

## BOOK REVIEWS

SCIENCE AND THE NEAR-DEATH EXPERIENCE: HOW CONSCIOUSNESS SURVIVES DEATH by Chris Carter. Rochester, VT: Inner Traditions, 2010. Pp. xvi + 304. \$18.95 (paperback). ISBN 978-1-59477-356-3.

In *Science and the Near-Death Experience*, Chris Carter explores the implications of the phenomenon of near-death experiences for our understanding of the relationship between consciousness and the brain. In the course of this exploration Carter provides a challenging and well-informed critique of materialist philosophies of mind and a defense of the survivalist interpretation of near-death experiences against various materialist objections. Carter's book is nicely organized around three main categories. Chapters 1–6 explore the relationship between consciousness and brain functioning. Chapters 7–17, the heart of the book, examine near-death experiences. Chapters 18–20 examine the phenomenon of deathbed visions.

### **Carter's Critique of Materialism**

The central question explored in chapters 1–6 is whether consciousness depends on a functioning brain. Carter rightly notes that the more prominent objections to the survival of death rest on the belief that consciousness cannot exist apart from a functioning brain. Carter's general strategy is to dismantle this materialist viewpoint so as to remove a widespread objection to the case for survival based on data drawn from near-death experiences.

Carter begins in chapter 1 by outlining some of the more prominent philosophies of mind that are usually adduced as evidence against postmortem survival: epiphenomenalism, identity theory, and behaviorism, each of which entails that consciousness cannot survive the death of the brain. However, Carter presents what he considers compelling reasons for rejecting these philosophies of mind. He also draws attention to the apparent leap in logic among philosophers of mind and neuroscientists who conclude that the mind cannot exist apart from a functioning brain solely on the grounds of various correlations between mental states and states of the brain. Carter argues that the correlative data of neuroscience are compatible with two distinct models of mind-brain interaction: the productive model (favored by materialists) and transmission models (favored by dualists). According to the former, the brain produces consciousness in much the same way that a kettle produces steam. Remove the kettle, of course, and there is no steam. According to the latter, the brain transmits consciousness in a way analogous to how light is transmitted through a lens or prism. On the transmission hypothesis, consciousness depends on

the brain for its manifestation in the world, but this does not entail that consciousness depends on the brain for its existence.

In chapter 2 Carter provides a brief but insightful critique of arguments against the transmission hypothesis as articulated by philosophers Paul Edwards and Colin McGinn. Carter argues that, contrary to what Edwards and McGinn state, data drawn from cases of brain damage and mental deterioration in old age are consistent with the transmission hypothesis. In chapter 3 Carter draws on the research of neuroscientists Wilder Penfield, John Eccles, and Gary Schwartz to reinforce the central claim of chapter 2 regarding the compatibility of the data of neuroscience and the transmission hypothesis. Penfield, Eccles, and Schwartz each affirm that the mind is a causally efficacious entity distinct from the brain. Moreover, they have each argued that the current data from neuroscience do not rule out the possibility that consciousness can exist apart from a functioning brain.

In chapter 4—one of the more robust chapters of the book—Carter explores the relationship between consciousness and physics. The design of the chapter is twofold: (a) critique materialist theories of mind in connection with developments in physics and (b) draw on quantum mechanics to support a dualistic, interactionist theory of mind, already supported by the conclusions of Penfield, Eccles, and Schwartz in chapter 3.

With respect to (a), Carter shows how many of the arguments adduced in support of materialism (and against dualistic theories of mind) are based on the implausible assumptions of classical physics. For example, he argues that since classical physics could provide no mechanism to explain how consciousness enters into causal interactions with matter, it was concluded that there is no such mechanism and that therefore dualistic interactionism must be rejected. But this objection is obviously grounded in classical physics and loses its force once we explore causal interactions at the quantum level. Elsewhere in the chapter Carter sketches a number of the problems associated with three garden variety forms of materialism: eliminative materialism (the view that consciousness does not exist), identity theory (the view that consciousness and brain states are identical), and epiphenomenalism (the view that consciousness, though distinct from brain states, lacks causal efficacy).

With respect to (b), Carter argues that developments in quantum physics actually support a dualistic, nonmaterialistic model of mind-brain interaction. Carter develops this line of reasoning by exploring the implications of quantum mechanical theories of mind developed by Evan Harris Walker, John Eccles, and Henry Stapp. Each of these theorists attempted to show that consciousness, as something distinct from matter, exerts causal efficacy over the world of material objects. Moreover, they each posit a region in the brain where the interaction between consciousness and matter takes place at the quantum level (Walker, the electron; Eccles, synaptic microsites; and Stapp, calcium ions—see Walker, 1974; Eccles,

1970; Stapp, 2005, 2007). Moreover, Carter shows how the supposition of dualistic interactionism actually accounts for a range of phenomena that are inexplicable on the materialist hypothesis, for example, the placebo effect, cognitive behavioral therapy, and psychic abilities. He also briefly responds to a couple of the standard objections to dualistic interactionist models: the perennial “interaction problem” (how can mind, being so different from matter, come into causal interactions with matter?), and the contention that dualism violates the law of the conservation of energy.

In chapter 5 Carter examines several problems with the materialist contention that memories are stored in the brain. Carter argues that this viewpoint follows from an outdated mechanistic conception of life and is not adequately supported by the data of neurophysiology. This mechanistic view of life is subjected to further critique in chapter 6. Carter concludes the first part of his book by summing up its implications for postmortem survival, namely that survival is both a theoretical and empirical possibility.

### **Carter on Near-Death Experiences**

Carter is convinced that near-death experience (NDE) phenomena shed significant light on the mind-brain relation, specifically by providing evidence that consciousness is not essentially connected to our brains. Chapters 7–17, the heart of Carter’s book, present a well-organized and insightful analysis of both the nature of NDEs and their weight as evidence against materialism and for postmortem survival.

In chapters 7–9 Carter reviews the history of literature produced as the result of the systematic inquiry into NDEs going back to Raymond Moody’s work in the mid-1970s. (See Moody, 1975). Carter begins by concisely outlining the basic phenomenological features of NDEs, the diachronic structure of such experiences, the circumstances of their occurrence, and the after-effects of NDEs. Based on data collected by researchers from the 1970s to the present, Carter provides an account of the classical features of NDEs (e.g., feelings of peace, out-of-body experience, encountering a light, and meeting deceased relatives). The discussion of NDE characteristics, and the stages of the experience, is supported by a variety of helpful illustrations from relevant case studies. Carter also provides helpful statistical information on the frequency of various features of NDEs, for example data suggestive of more common features (e.g., feelings of peace and the out-of-body experience) and less common features (e.g., life review and the tunnel experience). Special emphasis is placed on the out-of-body (OBE) experience since Carter believes that this feature constitutes one aspect of the NDE that can in principle be independently corroborated, a theme Carter explores in considerable detail in chapter 14. Carter goes on to refine his account of the phenomenology of NDEs by discussing negative near-death experiences (chapter 8) and NDEs as a cross-cultural phenomenon (chapter 9).

