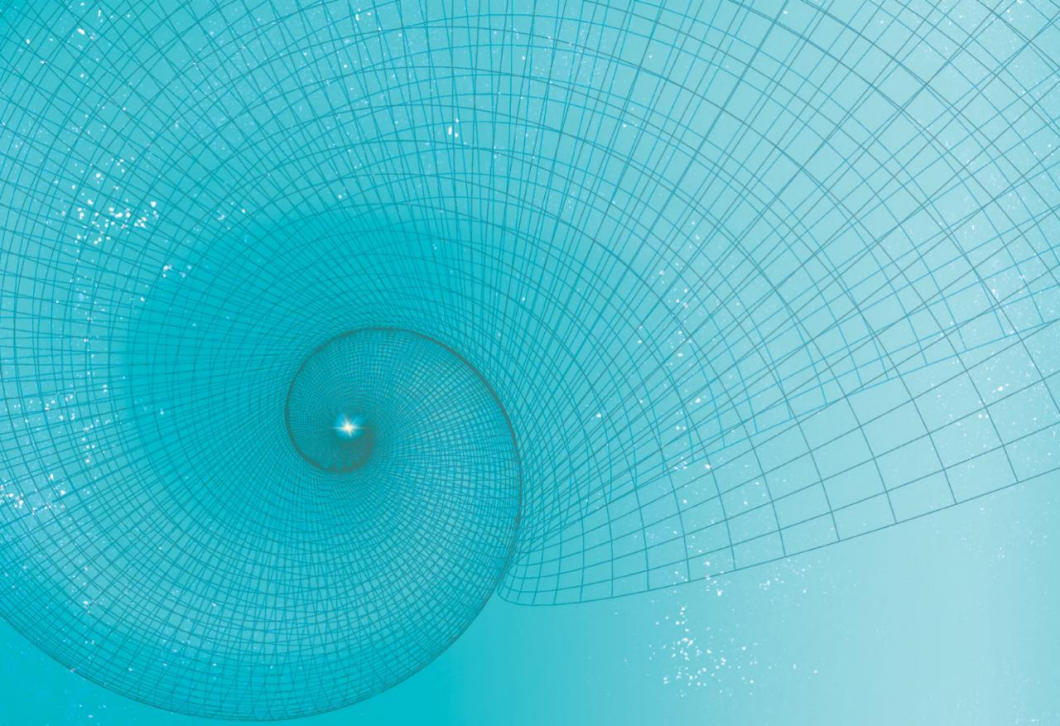

LIVING IN A MINDFUL UNIVERSE

A Neurosurgeon's Journey into the Heart of Consciousness

From the #1 *New York Times* Bestselling Author of
PROOF OF HEAVEN

EBEN ALEXANDER, MD
and Karen Newell

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EBEN ALEXANDER, MD, AND KAREN NEWELL

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Starting with you.

CONTENTS

PREFACE

This book is an ambitious effort to unite science and spirituality, two topics that are typically seen as opposites and are rarely so thoroughly addressed in the same book. We aim to reach a broad reading audience: those with both scientific and spiritual leanings—and everyone in between. This is a message for *all* of humanity.

We wish to engage the modern, informed reader with a sincere interest in further understanding the nature of our world, and their relationship to it. The first five chapters generally clarify the problems facing our prevalent Western worldview and confront many ingrained conventional scientific and philosophical assumptions. We then outline a broadened paradigm supported by both human experience and the empirical evidence of scientific research.

Some of the content in those opening chapters may be of less interest to a nonscientific reader, but full comprehension of these concepts before moving on to the remainder of the book is not required. Some may find it useful to read the early chapters *after* the rest of the book. Chapters 6 through 16 relate examples and information involving actual tools and techniques of value to individuals wanting to learn more about their connection with the universe and their capacities for fully manifesting their free will.

The text is written in my first-person voice because it is my narrative. But my coauthor, Karen Newell, understands my voice better than anyone and significantly added to, clarified, and refined what is truly *our* message—I could not possibly have come up with this on my own. Karen's lifetime spent in pursuit of deeper understanding of the nature of all existence has offered a treasure trove of insight and understanding, and this book is far more informative (and friendly to the less scientific reader) through her sage wisdom.

INTRODUCTION

Discovery consists of seeing what everybody has seen and thinking what nobody has thought.

—Albert Szent-Györgyi (1893–1986),
Nobel Prize in Physiology or Medicine, 1937

What is the relationship between the mind and the brain? Most people do not dwell on this question. It's best to leave such musings up to neuroscientists and philosophers—why spend time thinking about such scholarly matters? Brain and mind are clearly related, and that's enough for most of us to know, right? We have more important things to focus on in our lives.

As a practicing neurosurgeon, I was exposed daily to the mind-brain relationship due to the fact that my patients would often have alterations in their level of consciousness. While this phenomenon was interesting, my focus was pragmatic. I was trained to evaluate those alterations in consciousness in order to diagnose and treat various tumors, injuries, infections, or strokes affecting the brain. We have the tools and, hopefully, the talent to benefit our patients by restoring them to more "normal" levels of conscious awareness. I closely followed developments in physics and knew there were theories about how it all works, but I had patients to care for, and more important things to consider.

My complacency with that arrangement of casual "understanding" came crashing to a halt on November 10, 2008. I collapsed on my bed and fell into a deep coma, after which I was admitted to Lynchburg General Hospital—the same hospital where I had worked as a neurosurgeon. While in coma, I experienced things that, in the weeks after awakening, baffled me and cried out for an explanation within the bounds of science as I knew it.

According to conventional neuroscience, due to the severe damage to my brain caused by an overwhelming bacterial meningoencephalitis, I

should not have experienced anything—at all! But while my brain was besieged and swollen with infection, I went on a fantastic odyssey during which I remembered nothing of my life on earth. This odyssey seemed to have lasted for months or years, an elaborate journey into many layers of higher dimensions, at times viewed from the perspective of infinity and eternity, outside of space and time. Such a complete inactivation of my neocortex, the outer surface of the brain, should have disabled all but the most rudimentary experiences and memory—yet I was haunted by the persistence of so many ultrareal memories, vivid and complex. At first I simply trusted my doctors and their advice that "the dying brain can play all kinds of tricks." After all, I had sometimes given my own patients the same "advice."

My final follow-up visit with the main neurologist involved in my care came in early January 2010, fourteen months after awakening from my treacherous weeklong coma. Dr. Charlie Joseph had been a friend and close associate before my coma, and had struggled with the rest of my medical colleagues through the brunt of my horrific meningoencephalitis, recording the details of the neurological devastation along the way. We caught up on the specifics of my recovery (all of which were quite surprising and unexpected, given the severity of my illness during that fateful week), reviewing some of the neurological exams and MRI and CT scan results from my time in coma, and performing a complete neurological examination.

As tempting as it was to simply accept my extraordinary healing and current well-being as an inexplicable miracle, I couldn't do that. Instead, I was driven to find an explanation for the journey I took during the coma—a sensory experience that completely defied our conventional neuroscientific concepts of the role of the neocortex in detailed conscious awareness. The unsettling prospect that fundamental tenets of neuroscience were incorrect led me into deeper territory in my final discussion with Dr. Joseph that blustery winter afternoon.

"I am left with no explanation whatsoever as to how my mental experiences deep in coma, so vibrant, complex, and alive, could have possibly occurred," I said to him. "It *seemed* more real than anything I had ever experienced." I recounted for him how numerous details clearly placed the vast majority of my coma experience as occurring between days one

and five of my seven-day coma, and yet the neurological examinations, lab values, and imaging results all confirmed that my neocortex was too damaged by the severe meningoencephalitis to have supported any such conscious experience. "How am I to make any sense of all this?" I asked my friend.

I'll never forget Charlie's smile, as he looked at me with a sense of *knowing,* and said, "There is plenty of room in our understanding of the brain, and mind, and consciousness to allow for this mystery of your remarkable recovery to indicate something of great importance. As you well know, we encounter copious evidence in clinical neurology that we have a far way to go before we can start claiming any kind of 'complete' understanding. I am inclined to accept your personal mystery as another lovely piece of the puzzle, one that greatly raises the ante in approaching any understanding of the nature of our existence. Just enjoy!"

I found it most reassuring that a highly trained and capable neurologist, one who had carefully followed the details of my illness, was open to the grand possibilities implied by my memories from deep in coma. Charlie helped open wide the door that has led to my transformation from a materialist scientist, proud of his academic skepticism, into someone who now knows his true nature and has also been offered a glimpse into levels of reality that is most refreshing, indeed.

Of course, it was not an easy journey in those initial months of exploration and confusion. I knew that I was entertaining concepts that many in my field would consider beyond the pale, if not outright heretical. Some might even suggest that I let go of my inquiry rather than commit professional suicide by sharing such a radical tale.

As Dr. Joseph and I had come to agree, my brain was severely damaged by a near-fatal case of bacterial meningoencephalitis. The neocortex—the part modern neuroscience tells us must be at least partially active for conscious experience—was incapable of creating or processing anything even remotely close to what I experienced. And yet I did experience it. To quote Sherlock Holmes, "When you have excluded the impossible, whatever remains, however improbable, must be the truth." Thus, I had to accept the improbable: This very real experience happened, and I was conscious of it—and my consciousness did not depend on having an intact brain. Only by allowing my mind (and my heart) to open as widely

as possible was I able to see the cracks in the conventional consensus view of the brain and consciousness. It was by the light allowed in by those cracks that I began to glimpse the true depths of the mind-body debate.

