

Wired Morality: Neuroscience's Unsettling of Traditional Moral Thought

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Most human beings tend to presume that there is a certain metaphysical order to their moral decisions – that what they decide is right is justifiably right, what they decide is wrong is justifiably wrong. It seems rather natural that recent research in neuroscience would cause an upset in traditional moral philosophy. While it is somewhat comforting to think that a moral system is built and cultivated by a coherent, functioning group of like-minded people, neuroscience reveals a much messier truth: Morals are complicated, emotionally based, and sometimes incredibly difficult to justify. The notion of morality as it has been traditionally conceived in society for centuries is slowly being eroded away by neuroscience research, and the result has been moral confusion and backlash in both popular and scientific communities. There are three major developments in neuroscience and psychology that serve as major points of departure from traditional moral thought, and hence cause the most controversy: the search for a moral region of the brain, the development of “trolleyology”, and the recent discovery that free will is quite probably a happy illusion. These advancements suggest that traditional ideas of rational moral thought have become obsolete, and societal disquietude over this revelation is pushing neuroscientists to search for a more complete description of moral reasoning.

This suggestion should not be perceived as radical, nor come as a major shock; indeed, moral thought up to the modern day has been limited by technological inabilities to explore the actual structure of the brain. It is inevitable that such theories be revised at some point. Morals were instead closely tied to calculated cultural, religious, or philosophical ethics systems. For example, philosopher Jeremy Bentham proposed that what was to be considered “right” was

what provided the greatest good for the greatest number; clearly, such a moral distinction is purely analytical. Immanuel Kant's categorical imperative serves as another example; determining what one should do based on what one would wish another to do in the same situation – a rough interpretation of Kant's ideas – is largely based on a rational analysis of the aforementioned scenario. In short, the old order of moral thought suggested that morals could be teased out of rational thought and systematic analysis. Furthermore, religious groups such as Judaism and Christianity often have a moral code written into their holiest texts. Morals were thought to be a self-selected ideology, having little to do with biology. The great variety of cultural values between cultures seems to cement this fact. In a Boston Review article, Dr. Rebecca Saxe realizes that the great variety of moral values between cultures seems to cement this fact: "In a world of religious wars, genocide, and terrorism, no one is naive enough to think that *all* moral beliefs are universal" (Saxe 2005). In other words, the long-standing hypothesis that morals were determined rationally appears perfectly sensible. Even though neuroscience supports the idea that morals can be socially determined, it has garnered formidable evidence pointing to evidence of biological roles in moral development. In short, the rational hypothesis of moral thought has been thoroughly challenged.

A prime example of how the idea of rational moral thought has been shaken can be found in the search for a moral region of the brain. The search for such a region dates back to the 1970s, when psychologist Lawrence Kohlberg first started his research on the subject. Kohlberg did support the idea that morals were logically determined, but suggested that the stages of moral development were biologically determined. This idea of a moral universal – that is, of moral

development in all humans being completely homogeneous – was rejected outright by many of his peers. As Rebecca Saxe notes in a *Boston Review* article, opponents to the theory “attacked everything from the specific dilemmas to the coding criteria to the whole philosophy of monotonic universal moral development” (Saxe 2005). Granted, there were many problems with Kohlberg’s theory, not the least of which was a blatant undercurrent of sexism: He created his own developmental moral hierarchy, atop which sat Western males. The engrained idea that morals were rationally determined also prevented society as a whole from warming to the research. Unfortunately, this combination of issues led to the curt dismissal of research on moral universals at the time. Societal pressures pushed neuroscience research in other, less inflammatory directions.

However, this impediment was temporary; later, more scientifically sound developments in neuroscience brought up the same troubling questions about moral universals as Kohlberg. Making use of fMRI brain imaging, Jorge Moll and his team of researchers were able to pinpoint a particular region of the brain – the medial orbito-frontal cortex – that was especially active during the processing of moral issues. It appeared that a “moral region” of the brain had finally been established. Further evidence was provided by the case of Phineas Gage. Gage was a railroad worker who suffered injury to his orbito-frontal cortex in an accident – an injury that left him seemingly without any moral judgment whatsoever. However, this evidence did little to quell the controversy that still surrounded the identification of a brain region selected for moral decisions. Indeed, other prominent scientists such as Joshua Greene of Princeton University have found convincing evidence that this localization of moral functions is wholly unfounded:

“He finds lots of different brain regions recruited—as one might imagine—including regions associated with reading and understanding stories, logical problem-solving, and emotional responsiveness” (Saxe 2005). In other words, according to Greene, no single area of the brain could be said to constitute the whole of moral reasoning. Research on the subject is clearly still very divided, and the persisting dissatisfaction with the idea of a singular, biological moral reasoning center continues to produce controversy.

