

MYSTERIOUS MINDS: THE NEUROBIOLOGY OF PSYCHICS, MEDIUMS, AND OTHER EXTRAORDINARY PEOPLE edited by Stanley C. Krippner and Harris L. Friedman. Santa Barbara, CA: ABC-CLIO, 2010. \$44.17 (hardback). Pp. xviii + 219. ISBN 978-0-313-35866.

A few years ago, possibly around 2008 or even earlier, it seems that a new era began in scientific research of parapsychology. I would like to call it the era of reconsideration. It is an era in which very few novel experiments have been conducted; many old experiments had already been replicated several times with more or less (but predominantly less) success, prompting several parapsychologists to begin reconsidering their field. However, this has not turned the parapsychological community into skeptics but rather has caused a kind of paradigm shift.

There are still people with extraordinary abilities, and phenomena like extrasensory perception clearly seem to exist. However, inconsistent results were obtained by the numerous statistical investigations of such phenomena. Those statistical studies were intended to provide robust results, but most of them did not. Instead, many findings raised some doubts about the reproducibility of parapsychological phenomena, or even their existence. Therefore, the questions of this new era are: (a) What have we learned from the classical parapsychological research? (b) How can we better approach spontaneous, nonreplicable but evidential events scientifically? (c) What is the nature of paranormal events and abilities, and how can we explore them? (d) What do other scientific fields such as neuroscience tell us about people's extraordinary abilities? This book edited by Krippner and Friedman addresses some of those questions and discusses scientific findings from both lab and field research. It provides original research articles as well as excellent reviews of paranormal studies in the field of consciousness science. It contains a nice selection of information, articles, studies, opinions, and citations that represent the present state of the art in the field of paranormal research. Nevertheless, the book should not be regarded as a full compendium as some currently discussed aspects, theories, and research ideas are not included.

In the first chapter, William Roll and Bryan Williams provide a profound summary of neuroscientific studies on people with extraordinary abilities such as extrasensory perception (ESP). In the second part of their contribution, they summarize opinions and ideas on the connection between psi phenomena and quantum physics. This section opens up a playground for speculations and attempts to connect arbitrarily all kinds of psi phenomena with quantum physical interpretations. Here, the reader should be aware that even if quantum physics seems to make those phenomena possible, such speculations should be seen as unproven hypotheses that cannot serve as explanations yet. In my opinion there is still a big gap between the clarity of quantum physical experimentation and the rather fuzzy debate about "quantum psi," which may be the reason for most physicists still not being convinced psi believers.

The most skeptical part of the book is provided by James Alcock. He plays the devil's advocate by providing a number of profound arguments to explain why parapsychology has still failed to convince the scientific community. It is a strong collection of statements that are absolutely worth considering in order to formulate new approaches and methods for possible future parapsychological research.

The review of ESP research is continued by Caroline Watt and Harvey Irwin. They also present a number of speculations and possible explanations that researchers have stated when discussing their findings. They point out the limitations of current approaches that still focus on existential proofs and suggest more process-oriented research that aims to find mechanisms for extraordinary phenomena.

Adrian Parker discusses the mind-body problem in relation to the results of research on psychokinesis (PK). After reporting the statistical results and meta-analysis of the PK experiments that have been carried out in recent decades, Parker again brings up the debate about quantum physics and consciousness in the search for possible explanations. Although most neuroscientists nowadays sympathize with a monistic worldview in which consciousness arises from the functions of the brain, this book contains a variety of statements from several authors suggesting a dualistic model that promotes the idea that the brain shows only correlates of consciousness and works more like a receiver than a system creating consciousness. This view still seems to be dominant in researchers who try to include the transpersonal phenomena of extrasensory perception and paranormal abilities into the current picture of physics. The facets of mind-brain models, however, are far more complex and cannot be classified anymore into those simplistic categories. Parker also addresses this when calling the Hammeroff-Penrose model panpsychism.

The neurobiology of altered states of consciousness such as trance, dissociation, and possession is reviewed by Joan Hagemann et al. Besides some EEG studies, they also present results from functional brain imaging studies and metabolic parameters such as the neurotransmitters involved in the generation of those states. Hagemann, Ian Wikramasekera, and Krippner provide original data when reporting their studies of Brazilian trance mediums who show extraordinary abilities by, for example, drawing works in the style of famous artists while in mediumistic trance.

Original data on studies of people with psi abilities and people with altered states of consciousness are also reported in Norman Don's contribution. He provides insight into a variety of his research activities and offers a wide spectrum of subjects, including psychics with clairvoyant abilities, Brazilian trance surgery, and UFO-experiencers. He discusses the question of whether 40 Hz EEG activity could be connected to these extraordinary consciousness effects, which remains unanswered although correlations have been found. He also experimented a lot with psi tests such as card-guessing tasks. As each experiment is described very briefly

here, it is hard to follow the methodology and to assess the meaning of the results. In this case, the reader should look into the numerous cited publications.

A review about the neurophysiological correlates of out-of-body experiences (OBEs), near-death experiences, and other paranormal phenomena is given by Vernon Neppe. As with other chapters reporting studies on the physiology of altered states and extraordinary experiences, one should note that those correlates can hardly contribute to causal explanations of these phenomena. Brain reductionism works very successfully for the explanation of the mechanisms of sensory perception, cognition, and emotions. However, paranormal phenomena that project information outside the brain cannot be explained adequately by a functional model based on neurocorrelates. If such phenomena can be explained, they are debunked as brain-illusion, as discussed in the case of OBEs. After reading the list of neuronal correlates, one may get the impression that psi research has been unsuccessful in finding a mediator of psi by working with neurophysiology. The neurophysiological experiments have been used in an attempt to prove the existence of a phenomenon by making it reproducible and independently measurable, or to point to certain brain areas that may be involved. The results remain meaningless as there seems to be no specific brain condition for the paranormal but only for altered states of consciousness. This question is also addressed by Morris Friedman, who reported original data from a patient with brain lesions. Finally, David Luke and Harris Friedman provide an insight into the neurochemistry of psychoactive substances. They describe four different neurochemical models: the filter model, the beta-carboline and tryptamine model, the DMT model, and the ketamine model. They also discuss how substance-induced altered states of consciousness could foster psi phenomena such as extrasensory perception. As they state, this subject currently remains insufficiently researched.

All in all, the book deals with lots of phenomena, providing mostly well-researched review articles. However, readers should not be disappointed if they do not get satisfactory answers to most of the research questions. One can easily come to the conclusion that parapsychological researchers have spent a lot of time approaching their mysterious questions but in the end cannot even demonstrate the existence of the paranormal in a replicable way, nor have they come up with a verifiable theory of its underlying mechanisms. The big question remains how the neuroscientific approaches could contribute to the understanding of mystical and extraordinary experiences, or whether we should look for explanations from other fields of science, such as physics. Maybe these questions are closely linked to the great mystery of consciousness itself: what is the observer in our mind?

When I read this book, I felt invited to reconsider the whole field of neuroscientific experiments addressing consciousness, spirituality, and the realm of paranormal phenomena. The scientific value of the book is

supported by the inclusion of skeptical opinions, which should be taken as seriously as some enthusiastic reports of extraordinary experiences. It becomes more and more obvious that for the scientific exploration of spontaneous events and subjective experiences, we still do not have adequate tools available.

To conclude, I would like to recommend this book very much for all those scientists, students, and other people who are interested in the scientific exploration of extraordinary people. It not only inspired me to reconsider the whole field but to reframe the exploration of the mystery of minds.

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