

**Birger P. Priddat (ed.), *Neue Theorien zu Konsum, Marketing und emotionalem Verhalten in der Ökonomie (Neuroeconomics: New Theories of Consumption, Marketing and Emotional Behavior in Economics)*, Metropolis-Verlag, Marburg 2007, 225 pages, 24,80 €.**

In spring 2013, I accepted the guest editors' invitation to write a review of this German-language book. It was entirely due to this invitation that I became aware of this work. Although reviews are usually written shortly after publication of a book, I am reviewing this book many years after its publication. Thus, it is now possible to evaluate the statements in the book based on the actual development of neuroeconomics that has taken place over the past years.

Neuroeconomics is a scientific research field that seeks to explain human decision making, a major topic in economics, by taking into account neuroscientific and psychological approaches. (Here, I use the word "approach" as a catch-all for the knowledge, theories, methods, and tools that neuroeconomics researchers use.) The availability of corresponding explanatory models is a precondition for the prediction of individual human behavior and the behavior of larger social systems. Insights gained from neuroeconomics may also contribute to the design of policies such as economically relevant regulations. Readers who are interested in the historical development of neuroeconomics, including research approaches, important theoretical and empirical findings, and possible future developments, should read a book edited by Paul W. Glimcher, Colin F. Camerer, Ernst Fehr, and Russell A. Poldrack, *Neuroeconomics: Decision Making and the Brain*, Elsevier 2009. Paul W. Glimcher and Ernst Fehr edited a second edition of this book in 2013.

The field of neuroeconomics has been the focus of intense discourse in theory and practice for about a decade; researchers conducted pioneering activities in the early 2000s. At the same time more and more scientists, and also practitioners, started to take an interest in the topic, especially in the related field of neuromarketing (i.e., consumer neuroscience). In response to these developments, a meeting took place at the Zeppelin University in Friedrichshafen in 2005 and a conference on neuroeconomics was organized. The book I review here summarizes the results of this conference.

In Chapter 1, „Vom Nutzen der Neuroeconomics: Einleitung“ (“On the Benefits of Neuroeconomics: Introduction”) Birger P. Priddat describes the book's motivation. He draws particular attention to the lack of introductory literature. He also highlights one of the most important topics in neuroeconomics, the influence of emotions on economic decisions, a theme that constitutes a major thread throughout the entire book. A hindsight from today's perspective shows that it was exactly this topic that managed to establish itself successfully in the neuroeconomic literature. Thus, many years ago this book focused on a topic that was to become one of the major themes in neuroeconomics.

It is important to note that in this introductory chapter I missed an explicit distinction between *neuroeconomics* and *neuromarketing*. Thus, it remains unclear in what way the two fields differ and what they have in common. This fact is problematic, because these two fields are evaluated in depth in the book. However, the reason there is no sufficiently precise conceptual distinction could also be that in the early period of this research area both streams had much common content. Only later would they be differentiated by specific subjects.

I note that there is also no explicit statement on the target group of readers in this introduction. Consequently, it remains unclear who comprises the primary audience for the book. This lack of specific focus makes it difficult to write a review, because the content (e.g., methodological foundations, level of abstraction) is difficult to assess without any knowledge of the intended target group. In my opinion the introduction is not only too short, but also the motivation for the topics covered in the book is not very strong. This lacuna is further illustrated by a 15-line English-language

quote, which although it basically fits in the theme of the book, looks slightly out of place at this point. Above all it does not provide sufficient motivation for the chapters to follow.

In Chapter 2, „Neuroökonomie – wie unser Gehirn unsere Kaufentscheidungen bestimmt“ (“Neuroeconomics – How Our Brain Determines Our Purchasing Decisions”) Hans J. Markowitsch discusses major topics of psychology (e.g., perception and memory) to point out their relevance to neuroeconomic research. In my opinion, the introductory part of this contribution is especially very well written. The introduction and ten lessons learned from neuropsychological research that are of particular relevance for practitioners are very useful for understanding the following explanations. In this chapter, the author also discusses basics of brain physiology, as well as important brain research methods.

In particular, I note that there are many references to practice. For example, the chapter addresses the applicability of research findings to a better understanding of consumer behavior (e.g., emotion). It follows that this article is very useful for practitioners. (I note that this usefulness does not negatively influence the fact that scientists who previously had little contact with or knowledge of neuroeconomics and neuromarketing can also benefit from the contribution). However, I do criticize the author for not always being totally accurate in his description of psychological concepts. For example, the “Zeigarnik effect” is described as “...wanting to bring something begun to an end– ‘not doing things by halves’” (“etwas Begonnenes zum Abschluss bringen wollen – “keine halben Sachen machen”) (p. 15). However, in fact, this effect states that humans remember uncompleted tasks better than completed tasks. Moreover, some figures in the article, such as Figure 6, may be superfluous. I note that this paper, primarily from the perspective of the practitioners, delivers highly interesting findings and insights.

