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Free Will and Responsibility in the Neuroscientific Age

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ABSTRACT
As neuroscientists garner greater insight into one of the world's most complex and mystifying structures —the brain—we do not only achieve heightened awareness of the workings of our brains; we are also saddled with the laborious task of reconciling these findings with ordinary and longstanding philosophical conceptions of the mind. Contemporary neuroscience poses an apparent challenge to the concept of free will. As behaviors are attributed to inner structures and workings of the brain, is room left for freedom? If our thoughts and behaviors are determined by inner physiological structures and neuronal processes, how can we make genuine choices? If there are no genuine choices, is anyone responsible for their actions? Drawing on philosophic resources, I will defend robust notions of freedom and responsibility that demonstrate. The objective is to provide a resolution of these tensions that can enable us to properly employ neuroscientific concepts, particularly in legal contexts, without subverting our humanity.

KEYWORDS
Neuroethics, Free Will, Responsibility, Agency, Compatibilism, Criminal Law, Technology

Consider the 1991 case of the Manhattanite Herbert Weinstein, who was charged with the violent murder of his wife. Due to his affluence, he was able to access and procure a positive electron transmission (PET) scan that demonstrated a cyst had formed on his brain. The defense presented this scan as viable evidence, claiming that the abnormality had caused the defendant's violent behavior and that he should be exonerated, despite the fact that the accused had no previous signs or symptoms of brain abnormalities or mental illness (Davis 2012).[1] The evidence persuaded the jury to reduce the charges from first degree murder to manslaughter (Rosen 2007) . Now consider the case of George Franklin Page, a Vietnam veteran suffering from undiagnosed and untreated PTSD, alcoholism, and other possible mental disorders with no previous record, who was prosecuted for murder and sentenced to death in North Carolina in 1995. Page had been denied a full psychiatric workup, which would have included neuroimaging, but then received treatment for apparent PTSD and bipolar disorder while he was on death row. Despite pleas to investigate his mental health, he was unable to access such diagnostic measures and care and was executed in 2004 (Amnesty International 2004). Chances are high that if permitted access to such testing, a scan (or other measure) would've revealed brain dysfunction, rendering him unfit to be subjected to the death penalty.

These blatant discrepancies and discrimination highlight the controversial issue of the implementation of neuroscience data in criminal law, particularly how it confounds our concepts of free will, personhood, agency, and responsibility.[2] As we learn to attribute more behaviors to the inner structures and workings of the brain, is there any room left for free will? If all of our thoughts, actions, and behaviors are simply products of and determined by inner physiological structures and neuronal processes, how can we make genuine choices? If there are no genuine choices, no person can be held responsible for their actions. This line of reasoning has had severe consequences within the courtroom, leaving us saddled with the laborious task of reconciling neuroscientific findings with our beliefs in our abilities and freedom.

1. The judge decided the claim was not admissible, but by that point, the damage had been done and the insinuated claim had severe implications.

2. Contemporary neuroscience seems to pose a particular challenge and grave implications to the concept of free will, traditionally defined as "a particular sort of capacity of rational agents to choose a course of action from among various alternatives." See Stanford Encyclopedia of Philosophy for an in depth exploration of the concept of free will.

In what follows, I will argue that questions such as these, amongst others pertinent to our concept of self, responsibility, and blameworthiness, cannot be explored or answered by neuroscientific data. A philosophical solution is required to mitigate the ailments created by the improper and misinformed use of neuroscientific data as evidence in criminal law. The first section will explore the limitations of Neuroscience, both technologically and metaphysically, in order to raise awareness concerning the flaws that are not thoroughly or properly discussed when such data is being implemented as evidence in the courtroom. Section Two will examine the dangerous consequences of the unquestioned faith that has been placed in the facts and figures provided by scientific data.