That debate is of extreme importance to us all because many of our foundational assumptions about the nature of reality hinge on the directions in which that debate flows. Any notion of meaning and purpose in our existence, of connection with others and the universe, of our very sense of free will, and even of such concepts as an afterlife and reincarnation—all of these deep issues depend directly on the outcome of the mind-body debate. The relationship between mind and brain is thus one of the most profound and important mysteries in all of human thought. And the picture emerging from the most advanced reaches of scientific investigation is quite contrary to our conventional scientific viewpoint. A revolution in understanding appears imminent.

This pathway of discovery continues to unfold, and will no doubt occupy me for the rest of my life. Along the way I have encountered some of the most expansive experiences and intriguing people I could possibly imagine. I have learned not to be seduced by simplistic falsehoods about an assumed world, but to strive to assess and deal with the world *as it truly is*. As human beings seeking a deeper understanding of our existence, we are all well served to take that approach to heart.

DURING THE DEEPEST AND most perplexing phases in the nine years since I first awakened from coma, my mantra has often been, "Believe in it all, at least for now." My advice to you, dear reader, is to do the same—suspend disbelief for now, and open your mind as broadly as possible. Deeper understanding demands this liberation, just as trapeze artists must release the trapeze to tumble through the air, trusting that their partner will be there to catch them.

Think of this book as my outstretched hands, ready to support you as you take the greatest leap of all—into the glorious reality of who we truly are!

CHAPTER 1

MAKING SENSE OF IT ALL

The Universe is not only queerer than we suppose, but queerer than we *can* suppose.

—J. B. S. Haldane (1892–1964), British evolutionary biologist

Morbidity and mortality (M&M) conferences are the medical community's way of sharing the stories of hapless patients who end up maimed or dead from various illnesses and injuries. It is not, perhaps, the happiest of topics, but they are held in an effort to learn and teach so as to protect future patients from suffering the same fate. It is vanishingly rare for such a patient to be present at their own M&M conference, but that is exactly the situation I encountered a few months after my coma. The physicians who had cared for me were astounded by the high level of my ongoing recovery, and they took advantage of that apparent miracle to invite me to participate in a discussion of my unexpected escape from death.

My recovery defied any explanation in medical science. On the morning that I appeared at the conference, several colleagues shared with me what a shock it was that I had not only survived (which they

had estimated to be a 2 percent probability by the end of my week in coma), but that I had seemingly recovered all of my mental function over a few months—that aspect was truly stunning. No one would have predicted such a recovery, given the extent of my illness. My neurological examinations, CT and MRI scans, and laboratory values revealed that my meningoencephalitis was one of radical—and very lethal—severity. My initial treatment was confounded by a relatively constant state of epileptic seizures that proved difficult to stop.

The neurological examination is one of the most important factors in determining the severity of coma, and can offer some of the best clues as to the prognosis. By assessing eye movements and pupillary responses to light, as well as the nature of arm and leg movements in response to painful stimuli, my doctors determined, as I would have, that my neocortex, the human part of the brain, was badly damaged even when I was first brought into the emergency room.

Another crucial factor concerns the quality of verbalization, but I had none—my only vocalizations were occasional grunts and groans, or nothing at all. The only exception was when I unexpectedly called out, "God help me!" while still in the emergency room (I have no memory of this, but it was reported to me later). Having heard nothing intelligible from me for hours, close family and friends thought those words might offer a glimmer of hope—that I might be returning to this world. But they were the last words uttered before I lapsed into deep coma.

The Glasgow Coma Scale (GCS)—which assesses vocalization, movement of the arms and legs (especially in response to painful stimuli in obtunded or comatose patients), and eye movements—is used to evaluate and follow patients with altered levels of awareness, including coma. The GCS is an assessment of one's level of alertness, and ranges from 15 in a normal healthy patient, down to 3, which is the score for a corpse, or a patient in very deep coma. My highest GCS score in the ER was 8, and it ranged as low as 5 at times during the week. I was clearly suffering from a deadly meningoencephalitis.

In the discussion around the level of damage to my neocortex, people often inquire about the electroencephalogram, or EEG. An EEG is a fairly cumbersome and finicky test to set up, and one would do so only if it were going to provide useful information for diagnosis or to assist in guiding therapy. Some studies have demonstrated a correlation between

the degree of EEG abnormalities and neurological outcome in cases of bacterial meningitis. In addition, I had presented to the ER in status epilepticus (epileptic seizures resistant to medical control). There were good reasons to perform an EEG.

The sad truth was that I was so ill, with such a dismal prognosis based mainly on my neurologic examinations and laboratory values, that my doctors decided an EEG was not warranted. My EEG, as in other cases of severe meningoencephalitis, would have likely shown diffuse slow-wave activity, burst suppression patterns, or a flatline, indicative of incapacitating damage to the neocortex. This is clear from my neurologic exams and what they revealed about the severity of my illness, especially in the setting of similar cases.

In fact, an EEG recording goes silent (flatlines) within 15 to 20 seconds of cardiac arrest due to cessation of blood flow to the brain. The EEG is thus not a very demanding test in terms of revealing the extent of global neocortical damage. My neurologic examinations, and my CT and MRI scans that revealed the damage to be extensive (affecting all eight lobes of my brain), painted a plenty gloomy picture. I had been deathly ill, with significant brain damage, based on all of the available clinical facts alone.

Given such a rapid descent into coma due to severe gram-negative bacterial meningoencephalitis, by day three of such an illness virtually all patients are either beginning to awaken, or they're dead. My ongoing existence somewhere in between those definitive states vexed my doctors.

On day seven of coma, my doctors held a family conference in which they reiterated that I had been assigned approximately a 10 percent chance of survival on my initial arrival in the ER, but that that probability had dwindled to a pathetic 2 percent chance of survival after a week spent in coma. Much worse than the measly 2 percent probability for survival was the harsh reality they attached to it, and that was the likelihood of my actually awakening and having some return of quality to my life. Their estimate for that possibility was a most disappointing zero—no chance of recovery to any sort of normal daily routine. A nursing home was the best-case scenario, albeit a remote possibility.

Of course, my family and friends were devastated by this bleak depiction of the future. Due to my rapid descent into coma, and the extent of

neocortical damage reflected in my neurological exams and the extreme lab values (such as the glucose level of 1 mg/dl in my cerebrospinal fluid, compared to the normal range of 60 to 80 mg/dl), any physician realizes the basic impossibility of a complete medical recovery, and yet that is what happened. I have discovered no cases of any other patients with my particular diagnosis who then went on to benefit from a complete recovery.

Toward the end of that morning conference, I was asked if I had any thoughts to share.

"All of this discussion about my case, and the rarity of my recovery, pales in comparison to what I see as a much deeper question that has plagued me ever since I opened my eyes in that ICU bed. With such well-documented decimation of my neocortex, how did I have any experience at all? Especially such a vibrant and ultrareal odyssey? How did that possibly happen?"

As I scanned the faces of my colleagues that day, I saw no more than a dim reflection of my own wonderment. Some might default to the simplistic assumption that what I had experienced had been nothing more than a feverish dream or hallucination. But those who had taken care of me, and those who knew enough neuroscience to understand the impossibility that such an impaired brain could have even remotely offered up that extraordinary and detailed complexity of experience, shared that much deeper sense of mystery. I knew that, ultimately, I would be responsible for seeking any satisfactory answers. A ready explanation of my experience wasn't lining up neatly, and I felt compelled to make better sense of it all.

I considered writing a paper for the neuroscience literature to demonstrate the fatal flaws in our scientific understanding of the role of the neocortex in detailed conscious awareness. I hoped to progress toward deeper understanding of the mind-body question, and maybe even glimpse some facet of how the mechanism of consciousness could be explained. I struggled with somehow framing it within my pre-coma worldview of scientific materialism, believing that my beleaguered brain during coma could somehow have had enough capacity to fully explain the origins of my experience.

Some of the greatest assistance in comprehending my experience has come from colleagues whom I trust and respect as truly open-minded and

intelligent. The majority of physicians who have discussed my experience with me in depth have been intrigued and, for the most part, supportive. We considered many theories, all of which were attempts to somehow explain my experience as brain-based. These explanations attempted to place the origin of my perceptual experience in parts of the brain other than the neocortex (i.e., the thalamus, basal ganglia, brainstem, etc.) or by postulating that the awareness occurred outside of the interval of time during which my neocortex was clearly inactivated.

In essence, we tried to explain my memories during coma based on the common assumption that the brain is required for any type of conscious awareness. Over almost three decades of my life spent working daily with neurosurgical patients, frequently challenged by those with alterations in their consciousness, I had come to believe I had some understanding of the relationship between brain and mind—the nature of consciousness. Modern neuroscience has come to believe that all of our human qualities of language, reason, thought, auditory and visual perceptions, emotional forces, etc.—essentially all of the qualities of mental experience that become part of our human awareness—are directly derived from the most powerful calculator in the human brain: the neocortex. Although other more primitive (and deeper) structures, like those mentioned above, might play some role in consciousness, all of the grand details of conscious experience demand the high-quality neural calculator of the neocortex.

