

STRUCTURING NEURAL RIGHTS

—Ashit Kumar Srivastava*, Priyanshi Jain** &
Pragya Richa Tiwary***

ABSTRACT

There surely has been a rise of techno-perspective of Constitutional rights. This has largely to do with the leaping growth of technology across the globe, on this front, brain mapping technologies have also seen a tremendous growth. It feels like yesterday, where the world was still consistently questioning about personal data protection, but certainly within few years, the discourse has shifted to protecting neural rights, it says a lot about the technology-savvy world we live-in, and in granularity also raises questions as to how the legal infrastructure will respond to this problem. There is no doubt that law as an enterprise attempt to address questions of social evil, but unlike, earlier times wherein a social evil will take time to generate, the technology dynamics gives rise to social evils within a second, just to name a few: digital disparity, discrimination, biasness, profiling (all types of it). Therefore, the engineering aspect of law that is meant to bring social justice has to be in sync or at least a step closer to the technological challenges. The introduction of much anticipated Neuralink is one such challenge, in fact, Neuralink is just one of the many neuro technologies meant to study the neural movement of the human brain, draw a pattern of human emotion and in some cases even to stimulate human emotions. On these lines, the authors will analyze the scope of the neuro-rights, their normative origins and what constitutional measures will be needed for them to be safeguarded.

Keywords: Neurotechnology, Neurorights, Brain Computer Interface, Mental Privacy.

* Assistant Professor of Law at Dharmashastra National Law University, Jabalpur.

** Student at Dharmashastra National Law University, Jabalpur.

*** Student at Dharmashastra National Law University, Jabalpur.

1. INTRODUCTION

The novel concept of “*Neuro-Rights*”, a possible subset of the digital right, is one of the fastest growing discourses across the globe. Especially, knowing that the scope of the right has primarily increased due to the rapid technological changes in the neuro-technological development, gradually a large portion of the human brain is capable of being mapped. This mapping capacity of the technology has led to question the safety of the cerebral activity. The right moves beyond the premise of ‘*Mental Privacy*’ and attempts to locate safety for the neuron-movement. It is both centered around the concepts of ‘*Dignity*’ and ‘*Privacy*’, and to some extent overlaps between the two concepts as well. Primarily ‘*Dignity*’ because it raises serious concerns pertaining to the scope of neuro-technology and its consequential impact on autonomy of the human being. With modern-day human technology in a position to stimulate human brains to perform certain activity, to what extent this can be tolerated to not to lead to a detrimental impact on the decisional autonomy of an individual. In matters of ‘*Privacy*’, there is no doubt, the major concern is pertaining to the privacy of the individual. On the front of ‘*Privacy*’, the existing jurisprudence of ‘*Mental Privacy*’ may still be effective to curb brain-mapping to a large extent.¹

However, irrespective of the ethical concerns attached with the right, it is not contested that the kind of clinical benefits that may be attached with the neuro-technology. The diseases that for decades were thought of being incurable, can be addressed such as schizophrenia, body-paralysis and can of great benefits in the discipline of pathophysiology to find cure for diseases that can be traced back to human brain, nervous system or spinal cords.² So yes, there is a genuine need of the growth of such technology, on a commercial side there is a consolidated growth of neuro-technology consumer market, selling such devices and services commercially (both implantable and wearables).³

-
1. Ashish Goel, ‘Indian Supreme Court in Smt Selvi v State of Karnataka: Is a Confusing Judiciary Worse Than a Confusing Legislation?’ (2011) LPAALA 602.
 2. White S W, Richey J A, Gracanin D, Bell M A, LaConte S, Coffman M, Trubanova A and Kim I, ‘The Promise of Neurotechnology in Clinical Translational Science’ Clin Psychol Sci (2015).
 3. *ibid.*

With growing panache of *Brain Computer Interface*⁴ (“BCI”) there are genuine and ethical concern pertaining to the privacy of the neural data. Privacy as an independent phenomenon is social context(ed). As the context changes the contour of the right also changes, sequentially, the context of the privacy will surely change with a change in the existing technology, the penetrative force of technology will get more sophisticated and more infiltratory, and thus viable questions will sequentially follow pertaining to the safety measures in the existing jurisprudence. As *Julian Kokkott*⁵ highlights such kind of genuine threat to the rights will surely demand that a novel set of right be created to provide for better safety mechanism. *Kokkott* emphasizes on two criterions that leads to this creation: 1) Scope and 2) Safeguard of the right. The scope of the right is too large to be covered by a novel jurisprudence and need of a genuine safeguard to protect the right. However, the author disagrees to a certain extent from the perspective of *Kokkott*, on the premise that it is not only because of the larger scope that a right needs to be protected, rather, sometime the infiltration of the right will at such a miniscule level, that it will not be covered by the existing mechanism. This raises a viable question: is addressing concerns of neural-privacy, in a way addressing questions of ‘*Privacy*’ itself. Or again it is a question of scope of the right and kind of mechanism that will be required to safeguard that scope. Neural rights seem more proximate to the individual identity, as it is literary attached with the physiology of the human brain, the capacity of the neuro-technology to map the human brain and to a certain extent determine what part of the human brain is more active than the other in physiological activities. This sort of neural data seems more proximate to the human being, specially to human dignity. As cases of generic ‘*Privacy*’ are broadly concerned with the control of the spatial spaces, whereas, in case of powerful neuro-technology, the option for the human being to exercise that control seems denude to a large extent.

There is no iota of doubt that there is genuine concern on the ethical usage of neuro-technology and what consequence could follow from the operational usage of such technology, let alone of the concerns raised regarding safety of thoughts.⁶ The neuro-rights activist more solidly push

4. World Economic Forum, *The Brain Computer Interface Market is Growing – But What are the Risks?*, accessible at <<https://www.weforum.org/stories/2024/06/the-brain-computer-interface-market-is-growing-but-what-are-the-risks/>> accessed 5 March 2025.

5. Juliane Kokott and Christoph Sobotta, ‘The Distinction Between Privacy and Data Protection in the Jurisprudence of the CJEU and the ECtHR’ (2013) 3(4) IDPL 222.

6. Jose M Munoz and Jose Angel Marinero, ‘Neurorights as Reconceptualised Human Rights’ *Frontiers in Political Science* (2023).

for safety of the cognitive liberty, mental integrity, psychological continuity and equal access to cognitive enhancement.⁷ There are corresponding school of thoughts that question the basis of such rights and is the current state of neuro-technology in a position to harm such rights or are these concern pertaining to protection of right from a distant-future or more of a make belief.⁸

The other critique of the right that has gained traction is the normative space for neuro-rights, there are authors that genuinely believe that instead of creation of a novel normative space for the right, the right is merely re-conceptualization of the existing framework of rights: freedom of thought, privacy rights and right against discrimination.⁹ The authors under the present paper will analyze the jurisprudential scope and space of neuro-rights and what sort of measure should be there, if there has to be one, to safeguard the legitimate space of neuro-rights.

2. CONSTITUTIONAL BASIS OF THE RIGHT

As the neuro-right activist are pushing for recognition of several neuro-rights, there are Countries that have recognized the basis of the right. The Chilean Constitutional Amendment of 2021 amended Article 19 of the Constitution that provided recognition to the mental privacy and other rights, such as: Mental Privacy, Personal Identity, Free Will, Just and Equitable Access to Technological Advancement, and Protection from discrimination against Algorithmic Practices.¹⁰ This is a good head start on this particular discipline, however, the authors will take few steps ahead in this direction to test the viability of the current landscape, whether the current regimes are in a position to normatively imbibe the scope of neuro-rights, specially, with reference to Mental Privacy. As highlighted *Mental Privacy* has been an addition to the Chilean Constitution through the means of 2021 Constitutional Amendment, interestingly, the right of

7. *ibid.*

8. J C Bublitz, 'What an International Declaration on Neurotechnologies and Human Rights Could Look Like: Ideas, Suggestions, Desiderata' (2023) 15(2) *AJOB Neuroscience* 96-112.

9. Jose (n 6).

10. Centre for Research in International Law, *The Neurorights Legislation in Chile*, accessible at <<https://nliu-cril.weebly.com/in-the-news/the-neurorights-legislation-in-chile#:~:text=It%20prohibits%20any%20scientific%20development,the%20consent%20of%20an%20individual.>> accessed 5 March 2025.