Having provided a detailed account of the nature of NDEs, in chapters 10–17 Carter goes on to provide a detailed examination of several proposed explanations of the phenomenon. These fall into four basic categories: psychological, physiological, psycho-physiological (or hybrid models), and survivalist explanations.

In chapter 10 Carter critically assesses various psychological explanations of NDEs. For example, Carter considers the hypothesis that the NDE is a kind of fantasy produced by the fear of death, a psychological defense mechanism that employs personal and cultural expectations of an afterlife to comfort us in the face of death. Carter argues that this proposed explanation fails since it makes the wrong sort of predictions. For example, this hypothesis leads us to expect a strong positive correlation between religious faith and the occurrence of NDEs. But the data do not support any such correlation. Furthermore, people with no prior knowledge of NDEs report the same experiences, people with no antecedent expectation of death sometimes have NDEs, and children—who are too young to have developed personally and culturally grounded expectations of an afterlife—also have NDEs. In other words, the observational data are not what we would expect if the psychological fantasy hypothesis were true. Carter utilizes a similar strategy to dismiss explanations in terms of dissociative states, imaginative reconstructions based on prior NDE knowledge, semiconscious perceptions, and triggered memories of birth. As Carter argues, all proposed psychological explanations fail in two crucial respects. They either do not lead us to expect certain prominent features of NDEs or they lead us to expect what we do not in fact observe. In this way, the psychological explanations fail to have adequate predictive power. So they are failures as explanations of NDEs.

In chapter 11 Carter critically explores physiological explanations of NDEs. These proposed explanations all attribute NDEs to one or more physical processes that allegedly take place in the body under circumstances associated with NDEs. For example, the feeling of peace associated with the first stage of NDEs is sometimes attributed to the release of neurotransmitters such as endorphins or enkephalins. However, as Carter notes, the relief from pain associated with these neurotransmitters is very much unlike the feelings of peace associated with NDEs, for instance in terms of their temporal duration. Similarly, explanations in terms of anoxia (e.g., lack of oxygen to the brain) to explain the tunnel and light features present in NDEs are implausible since there are many cases of anoxia that do not involve NDEs, and many NDEs (nonwestern NDEs, for example) do not involve the experience of going through a dark tunnel. Furthermore, the tunnel experience is sometimes present at a point in the NDE where there is no anoxia. Carter shows that other physiological explanations (e.g., hypercarbia, temporal lobe seizures) are equally impoverished as explanations of NDEs because they do not explain some central feature of a paradigmatic NDE, describe experiences that do not adequately

resemble NDEs, or lead us to expect the very opposite of what the NDE data document.

In chapter 12 Carter shows that the attempt to explain NDEs in terms of biochemical changes in the brain (together with certain psychological preconditions) is inadequate. Here Carter critiques Ronald Siegel's hallucination model of NDEs, but he focuses primarily on ketamine-based explanatory models derived from the work of Karl Jansen. The core notion—the brain, under oxygen starvation or seizure, produces a chemical like ketamine that generates the NDE—is carefully scrutinized. Carter draws the reader's attention to two basic assumptions of this explanatory model. First, the brain produces a ketamine-like chemical under the specified circumstances, and secondly, ketamine hallucinations sufficiently resemble NDEs. As in his earlier criticisms of physiological and psychological explanations, Carter argues that the nature and contexts of NDEs are not adequately reflected or even approximated by the proposed theory. For example, as Carter establishes earlier in his book, NDEs involve a predictable pattern of phenomena, both with regard to the imagery of the experience and the order in which the NDEr experiences these images: feelings of peace, OBE, passage through darkness, seeing a light, encountering deceased relatives or friends, life review, and entering a light. Nor does this content and order appear to be essentially connected to the particular setting of a given NDE. According to Carter, this is not the case with ketamine-hallucinations. Their content significantly varies from case to case and is contextualized in a way that makes them very different from NDEs. Moreover, the stages of the ketamine hallucination experience do not exhibit the consistent patterns that are exhibited by the NDE. There is no consistent set of images that are experienced in a particular order.

As should be apparent at this point, an essential aspect of Carter's argumentation against psychological and physiological explanations of NDEs involves showing how these proposed explanations do not account for all the relevant features of NDEs. One might wonder, though, whether psychological and physiological explanations might be combined in some way to shore up the sort of explanatory deficiencies Carter addresses. In chapter 14 Carter addresses just this possibility by critically examining Susan Blackmore's "Dying Brain" theory of NDEs. (See Blackmore, 1993). Roughly stated, Blackmore constructs a theory that postulates multiple psychological and physiological causes that occur simultaneously, and when combined they ostensibly explain the complete NDE. The release of endorphins at the outset of the NDE causes feelings of peace or bliss. The endorphins in turn trigger temporal lobe seizures that are allegedly responsible for the life review component of NDEs. Anoxia produces tunnel and light imagery. The OBE arises from a breakdown of body image and the subject's model of reality, and coincidences, inferences from prior knowledge, and residual sensory information processing explain the veridical features of NDEs, that is, their ability to engender true beliefs about events or features of the

NDEr's environment during the NDE, a topic that Carter explores in detail in chapter 14.

Carter does not find Blackmore's proposed explanation of NDEs plausible. Carter argues that Blackmore's attempt to explain the OBE component of NDEs, specifically the aerial perspective of the NDEr, is based on inadequate evidence. Another plank in his case against Blackmore comes from research on the physiology of the dying brain that Carter claims provides compelling evidence that clear memories or enhanced mental processes cannot be formed at a time when brain functioning is severely compromised. The strongest evidence against the dying brain theory, though, comes from veridical NDEs.

Carter documents three veridical NDE cases in chapter 14, though he focuses primarily on the Pam Reynolds case. In each of these cases the NDEr reported, after resuscitation, details concerning events or features of their environment, the knowledge of which was ostensibly acquired during the subject's OBE. Carter had noted earlier in his book that the OBE component of the NDE, unlike its other features, has the advantage of being capable in principle of being independently corroborated. The reason for this is that during this phase of the NDE some NDErs report "seeing" some particular feature of their physical environment, or they "see" an event take place in their environment, where these "visual" experiences correspond to the OBE phase of the NDE and apparently at a time during which cerebral functioning was severely compromised. In some cases, NDErs accurately report spoken words or the content of conversations they allegedly "heard" during their OBE. The skeptical response to such cases has typically been to view them as the product of lucky guesswork, imagination, memory, and persisting input from the senses during the NDE. Carter contends that these skeptical responses are implausible.