In Chapter 3, „Neuroökonomie und Neuromarketing: Neurale Korrelate strategischer Entscheidungen“ (“Neuroeconomics and Neuromarketing: Neural Correlates of Strategic Decisions”) Cornelia Hain, Peter Kenning, and Marco Lehmann-Waffenschmidt provide very good insights on the topic. At the very beginning of the contribution there is a particularly successful introduction, which makes it clear that the goal of the article is to inform the reader on the state of the art in neuroeconomics and its application-oriented sub-areas, especially neuromarketing, and to do so in a summarized form. Based on a taxonomy by Colin F. Camerer, George Loewenstein, and Drazen Prelec (p. 74), the article explains selected research papers and synthesizes them. In addition, the paper contains an overview of neurophysiological measurement tools and important basics for the localization of central brain functions. It is also both helpful and constructive that the chapter discusses ethical considerations. In my opinion, this contribution is well done, particularly since it provides a good introduction to neuroeconomics and neuromarketing for scientists who have little previous knowledge on the topic. This fact is substantiated by the structured presentation of relevant literature along the areas neuroeconomics, neuromarketing and neurofinance, and neuroscientific measurement methods.

In Chapter 4, „Wahrnehmung im Gehirn: Limits, Optimierungen und ihre Implikationen für die Neuroökonomie“ (“Perception in the Brain: Limits, Optimizations and Their Implications for Neuroeconomics”) Grit Hein and Christoph Henning present a multifaceted contribution. They begin by discussing the positioning of neuroeconomics in the scientific landscape. Among other things, they argue that establishing neuroeconomics within the so-called “hard sciences” such as neurobiology, as well as within “basic economic research” (“ökonomische Grundlagenforschung”) (p. 109), would be possible. Considering the developments of the past years, researchers could argue that neuroeconomics has been established as an independent field of science, thus potentially gaining the status of an independent scientific discipline in the future.

In discussing research in neuromarketing, the authors indicate that there is some danger that the field could suffer as a result of being a too “application-related and market-based orientation of science” (p. 111). The following section then addresses perception and attention, focusing on multitasking problems in human information processing. I note that in this context it is explicitly stated that due to the increasing amount of information on the Internet, people can reach their biological processing capacity and that this fact can result in “a dramatic increase in ‘man-made errors’ and a decline in performance” (“dramatischer Anstieg von ‘man-made errors’ und eine Abnahme der Leistungseffizienz”) (p. 114). Today, researchers investigate the neurobiological effects of information and communication technologies in a field called Neuro-Information-Systems (see [www.NeuroIS.org](http://www.NeuroIS.org)). This chapter is also valuable because it discusses ethically and sociopolitically relevant topics.

In Chapter 5, „Neuroökonomik des Vertrauens“ (“Neuroeconomics of Trust”) Utz Helmuth provides interesting insights on the findings of empirical research on the neurobiology of trust. Starting from a description of the relevance of trust for economic activities (e.g., cooperative behavior), the author presents a model for the explanation of trust by James S. Coleman. This model is based on rational considerations of a decision-maker, a fact that the rest of the essay describes as not very practical. Therefore, what follows is a description of the importance of emotions in trust situations. In addition, the chapter provides insights on the neural correlates of trust. It also outlines the importance of oxytocin (a neuroactive hormone that plays a central role in trust situations). Thus, this chapter represents an interesting contribution, and, as has now become apparent, trust has developed into one of the major topics in neuroeconomic research.

In Chapter 6, „Entscheidungen über Symbole: Was die Ökonomie von der Neurowissenschaft nicht lernen kann“ (“Decisions on Symbols: What Economics Cannot Learn from Neuroscience”) Alihan Kabalak starts by discussing a central issue, one which is particularly important in scientific discourse: the question of whether neuroscience has more to offer than just the localization of brain activity associated with the perception and processing of a stimulus. The author argues that neuroeconomics primarily contributes to the neurobiological proof that emotions are important in economic decisions. In the conclusion, the author also argues that despite the importance of neuroscientific approaches for the study of human emotion, this stream of research has limited value, because “...theoretically long-established relationships are only enriched by empirical evidence that emotions somehow play a role” (“theoretisch längst etablierte Sätze mit dem empirischen Beleg dafür anzureichern, dass Emotionen irgendeine Rolle spielen”) (p. 163). In my opinion, this is not a strong argument, because one of science’s major tasks is to empirically validate intuitively plausible hypotheses.

