THE NEUROLOGY OF CRIMINAL DEFENCE OF INSANITY*

Abstract

In criminal jurisprudence, culpability of a defendant is determined strictly by the establishment of the physical and mental elements of the offence. Albeit, in certain rare circumstances both the guilty act, to wit, the actus reus and the guilty mind, to wit, the mens rea could be established and proved as required by law, yet the defendant might not be criminally culpable. One of such very rare occurrences is when the statutory defence of insanity is raised. Whenever it is properly raised and successfully defended, the defendant is completely exculpated from any modicum of criminal culpability no matter how grave and sever the offence may be. Therefore, this academic investigation is geared towards the critical examination of the root, the raison d'etre of why the criminal defence of insanity is so effective in criminal jurisprudence. This is knitted upon the specific objective of unveiling whether the efficacious defence is neurologically oriented. The adopted methodology is doctrinal using primary and secondary sources of information as means of data collection and tools for analysis of chosen indices. The work found and concluded that the root of raising the defence is endogenous due to imbalance in the secretion and circulation of biochemical substances in the brain circuitry systems resulting to damages of some vital parts of the brain. Hence, the defence is absolutely rooted on neurological stimulation as it is generated from the neural correlates of the brain circuitry systems.

Keywords: Neurology, Criminal, Defence, and Insanity.

1. Introduction

The essence of having statutory and common law criminal defences is to either mitigate punishment or to secure an outright acquittal of the defendant from any criminal responsibility.[1] Defences in criminal jurisprudence are mechanisms entrenched principally in statutes to further strengthen the actual determination of the real mental state of the defendant as at the time of commission of the offence. They are statutory shields at the disposal of the defendant, once they are properly raised and are successfully defended, the defendant may either be exculpated from criminal liability or punishment drastically reduced to the barest minimum. The potency of statutory criminal defences in the course of criminal proceedings is firmly reiterated by the settled principle of law that the trial court is at liberty to raise any available defence and rely on it which is supported by the evidence, even if the defendant inadvertently omitted to raise it. This principle of law in criminal jurisprudence is expounded by the highest in the pedigree of courts in Nigeria, in *Orubo v The State*,[2] where *Abba Aji, JSC.*, held as follows:

> An accused person is entitled to raise any defence available to him at the trial, and the court is bound to consider same. In fact, even where he did not raise it, he can benefit from it, if it is available in his case. The settled principle of law is that if, from the totality of evidence, a particular defence avails an accused person in a criminal matter, he should be given the benefit of that defence notwithstanding the fact that he did not specifically raise it.[3]

The legal implications of criminal defences are rather very simple, which is an outright acknowledgement of guilt, that is, an admission of the *actus reus* by the defendant, on the premise that the defendant committed the offence, but under some exculpatory influences allowed by law. These influences in certain circumstances, if not all, could deprived the defendant from having the inert capacity to make rational decisions, understand the situation and complete loss of environmental consciousness. Conversely, this implies that a defendant who rescinds the commission of the offence is not entitled to raise and defend any of the special statutory defences. Only those who acknowledged the commission of the *actus reus* are allowed by law to rely on the special shields provided by law. The well settled principle of law is expatiated by the echelon in the hierarchical order of courts in Nigeria, in *Posu vs The State*,[4] where the law lords stated thus:

> The appellant in his testimony did not plead any of the special defences- self-defence or provocation. That of course entails his admitting, the *actus reus*. The plea of any of the two special defences effectively renounces or negates the necessary criminal mental element or the *mens rea* to complete the offence. These special defences, being pleas of justification or

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[1] O I Derik-Ferdinand, Lectures Monogram on Criminal Law II, Unpublished work, Bayelsa State Polytechnic Aleibiri, P.M.B 168 Yenagoa, Bayelsa State, 2018.

[2] [2021] 16 NWLR (Part 1803) 549 SC; [586, paras. E-F].

[3] *Edoho v The State* [2010] 14 NWLR (Part 1214) 651 SC.

[4] [2021]4 NWLR (Part 1767) 434 SC; [451, paras. F-G] per, Eko., JSC.

