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Can the Brain be Guilty? The Impact of Neuroscience on Criminal Liability

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The relationship between neuroscience and criminal law has become a subject of increasing academic and legal interest. Developments in brain science have challenged traditional assumptions regarding human behaviour, free will, and criminal responsibility. Modern neuroscientific studies suggest that human actions may be influenced by neural processes that operate beyond conscious awareness. This raises an important question: if an individual's behaviour is significantly shaped by brain activity, to what extent can they be held criminally liable for their actions? This article examines the impact of neuroscience on criminal liability, particularly in the context of the Indian legal system. It explores the traditional concepts of actus reus and mens rea, analyses major scholarly perspectives on free will and responsibility, and evaluates the relevance of neuroscientific evidence in criminal proceedings. The article further discusses statutory provisions relating to mental incapacity and expert evidence under Indian law. While neuroscience offers valuable insights into human behaviour, this article argues that it should supplement rather than replace traditional principles of criminal responsibility.

Keywords: *neuroscience, neurolaw, criminal liability, mens rea, free will.*

INTRODUCTION

The criminal justice system is founded upon the assumption that individuals possess the capacity to make conscious choices and can therefore be held accountable for their actions. Criminal liability traditionally depends upon two essential elements: the commission of a prohibited act (actus reus) and the existence of a guilty mind (mens rea). The law has long proceeded on the belief that human beings are rational actors capable of understanding the nature and consequences of their conduct.

In recent decades, however, advances in neuroscience have begun to challenge this traditional understanding. Scientific studies examining brain activity, decision-making processes, and human behaviour have raised questions about the extent to which individuals exercise conscious control over their actions. Neuroscientific research increasingly suggests that human behaviour may be influenced by neurological processes that occur before an individual becomes consciously aware of making a decision. Such findings have reignited longstanding philosophical debates concerning free will, determinism, and moral responsibility.

The emergence of neurolaw, an interdisciplinary field that examines the relationship between neuroscience and legal principles, has brought these debates into the realm of criminal justice. Questions that were once largely confined to philosophy now possess significant legal implications. If brain abnormalities, neurological disorders, or unconscious neural processes influence behaviour, should such factors affect criminal liability? Can neuroscientific evidence assist courts in determining criminal intent? More importantly, can the law continue to hold individuals fully responsible if scientific evidence suggests that human decision-making may not be entirely autonomous?

At first glance, these questions may appear to have already been addressed by existing legal doctrines. Indian criminal law recognises circumstances in which an individual's mental condition may affect criminal responsibility. Section 22 of the Bharatiya Nyaya Sanhita, 2023 provides a defence based on unsoundness of mind,[1] while Sections 20 and 21 acknowledge the significance of mental development in determining criminal liability.[2] Furthermore, Section 45

[1] Bharatiya Nyaya Sanhita, 2023, s 22
[2] *Ibid* ss 20, 21

of the Indian Evidence Act, 1872 permits courts to consider expert opinions on matters requiring specialised knowledge, including medical and psychiatric evidence.[3]

However, modern neuroscience presents challenges that extend beyond the traditional legal understanding of mental incapacity. The existing legal framework was developed primarily to address conditions such as insanity and cognitive impairment. Contemporary neuroscientific research, by contrast, seeks to explain how ordinary human decision-making itself may be influenced by unconscious neural processes. Consequently, the issue is not whether a mental condition is relevant to criminal liability—the law already recognises that it is. Rather, the more pressing question is whether advances in neuroscience require a reconsideration of the existing standards used to assess criminal responsibility and mens rea.

This article examines the growing relationship between neuroscience and criminal liability. It analyses prominent scholarly perspectives on free will and legal responsibility, explores the Indian legal framework governing mental capacity and criminal intent, and evaluates the role of neuroscientific evidence in criminal proceedings. The article argues that while neuroscience provides valuable insights into human behaviour and decision-making, it should supplement rather than replace the traditional principles of criminal responsibility that continue to underpin the criminal justice system.

LITERATURE REVIEW

Benjamin Libet and the Question of Free Will: The debate between neuroscience and criminal liability gained significant attention through the work of Benjamin Libet. In his famous experiments conducted during the 1980s, Libet observed that a person's brain showed signs of activity before the individual became consciously aware of making a decision. This finding led many scholars to question whether human beings truly possess free will or whether our decisions are initiated by unconscious neural processes before we become aware of them.[4]

[3] Indian Evidence Act 1872, s 45

[4] Benjamin Libet, 'Unconscious cerebral initiative and the role of conscious will in voluntary action' (1985) 8(4) Behavioral and Brain Sciences 529–566 <https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/unconscious-cerebral-initiative-and-the-role-of-conscious-will-in-voluntary-action/D215D2A77F1140CD0D8DA6AB93DA5499> accessed 22 May 2026

Libet did not completely reject the existence of free will. Instead, he proposed that while unconscious brain activity may begin the decision-making process, individuals may still possess a conscious 'veto power' that allows them to stop or control an action before it is carried out.