However, Greene’s research on the trolley problem, from which he derived his conclusions about the numerous brain functions involved in morality, might actually constitute a bigger challenge to traditional moral thought. Simply stated, the trolley problem asks if a person would flip a switch to kill one person rather than five, then asks if that person would push a man off a footbridge to save five others. Invariably, the person says he or she would flip the switch but not push the man, even though very few could give any sufficient justification as to why. This seeming arbitrariness in moral reasoning constitutes a major challenge to the philosophical theories of morality. Morals, it seems, are derived not solely – or even primarily – from reasoned analysis, but are largely determined by emotional response. Joshua Greene’s research specifically found evidence that emotions interfere with and contribute to moral decision-making: “Moreover, the presence of this [emotional] interference effect in the behavioral data strongly suggests that the increased emotional responses generated by the moral-personal dilemmas have an influence on and are not merely incidental to moral judgment” (Greene 2001: 2107). Clearly emotions cannot be marginalized when considering the process of determining morals. Somewhat ironically, Greene’s denouncing of the

centralization of moral function in the brain actually further unsettled traditional thinking. Controversy, as it were, breeds more controversy.

This trend continues with the third and final research development brought under consideration here – namely, the strong possibility that free will is an illusion. This conclusion was reached in a paper co-authored by John-Dylan Haynes which found that decisions are very possibly made seven seconds before one is consciously aware of them. The possibility that free will does not exist poses the most direct challenge to the hypothesis that morals are determined rationally; in fact, if an unconscious process determines decisions, and moral reasoning comprises some of these decisions, then morals are largely not determined by conscious rationalization. Unsurprisingly, there has been considerable skepticism and backlash to Haynes study. In an article in *Wired* magazine, Haynes is quoted as saying that he does not think free will is plausible. The author of the article then notes, “That implausibility doesn't disturb Haynes” (Keim 2008). This off-handed response signifies the general public's response to Haynes' research; unquestionably, many people find the concept that free will is illusory to be very disturbing. Predictably, this uneasiness influences Haynes' research direction. He notes that his study is inconclusive he will remain open to the possibility that free might exist, saying that he is “happy to keep looking” (Keim 2008). Since Hynes' research has such a high potential for strongly negative public reaction, it is no wonder that the scientist would stay open to the possibility that his conclusions are incorrect.

It is worth noting that the controversy over free will has extended beyond neuroscience into other research fields – in fact, ambitious physicists are currently

tackling the issue. One of the major arguments against free will is, in fact, a physical one. The physical systems that govern our universe are deterministic; even quantum mechanics limits a process' outcome to a range of probabilities. Therefore it should be self-evident that free will – or at the very least, strong free will, the type that allows one to do literally anything they wish – is strictly impossible. However, other physicists share popular skepticism of the idea of a deterministic universe governing our decisions. Two such experimenters, John H. Conway and Simon Kochen, claim that “if the experimenter can freely choose the directions in which to orient his apparatus in a certain measurement, then the particle’s response (to be pedantic—the universe’s response near the particle) is not determined by the entire previous history of the universe” (Conway 2009: 226). So, physically, there is also still a slim possibility for strong free will. The concurrence between the academic fields of neuroscience and physics on the issue of free will – in both initial objections and later backlash – is fascinating, and hints that there is a strong possibility that the areas of research will continue to blend in interesting ways in the future. This concurrence also demonstrates that research in both fields is heavily influenced by public opinion.

Currently, it is easy to identify the main source of public backlash underlying all research refuting free will and, more specifically, the idea of rational moral reasoning: many justice systems, including the one in place in the United States, depend heavily on intent in determining culpability. As implied by the study led by Haynes, a complete lack of a conscious moral decision-making process would imply that a person does not have executive control over his or her own morality or actions. If one does not have executive control, one does not have intent and

therefore cannot be blamed for his or her actions under the United States' legal system. Obviously, free will and moral reasoning studies throw a tremendous wrench into such a system of justice, for even if some moral processes are not controlled by a conscious, rational process, intent and culpability become ambiguous. This ambiguity most blatantly manifests itself in public opinion through an image in a popular science article about a study by led by Dr. Saxe. The study found that disrupting a specific region of the brain could influence moral decisions. The image in question consists of a question mark draped across a balanced scale with the word "right" on one side and the word "wrong" on the other – a clear reference to the metaphor of the fair scales of justice (PhysOrg.com 2010). This image encapsulates public uncertainty about the implications of studies discrediting the traditional view of moral decision-making. By refuting traditional moral thought, neuroscience has unintentionally questioned the foundations of systems of justice, and the public is understandably uneasy about where such questioning might lead.