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> for mitigation of sentence avail only the accused person [defendant] who had admitted the *actus reus*. The appellant had thus, in his oral testimony which denied the commission of the offence abandoned any of the special statutory defences and the available evidence did suggest any.

These escape routes are allowed by law to simply underscore the prominence and supremacy of the mental element of an offence over and above the physical element, in the assessment of criminal culpability of an act or omission. Criminal defences are judicial tools in the assessment and evaluation of the mental elements of an offence in order to ascertain vividly if the defendant was at the right frame of mind as at the time the offence was allegedly committed. Since they are products of internal mental acumen of the defendant, they are therefore connected with neural functionality of the brain circuitry systems. Having shown to be related with the functions and operations of the brain, it then follows that, criminal defences are purely neuroscientific in all ramifications. It has been demonstrated in this scholarly investigation that mental elements of offences are by their very nature and character neurological, and that criminal defences have strong nexus with mental activation and stimulation of the brain. It is therefore the intendment of this fragment of the dissertation to demonstrate and illustrate how defences in criminal jurisprudence are direct derivative outflow of neuroscience and the surrounding environment. It is worthy of note to reiterate herein as a caveat that in the course of illustration using some known criminal defences, emphasis shall be made principally on the neurological correlate of the defences and the function of the brain. In relation to the above limitation, there shall be deliberate effort to deemphasise the judicial nitty-gritty in the sequential process of raising and defending such defences. Also to be less emphasized are the condition precedents and judicial modalities of sustaining such defences whenever they are raised in a proceeding. The vital point of emphasis hereto is that such defences are statutorily known in Nigeria. They are inclusive in the extant and contemporary criminal jurisprudence in Nigeria. A thorough evaluation of criminal defences, especially, defence of insanity is neurologically based in their operational foundation. Assessment and appraisal of those defences in Nigeria using neuroscientific oriented knowledge has been in operation covertly in criminal proceedings since the promulgation of the Criminal Ordinance in 1904. The illustrative explanation of the correlation between the criminal defence of insanity and neuroscience in Nigeria is discussed as follows:

2. The Meaning of Insanity:

There is no doubt that no definition is universally accepted, especially in the realm of legal jurisprudence. This categorical assertion is almost in tandem with the jurisprudential postulation that terms, especially legal terms, should not be defined, rather they should be described or identified and used contextually whenever the need arises for legal utilization.[5] Howbeit, it is pertinent to have a working definition of the term 'insanity' for the purposes of this scholarly investigation. Accordingly, the Black's Law Dictionary,[6] insanity defines as any mental disorder severe enough that prevents a person from having legal capacity and excuses the person from criminal or civil responsibility. Insanity in this perspective is legal, and not on absolute medical standard. The term is also referred to as legal insanity or lunacy. In a similar vein, the Osborn's[7] defines insanity as the unsoundness of mind, mental disease giving rise to defect of reason which renders a person not responsible in law for his actions. Moreso, madness or insanity is considered at least from the periods of civilization and enlightenment as typically loss of reasoning and environmental consciousness.[8] Furthermore, insanity is defined judicially, in *Achuku vs The State*[9] as follows: 'In the sight of the law, insanity is a blanket term which encompasses a considerable variety of mental abnormalities, mental infirmities, neurosis and psychosis.'

From the foregoing submission, the totality of the various definitions given above, the term insanity simply means a state of mental incapacitation, unsoundness of mind, defect, disorder or impairment which renders the person so affected to have complete loss of reasoning and consciousness of environmental reality. It could also be perceived to mean an agglomeration of all forms of mental and neural malfunctioning which deprive a person of cognitive appreciation, thinking right and taking apt and rational decisions. In an insane person, all forms of socially accepted behaviour are completely absent. His conducts become sacrilegious, taboo and abnormal to all accepted social norms and standards. He becomes an endanger specie and severe threat to himself, to other people and the society at large. It is one of the very worse illnesses on earth

[5]O I Derik-Ferdinand and P. O. Okolo, 'The Concept of Dualism of Title to Land in Nigeria' [2015] (5)(2) *American International Journal of Contemporary Research*,176. See also at www.aijcrnet.com.

[6]B A Garner, *Blacks' law dictionary*, (Editor-in-Chief, 8th Edition Thompson West, 2004), 1750.