From an Indian legal perspective, Libet's work presents a challenge to the traditional understanding of mens rea. Criminal law assumes that an individual consciously forms an intention before committing an offence. If decisions begin unconsciously, it raises questions about the extent of personal responsibility. However, the existing framework under the Bharatiya Nyaya Sanhita continues to focus on whether a person had the capacity to understand and control their conduct at the time of the act rather than the neurological origin of the decision itself.

Joshua Greene and Jonathan Cohen's Perspective: Joshua Greene and Jonathan Cohen advanced a more radical argument regarding the implications of neuroscience for criminal law.[5] According to them, as scientific knowledge about the brain develops, society may gradually move away from viewing criminals as morally blameworthy individuals and instead view criminal behaviour as the result of biological and neurological processes or may be the impact of past trauma which society may gradually move away from viewing criminals as morally blameworthy individuals and instead view criminal behaviour as the result of biological, neurological, and environmental influences.

They argue that if human actions are heavily influenced by brain mechanisms, then traditional ideas of punishment based on moral blame may become less convincing. In such a system, the focus of criminal justice should shift toward rehabilitation, deterrence, and public protection rather than retribution.

Their approach indirectly challenges the assumptions underlying criminal liability. While Sections 20, 21, 22 and 23 of the Bharatiya Nyaya Sanhita recognise limited situations where a person lacks sufficient mental capacity, Greene and Cohen's argument goes further.[6] They suggest that all human behaviour may be influenced by neurological causes to some extent. If

[5] Joshua Greene and Jonathan Cohen, 'For the law, neuroscience changes nothing and everything.' (2004) 359(1451) Philosophical Transactions B <https://pmc.ncbi.nlm.nih.gov/articles/PMC1693457/> accessed 22 May 2026

[6] Bharatiya Nyaya Sanhita 2023, ss 20-23

accepted completely, this approach could significantly weaken the traditional concept of mens rea.

Stephen Morse's Critique of Neurolaw: Stephen Morse is one of the strongest critics of exaggerated claims made by neurolaw scholars. He argues that neuroscience does not eliminate legal responsibility simply because behaviour originates in the brain. According to Morse, every human action is ultimately produced by the brain. Therefore, proving that a person's brain was involved in an action tells us very little about whether the person should be held legally responsible.

Morse warns against what he calls 'Brain Overclaim Syndrome,' which refers to the tendency to assume that brain scans and neuroscientific findings can answer legal questions regarding guilt and responsibility. In his view, criminal liability remains a normative legal concept rather than a purely scientific one.

Morse's position aligns closely with the Indian legal framework. Sections 20, 21, 22 and 23 of the Bharatiya Nyaya Sanhita do not excuse a person merely because a biological or neurological explanation exists.[7] Instead, these provisions require proof that the person lacked the capacity to understand the nature of the act or its consequences. Similarly, Section 39 of the Bharatiya Sakshya Adhiniyam allows expert evidence to assist the court, but does not permit experts to determine guilt or innocence.[8] The final decision remains with the court.

Michael Gazzaniga's Middle-Ground Approach: Michael Gazzaniga adopts a balanced position between the extremes represented by Greene and Morse. He accepts that neuroscience can provide valuable insights into human behaviour and decision-making. At the same time, he argues that legal responsibility should not disappear simply because science identifies neural causes for behaviour.

According to Gazzaniga, human beings live within a social and legal framework where responsibility is assigned to persons rather than brains. While neuroscience may explain why a person acted in a certain way, it does not necessarily excuse the conduct. Instead, neuroscientific

[7] *Ibid*
[8] Bharatiya Sakshya Adhiniyam 2023, s 39

evidence should be used as an additional tool to help courts understand behaviour and determine appropriate punishment.

This approach appears most consistent with Indian criminal law. The BNS already recognises exceptions for children, persons of unsound mind, and persons affected by involuntary intoxication. Likewise, the Bharatiya Sakshya Adhiniyam permits expert evidence to assist the court. Gazzaniga's theory supports the use of neuroscience as a supplementary aid without replacing established principles of criminal responsibility.

MAIN ANALYSIS: NEUROSCIENCE AND INDIAN CRIMINAL LIABILITY

The Indian criminal justice system has long recognised that criminal liability depends upon the mental capacity of the accused. This is reflected in Sections 20, 21, 22 and 23 of the Bharatiya Nyaya Sanhita.

Section 20 provides complete immunity to children below seven years of age because they are considered incapable of understanding the consequences of their actions.[9] Section 21 extends protection to children above seven and below twelve years who have not attained sufficient maturity of understanding.[10] Section 22 exempts persons of unsound mind who are incapable of understanding the nature of their conduct,[11] while Section 23 protects individuals whose judgment has been impaired due to involuntary intoxication.[12]

These provisions demonstrate that Indian law already acknowledges the importance of mental capacity in determining criminal liability. The law does not punish a person merely because a harmful act has occurred. It also considers whether the accused possessed the ability to understand the nature and consequences of the conduct.

