
NEUROSCIENCE IN THE COURTROOM: EXPLORING THE ROLE OF BRAIN SCIENCE IN MODERN JUDICIAL DECISION-MAKING

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ABSTRACT

Neuroscience and law has introduced transformative growing development among the judicial system worldwide. Neuroscience is the form of scientific study of the nervous system and the brain cells which is majorly being used in the courtrooms to evaluate the criminal responsibility, intention, sentences and competency. Brain technology majorly influencing legal arguments and judicial reasoning in the court rooms such as (fMRI) functional magnetic resonance imaging and (EEG) electroencephalography.

The Unification of neuroscience in court proceedings has grows moral, constitutional and evidentiary questions towards privacy, free will and Liability. This article majorly focused on the approach of neuroscience in courtroom proceedings its pros and cons its limitations legal ethical and moral implementation associated with neuroscience evidences. Further it explores the role of neuroscience in the findings of criminal justice systems and evaluates whether neuroscience can contribute to the fair and justice

Keywords: Neuroscience, Courtroom, Evidence, Brain, Criminal justice system, Judicial system.

INTRODUCTION

Scientific approach and law both have been historically intersected with each other to improve the delivery of justice and the evaluation of evidences. In today's decades neuroscience has developed as in significant scientific influence towards legal system across the world wide. Neuroscience majorly focuses on the study of brain and nervous system and its structure which helps the researchers to understand the emotions and human behavior and decision-making approach. Neuroscience mostly focuses on the neuroscience evidences to know the intention of the criminals their mental capacity and behavioral orders.

The concept of neurology has developed as an combining study of legal system with neuroscience. Judges lawyers and policymakers are now facing difficulties regarding the questions of criminal transparency and its accountability when brain abnormalities and disorders affect the human behavior. Neuroscientific approaches are majorly used in criminal cases to reduce the sentences and responsibility after brain assessments and cognitive assessments.

The approach of neuroscience in the courtroom proceedings represents challenges as well as opportunities. Have avar it improves the understanding of human behaviour and mental disorders although major rely on neuroscience evidences may hamper the traditional legal approaches like free will ethical and moral accountability. That's why it is necessary to make sure that there shall we balance between scientific approach with legal justice and fairness.

Overall, this article focuses on the concept of neuroscience in law and the techniques which used in court rooms in the proceedings and criminal responsibilities and how you pro science effects the ethical and legal concerns in a society.

CONTENTS OF THE ARTICLE

MEANING, SCOPE AND NATURE OF NEUROSCIENCE IN LAW

Neuroscience is the study of brain cells and nervous system particularly and its effect on behaviour and understanding. When it comes on the application of neuroscience in legal context neuroscience explains the brain structure and the functioning which affects neurologically and impacts the decision-making emotions action and criminal conduct.

The appliance of neuroscience in judicial systems includes such as:

1. Assess the mental competency
2. determines the criminal responsibility
3. Evaluation of memory of witness and its reliability
4. identify is neurological disorders
5. Decision making on punishments and rehabilitation
6. Predicts violence or unethical behaviour

These approaches effectively influence the constitutional law criminal law evidence law and forensic approach.

TECHNIQUES OF NEUROSCIENCE USED IN COURTROOMS

Techniques of neuroscience used in the courtrooms are called “neurolegal” or “neurolaw” focuses on brain science to know the credibility of offender culpability and sentences.

(fMRI) Functional magnetic resonance imaging: functional magnetic resonance imaging focuses on the activities of brains by detecting the changes in the flow of blood. Sometimes courts consider the functional magnetic resonance imaging evidences to know the mental state of offender and their emotional system.

(EEG) Electroencephalography: Electroencephalography collects the electrical activities in the brain cells and help out in detecting the neurological disability such as brain injuries epilepsy and other mental disorders.

Positron Emission Tomography: PET Scan identifies metabolism activities in brain cells and can reveal impairment effects regarding the aggressive and impulsive acts or behaviour.

Neuropsychology: neuro psychological approach is used to know and to determine the criminal intention of an offender by evaluating the emotional system, intellectual activity, reasonableness and memory.

CRIMINAL LIABILITY AND NEUROSCIENCE

Most disputed issue of criminal law is that brain disorders will reduce the personal liabilities of criminal actions or not. Accused so many times in their arguments are you that the neurological abnormalities are impaired with the ability to control behaviour of the offenders and to understand the major consequences behind it.