However, it is not the intention of this paper to discredit or dismiss the importance of Neuroscience as a field or the advances in technology that are beneficial nor further the divide between philosophy and science. Sections 3 and 4 will follow into a discussion acknowledging the extremist incompatibilist views of hard determinism and dualism that arise from misuse of Neuroscientific data and the solution in accepting a compatibilist view. I will provide an in-depth scope of the philosophical concept of compatibilism and how informing and reshaping the law via philosophy will not hinder science, but rather provide a solution in which the metaphysical and empirical realms can coexist and work alongside one another.

Now more than ever, philosophical solutions are needed in order to create a more informed and proper use of neuroscientific evidence, which has become not only a powerful and dangerous tool but a source of discrimination skewed in favor of the affluent who have access to such treatment and care. Consequently, as discussion will follow in Section 5, this philosophical exploration also will be framed in the practical context of a controversial issue concerning limit of access to healthcare and neuroscience technology that those in a low socioeconomic status do not have the means to acquire. The final portion of this paper, Section 6, will reiterate the importance of establishing a foundation in philosophy in to correct the misapplication of neuroscience data. A proper solution will be found through the redirection and reformation of our conceptions of agency and free will in order to correct our misinformed speculative assumptions that tend to be derived from the presentation of neuroscientific data.

SECTION 1: THE LIMITATIONS OF NEUROSCIENCE

A practical point to consider when examining the validity of neuroscientific data is that technological limitations exist, which often leads to misuse of the data output and spread of false information and claims that go beyond the data. That the evidence does not fully support the claims being made raises the question if this evidence should even be permissible in court. The rise of the use of neuroscientific technology, particularly that of functional magnetic resonance imaging (fMRI), Brain Fingerprinting, and memory-encoding-related multifaceted Electroencephalographic Response MERMER, amongst others, are landmark discoveries and revolutionary techniques for diagnosing and understanding the workings of the brain, but they are not without flaw. At present, they are being implemented in order to explain behaviors, though are far from having the capability to do so. While they provide an accurate picture of neurobiological structures and processes, they do not provide a landscape of how conscious thoughts and behaviors can be derived from a pinpointed location within or on the brain. Due to the inaccurate assumptions that appear to be derived from neurodata, it seems to be the case that brain scanning may not be admissible in court, for while it can display diagnostic markers for conditions, it does not discriminate what behavior or mental state can be correlated with brain activity. For instance, an individual may be subject to a MERMER scan in order to see what areas of the brain light up when they are asked to recall certain information. However, while the test may indicate an area correlated to memory, it cannot demonstrate that the specific memory of the crime was recalled, but rather a similar event that they may have experienced (Pardo and Patterson 2013).

A more persistent interpretive concern that arises with utilizing such technology to measure behaviors is the contradictions that appear. A brain can appear abnormal although the person is fully exercising their rational capacities in a normal manner, and vice versa. For instance, a person may exhibit a significant portion of their brain is covered with a subarachnoid cyst, which appears to be a deviant from a normally functioning brain, but the cyst may not cover or impact the prefrontal cortex, the portion of the brain controlling decision making, planning and execution. This discredits arguments centered around conscious agents' capability to rationalize and deliberate. How do we account for such cases? How is the legal system supposed to ascribe proper punishment to someone presenting

significant brain abnormalities, yet fully capable in their ability to reason? No scan can answer this question.

Unfortunately, this is how the technology is sometimes implemented, despite the absence of an argument for the underlying assumption that human consciousness and behavior can be measured by a machine. A failure to appreciate these limits has led the propagation of misinformation, leading us further from the truth and towards a dangerous reality of neglecting the agency of the individuals and the reduction of personhood to neurobiological processes. If we continue along this trajectory, the importance of preserving personhood and protecting agency, free will, and responsibility will be relinquished, propagating misinformation and a accepting a mechanistic view of human beings, eradicating the notion of sentience.

Turning to philosophy may provide insight. For while images of a seemingly abnormal brain cannot produce a causal explanation between neuronal activity and conscious behaviors, philosophical conceptions can assist in comprehending the notions of rationalization and conscious mental processes. In cases where a person has an evident abnormality but is consciously aware of their decisions, the law can be guided by understanding the concept of agency and rational capacities, for judging one's actions and rationality is not a matter of science. For what scientific data cannot uncover and the code of law does not include, philosophy may provide: helpful insight when concerning one's conscious behavior, not by quantified measurements but rather supported and widely accepted views on rationality.