'Mental Privacy' was recognized within the Indian jurisprudence way back in the 2010 *Selvi v State of Karnataka* judgment.¹¹

*"There are several ways in which the involuntary administration of either of the impugned tests could be viewed as a restraint on personal liberty'. The most obvious indicator of restraint is the use of physical force to ensure that an unwilling person is confined to the premises where the tests are to be conducted. Furthermore, the drug-induced revelations or the substantive inferences drawn from the measurement of the subject's physiological responses can be described as an intrusion into the subject's mental privacy. It is also quite conceivable that a person could make an incriminating statement on being threatened with the prospective administration of any of these techniques. Conversely, a person who has been forcibly subjected to these techniques could be confronted with the results in a subsequent interrogation, thereby eliciting incriminating statements".*¹²

*"Lastly, we must consider the possibility that the victims of offences could be forcibly subjected to any of these techniques during the course of investigation. We have already highlighted a provision in the Laboratory Procedure Manual for Polygraph tests which contemplates the same for ascertaining the testimony of victims of sexual offences. In light of the preceding discussion, it is our view that irrespective of the need to expedite investigations in such cases, no person who is a victim of an offence can be compelled to undergo any of the tests in question. Such a forcible administration would be an unjustified intrusion into mental privacy and could lead to further stigma for the victim".*¹³

Both the paragraphs highlight the sanctity of the mental-privacy; however, it is still unclear what really is it protecting, is it the protection of the physiological aspect of the mental privacy consisting of the neurological movement, or is it the safety of the connection between the neurological movement and the thought as an output. This is not a far-sighted perspective to have, that in coming times there will be artificial intelligence that will be able to find patterns between the neurological movement of the electric waves and the kind of thought that are been produced as an end result. So, gradually the picture is getting clearer, it is the safety of the physiological

11. *Selvi v State of Karnataka* (2010) 7 SCC 263 : AIR 2010 SC 1974.

12. *ibid.*

13. *ibid.*

as well as the end result of that physiological movement. The keywords that can be extracted from the above paragraphs are ‘*Personal Liberty*’, ‘*Mental Privacy*’, ‘*Forceful Intrusion*’, these words are suggestive that there is an outer-layer in form of *Mental Privacy* (derivative of *Personal Liberty* or as the authors will suggest from a more control-centric form of *Human Dignity*). The usage of word ‘*Forceful Intrusion*’ indicates that if this outer-layer is intruded, it will be a violation of the ‘*Mental Privacy*’, on this basis it can be deduced that *Mental Privacy*, just like *privacy*, represents a control-centric approach of human dignity. Wherein, voluntary exposition/enunciation by an individual is acceptable as part of the human dignity, but not the forceful one. The Constitutional safety will be provided to the outer layer in form of ‘*Mental Privacy*’ as well as to the ‘*Content*’ that is being protected by the outer layer, and safety will also be provided to the neurological activity (the physiological aspect) that leads to creation of that content. In short, safety will be provided for the following aspects:

- 1) *Mental Privacy* (protection of the content)
- 2) *Human Dignity* (protection of the neurological process for creation of the content)

The second aspect of ‘*Human Dignity*’ emphasizes more on the control-centric approach of the human being, wherein it is a question of conscious choices of the individual to decide what piece of information he/she wants to share, what bodily choices it wants to make. This proposition, does not in any way belittles the important role that *privacy* plays in operationalization of the human dignity, as Justice Chandrachud has succinctly put in *K S Puttaswamy (Privacy-9J) v Union of India*.¹⁴

Privacy of the individual is an essential aspect of dignity. Dignity has both an intrinsic and instrumental value. As an intrinsic value, human dignity is an entitlement or a constitutionally protected interest in itself. In its instrumental facet, dignity and freedom are inseparably intertwined, each being a facilitative tool to achieve the other. The ability of the individual to protect a zone of privacy enables the realization of the full value of life and liberty. Liberty has a broader meaning of which privacy is a subset. All liberties may not be exercised in privacy. Yet others can be fulfilled only within a private space. Privacy enables the individual to retain the autonomy of the body and mind. The autonomy of the individual is the ability to make decisions on vital matters of concern to life. Privacy

14. *K S Puttaswamy (Privacy-9J) v Union of India* (2017) 10 SCC 1 [169].

*has not been couched as an independent fundamental right. But that does not detract from the constitutional protection afforded to it, once the true nature of privacy and its relationship with those fundamental rights which are expressly protected is understood. Privacy lies across the spectrum of protected freedoms. The guarantee of equality is a guarantee against arbitrary state action. It prevents the state from discriminating between individuals. The destruction by the state of a sanctified personal space whether of the body or of the mind is violative of the guarantee against arbitrary state action. Privacy of the body entitles an individual to the integrity of the physical aspects of personhood. The intersection between one's mental integrity and privacy entitles the individual to freedom of thought, the freedom to believe in what is right, and the freedom of self-determination.*¹⁵

*“.....privacy facilitates freedom and is intrinsic to the exercise of liberty. The Constitution does not contain a separate Article telling us that privacy has been declared to be a fundamental right. Nor have we tagged the provisions of Part III with an alpha suffixed right of privacy: this is not an act of judicial redrafting. Dignity cannot exist without privacy. Both reside within the inalienable values of life, liberty and freedom which the Constitution has recognised. Privacy is the ultimate expression of the sanctity of the individual. It is a constitutional value which straddles across the spectrum of fundamental rights and protects for the individual a zone of choice and self-determination”.*¹⁶

The paragraphs highlight the importance of privacy in relation to human dignity, its role as a normative value and its facilitative value for operationalizing different contours of personal liberty. It is interesting to mention that in the above quoted paragraph, the Court has highlighted the knitted origin of the ‘*Freedom of Thought*’ as an end result of intersection between mental integrity and privacy. The term mental integrity, itself is suggestive of the unbreachable nature of sanctum sanctorum of human mind. This raises viable question pertaining to the need for a different set of rights. The overlapping relation between mental integrity and privacy itself knits a ground for safety of ‘*Freedom of Thoughts*’.¹⁷

15. *ibid.*

16. *ibid.*

17. Sjors Ligthart, Christoph Bublitz, Thomas Douglas, Lisa Forsberg and Gerben Meynen, ‘Rethinking the Right to Freedom of Thought: A Multidisciplinary Analysis’ (2022) 22(4) Human Rights Law Review.

The case for neuro-rights was specifically introduced to address this aspect of human being, with neural technology becoming more pervasive, intrusive and penetrative in nature, what impact it can have on the physiology of the human brain, or even to manipulate certain choices. Taking the question back to the original arguments of dignity, the idea of self-determination (or more specifically questions of mental self-determination) the scholars that perpetuate recognition of a novel human right to provide protection to the *mental process* and *brain data*¹⁸ in form of Right to '*Freedom of Thought*' genuinely believe that the premise of neuro-right can protect the realm of mental process and brain data. As the whole premise of '*Freedom of Thought*' is custom made to address safety of mental process and the brain data. However, the authors under the present paper, still want to protest against this premise, on the pretext that the whole concept of '*Mental Integrity*' coupled with '*Privacy*' may just do the trick.¹⁹ However, the premise of the authors need to be closely scrutinized on the lines of exponential growth in the neuro-science technology, the core essence is the current development of the neuro-technology so intrusive that it demands a separate right?²⁰

Further, building on the same line of thought what forces the legal scholarship to reconceptualize the existing set of rights: such as right of *Freedom of Thought* or *Mental Integrity*. Differing scholars have highlighted three aspects of human brain that needs to be protected under the veil of neuro-rights: 1) Right not to reveal one's thought, 2) Right not to be penalized for one's thought, 3) Right not to have one's thought manipulated.²¹ Either, they may be covered under the existing set of rights or they may be covered through the means of a novel rights. One of the proponents for the existing rights jurisprudence is Scholar N. Hertz,²² who pushes for covering the aspect of neuro-rights within the broad heading of freedom of '*Right to Thought*', a right very well covered within the Article 18 of the International Covenant on Civil and Political Rights ("ICCPR"),²³ Article 9 of the European Charter of Human Rights ("ECHR"), and Article 30 of the Arab Charter on Human Rights. N. Hertz conveys that the scope of the right as denoted under Article 18 of the ICCPR and Article 9 of

18. *ibid.*

19. *ibid.*

20. *ibid.*

21. Nora Hertz, 'Neurorights — Do We Need New Human Rights? A Reconsideration of the Right to Freedom of Thought' *Neuroethics* (2023).

22. *ibid.*

23. ICCPR, art 18.

ECHR is large enough to provide for protection of *mental processes* and the end result of that mental process in form of *'thought'*. The thought of certain quality qualifies as an attitude, perspective or viewpoint. Working on the idea of N. Hertz, the objective of protection of neuro rights is to protect the mental process, which to a large extent can be covered within a broad conceptualization of *'Thought'*, when thoughts are a reflection of the political, religious or gender identity/affiliations they are already protected within the existing rights of *'Freedom of Religion'*, *'Expression of Gender Orientation'*.

This pushes the question, what actually then is left to be covered by the concept of *'Thought'*, the authors further deliberate, if the concept of *'thought'* is intermixed with *'decisional autonomy'*, it will result in mental self-determination. In a way acknowledging the human neurological autonomy of having thoughts and the process that goes into making of that thought, in lay men term, not to influence the decision making of an individual. Hertz believes, that by giving a large encompassing interpretation to the concept of *'Thought'* all three essential elements of neuro-rights can be addressed: 1) Right not to reveal one's thought, 2) Right not to be penalized for one's thought, 3) Right not to have one's thought manipulated.