Carter strengthens his case for veridical perception in NDEs in chapter 15, where he provides an account of veridical NDEs in people who were blind. Carter utilizes chapter 16 to summarize and further elucidate his case against materialism. As Carter argues (p. 240), the basic problem facing materialism is that (a) it has been proven false and (b) the very facts that prove materialism false are explicable in terms of an alternate theory of mind, that of dualistic interactionism or the transmission hypothesis. The facts in question, as they are drawn from NDE data, would be enhanced mental processes and accurate perception of the environment at a time of impaired cerebral functioning, or the absence of brain functioning altogether.

Carter summarizes his argument as follows:

The reports of enhanced mental processes and out-of-body perception of the environment at a time when we would expect brain processes to be severely impaired or entirely absent quite clearly seem to prove the production

hypothesis false in favor of the rival view that the brain acts as a two-way receiver-transmitter, one that also restricts and filters out certain forms of consciousness and perception. (p. 243)

Having considered how NDE data prove materialism false, in chapter 17 Carter considers the extent to which NDE data provide support for postmortem survival. His conclusion at this juncture is more modest than his case against materialism. The data from NDEs do not prove postmortem survival, but they do at least provide evidence suggestive of the survival of consciousness after death. Carter identifies four features of NDEs that provide this evidence.

1. Normal or enhanced mental processes at a time when the brain processes are severely impaired or entirely absent.
2. Out-of-body view of one's own body and the surrounding environment.
3. Perception of deceased acquaintances.
4. Corroborated perception of events not accessible to one's biological sense organs, apparently while out of the body.

In chapters 18–20 Carter explores the phenomenon of deathbed visions, in which individuals near death report seeing or speaking with deceased relatives or friends. As in his chapters on NDEs, Carter shows in some detail how conventional explanations of these experiences fail to account for many of their most prominent features.

### **Critical Assessment of Carter's Book**

Carter has set out to refute materialist philosophies of mind, one of the fundamental grounds for objecting to postmortem survival. He should be commended for taking seriously just how dependent the case for postmortem survival is on antecedently held beliefs about the nature of consciousness. Carter's book fits nicely in this way with a number of other more recent books on postmortem survival (e.g., Lund 2009). Critically exploring the nature of the mind and its relationship to the brain would seem essential to any attempt to argue for the continuation of consciousness (in some mode) after our biological death. In the light of Carter's overall project, presumably to culminate in his forthcoming book devoted entirely to postmortem survival, Carter's approach in his current book is masterful in its strategy.

Furthermore, Carter should be commended for doing a very good job of showing why certain forms of materialism are implausible, as well

as why commonly proposed materialist explanations of NDEs in terms of psychology, physiology, or some combination of the two are problematic, if not simply implausible. In the case of his direct assault on materialism, it is relatively clear why consciousness cannot be identical with brain states and why we must attribute causal efficacy to consciousness as something distinct from brain states. In other words, I'm convinced that Carter has provided a good case against common forms of materialism. In particular, the appeal to quantum models of consciousness is a thought-provoking defense of dualistic interactionism. Also, Carter has done an excellent job of showing why standard "materialist" proposals for explaining NDEs fall considerably short of explanatory adequacy.

Despite the virtues of Carter's book, there are three areas where I was less than satisfied with his discussion and argumentation.

First, while Carter seeks to defend a form of dualistic interactionism, he seems not to acknowledge that dualistic interactionism is logically compatible with one of the claims that he associates with materialism, namely that consciousness depends on a functioning brain. Consider the following four claims:

1. Mental states are distinct from physical states.
2. Mental states exerts causal efficacy over the world of physical objects.
3. Mental states are properties of an immaterial substance (i.e., a soul).
4. Mental states are dependent on a functioning brain.

The conjunction of 1–3 sufficiently identifies classical substance dualism (which could be further ramified with an interactionist clause allowing physical states to affect mental states), but there is no obvious reason why 1, 2, or 3 should severally or jointly entail the negation of 4. Indeed, emergent substance dualists (e.g., Swinburne, 1986, and Hasker, 1999) affirm 4. In the field of contemporary philosophy of mind, substance dualism is typically defined in terms of the *sui generis* character of the mental, the reality of a nonphysical subject of mental states, and the causal efficacy of the mental in relation to the world of material objects. Each of these claims is compatible with consciousness depending on a functioning brain for its continued existence. (In fact, since there are many different aspects to "consciousness," a more nuanced treatment of 4 would need to acknowledge that some mental states could be dependent on a functioning brain whereas others are not.)

What's the relevance of this? First, labeling philosophies of mind that maintain 4 above "materialist" gives the impression that we're dealing with a materialist versus dualist debate. We're not. We're dealing with a set of issues that actually divides substance dualists, including substance dualists who affirm postmortem survival. More caution is needed in explaining the



conceptual territory here. Secondly, several of Carter's arguments earlier in the book, for instance in chapters 3 and 4, refute the negations of 1, 2, and 3, but do not count as evidence against 4. Without an adequate account of dualism, we might be led to suppose that Carter's refutation of the forms of materialism associated with a denial of 1, 2, and 3, also amount to a denial of 4. But this is not the case.

Carter will of course contend that since 4 *has* been refuted in the course of his book, dualistic interactionist models that deny it are to be preferred over those that affirm it. But has he disproven 4?

It is interesting to note that Part I of the book has as its central question: Does consciousness depend on the brain? However, it seems to me that nowhere in Part I does Carter actually show that the answer here is "no." Chapter 1 shows that the production and transmission hypotheses are equally compatible with the data of neuroscience, but to show that the data of neuroscience are logically compatible with 4 and its negation is not to provide evidence against 4, much less disprove it. Chapter 2 aims to defend the transmission hypothesis against objections, but a defense of the negation of 4 against objections is not equivalent to evidence for the negation of 4. I don't get reasons for denying 4 merely by having reasons for supposing that certain objections against the denial of 4 aren't good objections. Chapters 3 and 4 provide support for 1, 2, and 3, not the negation of 4. Chapter 5 raises objections to the idea that memories are stored in the brain, but 4 does not entail this, so the discussion in chapter 5 can't properly be taken to refute 4. Finally, Carter concludes the discussion of Part I with the following statement at the end of chapter 6: "We have seen from the above that survival is both a theoretical and an empirical possibility. The statement that consciousness may survive the death of the brain is not self-contradictory, nor is it in conflict with any of the laws or facts of science as currently understood" (p. 101). Of course, the theoretical and empirical possibility of the negation of 4 is a far cry from evidence against 4, much less a disproof of 4.

However, it's in Part II of the book that Carter explicitly affirms that he has disproven 4. He contends that NDE data disproves materialism, understood in the sense of 4. This claim is explicitly made in chapter 16: "The cases above seem to provide strong evidence that consciousness and perception operate independently of a properly functioning brain and sense organs" (p. 235), "the evidence appears to prove false the hypothesis that consciousness is produced by the brain" (p. 239), and "the production hypothesis has been proven false by the data" (p. 240).