In this case, public anxiety over scientific results has the curious result of perpetuating more research on the issue. Moral reasoning, researchers are quick to point out, is not entirely controlled by unconscious processes. In the aforementioned popular science article, Dr. Saxe was quoted as saying that the altering of a specific brain region "doesn't completely reverse people's moral judgments, it just biases them" (PhysOrg.com 2010). Morals are complex, and further research is required to determine to what extent ideas of intent and culpability might need to be altered. The public wants answers, essentially, and further research on the topic of moral reasoning will provide more concrete

answers about the veracity of the assumptions that have gone into the construction of justice systems. Saxe is wholly aware of this need to justify legal assumptions, as is evidenced by the first line in her scientific paper about her discovery: “According to a basic tenet of criminal law, ‘the act does not make the person guilty unless the mind is also guilty’” (Young 2010: 1). Saxe’s reference to the legal applications of her findings in the first sentence of her paper speaks to the importance of public demand to know more about moral reasoning in determining the direction to take her research. Saxe is fully aware that her study’s potential to affect basic legal notions is of great popular interest. When the implications of moral research are integral to societies’ ability to function, it is logical that the voice of the public would direct scientists to further explore these questions of morality.

Progressions in neuroscience have sparked a massive reconsidering of moral thought. The traditional view that morals are determined by a conscious, rational process simply is not sophisticated enough to deal with new evidence produced by neurological studies. Each discovery – be it the localization of morality in a brain region, a demonstration of the role of emotion in moral reasoning, or the conclusion that free will is actually an illusion – has unsettled public opinions on morality and produced controversy surrounding systems of justice. This controversy, in turn, has provided motivation for neuroscientists to pursue the issue further. Essentially, neuroscientists are slowly gathering evidence that morality is wired into our neurons, and is not the result of some abstract rational process, challenging the prevalent public perception of morals as something purely determined by culture. The new moral paradigm is centered on the brain.

Works Cited

Conway, John H. and Simon Kochen. "The Strong Free Will Theorem." *Notices of the AMS* 56.2 (2009). 226-232. Print.

Greene, Joshua D. et al. "An fMRI Investigation of Emotional Engagement in Moral Judgment." *Science* 14 September 2001. 2105-2107. 28 March 2010.
<[http://www.pni.princeton.edu/ncc/PDFs/Moral%20Reasoning/Greene%20et%20al%20\(Science%2001\).pdf](http://www.pni.princeton.edu/ncc/PDFs/Moral%20Reasoning/Greene%20et%20al%20(Science%2001).pdf)>.

Keim, Brandon. "Brain Scanners Can See Your Decisions Before You Make Them." *Wired* 14 April 2008. 28 March 2010
<http://www.wired.com/science/discoveries/news/2008/04/mind_decision>.

"Moral Judgments Can Be Altered by Disrupting Specific Brain Region." *PhysOrg.com*. 29 March 2010. 21 April 2010
<<http://www.physorg.com/news189085599.html>>.

Ricciardi, Emiliano et al. "Do We Really Need Vision? How Blind People 'See' the Actions of Others." *Journal of Neuroscience*. 13 June 2009. MIT Libraries. 3 March 2010 <<http://www.jneurosci.org/cgi/content/short/29/31/9719>>.

Saxe, Rebecca. "Do the Right Thing: Cognitive Science's Search for a Common Morality" *Boston Review* October 2005. 28 March 2010
<<http://bostonreview.net/BR30.5/saxe.php>>

Young, Liane et al. "Disruption of the Right Temporoparietal Junction with Transcranial Magnetic Stimulation Reduces the Role of Beliefs in Moral

Judgments." *Proceedings of the National Academy of Sciences of the United*

States of America. 29 March 2010. MIT Libraries. 21 April 2010

<<http://www.pnas.org/content/early/2010/03/11/0914826107.full.pdf+html>>.

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