

Controversial Brain Imaging as a Terrorism Emergency Measure in Neurolaw Discourse

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Abstract

There have been great developments in the fields of Neuroscience, which proved to be an immediate and powerful catalyst to understand how the nervous system works and also exerts influence upon neurolaw. By working on brain, neurolaw-scientists try to understand human behaviors. Government in terrorism, as an instance of the state of emergency, occasionally relies on neuroscience achievements through brain imaging of suspects for terrorist, to get access to their intentions, minds, background thoughts and last or possible future behaviors. Governments justified this neuroscientific technological measure, which causes deprivation from right to cognitive liberty, under the pretext of public security. On the basis of emergency theory, scholars argue that Government can deviate from its human rights obligations towards individuals in emergency, in order to bring about derogation from rights. In this paper main experimental neurological achievements have been investigated and their effects in law have been significantly analyzed. Drawing from human rights and emergency theory in the area of neurolaw, as a new born interdisciplinary study field, this paper sheds light of inquiry upon brain imaging as justified terrorism emergency measures.

Keywords: Brain scanning; Neurolaw; Neuroscience; Derogation from right; Emergency theory; Right to privacy; Right to cognitive liberty

Introduction

Relationship between law and neuroscience, with the brain lying in as their similar correlative factor, gives rise to neurolaw as an interdisciplinary field, offering more comprehensive, accurate approach to legal phenomena; that all put forward a more accurate evidence for legal process, and a fairer justice system [1,2]. Nowadays, we are witnessing the lots of neuroscientific evidences are

increasingly reaching courts in a number of legal contexts in practice. It's been almost three decades since proposing Neurolaw during the post-modern arena, in which, there have been great developments in the fields of Neuroscience, which proved to be an immediate and powerful catalyst to understand how the nervous system works and also exerts influence upon Law [3-5].

Neurolaw is an attempt to know relationship between law and the brain by taking into account neuroscience's findings [6]. Drawing from neuroscience, neurolawyers try to understand human behaviors, and will potentially shape future aspects of legal processes. Practically, they deliberate on human brain and nervous system image by medical technology mainly scanning instruments such as radiology, psychiatry, neurology, and clinical neuropsychology [7]. With these new imaging techniques, scientists strive to construe the brain interactions as a mind's display to comprehend object's behaviors or predicting his/her probabilistic ulterior doings. Chiefly, neuroimaging manners create optical scheme of the brain and via involved factors (Such as magnetic flux, thermal energy, electoral current and so on) gives numerous nervous data could be interpreted by subjects [8]. Neuroscience, by clarifying some hidden aspects and undercover facts of a subject before the court, had a tremendous impact on law; this is why the Supreme Court has emphasized on the brain development research in the matter of life imprisonment for minors [9].

In particular, these developed neuroscientific technologies could be useful for cases before courts in which a suspect is believed to be the one who committed terrorism. Testing the brain of suspect by neuroscientific-psychological appliances brings about some significant data about terrorism. These data in addition to augment judge's knowledge for more realization of suspect criminal responsibility, gives numerous information related to terrorism by which potential hazard might be discovered for preventing future dangerous terrorism. In spite of that, suspect's fundamental rights are in confrontation to any compulsory experimentation. Here is a controversial issue in which on the one hand, right to cognitive liberty - on the basis of consent element - and right to privacy - based on the brain's information private property - are protected under Constitution and on the other hand, terrorism as an emergency threatens public security as a more significant collective right. Hereupon, this paper, through figuring some cardinal neuroscience's achievements on brain imaging and investigating emergency theory in the field at hand, endeavors to provide a cogent answer for this main question: is this allowed to put the brain of terrorism suspect into neuroscientific tests for discovering relevant information is covered to us?

Medical Experimentations on the Brain of a Suspect

Neuroscience has shed light of enquiry on the brain and certain mental processes functions, which underpin human behaviors; as law is primarily concerned with

regulating people's actions. Sometimes there could be scant correlated factors possessed in common behaviors in analogous situations, but out of extreme diversity among individuals' brain specs, there is no decisive cognition of mental functions specifically; hereto, this is a fundamental challenge in the neurolaw; convicting someone on the basis of neuro-evidences due to his/her presumptive previous offences or arresting him/her for future possible violation, is remained in dispute. But as it is expanding in current judicial procedure, brain-imaging as main neuroscientific evidence, which is highly effective in courtroom, is documented for judges' decisions [10,11].