The data Carter has in mind here are two: enhanced mental processes and out-of-body perception of the environment at a time when brain processes are either significantly impaired or entirely absent (pp. 240, 243, 244). Now, of course, if human persons exhibited states of consciousness at times when their brain functioning could not support such states of consciousness, then 4 would be false, at least with respect to

the states of consciousness in question. But we need fairly strong grounds to affirm the antecedent of the conditional. This means a high degree of warrant for three independent kinds of claims:

1. Subject S claims to have had a particular state of consciousness C.
2. S was in C at some time t.
3. S's brain at time t could not support C.

There is little doubt that people have claimed NDEs, and Carter has provided many detailed descriptions of these experiences. So 1 is beyond doubt. The difficulty, it seems to me, lies in determining our warrant for simultaneously believing both 2 and 3. In looking at the cases that Carter provides, it seems very difficult to isolate any time t such that we can claim both that the subject was in C and his or her brain could not support C.

As Carter himself suggests, veridical OBEs provide the best way of addressing this problem because they provide a kind of time marker or anchor for at least one phase of the NDE. If a subject's reported state of consciousness involved knowledge of events or features of the environment that can be tied to a particular time by independent observers, then we might be able to determine 2 with a high degree of warrant. However, even in the best case of a veridical OBE—the Pam Reynolds case—it becomes clear why this will not do the job. Given the nature of Pam Reynolds's operation, I think it's pretty clear that we can isolate a timeframe during which 3 was true with respect to the states of consciousness Pam subsequently reported. If we assume that Pam Reynolds acquired her knowledge of the events that took place during her operation at the time these events took place (and this might be doubted for any number of reasons), then the verifiable content of her experience would allow us to specify a timeframe so that we are warranted in believing 2. Unfortunately, the data in this case make it clear that the verifiable content of Pam Reynolds's NDE took place before and after she was clinically dead. So although we can specify a time for which 3 would be true and a time for which 2 would be true, these timeframes would not be the same.

Of course, Reynolds's experience seemed to her to be continuous, so we might infer continuing consciousness during the timeframe between the veridical reports, that is, before and after she was clinically dead. But this is an *inference*, resting it seems to me, on all sorts of additional assumptions that would need to be more carefully explored. For example, we would have to explore the reliability of subjective judgments about the passage of time "from the inside," as it were, during these experiences. There's no doubt that many NDErs report fully conscious experiences during crisis experiences, but that these experiences are happening precisely when their brains cannot support such states of consciousness seems to me to go considerably beyond the NDE data.

And here's the central point. When Carter claims that NDE data disprove the idea that consciousness depends on a functioning brain, it's not the NDE data as such that do this, but a series of inferences Carter draws in conjunction with various collateral assumptions about these experiences. I think this needs to be more systematically laid out than Carter has done. Moreover, it isn't obvious to me that the auxiliary assumptions needed here are considerably more plausible than the ones employed by those who reason to 4 from various correlations between mental states and brain states. This is not to say that Carter has not done a good job of exposing the explanatory deficiencies of materialist theories that accept 4 above, but this does not amount to much of a case against 4, which is what Carter claims he has done.

Finally, chapter 17 is titled "The Near-Death Experience as Evidence for Survival." Carter's main claim here is that the data from NDEs provide evidence that is "suggestive" of survival. This is, I think, the least impressive chapter of Carter's book.

First, it's not clear what "suggestive evidence" means. It's clearly not *proof* that some hypothesis is true. So presumably some sort of evidential probability is in view here, but what *degree* of likelihood is intended? And how is this being determined? We're not given any explanatory or logical criteria that would allow the reader to assess how likely Carter thinks the case for survival is based on NDE data. So the reader doesn't know what sort of positive epistemic value the data (are supposed to) confer on the survival hypothesis.

Secondly, Carter lists four features of NDEs that allegedly make them "suggestive" of survival. These are 1–4 mentioned above in the outline of chapter 17, to which Carter adds the following clarification: "The first feature suggests that mental clarity is not entirely dependent on a properly functioning brain, the second that consciousness can function apart from the physical body, the third that those who have died before us continue to exist, and the fourth that these experiences are not entirely subjective" (p. 250). The operative word repeatedly used here again is "suggests." What does this mean? And what is the argument for each of the contentions here? In a chapter that ostensibly presents NDE data as evidence for survival, more care should have been taken to spell out the (at least approximate) degree of evidential probability and the logical criteria by which this is determined.

Now presumably Carter envisions some sort of explanatory role for the survival hypothesis. Earlier in the book he made good use of "predictive power" to dismantle nonsurvivalist explanations of NDE data. However, it's not clear how "predictive power" would work here in support of the survival hypothesis. For example, why would the "continuation of consciousness after death" lead us to expect out-of-body perceptions of the physical environment around a person's body from an elevated position above the body, or encounters with deceased relatives. Indeed, it's hard to

see how the survival hypothesis, as Carter states it, should lead us to expect any of the features of the NDE. So how exactly are these data suggestive of survival? Nor does Carter outline any of the auxiliary assumptions that would, in conjunction with the survival hypothesis, allow such predictive consequences. The nonsurvivalist explanations of NDE data may fail because they make the wrong predictions, but the survivalist hypothesis is at least an equal failure if it isn't properly embedded in a set of independently warranted auxiliary assumptions that allow us to make definite predictions relative to the NDE data.

On the whole, Carter's book is an important one for its critical exploration of materialism, its lucid account of NDE research, and its critique of nonsurvivalist explanations of NDEs. However, as interesting as Carter's arguments are, I don't believe he succeeds in disproving that consciousness depends on a functioning brain, and I don't think he has shown that the ostensible evidence for postmortem survival drawn from NDEs confers any significant evidential probability on this hypothesis. The nonsurvivalist alternatives may very well be implausible, but this confers no plausibility, much less probability, on the survivalist alternative.

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### References

- Blackmore, S. (1993). *Dying to live: Near death experience*. Buffalo: Prometheus
- Eccles, J. (1970). *Facing reality: Philosophical adventures of a brain scientist*. New York: Springer-Verlag.
- Hasker, W. (1999). *The emergent self*. Ithaca, NY: Cornell University Press.
- Lund, D. H. (2009). *Persons, souls and death: A philosophical investigation of an afterlife*. Jefferson, NC: McFarland.
- Moody, R. (1975). *Life after life*. New York: Mockingbird Books.
- Stapp, H. (2005). "Quantum Interactive Dualism: An Alternative to Materialism." *Journal of Consciousness Studies*, 12(11), 43–58.
- Stapp, H. (2007). *Mindful universe*. Berlin: Springer.
- Swinburne, R. (1986). *The evolution of the soul*. Oxford, England <Correct?>: Clarendon Press.
- Walker, E. H. (1974). "Consciousness and Quantum Theory." In J. White (Ed.), *Psychic exploration* (pp. 544–68). New York: Putnam's.