SECTION 2: THE DANGEROUS CONSEQUENCES OF UNQUESTIONED FAITH

There is a grave danger in the sheer power and influence Neuroscience holds on society's perspective of how to judge and conceptualize agents with abnormalities/disorders that contribute to their behavior. These misguided perceptions lead people to blindly follow empirical data and instill total, unquestioning faith in science, regardless of the imperfections and errors that routinely occur, further perpetuate the misuse and abuse of Neuroscience technology and data. For example, a common phenomenon in criminal law is "The Christmas Tree Effect," wherein an image of a brain that is colored and "lit up like a Christmas tree," subsequently influencing the jury's decision, purely due to the presentation in

front of them, regardless of the further evidence provided (Davis 2012). Permitting this effect to continue by allowing such images and faulty/inaccurate explanations alongside the presented data are shielding individuals from the truth, which cannot continue to occur if progress is to be made.

Inquiries concerning the validity and reliability of such measures come into question, for while statistics such as "0 percent error" or "99.9 percent reliability" when discussing the accuracy of the P300-MERMER test appear confidently accurate, it calls into question what aspect is truly reliable and valid of the measurements (Pallares-Dominguez and Esteban 2016). The results yielded from these measurements may appear concrete, but they are not all encompassing and require scrutiny and interpretation if they are to be implemented correctly. What exactly are the numbers and figures produced by tests such as the MERMER exactly telling of? Are they describing the recognition of stimuli or are they telling of an admission of guilt (Pallares-Dominguez and Esteban 2016)? It is near impossible to denote what measurements are telling of what brain activity, especially if the activity being measured is of the individual at present, if that was their brain state at the time of the incident, or another non-related circumstance (Pallares-Dominguez and Esteban 2016). Although such devices are impressive and seemingly reliable, it is a misguided notion to instill faith in such technology for it is not telling of conscious thought or behaviors and further propagation of such tools by citing reliability and validity rates is a treacherous path to continue following down.

The danger in the influence this neuroscientific data is that the misuse of information follows an implicit stance on hard determinism, suggesting the agent has no free will and is predetermined by their structures, eradicating consciousness and the person themself. This presumes causal claims between neurobiological processes and the person's behavior, which at present, we are unable to make. Since technology has not advanced enough to catch up to such ideas, especially as there is no scientific way to measure consciousness, these claims and their applications are premature.[3]

3. A notable study that has had incredible influence on the field is the Libet Experiments, wherein it was recorded that neurons fired milliseconds before a decision was consciously made and executed. Libet's findings shaped and perpetuated the notion that humans are not free of will and are in fact, at the fate of their anatomy. Although this presupposes that the mind is a substance that can be quantifiable, in a Wittgensteinian fashion, it is a conceptual confusion to assume that the mind is a substance (Pardo and Patterson 2013). It must be noted this is not advocating for

SECTION 3: EXTREMIST VIEWS AND THEIR MODERATE COMPANION: COMPATIBILISM

Eagleman, Greene and Cohen in particular uphold the favored scientific explanation by taking a hard determinist stance through promoting causal claims of neuronal activity and a person's behavior.[4] This view emphasizes the notion that our neurobiology determines our actions and our actions are inexplicably bound to our biology, eradicating any sense of a sentient being with free will who is responsible for their actions. This is a mechanistic view, reducing the human to a machine at the will of their pre-wired brain who cannot act beyond their natural, predetermined settings. If a conscious agent is considered to be at the will of only their anatomy and biological processes, then we cannot consider them free, conscious beings. If this line of reasoning were to be upheld by society and particularly in criminal law when determining the fate of the defendant, then no one could be held accountable for their actions, for every person would be understood to be at the mercy of their brain and not able to act otherwise.[5]

The rise of hard determinism has prompted an equal and opposite, reactionary danger suggesting consciousness lies in the mind, a separate entity distinct from the body, suggesting a radical notion of total uncaused free will. This view appeals to followers of the dualist school of thought who believe the brain should be treated separately from the mind, for while neuronal processes may exist in the brain, they do not exist in the mind. Therefore, one's rational capacities and ability to deliberate are unscathed by the brain or any myriad of physical factors that would normally be taken to influence one's decision making, such as neuronal activity, chemical imbalances, or structural abnormalities. The result is that the agent is radically free and all actions and behaviors uncaused.