I accepted the conventional neuroscientific party line that the physical brain creates consciousness out of physical matter. The implications of that are clear: Our existence is "birth to death" and nothing more, and this is what I firmly believed in the decades preceding my coma. That's where a disease such as mine (bacterial meningoencephalitis) becomes a perfect model for human death by preferentially destroying that part of the brain that most contributes to our human mental experience.

Several months after coma, I returned to work and attended the annual meeting of the Society for Thermal Medicine in Tucson to help support the fledgling research for the Focused Ultrasound Surgery Foundation. What excited me most as I flew from Charlotte, North Carolina, to Phoenix that sunny Friday afternoon was that I would be able to reconnect with Dr. Allan Hamilton, my longtime friend and neurosurgical colleague.

Allan and I had become fast friends while working together in the neurosurgical laboratory at the Massachusetts General Hospital in Boston from 1983 through 1985. We had spent countless hours together, sometimes long into the evening, discussing various lab protocols, techniques, and projects, and commiserating over the endless stream of imperfections involved in such scientific efforts as experienced by those in the trenches who are actually doing the work.

Our friendship had overflowed the boundaries of our formal neurosurgical training, which is how, in the mid-1980s, I found myself trekking with "Old Mountain Hamilton" (as I used to call him when out in the wilderness) through ascents of some of the most storied peaks of the northeastern United States. These included Gothics and Marcy (two of the highest peaks in the Adirondack Mountains of upstate New York) and Mount Monadnock in New Hampshire, where we shared an overnight winter bivouac during a blizzard. That evening, the last thing we saw in the early fading twilight was an overflying Red Cross Huey helicopter evacuating a more hapless hiker off the mountain above us. And, of course, Mount Washington, home to some of the worst weather conditions on earth, which we had experienced together firsthand.

As an accomplished hiker who had led US Army missions on such peaks as Mount McKinley in Alaska (at 20,310 feet, the highest peak in North America, and now known as Denali), Allan excelled in preaching the importance of preparation and knowledge required to safely ascend such peaks. As part of my homework prior to our ascent to the summit of Mount Washington in October 1984, Allan had had me review decades of fatality reports. We had begun our ascent an hour before sunrise. Wind gusts up to 70 mph and thickening snowfall obscured our view to the point where we could barely see the next cairn (the rock piles that mark the trail over such lifeless landscapes). This came as no surprise. Wind speed has been measured here up to 231 mph, the highest sustained anemometer reading ever recorded on earth.

An immense sense of relief blanketed me as we entered the Lakes of the Clouds Hut, the highest of eight stone fortresses in the Presidential Range built to provide temporary shelter for hikers in this potentially deadly terrain. The fact that the heavy stone hut was chained to the rockscape seemed perfectly appropriate, given the extreme and steady force of such unearthly winds.

As my mentor in this situation, Allan challenged me to make a choice.

"Shall we continue our ascent?" he asked.

Allan had asked me to read those Mount Washington fatality reports for a reason, and this was my final exam. The weather here can shift unexpectedly and he wanted me to decide whether or not we should continue our ascent in spite of the increasingly impressive blizzard.

From my time spent in extreme sports, beginning with a four-year skydiving career in college at the University of North Carolina at Chapel Hill, I knew that the real currency between participants in these potentially deadly adventures was the demonstration of professional and responsible decisions based on the situation, not some display of wild bravado. The only way to being invited onto and organizing those larger freefall star formations back in my skydiving days was through demonstrating a very cool head no matter how intense the challenges—no place for wild cowboys. Similarly, here on "the place of the Great Spirit," Allan deserved the best I could muster in making this decision.

"Maybe we should head back down," I finally said, reluctant to relinquish our treasured goal, but knowing in my heart that it was the right decision based on all of those fatality reports.

"Good choice," Allan muttered, as we started packing our gear to depart the safety and comfort of the massive stone fortress. He pushed the door out into the raging winds, as we started the arduous trek back down the mountain.

The fates were smiling down on us, though; soon after we stepped below the tree line on our descent, the weather changed abruptly. The clouds cleared, the temperature climbed into the forties, and we were able to turn back to ascending the peak in brilliant sunshine, stripped down to T-shirts, with breathtaking views for hundreds of miles all around. One of the final sections on the hike out was through a giant birch forest. I'll never forget the crystal blue skies beyond the intricate interwoven beauty of their white bark. Scattered bright golden leaves still clung on some branches in colorful defiance of the brutal winter that was fast approaching. The subtlety of the lesson of that day, and the glory we were rewarded by trusting our highest instincts and our connection with nature, is analogous to the life-changing shift in understanding I have reckoned with through the nine years since my coma.

Good choice, indeed!

I had come to respect Allan's deep intellect, rich insight, and refreshing sense of humor. He was a consummate scientist, which became abundantly clear as his career blossomed over the next few years. He went on to graduate from the top-notch neurosurgical residency program at Massachusetts General Hospital and ascended through the academic ranks at the University of Arizona, Tucson, not only to become the chairman of neurosurgery, but also to an appointment as chairman of the department of surgery. Allan was truly a star in the highest constellation of academic neurosurgery.

So as I flew out to Tucson for the Society for Thermal Medicine meeting mere months after my coma, I anticipated my reunion with Allan as the high point of the trip—and I was not to be disappointed! He picked me up in his shining blue Smart car and drove me to his home, a horse ranch on the outskirts of Tucson. All the while, our conversation allowed us to catch up on much that had happened since our previous visit together a few years earlier.

Allan listened in rapt attention as we sat in his study, richly adorned with books and memorabilia, the desert twilight fading in the large windows. I recounted for him a fairly complete summary, not only of my deep coma memories, but of the medical details that were so confounding, that had so far seemingly eliminated any chance of explaining it all as some feverish dream or hallucination. Like many of my medical colleagues, Allan shared my sense of mystery over interpreting my case, greatly enlivened by the extreme rarity of such a recovery. I knew I could count on him to help me assess the mystery of how I could have had such vivid experiences and memories during a time when my neocortex was being devoured.

Fortuitously, it was in the week preceding my trip to Tucson that I had encountered the crowning blow in my recent attempts to explain my experience. I had just received the picture of the birth sister whom I had never known, a week earlier, and the shock of understanding it had provided me about the reality of my coma memories was still fresh in my mind. As those who have read *Proof of Heaven* realize, connecting that picture of my lost birth sister with my beautiful companion deep in coma had been an earth-shattering recognition for me. Allan sensed the same astonishment, as I recounted that recent discovery.

"This is pure gold," he said, after a minute or so of thoughtful reflec-

tion at the end of my long sharing. Allan was already way ahead of me.

"Pure gold," he repeated, to which his wife, Janey, who sat in during parts of my recap, agreed wholeheartedly. "It's hard not to feel a bit jealous—I want to have your experience, too!" Janey added.

Allan explained that in his view, my story had provided a much richer and deeper understanding of the mind-body connection. If we viewed it with an open mind, rather than through the limited lens of the scientific view that I had, my experience could help us transcend our flimsy understanding of consciousness, of the relationship of mind and brain—indeed, of the very nature of reality.

"You might enjoy this," Allan said, smiling, personalizing and handing me a copy of his recently released book, *The Scalpel and the Soul: Encounters with Surgery, the Supernatural and the Healing Power of Hope*. Up to this point, we had not discussed anything strongly supernatural, so it was quite a surprise to learn he harbored such an interest—enough to write a book about it. Looking back, it occurred to me that many scientific-minded folks intentionally avoid bringing up such subjects to their colleagues and peers. Such frivolous sharing might induce raised eyebrows and rolling eyes. Given his prestigious academic appointments, it seemed he had gained the courage that so many others lacked.

I had recently allowed myself to read books on such subjects, and I devoured all 272 pages of Allan's book on the night flight back east. It contained a compelling collection of anecdotes from Allan's life experiences as a thoughtful neurosurgeon that opened the door wide to the reality of our spiritual nature. His reflective personal stories about deathbed visions, premonitions, angels, and the astonishing power of faith and love to achieve the deepest healing of the soul moved me to tears at several places in the book.

One example is a heartwarming story about a grandmother—who had been charged with taking care of her daughter's handicapped son—who now was struggling with her own diagnosis of advanced ovarian cancer, and was expected to die in just months. Who would care for this poor child when the grandmother succumbed to illness? The grandmother's faith allowed her to defy her doctors' predictions. She ended up outliving her own doctor and attending the wedding of her grandson, who also seemingly benefited from his grandmother's strong faith: Despite his disabilities, he became a skilled craftsman. Allan's blend of scientific

insight combined with a deep and advanced awareness of the reality of soul, garnished with an appropriate sense of humor, greatly energized my personal quest.

Another excellent sounding board arrived in the form of Michael Sullivan, who had been at my bedside during the week of my illness. Michael was the rector at the Episcopal church I had attended for the previous two years since moving to Lynchburg, Virginia. I had not sought spiritual advice from him in the past—I had never felt the need before my coma.

Michael had become a good friend through the close connection of his son, Jack, with my youngest son, Bond. They had met while Bond was in third grade at the James River Day School, and we had shared many good family times together attending their Little League baseball games. While he happened to be a minister, he was more my fun neighbor and close friend than anything else. Given my spotty attendance in church, our conversations tended to be more secular than spiritual. Like many more evolved church leaders, he excelled at delivering spiritual grace to me, even though I had no idea he was doing so at the time.