In the same way, by neuro criminology studies, legal responsibility is going to take some distance from its classical sense. Neuro criminologists by considering, pondering and interpreting brain-imaging, endeavor to prove relative offenders responsibility. There are multiple neuroscientific documents which are handled in this sense. Nowadays, neuro criminologists oftentimes incorporate fMRI with an accused criminal liability to test the supposition in which, to estimate offender punishment ambit that deserved to it or even put a decree to innocence [12]. Considerable debate beyond neuro criminologists has focused on free will and legal responsibility; to which neurolaw is exerted for intensely elucidating responsibility and intentionality [13,14]. Neurolaw is one of the next generations of interdisciplinary field of Law, which would cause the major evolution in this sake.

On the basis of clinical and non-clinical tests neuroscientist surveys on human nervous system by two main methods: neurological (the Brain) and psychological (the Mind) manner. By given outcomes, neurolawyers hold forth pertinent legal orders to pondering on consequences. Chemical and physical interplay in the brain and transmitting the information within whole the nervous system by neurons, are all neurological events which are considered by the first method; but the second one, mainly focus on psychological conditions to obtain some mental results by object in a specific legal situation. Anyway, these methods can set forth to access suspect brain's information by medical experiments, even in compulsory way confronting with emergency situations, to put as an auxiliary evidence to have a more precise legal understanding of case [15].

Psychological Testing Method

Prevalent "Psychological Testing Method" (PTM) is a technical to investigate object's responses, in a complex method, by providing two-choice (Mostly yes-or-no reply) or multiple-choice questions -we might name it

“Questioningly Evaluating Technique” (QET) - potentially by exerting analogical procedure to compare object’s thought with particular typical results in psychology [16,17]. As a psychological manner, this could uncover various probable covered appurtenant facts of a case and clarifying some aspects to attain more accurate legal decision making. Furthermore, this could be applied to the detection of criminal deceit including lie-detection, for determining and evaluating responsibility related to terrorism.

Neurological Examination Method

According to the latest achievements, among the most rampant “Neurological Examination Method” (NEM) are used fMRI and EEG are widely utilized. In this manner, neuroscientists are investigating the brain and nervous system by medical experiments and perusing written consequences which is more objective than PTM’s one. FMRI individually is a methodical brain activity analysis on functional neuroimaging procedure using MRI technology, but EEG solely related to the recording of activity by waves instead of brain imaging. On the basis of this neuroscientific techniques, In recent days, two major neurolegal techniques have emerged; the first relies on imaging technology, specifically fMRI, to visualize the degree of brain activity associated with particular behaviors; and the second, is based on the analysis of brainwaves, has been termed ‘brain fingerprinting’ [18]. Their proponents have begun to push for their use in the courtroom, although with limited success [19]. Both of these techniques seem to be capable of detecting lies or giving us significant data which are notable in the case at hand. Some scholars suggest that fMRI is the most advanced method in brain imaging, which is most commonly used in neurolegal considerations, well serves for judicial process by examining psychopaths, aggressive crimes, and so on [20]. FMRI lie detection relies on the observation by considering suspect’s statement by “different patterns of brain activity”. FMRI based methods use brain imaging techniques that identify levels of metabolic activity, and uses particular activity patterns as indicators of the construction of a falsehood; whereas brain fingerprinting is based upon the association of a particular brainwave pattern with the retrieval of memory, and it held to detect the functioning of true memory as opposed to detecting lying uses the older and simpler technology of brainwave detection in a new manner [21].

EEG is the recording of electrical activity along the scalp and object’s brain waves are measured by electrodes on the scalp. For example, as it is shown in the (Figure 1), EEG experiment is reporting a movement

Process with the passing of the readiness potential (Preparedness) and the wanting or wishing to act (Deciding) steps to the end of the movement time (Determined) concurrent with acting commence (Act)[22]. Somehow, this could evaluate object’s intention, decision and action; however, It cannot pinpoint the exact location of brain activity as stringent as fMRI; also, there is no certitude if movement flexural effects will be remained through a long time in the brain. Hence, fMRI is a more admissible instrument for clinical evaluation than EEG; though, it is a more expensive and less portable than EEG machine. However, EEG data could be reliable in some cases such what Florida court has admitted as quantitative Electroencephalographic evidence to sentence [23,24].