Again, this is at the cost of repetition, what will be better suited for Indian jurisdiction to recognize? A freedom of *'Right to Thought'* or should there be a push for the concept of recognition of several other rights (a bouquet of rights that can be entitled as *'Neuro-Rights'*), Scholar Nita Farahany recommends for recognition of *'Right to Cognitive Liberty'* as a check against the advances in the neuro-science field. However, her concept of Cognitive Liberty works as a negative right to curb the impact of advances of neuroscience, yet it does not specifically address questions of privacy, rather, looks at the autonomy of the individual against the self-incriminating techniques of the State.²⁴ Farahany believes that this can bring clarity to the judges and the judicial system, when applying the concept of self-incriminating techniques against an individual. However, it is conducive to mention that this aspect of Farahany is very well-covered within the Indian jurisdiction, but by a different designation of *'Mental Privacy'*. It is conducive to analyze the perspective put forward by Farahany as she delves into deeper roots of neural rights, her main contention hovers around

24. Nita Farahany, "'Cognitive Liberty' is the Human Right We Need to Talk About" *Time* (2023) <<https://time.com/6289229/cognitive-liberty-human-right/>> accessed 5 March 2025.

commodification of human emotions, or human reactions by a deeper study of the electric waves of the human brain. This commodification can easily be utilized by commercial entities for the purpose of stimulating brain reactions.²⁵ This surely raises fear that are far beyond one's understanding, however, as the next generation non-surgical neurotechnology's (N3) are developing, it is easy to monitor human brain, its emotions, especially which part of the human brain are active, and thus a pattern can be knitted with the help of A.I. which will give sufficient insight as to the working of the human brain and what sort of stimuli should be given. This becomes interesting, knowing that there are consumer-driven neurotechnology, that are turning less and less surgical: In forms of wearables, one such technology was discussed earlier in form of Electroencephalogram (EEG) that used to measure electric activity of the brain. *Nita Farahany* has quoted examples of Chinese workforce, how sensors are being attached to the caps of the workers in Chinese factory coupled with A.I. which gives substantial insights into the working behaviour of the human brain, how are they feeling, so the administration can maneuver the workload accordingly, in fact, this has brought about positive changes in the output.²⁶ The administrator of the factories are better positioned to locate the workforce as per their possible contributory capacity at a particular time, yet it raises serious questions as to the decisional autonomy of the individual, the maneuvering of individual gives an impression of a lab rat.

As earlier noted, the authors want to test the conceptual landscape of '*Mental Integrity*', whether there is enough normative space in its framework to cover substantial, if not the whole, scope of neuro-rights.

3. CONSUMER LAW AND PERSONAL DATA PROTECTION ASPECT

Neuro technology, has led to an increased integration of technology in human lives. The interaction between humans and machines has increased to an extent of machines digitizing human brain data. This substantially raises the risk of selling brain data to third parties, breaching human privacy. When embedded in the body, neurotech devices are governed by health laws, however, when in form of wearables, should they be governed by consumer protection laws, or some other law is a point of contestation. Currently, for example, The Health Data Privacy Laws like the The Health Insurance Portability and Accountability Act²⁷ in Colorado is sufficient

25. *ibid.*

26. *ibid.*

27. HIPPA 1996.

guide usage of brain data collected by Invasive neuro-technologies as the machines are embedded in human organs. However, a regulatory gap exists to address rising concerns relating to non-invasive technologies, such as head bands etc. that digitalize, analyse, and store brain data. Looking at the increased adaptation of such technologies, it is vital to set guidelines, create new legislatures, or at least evolve current legislations, to meet the needs of contemporary era.

To regulate non-invasive neurotechnology, Colorado recently announced to extend its understanding of “sensitive data” to cover biological data , through Colorado Privacy Act. Is exclusive of “De-identified data”,²⁸ as described under Section 2(11) of the Act.²⁹ By such exclusion the law a pool of person specific information, which needs to be protected, to uphold rights of individuals. This subject neural data to regulatory frameworks to ensure human privacy, to the extent of safeguarding thoughts against unlawful, unconsented intervention.

Consent under section 2(5)³⁰ is explained as:

“Consent” means a clear, affirmative act signifying a consumer’s freely given, specific, informed, and unambiguous agreement, such as by a written statement, including by electronic means, or other clear, affirmative action by which the consumer signifies agreement to the processing of personal data.”

While “Consumer” is explained as an individual, not acting in commercial or employment context, under section 2(6)³¹ of the Act. This excludes employer-employee relation is from the scope of scrutiny, implying that the employer in dominant position, may use “sensitive data” of the employee, collected via biometrics to profile³² an individual. Protection against unconsented profiling is necessary, since it dilutes autonomy of an individual over their personal information and heightens the potential for discrimination on the basis of ethnicity, sex or race, which

28. Khaled El Emam and Bradley Malin, ‘Sharing Clinical Trial Data: Maximizing Benefits, Minimizing Risk’ *National Library for Medicine*, 20 April 2015 <<https://www.ncbi.nlm.nih.gov/books/NBK269030/>> accessed 16 February 2025.

29. Colorado Privacy Act 2021, s 2(11).

30. Colorado Privacy Act 2021, s 2(5).

31. Colorado Privacy Act 2021, s 2(6).

32. What is Automated Individual Decision-Making and Profiling? Information Commissioner’s Office <<https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/individual-rights/automated-decision-making-and-profiling/what-is-automated-individual-decision-making-and-profiling/>> accessed 31 January 2025.

leads to a violation of rights. The scrutiny, therefore, allowing government to access brain data. This might appear beneficial, when analysed from the perspective of designing apt and applicable policies, however, appears violative of rights, when government analyses data and designs policies to favour a race, ethnicity or gender or its targeted vote bank. State is sovereign, therefore, rights are exercised against the state, to uphold “inherent dignity” and “disregard barbarous acts that outrage conscience of mankind”.³³ Hence, exclusion of governmental agencies, from the scope of scrutiny, dilutes the vision of neuro rights.

Neurorights, emerged from an interplay of right to privacy and freedom, are essentially a step further than these rights. The variety of threats that they tackle is comparatively newer and complex. On further analysis, right of access, right to opt out, correction, deletion and data portability are revealed as subsets of neuro rights. However, a right that remains largely undiscussed is the right to “partially retrieve information”. A part of information submitted via “dark patterning”,³⁴ which deceives users to do things that they would not do ordinarily leading to a loss in autonomy and free choice in making decisions, should be allowed to be retrieved, while allowing consented information to stay intact with data controllers and processors.

Neurorights strive to protect brain, not as an organ, but as mind, that thinks and creates an identity for self. When not protected highly intrusive brain computer interfaces, may use sensitive data in profiling or identifying an individual. Unconsented profiling may lead third party to access, analyse, mould and predict brain activities, thoughts and preferences. The gravity of such third-party interferences is realized best when data is sold to agencies, or enterprises, that use such data to influence behaviour and choices of citizens. For example, when the U.S. Supreme Court decided to overturn *Jane Roe v Henry Wade*³⁵, it allowed applications tracking

33. United Nations Human Rights Office of the High Commissioner, 70th Anniversary of the Universal Declaration of Human Rights Press Release, 6 December 2018 <<https://www.ohchr.org/en/press-releases/2018/12/70th-anniversary-universal-declaration-human-rights#:~:text=in%20the%20world.-%22%E2%80%A6,%22%E2%80%A6>> accessed 27 January 2025.

34. Amy Lee Tan, ‘Illuminating Dark Patterns: US Regulators Crack Down on Deceptive Practices Targeting Consumers’ Science and Technology Law Review, 17 February 2024 <<https://journals.library.columbia.edu/index.php/stlr/blog/view/593>> accessed 16 February 2025.

35. *Jane Roe v Henry Wade*, 1973 SCC OnLine US SC 20 : 35 L Ed 2d 147 : 410 US 113 (1973).

period to share data with the governmental agencies, leading to privacy breach and affected individual choice making. Imagine neurotechnology, that has access to patterning of thoughts, processes and sells or publishes brain data unconsented, leading to manipulated perception of self. It can also be intrusive to an extent of altering brain waves. This appears to be beneficial in curing brain disorders, however, a point of contestation is whether neurodivergent people can make a valid consent for the usage of such technologies. Valid consent requires “informed and unambiguous agreement”, according to section 2(5)³⁶ of the Colorado Privacy Act. Therefore, the act opens a possibility of penalizing companies when treating neurodivergent people. Invasive brain technology is largely excluded from such punishments, as it is scrutinized by healthcare laws, however, non-invasive wearables could be subjected to constant scrutiny even when its neurodivergent customers agreed to accessing, storing, or analysing brain data.

The act expands the scope of consumer laws, and lays foundations for future legislations that may specifically address neurorights. However, such step also paves way for transformation within the legal domain. Currently detectors in practice answer in yes or no, however “Neuronal Testimonials” could become an admissible practice as legislative framework is adopting itself to meet expectations of contemporary world. A victim brutally injured, and incapable of speaking may testify via the use of non-invasive neurotechnology, that helps to map thoughts of the victim post the crime. Not just during trials, such technology is capable of aiding investigation too. A victim in vegetative state,³⁷ with some consciousness, could provide information regarding the incident via “Neuro Identification”³⁸ of offenders or other details of the crime. However, such technologies, cannot be used on the accused as privilege against self-incrimination protects them. Nonetheless, the act is instrumental in pioneering the concept of Neurorights, while being capable to introduce newer practices in legal systems.

