v. California (1966)*, when it stated physical evidence (like blood draws) could be admitted, but "testimonial" evidence (evidence about cognition) was protected from compulsion.[532] The European Court of Human Rights (ECHR) echoes this human dignity and mental privacy principle in the context of Article 8 the European Convention on Human Rights.[533] The case law from these jurisdictions illustrates that the world is beginning to converge on recognizing cognitive liberty and mental integrity as fundamental human rights. Accordingly, when clothed in the veil of confidentiality, Indian courts generally should exercise the same degree of prudence as these jurisdictions, especially as they adapt to new forms of neurotechnology. It is also imperative for the integrity of the judicial process and individual autonomy that the use of neural data is always based on voluntary and informed consent.

V. ADMISSIBILITY AND EVIDENTIARY CHALLENGES

The introduction of brain-wave or neural evidence in Indian courts depends both on reliability and on the constitutionality. The Bharatiya Sakshya Adhiniyam (BSA), 2023 specifies (in section 45) that an expert opinion is relevant when the Court must form an opinion upon a point of science or

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[527] (2010) 7 SCC 263.

[528] *Ibid.*, para 160.

[529] *Ibid.*, para 221.
[530] *Ibid.*, para 175.
[531] U.S. Const. amend. V.

[532] 384 U.S. 757 (1966).
[533] *S. and Marper v. United Kingdom*, App. Nos. 30562/04 and 30566/04, ECHR (2008).

technology.[534] Neural surveillance and brain-wave data, then are expert scientific opinion. However, in order for that evidence to be admissible it must pass the test of scientific validity and reliability, along with proper procedures. One of the major evidentiary issues is the Daubert-like reliability examination whether the scientific methodology has been empirically tested, subjected to peer-review, and is generally accepted in the scientific community.[535] Brain-wave data, meaning both the technology and interpretation will be subject to scrutiny as to accuracy, error rates, and reliability/repeatability. Courts must also be assured that the neural data being evidence is not mere speculation or probabilistic, but backed by verifiable and objective science.

Procedural safeguards are also of equal importance. The verification of neural data requires a strict chain of custody proof that brainwave recordings have not been altered, manipulated, or misread.[536] The digital and biometric evidence would need to be as admissible as any human-expert testimony, and that must be substantiated by sound forensic protocols, and evidence of transparency in collection, preservation, and testing. The BSA, 2023, emphasizes digital records accuracy without discrepancies and requires electronic evidence to be accompanied by certification, according to Section 63(4).[537] Even with its potential, neural evidence presents serious ethical and legal dangers. Over-reliance on neuroscience data can lead to deterministic reasoning where presumption of innocence and free will are diminished. Evidential cognitive data may also be vulnerable to bias or contextual misinterpretation of experts or judges, who may not fully understand it. The ethical dilemmas about going into the human mind as an evidential site raise fundamental questions of autonomy, dignity, and consent, central to the values espoused by the Constitution of India and Articles 14, 20 (3), and 21.[538]

Given these difficulties, courts must take a careful, but progressive stance. The inclusion of neural surveillance evidence must be accompanied by education for judges, ethical safeguards and an assurance that procedural fairness is maintained so that technology supports because of rather than undermines, the administration of justice.

Ethical and Human Rights Considerations

The intersection of neural surveillance and law raises fundamentally important ethical and human rights issues, especially those regarding the sanctity of mental privacy and cognitive liberty. Within the Indian constitutional context, mental privacy is legally recognized as a part of the expansive reading of right to life and personal liberty in Article 21. The Supreme Court in Justice K.S. Puttaswamy (Retd.) v. Union of India (2017) held that privacy is a fundamental right of all individuals. This right encompassed privacy in a physical sense, in an informational context, and in decision-making.[539] Hence, in a logical extension, we can consider mental privacy the protection against involuntary entry to one's thoughts or neural data as an aspect of the right to privacy.[540] Discourse emerging from within neuroethics and international law has introduced *'neuro-rights'*, which aim to protect individuals against arbitrary access, manipulation, or

[534] *Supra n.*20
[535] Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993).
[536] State of Rajasthan v. Kashi Ram, (2006) 12 SCC 254.
[537] Bharatiya Sakshya Adhiniyam, 2023, s. 63(4)
[538] *Supra* n.3
[539] *Supra n.*25
[540] *Supra n.*26

surveillance of mental processes.[541] Chile, for example, has taken a proactive step in acknowledging neuro-rights as part of its constitutional protections and the Supreme Court has subsequently ruled that neuro-rights should be considered fundamental human rights.[542] Other organizations, like UNESCO and the OECD, have been working to develop normative frameworks that address ethical limits on the use of neural or brain data. Both organizations recommend principles of dignity, autonomy, and fairness.[543] In terms of Indian context, a framework that identifies neuro-rights is missing and consequently the regulation of neural evidence is left reliant on constitutional protections and the interpretation of statutes included in the Bharatiya Sakshya Adhiniyam (BSA), 2023. While the state has a legitimate social interest in finding the truth and preventing crime, it has no right to override an individual right to cognitive freedom. The compulsory disclosure of neural data and compelled brainwave tests, would violate the right against self-incrimination under Article 20(3) and the right to mental integrity under Article 21.[544]

The way to find a balance between these contending interests is for the courts to adopt a human-rights-based approach to ensure justice-seeking does not come at the detriment of individual autonomy. Judicial oversight, informed consent, and ethical review should be normative principles in a legal architecture governing neural evidence. As India stands at the cusp of a neuro-technological age, it is our first duty to protect the sanctity of human thought, and to transform "mental privacy" from an aspirational ideal to an enforceable constitutional right.

