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EDITORIAL

On Bem and Bayse

A key objective of parapsychologists has always been to gain acceptance of the existence of psi from mainstream scientists. Crucial to that effort is support from prominent scientists in mainstream fields. In recent years, the most important of these allies has been Daryl Bem, a distinguished social psychologist who recently retired from Cornell. Bem burst on the scene 17 years ago when he authored with Charles Honorton a report of a series of successful ganzfeld experiments conducted at Honorton's laboratory (Bem & Honorton, 1994). The article was published in a major psychology journal, *Psychological Bulletin.* Then earlier this year, Bem (2011) published a successful series of precognition experiments in another prestigious psychology journal, the *Journal of Personality and Social Psychology* (*JPSP*). In both cases, critical responses were published in the same issue of the journal. However, much more so than the ganzfeld paper, the precognition paper led to a firestorm of other negative comments from the "establishment." The intensity of the comments suggests that certain segments of the mainstream scientific community feel threatened by the publication of Bem's results. For example, the normally tactful Ray Hyman, who had refereed and approved the publication of the ganzfeld paper in *Psychological Bulletin,* was quoted by Carey (2011) in the online *New York Times* as proclaiming the publication of the precognition paper to be "... craziness, pure craziness. I can't believe a major journal is allowing this work in. I think it's just an embarrassment to the entire field." A consistent theme in these commentaries has been the danger that the publication of Bem's research posed to science generally. I can think of two reasons why scientists would be more threatened by the precognition experiments than the ganzfeld experiments. First, Bem conducted the precognition studies himself. Second, he employed a research methodology modeled on a procedure widely adopted in mainstream psychology.

I want to comment in more detail on one of these commentaries, written by cognitive psychologist Douglas Hofstadter (2011). He stated, for example, that if psi were real, it "... would go so profoundly against the laws of physics as we know them that our entire scientific worldview would be toppled ..." Of course, a number of physicists/paraphysicists would disagree with this statement (e.g., Walker, 1975), but let's assume for the sake of argument that current physical theories cannot account for psi. Hofstadter's remark implies that we would have to abandon or drastically revise these theories if psi were true. He doesn't tell us why having to do so would be such a terrible thing, but as far as the laws of physics are concerned he doesn't have anything to worry about. Hidden in Hofstadter's remark is the premise that fundamental theories of

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 exert 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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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 evidenial 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.