[7]S Bone, *Osborn's Concise Law Dictionary*, (Editor-in-Chief, 9th Edition, Sweet and Maxwell,2001), 209.

[8]C D Frith,' Understanding Madness' [2016] (139) (2) *Oxford Academic journals*, 635. Also available at https//doi.org.10.1093/brain/awv373; academic.oup.com; googleweblight.com. Accessed on December 5, 2020 at about 13:26 hours Greenwich meantime (GMT).

[9] [2015] 6 NWLR (Part 1456) 425 CA, [461, paras. F], per Ogbuinya, JCA.

3. Historical Evolution of the Defence of Insanity:

Historically, the postulation that criminal defendants in some peculiar circumstances should not be held criminally responsible for their acts or omissions by reason of mental disorder or defect in reasoning has been well established and developed in Anglo-American laws for centuries. As early as 1581, a legal treatise distinguished between those who understood the difference between good and evil and those who do not.[10] The 1581 Treatise holds thus: 'If a madman or a natural fool, or a lunatic in the time of his lunacy do kill a man, they are not felonious of the act for they cannot be said to have any understanding will'. By the 18th century, the British had elaborated on this distinction and developed what became known as the '*Wild Beast Test.*' That if a criminal defendant is so bereft of understanding and capacity, he commits no wrong and would not be held criminally responsible[11] for any act or omission. Beside the sound foundation laid hereinabove, the historical evolution that ignited the global defence of insanity had its legal roots in 1843 when a Scottish woodcutter named Daniel M'Naughten murdered Edward Drummond, Secretary[12] to the British Prime Minister, Sir Robert Peel, thinking he had killed the Prime Minister under the influence of schizophrenic and strong belief that the Prime Minister was behind his financial misfortunes. In the course of trial, the defence pleaded insanity and was allowed. Queen Victoria and House of Lords disapproved the verdict of 1843 and summoned Common Law Judges[13] to review the decision and came up with the popular *M'Naughten Rule* that gave birth to the present day defence of insanity in criminal proceedings in most countries of the world. These rules formulated by the House of Lords in conjunctions with the Common Law Judges are the bedrock of the defence of insanity which is still operational in most jurisdictions of the world.

The M'Naughten Rule is the first ever formal and standardised rule developed to guide the court in handling issues of insanity whenever it is raised in the course of criminal proceedings.[14] Its fundamental presupposes the following essence as principal guidelines:

1. Everyman is presumed sane unless the contrary is proved;
2. To establish a defence on the ground of insanity, the accused must clearly show and prove that at the time of committing the act, the accused was labouring under such a defect of reason, from a disease of the mind capable of depriving him the following:
   a) The capacity to know the nature and quality of the act he was doing; and
   b) If he did know it, that he did not know he was doing what was wrong.[15]
3. If a man commits a criminal act under an insane delusion, he is under the same degree of responsibility as he would on the facts as he imagined them to be.

The basis of the Rule is to determine if a defendant that is relying on the defence could distinguish right from wrong as at the time of commission of the offence. By this the defendant is required to know the salient difference between wrong and right in order to sustain conviction. This rule remains the only rule for the evaluation of the defence of insanity in most commonwealth nations before the emergence of some rules in other jurisdictions. Some of the rules that were developed after the M'Naughten Rule are as follows: The Durham Rule, developed in New Hampshire in 1871; The Irresistible Impulse Test (IIT), developed in 1887; the American Law Institute's Model Penal Code Test (ALI), developed in 1962; Hinckley Trial Procedure, (HTP), build on the doctrine of guilty, but not mentally Ill, (GBMI) developed in 1982 in the United States of America; and Reverse Persuasive Burden of Proof (RPBP), developed in 1998. This rule presupposes that when the defence of insanity is raised, it should be determined based on balance of probability. Under this rule of law, the court may convict even if there is a reasonable doubt.