36. Colorado Privacy Act 2021, s 2(5).

37. Peter McCullagh, *Ted Freeman and the Battle for the Injured Brain: A Case History of Professional Prejudice* (ANU Press 2013).

38. Jesper Ryberg, ‘When Should Neuroimaging Be Applied in the Criminal Court? On Ideal Comparison and the Shortcomings of Retributivism’ (2014) 18(2) J Ethics <<https://www.jstor.org/stable/43895862>> accessed 14 January 2025.

4. INDIAN APPROACH

When Indian legal landscape is analyzed, “The Digital Personal Data Protection Act”³⁹, appears to be the closest step that India has come to new age technology regulation. With Apple applying for a patent for electroencephalography enabled AirPods,⁴⁰ the possibility of non-invasive tools that measure electrical activity of brain, flooding marketplaces is predicated. Currently no dedicated legislation exists in India to regulate neurotech specifically, however, Digital Personal Data Protection Act, largely based on consented use of information, may be interpreted expansively to temporarily direct the usage of neurotechnology. Colorado bill largely revolves around consenting to share and process data, however, the act exists as an expansion of Consumer Laws, therefore, multiple agencies that should have been regulated are ignored. Digital Personal Data Protection Act on the other hand appears to be more comprehensive, as it specifically addresses digital data collection, storage and processing.

It is predicted that most MNCs would initially dominate the market space in neurotechnology, and the act expands to regulating fiduciaries,⁴¹ even when they operate on foreign lands while they deal with Indian Data. Assuring right to privacy is the aspiration of legislation and neuro rights is an evolving domain of rights could be protected by provisions of the act. Neurorights penetrate into a deeper layer of right to privacy, by striving to assure cognitive liberty and freedom. A right to think without external manipulation is promised. To process private data, that helps in identifying an individual, consent is required. Contention is raised as to whether consent to share data protects an individual against algorithmic biases of artificial intelligence. Whether “targeted advertising” breaches the right or not is another contention. However, to uphold autonomy of an individual, “right to erasure”⁴² as called in European privacy law is essential to aid in opting out of processes, even when prior consent was given. The materialization of same can be seen in section 12⁴³ of the act, where “right to erasure” is provided.

39. Digital Personal Data Protection Act 2023.

40. Biosignal Sensing Device Using Dynamic Selection of Electrodes, World Intellectual Property Organization <https://patentscope.wipo.int/search/en/detail.jsf?docId=US402825807&_cid=P10-LRT3OJ-01103-1> accessed 15 February 2025.

41. Digital Personal Data Protection Act 2023.

42. Right to Erasure, Information Commissioner’s Office <<https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/individual-rights/individual-rights/right-to-erasure/>> accessed 31 January 2025.

43. Digital Personal Data Protection Act 2023, s 2(5).

Majorly neurorights are for protecting biological data, or digitalized brain data against unlawful sharing or selling to third parties, the Digital Personal Data Protection Act appears apt to uphold neurorights, as it specifically deals with protecting data against illegitimate processing, until a dedicated legislation is formed.

Till recently, judicial understanding of privacy in India has mostly stressed on protection of body and physical spaces from intrusive actions by the State. But now mental privacy has been recognised after a conjunctive reading of Articles 20(3) and 21 of the Constitution along with the principles of evidence law leads to a clear answer. Importance of personal autonomy must be recognised in aspects such as choice between remaining silent and speaking. 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. Today mental information covers thoughts, feelings, emotions, dreams, nightmares, fears, anxiety etc., and the enjoyment of having control over such psychological processes is the *end* of the inborn right of mental privacy.⁴⁴ Control over one's own psychological information gives room to the individual to evaluate their thought, and to participate in the social, political and legal institutions of the society. Therefore, any attempt to penetrate one's mental process with an intention to decrypt the thought process can have dire consequences on the privacy. Although the nature sufficiently provides the innate veil to an individual in order to protect his or her thoughts and feelings, the prejudicial norms of a society and the powers always try to remove the natural veil through various ways since times immemorial. The traditional ways would include torture, coercion, hypnosis, etc., and the modern ways include the ubiquitous monitoring through the new media tools, with increased reliance on technologically advanced techniques.⁴⁵ In *Selvi v State of Karnataka*,⁴⁶ the Supreme Court held that compulsory administration of

44. Marcello Ienca and Roberto Andorno, 'Towards New Human Rights in the Age of Neuroscience and Neurotechnology' *Life Sci Soc Policy* (2017).

45. Alan F Westin classified surveillance in three parts i.e. physical surveillance, psychological surveillance, and data surveillance. The traditional means for extracting information include eavesdropping, paid surveillance agents, torture, sex, alcohol, opium, hypnotism, primitive "lie" tests, registers in which residences, movements, and transactions of individuals were recorded, etc. Modern ways include electronic eavesdropping, wiretapping, television-eye monitoring, etc. The new technology is serving the purposes of classic surveillance methods. Alan F Westin, *Privacy and Freedom* (1970) 72.

46. *Selvi v State of Karnataka* (2010) 7 SCC 263.

any of the techniques like narcoanalysis, polygraph examination and brain Electrical Activation Profile (BEAP) test, is an unjustified intrusion into the mental privacy of an individual. It was also recognized that forcible intrusion into a person's mental processes is an affront to human dignity and liberty, often with grave and long-lasting consequences.⁴⁷

There are still some prime concerns that are not addressed by the Consumer Law perspective as well as Personal Data Protection perspective. Whereas, in case of Consumer law, as highlighted earlier, Government agencies have been left outside the scope of the enactment. Additionally, from the perspective of personal data protection, the brain data as sensitive data is well covered within the premise of Personal Data Protection Act, however, the deceptive and manipulative capacity of neurotechnology is not addressed by either of the objective of the laws. This is another layer of neurological integrity that needs to be addressed, in direct link with the concept of human dignity. The broad concept of neuro rights is not only about addressing safety of the brain data in form of sensitive data, rather, it is also about maintaining the decisional control of the individual over its choices and materializing of the thoughts.

5. NEURO-TECHNOLOGY

For centuries, the human mind has been regarded as an inviolable domain, free from external influence or intrusion. In his 1634 masque, *Comus*, John Milton expressed this sentiment through the character of a young girl held captive, who declares, "*Thou canst not touch the freedom of my mind.*" This belief, which John Bury also articulated in his assertion that a person can think whatever they choose as long as they conceal it, forms the essence of cognitive liberty—the right to autonomous thinking and free will. However, with the rise of neurotechnology, which can directly interact with and influence the human nervous system, this notion is under threat.⁴⁸

Brain circuits operate in a coordinated manner to produce all of our ideas, opinions, imagination, memories, decisions, and emotions. We are

47. *Ramlila Maidan Incident, In re* (2012) 5 SCC 1.

48. 'Right to Cognitive Liberty in a Transhumanism Era: A Case for Integration within Indian Legal Framework' NUALS L J (29 June 2023) <<https://nualslawjournal.com/2023/06/29/right-to-cognitive-liberty-in-a-transhumanism-era-a-case-for-integration-within-indian-legal-framework/>>.

actually facing the prospect of technology being able to decipher or alter human mental processes for the first time in history.⁴⁹

BCIs can function in two different ways:⁵⁰ they can brain data or change brain activity, enabling reciprocal communication between the brain and the outside environment. Specific regulatory gaps are exposed by both forms of neurotechnology, and these regulatory gaps lead to protections of human rights being inadequate.

Certain brain-computer interfaces (BCIs) need invasive surgery to implant electrodes directly into the brain. Brain data is sent from the electrodes to a computer for analysis and decoding. For many years, invasive brain stimulation devices (BCIs) have been a part of conventional medicine. Well-known examples of such devices are cochlear implants and deep brain stimulators, which can assist patients with Parkinson's disease regain their range of motion. Invasive Brain Component Interfacing (BCI) has several noteworthy medical uses, but it may also be applied in other contexts. In 2018, the MIT Media Lab recorded human thoughts into text messages using an intrusive brain-computer interface (BCI). Researchers have already figured out how to utilise intrusive BCIs to manipulate lab animals' behaviour, such as mice.⁵¹ Scientists have developed invasive Brain-Computer Interfaces (BCIs) that can control the actions of laboratory animals, such as mice, by recording and stimulating specific brain activity. This technology has been used to induce actions, like eating, even when the animal does not want to, and to implant artificial memories or images, leading to hallucinations or false memories. Non-invasive BCIs, worn externally like helmets or glasses, can predict speech or movement and help people with communication disorders. These devices have enabled thought-sharing between individuals and allowed a quadriplegic man to drive a Formula One car. In the future, similar BCIs could be used to alter human brain activity, potentially applying the same techniques used on animals to humans.

These instances demonstrate how neurotechnology applications are full of potential human rights breaches. The growth of neurotechnology has surpassed national and international organisations' attempts to control it, as is common with new technologies. Non-invasive BCIs, which will be used

49. It's Time for Neuro-Rights, Center for International Relations and Sustainable Development (CIRSD) (Winter 2021) <<https://www.cirsd.org/en/horizons/horizons-winter-2021-issue-no-18/its-time-for-neuro--rights>>.

