AAR BOOK REVIEW

Hardwired Behavior: What Neuroscience Reveals about Morality. By Laurence Tancredi. Cambridge University Press, 2005. 226 Pages. $28.99.

Lawrence Tancredi is a Clinical Professor of Psychiatry at New York University School of Medicine, a psychiatrist in private practice, and a lawyer who consults on criminal cases involving psychiatric issues. This extraordinary combination of expertise and experience puts him in a position to write this book on the contemporary status of the classic nature–nurture debate.

Hardwired Behavior suffers from two connected rhetorical problems that should be addressed up front. First, the main title suggests neurological–genetic determinism of human behavior. Yet, the actual content of the book supports a more balanced view, with genetically based and neurologically expressed propensities for behavior situated in a social context that is usually capable of regulating or exacerbating them. Relative to the social constructivism that has dominated theories of behavior since the collapse of social Darwinism decades ago, Tancredi's case does push hard in the direction of neurological–genetic determinism of human behavior, but the end result is still a balance between nature and nurture.

Second, the subtitle suggests that neuroscience can reveal something about morality, and that this book will tell us what that is. This, too, is misleading. The book has little to say about morality as such. It focuses on behaviors that are commonly considered to be morally bad because they can harm individual happiness or the social fabric of life, such as violent crimes and unhealthy sexual activities, pathological gambling, and lying. Tancredi shows that such behaviors are profoundly influenced by neural hardwiring. This is relevant to morality, to be sure, but the most Tancredi says about that is to notice that people generally think of such behavior as wrong and to speculate that, if they knew about the underlying biological component in the behavior, they might have to rethink how they assign culpability. In particular, the infamously complex philosophical linkage between behavior and morality, between the "is"

Journal of the American Academy of Religion, pp. 1–4

of the description and the "ought" of the prescription, is not explored here, nor is the puzzling question of the evolutionary emergence of moral systems.

These issues can be put down to marketing bluster, which often influences book titles, and to the author's profile of expertise in what is a prodigiously complicated multidisciplinary area. Similarly, a number of distracting errors in the book, which should have been caught in proofing, probably can be put down to a rushed process mandated by a marketing deadline. Readers of this journal will also need to know that there is also almost no discussion of religion in the book, though much that is said bears on the study of religion. With these concerns out of the way, I now turn to the marvelous heart of the book's argument.

Tancredi marshals a formidable array of evidence to show that human behavior is more strongly influenced by biological factors such as genes and brain damage than is usually realized. The main supply of evidence is research studies built around functional imaging of the brain. These are non-invasive brain scans that capture signs of neural activity (such as changes in blood oxygen level) while the brain is doing an activity. A single PET or fMRI scan tells us little of relevance to the issue of morality; comparative studies matter more. Scans of brains operating normally establish a basis for identifying unusual or abnormal function, such as reduced activation in a region of the brain associated with empathy or greater activation in a region associated with aggression. Such comparisons allow neuroscientists to infer that distinctive variations in the behavior being studied have neurological underpinnings, or what Tancredi calls "hard-wiring."

This sort of evidence necessarily presupposes a modular approach to understanding brain activity, which ~~focusing~~ on correlations between a bodily or mental function and one or more brain regions. Though Tancredi never addresses the problems with modular models, he appears to believe that the modularity thesis is sound enough to support the inferences he wants to draw from the imaging data. Where possible, he ~~draws in~~ findings from other sources—such as gene studies, heritability studies, and neurochemical studies—but he relies heavily on the modular framework.

One obvious issue affecting interpretation of comparative neurological evidence is the chicken-and-egg question about whether these scans reflect brain expression of free behavioral choices or rather brain-based constraints on behavioral possibilities. For example, a dualist could argue that a violent criminal is so because of a deformed soul, which expresses its evil choices through the brain so as to produce scans characteristic of impulsive violence. Meanwhile, the physicalist could argue that the same brain is conditioned by genetics and developmental plasticity so as to limit self-control and maximize aggression, which would produce the same scanning data. Questions such as this are important in the philosophical interpretation of brain studies and also in religious perspectives on morality and human behavior. Tancredi seems oddly untroubled by them, taking the physicalist perspective totally for granted. Good reasons for his view do exist, especially behavioral change following head trauma that damages the brain, and genetic studies that show the heritability of

certain brain features that affect behavior. But even these data can be interpreted along dualist lines. This issue has profound significance for understanding morality so the reader would have profited if the book had displayed greater awareness of the philosophical difficulties surrounding interpretation of functional brain imaging data.

Relative to Tancredi's metaphysical framework (i.e. the brain makes the mind), his case is persuasive. The book's exciting tour through cutting-edge neurological studies of behavior amply supports the conclusion that human behavior is hardwired in large part, and that environmental factors such as upbringing, education, and experience only refine (as against define) the expression of hard-wired behavioral tendencies. It follows that psychological studies of mental activity may be less useful for understanding human behavior than is typically assumed, and that physical studies of the brain's role in behavior may become increasingly important. This should affect the discipline of psychology, though Tancredi says little about this. He focuses on the effects of these findings on the legal system's way of assigning responsibility and guilt, about which he evidently knows a great deal. In the final chapter he also speculates on the way this understanding of human behavior might affect medical care and even the political task of securing peaceful societies.

Tancredi's argument has great importance for the study of morality in relation to religion, though he does not take up this topic. Just as brain studies of behavior are steadily transforming the legal system and producing formerly unthinkable choices for medical intervention around behavioral issues, so they will gradually place stress on religious self-understandings. For example, theistic religions have typically understood morality in terms of obedience to God, ~~thereby,~~ interpreting moral badness as deliberate spiritual rebellion and~~,~~ maximizing the responsibility of human beings for their behavior in all circumstances. This is so, whether the enclosing cosmology is cyclical (samsara–moksha) or linear (life–afterlife) in character. Tancredi's argument, if correct, places major causal factors for behavior fully outside the control of the human moral subject, and so would require a careful reevaluation of such religious interpretations of human moral responsibility.

Also relevant to religion is the shift of responsibility from the individual to the human group. Individual moral badness (i.e. personal sin) may be more a matter of corporate responsibility than theistic religions have assumed. Moreover, if human beings are capable of using new medical technologies and improved educational techniques to help individual moral subjects overcome moral badness, then this may change the way religions assign responsibility for morally bad behavior.

It is not easy to write a book that has many hundreds of references to specific brain regions and the meaning for human behavior of their activation. Tancredi provides a couple of brain maps to help the reader track what he says about functional imaging brain scans but sometimes the neurological references come so thick and fast that they really have no meaning for non-experts. The more helpful device is the stories that Tancredi weaves around the research

he summarizes. The book is built around two detailed cases studies, one of a serial murderer and another of the effect on a romantic relationship of a man's uncontrolled obsession with sex. Tancredi uses many other illustrations, also, and succeeds in giving each chapter an existentially vibrant framework for the scientific findings that he presents. This is a notable achievement from a communications point of view and it makes the book accessible in a way that is both unexpected and rewarding for the reader.

doi:10.1093/jaarel/lfl057

Wesley J. Wildman
Boston University