In Chapter 7, „Was kostet Angst? Eine neuroökonomische Studie zum Home-Bias“ (“What Does Anxiety Cost? A Neuroeconomic Study on Home Bias”) Peter Kenning, Peter Mohr, and Hilke Plassmann present an fMRI study showing, on the basis of brain activity, that anxiety can unfavorably affect people’s investment behavior. This paper is a valuable contribution, one that illustrates the motivation that can underlie the use of neuroscientific approaches (in this case, fMRI), particularly from the perspective of a behavioral science discipline (see Sections 1, 2, and 3.1). In addition, the chapter includes a brief summary of the experimental study (see 3.2, 3.3), including the empirical results (see 3.4). The authors continue by discussing these results, along with implications that are grouped into different categories (e.g., the perspective of investment providers as well as the economic point of view). A summary completes the chapter.

This chapter could serve young scientists as a template, illustrating how a neuroeconomics article could read. (And in any case, the chapter shows how most contributions actually do read.) I note that this study also shows that two phases in fMRI research are of particular importance from the perspective of a behavioral scientist. First is the development of the experimental design based on the research question, and second is the discussion of the results on

the basis of relevant literature. Formally, I note that the section 3.2 appears twice (n.b.: “MRI main study” („MRT-Hauptstudie“) should be section 3.3).

In chapter 8, „Die Blackbox des Konsumentengehirns öffnen: Versuch einer soziologischen Erklärung des Neuro-(Marketing-)Hypes“ (“Opening the Black Box of the Consumer Brain: An Attempt to Explain the Neuro-(Marketing)Hype from a Sociological Perspective”) Andreas Huchler highlights, in a linguistically highly skilled and entertaining way, but in my opinion sometimes with too scathing criticism, two questions: Why are the economic sciences increasingly open to using the approaches of the natural sciences such as physiology and neurology? How can this process be assessed from a sociological science perspective? The author provides interesting answers to both questions, which are briefly summarized below.

Regarding question 1 the author argues that the establishment of neuroeconomics as a new and specific economic science suggests not only interdisciplinary openness, a signal that can positively affect efforts of raising research funds, but also contributes to perception of economics as a “hard” quasi-natural science. Regarding question 2, the reader can find, for example, the following (rough translation): “The neuromarketing community, which is considered more closely in this work, is ultimately only docking on this shift towards ‘nature’ in a parasitic way in order to get hold of the scarce public research funds.”

As indicated above, this contribution is, especially from a scientific perspective, a stimulating essay, particularly because it holds up a mirror to research in neuroeconomics and neuromarketing. By doing so, it helps us to better understand the motives underlying the fields’ behavior, including the individual behaviors of scholars in the field. However, it is difficult to argue against the fact that a better understanding of neurobiological processes in the human body (especially in the brain) leads to advanced knowledge about the behavior of economic actors. (I base this statement on the assumption that neuroscientific approaches are used to complement the more traditional approaches.

In the final chapter “The *affective turn* in economics: Neuroeconomics” (original title) Birger P. Priddat again emphasizes the importance of emotions in economic decisions, with particular reference to the neuroscientific approaches that can contribute to the measurement of emotions. This chapter presents several new facets of relevant research. Yet, in my view, this final chapter lacks a comprehensive summary of the individual essays in the book.

Overall, I firmly believe that this book presents many interesting insights on the fields of neuroeconomics and neuromarketing. However, as noted in the beginning of my review, the book does not define target groups (e.g., scientists, practitioners, or both, with or without previous knowledge). Taking into account that the chapters have varying emphases on theory, empirical research, and the practice and sociology of science, it follows that not specifying target groups in the introductory chapter might have been intended. Metaphorically speaking, it is possible that the editor’s intention was to offer “a bunch of flowers” from which each reader can choose his or her “favorite”. Consequently, my positive overall impression after reading the book results not so much from the feeling of a coherent and integrated work, as from the content that each contribution has in and of itself. In this sense, I would like to congratulate the publisher Birger P. Priddat for developing a useful and interesting book, and would like to extend this congratulation to each individual author for the documentation of his or her ideas and research results. In years to come, by which time neuroeconomics will very probably have developed into an independent scientific discipline, the book discussed here will be considered one of the first truly relevant books on neuroeconomics. Today, it is already clear that all the authors involved in this book project have made a generous and important contribution to the history of neuroeconomics.

*Professor Dr. René Riedl*

*University of Applied Sciences Upper Austria and University of Linz*

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