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a dualist position, for this claim does not imply that the mind is a separate entity from the body, rather the mind is not a substance that can be quantified or measured as consciousness is not tangible and subsequently, not accessible for empirical testing.

4. For further information concerning Eagleman's exploration into legal cases ascribing violent criminal behavior to predetermined neuronal connections and activity see his article, "The Brain on Trial."

5. It is important to consider how punishment is handled, for at present our legal system focuses on a retributive system of justice (punishment fitting of the crime), though neuroscientists are urging for a rehabilitative stance of punishment as well as preventative). The opposition to a rehabilitative/preventative system of justice, as noted by Morse, seems to be degrading to our humanity by incarcerating those before crimes have been committed.

Dualists in favor of free will may claim that there are neuronal gaps or spaces in the brain that allow for unpredictable events to occur and, hence, that provide a space for free will. But this is misguided/unnecessary. Free will is not predicated upon biological space nor does it imply for an event to be free it must be unexpected. In fact, if we are at the will of an unexpected, uncaused event, we are not free (Kane 2005). Uncaused events cannot be considered free, for if there is a random firing of neurons that causes a person's arm to jolt up, they did not freely choose to move their arm; they were at the will of an unpredictable event where they could not have freely chosen to do otherwise. We need to be able to acknowledge and discuss the relevance of a person's anatomy and biological processes while taking into the account they are a rational, intelligent beings with capacities beyond those dictated by their neuronal connections. Dualism presupposes the notion that the biological processes are largely irrelevant, which is not beneficial when considering a person, for while human beings are not machines, we do experience biological processes that influence behavior.

To avoid the hard determinist and dualist extremes and their untenable consequences, we must return to the question--what does it mean to to choose and will freely? What are the conditions of responsibility? To address such queries, I will draw on compatibilist resources in order to provide a comprehensive understanding of the assistance philosophy can be when crafting beliefs and judgments on agents and their behaviors.

To satisfy conditions in order for our "willings" to be free, one must first consider what approach to take when examining what is free, be it our willings, our actions, or both. The compatibilist approach is rooted in the notion that determinism and free will are compatible with one another, which is to say that freedom doesn't depend on the absence of causal determination. Rather, freedom depends on the right kind of determination. Roughly, a free action is one that is caused by the agent's own desires rather than constrained by someone or something that is external to the agent. Classical compatibilists who crafted the basis of these arguments, such as Hume, claim that free actions are unconstrained but not uncaused, for they express our characters and intentions for which we can be considered responsible (Kane 2005). This is a crucial foundation to build a solution upon, for compatibilism is a voice of clarity amongst the chaos, providing a stance that considers the practicality of neuroinformation as well as tending to the metaphysical issues that arise concerning agency and responsibility.

Although it can be objected that compatibilism only accounts for freedom of action and not encompassing of will, for the focus of freedom is on the ability to will one's actions in accordance with one's desires, more recent compatibilists contend that not just action but will as well can be in accordance with determinism. Frankfurt and Wallace provide a more contemporary viewpoint, drawing on a notion of psychological freedom that is not hinged upon a broad, metaphysical sense of freedom, rather turn inward and explore internal freedom through personal desires, values and volitions. They acknowledge that desires and values themselves have a determinate cause from previous background. But having a cause does not make these desires unfree, according to the compatibilist, so long as they are reflectively endorsed by the agent who has them.