Examples: traumatizing brain injuries brain tumor brain hemorrhage or other brain abnormalities or disorders may influence the impulsive nature or aggression of a person and their decision-making capacity. Neuro scientific approach has been used to give support to the defense are as:

- Defense of insane
- Lack of intention
- Reduction during sentences
- Decline capacity

It has been seen that courts in some jurisdictions considered neurological evidences where as in deciding the imprisonment for particularly in capital penalties and journal justice cases.

JUVENILE JUSTICE SYSTEM AND NEUROSCIENCE

Today neuroscience has entrenched that the pubescent brain is not fully grown especially the pre- cortex liable for judgement and impulsive nature. This understanding has majorly influenced the journal justice system with neuroscience.

Quotes have seen that the juvenile's possession reduce the majority level and potential regarding rehabilitation. Neuroscience approaches have contributed to the Restrictions on many punishments are as capital punishments and life imprisonment for minors. Neuroscience promotes the rehabilitation rather than punitive approach towards to vinyl offenders or minors.

CHALLENGES OF NEUROSCIENTIFIC EVIDENCES

Neuroscience is growing with its importance but still in the court rooms it faces several

limitations and restrictions.

Scientific instability: it is not necessary that brain scans always link a connection between brain disorders and criminal behaviour. Behaviour of humans is majorly influenced by environmental factors, social factors and psychological factors.

Misinterpretation: juris and judges have given enough importance to colorful brain impacts without fully knowing the fact that is there any scientific limitation or restriction or not.

Moral and Ethical Concerns: brain-based evidences representation in the courtroom rays the concern towards the privacy of person and their mental state with their consent and free will.

Free-Will: neuroscience challenges the customer legal approaches with says that individual person is free to choose their actions and they know what will be the reaction. The concept of moral or ethical responsibility of offender becomes more complex when it came on the behaviour which is determined biologically.

Validity Issues: courtrooms determines that the neuroscientific evidences fulfill the legal approaches of relying and applicability prior admitting it as evidence for case.

LEGAL AND ETHICAL CONCERNS

The growing use of neuroscientific approach in legal argument and proceedings develops the major concerns toward ethical questions.

- ❖ **Privacy Concerns:** article 21 of Indian constitutional gives the right of privacy to all the offenders by the brain scans we in French the right to privacy of a person which may reveal their personal information and violets their right of privacy.
- ❖ **Equality Before Law:** article 14 of the constitution talks about equality before law with says inequality will give chances towards neuro scientific technology to become poorer and more unhelpful for the offenders.
- ❖ **Exploitation of evidences:** misuse or manipulation of the evidences will miss lead the court rooms if the neuro scientific data is not proper and selective in nature.
- ❖ **Human Dignity:** more rely on biological appliances will suppressed the individual to

be more productive brain chemistry Instinct of moral agents.

That's why strict rules for moral and ethical standards are needed for safety of Judiciary while using the neuro scientific evidence in the courtroom proceedings.

FUTURE DEVELOPMENT OF NEUROSCIENCE IN LEGAL SYSTEMS

The futuristic development of neuroscience and law is expected to be more spread full worldwide. Where is the growing of artificial intelligence and advance technology of neuro imaging can influence the legal process and investigation approach of judiciary.

However, it is expected that neuroscience will be and support function for the judicial reasoning rather than a replacement for judicial purpose. Foreign proper and better growing of neuroscience in legal system it is necessary that quote rooms will evaluate the evidences of neuroscience with legal principles, social responsibility and moral considerations.

Legal experts should require proper training to understand the concept of neuroscientific with good efforts. For balancing justice, the collaboration among the psychologist, neuroscientist and legal professionals is needed.

CONCLUSION

Neuroscience has grown with revolutionary fact on today's legal system by giving scientific measures into cognition, human behaviour and criminal liabilities. It's implementation in proceedings of courtrooms has improved the understanding of mental disorders, illness, Juvenile behaviour, minor behaviour and Punishments. Neuro scientific evidence approach will assist the quarters proceedings in giving more balanced and reasonable justice to individuals.

Overall, the use of neuroscientific evidence also represents significant scientific, moral, ethical and legal challenges. Brain imaging techniques are not fully explaining the conduct of human nor should the y diminish the concept of transparency and free will that form the foundation of legal system. So much dependency on neuroscientific evidences can create risk of misrepresentation of evidences privacy violation of article 21 and unfair legal outcomes which affect the person's life.

Therefore, neuroscience shall be used with proper care and question in the courtroom

proceedings with a good responsibility. A balanced and reasonable approach combines scientific knowledge with legal reasoning and ethical approach which is essential to make sure that the justice is delivered with fairness and protection of human rights is there in the field of neurolaw.

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