Michael was grateful I had managed to defy my doctors' dire predictions. He had been preparing to perform my funeral (which seemed inevitable throughout the week of my coma), and offer solace to my family. Instead, he found himself becoming fascinated with the "miracle" aspects of my recovery. As a child, he had poked fun at the concept of miracles, especially as presented through televised evangelical faith healings when, for example, someone in a wheelchair might suddenly walk again after being touched on the head by an enthusiastic pastor. He assumed these were staged events believed only by gullible viewers, yet he watched with rapt curiosity. After many years of pondering the veracity of so-called miracles, his firsthand witnessing of my recovery had caused quite a stir in his own beliefs. It's one thing simply to read about such an occurrence or view it from afar on TV; it is quite another to be front and center at the bedside of a trusted friend who directly experienced such an inexplicable recovery.

In the early months after awakening from coma, I encountered Michael in our neighborhood Starbucks. We sat together to talk, and soon found the conversation delving into the memories of my coma experience. Each of our perspectives were better understood through this candid sharing.

I told him that I had been in a seemingly idyllic paradise with many earthlike features—a fertile, lush verdant valley filled with life and creation, such as plants growing, flowers and buds blossoming—all in a world much like Plato's world of forms (from his writings in *Timaeus*), in that the contents of that world are more ideal than what they represent from the earthly realm. What I came to call the Gateway Valley was only a stepping-stone to the Core, which I encountered by ascending through higher dimensions of space and time. The Core itself was the source of *all,* the ultimate nonduality of pure oneness. I was aware of the entire higher-dimensional universe as indescribably complex and holding all of existence, there as a model for the entire construct—all space, time, mass, energy, interrelationships, causality, and much more for which I have no words to express. Just beyond all of that, I encountered the power of infinite unconditional love, the very *feeling* of that ineffable love. I was awash in the source of all that is. That feeling is beyond description, yet so shockingly concrete and real that I've never lost the memory of it. Human words, developed to help us describe earthly events, obviously fall far short of conveying the astonishing majesty of the complete acceptance of that love without judgment or expectations.

"Your description of the experience reminds me of the writings of some of the early Christian mystics," Michael said to me. "I have a book that might help you even more than your neuroscience books. I'll drop it off this afternoon."

Later that day, I returned to find on the front step of my home, *Light from Light: An Anthology of Christian Mysticism*. It contained the fascinating writings of those who wrote about profound and life-changing spiritual experiences, some dating back almost two thousand years. I was in for a mind-opening read.

My knowledge of Christianity was then confined to the very limited popular variety one might expect from my conventional religious upbringing in a Methodist church in North Carolina. Mysticism was not a quality that I had yet come to associate with Christianity. This book was my first introduction to the mystics, those who actively traverse unseen realms and live a life knowing that the physical realm is but a small part of a much grander reality, most of which remains obscure from our normal waking awareness. I was surprised to learn the power and diversity of such writings from a Christian perspective. From Origen

in the early 3rd century through Bernard of Clairvaux (12th century), Francis of Assisi (early 13th century), Meister Eckhart, Julian of Norwich (14th century), and Teresa of Avila (16th century), all the way up to Thérèse of Lisieux in the 19th century, the journeys sounded hauntingly familiar.

Profound mystical accounts had led the way in humanity's understanding of the full nature of the universe. Such extraordinary experiences deep in the spiritual realm were the basis for all religions. Personal experience is the greatest teacher, and Michael's recommended anthology of Christian mysticism helped me to gain a richer understanding of my own seemingly inexplicable experience. Most importantly, they began to reveal that all pathways to such knowing involve a journey into consciousness.

After several months of discussing my experience with trusted friends and colleagues, I found I had to greatly broaden my inquiries into territory quite distant from my familiar and comfortable knowledge base. The general approach to a case such as mine had been to sweep it under the rug, out of the way, and simply accept it as unexplainable. But my confidants understood my dilemma and supported my quest to more properly comprehend it. There was something much greater going on here, and I was driven to seek deeper understanding.

CHAPTER 2

A HARD PROBLEM, INDEED

Science's biggest mystery is the nature of consciousness. It is not that we possess bad or imperfect theories of human awareness; we simply have no such theories at all. About all we know about consciousness is that it has something to do with the head, rather than the foot.

—Nick Herbert (1936–), physicist

As I first regained conscious awareness in Medical ICU bed ten, I had no memories whatsoever of my life before coma. In fact, I had no personal memories of having ever lived on planet earth. All I knew was the fantastic odyssey from which I had just returned—the astonishing deep coma journey that seemed to last for months or years, even though it all had to have happened within the seven earth days of my coma. All recollections I had up until then, including religious beliefs, personal memories, and the scientific knowledge gained through more than twenty years spent as an academic neurosurgeon, had vanished without a trace.

When I returned to this world that Sunday morning, my brain was wrecked. Even words and language had been wiped out, although they

began to return rapidly in the first hours of my awakening. I initially explained the amnesia for my prior life as a result of the extensive neocortical damage my doctors insisted had occurred based on my neurological exams, scans, and laboratory values. My conventional neurosurgical training had postulated that memories were somehow stored in the brain, and particularly in the neocortex, so that was my default explanation.

My language came back over hours and days, followed by many personal life memories that returned, gently and spontaneously, over the next few weeks. The nurses were kind enough to allow two of my sisters, Betsy and Phyllis, to sleep on cots by my hospital bed to maintain that constant family vigil they had mounted during my week in coma. In my brain's beleaguered state, I found it very difficult to sleep, night or day. My sisters found my insomnia and restlessness quite annoying, and would attempt to lull me to sleep by recounting stories of our childhood vacation trips.

I was fascinated by their exotic-sounding anecdotes, of which I had no personal memories. But over a few days, vague fragments began to surface—memories that actually aligned with the fascinating stories shared by my sisters during those bizarre days (and nights) as my damaged brain attempted to right itself. Most personal life memories returned by three weeks after awakening from coma. All prior knowledge of physics, chemistry, and neuroscience (semantic memory) returned progressively over about two months or so. The completeness of my memory return was quite astonishing, especially as I thoroughly reviewed my medical records and held discussions with colleagues who had cared for me, and I realized just how ill I had actually been. Such patients do not survive, much less have extraordinary spiritual experiences and live to tell the tale, followed by a more-than-complete recovery—how to fathom it all?

The initial problem I faced concerning the nature of memory was the fact that I had *any memories whatsoever* from deep within coma. If details of my case had been presented to me before my coma, I would have very confidently told you that a patient as ill as I had been would have experienced nothing more than the most basic rudiments of conscious experience and would certainly have had no memory of it. I would have been dead wrong.

In neuroscience, we generally consider new memory formation to be

a demanding process that is only incomplete and fragmented in a significantly impaired brain. This is why so many brain maladies result in partial to complete amnesia for the period of illness. Even after patients awaken from coma and interact with those around them, the capacity to remember those new experiences can take hours, days, or even longer to return, if at all. Note that recall of already formed long-term memories is not as demanding, which is why demented patients initially have their greatest problems recalling new short-term memories—for example, what they had for breakfast (even whether or not they have had breakfast)—yet their remembrance of childhood events and other distant episodes of life experience remain accessible.

Yet notably, my deep coma memories have not faded with time. After awakening from coma, I experienced roughly 36 hours of a paranoid delusional psychotic nightmare, distinctly different from the subjective sense of ultrareality that took place during the deep coma experience. I expected all of the memories (both deep coma ultrareal spiritual and postcoma delusional paranoia) to represent hallucinations of my beleaguered brain, somehow enabled through the damage to my entire neocortex and anticipated they would become less vivid over time. To my surprise, a fundamental difference between the two sets of memories has been the rock-hard resilience of the ultrareal deep coma memories compared to the ephemeral transience of the psychotic nightmare memories (which essentially disappeared over weeks). In fact, my memories of the deep coma experience have remained stable and clear even to this day.

I came to realize my ordeal could be termed a near-death experience (NDE) and was eager to learn more about similar reports to compare them with mine. But prior to reading any other accounts, during the first six weeks after awakening, I carefully wrote down everything I could remember about all of those memories from deep coma and early recovery. I then began an earnest search for records of similar experiences.

One of the first resources I encountered was *Life after Life,* Dr. Raymond Moody's world-changing 1975 book that first popularized the term "near-death experience." The loving comfort encountered by most of the hundred or so patients discussed in Dr. Moody's book resonated deeply and truly with what I recalled from my experience. The words he chose to relate from the various subjects, as well as the general sense that they were all confounded by the limitations of earthly language

in trying to describe such nonearthly journeys, enlivened in me the vivid yet ineffable memories of my own experience.

The varied descriptions of that spiritual realm as a reality that was more fundamental than our earthly realm made eminent sense to me. I was blown away that other people could have had these kinds of extraordinary experiences when they were supposed to be dead. If it all worked the way materialist neuroscience imagined, where consciousness is completely shut down when the brain no longer functions, they should have had no memories at all. I was driven to explain how these experiences could be possible.

Having paid scant attention to the NDE literature before my coma, I had no idea that a hallmark of NDE memories is that they are very persistent and stable over long periods of time, unlike memories of most events, dreams, and hallucinations. Researchers have studied the remarkable stability of such memories, demonstrating that the detailed contents of NDE memories remain consistent over decades, compared to most other types of memory that seem to change somewhat every time we revisit them.