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**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 world view 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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RADIANT MINDS: SCIENTISTS EXPLORE THE DIMENSIONS OF CONSCIOUSNESS, edited by Jean Millay. Doyle, CA: Millay, 2010. Pp. xli + 632. \$29.00 (paperback). ISBN 978-0-615-29633-3.

*Radiant Minds* is an updated version of a book previously published by the Parapsychology Research Group (PRG), a group of largely California-based parapsychologists and sensitives founded in 1966, under the title *Silver Threads: 25 Years of Research*, in 1993. The updating is somewhat uneven, with several chapters completely updated, but most chapters only minimally updated. As there are 67 chapters and other essays, most contributions will be only briefly reviewed here.

The book begins with a prologue by Dan Brown taken from the 1993 edition and an introduction by Jeffrey Mishlove, who discusses his own research with Ted “PK-Man” Owens. Mishlove claims that Owens materialized a UFO in view of multiple observers. Mishlove states he is the only researcher to earn a Ph.D. in parapsychology from an accredited American University. As he states in the same passage that an observed significance level of .031 means that the probability that the experimental results were due to chance is .031, the awarding of this degree may have been a substantial mistake. In fact, the significance level indicates that the probability that the results would *arise* by chance is .031, not that the probability that only chance is operating (the null hypothesis) is .031. Mishlove then discusses his own research on the fear of psi, without citing Tart’s research (all the more peculiar as Tart is a Californian researcher and a founder and former president of PRG).

The first five full chapters consist of a review of remote viewing research by Russell Targ, not updated from the 1993 version; a review of



psychophysiological studies of psi and emotions by Dean Radin; discussions of the scientific study of anomalous dreams and gender differences in such dreams by Stanley Krippner; and a chapter on optometric phototherapy by Raymond Gottlieb, who discusses the use of light therapy to cure vision disorders, stroke symptoms, and attention deficit disorders (not updated from the 1993 version).

The next group of essays begins with a chapter on psychoimmunology and the conditioning of immune responses by Sondra Barrett. This is followed by a report of a series of studies of the effects of “laying-on-of-hands” healing on bacterial growth and motility by the noted healer Olga Worrall, conducted by Beverly Rubik and Elizabeth Rauscher in 1979-1982. Russell and Elizabeth Targ next discuss research on remote healing through intercessory prayer. This chapter is followed by a chapter by Marilyn Schlitz and Dean Radin on distant healing.

Larissa Vilenskaya then discusses the phenomenon of firewalking. She refutes Leikind and McCarthy’s explanation of the ability of humans to walk on hot coals and other material as due to low heat conductivity, by noting that people have successfully walked on hot stones and even iron. She notes that the explanation of firewalking ability in terms of a layer of moisture, or “Leidenfrost,” on the bottom of the perambulator’s feet is inconsistent with the temperature ranges involved. Thus, unlike most of the contributions in this volume which seem to treat skeptics as though they don’t exist, she considers and carefully assesses the explanations posed by the skeptics, and her chapter is the best and most balanced review of firewalking I have ever read. Unfortunately, toward the end of her chapter she states that faith may be a necessary ingredient in successful firewalking, which contradicts her earlier statement that belief systems are irrelevant to firewalking success.

The next two chapters consist of a discussion of psycholuminescence by Henry Dakin, including a study of Uri Geller using Kirlian photography, and a discussion of biofields by Beverly Rubik.

The next four chapters are devoted to a discussion of belief systems. Willis Harman argues that science should no longer allow theory to take precedence over explanation and advocates the development of a science based on an inner perspective as well as one based on an outer perspective.

William H. Kautz suggests that all knowledge—past, present, and potential—already exists in a superconsciousness or collective mind, ready to be accessed by the human mind. This includes all technical information and even biographical information for historical figures. He suggests replacing the term “psi” with the term “intuition” for political reasons.

Kautz’s chapter is followed by a discussion of belief systems by Beverly Kane. Kane suggests that the cosmic microwave background is due to the explosion of our galaxy, not the Big Bang as is overwhelmingly believed by physicists. This is a bold statement from a person who is not a physicist but a specialist in horse therapy.

The next group of chapters is devoted to a discussion of mind and brain/body chemistry. Cheri Quincy provides an overview of work involving neurotransmitters. She rather simplistically talks about psychological states produced by a single neurotransmitter, such as the “dopamine” state. She states that, due to the loss of odorants in our sanitized modern society, telepathy, which is really nothing more than sensory communication in Quincy’s view, will be lost. This possibility would be surprising to J. B. Rhine, who defined telepathy as a form of *extrasensory* perception.

Dean Brown then advocates the exploration of new uses for plants, including as food, drugs and psychedelic agents. Brown’s chapter is followed by a discussion of alternate states of consciousness by Ruth-Inge Heinze (not updated from the 1993 edition).

Next follows a series of short interviews. In the first, Sasha Shulgin asserts that the use of psychedelic drugs allows one to experience forgotten memories and psychological states (such as childhood states of mind). With regard to scopolamine, he states that it “takes you out of your brain, so you no longer have access to it” (p. 196). If only it were so easy.

Ann Shulgin then discusses the use of the drug MDMA in psychotherapy. Hosteen Nez discusses the use of “smart pills” to increase intelligence, the use of which was banned in 1986. Nez also describes his apprenticeship with a Navaho medicine man. Timothy Scully describes his career as an underground manufacturer of LSD as well as his experiences touring with the Grateful Dead. Jean Millay describes feeling her grandfather’s presence at the time of his death, as well as her experiences with peyote and LSD. The last contribution in this section is by Stanislav Grof, who discusses the use of drugs in psychotherapy.

The next four chapters fall under the rubric “Mind and Brain/Body Electricity.” James R. Johnston presents a pilot study on brain-wave phase synchronization. Elizabeth Rauscher and William Van Bise discuss the effects of magnetic fields on organisms, as well as earthquake prediction. Michael A. Persinger and Stanley Krippner report the results of several analyses indicating that psi events may be associated with reduced geomagnetic activity. Cheri Quincy and Joel Alter discuss the biological effects of sonic resonance, including the effects of drumming on craniosacral motion (literally having one’s bell rung).

The next six chapters deal with mathematical models and physics. Elizabeth Rauscher presents the results of a remote viewing experiment involving trial-by-trial feedback. As the photographs used in the judging process were taken on the day of trial, the photographer could have unconsciously biased the pictures based on the subject’s mood that day, and the subject could have incorporated the day’s weather into his/her description of the target scene. This would provide the judges with sensory cues enabling them to match the subject’s descriptions to the targets. This has been pointed out by several skeptics and other scientists. Yet in this

chapter and in many others in this book, skeptics and constructive critics are treated as though they didn't exist.