The real challenge presented by neuroscience is different. Modern neuroscientific research does not merely deal with insanity or cognitive impairment. Instead, it raises broader questions regarding how all human decisions are formed. If neural activity begins before conscious

[9] Bharatiya Nyaya Sanhita 2023, s 20
[10] *Ibid* s 21
[11] *Ibid* s 22
[12] *Ibid* s 23

awareness, as suggested by Libet, should criminal responsibility be reconsidered? If criminal behaviour can be linked to neurological abnormalities, should punishment be reduced?

The answer is not straightforward. The views of Greene and Cohen suggest that neuroscience may eventually transform the foundations of criminal law by reducing the importance of moral blame. However, this approach risks undermining the very concept of personal accountability upon which criminal law is based.

On the other hand, Stephen Morse correctly points out that legal responsibility cannot be reduced to brain activity alone. Courts do not punish brains; they punish individuals who act within society. A brain scan may reveal important information, but it cannot independently determine whether an accused possessed mens rea.

The Indian position appears closer to Gazzaniga's middle-ground approach. The law already permits consideration of mental incapacity through Sections 20 to 23 of the BNS[13] and allows expert testimony under Section 39 of the Bharatiya Sakshya Adhiniyam.[14] The admissibility of evidence indicating a person's mental condition under Section 12 of the Bharatiya Sakshya Adhiniyam demonstrates that Indian evidence law already recognises the relevance of psychological and cognitive states.[15] Expert opinions relating to mental illness, neurological disorders, and cognitive impairment are relevant facts and may assist the court in determining criminal responsibility.

Therefore, neuroscience should not replace traditional legal concepts such as mens rea. Instead, it should function as a supplementary evidentiary tool. Neuroscientific evidence can help courts better understand an accused person's mental condition, but the ultimate question of criminal responsibility must continue to be determined through legal standards rather than scientific findings alone.

[13] Bharatiya Nyaya Sanhita 2023, ss 20-23
[14] Bharatiya Sakshya Adhiniyam 2023, s 39
[15] *Ibid* s 12

RECOMMENDATIONS

Neuroscientific evidence, such as brain scans and expert medical opinions, should be used by courts as supporting evidence, especially in cases involving mental illness or neurological disorders.

Judges, lawyers, and investigators should be given basic training about neuroscience so that they can better understand and evaluate such evidence. Clear legal guidelines should be framed regarding when and how neuroscientific evidence can be used in criminal trials.

Courts should be careful not to rely solely on brain scans while deciding criminal liability, as criminal responsibility involves legal and ethical considerations as well. Greater cooperation between legal experts, neuroscientists, psychiatrists, and psychologists should be encouraged to ensure a more accurate assessment of an accused person's mental condition.

Indian criminal law should remain open to scientific developments while continuing to protect the principles of mens rea, free will, and personal accountability. Further research in the field of neurolaw should be encouraged to understand how future developments in neuroscience may affect criminal justice systems.

CONCLUSION

The relationship between neuroscience and criminal law is one of the most interesting and debated issues in modern legal studies. As our understanding of the human brain continues to grow, it has become increasingly important to examine how scientific discoveries may affect traditional legal concepts such as free will, mens rea, and criminal responsibility. The works of Benjamin Libet, Joshua Greene, Jonathan Cohen, Stephen Morse, and Michael Gazzaniga have played a significant role in shaping this debate.

Libet's experiments raised an important question: do we consciously make decisions, or does the brain begin the process before we are even aware of it? Building on such findings, Greene and Cohen argued that criminal behaviour should be understood more through the workings of the brain and less through the idea that individuals always act out of completely free choice. On the other hand, Stephen Morse warned against relying too heavily on neuroscience and reminded us that criminal responsibility is ultimately a legal question, not a scientific one. Michael Gazzaniga

offered a middle path by accepting the value of neuroscience while maintaining that responsibility should continue to be attached to people rather than to their brains alone.

When these theories are examined alongside Indian law, it becomes clear that our legal system already recognises the importance of mental capacity in determining criminal liability. Sections 20, 21, 22, and 23 of the Bharatiya Nyaya Sanhita, 2023 protect individuals who lack the necessary mental capacity to fully understand their actions.[16] Similarly, the Bharatiya Sakshya Adhiniyam, 2023 allows courts to consider expert evidence and facts relating to a person's mental condition when deciding questions of criminal responsibility. This shows that Indian law has long acknowledged that a person's state of mind is relevant while determining guilt.

However, neuroscience does not yet provide a strong enough reason to completely abandon traditional legal concepts such as mens rea, intention, knowledge, and criminal responsibility. While brain scans and neuroscientific evidence can help us better understand human behaviour, they cannot by themselves decide whether a person is guilty or innocent. Criminal liability involves not only science, but also legal, moral, and social and ethical considerations.

Therefore, neuroscience should be viewed as a helpful tool rather than a replacement for existing legal principles. Its real value lies in assisting courts to better understand mental conditions, neurological disorders, and human behaviour while ensuring that justice is delivered more accurately. As neuroscience continues to develop, Indian criminal law should remain open to scientific advancements, but at the same time preserve the fundamental principle that individuals are responsible for their actions unless the law provides a valid exception.

[16] Bharatiya Nyaya Sanhita 2023, ss 20-23