In the context of applying such concepts to the empirical testing and data of neuroscience, it is an undeniable truth that "human rationality and human freedom are determined neither by the images provided by functional magnetic resonance images (fMRI) nor by the person's own brain" (Pallares-Dominguez and Esteban 2016). As satisfying as it would be to be able to run a test and determine the capabilities of one's rationality or measure freedom quantitatively, it is not at present nor in the imminent future a real possibility. But philosophic compatibilism enables us to see how desires and actions can be both caused by brain states and also free. If we ever were in a position to demonstrate that actions are caused by brain states, it would not follow from this that they are unfree. It also would not follow from this that they are all free. According to the compatibilist, whether or not an action is free depends on the specific nature and manner of its cause. It would be incoherent to assume there is a deep sense of free will that cannot be attached to a determinate cause.

SECTION 4: A COMPREHENSIVE EXPLORATION OF STEPHEN MORSE'S COMPATIBILIST VIEW

As research delves deeper into the brain and attempts to create causal relationships between neuronal patterns and behaviors, and seeps into the courtroom in an attempt to explain criminal behaviors, the greater our notion of personhood, free will, and responsibility are impeded and compromised. A hard determinist stance is influential, claiming all thoughts, behaviors, rationality, and actions are predetermined and can be explained by neuronal connections and levels of neurotransmitters within the nervous system. Fortunately, the tension

that arises can be soothed by a firm philosophical foundation, such as that offered by Stephen J. Morse, who takes an unyielding stance that emphasizes the importance of not allowing neuroscience evidence and technologies to seep into the legal system and relies on philosophy to reconcile the predicaments that arise in the court when prosecuting criminals with atypical circumstances (such as mental illness, brain abnormalities, environmental factors, and so on).

Through his exploration into the relationship between neuroscience, criminal law and philosophy, Morse denounces the use of neuroscience evidence and technology shaping the doctrine of law, particularly the notion that all conscious agents are to act in accordance with the workings of their brains, therefore no agent can be held responsible for their actions. Despite the fact the influence of neuroscience is rebuked, it is not discrediting the findings, for it is upheld that the brain and the inner connections do in fact enable the mind and action, but despite all evidence incurred thus far, it is impossible to know why and how this occurs. Consciousness cannot be empirically tested or attributed to an empirical value, therefore neuroscience evidence cannot stand alone as enough in the court of law. Instead of focusing attention on the cause of thoughts, actions and behaviors, which is too insurmountable of a feat to even attempt, Morse suggests shifting attention to understanding and progressing the notions of mental states and actions, stating: "The brain enables the mind and action, but we have no idea how, despite all the astonishing advances in neuroscience and other disciplines" (Morse 47).

The discussion of mental states is fundamental to comprehending not only determinism, but the causal and rational capacities of humans, for while it is debated what a mental state truly is, as each discipline has a different perspective on the definition of a mental state, it cannot be disputed that mental states exist and are a foundation to actions perpetrated by humans. In the eyes of the law, a person is a conscious, rational agent that acts on intentions incurred by mental states, wherein these behaviors can be modified by external and internal influences (Morse 51). Though, it must be taken into consideration that persons may act without or before deliberation and the rational capacity of some persons may not be fully functioning to a normal standard.[6] These cases, along with those

6. For further consideration on the Aristotelian conception of the necessity of deliberation and rational capacities for free will, consult Susanne Bobzien's article "Choice and Moral Responsibility" (NE iii 1–5) in *The Cambridge Companion to Aristotle's* Nicomachean Ethics.

of agents acting intentionally and who are conscious of their intentions, raise the notion of who truly is responsible and can be held accountable for their actions. As these philosophical issues arise, Morse emphasizes that one should remain grounded in the practical application of these notions, particularly adhering to the model of folk psychology and common sense, for the common conceptions of such notions are upheld in the layperson's ideology which, in turn, influences the legal system and how to rationally and equitably judge others' characters and actions.