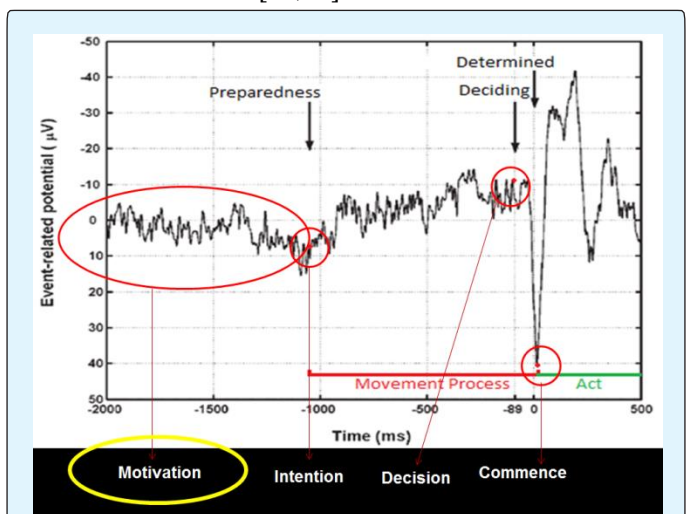


Figure 1: It is clear that object’s movement inchoate with enhancing potential which takes much longer than the determination step; also, there is an abrupt raise in potential during the period of deciding to make a decision; this decreasing status turns into precipitate increasing potential by the beginning of activity. These potential changes could elucidate that if object had an intention to do a specific kind of terrorism or not; or even illustrating if suspect commits such a crime or not. Howbeit, the latter is not so reliable. In the latest medical science mechanism, scientists try to put the object into the state of hypnosis and drawing from EEG method, assess his/her criminal responsibility in the situation of offense occurred. In this sense, any reactions to events and phenomena could imply the reasons motivate suspect to terrorism.

Inspired of what Greely stressed the most suitable functions in this regard are as follow: lie-detection, bias-detection, pain-detection and finally criminal responsibility [25-29]. For instance, fMRI of the prefrontal lobe of the brain could be the way to show when

individuals tell lies. The experiment of “the brain responds to evidence” is a method for demonstrating honesty of pretenses; this method investigates nervous repercussion in the context of consistent or inconsistent object’s beliefs with cerebral given data. As it is shown in the (Figure 2), when object’s belief and evidence are inconsistent, we are witnessing the brain activity in certain areas are displayed in red symbols; and green symbols shows the consistent one [30].

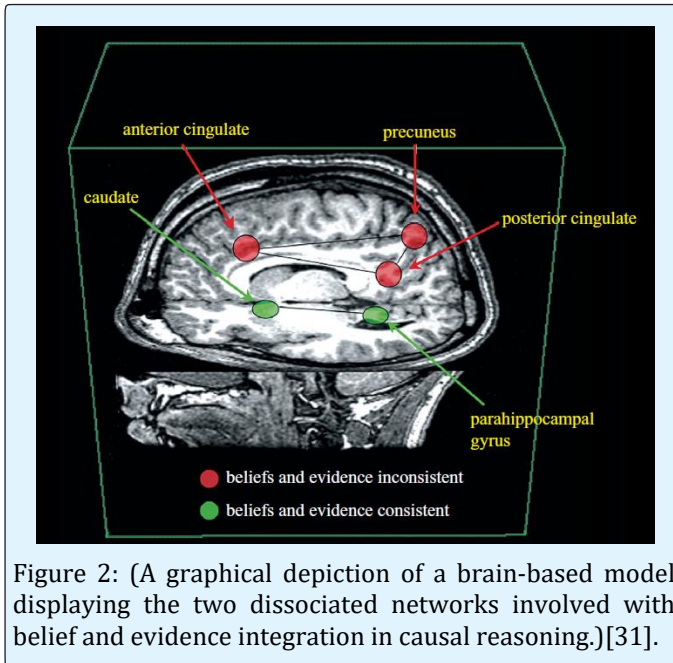


Figure 2: (A graphical depiction of a brain-based model displaying the two dissociated networks involved with belief and evidence integration in causal reasoning.)[31].

Nowadays, fMRI is almost the most satisfactory way for *neuro-litigation*. It should be acknowledge that interfering neuro-evidence in judicial procedure as a component of litigation evidence could rather clarify proposed case in court by imposing the details; by which judge could decide more sound. For instance, in 2010 the first *Dauber* hearing was held on the basis of neuroscientific evidences, specifically fMRI lie-detection evidence, for sentencing argumentatively [32].

