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THE BLOG

Science on the Brink of Death

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(Photo by [h.koppdelaney](#))

One cannot travel far in spiritual circles without meeting people who are fascinated by the "near-death experience" (NDE). The phenomenon has been described as follows:

Frequently recurring features include feelings of peace and joy; a sense of being out of one's body and watching events going on around one's body and, occasionally, at some distant physical location; a cessation of pain; seeing a dark tunnel or void; seeing an unusually bright light, sometimes experienced as a "Being of Light" that radiates love and may speak or otherwise communicate with the person; encountering other beings, often deceased persons whom the experiencer recognizes; experiencing a revival of memories or even a full life review, sometimes accompanied by feelings of judgment; seeing some "other realm," often of great beauty; sensing a barrier or border beyond which the person cannot go; and returning to the body, often reluctantly.

(E.F. Kelly et al., *Irreducible Mind: Toward a Psychology for the 21st Century*. New York: Rowman and Littlefield, 2007, p. 372)

Such accounts have led many people to believe that consciousness must be independent of the brain. Unfortunately, these experiences vary across cultures, and no single feature is common to them all. One would think that if a nonphysical domain were truly being explored, some universal characteristics would stand out. Hindus and Christians would not substantially disagree—and one certainly wouldn't expect the after-death state of South Indians to diverge from that of North Indians, as has been reported. It should also trouble NDE enthusiasts that only 10-20 percent of people who approach clinical death recall having any experience at all.

However, the deepest problem with drawing sweeping conclusions from the NDE is that those who have had one and subsequently talked about it *did not actually die*. In fact, many appear to have been in no real danger of dying. And those who have reported leaving their bodies during a true medical emergency—after cardiac arrest, for instance—did not suffer the complete loss of brain activity. Even in cases where the brain is alleged to have shut down, its activity must return if the subject is to survive and describe the experience. In such cases, there is generally no way to establish that the NDE occurred while the brain was offline.

Many students of the NDE claim that certain people have left their bodies and perceived the commotion surrounding their near death—the efforts of hospital staff to resuscitate them, details of surgery, the behavior of family members, etc. Certain subjects even say that they have learned facts while traveling beyond their bodies that would otherwise have been impossible to know—for instance, a secret told by a dead relative, the truth of which was later confirmed. Of course, reports of this kind seem especially vulnerable to self-deception, if not conscious fraud. There is another problem, however: Even if true, such phenomena might suggest only that the human mind possesses powers of extrasensory perception (e.g. clairvoyance or telepathy). This would be a very important discovery, but it wouldn't demonstrate the survival of death. Why? Because unless we could know that a subject's brain was not functioning when these impressions were formed, the involvement of the brain must be presumed.

What is needed to establish the mind's independence from the brain is a case in which a person has an experience—of *anything*—without associated brain activity. From time to time, someone will claim that a specific NDE meets this criterion.

One of the most celebrated cases in the literature involves a woman, Pam Reynolds, who underwent a procedure known as "hypothermic cardiac arrest," in which her core body temperature was brought down to 60 degrees, her heart was stopped, and blood flow to her brain was suspended so that a large aneurysm in her basilar artery could be surgically repaired. Reynolds reports having had a classic NDE, complete with an awareness of the details of her surgery. Her story has several problems, however. The events in the world that Reynolds reports having perceived during her NDE occurred either before she was "clinically dead" or after blood circulation had been restored to her brain. In other words, despite the extraordinary details of the procedure, we have every reason to believe that Reynolds's brain was functioning when she had her experiences. The case also wasn't published until several years after it occurred, and its author, Dr. Michael Sabom, is a born-again Christian who had been working for decades to substantiate the otherworldly significance of the NDE. The possibility that experimenter bias, witness tampering, and false memories intruded into this best-of-all-recorded cases is excruciatingly obvious.

The latest NDE to receive wide acclaim was featured on the [cover of *Newsweek* magazine](#). The great novelty of this case is that its subject, Dr. Eben Alexander, is a neurosurgeon who we might presume is competent to judge the scientific significance of his experience. His book on the subject, *Proof of Heaven: A Neurosurgeon's Journey into the Afterlife*, has landed atop the [New York Times paperback best-seller list](#). As it happens, it displaced one of the best-selling books of the past decade, *Heaven Is for Real*—which is yet another account of the afterlife, based on the near-death adventures of a 4-year-old boy. Unsurprisingly, the two books offer incompatible views of what life is like beyond the prison of the brain. (As colorful as his account is, Alexander neglects to tell us that Jesus rides a rainbow-colored horse or that the souls of dead children must still do homework in heaven.)