Furthermore, it has been found neurologically that one of major causes of insanity is malfunctioning of the 'brain chemistry' which means insufficient supply and circulation of brain biochemical substances described as neurotransmitters and neuropeptides within the brain circuitry systems.[16] Neurotransmitters are chemical substances that are naturally secreted in the brain which are responsible in carrying out signals and vital nutrients

[10]www.pbs.org/wgbh/pages/frontline/shows/trials/history and lawdigest.uslegal.com/criminal-law/insanity-defence/7204. Accessed on December 2, 2020 at about 13:26 hours Greenwich meantime (GMT).

[11]www.lawdigest.uslegal.com/criminal-law/insanity-defence. Accessed on December 2, 2020 at about 13:26 hours Greenwich meantime (GMT).

[12]www.uslegal.com/lawdigest/criminal-laws/insanity-defence/unitedstates. Accessed on December 2, 2020 at about 13:26 hours Greenwich meantime (GMT).

[13]www.law2.umkc.edu/hickey-insanity. Accessed on December 2, 2020 at about 13:26 hours Greenwich meantime (GMT).

[14]www.uslegal.lawdigest.com/criminal-laws/insaninity/unitedstates.

[15]Ibidem.

[16]httsps//www.webend//mental-illness; www.webend.com. Accessed on December 2, 2020 at about 16:00 hours Greenwich meantime (GMT).

to all regions of the brain.[17] When the neural network involving these biochemical substances are impaired, the functions of the nerve receptors and the entire functionality of the nerve systems in the body are seriously altered thereby leading to emotional disorders and mental health related issues.[18] Further study in 2013 by a group of neurologists and psychiatrists have found scientifically a link in genetic between malfunctioning of the neurotransmitters systems of the brain as being responsible for a great deal of insanity.[19]

4. Statutory Inclination of the Defence of Insanity:

The pertinent question begging for judicial answer is, why is the defence the *(raison d'etre)* of the criminal defence of insanity? How is it generated? Is it a product of the body or mind? If it is the product of the mind, what then is the mind? These posers shall be answered in anon. Before delving into the analysis of the nitty-gritty of the above questions, let's be acquainted on how the defence of insanity is couched in the Criminal Code, for practical consumptions in criminal jurisprudence in Nigeria. The Code under the provisions of Section 28, entrenches inter-alia as follows:

> A person is not criminally responsible for an act or omission if at the time of doing the act or making the omission he is in such a state of mental disease or mental infirmity as to deprive him of capacity to understand what he is doing, or of capacity to control his actions, or of capacity to know that he ought not to do the act or make the omission.

By the foregoing excerpt from the Criminal Code, the operative words in the Section are 'mental disease or infirmity capable of depriving understanding and control' at the time of commission of the offence. It has been found earlier on, in this scholarly investigation that mental stimulation, activation and the slightest impact of any kind is neural functional reaction of the brain.[20] For further illustration, mental illness or disease is defined in,[21] as a health condition which is associated with changes in the brain structures, chemistry and functions that basically alter the neural functionality of the neurotransmitters within the brain circuitry systems.[22] Furthermore, mental illness can also be defined as the state of health which changes a person's thinking, feelings, and behaviours. In most circumstances all the three, to wit, the structures, chemistry and functions of the brain may cause distress and difficulty in a person functioning normally in the society.[23] Consequently, it implies that defence of insanity is related to neurological activities of the brain, being neurological, it is neuroscientific in nature. Wherefore, the foundational basis of the defence of insanity which is well known globally in criminal jurisprudence inclusive of Nigeria is wholesomely knitted upon neuroscience.[24]

Streaming from the above, the response to the aforesaid posers could be reacted upon as follows: the raison *d'etre* or the root of the defence is absolutely neural abnormality leading to the depletion of grey materials on the prefrontal and cortical regions of the limbic system of the brain.[25] The defence is generated endogenously from

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[17] *Ibidem*.

[18] www.mayo-clinic.org-syc (mental illness-symptoms and causes). See also C. D, Frith,' Understanding Madness' [2016] (139) (2) *Oxford Academic journals*, 635. Also available at https//doi.org.10.1093/brain/awv373; academic.oup.com; googleweblight.com. Accessed on December 5, 2020 at about 13:26 hours Greenwich meantime (GMT).

[19] www.en.m.wikipadia.org, Accessed on December 5, 2020 at about 13:26 hours Greenwich meantime (GMT).