These neuroscientific technologies could be applied as a way to discovering “dangerous mind” in order to preventing violations or dealing with criminals. However, neuroscientific tests’ results do not absolutely imply to the reality but, as a matter of fact, its leading data for clarifying the truth in a more significant way is undeniable; these data, as well as, other subject matters (Data, documents, evidences and so on) could be outstandingly helpful for judge’s knowledge [33,34]. Among neuroscience’s usages, one of the controversial issues is investigation on the brain of suspect of terrorism as a measure to maintain public security. Is public security a convincing legitimate justification for this

experimentation? This leads to a multi-dimensional analysis in which various norms are implicated. In a general vision, it falls into the realm of human right and public law with neurolaw as the common factor. In this regard, we are specifically confronting “right to privacy” and “right to cognitive liberty” on the one hand, and “public security” on the other hand.

Mandatory Brain Testing and Suspect’s Rights: Derogation or Violation?

It is crucial debates on protecting individual right against any violation; more specifically, preventing government from abuse of power and illegally treat with suspect by outraging. Then, it is feared that justifying authorization of government to investigate the brain of a terrorism suspect might causes to utilize this measure in an abused way. But on the other hand, terrorism threatens public security and also the brain data would be extremely advantageous to relatively finding out facts and discovering realities. In order to put aforesaid challenge on reconciliation the theory of “emergency” is fruitfully applicable; due to this theory “This is temporarily permissible to non-punitively derogate from right in time of emergency to maintain public security legally by government” [35,36]. In other word, it is justified that in time of emergency, government could legally be able to apply some feasible precautionary measures to put the situation under control in order to protect public security [37-41]. Derogation has been taken into account by article 15 of the European convention on human right (ECHR): “In time of war or other public emergency threatening the life of the nation any High Contracting Party may take measures derogating from its obligations under this Convention to the extent strictly required by the exigencies of the situation, provided that such measures are not inconsistent with its other obligations under international law.” By pondering on the main characteristics of the theory’s underlying assumption and conceptualizing them in the field at hand this controversy would be appropriately solved.

Emergency

Generally, emergency is a public crisis in which the life of a nation is put in a serious threat [42]. In explaining its various manifestations, in general, war, riots, natural disasters and such accidents have proposed [43]. After the attack of September 11, 2001, terrorism has been added to these instances [44]. Here is a thought provoking issue on possibility of supposing terrorism threat as an emergency. Is the risk of terrorist acts justifies neuroscientific tests and experimentations on the brain of a suspect? A large number of scholars stand in the

position that relies on derogation requisiteness because of public security [45]. In fact, terrorism makes the situation frightening and hazardous for public life and put life of nation and collective rights in peril; so, it is obvious that terrorism is an incontrovertible type of emergency.

Governmental Authorization

Since government is the holder of authoritative sovereignty for maintaining public security and public interest, it is the only external source of power to forcibly impose its authority for derogation from right in a legitimate way [46,47]. Therefore, the experiment should be done by a governmental organization or an authorized one. On the basis of fundamental right protection, official authorization to the experimentation whether by governmental authority or authorized person should be permitted by a court via fair trial [48,49].

Legality

As Dyzenhaus stressed, for preventing abuse of power and violation of fundamental rights, derogation from right is possible only in the light of “rule of law”. The legality of derogation encompasses three main conditions: a) performing under the permission of law; b) carrying out on the basis of a legitimate purpose; c) such derogation would be requisite in a democratic society [50-53]. Inspired of what Roach said, two essential elements that are deterministic to realize these conditions are as follow: a) emergency legislation; b) courts authorization [54]. The earlier empowers the first condition and the two latter protecting other ones. Emergency legislation, to regulate authority power and put competences under control, determines the terms of derogation that can consist of a former made law or a subsequent code; either including general or specific rules. Furthermore, judicial control over government measures especially in this regard is robustly necessary for preservation of rights [55]. These measures via establishing a transparency clarify what could and might be done about the brain of a suspect [56]. However, significant court role-playing remarkably depends on judiciary independence and judicial authoritative control over government’s actions in legal system; so, in the absence of this, suspect’s rights to privacy and cognitive liberty would be simply violated [57]. Howbeit, Schmitt emphasize on full authority of government for derogating rights in emergency and believes that any supervision or cumbersome regulation put this duty on serious trouble; but in contrast to what he said, it seems that this idea steers the situation to tyranny [58].

