book review

Neuroeconomics: A Guide to the New Science of Making Choices

By Peter Politser. (2008). Oxford University Press, USA. 219pp. ISBN 978-0-19-530582-1 $37.95 USD (hardback).

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Editor's Note: This review by Dr. Ari. Kalechstein is the first in a two-part series on neuroeconomics. Since the field is new to most, we start by reviewing an introductory-level text to introduce our readers to this area of study. In our next issue, we will conclude with his review of the book, *Mid-Brain Mutiny: The Picoeconomics and Neuroeconomics of Disordered Gambling*.

A Neuroeconomics Text Stimulated My Medial Forebrain Bundle

Within the last several years, marked interest has emerged in the field of neuroeconomics. A number of reasons may underlie this interest; for example, over the past 20–30 years, there have been remarkable breakthroughs with respect to the development of technologies that enable researchers and clinicians to characterize brain structure and function, such as functional magnetic resonance imaging (fMRI). In addition, researchers in a wide array of fields are presently interested in describing the link between elements of neurobiology, such as brain chemistry (e.g., dopamine tone) or diagnosis of a particular mental health condition (e.g., addiction), to the manner by which individuals place a value on particular events, people, or objects. Finally, the visibility of the field was increased when pioneers in neuroeconomics were recently awarded the Nobel Prize in Economics. Despite the proliferation of peer-review manuscripts in this area, there exist, to this reviewer's knowledge, very few scientific texts on the topic (one example is Glimcher, 2004). Thus, Dr. Politser's text is timely.

With regard to the intended audience, it is this reviewer's opinion that the text is most appropriate for the following readers: neurologists, neuropsychiatrists, neuropsychologists, or cognitive neuroscientists—in other words, individuals with a background in neurobiology. For example, the text is prepared in a manner which assumes that the reader is familiar with the structure and function of the brain, such as the cognitive functions mediated by specific regions of the brain and particular neurotransmitters. As a result, individuals without a background in neurobiology will find the text to be more taxing, though Dr. Politser attempts to mitigate this issue by providing a glossary that includes succinct descriptions of terms. This point is not meant to discourage intrepid graduate students, interns, and fellows, who will certainly benefit

from reading this text if they are interested in neuroeconomics; rather, the intent is to forewarn, so that interested readers will obtain the maximum benefit.

In contrast, the text assumes that the interested reader will be less grounded in the area of economic theory. Indeed, the chapters are organized so that the following topics are sequentially addressed: identifying and defining the various components of choice, the economic elements underlying the ability to evaluate risk and reward, psychological abilities that underlie these evaluations, and future directions for neuroeconomics. Moreover, the majority of the text focuses on describing the overarching themes and the essential constructs of each theory.

Overall, Dr. Politser does an excellent job of integrating neurobiology and economics in 140 pages (glossary, references, and appendices excluded). His approach is to use a neuroeconomics principle as a starting point, which he then links to a neurobiological function or series of neurobiological functions. For instance, in Chapter 3, Dr. Politser discusses evaluation of risk and reward. He begins by describing various models of reward and risk evaluation and, to the extent that there is research regarding the neurobiology that underpins each model, he reviews it in the context of the particular model. Additionally, to facilitate reader comprehension, Dr. Politser includes a table that distills each of the economic theories into their basic elements, lists the advantages and disadvantages of each theory, and summarizes the neurobiological foundations of the particular model.

Particular strengths of the text are Dr. Politser's apparent grasp and understanding of complex neuroeconomics principles, and his writing style. For example—and consistent with the approaches used by experts in various fields—Dr. Politser can explain technical jargon using lay terms. In Chapter 2, Dr. Politser elucidates the components of choice. In one subsection, he lists the three primary elements of economic decision theory: diagnostic, management, and outcome efficacy. In order to illustrate these elements, Dr. Politser references a scene from the 1999 movie *Analyze This* with Robert De Niro and Billy Crystal, in order to demonstrate how each of these principles unwittingly played a role in the behavior of the character portrayed by De Niro. In fact, throughout the text, Dr. Politser uses scenes from movies and comments from various stand-up comedians and humorists to illustrate the applicability of the economic principles he presents in his book. From this reviewer's perspective, Dr. Politser's approach reflects the fact that he has considered the ecological validity of these economic principles—in other words, the degree to which they can be applied to day-to-day functioning. Moreover, and equally important, he makes a conscious effort to liven up the material, which is quite dense and might otherwise be less entertaining, and engages readers so that they might use this line of reasoning to generate their own examples of how these theories might explain human decision-making.

It is noteworthy that, in the introductory chapter, Dr. Politser tempers his excitement regarding the unlimited potential for neuroeconomics to explain human decision-making with an important disclaimer regarding the "fledgling science" that is neuroeconomics. Specifically, Dr. Politser articulates the need to formulate a framework that can "clarify the meaning and limitations of current neuroeconomic research." From this reviewer's perspective, it is the understanding of scientific limitations that can ultimately lead researchers to new and exciting discoveries. Dr. Politser's book can provide important assistance in that regard.

Reference

Glimcher, P.W. (2004). *Decisions, uncertainty, and the brain*: *The science of neuroeconomics*. Cambridge, MA: MIT Press.