VI. DISCUSSION AND PROPOSED FRAMEWORK

The debate regarding the admissibility of brainwave data in India must be approached with caution so that scientific innovation is developed without compromising constitutional and human rights. While neural surveillance technologies have the potential for advancing forensic truth-finding, their admissibility must be approached with ethical and legal constraint. Specifically, a measured admissibility framework should be developed creating policies in three fundamental areas: scientific reliability, procedural fairness, and cognitive liberty. First, scientific reliability requires brainwave data to satisfy criteria for empirical validity and reproducibility. That is, the courts must adopt Daubert-style analysis to assure that only those neurotechnological methods that are peer-reviewed, statistically sound, and accorded consensus by recognized experts can be considered in evidence.[545] Expert evidence relating to neural could only be admissible subject to the limitations imposed by Section 45 of the new Bharatiya Sakshya Adhiniyam (BSA), 2023, exposes this court should assess the persuasiveness of the expert evidence, taking into account both the qualifications of the expert and the reliability of the method or process in developing that evidence. Bharatiya Sakshya Adhiniyam (BSA) is 2023.[546]

Second, procedural fairness must be guaranteed through sufficient precautions. A subject's informed consent should be required before neural data can be collected and used, and there

[541] Rafael Yuste et al., *Four Ethical Priorities for Neurotechnologies and AI,* Nature 551 (2017): 159–163.
[542] Chilean Constitutional Amendment on Neuro-Rights, Law No. 21.383 (2021).
[543] UNESCO, *Recommendation on the Ethics of Artificial Intelligence* (2021);OECD, *Recommendation on Responsible Innovation in Neurotechnology* (2019).
[544] *Supra n.*3
[545] *Supra n.*38
[546] *Supra n.*20

should be judicial safeguards in place to ensure that participation is voluntary and free from coercion. Legal safeguards, such as the chain of custody, data authentication, and digital integrity measures mentioned in sections 63 and 65 of the BSA, must be rigorously implemented to minimize the potential for tampering or misuse of brainwave recordings.[547]

Third, a neuro-rights–based evidentiary framework should be introduced that recognizes cognitive liberty as a right within the Indian legal framework. This framework would recognize mental privacy as an *'extension'* of Article 21 and of the right against self-incrimination in Article 20(3). This paradigm would also elevate the Indian legal standard to an emerging international standard, as described in UNESCO's and the OECD's neuroethical recommendations and on recent neuro-rights legislation in Chile.[548]

To implement these principles, some guidelines for both judges and practitioners will be necessary. Judicial colleges should provide specialty training on neuroscience and evidentiary law to judges and practitioners. Courts need to establish panels of experts to assess the admissibility of neural evidence in a manner similar to the manner in which forensic boards assess the admissibility of DNA evidence and cyber forensics. Ultimately, however, a law reform process needs to be undertaken in order to draft a *"Neuro-Evidence Protocol,"* in order to align neural advances with the constitutional obligations to dignity and autonomy. The careful admissibility of brainwave data should not demonstrate the loss of human freedom, but its reinstatement ensuring that the pursuit of truth in the courtroom does not breach the sanctity of the human mind.

VII. CONCLUSION

The study of neural surveillance and its interaction with Indian law of evidence is a complex but vital engagement of the intersections of technology, law and human rights. This study emphasizes that neuroscience does present new opportunities to understand cognition and behaviour, but any consideration of the admissibility of brainwave data as evidence before Indian courts must be undertaken with utmost caution. The Supreme Court decision in Selvi v. State of Karnataka (2010) firmly stated that the mandatory extraction of cognitive mental states is in violation of guarantees under the Constitution of India to protect individual liberty and against self-incrimination.[549] This implies that any form of evidence involving brainwave data must respect the concepts of voluntariness, consent and the right to mental privacy.

Under the Bharatiya Sakshya Adhiniyam (BSA), 2023, Sections 45 and 63 provide the statutory framework for permitting expert evidence and electronic records.[550] However, the unique nature of the neuroscience data, in relation to both the digital and cognitive realm, warrants stricter evidentiary requirements. Courts must be exacting in reviewing these reasonable forms of evidence based on reliability, authenticity, procedural safeguards, and so on, before they will even consider admissibility. In addition, the BSA even recognises electronic and digital records, and this presents the opportunity to build unique conditions to accommodate how neural data should be an admissible form of evidence in the law of evidence, and to this end may be accomplished via a legal framework, or ideally an amendment would be a concrete means; all else aside, a

[547] *Supra n.28*
[548] *Supra n.*46
[549] *Supra n.*3
[550] *Supra n.*21

unique '*Neuro-Evidence Code'* would a legally complex imperative ultimately context for, to consider mental privacy laws and cognizable vs. non-cognizable brainwave data being admissible. From a standpoint of ethics and policy, India must prioritize a neuro-rights framework that offers explicit protections for mental integrity, cognitive liberty, and autonomy. The underpinnings of this framework may consist of judicial training, interdisciplinary research, and ethics review boards that ensure scientific progress does not violate constitutional morality. The experiences of other nations from Chile's neuro-rights constitutional amendment to UNESCO's ethical considerations provide examples of balancing scientific innovation and constitutional morality.[551] In the future, research should direct its attention toward developing standard forensic protocols for neural data, neuro-legal literacy for judges and practitioners, and research on the use of AI to assist in interpreting brain waves. As neuroscience and law start to converge, India is at a key moment-don't reject innovation; develop a rights-respecting system for evidence. The ultimate objective must remain in focus- preserving the sanctity of the human mind while allowing for truth and justice that are dignified and free.

[551] *Supra n.*45