The other main quality of NDE descriptions concerns the sense of ultrareality. I was absolutely astonished by the "way too real to be real" quality of my deep coma memories, especially in the Gateway Valley and ascending to the Core realm of pure oneness. My reading revealed that more than half of NDEers are astonished by such a sense of heightened reality. I would agree with many of them who report that this normal waking reality is more dreamlike than the richness of transcendental NDEs. NDE memories are distinctly different from dreams or hallucinations. They suggest that our sense of a consensus reality in this material world is but one mode of possible realities we share.

Steven Laureys, a Belgian neurologist, and other colleagues who shared a keen interest in NDEs reported in March 2013 a fascinating study of memories in coma patients.[1] Their study evaluated three groups of coma survivors (eight patients with NDE as defined by the Greyson NDE scale, six patients without NDE but with memories of their coma, and seven patients without memories of their coma). These were compared with a group of eighteen age-matched healthy volunteers. Five types of memories were assessed using a memory characteristics questionnaire: target memories (NDE for NDE memory group, coma memory

for coma memory group, and first childhood memory for no memory and control groups), old and recent real-event memories, and old and recent imagined-event memories. Since NDEs are known to have high emotional content, participants were requested to choose the most emotionally salient memories for both real and imagined recent and old event memories.

They concluded that NDE memories have more features than any other kind, from both real and imagined events, as well as compared to memories from an unconscious state, such as coma. In fact, they interpreted their findings as demonstrating that NDEs could *not* be considered as imagined events at all. They were faced with the realization that such recalled events had actually taken place. Their ultrareal nature is truly remarkable and sets them apart from any other type of memory.

Arianna Palmieri and her colleagues at the University of Padova in Italy published an interesting study in 2014 of the extraordinary quality of NDE memories. They used hypnosis to increase the amount of detail recalled from the exceptional experiences and found that the degree of detail, emotional power, and self-referentiality were more similar to memories of real events than they were to dreams and similar imagined events.[2]

Initially, my attempts to understand were dominated by my pre-coma assumptions about the nature of brain and mind. But the ultrareality itself was most difficult to explain from within my old paradigm. If the brain produces conscious awareness, and the neocortex (as the most powerful calculator in the information processing system of the brain) is essential in constructing any such detailed conscious awareness, then why would the progressive dismantling of my neocortex allow for such an astronomical enhancement in the detailed, multilayered quality and meaning of conscious awareness? I struggled for months with that conundrum before I finally started to rework my worldview from square one.

The more I read about the scientific study of NDEs, the more I felt like I was tumbling over the edge of a gargantuan precipice. This was becoming much more serious than my initial forays, in which I had first sensed a fly in the ointment—it now seemed much more like an asteroid destroying the home planet! All of my pre-coma assumptions about the nature of reality were now up for grabs. Something must be fundamentally wrong with our conventional scientific worldview, something

revealed by these extraordinary human experiences—but what? How far down into my fundamental beliefs did I have to go in order to make changes that would allow for deeper understanding?

In essence, I was seeking a new scientific framework that could explain such experiences in a way that was more accurate and comprehensive than what conventional science allowed. To my great delight, I found that serious scientists had been studying these phenomena for decades, if not for more than a century. And, as fate would have it, one of the most prominent and renowned of such scientists worked right up the road.

Dr. Bruce Greyson, a remarkably mild-mannered psychiatrist at the University of Virginia (UVA) in Charlottesville, began researching NDEs in the early 1970s. He became fascinated with reported aftereffects of individuals who claimed to have vivid, transcendental memories of events that occurred while their bodies were in physical distress, leading him to develop the Greyson Scale to determine common features of near-death experiences. He created a questionnaire with questions such as "Were your senses more vivid than usual?" and quantified the results in order to classify the intensity of the experience as compared to others.

As a practicing psychiatrist, he was well suited to contrasting differences of such experiences with common mental disorders, such as psychosis and schizophrenia. Among many such distinctions is the often long-lasting beneficial transformation of beliefs, attitudes, and values that occurs following a near-death experience. Long-term follow-up reveals such effects continue for years, even permanently, a feature not typically found in other mental disorders.

Dr. Greyson has authored more than 100 publications in peer-reviewed medical journals and was editor in chief of the *Journal of Near-Death Studies* for more than twenty years. Naturally, he was interested in hearing the details of my experience, and I realized he possessed a gold mine of information on the phenomenon that might contribute usefully to my ongoing investigation. Among other prestigious appointments at the time, Dr. Greyson was the director of the Division of Perceptual Studies (DOPS) at UVA. After establishing an email correspondence over several months, he invited me to speak at one of their regular meetings. What was the subject of their weekly gatherings? Consciousness!

As I drove to Charlottesville for my presentation, I realized that I

would be speaking at exactly the second anniversary (to the hour) of my emergence from coma—a worthy celebration, I reflected. I had reviewed the DOPS Web site and had been amazed by their world-leading efforts in the exploration of all matters of consciousness and, in particular, nonlocal consciousness (that is, that we can know things independently of our physical senses and beyond the constraints of space and time). The entire DOPS group was driven by a common goal: to establish an alternate theory describing our perceptions of the world, given the failures of the common physicalist (or materialist) paradigm to explain the mind-body relationship. Their mission was defined by the relative lack of scientific understanding about the brain and mind that had emerged, in spite of enormous research funding and effort (most of that funding devoted to brain studies, in particular, with the equally relevant field of parapsychology left woefully short of funding). The doctrine of physicalism, the notion that only physical stuff exists, had so far failed to offer up any meaningful understanding of the mind-brain relationship.

This scholarship began with the work of Dr. Ian Stevenson in the 1960s, who researched past-life memories in children using scientific protocols, and is continued today by Dr. Jim Tucker, the current director of DOPS. This focus led to the general study of nonlocal consciousness—i.e., aspects of mind occurring beyond the ken of our physical senses, such as near-death experiences, after-death communications, telepathy, psychokinesis, precognition, presentiment, out-of-body experiences, remote viewing, past-life memories in children indicative of reincarnation, and other types of altered states of consciousness. Their special interest is in using scientific methodology to study evidence for survival of the soul beyond death. I had no idea there was such research going on just 90 minutes up US Highway 29.

During my hourlong presentation to the thirty or so scientists and their colleagues, rather than disbelief, skepticism, or surprise, this group exchanged meaningful nods of understanding as my story unfolded. Our discussion spilled over into lunch at a local restaurant on the Downtown Mall, where I learned much more about the volumes of research being performed at DOPS.

Among these intrepid scientists was Dr. Edward Kelly, who had earned a PhD in psycholinguistics and cognitive science at Harvard in 1971 and later spent more than fifteen years studying psi (or "paranormal")

phenomena at JB Rhine's Institute for Parapsychology in Durham, North Carolina. He had also worked at the department of electrical engineering at Duke University, where I attended medical school. We seemed to have crossed paths at several institutions, albeit at different times and with contrasting interests.

Dr. Kelly gave me a copy of their revolutionary book *Irreducible Mind: Toward a Psychology for the 21st Century*. I had never heard of the book prior to this. Upon reading it, I realized I had missed a giant body of existing research on the phenomena of NDEs, past-life memories in children, mystical experiences, and other examples of nonlocal consciousness. Shocking! I recognized that the DOPS team was far along the trail I was just beginning to follow. Surprisingly, I began to realize there are many scientists and physicians around the world who have already come to appreciate that conventional scientific materialism is hopelessly lost about any understanding of consciousness.

The past century has witnessed astonishing progress in our understanding of the human brain. After millennia of guessing what was happening in our heads during any human activity, we developed exciting new tools for exploring the physical actions within the brain. Starting in the 1970s, CT scans allowed us to create three-dimensional images of brain structure using x-rays; soon after, MRI gave us unprecedented detail in the normal and abnormal anatomy in people's brains, and soon fMRI ("functional" MRI) allowed a structural assessment of brain activity when a person perceives, thinks, or moves. Especially over the past few decades, neuroscientists have enjoyed unprecedented access to what is going on in the brain in magnificent detail.

As a neurosurgeon, I have been privileged to be part of that race toward mapping and understanding the human brain. I helped develop advanced neurosurgical techniques such as stereotactic radiosurgery (which utilizes precisely directed beams of radiation to treat various brain anomalies), image-guided operations (notably, a complete redesign of MRI systems to allow us to operate on people's brains while imaging in the MRI scanner, enabling far safer and more efficacious operations), and the use of focused ultrasound energy to treat (not simply image, as in the classical use of ultrasound) movement disorders (such as tremor), brain tumors, strokes, and Alzheimer's. Suffice it to say that by now, we know vast amounts about the brain's physiology and function. And yet we neu-

roscientists and researchers still can't answer the single most important question: What is consciousness and where does it come from?

In the world of neuroscience and philosophy of mind, this question is known as the hard problem of consciousness (HPC), a term coined by the eccentric Australian philosopher David Chalmers in his 1996 book, *The Conscious Mind*. Many scientists believe it to be the most profound mystery in the history of human thought. We know lots about the mechanics of the brain, right down to the molecular level, but when it comes to consciousness, we simply haven't got a clue. How might the physical matter of the brain give rise to the conscious mind? What is its relationship to the observer within that witnesses all that we experience and remember, the part of us that not only processes stimuli, but has thoughts and can even reflect on them? It's a crucial question, and it gets to the heart of what makes us us. But despite all of the advances in evolutionary biology and brain research, we don't know how our essential beingness gets formed—or even where it comes from.