50. *ibid.*

51. *ibid.*

for the same objectives as invasive ones, frequently fall outside of medical laws, whereas invasive BCIs, which need surgery, are now controlled under the realm of medicine. Non-invasive brain-computer interfaces (BCIs) are regarded as consumer goods in the majority of nations. If they are regulated at all, they may fall within pre-existing frameworks that are insufficient to handle the particular problems this new technology presents. This also raises some genuine concerns pertaining to commercial market, that might exploit the BCI for the purpose of indiscriminate marketing, manipulating human choices or even nudging them in a particular direction.

The right to privacy, recognized as a fundamental right by the Indian Supreme Court in the landmark *Puttaswamy* judgment, is closely tied to the ethical concerns surrounding neurotechnology. Neurotechnology's ability to decode thoughts, emotions, and brain activity challenges the traditional notion of privacy, as brain data could be accessed without a person's consent or awareness. For instance, BCIs in education or workplace settings could lead to the misuse of mental data, raising concerns about surveillance, data privacy, and mental autonomy.⁵²

Neurotechnology's potential to influence human thoughts, emotions, and behaviour brings up serious concerns about human agency. However, the development of BCIs capable of controlling or altering human behaviour poses risks to free will. In India, Article 21 of the Constitution guarantees the right to life and personal liberty, which includes bodily autonomy and mental integrity. For example, neurotechnology could be used in coercive settings, such as interrogation or surveillance, where a person's brain activity may be manipulated.

India is a diverse country with social and economic disparities, and there is a risk that neurotechnology, if misused, could exacerbate discrimination. The potential for algorithmic bias in BCIs—where brain data could be misinterpreted due to pre-existing biases in technology—raises concerns about discrimination in employment, education, and healthcare. For instance, neuro-data could be used to unfairly assess or reject candidates during hiring processes or in educational assessments, creating systemic biases that reflect social prejudices. The Indian legal system already prohibits discrimination on the basis of caste, religion, gender, and other factors, as enshrined in Articles 14, 15, and 16 of the Constitution.

52. *ibid.*

Mandating consent as a condition for retaining employment — especially in the context of invasive technologies like neuro-monitoring — raises significant ethical and legal concerns, particularly regarding fairness and autonomy. When an employee is forced to consent to the use of such technologies, it essentially becomes coercion disguised as voluntary agreement. The employee faces a dilemma: either consent to having their brain activity monitored or risk losing their job and livelihood.⁵³

With a significant portion of the Indian population affected by mental health issues, the integration of neurotechnology in mental health treatment offers hope for better diagnosis and treatment.⁵⁴ However, this also presents ethical concerns about consent, the potential misuse of sensitive mental health data, and the accessibility of such advanced treatments.

It is crucial to guarantee neurotechnology's ethical use and accessibility since it is expected to go beyond medical and into industries including education, gaming, entertainment, transportation, law, research, and the military. The ethical issues surrounding other biological and computational technologies, such artificial intelligence and genomics, and neurotechnology do not always align. These overlapping ethical issues include those related to well-being, justice, openness, and data security.

Mental privacy refers to the presumption that the contents of a person's mind are only known to that person. In the age of neurotechnology, the presumption of mental privacy is no longer a certainty. Most brain data generated by the body's nervous system is unconsciously created and outside a person's control. Therefore, it is plausible that a person would unknowingly or unintentionally reveal brain data while under surveillance. Human agency is the combination of a person's physical autonomy and free will. Neurotechnology has the power to affect a person's behaviour, thoughts, emotions, or memories since it may be used to stimulate the brain. Although freedom of mind and the absence of force to embrace specific views are often mentioned in current international human rights treaties, it is unclear if these clauses anticipated the possibility of coercion through technology. To safeguard individual autonomy and mental privacy, it is

53. 'Right to Cognitive Liberty in a Transhumanism Era: A Case for Integration Within Indian Legal Framework' NUALS L J (29 June 2023) <<https://nualslawjournal.com/2023/06/29/right-to-cognitive-liberty-in-a-transhumanism-era-a-case-for-integration-within-indian-legal-framework/>>.

54. Ministry of Health & Family Welfare (2 February 2025) <

essential to both conceptualise the potential breaches of human rights that might result from the use or misuse of neurotechnology and to advocate for its safe, responsible, and efficient application. Two central aspects of privacy — informational privacy and informational self-determination — are vital in this context, particularly when discussing Brain-Machine Interfaces (BMIs), neuroimaging techniques, and other neurotechnological tools.⁵⁵

Informational privacy encompasses not just physical aspects of an individual but also the mind itself. The right to informational privacy serves to promote individual autonomy, protecting personal material from unfair dissemination, while simultaneously safeguarding the freedom of thought. As recognized in the *K.S. Puttaswamy* case, the mind is an integral part of an individual's personality, and its sanctity forms the very foundation of one's private space.

Neuro-technology has the potential to revolutionize industries and enhance human experiences in ways previously unimaginable. Recent collaborations, such as between L'Oreal and Emotiv, which allow consumers to select personalized scents based on mental responses measured by EEG headsets,⁵⁶ or Microsoft's patented EEG device that lets users navigate apps and web browsers using their thoughts, highlight the remarkable promise of these technologies for consumer benefit. However, while such innovations offer significant advantages, they also expose individuals to risks of exploitation, particularly concerning their mental privacy, autonomy, and the collection of brain data for corporate or state purposes.⁵⁷

The potential misuse of neuro-technology by states raises further ethical and legal concerns. For instance, China's widespread adoption of EEG sensor-fitted helmets by the State Grid Corporation to monitor the brainwave activity and fatigue levels of workers represents a troubling trend in workplace surveillance.⁵⁸ While purportedly intended to improve worker productivity and safety, such practices effectively commodify brain

55. It's Time for Neuro-Rights, Center for International Relations and Sustainable Development (CIRSD) (Winter 2021) <<https://www.cirsd.org/en/horizons/horizons-winter-2021-issue-no-18/its-time-for-neuro--rights>>.

56. Venya Patel, 'L'Oréal and Emotiv Harness Neurotech and Algorithms for Personalized Fragrances' (28 March 2022) <<https://www.personalcareinsights.com/news/loreal-and-emotiv-harness-neurotech-and-algorithms-for-personalized-fragrances.html>>.

57. 'The Time is Now for a "Neuro-Rights" Law in India' *Vidhi Legal Policy* (27 April 2023) <<https://vidhilegalpolicy.in/blog/the-time-is-now-for-a-neuro-rights-law-in-india/>>.

58. Erin Winick, 'With Brain-Scanning Hats, China Signals it Has No Interest in Workers' Privacy' *MIT Technology Review* (30 April 2018) <<https://www.technologyreview>

activity, stripping individuals of their cognitive privacy. The intrusion into personal mental states could lead to the erosion of human dignity, autonomy, and the right to mental privacy. More troubling still is the Chinese military's reported focus on cognitive warfare, which aims to shift warfare from the physical battlefield to the human mind. By targeting an adversary's decision-making process and cognitive abilities, this evolving form of warfare represents a significant violation of cognitive liberty. The military's interest in controlling the cognitive processes of opponents through technology is indicative of how neuro-technology, while promising positive applications, can also be weaponized to exert coercive control over individuals' thoughts and actions.⁵⁹

In light of these developments, there is a growing recognition of the need for urgent legal safeguards to prevent neuro-technology from becoming a tool for corporate surveillance or state manipulation. Without clear regulations, corporations and governments could exploit neuro-technology to infringe on fundamental human rights, including the right to cognitive liberty, mental privacy, and freedom of thought.

Neurotechnology, with its ability to decode, monitor, and manipulate brain activity, presents exactly this threat. When this technology is deployed for purposes like employee monitoring or corporate surveillance without sufficient safeguards or consent, it directly infringes upon the right to privacy.⁶⁰

Sections 66E and 72 of the IT Act provide protection against violations of privacy and unauthorized disclosure of personal data. Section 66E criminalizes the intentional capturing, publishing, or transmitting of images of a person's private areas without consent, while Section 72 punishes the disclosure of information in breach of lawful contracts or obligations of confidentiality. However, these provisions apply primarily to computer systems, electronic resources, and data transactions. The protection extends to electronic records and personal data but does not cover the mental domain or the autonomy of the mind. Neurotechnological advancements, such as brain-computer interfaces or EEG devices that

.com/2018/04/30/143155/with-brain-scanning-hats-china-signals-it-has-no-interest-in-workers-privacy/>.

59. *ibid.*

60. 'Right to Cognitive Liberty in a Transhumanism Era: A Case for Integration Within Indian Legal Framework' NUALS L J (29 June 2023) <<https://nualslawjournal.com/2023/06/29/right-to-cognitive-liberty-in-a-transhumanism-era-a-case-for-integration-within-indian-legal-framework/>>.

could potentially read or manipulate thoughts, are outside the ambit of these protections. Section 2(14) of the BNS defines “injury” means any harm whatever illegally caused to any person, in body, mind, reputation or property, it only becomes relevant when an individual’s mental state has been directly harmed through acts of physical violence or trauma. The current definition of injury does not encompass the more subtle violations that can occur through the use of neurotechnology, such as mind-reading, thought manipulation, or cognitive interference. These actions, while potentially harmful, do not necessarily result in observable injury but instead infringe upon an individual’s mental privacy and cognitive liberty.