Next follows an essay by Elizabeth Rauscher and Russell Targ in which they set forth a spacetime model that they believe may be able to explain precognition and other psi phenomena. They assert that precognition cannot change the past and that the future is determined from the perspective of the present and the past. This position does not seem very accommodating to the evidence from spontaneous cases assembled by Louisa Rhine and others that precognitive experience may be used to avert a negative event in the future. However, elsewhere (on p. 314) they state that "additional precognitive and psi information allows us to experience a different world line" [future]. They propose an eight-dimensional spacetime to account for psi (actually four dimensions with complex numbers as coordinates). Instead of the usual definition of the magnitude (length) of a complex number  $a + bi$ , which is the square root of  $a^2 + b^2$ , they define the magnitude as the square root of  $a^2 - b^2$ . This trick enables them to set the imaginary parts of the complex coordinates in ways that the spatial and temporal differences between two seemingly distant points (events) in four-dimensional real spacetime have no separation in Rauscher and Targ's eight-dimensional hyper-spacetime. However, in physics one can directly measure the spatial and temporal coordinates of an event, whereas Rauscher and Targ offer no procedure whereby one may measure the imaginary parts of their spacetime coordinates. Thus, they are free to adjust these coordinates in such a way that there is no spatial or temporal separation between two seemingly separated events involved in a psi experience, and this lack of separation in hyperspace allows psi events to occur. However, this is just a cheap mathematical trick unless a means of measuring the imaginary parts of the coordinates is provided. Rauscher and Targ tie the lack of separation between two seemingly separated events to quantum nonlocality, and they advocate the use of four-valued logic (in which a statement may be both true and false at the same time).

Next follow two chapters by the physicist Saul-Paul Sirag. He notes that Newtonian mechanics (at least in Newton's own understanding of it) was not a mechanistic model, as Newton's law of gravity relied upon the "occult" notion of action at a distance, which is essentially magical in the version set forth by Newton himself. Newton believed that the universe was the sensorium of God, and thus subscribed to a mentalistic rather than completely mechanistic view of the universe. Sirag observes that the concepts of energy and its conservation were not present in the physics developed by Newton, but were first articulated by fringe physicists and inventors, such as Mayer, Watt, and Joule. Thus, Newton discovered only a portion of what is today described as Newtonian physics, and he himself did not subscribe to what nowadays is called the Newtonian mechanical picture of the universe.

Sirag's chapters are followed by a chapter on the relationship between quantum reality and consciousness by the physicist Nick Herbert. Herbert proposes that mind is not restricted to living organisms, but is everywhere. He notes that minds, as unified entities, are more akin to the mass and charge of an electron than to the complex operations of a computer. He adds that the feel of consciousness, in which states are continually coming into being, bears a strong resemblance to the collapse of state vectors of potentiality into definite events in quantum mechanics.

Herbert's chapter is followed by a contribution by Jean Burns, who discusses the direction of time, the notion of "becoming," and entropy (disorder). She asserts that psi may operate to decrease entropy. Next, Sondra Barrett discusses the spirituality of biological cells, and Joel Alter discusses his own midlife crisis and his studies with Indian shamans. Stephan Schwartz describes his observations of a healing session led by Rolling Thunder, a Shoshone shaman. Arthur Hastings discusses his studies (through experiments and questionnaires) of the use of the psychomanteum to get in touch with deceased loved ones.

Hastings' chapter is followed by a series of short descriptions of messages from the deceased by a variety of contributors, including one case in which the face of a heart donor was superimposed on the recipient's face in a photograph. Many of the alleged spirits' statements about the nature of the afterlife are simply presented as factual in this section.

Following these short essays is a chapter by William C. Gough and Dean Brown, in which Gough summarizes the teachings of Brown. This essay contains a lot of untestable and sometimes babbling statements about the nature of the "Absolute."

Roger Nelson then describes the Global Consciousness Project (GCP), which is based on an array of random event generators (REGs) placed around the world. Nelson states that there was a strong REG response at the time of the attacks on the World Trade Center on September 11, 2001, as well as at the time of Barack Obama's election to the Presidency of the United States (and even in response to fluctuations in his approval rating). Nelson discusses the connections between the GCP findings and theories regarding the existence of a group or collective mind.

Jacques Vallee and Eric Davis then offer the theory that UFOs originate from locations near Earth in a hyper-dimensional space. They further conjecture that UFOs have a psychic component and consequently may violate laws of physics. They suggest that UFOs are sending us messages in icons that we cannot yet understand (emoticons from the Great Beyond?). Vallee and Davis also propose that UFOs may use mimicking camouflage, masquerading as ordinary objects (swamp gas perhaps?).

Next follow eight essays on education. Ray Gottlieb advocates the use of trampolines to focus attention (I can imagine what this would have done to my neck muscles during my teaching career). Jean Millay suggests training students in the use of the senses, including olfaction and hearing.

Marge King advocates the use of biofeedback and stress management in the classroom (although my teaching experience suggests that we could do with more stress and less self-esteem in the classroom). King would like to see students weaned from allopathic (as opposed to homeopathic) medicine, which she thinks would increase their intelligence. Similarly, Mara Mayo advocates the use of biofeedback relating to heart rates for students with learning difficulties.

The final section of the book summarizes the history of the PRG and the careers of PRG members since the publication of *Silver Threads* in 1993. Tart recalls that his early interest in parapsychology was stimulated by Andrija Puharich's work on the use of Faraday cages to enhance the operation of psi (presumably by decreasing the psychological noise generated by electromagnetic radiation). Tart also reviews the remote viewing research of Targ and Puthoff, without mention of the many skeptical critiques that have been published regarding this body of work.

Barbara Honneger reports a spontaneous healing of her own broken shoelace at the same time that her father was almost killed by an untied shoelace getting caught up in machinery at work. Although one would think that the spontaneous healing of a broken shoelace would be a particularly salient event, Honneger only realized this coincidence years later, but confirmed it through a comparison of entries in her daily journals (and they say that interesting spontaneous cases are no longer reported!). Honneger compares physical reality to a form of waking dream. She also describes her career as a policy analyst at the White House. While working at the White House, she realized through a "profound synchronistic connection" that the three main pyramids at Giza were a projection of the three main stars in Orion's belt, a fact which she communicated to contacts at the United Nations. My Google search uncovered a number of interesting facts regarding her later career. Bored readers with a lot of time on their hands might be able to reduce their ennui (at least temporarily) by typing her name into a search engine.

To end with the sublime rather than the ridiculous, Roger Nelson compares people to individual neurons in the brain and wonders if there is a corresponding global mind (as suggested by the findings of the GCP discussed by Nelson in an earlier chapter).