[20] Dr Omekwe Dakoru Edoghotu, Consultant Neuro Surgeon, Federal Medical Centre Yenagoa, Bayelsa State (An oral interview granted at his office at about 11: 45 hours Greenwich mean time (GMT) on June 20, 2020).

[21] httsps//www.webend//mental-illness; www.webend.com. Accessed on December 2, 2020 at about 16:00 hours Greenwich meantime (GMT).

[22] www.mayo-clinic.org-syc (mental illness-symptoms and causes). See also C. D, Frith,' Understanding Madness' [2016] (139) (2) *Oxford Academic journals*, 635. Also available at https//doi.org.10.1093/brain/awv373; academic.oup.com; googleweblight.com. Accessed on December 5, 2020 at about 13:26 hours Greenwich meantime (GMT

[23] www.ncbi.nlm.nih.gov. Accessed on December 1, 2020 at about 16:00 hours Greenwich meantime (GMT).

[24] The historical origin of the defence of insanity was when in 1843 a Scottish woodcutter named Daniel M'Naughten murdered Edward Drummond, the personal Secretary to the British Prime Minister, Sir Robert Peel, where he thought, he had killed the Prime Minister under the influence of schizophrenic conditions and strong belief that the Prime Minister was behind his financial misfortunes. During the trial proceedings the defence raised the defence of insanity arguing that the defendant did not know what he had due to the schizophrenia, mental health condition which argument was upheld and sustained by the Common Judges and House of Lords.

[25] Dr Omekwe Dakoru Edoghotu, Consultant Neuro Surgeon, Federal Medical Centre Yenagoa, Bayelsa State (An oral interview granted at his office at about 11: 45 hours Greenwich mean time (GMT) on June 20, 2020).

the brain neurons, when it is affected by the slightest form of ailment or disease.[26] From the above discoveries, the defence is a product of the mind, that is, a disease of the mind affecting normal coordination and activation of the brain.[27] The mind is the brain the brain is the mind. This is because the thinking faculty of the body is the brain. Decisions, either rational or irrational are taken from the brain before physical manifestation.

5. The Neurobiology of the Defence of Insanity:

It is worthy of note and to firmly reiterate hereto that most categories of insanity including, but not exhaustive of the following: psychosis, neurosis, schizophrenia, autism, bipolar, Alzheimer depression and etcetera are caused by brain (mental) disorder or malfunctioning.[28] Furthermore, empirical studies have shown that the principal elements that results to the defence of insanity, to wit, incapacity to: 'understand and control bioelectrical impulses that may result to the doing of an act, or the making of the omission'; 'the inability to know whether the act or the omission is right or wrong'; and 'complete loss of environmental consciousness' are generated only from the brain.[29] The above vital variables of mental infirmity could be discerned under Section 28.[30] Mental incapacities described above are essentially caused by depletion and loss of grey materials in the forebrain.[31] Another contributing factor to mental incapacity which deprived humans from control of their bioelectrical impulses is insufficient supply and circulation of neurotransmitters and neuropeptides[32] within the dorsal anterior cingulate cortex (DaCC), and the right insula and left insula regions of the cerebral hemisphere of the brain.[33] Evaluation and assessment of insanity based proceedings to unveil the *mens rea* of the defence by the courts in Nigeria is never new, but ubiquitous and banal in the shores of Nigeria. No matter how the insanity may be described either medical or legal has been known within the spheres of Nigeria's criminal jurisprudence since the promulgation of the Criminal Code Ordinance in 1904 by the British Colonial Administration. In the advance technologies of the world, the neurological technology of deep brain stimulation (DBS), brain electrical oscillations signature profiling (BEOSP), and brain electrical activation profiling (BEAP) are often used by neurological experts to determine the brain functional capacity as at when the offence is committed. The correlation between DBS, BEOSP, BEAP and defence of insanity (DOI) is that, DBS, BEOSP, BEAP and DOI are technologies designed to ascertain the mental state, *mens rea* of the defendant as at the time of commission of the offence. *Mens rea* is the analytical evaluation of the operational functionality of the brain circuitry system as at the time of commission of the offence. Flowing from the above, the neurological technologies of DBS, BEOSP and BEAP can be used to ascertain the defence of insanity by determining whether the brain circuitry system was functioning properly or not as at when the offence was committed.