Having now read Alexander's book, I can say that it is every bit as remarkable as his *Newsweek* cover article suggested it would be. Unfortunately, it is not remarkable in the way that its author believes. I find that [my original criticism](#) of Alexander's thinking can stand without revision. ^[1] However, as he provides further "proof" of heaven in his book, there is more to say about the man's mischief here on earth. There is also a rumor circulating online that, after attacking Alexander from the safety of my blog, I have refused to debate him in public. This is untrue. I merely declined the privilege of appearing with him on a parapsychology podcast, in the company of an irritating and unscrupulous host. I would be happy to have a public discussion with Alexander, should it ever seem worth doing.

As I wrote in my original article, the enthusiastic reception that Alexander is now enjoying suggests a general confusion about the nature of scientific authority. And much of the criticism I've received for dismissing his account has predictably focused on what appear to be the man's impeccable scientific credentials. Certain readers feel that I have moved the goalposts: *You see, even the testimony of a Harvard neurosurgeon isn't good enough for a dogmatic, materialistic, fundamentalist atheist like Harris!* And many people found the invidious distinction between a "neurosurgeon" and a "neuroscientist" (drawn in a comment by Mark Cohen in my last article) to be somewhat flabbergasting.

When debating the validity of evidence and arguments, the point is never that one person's credentials trump another's. Credentials just offer a rough indication of what a person is likely to know—or should know. If Alexander were drawing reasonable scientific conclusions from his experience, he wouldn't need to be a neuroscientist to be taken seriously; he could be a philosopher—or a coal miner. But he simply isn't thinking like a scientist—and so not even a string of Nobel prizes would shield him from criticism.

However, there are general differences between neurosurgeons and neuroscientists that might explain some of Alexander's

errors. The distinction in expertise is very easy to see when viewed from the other side: If the average neuroscientist were handed a drill and a scalpel and told to operate on a living person's brain, the result would be horrific. From a scientific point of view, Alexander's performance has been no prettier. He has surely killed the patient (in fact, he may have helped kill *Newsweek*, which announced that it would no longer publish a print edition immediately after his article ran), but the man won't stop drilling. Many of his errors are glaring but immaterial: In his book, for instance, he understates the number of neurons in the human brain by a factor of 10. But others are absolutely damning to his case. Whatever his qualifications on paper, Alexander's evangelizing about his experience in coma is so devoid of intellectual sobriety, not to mention rigor, that I would see no reason to engage with it—apart from the fact that his book seems destined to be read and believed by millions of people.

There are two paths toward establishing the scientific significance of the NDE: The first would be to show that a person's brain was dead or otherwise inactive during the time he had an experience (whether veridical or not). The second would be to demonstrate that the subject had acquired knowledge about the world that could be explained only by the mind's being independent of the brain (but again, it is hard to see how this can be convincingly done in the presence of brain activity).

In his *Newsweek* article, Alexander sought to travel the first path. Hence, his entire account hinged on the assertion that his cortex was "completely shut down" while he was seeing angels in heaven. Unfortunately, the evidence he has offered in support of this claim—in the article, in a [subsequent response](#) to my criticism of it, in his book, and in multiple interviews—suggests that he doesn't understand what would constitute compelling evidence of cortical inactivity. The proof he offers is either fallacious (CT scans do not detect brain activity) or irrelevant (it does not matter, even slightly, that his form of meningitis was "astronomically rare?")—and no combination of fallacy and irrelevancy adds up to sound science. The impediment to taking Alexander's claims seriously can be simply stated: *There is absolutely no reason to believe that his cerebral cortex was inactive at the time he had his experience of the afterlife.* The fact that Alexander thinks he has demonstrated otherwise—by continually emphasizing how sick he was, the infrequency of *E. coli* meningitis, and the ugliness of his initial CT scan—suggests a deliberate disregard of the most plausible interpretation of his experience. It is far more likely that some of his cortex was functioning, despite the profundity of his illness, than that he is justified in making the following claim:

My experience showed me that the death of the body and the brain are not the end of consciousness, that human experience continues beyond the grave. More important, it continues under the gaze of a God who loves and cares about each one of us, about where the universe itself and all the beings within it are ultimately going.

The very fact that Alexander *remembers* his NDE suggests that the cortical and subcortical structures necessary for memory formation were active at the time. How else could he recall the experience?

It would not surprise me, in fact, if Alexander were to claim that his memories are stored outside his brain—presumably somewhere between Lynchburg, Virginia, and heaven. Given that he is committed to proving the mind's nonphysical basis, he holds a peculiar view of the brain's operation:

[The brain] is a reducing valve or filter, shifting the larger, nonphysical consciousness that we possess in the nonphysical worlds down into a more limited capacity for the duration of our mortal lives.