One immediate concern is the use of neuroscience in legal proceedings. Neuroimaging technologies may blur the lines between testimonial and physical evidence. For example, a static brain image (physical evidence) might be used to extract testimonial information, which could infringe upon an individual’s right against self-incrimination under Article 20(3). The use of neuro-evidence in courtrooms could lead to significant challenges for maintaining fairness in legal proceedings, especially when individuals have not explicitly consented to sharing such information.

As neurotechnology rapidly advances, the potential for infringement on cognitive liberty and mental privacy grows. Without appropriate legal protections, the freedom to think and act autonomously — one of the most fundamental human rights — could be compromised. India must act swiftly to introduce legislation that protects neural data and regulates the use of BMIs and other neurotechnologies. By doing so, the country can ensure that technological progress does not come at the expense of individual rights, and that cognitive liberty remains protected in the face of future innovations.

6. COMPARATIVE ANALYSIS

The right to cognitive liberty remains a concept not yet explicitly acknowledged on an international scale, despite the growing discourse surrounding personal autonomy in the face of advancing neurotechnological innovations. In the European Union, the closest recognition can be found in Article 9 on European Convention on Human Rights (ECHR), which guarantees the right to freedom of thought, conscience, and religion. This provision, while vital in safeguarding individual beliefs, does not encompass the full spectrum of cognitive liberty, particularly in light of emerging technologies that may influence or manipulate thought processes. Additionally, Article 10 of the European Council on Foreign Relations,

which protects the right to freedom of expression, may indirectly support aspects of cognitive liberty, yet it does not explicitly articulate the nuances of thought privacy or the autonomy over one's cognitive processes.⁶¹

At a broader level, instruments like the Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR) recognize the importance of freedom of thought. The UDHR, particularly in Article 18, affirms that “everyone has the right to freedom of thought, conscience, and religion,” echoing similar sentiments in the ICCPR. However, these frameworks do not delve into the complexities surrounding the privacy of thought or the implications of cognitive autonomy in the context of technological advancements. The distinction between freedom of thought and privacy of thought is significant; while freedom of thought ensures individuals can hold beliefs and opinions without coercion, the privacy of thought pertains to the safeguarding of those thoughts from external intrusion or manipulation.⁶²

The right to cognitive liberty would inherently encompass both dimensions—freedom of thought and privacy of thought—recognizing the individual's right to maintain control over their cognitive processes without interference. This necessity becomes even more pronounced in an era marked by the proliferation of neurotechnological tools capable of monitoring and potentially altering cognitive functions. The only avenue for incorporating the right to cognitive liberty into existing international legal frameworks may lie within Article 12 of the UDHR, which offers protection against arbitrary interference with privacy, family, home, or correspondence. This article, while traditionally focused on personal privacy, was recognized by the United Nations in 2018 as encompassing issues pertinent to the digital age, thereby extending its relevance to contemporary challenges posed by neurotechnology.

By affirming the importance of protecting cognitive processes from unwarranted external influences, the international community can begin to lay the groundwork for recognizing cognitive liberty as an essential human right. This acknowledgment would not only address the ethical implications of neurotechnology but also fortify individual autonomy in a rapidly evolving digital landscape, ensuring that the sanctity of the mind

61. It's Time for Neuro-Rights, Center for International Relations and Sustainable Development (CIRSD) (Winter 2021) <<https://www.cirsd.org/en/horizons/horizons-winter-2021-issue-no-18/its-time-for-neuro--rights>>.

62. *ibid.*

remains inviolable against encroachments that threaten personal dignity and self-determination. The time is ripe for international legal instruments to evolve, integrating the right to cognitive liberty into the broader human rights discourse and protecting individuals from the potential abuses of emerging technologies.

Chile⁶³ has taken a pioneering step on the international stage by being the first country to formally recognize neuro-rights through a constitutional amendment. This groundbreaking move represents a significant acknowledgment of the importance of mental integrity and autonomy in the face of rapid advancements in neurotechnology. The amendment aims to safeguard mental identity as a non-manipulable right, setting a precedent for the protection of individual cognitive liberties. Specifically, the Bill delineates five key rights that are to be prominently protected: mental privacy, personal identity, freedom of thought, equitable access to neurotechnological enhancements, and the right to make autonomous decisions regarding one's cognitive processes. This proactive stance emphasizes not only the necessity of protecting individuals from potential abuses stemming from neurotechnological innovations but also the broader implications for human dignity and self-determination.

Following Chile's lead, Spain has also recognized the significance of neuro-rights by implementing a similar legal framework through the Spanish Charter⁶⁴ of 2021. This Charter extends the rights articulated in foundational documents such as the Universal Declaration of Human Rights and the Spanish Constitution to address the unique challenges posed by digital technologies. Article 1 of the Charter guarantees the right to free individual self-determination, asserting that individuals have the right not to be subjected to invasive tracking or profiling that could undermine their autonomy and mental integrity. This provision aligns closely with the broader concept of cognitive liberty, ensuring that individuals maintain control over their thoughts and identities in a digital landscape increasingly characterized by data exploitation and surveillance.

Furthermore, Article 2 of the Spanish Charter highlights the regulatory responsibility of the law regarding technologies that extend beyond therapeutic applications. This includes the regulation of mental augmentation

63. 'Right to Cognitive Liberty in a Transhumanism Era: A Case for Integration Within Indian Legal Framework' NUALS L J (29 June 2023) <<https://nualslawjournal.com/2023/06/29/right-to-cognitive-liberty-in-a-transhumanism-era-a-case-for-integration-within-indian-legal-framework/>>.

64. *ibid.*

and enhancements aimed at improving human capabilities. By explicitly acknowledging the need for regulation in this area, Spain is addressing the ethical concerns surrounding the application of neurotechnologies and the potential risks they pose to personal freedoms. The Charter thus establishes a legal framework that prioritizes individual rights while recognizing the transformative possibilities of neurotechnology, ensuring that advancements in this field are pursued responsibly and ethically.

The neuro-rights agenda seeks to fill the protection gaps in current human rights systems, ensuring that individuals retain control over their mental processes and identity amidst the evolving landscape of neurotechnology. Proposed neuro-rights encompass several fundamental concepts essential for protecting cognitive autonomy. The right to identity emphasizes individuals' ability to maintain both their physical and mental integrity, ensuring that their personal identity remains unaltered by external manipulations. The right to agency highlights the importance of freedom of thought and the capacity to make autonomous decisions, underscoring the necessity of protecting individuals from coercive influences.

The right to mental privacy ensures that individuals can keep their thoughts shielded from unauthorized disclosure, while the right to fair access to mental augmentation calls for equitable distribution of the benefits derived from neurotechnological enhancements. Lastly, the right to protection from algorithmic bias aims to prevent technologies from perpetuating existing prejudices and discrimination. Together, these rights not only build upon but also expand existing international human rights norms related to human dignity, liberty, and privacy.

However, the landscape of neuro-rights is still developing, and there is currently no international consensus on what constitutes these rights. While Chile has taken a significant step by enacting laws that explicitly protect neuro-rights, the framework remains limited and lacks widespread adoption. Spain's recent Digital Rights Charter represents another important initiative, but further international cooperation and consensus-building are essential to fully realize neuro-rights as a recognized category within the global human rights framework. Existing international instruments addressing neuroethics, such as the OECD's Recommendation on Responsible Innovation in Neurotechnology, provide some guidelines but fail to comprehensively tackle the broader implications of identity abuse, discrimination, and the responsibilities of states in relation to neurotechnology.

7. CERTAIN POLICY MEASURES

7.1 United Nation positioned recognition and standardization of right

To advance the neuro-rights agenda globally, bold leadership and new institutional structures are necessary. The United Nations (UN)⁶⁵ is well-positioned to facilitate this dialogue, given its overarching mandate to promote and protect human rights worldwide. A focused strategy involving both short-term and long-term measures could pave the way for a robust international framework addressing neuro-rights.

In the short term, the UN could establish an International Science and Law Expert Commission on Neuro-Rights. This Commission, composed of legal experts in human rights and scientists specializing in neuroscience, would work to define neuro-rights through collaborative research and the application of existing human rights laws. Additionally, the UN could appoint Special Advisors on Neuro-Rights to identify best practices from various countries and investigate allegations of neurotechnology misuse. Regular consultations with nations leading in neurotechnology research would also foster dialogue and promote consensus on regulatory practices.

For long-term impact, the UN General Assembly and Human Rights Council could work towards creating a new treaty or protocol that incorporates neuro-rights into international law. This would establish clear treaty bodies responsible for defining and enforcing neuro-rights. Existing treaty bodies, such as the UN Committee Against Torture and the Human Rights Committee, should also be encouraged to adopt General Comments interpreting neuro-rights within the context of their existing mandates. Furthermore, appointing a Special Rapporteur on the Impact of Neurotechnology on Human Rights would enable the UN to monitor countries' adherence to neuro-rights and report findings on violations or progress. Finally, the creation of a specialized agency to coordinate global efforts surrounding neuro-rights could further strengthen these initiatives and solidify the importance of cognitive liberty on the international stage.