In crafting a solid foundation for his argument, Morse aligns with the ideology of compatibilism and the so-called "Causal Theory of Action (CTA)," as they are secure notions of free will and responsibility that are compatible with determinism and do not give rise to as many complications as libertarianism or hard determinism do. CTA roots itself in the notion that an event, be it behavioral or mental, can be considered an action if it is caused correctly in accordance with a mental state (Morse 48). This supports the notion that determinism can align with common sense and folk psychology, as Morse upholds these notions throughout his exploration into the legal system. It should also be taken into account that he suggests throughout the piece the direction neuroscience should take in shifting their perspectives to allow for these philosophical notions to work alongside the empirical data instead of eradicating it, as demonstrated by the claim: "The task of neuroscience should be to explain agency, not to explain it away reductively" (Morse 48). When discussing determinism in the sense of nonreductive physicalism (conscious agents have a brain/mind that is one substance but can be the source of both physical and mental properties) and compatibilism, it seems that responsibility is irrelevant to consider, for every behavior and mental state has a cause therefore the agent cannot be responsible, but it is assured this is not the case (Morse 49). As a compatibilist, Morse claims that responsibility can be genuine and exist in a deterministic universe for agents have the capacity to determine actions by reasoning, which, at present, cannot be contested by any current neuroscientific research (Morse 49).

As Morse notes, using neuroscientific data in the court influences our perception of selfhood, responsibility, and blameworthiness. If a scan of a defendant's brain is shown to a jury, demonstrating a tumor on the surface of the brain, but the defense does not explain that the large mass present does not affect the person's rational capacities, the jury will be lead to believe the abnormality is responsible for the

course of action the defendant took. This eradicates the notion of the person being as a conscious agent, for it shifts all blame to the person's neurobiological processes, neglecting that the brain being displayed is attached to a person who is an intelligent creature capable of higher order conscious processes, such as reasoning and rationality.

Morse argues that science should not have a place in revolutionizing the law, especially as the technology has not caught up to how neuroscientists would like to use it to explain behaviors. Brain and neuronal connections enable mind and action but at present, it cannot be known how exactly such actions are enabled and where exactly in the brain that connection can be traced to, despite all the evidence incurred. For example, there may be a lesion on the amygdala that controls opposing reactions and emotions, such as love and hate, and that area may light up on a scan when activated, but it cannot be pinpointed what particular emotion or behavior is exactly being stimulated. He is led from this line of reasoning to conclude that "if any science is to have appropriate influence on current criminal law and legal decision making, the science must be relevant to and translated into the law's folk-psychological framework" (Morse 52). If science should find its way into informing and shaping legal decisions, it cannot be submitted in its unadulterated form, it must be doctored to accommodate a more philosophical conception before it can be implemented.[7]

At present, there is simply not the technology or validated evidence to support causal claims of the brain, mental states and behavior and therefore there is little relevant information available, let alone to be used as sound evidence. It is suggested that neuroscientific evidence and technology should not even be permissible in court due to the physical limitations of the available technology, for it is not a flawless measure and has obvious flaws and errors that occur (Morse 61). It may be possible in the future to permit such data as research techniques and technologies will continue to improve have the capabilities to account for these present discrepancies, therefore providing a more comprehensive view of the brain and neuronal activities (Morse 61-62).

Neuroscience appears to reduce conscious, rational agents to pure mechanisms, eradicating any sense of humanness and degrading our sense of

7. Morse notes how it is practically used, not in a complex, intricate sense, but rather in the legal system or conversations surrounding criminal law, free will is often implemented loosely in lieu of agent responsibility, which can lead to misunderstanding (Morse 55). The problem of free will is an issue not to be handled in the court of law.

human nature, which is a serious concern and consequence of subscribing only to scientific data, particularly if one were to believe the consequences of the Libet experiments (Morse 70).[8] Human beings are not machines and I reject the view we are all at the will of our brains and unable to think, behave or act differently than what has been determined by our neuronal connections. There are clear influences that shape our behaviors beyond personal control, but there has to be a sense of the person and humanity that prevails through the external and internal forces pulling one to think and act in certain ways. Morse raises a rational and clear point that, at present, it does not appear that neuroscience data should hold too much weight in the court of law. At present, there is not the capability to make the causal claims that are speculative assumptions made by those who are presented the data and disregard the limiting factors/relevant evidence.