There are some obvious problems with this?which anyone disposed to think *like* a neuroscientist would see. If the brain merely serves to limit human experience and understanding, one would expect most forms of brain damage to unmask extraordinary scientific, artistic, and spiritual insights?and, provided that a person?s language centers could be spared, *the graver the injury the better*. A few hammer blows or a well-placed bullet should render a person of even the shallowest intellect a spiritual genius. Is this the world we are living in?^[1]

In his book, Alexander also attempts to take the second path of proof?alleging that his NDE disclosed facts that could be explained only by the reality of life beyond the body. Most of these truths must be left to scientists of some future century to explore?for although his collision with the Mind of God seems to have fully slaked Alexander?s scientific curiosity, it apparently produced few insights that can be rendered in human speech. This puts the man in a difficult position as an educator:

I saw the abundance of life throughout countless universes, including some whose intelligence was advanced far beyond that of humanity. I saw that there are countless higher dimensions, but that the only way to know these dimensions is to enter and experience them directly. They cannot be known, or understood, from lower dimensional space. Cause and effect exist in these higher realms, but outside our earthly conception of them. The world of time and space in which we move in this terrestrial realm is tightly and intricately meshed within these higher worlds?. The knowledge given to me was not ?taught? in the way that a history lesson or math theorem would be. Insights happened directly, rather than needing to be coaxed and absorbed. Knowledge was stored without memorization, instantly and for good. It didn?t fade, like ordinary information does, and to this day I still possess all of it, much more clearly than I possess the information that I gained over all my years in school.

Alexander claims undiminished knowledge of all this, and yet the only specifics he can produce on the page are as vapid as any ever published. And I suspect it is no accident that they have a distinctly Christian flavor. Here, according to Alexander, are the deepest truths he brought back to our world:

You are loved and cherished, dearly, forever. You have nothing to fear. There is nothing you can do wrong.

Not only will scientists be underwhelmed by these revelations, but Buddhists and students of Advaita Vedanta will find them astonishingly puerile. And the fact that Alexander returned from ?the Core? of a loving cosmos only to piously assert

the Christian line on evil and free will (?Evil was necessary because without it free will was impossible??) renders the overall picture of his religious provincialism fairly indelible.

Happily, you do not need to read Alexander's book to see him present what he considers the most compelling part of his case. You need only spend six minutes of your life in this world watching the following video:

Watch the video to the end. True, it will bring you six minutes closer to meeting your maker, but it will also teach you something about the limits of intellectual honesty. The footage shows Alexander responding to a question from Raymond Moody (the man who coined the term ?near-death experience?). I am quite sure that I've never seen a scientist speak in a manner more suggestive of wishful thinking. If self-deception were an Olympic sport, this is how our most gifted athletes would appear when they were in peak condition.

It should also be clear that the knowledge of the afterlife that Alexander claims to possess depends upon some extraordinarily dubious methods of verification. While in his coma, he saw a beautiful girl riding beside him on the wing of a butterfly. We learn in his book that he developed his recollection of this experience over a period of *months*?writing, thinking about it, and mining it for new details. It would be hard to think of a better way to engineer a distortion of memory.

As you will know from watching the video, Alexander had a biological sister he never met, who died some years before his coma. Seeing her picture for the first time after his recovery, he judged this woman to be the girl who had joined him for the butterfly ride. He sought further confirmation of this by speaking with his biological family, from whom he learned that his dead sister had, indeed, always been ?very loving.? QED.

As I said in my original response to his *Newsweek* article, I have spent much of my life studying and even seeking experiences of the kind Alexander describes. I haven't contracted meningitis, thankfully, nor have I had an NDE, but I have experienced many phenomena that traditionally lead people to believe in the supernatural.

For instance, I once had an opportunity to study with the great Tibetan lama [Dilgo Khyentse Rinpoche](#) in Nepal. Before making the trip, I had a dream in which he seemed to give me teachings about the nature of the mind. This dream struck me as interesting for two reasons: (1) The teachings I received were novel, useful, and convergent with what I later understood to be true; and (2) I had never met Khyentse Rinpoche, nor was I aware of having seen a photograph of him. This preceded my access to the Internet by at least five years, so the belief that I had never seen his picture was more plausible than it would be now. I also recall that I had no easy way of finding a picture of him for the sake of comparison. But because I was about to meet the man himself, it seemed that I would be able to confirm whether it had really been him in my dream.

First, the teachings: The lama in my dream began by asking who I was. I responded by telling him my name. Apparently, this wasn't the answer he was looking for.

?Who are you?? he said again. He was now staring fixedly into my eyes and pointing at my face with an outstretched finger. I did not know what to say.

?Who are you?? he said again, continuing to point.

