

The Science of Justice

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I parked my car down the street, out of view. I approached the home and unlocked the door, quietly, so as not to be heard. I crept up the stairs and down the hallway, approaching the bedroom. I heard voices coming from inside, voices I recognized—my wife, and her lover. I pulled the pistol out of my waistband, and opened the door.

Investigators read these statements aloud as the defendant sits, a bevy of electrodes connected to his head. He remains silent as the crime is recounted, all in first-person declarations. The electrodes, part of a test known as an electroencephalogram (EEG), measure electrical waves inside the defendant's brain. Researchers watch for increased activity in specific regions, which indicates that personal experiences are being relived. If these remembrance sectors show a significant uptick in activity, the defendant is guilty.

At least, that's the theory. In practice, psychologists and neuroscientists are far from confident that brain-scanning technology in its present state is trustworthy enough to prove guilt or innocence in a court of law. But that didn't stop India in 2008 from becoming the first country to convict someone based in part on evidence from an EEG. Indian courts were among the first to allow brain scans to be presented to a jury, but it wasn't until Aditi Sharma, a woman living in the Indian state of Maharashtra, was convicted of poisoning her fiancé—based on a scan of her brain that the judge considered proof of “experiential knowledge”—that such evidence actually led to a conviction. The verdict was met with a mix of curiosity and alarm from the neuroscientific community, which may be on the verge of discovering what prosecutors and defense attorneys alike have sought after for years: reliable, accurate lie detection (Giridharadas). And with so many parties eager to push brain-scanning technology to the forefront of criminal proceedings, expert neuroscientists and legal theorists are split as to the best course of action.

The trend of using brain-scanning in court started slowly. In 2003, an attorney in Iowa included functional MRI (fMRI) scans of the defendant's

brain to help overturn the 24-year-old murder conviction of Terry Harrington. The Iowa Supreme Court agreed to overturn the conviction primarily because of evidence of police misconduct during the initial investigation, but the Court's acceptance of the fMRI evidence lent some preliminary credibility ("Iowa Supreme Court"). Two years later, the United States Supreme Court viewed scans of adolescent brains in *Roper v. Simmons* before ruling the use of capital punishment on minors unconstitutional, but none of the Justices explicitly mentioned the scans in their written opinions (Madrigal).

Today, with more and more attorneys looking to use brain scans and companies like "Cephos" and "No Lie MRI" marketing private lie-detection services, judges must weigh the pros and cons of admitting such evidence in court. Will jurors view scans as one piece of evidence amidst a larger body of facts, or will they be unduly swayed by new, impressive-looking technology? Thus far, judges have erred on the side of caution, excluding most brain-scanning evidence. But researchers continue to push forward. Anthony Wagner of Stanford University is one of many scientists using fMRI technology in hopes of pinpointing the areas of the brain associated with genuine memory. Wagner's experiments accurately detect when a test subject believes he is remembering something, but not whether the memory is actually true (Gazzaniga). These kinds of mixed results are the reason most researchers stress the need for patience before brain scans become a fixture in the courtroom. "Technologies which are neither seriously peer-reviewed nor independently replicated are not, in my opinion, credible," says Dr. Peter Rosenfeld. Neuroscientist Michael Gazzaniga puts it even more simply: "The experts all agree. This work is shaky at best" (qtd. in Giridharadas).

Even more significant than the prospect of enhanced lie detection is the potential for neuroscience to further illuminate the brain's role in behavior. Researchers are already gaining insight into the curious case of psychopaths, the approximately 1% of the population who lack typical feelings of guilt, shame, and empathy. Psychopaths make up about 25% of the prison population, and are therefore of interest to those who study the brain. Researchers posit a variety of theories as to the origin of psychopathy, including the possibility of abnormal neuronal connections or damage to parts of the brain that control emotions (Gazzaniga). While these findings are not yet concrete, it seems clear that defects in important brain functions are causally linked to psychopathy. If this is true, it might challenge our common perception of those suffering from psychopathy as heinous criminals; if psychopathic behavior is caused by brain defects that are out of one's control, we should see

psychopaths more as victims than as deliberate miscreants. Perversely, though, our natural aversion to antisocial behavior usually leads to harsher punishments, rather than commitment to psychiatric treatment.

The criminal justice system in the US purports to judge the defendant's intentions. Criminal responsibility in most cases hinges on whether or not the defendant's law-breaking was intentional. The notion of criminal intent, known as *mens rea*, forms part of the backbone of traditional Anglo-American law ("*mens rea*"). Unless the defendant is judged to be under extreme duress at the moment of the crime, or is ruled legally insane, he is found guilty. At present, psychopathy is not a recognized legal defense (Hughes). This decision is controversial among those who view psychopathy through the prism of neuroscience: could a psychopath really choose to act differently given what we seem to be learning? Was he "free" to abstain from committing his crime? And what does the enlightened perspective of neuroscience make of the notion of free will?