The book has no index.

I cannot recommend this book as a serious scientific work. However, this volume offers one of the best available views into the mindset of Californian "New Agers" at one of the peaks of public interest in parapsychology and all things occult.

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COGNITIVE ANOMALIES, CONSCIOUSNESS, AND YOGA by K. Ramakrishna Rao. New Delhi, India: Matrix Publishers, 2011. Pp. xxii + 882. \$85.00 (hardback). ISBN: 978-81-910142-2-8.

From the work of J. B. Rhine to the present, the history of modern parapsychology has been one of frustration. Strong statistical evidence of psi has failed to convince hardened skeptics. Careful research has yielded hoards of data that support the existence of psi, yet parapsychology lacks a generally accepted theory to make sense of that data. Multiple theories compete without any clear way to decide between them. K. Ramakrishna Rao's book *Cognitive Anomalies, Consciousness, and Yoga* explores how parapsychology reached this impasse and suggests solutions.

The first 240 pages summarize the history and struggles of parapsychology in order to point out the problems that seem irresolvable under parapsychology's current research program. The bulk of the book is how the Indian intellectual tradition, especially the theory and practice of Yoga, can be a tool to avoid such problems. However, this review will focus on the first part of the book that specifically deals with psi.

One means of understanding a science is to examine the questions it asks and explore its presuppositions; Rao does both well. He recognizes that the issues with which parapsychology deals intersect with fundamental philosophical issues concerning the nature of mind, matter, and the relationship between the two. Rao reveals his understanding of the issues in current philosophy of mind, including the important work of David Chalmers (1996) and the difficulties with reducing first-person conscious experience to third-person brain processes. Rao suggests that psi "may be ... an interface between the two fundamental [material and mental] processes" (p. 13). Although not accepting Cartesian substance dualism (which he labels "entity dualism"), he is open to "process dualism" (roughly equivalent to property dualism). Later, he argues that the Yoga tradition offers a way to understand psi phenomena in terms of consciousness (which he takes to be broader than mind). In this way, Rao believes that science and spirituality can meet.

Rao's book includes a succinct summary of the history of psi phenomena and parapsychology from ancient times to the present. Although lacking the breadth of the monumental *Irreducible Mind* (Kelly et al., 2008), Rao's summary of parapsychological research is among the best available and would serve as a valuable tool for anyone teaching an introductory course in parapsychology. The one element downplayed is survival research, although there are some references to it. His major focus is on the period from the work of J. B. Rhine onwards. Rao states that despite the advances Rhine made, he accepted a strange mixture of Cartesian dualism combined with a positivist view of the scientific method. This is one (though not the only) reason that parapsychological research has been hampered by "a lack of coherent conceptual framework [sic],

and repeated attempts to reinvent the wheel ...” (p. 43). Another major problem is the tension between psi and the assumptions of modern and contemporary science that forbid telepathy, clairvoyance, precognition, psychokinesis, and survival after death. Rao believes that such tension is unavoidable because questioning the assumptions of contemporary science is inherent in parapsychology’s task of “naturalizing the supernatural” (p. 45). Since psi inevitably challenges such assumptions, it is unlikely that any statistical evidence in favor of psi, including sound meta-analyses, will convince most mainstream scientists. They can always appeal to flaws that are present in any experiment. They follow David Hume, who in his discussion of miracles argued that it is always more rational to deny miracles rather than to accept them because “A miracle is a violation of the laws of nature” (Hume, 1777/1975, p. 114). The skeptic of psi applies Hume’s principle to psi and thus denies the existence of psi and believes that parapsychology is a pseudoscience. Skeptics recognize, as does Rao, that if psi exists, it would mark a challenge to the currently fashionable physicalist world view.

In questioning Rhine’s positivist view that science “has answers to all questions” (p. 55), Rao looks to contemporary philosophy of science, noting that the vast majority of philosophers of science deny the existence of “a single, objective, scientific method by the pursuit of which we will be led indubitably closer to ‘truth’” (p. 69); here he refers to the work of Paul Feyerabend (1975) and Imre Lakatos (1978). Rao does assume, however, that science always uses some method to seek truth, and he does not question either scientism nor the scientism of parapsychology, claiming that “A return to hermetic contemplation may give one a more satisfying picture of psi, but such will not constitute a scientific endeavour” (p. 70). This problematic claim is in tension with the rest of Rao’s fine discussion of the philosophy of science, for Rao assumes that justified knowledge claims using careful methodology are only found in science. There are alternatives to “hermetic contemplation.” Philosophy, for example, uses careful methods that appeal to both empirical evidence and rational coherence in seeking truth. Theologians of various faiths use careful methodology to make and to defend truth claims. This is evident in recent Western philosophy of religion in such journals as *Faith and Philosophy*. Rao is not making a scientific argument when he claims science to be the apex of justifiable knowledge; it is a philosophical argument that requires philosophical justification. Later, Rao calls for an expanded view of science that allows room for spirituality, but then there is so much overlap between philosophy and science (as is also true of high-level theoretical physics) that it is practically impossible to separate one from the other.

Rao then considers Karl Popper’s falsificationism and Imre Lakatos’ notion of research programmes, and he outlines problems with each position. He admits his own metaphysical assumptions, including a realist position that the world exists in some respect outside individual minds. Thus it is clear that although Rao accepts scientism in parapsychology, he

is not a naïve inductivist or someone who blindly accepts the outmoded hypothetico-deductive “received view” of science.

The heart of Rao’s case against the approach of contemporary experimental parapsychology is found in chapter D, “The Matter of Evidence.” He elaborates on two claims: that parapsychology remains (1) overly concerned with proof of psi rather than with process-oriented studies, and (2) a collection of data without a viable theory. Although Rao accepts the view that there is “probablistically conclusive” evidence for psi, he does not believe that skeptics will be convinced due to their Humean evidential framework. He concludes: “That the debate about evidence continues inconclusively has more to do with the assumptions we make and the a priori probability accorded to psi than with the perceived flaws in research” (p. 95). His point is well taken. In philosophical debates over controversial topics such as the existence of a creator God, the intractability of the disagreements has as much or more to do with philosophers’ estimates of the a priori probability of God’s existence than with the evidence pro and con. There is no reason that the situation should be any different regarding the controversial claims of parapsychology.

Even the issue of replication in psi involves estimations of the prior probability of the phenomena claimed to have been replicated. Rao recognizes that not every scientific claim is replicable (if the Big Bang Theory is true, the Big Bang is an unreplicable, unique phenomenon). Rao realizes that scientists demand a higher level of replication when they think there is a low prior probability of a phenomenon occurring. In addition, there is no standard set of criteria for replication, and the standards for distinguishing exact from conceptual replication may be “tacit” rather than explicit (p. 98). Rao points out that psi has its share of “repeatedly observed” phenomena; he presents examples of the results of ganzfeld experiments and of extraversion-ESP studies. Even these well-established phenomena will not convince a hard core skeptic, who invariably points out problems with such studies. Even if predictive replication occurred, this would not convince the skeptic. No experiment in any field is perfect, but skeptics of psi believe that claims that challenge basic assumptions of modern science should be supported by evidence that seems impossible to obtain.