Some scientists are ready to give up on the question. They arrive at a point where they abandon all hope of ever explaining how consciousness might arise from the physical workings of the brain. Others decide to sidestep the issue by declaring that consciousness does not even exist, or by claiming that one day we will discover exactly how consciousness arises from physical matter. It's unfashionable to point out that the most logical explanations are the ones that completely contradict the current brain-creates-consciousness (materialist) model of neuroscience. Believe it or not, when faced with the fact that there aren't even any inklings of a theory to explain how the brain *might* create consciousness, many scientists simply shrug and move on. For them, the hard problem is just too, well, hard.

Chalmers was onto something back in 1996, but he wasn't the first or last person to glimpse the profound mystery of this subject. The father of quantum physics, and winner of the Nobel Prize in Physics in 1918, German Max Planck, said, "I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness." Another founding father of quantum physics, Austrian Erwin Schrödinger (Nobel Prize in Physics, 1933), said, "Although I think that life may be the result of an accident, I do not

think that of consciousness. Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else." And as Rutgers University philosopher Jerry A. Fodor has more recently stated, "Nobody has the slightest idea how anything material could be conscious. Nobody even knows what it would be like to have the slightest idea about how anything material could be conscious. So much for the philosophy of consciousness."

Scientists outside the formal bounds of neuroscience, especially physicists, also seem to grasp the enormity of the HPC. Edward Witten, a globally acknowledged leader in the advanced mathematical attempt to reconcile quantum physics with relativity through what is known as string theory, has said, "I have a much easier time imagining how we understand the big bang than I have imagining how we can understand consciousness." Clearly, the HPC has become something of a white whale—an endless quest for explanation by the most accomplished thinkers in their fields.

As students of science and reason, we are trained to study the world with the scientific tools in our possession: those CT scans, MRIs, and all the other modalities and techniques of modern medicine. But some scientists fall victim to the idea that everything must be quantifiable using those tools. What if we're using the wrong tools because we're not quite sure what we're looking for? What if, instead of a white whale, deeper understanding around human consciousness and its origins comes instead in the form of a black swan—something so completely unknown and unimaginable to our current mind-set that it does not exist until it is experienced firsthand?

What I've experienced—and what has been experienced by millions of other people who have had NDEs and other spiritually transformative experiences—is the black swan we didn't know to look for. We can't identify or analyze it with a spectral EEG or fMRI or any of the tools scientists have been using, but it's hidden in plain sight.

Some of the more modern scientific thinking now sweeping the field of consciousness studies concerns a wholly different concept of the mind-brain relationship: that the brain is a reducing valve, or filter, that reduces *primordial* consciousness down to a trickle—our very limited human awareness of the apparent "here and now." The physical brain only per-

mits certain patterns of awareness to emerge from a broad group of possible mental states. This conscious awareness can be liberated to a much higher level when freed up from the shackles of the physical brain, as happened while I was in coma.

The scientific implications are stunning, and provide powerfully for the reality of the afterlife. But this is only the beginning. As we come to realize that examples of exceptional human potential (as in genius-level creativity, telepathy, psychokinesis, precognition, and past-life memories) really occur in some people, we begin to realize that the latent ability is there in all humans. In other words, these are skills that one can cultivate and enhance. I was elated by the potential for tremendous enhancement in human activity that is possible due to this grander view of consciousness. If abilities such as these are achievable, the implications for human potential are breathtaking!

This idea was new to me, but not to the world. Late-19th- and early-20th-century luminaries including William James,[3] Frederic W.H. Myers, Henri Bergson, F.C.S Schiller, and Aldous Huxley advocated for more serious consideration of this filter theory. The Canadian epilepsy specialist Dr. Wilder Penfield, one of the most prominent neurosurgeons of the 20th century, wrote a book in 1975 (*The Mystery of the Mind*) summarizing his life's work, especially evidence that consciousness (including free will) is not created by the brain. The filter theory doesn't mean we have to throw out all of our recent discoveries about the brain—far from it. Rather, it opens the door to better explanations of human experiences, both mundane and exotic. I began to realize our minds are much more than mere electrical signals; we are not, as some argue, just "fleshy robots."

The more I studied, the more I realized that on some level, humans already know this is true. Nearly all religious and philosophical traditions have a sense that some part of our essential selves exists separately from our physical brains and bodies. Even those few without a clear vision of an afterlife include some ritual or practice focused on connecting humans with the divine and with their own enlarged, unfettered consciousness. Practices of Kabbalah, Christian mysticism, Sufi meditation, Buddhist mindfulness, and devotional prayer, among others—these are all ways people have accessed this larger sense of consciousness and connection with a world just beyond their sight.

The kind of sensing and thinking encountered in mystical experiences confirms that, at some level, most of us are aware that there is more to this life than we can see. We might seek it in a deeper connection with God through prayer or meditation, or we may simply be visited by the sense, stronger at certain moments, that we are connected to something larger than ourselves. Have you ever paused alone in a beautiful place and found yourself feeling a powerful sense of safety and connectedness that seemed to fill you from the outside in? That's what I'm talking about. What I came to see—and what has been viewed by so many others who have had near-death and similar spiritually transformative experiences—was a full awareness, like finally being able to look straight at something that's been lurking just outside my peripheral vision. The truth is all around us and, at times, we catch glimpses of it—but how can we make better sense of it all?

CHAPTER 3

SCIENCE MEETS SPIRITUALITY

Science is not only compatible with spirituality; it is a profound source of spirituality.

—Carl Sagan (1934–1996), American astronomer

There's no question that my world was rocked to the core. It seemed as though I had stumbled upon a crucial factor that might contribute to the advancement of science. More than that, I realized this ultimately offered the potential for a fuller understanding of the true nature of human existence. I was drawn to share my message with all who would listen in hopes they could offer further insights into these matters.

Word of my experience began to spread in my local community, and through my personal network I began to connect with grieving parents whose children had died. This led to my first formal presentation in 2010 at a fund-raising dinner for Kid's Haven, a support group for children who have lost parents or siblings. I shared how my experience supported the notion that one's soul continues to exist after the physical body has died. The audience was comforted by this—it seemed to help many with their grieving process. Next, I spoke to a small group of twenty-five healers

focused on helping people deal with grief at a Stephen Ministries group hosted by the Peakland United Methodist Church. One week later, I spoke at St. John's Episcopal Church, where Michael Sullivan was the rector, and where I was a member. This was the first big public event that ignited more widespread interest, and was followed by invitations from several other churches and organizations in the surrounding area.

Prior to being in coma, I had delivered approximately 200 presentations to medical groups concerning my research interests in neurosurgery, so public speaking was comfortable for me. But speaking to audiences about my personal experience was brand-new, shockingly different, and strange. People approached me afterward to tell me that my story resonated with them: a reassuring, positive message that left them feeling more complete. Many would be moved to tears. I was unaccustomed to emotional responses, yet amazed at this giant sense of evolving and reaching an aha moment with whole groups.

The audiences seemed to fully embrace the concept that our souls are eternal. This helped me to firm up the integration of everything I was coming to understand. Never is any part of this only one soul's journey: This is about a massive evolution of consciousness in which everyone partakes. It became clear that the process of telling my story helped others tremendously, but it also helped me to realize the universal aspects of the message I shared. I was absolutely bound to share with the world that our conventional understanding of reality as explained by materialist science was completely false and misleading. This was far too important to bury.

The risks to my career in academic neurosurgery were quite real—I was rocking the boat in a major way, and the end result could have been a forced separation from my tribe, that of neurosurgery and neuroscience. I was thus pleased to receive an invitation by the Lynchburg Academy of Medicine to speak to 150 fellow doctors (including some who had cared for me, and many who had attended my morbidity and mortality conference a few months after I awakened) and their spouses. As much as I had expected strong recoil and pushback from medical and scientific audiences, what I encountered was a generally open-minded group, with very pertinent questions appropriate to the deep nature of the subject matter. It seemed as if there was general agreement that my experience could not be explained by traditional models (that my spiritual journey had to be a

hallucination) and we had to seriously question the reigning paradigm we'd all learned in medical school.

Through my connection with Bruce Greyson, I was invited to give a keynote presentation at the national conference of the International Association for Near-Death Studies (IANDS) in September 2011 in Durham, North Carolina. IANDS had been founded in 1978 to provide support and resources to early researchers in the field. Their annual conferences include presentations of the latest research and reports from those who have had a near-death experience.

Presenting to a room of more than 300 people, the majority of whom were near-death experiencers themselves, I was astonished how my story flowed even more fluidly. I had already sensed that the message of communication of a deep, true knowing conveyed in these talks often went beyond the summary of words into something more, and here is where I felt that fully for the first time. It struck me that it was no longer "I'll tell my story to other people and wait for their response"; these people were among the countless others who had reported an experience similar to mine. With this group, there was a greater depth and understanding of the journey and a shared sense of mystery around it all that was driving these people's lives.

It was at this conference that I met Dr. Raymond Moody (who had founded the modern era of the scientific investigation of near-death experiences). He had recently become a legendary figure in my mind, but from the moment I was introduced to him, I found Raymond to be one of the most open and personable souls I had ever encountered. He was refreshingly available, and I thoroughly enjoyed talking to him, together with John Audette (also present as a founding father of IANDS).