"Who are you?" he said a final time, but here he suddenly shifted his gaze and pointing finger, as though he were now addressing someone just to my left. The effect was quite startling, because I knew (insofar as one can be said to know anything in a dream) that we were alone. The lama was obviously pointing to someone who wasn't there, and I suddenly noticed what I would later come to consider an important truth about the nature of the mind: Subjectively speaking, there is only consciousness and its contents; there is no inner self who is conscious. The feeling of being the *experiencer* of your experience, rather than identical to the totality of experience, is an illusion. The lama in my dream seemed to dissect this very feeling of being a self and, for a brief moment, removed it from my mind. I awoke convinced that I had glimpsed something quite profound.

After traveling to Nepal and encountering the arresting figure of Khyentse Rinpoche instructing hundreds of monks from atop a brocade throne, I was struck by the sense that he really did resemble the man in my dream. Even more apparent, however, was the fact that I couldn't know whether this impression was accurate. Clearly, it would have been more fun to believe that something magical had occurred and that I had been singled out for some sort of transpersonal initiation—but the allure of this belief suggested only that the bar for proof should be raised rather than lowered. And even though I had no formal scientific training at that point, I knew that human memory is unreliable under conditions of this kind. How much stock could I put in the feeling of familiarity? Was I accurately recalling the face of a man I had met in a dream, or was I engaged in a creative reconstruction of it? If nothing else, the experience of *déjà vu* proves that one's sense of having experienced something previously can jump the tracks of genuine recollection. My travels in spiritual circles had also brought me into contact with many people who seemed all too eager to deceive themselves about experiences of this kind, and I did not wish to emulate them. Given these considerations, I did not believe that Khyentse Rinpoche had *really* appeared in my dream. And I certainly would never have been tempted to use this experience as conclusive proof of the supernatural.

I invite the reader to compare this attitude to the one that Dr. Eben Alexander will likely exhibit before crowds of credulous people for the rest of his life. The structure of our experiences was similar—we were each given an opportunity to compare a face remembered from a dream/vision with a person (or photo) in the physical world. I realized that the task was hopeless. Alexander believes that he has made the greatest discovery in the history of science.

Notes

1. Everything of substance in Alexander's account hinges on his assertion that his cortex was shut down while he enjoyed a "hyper-real" experience of the afterlife. It seems, however, that it is easy for many readers to miss this. For instance, I've heard from several people who think that Alexander successfully ruled out the hypothesis that a spike in the neurotransmitter DMT could explain his NDE. But he did so only by observing that DMT would require a functioning cortex upon which to act, whereas his cortex "wasn't available to be affected." But no neurophysiological account of his experience could survive this treatment—because Alexander is asking us to stipulate that his cortex was functionally dead. As I have said, this is an incredible claim, rendered even less plausible by the fact that he does not appear to understand what sort of evidence would make it plausible.
- **(Added 11/16/12)** The phrase "reducing valve" appears to come from Aldous Huxley in his *Doors of Perception*, but the idea that the brain is a filter (rather than the origin) of mind goes back at least as far as Henri Bergson and William James. Both Bergson and James suggested that the purpose of the brain might be to limit conscious experience to a range of perceptions and mental states compatible with survival in this world. When the barrier of the brain is breached—whether partially, through mystical experience, or fully, upon the death of the body—a wider range of conscious states and cosmic understandings become available.

However, as I said above, if the brain were merely a filter, damaging it should reliably increase cognition. Some readers objected to this, suggesting that the brain could be a filter that functions like a radio—a receiver of conscious states, rather than a mere barrier to them. At first glance, this would appear to account for the deleterious effects of neurological injury and disease: If one smashes a radio with a hammer, it no longer functions properly.

There is a problem with this metaphor, however: Those who employ it forget that *we are the music, not the radio*. If the brain is truly a receiver of conscious states, it should be impossible to diminish a person's experience of the cosmos by damaging his brain. He may *seem* unconscious from the outside—like a broken radio—but, subjectively speaking, the music plays on.

This is not how the mind works. Specific reductions in brain activity might benefit people in certain ways, but there is no reason to think that the pervasive destruction of the cortex can leave the mind unaffected (much less improved). For instance, medications that reduce anxiety generally work by increasing the effect of the inhibitory neurotransmitter GABA, thereby diminishing neuronal activity in various parts of the brain. But the fact that dampening arousal in this way can make people feel better does not suggest that they would feel better still if they were drugged into a coma. Similarly, the psychedelic drug psilocybin seems to reduce activity in brain areas responsible for self-representation. It would be unsurprising if this accounted for the experience of self-transcendence that is often associated with this drug. But this does not give us any reason to believe that turning off the brain entirely would yield increased awareness of spiritual realities.

If Alexander's account is correct, strategically damaging the brain should be the most reliable method of personal empowerment and spiritual practice available to us. In almost every case, loss of brain should yield *more mind*. Surely there must be a way of enjoying the benefits of this brain-reduction therapy while maintaining an ability to function in the physical world. He's the neurosurgeon: I wonder which regions of his brain Alexander would remove first.

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