Freedom comes into question, greatly due to the notion that one can be truly free to make decisions despite pressing internal factors. Even if these factors influence and determine one's thoughts and behaviors, they do not automatically eradicate a genuine notion of free choice and responsibility. For instance, it is difficult to conceptualize a sense of freedom in decision-making when discussing those trapped in a low socioeconomic status, for many choices that would be beneficial are not accessible. Due to the barriers set in place by society, those who may consciously want to act freely may not have the ability to do so. Morse addresses this issue in relation to internal, psychological constraints by discussing the human tendency of compulsion, claiming that the law takes them into consideration while noting that "internal compulsion are difficult to conceptualize" (Morse 54). He concludes that it may be favorable to consider freedom in the light of responsibility as the ability to freely engage in higher order intelligent processes (rationalizing, reasoning, thinking, etc), an ability that no brain scan is sufficient to reveal. Other essential factors include past and present behavior…

A popular objection to Morse is that the brain is a complex organ, a mystifying enigma that has capabilities and connections beyond our current ability to map or measure, that should not be discredited as a tool for guiding and shaping the law. While it is pertinent to consider the empirical measurements of brain activity, particularly if employed to garner insight on the well-being of an individual, it is not a sound philosophical and legal decision to utilize this data to solve metaphysical issues or reform the legal system, for neuroscience does not have a place in doing

8. Refer to Footnote 5 for in depth explanation of the Libet Experiments.

so. At best, neuroscience may assist in understanding the proper way to apply scientific data when considering how to modernize and update the law, but it cannot at present be employed to explain human rationalization and behaviors, which is how it appears to have been interpreted and promoted through realms beyond the scientific community.

Morse provides a voice of clarity amongst the clatter of the misinformed that seems to have taken a stance at the center of society and criminal law, perpetuating the erroneous notion that agency, consciousness, behaviors, etc. can be reduced to neurobiological processes. Human beings are not machines following pre-wired programming; we have thoughts, intentions, desires, passions, beliefs, dreams, habits, attitudes, behaviors, and so on, that shape how we perceive the world around us and interact with it and others.[9] The perilous assumptions neuroscience has implemented that have skewed these notions towards a more mechanistic view on human behaviors threaten the core of our metaphysical conceptions and notions. This is not to say it must be eradicated altogether, rather there must be a way that Neuroscience, Philosophy and the Law can coexist and inform one another without breaching the concepts integral to each discipline and considering the person involved.

SECTION 5: A PRACTICAL IMPLICATION OF A METAPHYSICAL ISSUE

If the metaphysical conceptions of agency, responsibility freedom are to be applied practically, they can be framed in the manner of understanding the skewed manner in which society tends to approach these concepts. A major consideration in the implementation of neuroscience data and proposed courses of future action concerning the spread of neuroscience, is calling into question how that would practically be implemented when such technology is inaccessible to a vast majority of the population. This practical and political consideration presents yet another reason to be cautious about the use of brain scans in legal contexts.

Discrimination by class is evident throughout all reaches within society, and is especially prevalent in the court of law. Disparity arises from a socioeconomic standpoint, for neuroscientists suggest that potential menaces to society be screened and preventative steps be taken to ensure criminal behavior does not

9. It must be noted while mechanistic reductionism is not being promoted, neither is dualism, for while human beings are not simply machines, our biological processes operate on a mechanistic measure and are essential to how human beings function.

ensue. This is not a possibility for the 46.7 million living in poverty battling mental and physical disabilities with no access to such treatment, hence illuminating the impracticality of following a purely neuroscientific (US Census Bureau 2014) . This creates a significant divide for those living in poverty who are more likely to have an abnormality/disorder influencing their behavior, but do not have access to preventative care or treatment, as the first and foremost reason individuals do not seek care is the inability to afford the cost (Kaiser Family Foundation 2009).