Neuroscience, studies the composition, structures and functions of the brain. *Mens rea* is the critical analysis of the brain, therefore the quantification of *mens rea* of an offence is exclusively neuroscientific. Hence, the use of DBS, BEOSP and BEAP in the determination of DOI is absolutely inevitable. DBS, BEOSP, BEAP and DOI are neurologically oriented and are therefore knitted and rooted upon neuroscience. This is particularly so described, when certain parts of the brain circuitry systems, especially those responsible for moral judgement and rational thinking (the prefrontal cortical area of the limbic systems) have been affected by any kind of ailment. Whenever the determination of DOI is in issue, the DBS, BEOSP and BEAP are indispensable tools to ascertain the brain

[26]httsps//www.webend//mental-illness; www.webend.com. Accessed on December 2, 2020 at about 16:00 hours Greenwich meantime (GMT).

[27]B O Eboh, *Living Issues in Ethics* (Afro-Orbis Publications Limited, 2005), 27-33.

[28]A Bacq, and others, 'Molecular Psychiatry' [2018] (5) (2) *Springer Nature Publications*, 1.

[29]C D Frith,' Understanding Madness' [2016] (139) (2) *Oxford Academic journals*, 635.

[30]Criminal Code, which inter-alia states thus: 'A person is not criminally responsible for an act or omission if at the time of doing the act or making the omission he is in such a state of mental disease or mental infirmity as to deprive him of capacity to understand what he is doing, or of capacity to control his actions, or of capacity to know that he ought not to do the act or make the omission.'

[31]www.livescience.com//49694-mental.ilness. In a publication by Tanya Lewis on February 4, 2015. Accessed on December 6, 2020 at about 13:45 hours Greenwich meantime (GMT). Where it is stated as follows: 'Many vastly different types of mental-health disorders ranging from schizophrenia, autism, bipolar, Alzheimer, psychosis, neurosis, and depression stem from the same brain region. According to a new study, researchers compared the results of hundreds of brain imaging studies covering quite over six major psychiatry disorders. They found that most of the disorders were linked to grey matter loss within the network of the three regions of the brain involved in higher executive and cognitive functions, such as self-control and understanding.'

[32]Dr Omekwe Dakoru Edoghotu, Consultant Neuro Surgeon, Federal Medical Centre Yenagoa, Bayelsa State (An oral interview granted at his office at about 11: 45 hours Greenwich mean time (GMT) on June 20, 2020).

[33]www.livescience.com//49694-mental.ilness//byTanya Lewis published on February 4, 2015. Accessed on December 6, 2020 at about 13:45 hours Greenwich meantime (GMT).

functional capacity as at when the offence is committed. The grey materials which are responsible for maintenance of homeostasis in the brain will be gradually obliterated thereby making the brain not to perform maximally.[34] Therefore, depletion of grey materials in the forebrain is responsible for inability in persons resulting to loss of control, understanding and environmental consciousness leading to impulsive behaviours without bioelectrical control.[35] Lack of control of bioelectrical impulses and complete loss of environmental consciousness can never be an issue in either legal or social domains if the brain is in homeostatic state. Depletion of grey materials of the brain resulting to state of insanity; Insufficient circulation and distribution of neurotransmitters and neuropeptides within the neural correlates leading to mental disorders; and Tumours, growth and damages in the brain leading to unsoundness of mind and improper appreciation as to know right and wrong in humans are all incidences of malfunction of the brain. If the brain is in proper functional capacity, insanity or any other type of mental incapacitation would not have been an issue in the society.

