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Book Review: "Hardwired Behavior: What Neuroscience Reveals about Morality"

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HARDWIRED BEHAVIOR: WHAT NEUROSCIENCE REVEALS ABOUT MORALITY.
By Laurence R. Tancredi. Cambridge University Press 2005. Pp. 226.
\$28.99. ISBN: 0-521-86001-6.

The field of neuroethics has been described as an amalgamation of two branches of inquiry: the ethics of neuroscience and the neuroscience of ethics. The ethics of neuroscience, which has received considerable attention over the past three to four years, is concerned with the ethical principles that should guide brain research and the treatment of neurological disease, as well as the effects that advances in neuroscience have on our social, moral, and philosophical views. The neuroscience of ethics, which has received considerably less attention, may be described as a scientific approach to understanding ethical behavior.¹ Psychiatrist and lawyer Laurence Tancredi makes a significant and early contribution to the neuroscience of ethics in *Hardwired Behavior: What Neuroscience Reveals About Morality*.

Tancredi begins by developing a historical framework for understanding community notions of morality. Moral proscriptions on behavior originated in ancient philosophy, were illustrated in classic literature, and continue to be identified by the western Judeo-Christian tradition and the religions of Islam and the Far East. Common precepts of morality include bans on negative behaviors such as murder, infidelity, greed, sloth, and manipulation. Sigmund Freud, Jean Piaget, Lawrence Kohlberg, and other early experts in moral development viewed these negative behaviors through the lens of mentalism, a focus on the mind as separate from the brain and the body. Central to mentalism are the concepts of free will and intentionality—the belief that individuals can choose whether to engage in immoral acts.

Tancredi chronicles the transition from mentalism to physicalism, which emphasizes the primacy of the physical brain. Although physicalism dates back to Aristotle and the principles of natural law, advances in neuroscience have brought it to the level of brain biology. Tancredi's focus is the role of biology in immoral behavior, which he examines through a series of case studies, beginning with infamous Ricky Green. (46-68) Green, who had a long history of physical and

1. Adina Roskies, *A Case Study of Neuroethics: The Nature of Moral Judgment*, in *Neuroethics: Defining the Issues in Theory, Practice, and Policy* 18 (Judy Illes ed., Oxford U. Press 2006).

sexual abuse, sexually mutilated and killed at least two women and two men. Tancredi avoids the nature-nurture dichotomy by suggesting that Green's behavior resulted from a combination of *selection factors* (the genetic capacity for transferring a trait) and *instruction* (an environmental agent that triggers the innate capacity present in the genes). (64-66, 81) Stated another way, Green's genes and biology (including an ineffective limbic system and an abnormal prefrontal cortex), as well as environmental influences, may have contributed to his behavior.

Tancredi uses additional case studies and research findings to further illustrate the role of the brain in moral decision-making. A case study involving a failed heterosexual relationship is used to suggest that men who have structural and functional abnormalities in the orbitofrontal gyrus, left superior frontal gyrus, posterior cingulate gyrus, and superior temporal sulcus may have reduced capacity for empathy, an essential component for developing a moral sense. (112) Hypersexuality may result from damage to the limbic system, and poor financial planning skills may be due to frontal lobe injury. The cases of Andrea Yates, Susan Smith,² Martha Stewart, and Enron allow for a discussion of the role of the brain in cases involving "madness" and "badness," as well as individual and corporate greed. Drawing on his experience as a psychiatrist, Tancredi believes that criminal money-related behaviors frequently stem from bipolar illness, obsessive-compulsive disorder, and a pathological fear of failure—disorders involving major parts of the brain, including the prefrontal and temporal lobes and the amygdala.

In his final chapter, Tancredi considers a hypothetical legislative program set in the year 2100 that supports the use of functional neuroimaging technology and brain treatments to curtail immoral behavior, ensure acceptable expressions of sexual desires, and limit wasteful spending activities, including gambling. Among other measures, the hypothetical reforms require genetic and functional neuroimaging testing of all babies to identify their potential range of behavior, as well as the augmentation or replacement of the areas of the brain that contribute to immoral decision-making. The program's underlying assumption is that free will, if it exists at all, plays a minor role in morality. Briefly switching approaches from the neuroscience of ethics to the ethics of neuroscience, Tancredi compares the issues raised

2. Texas mother Andrea Yates, who suffered from psychotic hallucinations and delusions, drowned her five children in a bathtub in 2001. South Carolina mother Susan Smith rolled her Mazda—and her two children—into a lake in an attempt to secure the affection of her lover in 1995.

by his hypothetical program to current questions relating to the proper use of Prozac and Ritalin. Tancredi concludes by arguing that we need to balance the merits of a moral (and monolithic) society against the loss of individuality and diversity that could result from legislative reforms. (171-172)

Scientists who believe that modern brain imaging techniques only reveal the neural correlates of behavior, not the “hardwiring” of behavior,³ may struggle with Tancredi’s broad notion of defective brain wiring. Other individuals may question the diminished role Tancredi assigns to free will. Still others may disagree with Tancredi’s speculation that law enforcement agencies, educational institutions, and the health care system will extensively incorporate neuroimaging technology into their business processes. And, scholars in religion may wish to inquire further about neuroscience’s implications for religious understandings of morality. However, *Hardwired Behavior* more than accomplishes Tancredi’s goal, which is to generate discussion about the effect of recent neuroscientific findings on our moral and religious precepts.

Stacey A. Tovino[†]

3. See e.g. Elizabeth A. Phelps & Laura A. Thomas, *Race, Behavior, and the Brain: The Role of Neuroimaging in Understanding Complex Social Behaviors*, 24 *Political Psychol.* 747, 754 (2003) (“Showing a behavior ‘in the brain’ does not mean that it is innate, ‘hardwired,’ or unchangeable.”).

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