Raymond told me of his early interests that led him into his initial study of NDEs. Before he entered medical school, Raymond had earned his PhD in ancient Greek philosophy, where he became most enamored with the writings of Plato. In *The Republic,* Plato discussed the fascinating case of Er, an Armenian soldier killed in battle who was placed upon a funeral pyre. Just before its ignition he returned to life, to the amazement of his fellow soldiers. He went on to tell them that when one dies, they proceed through a review of the most crucial aspects of their life as a lesson of sorts (the "life review"), and that the most important quality by which they are judged concerns the love they have managed to manifest while here on earth.

That story had piqued Raymond's interest in the concept of an afterlife. When, as a medical student, he then started encountering stories of strange memories in his patients who had come close to death, the stage was set for him to begin collecting such stories in a systematic manner. The first hundred or so patients were the subject material for his world-changing book, *Life after Life*. I was most impressed by his demonstration that these experiences have been occurring in similar fashion for at least 2,400 years, and seem to provide universal lessons that are untainted by one's prior belief systems (although one's beliefs can influence how they interpret and communicate their experience). His approach is more philosophical than scientific; he believes the solution to the afterlife question is not going to come initially from science, but rather from critical thinking and logic.

One of the crucial events in Raymond's journey was encountering Dr. George Ritchie, a Virginia psychiatrist who had shared a profound near-death experience he had had as a 20-year-old Army private. Raymond had been an undergraduate philosophy major in 1965 when he first heard George tell the story of his NDE. His book, *Return from Tomorrow,* remains a favorite, especially given the innocence of the environment in which it all transpired, since no one had yet discussed NDEs as a concept. The illness that induced his NDE began late in the evening of December 11, 1943. Thus, George's experience, eventually published in 1978, emerged out of a fairly pristine origin. As he witnessed his body lying dead in the military hospital at Camp Barkeley in west Texas, Ritchie's soul took a nocturnal journey flying east across the southern United States, then back west to encounter a Being of Light and to harvest the rich lessons of the experience. It was a beautifully wrought journey that stands as one of the classics of the NDE literature.

"Did you ever meet George?" Raymond asked me.

"No, I never had the opportunity. Wish I had . . ."

"You remind me so much of George," Raymond smiled. "You share his boundless enthusiasm, and zest for existence. So similar . . . Amazing!"

My journey of discovery postcoma has been profoundly enriched by many other such enlightened minds I have encountered along the way, including many steeped in modern science and medicine. Members of the general public often assume that my journey and my sharing of it repre-

sent an anomaly that is antithetical to our modern science, whereas the exact opposite has been my experience. A number of the most advanced scientific minds in this world, especially those deeply involved in some understanding of consciousness, are not only on board with my central message, but serve as mentors. They *get it*.

It was exciting to meet more of those enlightened physicians at the conferences to which I was now being invited to speak. Another momentous opportunity occurred at the International Conference on After Death Communication, hosted by Anne and Herbert Puryear in Phoenix in April 2012. It was there that I met fellow physicians Pim van Lommel and Larry Dossey, two extraordinary and generous thought leaders whose work inspired me deeply.

NDEs have been reported for millennia, but a major ramp-up has taken place ever since the late 1960s, when doctors first developed techniques to resuscitate patients who had suffered cardiac arrest. Before that time, almost all such patients went on to die. The result is that we have now populated this world with a huge number of souls who have been to the other side and come back—and some doctors are paying attention.

Dr. van Lommel is a Dutch cardiologist who authored the landmark 2001 paper published in the highly esteemed medical journal the *Lancet*.[1] His widely acclaimed paper assessed 344 consecutive patients successfully resuscitated after cardiac arrest in ten Dutch hospitals, including follow-up for up to eight years after the events. Sixty-two patients (18 percent) reported an NDE, including 41 (12 percent) who had what they called a core (or exceptionally deep) experience (note that the use of the word *core* here is not the same as in my NDE, in which I identified the Core as the most profound level of the spiritual realm, at the origins of all existence). Such profound experiences were especially correlated with those who subsequently died within 30 days of their initial event ($p<0.0001$, or 0.01 percent probability that this finding is due to chance alone).

He followed up the *Lancet* study with his landmark book *Consciousness Beyond Life: The Science of the Near-Death Experience*, an extensive examination of the burgeoning global occurrence of near-death experiences, analysis of current medical knowledge concerning the mind-brain relationship, and an overview of the implications from the viewpoint of quantum physics, especially as it relates to the nature of consciousness.

On first meeting Pim in Phoenix, I found him to be the epitome of the stately, wise, and experienced physician who would engender the highest trust and confidence among his patients. Yet I found his most striking quality to be his exuberant zeal for life. This was bundled with an enthusiastic pursuit of a much deeper interpretation of the available evidence than that which might have satisfied a more casual physician. In short, he was not the type to simply accept a conventional explanation for such exotic experiences when the evidence suggested otherwise—truly the consummate skeptical scientist.

Likewise, Dr. Dossey is a highly regarded physician who has written influential books related to nonlocal consciousness and the value of spiritual wellness, including *One Mind, The Power of Premonitions, Reinventing Medicine,* and *Healing Words*. Tall and fit, Larry also stands out as a "physician's physician"—one who is clearly so knowledgeable, insightful, and experienced that he instills in his patients and colleagues a deep trust and confidence. He was originally drawn to the concept of all minds being connected due to the deep connection he had felt throughout his life with his identical twin brother. In *One Mind,* he reveals extraordinary evidence, such as coordinated movement patterns of flocks of birds and schools of fish, communication between humans and animals, group behavior, premonitions, remote viewing, NDEs, and twin studies, showing how we are all bound together through consciousness. Familiar with the advanced understanding so evident in his books, I'll never forget the comfortable kinship I felt on first witnessing his exceptional warmth and humanity in person.

By acknowledging and investigating the potential of our spiritual essence, both Pim and Larry had been instrumental in ushering the world of medicine from the dark ignorance of pure materialism into a more enlightened age in the healing arts. I felt them to be such kindred spirits that it seemed as if I had known them forever. They had worked for decades in the wild and unknown frontiers of consciousness, and I was the new kid on the block. I found it most refreshing to interact with other scientists who fully appreciated the seemingly bottomless mystery of consciousness.

I don't recall all the details of what we discussed that day, but it was by far the most in-depth discussion about the fundamental nature of consciousness I had ever had with fellow physicians. Larry must have shared this sense, for his parting comment was "My gosh—I wish we had

recorded this little conversation!" Although I wasn't sure how to put my perceptions of Pim and Larry into words at the time, I now know that what I sensed was that they were both very advanced souls, indeed.

I began to interact with scientists outside of the world of medicine who were also walking that tightrope between the domains of science and spirituality. John Audette, whom I initially met at the IANDS conference, had been a close friend for decades with *Apollo 14* astronaut Edgar Mitchell, who had had a profound personal transformation on his return from the moon in 1971. I was beyond thrilled when John made arrangements for me to stay with Edgar during a visit to Florida in July 2012.

As far back as I can remember, part of me always seemed to be more at home above this world than on it. My most vivid memory of the first grade occurred on May 5, 1961. The school brought a television set (limited to black and white, it was still a rarity in those days) into Mrs. Allen's classroom so that we could watch live as Alan Shepard rode a *Mercury-Redstone 3* rocket 116 miles up into space. Though it was but a 15-minute suborbital flight, I was hooked. Space was in my blood! I followed every *Mercury, Gemini,* and *Apollo* mission over the next fifteen years, getting to know as much about the men and the missions as I could, and following them live as if I were just another member of the crew.

My attraction almost diverted my neurosurgical career. After an inspiring dinner with Rhea Seddon, a mission specialist on the space shuttle who had previously trained as a surgeon, I applied for that program to fly on the space shuttle in 1983, when NASA was gearing up for another astronaut recruiting effort. I was only partly through my neurosurgical residency at the time, and my father urged me to finish my medical training before pursuing a career in the astronaut corps. History intervened with the *Challenger* tragedy in January 1986, which led to a 2½-year halt in our manned space program. I finished my neurosurgical training during that lull, and thus went straight into neurosurgical practice, as opposed to following my dream of flying into space.

My fascination with space flight led to my personally meeting four of the *Apollo* astronauts: Neil Armstrong (the first man to walk on the moon, during the *Apollo 11* moon-landing mission in July 1969), Jim Lovell (commander of the heroic *Apollo 13* mission, NASA's finest hour, when their spacecraft service module was damaged by an explosion en route to the moon and, through extraordinary human effort, they made

it safely back to earth), Frank Borman (who had accompanied Jim Lovell on the December 1968 *Apollo 8* mission in which they broadcast a Christmas Eve message of peace to earth from lunar orbit), and Edgar Mitchell (the Lunar Excursion Module, or LEM, pilot for *Apollo 14* in February 1971).

Although I thoroughly enjoyed meeting and talking with all of them, I have been most grateful for developing a friendship with Edgar, who I believe will go down in history as one of the truly great explorers of the ages. I enjoyed talking with him about his childhood, growing up on a New Mexico ranch next door to one owned by Robert Goddard, the "father of American rocketry" (a fascinating synchronicity!), and how he, like me, had soloed an aircraft at the young age of 14. To have such an extraordinary experience at that tender age of discovery weds one's soul forever to the realms beyond earth.

During the third successful moon-landing mission, Edgar became the sixth man (of twelve total, to date) to walk on the moon. On February 5, 1971, he was piloting *Antares,* the LEM for the *Apollo 14* lunar landing mission, to alight in the hills of the Fra Mauro highlands on the moon. His partner in the LEM was Shepard. Although I had followed his original journey as a teenager fascinated with space travel, hearing him share it with me directly was one of the highlights of my life.