65. It's Time for Neuro-Rights, Center for International Relations and Sustainable Development (CIRSD) (Winter 2021) <<https://www.cirsd.org/en/horizons/horizons-winter-2021-issue-no-18/its-time-for-neuro--rights>>.

7.2 Objective risk-perception and rights jurisprudence

As part of the research, the authors recommend certain measures that can be clubbed together under the heading of ‘*Neuro-Rights*’, these measures will be buttressing the concept of *Neuro-Rights*. It is conducive to mention that these measures are mostly churned out from a risk-perception approach, wherein the major risk that are arising against neural rights (be it short-term or long-term) due to neurotechnology will be countered by an appropriate right in the hands of the individual. The underlying idea is to empower the users (individual) of the neurotechnology, be it in form of a consumer, employee or even as a patient, what rights can be there to safeguard their interest.

7.2.1 Risk attached with Neuro-data

- i) Re-identification of the brain data
- ii) Hacking of the brain data
- iii) Unauthorized re-use of the data
- iv) Commercialization
- v) Digital Surveillance
- vi) Unconsented collection of brain data
- vii) Informed Consent

The points highlighted above raise genuine concern pertaining to the safety of neuro-data, interestingly, most of these points are covered within the realm of personal data protection principle. However, the intimacy of the neuro-data is more intricate (deeper) as compared to personal data or rather in a simpler tone, neuro-data seem more closer to human dignity. It will be an easier task to just to denominate neuro-data as a species of sensitive data under the data protection regime, but again from the perspective of ‘*scope*’ and ‘*safeguard required*’, the breath of neuro-data is larger. There are schools of thought that bat for recognizing neuro-data as sensitive data due to its intense proximity to the human personality.⁶⁶ Further, as neuro-data will not be covered in the category of special category of data as

66. Bojana Bellamy and Eduardo Bertoni, ‘Neurodata — the New Epicenter of Data Protection’ *Tech Policy* <<https://www.techpolicy.press/neurodata-the-new-epicenter-of-data-protection/>> accessed 5 March 2025.

mentioned under Article 9 of the GDPR, yet with much neurological device progression, it is not an off-shot believe that one day the physiological activity of the human brain may give insights into one's sexual orientation, political opinions and religious belief, all of which will qualify as a sensitive data under Article 9 of the GDPR. If Article 9 of the GDPR has to be the governing principle in this context, the primary condition for processing of the neural data will be based on explicit consent. However, will it be the right approach, it is an accepted thesis, that there is dynamism that underlies the neural data and neurotechnology, it will not be an easy task to capture the scope of the present neural data in one aspect, thus, the genus of the neural data needs to be treated differently than that of personal data (or even sensitive personal data).⁶⁷

7.2.2 *Cognitive integrity and risk-perception*

This thought is more echoed by the fact that the sort of consequence that a breach of neural data (or brain data) can expose onto an individual is far deeper and dire as compared to the kind of consequence that an individual will be exposed to in case of personal data breach. However, there is genuine scepticism on the current growth of the neurotechnology, to be even serious enough to be considered in the legal field, let alone in the neuro science field. *Anna Wexler*,⁶⁸ raises concerns on the current growing frenzy on neuro-rights or even right to thought, on two counts *Wexler* raises scepticism on the future of neuro-rights. Firstly, *Wexler*, truly believes that at the current state of growth, even to imagine a lowest strand of neuro-technology affordable to consumer will be in millions of dollars, with an additional humungous infrastructure cost.⁶⁹ Secondly, to grow the level of accuracy to predict human thoughts, beliefs or any emotion is very skewed.⁷⁰ *Wexler*, insists that even for the Artificial Intelligence to draw a pattern between electrical movement within a part of the brain with a particular emotion might not be accurate enough for it to qualify as a sensitive data.⁷¹ Thirdly, even to qualify as a sensitive data, the data needs to be identifiable to an individual, on this front, it is hard at the first place to establish an accurate relationship between one-set of brain electrical

67. *ibid.*

68. Wexler, Anna, 'At the Crossroads of Neuroethics and Policy: Navigating Neurorights and Neurotechnology Governance' (2024) 15(2) *American Journal of Bioethics Neuroscience* 77-79.

69. *ibid.*

70. *ibid.*

71. *ibid.*

movement with either of the characteristics that are regarded as sensitive; be it religious opinion, political opinion, gender identity or even identity.

Wexler, identifies the means of perception or cognition of a particular object might be different for different individuals, an individual 'Xs' cognition of a particular object might be different than that of individual 'Y', the same object might invoke different set of brain activities for different individuals. In this case, however, the unique brain activity for an individual for an object will be a unique impression on the neural data, particular to that individual, thus, surely coming within the realm of personal data protection.⁷² However, *Wexler*, outrightly condemn the growth of any jurisprudence of neuro-rights as he calls all the threats highlighted earlier are merely exaggerated.⁷³ The current neurotechnology is not in a position to show any dangerous threat to be taken a consideration of, thus, in simpler terms not worth the time.⁷⁴

However, authors like *Rafale Yuste*⁷⁵ emphasis on the need of recognition of the neuro-rights, irrespective of the current state of growth of the neurotechnology⁷⁶ primarily because, the current state of growth as laid the path for future threats that might arise for neural rights.⁷⁷ In simpler terms, it is better to be ready ahead of the threat yet to arrive. Be it exaggeration or a just caution step to prepare for the coming future, what really needs to be deciphered is the scope of revelation of the brain data. As *Wexler*, quite rightly highlighted, the current AI tools are in position to decipher a pattern between 'brain activity' and a 'thought', even if this accuracy is achieved to a certain extent, the next huddle will be knowing what are the content of the thought. If a pattern has been deciphered between 'brain activity' and 'thought', to have some impact, it is required that the technology is in a position to know the content of the thought as well as in a position to even manipulate those thoughts. If the content of the thoughts can be revealed in that case, it will be an appropriate case for personal data, as highlighted earlier. However, this does not in any way belittle the capacity of the current set of technology that can estimate mental workload,⁷⁸ stress

72. *ibid.*

73. *ibid.*

74. *ibid.*

75. Yuste, Rafael, 'Neurorights and New Charts of Digital Rights: A Dialogue Beyond the Limits of the Law' (2023) 30 *Indiana Journal of Global Legal Studies*.

76. *ibid.*

77. *ibid.*

78. *ibid.*

level⁷⁹ and emotions.⁸⁰ There are continuous research being undertaken in Caltech⁸¹ on the possibility of decoding brain data, in one such research, three patients of epilepsy have been subjected to fMRI to study the blood flow in their brain while they are been read sci-fiction novel of ‘*The Moth*’. The underlying idea was to observe the flow of blood in brain when certain phrases were being read and later the patients were called to recall those sentences, and the AI tool that had observed the blood-flow earlier will make prediction of the sentence the patient is going to say. Interestingly, the vocabulary used for this exercise was very less, yet, the accuracy achieved in the exercise was 61%.⁸² These are good indicators that the neurotechnology is well on its way to predict the kind of words that are about to be said an individual, the type of words to be used by an individual will give a lead to the category of theme he/she is talking about. Like, if the word to be used by the individual has religious undertone, a revelation to his religious affiliation can be divulged, the same can happen in case of sexual orientation, political affiliation or ethnicity. The only limitation currently the technology faces is the limited data-set on which the AI is observing the individual and is being trained on, but there surely cannot be scaling problem in coming times.⁸³ Though there are ethical concerns for using of the brain-data at such level. However, currently the prime concern is pertaining to the legislative framework to tackle such questions of liability and responsibility. As highlighted earlier, as these brain-data can reveal sensitive data about an individual, in such a case, there is no limitation to regard them as part of Article 9 of the GDPR.⁸⁴ The author even suggests an additional layer of security for these data, due to their deeper sensitive nature, revelation of such data to any neuro-marketing firm can have devastating impact for individual right, wherein the individual might be subjected to unwarranted stimulation that may make him loose control over his/her senses.

Neuro-marketing is already working in this area, giving stimuli to individual directing an individual to certain choices, that might not be deliberate choice, rather his brain has just been nudge towards that direction. The author truly believes, no other right than ‘*Cognitive Integrity*’ right can

79. *ibid.*

80. *ibid.*

81. Cynthia Eller, ‘A Window Into the Brain’ *Caltech* <<https://www.caltech.edu/about/news/window-into-the-brain#:~:text=In%202021%20and%202023%2C%20Andersen,intention%20can%20be%20carried%20out>>. accessed 5 March 2025.

82. *ibid.*

83. *ibid.*

84. General Data Protection Regulation 2016, art 9.

address the concern of sensitivity of the brain data. As the term '*Cognitive*' is suggestive of understanding by the human brain and '*Integrity*' represents the idea of impenetrable nature.

The authors truly believe that the term '*Cognitive Integrity*' will address both the concerns pertaining to the safety of the brain data and possibility of manipulative measures that the human brain may be made a subject too.