Beside this, rule of law is in an irrefragable connection with non-discrimination and proportionality. Somehow

derogation should be necessarily operated in compliance with equality; further, proportionality of neuroscientific experimentations to object’s health is an undeniable condition upon which, drawing from medical law, any harmful measures is strongly prohibited [59]. To the extent that, some scholars underline “absolute rights” from which, right to health could be perceived as a non-derogable right. In contrary, others believe that all rights can be derogated and non-derogable right is only a fiction and remains in theory; every right is restrictedly balanced and an emergency is a kind of situations in which we are witnessing the confrontation between rights: individual and collective right [60,61]. Dershowitz [60] puts this idea forward that even it is permissible to torture suspected terrorists because of life and public security as a much more important question [62]. Nevertheless, to dignify human being, this idea has not accepted by international legal documents such as what ECHR commands by 15(2) that no derogation from these rights shall be made: “right to life” (except in respect of deaths resulting from lawful acts of war), “prohibition of torture”, “prohibition of slavery and forced labor” and “no punishment without law”.

Temporarily

In addition to the above, aforementioned proportionality highlights the temporary derogation because of exceptional circumstances. In this sense, neuroscientific experimentations on suspect’s brain is limited to time and application; in clearer words, suspect would be in experimentation only during the time of emergency and after resolution of the situation, this measures should be thoroughly stopped; further, measures should be proportional to affected zone and urgency level [63]. Otherwise, contrary to justice, exception might be got as principle [64].

Non-punitively

Rights to cognitive liberty and privacy (Brain’s information and data) are derogated because of emergency that right-holder (Suspect) principally does not cause it. As a matter of fact, derogatory measures are only precautionary performances pending his/her guilty isn’t proved by fair trial. Accordingly, derogation is absolutely different from deprivation which is a punitive measure toward a right-holder. As ECHR affirm in article 7[2].

To Maintain Public Security

Public security is the most important component of public interests that constitutes justification element of derogation from right which is heterogeneous with

abolition of right [65-68]. Actually, a terrorism suspect is legally put in tests for illustrating the fact as much as possible with respect to a much more important right (Right to public security) albeit, here the problem is indetermination of “public security” conceptual border [69-71]. That is why judicial supervision was severely accentuated. Apart from this, if we look at the issue from another dimension, derogation from cognitive liberty not only is not an infringement, but is the effective implementation of human rights; in the sense that government temporarily *deviate* from its commitments to preserving individual rights to cognitive liberty in order to clarify facts either to prove suspect innocence or shed light on facts about terrorist which in turn fortifies the justice and also prevent possible terrorism in the future; just like routine inspection of suspect of committing a crime [72-76]. Here instrumentalism argumentation is worth noting that right is not the goal itself; indeed, it is as an instrument to realize justice as the goal; hence, in time of inconsistency, contrary right would be balanced by another right which is in accordance with justice [77-83].

Conclusion

Neurolawyers attempts to know any kind of data is taken out from the brain of terrorism suspect by taking into account neuroscience's techniques; to the extent that take advantage of its testes' findings. This is mainly a depiction of suspect's mind to discovering hidden facts which prior to the significant progress of neuroscience was not considerable in the realm of law. This kind of mind-reading by medical techniques, including PTM and NEM ones, could be considered as an effective post-modern legal manner for illustrating some determinative facts in each subject matter; insofar as to augment judge's knowledge for more realization of suspect criminal responsibility. Hence, this is an outstanding method for terrorism cases in which public security is in a serious danger. However, suspect's rights to cognitive liberty and privacy are in protection but actually, a terrorism suspect is legally put in tests for lightening the fact as much as possible with respect to a much more important right (Right to public security). As a matter of fact, the state of emergency is a convincing justification for derogation from rights in the case at hand. However, there should be some obligatory conditions by which any harmful act, abuse of power and violation of suspect's right don't come to pass. These conditions consist of “official authorization to the experimentation is permitted by a court via fair trial”, “subordination of rule of law in order to demonstrate Legality which is assessed by an emergency law, principle of non-discrimination and principle of proportionality”, “Judicial supervision over all government's measures” and “being a non-punitive and

temporary derogation”. Every neuroscientific techniques and each one of these conditions invites us to do a particular research in this regard; so extending these issues is strongly recommended to respected researchers.

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