These statistics may be a quantitative measure of a comprehensive overview of the low socioeconomic status population, but they speak to larger metaphysical issues at hand. The discrepancies present in the significant amount of the population suffering from illnesses and disorders that are barred from healthcare access illuminate the greater societal issue of blatant discrimination towards those suffering in poverty. This impedes how we conceptualize the self, personhood, and agency if we consider those who are struggling in a low SES situation to not be as worthy as those who have access to such care. If brain scans are used to establish innocence and low SES defendants do not have access to them, low SES defendants more often will be found guilty and incarcerated, further exacerbating already existing inequalities.

The inequality is then providing a skewed picture of how neuroscience evidence should be promoted in the legal system if only the affluent are able to access it and receive treatment, for how can those who are unable to be diagnosed and receive care be held accountable for negligence in measures to prevent criminal behavior? If neuroscience data is going to continue to be utilized, particularly as a diagnostic measure as well, it must be made accessible to all individuals in society regardless of their economic status.[10] An additional reason to exercise restraint, then, is that access is not equitable.

SECTION 6: WHERE DO WE GO FROM HERE?

It is evident that the root cause of confusion and escalation of neurodata entrenching itself in criminal law is the misguided blind faith in incompatibilism, which encompasses the extremes of hard determinism and dualism alike. In

10. Eagleman proposes that neuroscience be utilized in order to screen for potential criminals and indoctrinate them into rehabilitative programs as a preventative measure before crimes are actually committed. This raises grave concerns regarding freedom and personhood, but if this viewpoint were to be propagated, then persons from all backgrounds must have access to such technology and care.

order to correct the error of our collective ways, it is of the utmost importance to recognize and acknowledge these incompatibilist notions and act swiftly to reject them and replace them with compatibilist views, particularly those outlined by Morse. By reshaping the way empirical data is approached in the context of criminal law while taking philosophical notions into consideration, the tension that has been created can dissipate as we move towards a more harmonious and informed society and court of law that considers the person that is being evaluated for their brain activity and their actions. Compatibilism provides a solution to the practical issue at hand, for it is an equitable approach regardless of socioeconomic status, race, gender, religion, and so on. If neuroscientific data is to consider the person, then it must be accessible to those regardless of background or ability to access care.

Neuroscientists are also adamant about promoting Neurotechnology to craft preventative treatment programs, but such a task is irresponsible if those who cannot afford care for even diagnostic purposes do not have access, thus creating a divisive line between the higher and lower socioeconomic classes. When some individuals have access over others, some agents are considered of more importance than others, which subsequently contributes to a deeper, metaphysical inequity, as well as shaping the legal system to be set upon a premise of inequality. Philosophical conceptions are a practical way to assist in informing the legal system on how to approach science and personhood in a way that allows for ethical and humane treatment of all persons regardless of their background.

In in the interest of protecting the agency of individuals, it does not seem sufficient at this point in time to present Neuroscientific data as evidence in criminal law, for the intention of doing so would be to demonstrate how the abnormality evident in the brain can fully and deeply explain the roots, intentions, and enactment of human behavior. While it is possible the day may arrive where technology has the capability to peer into one's consciousness, there is currently no such measurement that has the capacity to map one's intentions, desires, behaviors, etc. Despite the impressive reputation Neuroscience has incurred, it should be approached cautiously and at this point in time. Until the time has arrived where technology is capable of displaying causal relationships between brain activity and behavior, it should not be implemented as evidence in the court of law, for it attempts to explain conscious motives, intentions, causes,

and behaviors that simply cannot be reduced or elucidated by neurobiological processes.

It is far from a dismal outlook for the future of neuroscience informing legal decisions, for both sides of the argument agree upon the optimistic outlook as technology and society rapidly evolves and shifts perceptions and understandings concerning the influence of science and how it can effectively mingle alongside philosophy and the law. Technology is constantly improving as neuroscientists garner greater insight into more proper, effective methods for incurring evidence, it can reach a point where it may be a crucial part of the evidence process in court cases. Until that day arrives, action must be taken immediately to repair the damage of misinformed use of empirical data as evidence in order to properly employ modern technology when determining the punishment and future of human beings.

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