The authors suggest there are darker times to come in the area of neuro-marketing wherein, large showrooms of consumer goods will be laced-up with in-built fMRI readings, where every consumer entering their shops will be monitored, to know their inclination and ads on the screen will keep changing as per the likes of the individual, this will give a nudge to the individual (as a stimuli) to buy something, which the individual will buy without a hint why did he/she did so?

Further, such a scenario, is not a far-off possibility that shops, platforms or any other publicly accessible places will be having '*Sign Boards*' highlighting you are entering into a monitored-space (either by some or the other sophisticated non-intrusive neurotechnology), just like in cases of CCTV surveillance, and the individual entering the space has to think twice before entering the space.

In second scenario, where the thoughts can be manipulated will be a direct violation of human dignity (covered under Article 21 of the Indian Constitution), however, this second situation, only requires to establish that certain stimuli had led to tweaking the brain to produce a result that was not warranted by the victim individual. It is not required that stimulation given to the brain produces the result intended by the stimulation, but the loss of control of the individual victim is justifiably a violation of the human dignity. It turns into a question of self-determination; or the question of decisional autonomy of an individual being at risk.

8. CONCLUSION & RECOMMENDATION

It goes without saying that there are normative overlap of mental integrity, bodily integrity and dignity jurisprudence, the core question that the authors had raised earlier in the starting of the paper was, is it required to set a new set of jurisprudence? Specifically named as neuro-rights for the purpose of maintaining the integrity of the human brain or are there existing sets of rights, capable of addressing the genuine concern raised by

the novel technology. *Christoph Bublitz*⁸⁵ reaffirms that the existing set of jurisprudence on bodily integrity, mental privacy and privacy provides for a layered protection to what is being attempted to be named as neuro-rights. *Bublitz*'s bats for actualization and specification of the existing set of right to cover the requisite area.⁸⁶ However, authors do disagree that existing set of right may not be in a position to be directed at the right place, rather, the actualization of the existing right may still require invocation of it, and this invocation may be termed as '*cognitive integrity*', what others are terming as '*neuro-rights*'. The reason for the authors to suggest this mechanism is simply because certain rights may still not be precise enough to address the intricate questions of autonomy, though the existing right maybe a genus capable of addressing the right-issue, yet, it requires custom-tailoring to be directed at the right place with the right force. For example, the cases of freedom of speech and expressions are appropriately suited to explain authors' point, like in the early cases of freedom of press, the idea of *Right of Circulation*,⁸⁷ *Newspaper Right*,⁸⁸ *Volume of Circulation* and such other rights are not specifically written rights, yet drawing their legitimate space from the genus of Freedom of Speech & Expression.⁸⁹ Idea being that these rights are a means to an end, what the authors calls as invocation of the spirit of the genus right. The invocation is only possible if there is a right in form of a stepping stone to reach the genus right, in the present paper the authors have called it as '*cognitive integrity*'.

Cognitive Integrity and the measures underlying it: The measures that will surely make a way for themselves post-cognitive integrity becomes a part of the Indian Jurisprudence will depend on the context in which the threat arises for the right. The authors would like to discuss few such instances wherein certain measures will be required to be contrived to safeguard '*Cognitive Integrity*'.

Privacy of the Brain Data: At the cost of repetition, the privacy of the neural data has been discussed at length in the earlier part of the paper. The authors have suggested for a more stringent provisions for safeguarding of the neural data, due to its deeper proximity to the human personality. In fact, giving them the stature of sensitive data can be regarded as a standard safety measure. However, the authors believe, something more can be

85. Bublitz (n 8).

86. *ibid.*

87. *Sakal Papers (P) Ltd v Union of India* 1961 SCC OnLine SC 124 : (1962) 3 SCR 842.

88. *Bennett Coleman & Co v Union of India* (1972) 2 SCC 788 : AIR 1973 SC 106.

89. Constitution, art 19(1)(a).

done to provide protection to the neural data, something more sensitive, wherein, the possibility of vices of neuro-marketing arising in the future (be it in the form of intrusive or non-intrusive gadget) can be kept under a check. Measures such as; (a) detailed notice, with continuous update to the consumer as to how his data is being used; and (b) appointment of special officer with expertise in neurotechnology for the companies that are processing neural data (this will be in lines with the position of ‘*Data Protection Officer*’ as suggested in the case of Personal Data Protection laws) may be effective. This specialized body will be well positioned and well trained to know the dynamic nature of the neural data, and will vehemently work in favour of the individual right.

Surveillance Jitters

There is no denial that State too is a relevant party in the citizens’ neural data, the prime concern can be pertaining to usage of neural data as evidence against the accused. However, the authors will not be dealing with this issue, as primarily this issue can easily be tackled by the scope of Article 20 (3) of the Indian Constitution. The judgments of *Selvi* and *State of Bombay v Kathi Kalu Oghad*⁹⁰ will still hold good to deal with possible abuse of doctrine ‘*rule against self-incrimination*’ in case of neural data.

Whereas, in overall cases of surveillance wherein the State might use intrusive technology, in such cases, the principle of personal data protection will be equally applicable to the State and to the Non-State actor.⁹¹ Further, any unwarranted surveillance in any form is already restricted within the Indian Constitution, and can easily be culminated from the judgments of *K S Puttaswamy-I*⁹² & *II*,⁹³ *Kharak Singh v State of U.P.*,⁹⁴ *PUCL v Union of India*,⁹⁵ and many more.

Special wing of Personal Data Protection Board

In cases wherein the individual is using the neurotechnology for conducive purposes such as patient of paralysis using the technology to communicate using the technology to move their limbs or users’ using artificial limbs.

90. *State of Bombay v Kathi Kalu Oghad* 1961 SCC OnLine SC 74 : AIR 1961 SC 1808.

91. *ibid.*

92. *K S Puttaswamy (Privacy-9J) v Union of India* (2017) 10 SCC 1.

93. *K S Puttaswamy (Privacy-9J) v Union of India* (2017) 10 SCC 1.

94. *Kharak Singh v State of U.P.* 1962 SCC OnLine SC 10 : AIR 1963 SC 1295.

95. *PUCL v Union of India* (1997) 3 SCC 433.

As neurotechnology is a dynamic phenomenon, the technology is bound to bring dynamic changes in the context of ‘individual consent’ and ‘controlling mechanism.’ In such a scenario, there has to be a continuous study of the individual autonomy under the usage of neurotechnology. The author suggests establishment of a ‘*Committee of Neurotechnological and Legal experts*’ to monitor the growth of the neurotechnology and usage with the individuals. As in cases of patients using the neurotechnology, it will be hard to draw the bifurcating line as to when the individual choice starts or the influence of the technology kicks-in. Technology that are capable of influencing thoughts or choices will be detrimental to individual choices. The constitution of the committee is suggested by the authors in line with the provisions of the similar nature suggested under the *The Rights of Person with Disability Acts, 2016*.⁹⁶ This Committee can also be a special wing of the Personal Data Protection Board established under the *Digital Personal Data Protection Act, 2023*.

The core idea will be to detect as to when the influence of the technology has affected the human brain. This is only possible with a continuous monitoring of the gadget in question.

Further, in cases, wherein the individual himself is in a position to detect the influence of technology upon themselves, there are few rights that the authors are pushing forward should be there with the individual also, so it can have some leverage against the infringement by such technology.

Certain Rights that can be exercised by the individual are as follows:

(a) Right to Opt-Out/detach

The right to opt-out has gained much international traction, specially, in the field of international human rights law. As the name of the right suggest, the right is meant to bring back the status-quo, in cases the individual does not feel comfortable with the technology, it is a simpler idea of not being subject to technological intervention with one’s body. The individual should also be entitled, that he/she is reversed back to the physical and neurological state of being that he/she was in when the technology was applied onto the individual.

(b) Insurance Pool

96. Refer to Rights of Person with Disability Act 2016, ss 60, 65 and 66.

Further, in cases of damages faced by the individual, be it bodily damage or decisional damage (in form of impact on the decision-making capacity) the concerned individual should be compensated for the same from the company concerned. This principle will be based on tortious liability cases. However, the State as a part of the regulatory framework may establish a joint insurance pool, wherein, all the tech companies coming-up with intrusive and non-intrusive neurotechnology are required to contribute a certain amount of their revenue to the pool, thus, the insurance pool can be used for the purpose of compensating the individual damaged by the technology in question.

Additionally, certain principles of consumer protection such as '*product-call back*' have to be robustly practiced. However, this does not in any way means to step on the jurisdiction of the Medical Device Rules, 2017.

(c) Right to Explanation

Right to explanation is one of the most talked about rights in the contemporary times, primarily because as technology has engulfed the human society, it is becoming more and more intriguing to know modus operandi underlying the technology. Especially in cases of Artificial Intelligence, the algorithmic setup they have and what result do they produce. In cases of neurotechnology, concerned individual and close aids has all the right to know how the technology is working, what modus-operandi it has and what consequences it can expose the individual too. This will reflect a closer control that the individual still can exercise over his physical body. Asking for explanation can have a deeper controlling measure over the technology.