The concept of free will, while it has been debated for ages in philosophical circles, is difficult to define precisely. Most people consider themselves and others to be freely acting beings—that is, at any given moment, they are free to think and act as they wish. We are "free" to prefer chicken over beef, or the Beatles over the Rolling Stones, or vice versa. If we possess free will, then a Beatles fan chooses her preference of her own volition, *and could have done otherwise had she wished*. The problem with this belief, from the perspective of a neuroscientist, is that the mind is a product of the brain, which is itself made of physical matter. Thoughts come to us as the byproducts of neuronal activity, which are in effect hidden within the fabric of our brain, beyond our conscious awareness. As neuroscientist Sam Harris explains, "Our belief in free will arises from our moment-to-moment ignorance of specific prior causes. The phrase 'free will' describes what it *feels like* to be identified with the content of each thought as it arises in consciousness" (105). Nonetheless, there is no invisible ego, no hidden "me" tucked within the folds of my brain that weighs and considers my thoughts before acting. My mind *is* me, and I am my mind. As such, it doesn't make sense to say that I might "change my mind" about something. Harris continues:

It means nothing to say that a person would have done otherwise had he chosen to do otherwise, because a person's "choices" merely appear in his mental stream as though sprung from the void. . . . From the perspective of your conscious mind, you are no more responsible for the next thing you think (and therefore do) than you are for the fact that you were born in the world. (104)

The truth of this proposition—the rejection of free will as an illusory concept, and the affirmation of “determinism,” the idea that all of our behaviors are determined by the physical brain—hasn’t achieved consensus among neuroscientists or philosophers. Many, like philosopher Daniel Dennett, combine a belief in determinism and free will, a stance known as *compatibilism*. Compatibilists believe that although determinism is plausible, our free will on a moment-to-moment basis is undeniably true, or at least impossible to disprove, so a combination of the two doctrines is the most tenable solution (Cohen 1777). Others, like Michael Gazzaniga, insist that in matters of personal and criminal responsibility, we should recognize that “people, not brains, commit crimes” (Gazzaniga). But the more we learn about the brain, the more our certainty of free will as an accurate description of our mental processes slips.

Yet the myth of free will dies hard, as many popular religious, moral, and judicial traditions rest on its affirmation. For many Christians, the difference between a life of sin and a life of piety rests on the notion that God endowed humanity with the freedom to choose between good and evil. Morality, in both its theological and secular conceptions, often relies on the idea that people explicitly choose to make moral or immoral decisions. Such moral frameworks help justify—and often include—tit-for-tat systems of justice: rewards for moral acts, retribution for immoral acts. But determinism undermines the very foundations of that kind of system.

Idealized notions of free will, however, and our corresponding retributive impulse, are not only intuitive and ingrained; they are also vital in maintaining social cooperation. An implicit assumption of free will underpins our entire system of laws, which enforces accountability for one’s actions; without personal responsibility, social cooperation is nearly impossible. But a dogmatic insistence on free will, in the face of mounting evidence against it, runs counter to the goal of maintaining law and order. The idea that one should be punished for criminal misdeeds is an appealing one, but that appeal falters as we come to understand the underlying genetic and environmental factors that produce a brain capable of such acts. If, as neuroscience suggests, human actions represent a merger of genes, upbringing, and luck—none of which are truly under our control—then increased public understanding may curb much of our inherent drive for retribution (Harris 103). As an old French proverb states: “To know all is to forgive all” (Cohen 1783). In the meantime, our fixation on meting out punishments distracts us from the very real possibility that, with further advancements, we may be able to cure certain antisocial impulses.

If our retributive justice system relies upon a notion of free will that is no longer tenable, then what can be put in its place? And if we accept that determinism is true and that people cannot be blamed for “choosing” their criminal behaviors, how can we claim to hold criminals responsible at all? While determinism spells the end for retributive justice, it does not mean that we can never hold anyone responsible for his actions. The alternative to retributivism is consequentialism, an approach that aims to achieve one central goal: the promotion of future welfare (Cohen 1773). A criminal still needs to be quarantined from the rest of society if he poses a threat, but consequentialists emphasize rehabilitation over strictly punitive measures. In a consequentialist framework, imprisonment is meant to contain dangerous individuals and prevent further criminal acts—not to extract society’s requisite pound of flesh. We would seek vengeance against tornadoes if we could, but that policy would be both impossible and pointless. We combat natural disasters by preventing damage; the same should be true of any human crime.

Preventing criminal behavior is a crucial part of maintaining societal order. Preventing criminals from running rampant, maintaining the peace—this is the mission statement of our justice system when it seeks out and prosecutes lawbreakers. This system, however, is far less objective and reliable than we wish and believe it to be. When death appears imminent, our powers of judgment fail us. Psychologist Sheldon Solomon’s study of “mortality salience” illustrates how profoundly flustered we become under duress. Solomon’s experiment gathered two groups of professional judges and asked each group to set bail in a hypothetical criminal case; both groups read the same case scenarios, but before the test, the experimental group was presented with a questionnaire designed to make them think about their own deaths. Solomon found that the group who thought about death set bail much higher than the control group when the case at hand dealt with a morally charged issue, such as prostitution.

Solomon’s research shows that the prospect of our own mortality leads us astray from more careful, informed thinking—and thus may strike at the heart of retributive thinking. Perhaps to crave retribution is to recognize the stakes involved in criminal behavior and fall victim to our baser impulses. When a psychopathic mass-murderer awaits sentencing for his crime, thoughts of death weigh heavily on all our minds—but the emotional reactions that follow lend themselves to unreasonable and increasingly unsupported notions of free will that taint our decisions.

Just as we begin to conquer the mysteries of the human brain and outgrow our antiquated conceptions of behavior and responsibility, we uncover

the forces that might halt our forward progress. Perhaps, as some research suggests, a primitive desire for vengeance might be so ingrained in our social and cultural development that to attempt to eliminate it completely would be at best useless and at worst deeply destructive. Even neuroscientific studies seem to indicate that certain hardwired mechanisms in the brain foster our retributive impulse (Cohen 1784). It seems, paradoxically, that further research leads to further mystery. But progress can only be halted for so long, and sooner or later the tides of neuroscientific knowledge will overrun our ability to keep them at bay. And even if we come face-to-face with the knowledge that our decisions are not wholly free, we will at least be able to work towards a more complete judicial system, one that is not built on a need for retribution—one that truly does our minds justice.

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