Rao’s solution to this dilemma involves questioning the assumptions of contemporary experimental psychology:

- (a) that psi is an ability like perception, (b) that it functions independently of our sensory-motor systems, (c) that it manifests even when the subject is shielded from all other modalities of subject-target interaction, and (d) that it can be detected and measured as distinct from and independent of all other modalities (p. 122).



Rao argues, correctly I think, that psi in real life cooperates with normal perceptual processes rather than being an isolated phenomenon. If that is the case, then attempting to isolate psi from normal perception in experimental situations may mask psi. In real life situations, psi may manifest more strongly than in the weak effects found in laboratory experiments. Rao (like Braude, 1996) questions the skepticism of parapsychologists toward macro-scale psi phenomena. Following Murphy (1970), Rao suggests that psi works together with normal sensory and (in the case of PK) motor processes. Paranormal processes “may be more like creativity in problem solving than perception of hidden phenomena” (p. 124). Testing procedures should provide the subject with “sensory as well as extrasensory information with the objective of discovering whether the sensory awareness somehow helps to expand the extrasensory and where the normal tends to enhance the paranormal” (p. 125). Rao thinks that such methods may reveal a “tangible,” macro effect that might have “practical value” (p. 125). He mentions such possibilities as locating water or oil, weather forecasting, and criminal investigation. Rao may be correct: just as technological innovation helped the rise of modern science in the seventeenth century, and eased the acceptance of quantum theory, so replicable practical applications of psi might be the key to convince the most reluctant skeptics of its existence.

There is much with which to sympathize in Rao’s position. If psi ability evolved, it is more reasonable to think that it evolved in cooperation with normal sensory and motor channels rather than in conflict with them. Experimentation based on the assumption of cooperation will focus on such a relationship and no longer attempt to isolate the normal and the paranormal. However, Rao should also consider the possibility that psi may function as a necessary condition for any experience, as “first sight” models of psi suggest (Carpenter, 2004, 2005, 2008). Rao believes that psi functions to focus “normal” perception in a particular direction. An interesting topic is the relationship between psi and conscious choice in focusing perception.

Rao also discusses psi missing, suggesting that the mental discipline of Yoga may help a person to avoid lapses in concentration. He also points out that oscillation between psi-hitting and -missing is a replicable element in psi experiments.

Rao then evaluates the experimenter effect in parapsychological experiments, noting the problem of psi-mediated experimenter effects (there is a useful taxonomy of experimenter effects on p. 188). He notes an interesting parallel between the source problem in survival research and the source problem of psi in general—if the source problem is used to discount survival research, it can also be used to discount research on *all* psi. Rao supports the idea that the results of an experiment may involve all individuals who participate in a psi experiment (p. 193). He believes that this suggests a larger whole is involved in psi, something like a psi field that transcends individuality. Psi, he believes, is “transpersonal,” and he argues

that Indian thought, with its lack of a clear subject/object distinction, is consistent with this interpretation of psi.

Rao does an excellent job summarizing theories of psi, carefully noting their strengths and weaknesses. Other than a scientific dismissal of theories with an “extraneous” explanation for psi, his discussion is thorough and reasonable. Rao finishes the first section of the book by providing a fascinating account of his life and his experiences in the parapsychological community. He mentions specific names, and some of the history he brings up is painful but necessary. Because parapsychology is constantly under critical attack and since the community of parapsychologists is small, it makes no sense for parapsychologists to divide into warring factions. Rao also states that parapsychology is more concerned with answering critics than with discovering the import of psi phenomena. Some of his major points are that parapsychology has been overly concerned with methodology when it should focus on “the meaning” of paranormal phenomena, that parapsychologists are “overly defensive,” and that “They fear the sacred and the spiritual” (p. 234). Yet psi does suggest, Rao thinks, at least an epistemological dualism between matter and mind, and he believes that consciousness is the common element that unites them both. Indian thought, he argues, with both its long tradition of developing paranormal abilities and its focus on consciousness, is a good vehicle for a more promising road in experimental parapsychology. Rao believes that experimentation to develop practical applications for psi will be more accepted in Indian culture than in Western Europe and the United States. On this point he is probably right.

Rao’s book is an indispensable addition to any academic library, and it should be in all libraries of parapsychological organizations. It is a valuable tool to any researcher in psi, no matter of what background, and a helpful resource for those teaching psi. Scholars in religious studies and in philosophy will also find Rao’s book an important resource for study and reflection. Rao’s extensive knowledge of both Western and Eastern philosophy, psychology, and parapsychology shines through, making this book unique in the literature of parapsychology. Parapsychologists should consider Rao’s advice to shift the burden of experimentation in psi to revealing macro-effects that have practical application and to permitting normal perception to be part of a psi experiment, rather than something methodologically excluded. I give this book my highest recommendation.

### References

- Braude, S. (1996). *The limits of influence* (Rev. ed.). Lanham, MD: University Press of America.
- Carpenter, J. C. (2004). First Sight: Part one, A model of psi and the mind. *Journal of Parapsychology*, 68, 217-254.
- Carpenter, J. C. (2005). First Sight: Part two, Elaborations of a model of psi and the mind. *Journal of Parapsychology*, 69, 63-112.

- Carpenter, J. C. (2008). Relations between ESP and memory in terms of the First Sight model of psi. *Journal of Parapsychology*, 72, 47-76.
- Chalmers, D. J. (1996). The conscious mind: In search of a fundamental theory. Oxford, England: Oxford University Press.
- Feyerband, P. K. (1975). *Against method: Outline of an anarchistic theory of knowledge*. London: Verso.
- Hume, D. (1975). *Enquiries concerning human understanding and concerning the principles of morals* (3rd ed.). Oxford, England <Correct?>: Clarendon Press. (Original work published 1777)
- Kelly, E. F., Kelly, E. W., Crabtree, A., Gauld, A., Grosso, M., & Greyson, B. (2007). *Irreducible mind: Toward a psychology for the 21st century*. Lanham, MD: Rowman & Littlefield.
- Lakatos, I. (1978). *The methodology of scientific research programmes: Philosophical papers* (Vol. 1). Cambridge, England: Cambridge University Press.
- Murphy, G. (1970). *The challenge of psychical research: A primer for parapsychology*. New York: Harper & Row.
- Popper, K. R. (1959). *The logic of scientific discovery*. London: Hutchinson.

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