6. The Workings of BEOSP:

The BEOSP and BEAP work principally with experimental knowledge (EK) as against acquired knowledge (AK). The former refers to personal experience of the subject, that is, what the subject or the defendant participated personally. On the other hand, the later means what the subject was told or heard from others. Therefore, the neurological technologies of BEOSP and BEAP do not operate with AK, but only EK. Specifically, the BEOSP as a neurological device is in the form of a protective cap like an helmet with thirty two hyper censors. The device is connected into a monitor or screen. When the equipment is applied on the head of a defendant, the censors interact with the person's brain profiling in an oscillating manner as in a modulating frequency sequence. Like that of a radio wave or the dial of a speedometer in a car. The frequency modulating wave length concentrates with heavy flow of blood to the part of the brain responsible for that particular criminal act or omission. The court, the prosecution, the defence, and the defendant would watch the modulating frequency as it traverses through and around the brain circuitry systems as depicted on the screen. If there is no concentration of the wave lengths in a particular portion of the brain, then the defendant is not responsible for the alleged act or the omission. The advancements in BEOSP technology is summed with the following phraseologies in the scholarly investigation of *Verma*:[36]

> Neurolaw is based on the scientific principles of medical science, neuroscience, psychiatry, psychology, etc. It is why results are very much accurate and one may justify the findings of brain mapping, and could be easily proved in the court room. There is a good thing that by studying the human brain we could provide treatment to many patients who are facing brain diseases and distress problems. The second good thing is, we can predict happening of a future event and could stop that event. … Now with the growth of literature in neuroscience, this advance field of studies can be benefited to mankind by proving better technological support in terms of evidentiary value so that justice could once again triumph over injustice.[37]

The technologies have been in used in courts in Mumbai, Chandigarh and Gandhinagar in India.[38] This neurological device of BEOSP and fMRI[39] were adopted by the Supreme Court of India[40] in the case, *State of Maharashtra vs Shama*,[41]where the court utilized the technology to acquit the respondent. Beside this technology, there is another one referred to as brain electrical activation profiling (BEAP). It is a neurological technology used in detecting whether a defendant is familiar with certain information by means of measuring event-related potential (ERP) by the brain after it has absorbed an external event. The BEAP is also called P-300 Waves test.[42]

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[34]O R Goodenough, 'Mapping Cortical Areas Associated with Legal Reasoning and Moral Intuition' [2001] (41) (31) *Journal of Jurimetrics*, 429.

[34]R M Sapolsky, 'The Frontal Cortex and the Criminal Justice System' [2004] (3)(5) *Philosophical Transactions of the Royal Society of Britain: Biological Sciences,* 1787.

[35] *Ibidem*.

[36]A Verma; A B Kafaltiya; D D Singh; and others, 'A Review of Neurolaw and its Contributions to the Judiciary' [2020] (9) (2) *International Journal of Scientific & Technology Research,* 466- 471.

[37]S S Dash, 'Expanding Frontiers of Neurolaw: Post Smt. Selvi v The State of Karnataka' [2020] (7) (19) Journal of Critical Reviews.

[38]S S Dash, 'Expanding Frontiers of Neurolaw: Post *Smt. Selvi v The State of Karnataka'* [2020] (7) (19) *Journal of Critical Reviews.*

[39]Functional magnetic resonance imaging.

[40] *Op-cit*.

[41]No. 508/07 (Court) of Sessions June 12, 2008.

[42]Smt. *Selvi v State of Karnataka*, (Court of Sessions, 2000) indiankanoon.org; available from http//indiankanoon.org/doc/338008.

7. Conclusion:

Wherefore, from the foregoing submissions canvassed in this scholarly investigation, defence of insanity is neuroscientific. This is because, but for brain functionality, either normal or abnormal, there would not have been insanity or mental disorder at all. The entire defence of insanity started and ended with the brain. The scientific study of the structures, compositions, functions and operations of the brain is neuroscience. All causes of insanity and other species of mental disorder are incidences of orchestrated by depletion of grey materials in the brain, insufficient secretion and circulation of neurotransmitters and neuropeptides in the brain. Wherefore, the defence of insanity is wholesomely neurological in all of its ramifications. It is rooted upon neuroscience and allied scientific fields. Flowing hereinabove, neuroscientific knowledge and its advancements are handy tools which can be maximised optimally in the determination of the criminal defence of insanity in Nigeria. The work, therefore recommends the teaching and learning of the basics of neuroscience and its technologies as part of legal education in Nigeria. It further recommends that seminars and conferences in relation to neuroscience should be organized to the members of bench and bar in order to be abreast with the emerging interdisciplinary domain.