Edgar told me about his grand epiphany, or *savikalpa samadhi* experience (as he called it), an "ecstasy of unity," while returning from his "sacred journey" to the moon. This extraordinary revelation completely shifted all aspects of his life.

"I had piloted *Antares* down to the Fra Mauro highlands, and taken the longest walks ever taken on the moon through those dusty lunar hills with Alan," he explained over breakfast in his home. "Most people heard about his driving two golf balls on the moon, but few realize that I bested his distance for those two drives when I threw a javelin even farther! That lunar gravity one-sixth of earth's allowed for Olympian gold-medal performances. I then piloted the ascent module with Alan back up to rejoin Stu in *Kitty Hawk* [the command module]. As we left lunar orbit to head home, my work was done. So I had three days to relax and enjoy the view.

"We were in barbecue mode, with the spacecraft rotating every couple of minutes to avoid any area overheating in the intense sunlight. I could see ten times as many stars as you can ever see from earth, so the

view was spectacular. With the rotation, I would see the earth, moon, and sun pass by the window every few minutes. The immensity and serenity of the universe struck me in an entirely new way, out there, suspended between the great blue jewel of earth and the dusky moon we were leaving behind. The setting was perfect. I suddenly sensed the profound consciousness of the universe—how it is completely interconnected and aware—an absolutely indescribable awareness. My life was changed forever."

His epiphany led him to pursue the deep study of scientific aspects of consciousness, and to help humanity awaken to a grander recognition of the unity of conscious awareness in oneness with the universe. During my coma journey, I experienced this same sense of oneness with the universe as a completely unified self-awareness of all that is—a truly mindful universe. Edgar's intuition that science and spirituality greatly strengthen each other, that their natural synthesis is an inevitable aspect of human history, is one that I share deeply. He wrote several wonderful books about his trip to the moon and resultant life journey, which I have found to be most inspiring (*The Way of the Explorer* and *Psychic Exploration*). I consider such enlightened individuals to be paradigm-shifting pioneers, heralding the next stage of humanity's evolving existence and leading us out of a world that many feel is void of meaning or purpose.

Dr. Mitchell pursued with tireless enthusiasm a passionate interest in deepening our understanding of reality, and of humanity's place in it, that I believe history will revere. In 1973, he created the Institute of Noetic Sciences, or IONS, that to this day carries on Dr. Mitchell's world-changing scientific work around the fundamental nature of consciousness and the universe. Their goal is to advance the concept that we can develop ways of knowing that we are all part of an interconnected whole. IONS conducts original research to broaden our understanding of reality and our human capacity to apply enhanced conscious awareness in our lives. I was heartened to learn about such efforts to bridge science and spirituality; this is not a choice to be made between one or the other. In fact, neither science nor spirituality is able to move forward without acknowledging the crucial role the other has to offer as humanity awakens into wholeness.

Despite my profound shift in view and my thorough academic education, I soon came to realize I was still quite near the bottom of an

ever-steepening learning curve. As I continued to study and research the phenomena of nonlocal consciousness, I learned about various methods used by people to consciously access realms similar to what I had experienced during coma. I was curious to see what might be possible so I enrolled in a seminar on how to achieve different states of consciousness. This is where I encountered Karen Newell in November 2011. Since our meeting came prior to the publication of *Proof of Heaven,* she knew no details of my story. Already familiar with NDEs, she inquired about my spiritual journey during coma.

"Tell me one important thing you learned from your near-death experience," she asked.

"The brain does *not* create consciousness," I quickly answered with adamant enthusiasm.

"Why would anyone think that it *does*?" she replied, confused. "I have always accepted that our consciousness existed before we were born and will continue to exist after we die. How could we *not* have a soul?" she added.

She had never entertained the worldview I had embraced for the 54 years of my life before coma, that of scientific materialism. In fact, she had spent her life very comfortably embedded in a worldview very much the opposite of materialism—that is, believing that mind and mental experience are the fundamental essence of all existence, that mind has complete power over matter, and that our free will has tremendous capacity to change the world. I was drawn to her passion and knowing of that idealism because it was a worldview I was just beginning to assess in my arduous trek toward understanding my NDE. One thing was clear: Karen was an astute and fast thinker and quickly became a valuable sounding board. With her frank and authentic nature, I could always count on her to cut straight to the heart of a matter. I had an immediate sense that we shared a similar mission.

Karen felt very familiar to me, as if I were reencountering a long-lost family member or old friend, and I trusted her immediately. I sensed in her a childlike innocence, open to all possibility, but combined with a powerful sense of presence. Karen's depth of spiritual composure was not apparent only to me. When she met one of my new friends in the medical NDE arena, Dutch cardiologist Pim van Lommel, he almost immediately asked her, "Have you had a near-death experience?"

"No, I haven't," she replied. But he seemed quite certain, and he trusted his intuition. He seemed to sense the same potent energy resonating from her that I had originally felt.

"I wonder if you might have had an NDE as a child," he continued. "Did you have any illnesses or accidents?"

"None that I recall," she responded. "I did have childhood seizures, though. I grew out of them around age 5. But I don't remember anything that might have caused an NDE."

"Sometimes people don't remember, especially if it occurred at a very young age. But I can feel your energy. I'm familiar with the energy in people who've had an NDE, and you definitely emanate that same kind of energy."

As we discussed the common aftereffects of NDEs, it turned out that Karen had experienced several of them, such as a profound appreciation for nature, heightened intuition and sense of knowing, being spiritual but not necessarily religious, and a strong sense of pursuing a higher truth and meaning to life. Karen had developed a passion early in life for exploring deep questions, such as "Why are we here?" and "What is our purpose?" She deduced at a young age that her Methodist church teachings could not answer such questions to her satisfaction. Secular school was likewise lacking. As she grew older, she sought alternative resources for explaining our past and began to read esoteric writings such as the Kabbalah, Theosophical texts, the Dead Sea Scrolls, and other esoteric and mythical writings, such as Plato's discourse on Atlantis (from his *Timaeus* and *Critias*).

While much of it was challenging to fully comprehend and there were many contradictions, she began to note commonalities among different schools of thought. Rather than finding one approach that held all the answers, she was intrigued to find that some concepts were often repeated, such as the incredible value that comes from truly knowing one's inner nature by going within through a practice such as meditation. She avoided strict adherence to any specific discipline, favoring a blend of what she came to call "universal truths."

Karen was quite naive about the science I had spent so much of my life pursuing; I found myself, by comparison, at least as naive about so many spiritual matters that she seemed to know so well. I was just beginning to dive deeply into those uncharted waters, and this required me to

develop new skills in discrimination to help fathom new sensations and concepts in a useful fashion. Although I was quite open to exploring every bit of this new experience of conscious awareness, Karen showed me the necessity for a very high level of discernment in order to separate the wheat from the chaff.

Along with her knowledge base, Karen had been cultivating her forays into consciousness consistently and tenaciously for many years. She had realized that experience is key to full understanding; it's not enough simply to read about certain topics. This was certainly true in my case—it had taken a seven-day coma and miraculous recovery to get my attention. Karen was intrigued by accounts of ancient mystery schools, where initiates would be led through a series of trials to learn the secrets of the universe. With no modern mystery school to attend, she had taken hands-on courses to investigate and develop such skills as lucid dreaming, astral travel, telepathy, remote viewing, self-hypnosis, and different forms of energy healing—many of the practices I had been reading about in my recent scientific research. She found this direct method of learning quite effective at contributing to her depth of knowledge.

Just as I had achieved my greatest lesson from the ordeal of my coma, Karen had learned from a long series of personal experiences. She tried out different theories and techniques by experimenting with and testing them in her daily life. She trusted her own body of personal evidence, which bolstered her strong sense of inner knowing. In this way, she formed a rather unique worldview, much broader than the scientific materialist view I had come to depend on during the years before coma.

There is a considerable difference between *believing* something, and *knowing* it. It is crucial not to simply believe what others say and then adopt those beliefs, including everything stated in this book. It is most beneficial to learn firsthand, to cultivate and trust personal experience in order to develop an inner capacity of knowing. Each of us will proceed on a slightly different path, according to unique motivations and goals. Letting go of ingrained beliefs can be extremely valuable in order to comprehend a situation from a fresh perspective. In fact, this is what science is all about. A truly open-minded scientist considers all available evidence before making any judgment.

CHAPTER 4

MOVING BEYOND MATERIALIST SCIENCE

If you thought that science was certain—well, that is just an error on your part.

—Richard Feynman (1918–1988),
Nobel Prize in Physics, 1965

I'm a surgeon, a skeptic, and a rationalist. I'm the last person to tell you to reject science. But, ideally, the scientific method involves questioning everything, so I *will* encourage you to examine some of the myths and beliefs that mainstream scientists cling to as articles of faith without proper foundation. To function properly, science must be held to a high standard and subjected to regular review. But the construct of scientific understanding of the world is only as strong as its foundational assumptions, and any errors in them will lead to major problems with the conclusions. One such metaphysical assumption (referred to as metaphysical because it is at the foundation of our thinking) is that only the physical world exists, a position known in science as materialism (also called physicalism). Under this theory, such things as thoughts, feelings, emotions, concepts, and consciousness are merely the results of some physical processes and have no real existence in their own right.

Materialist science thus posits that the brain creates consciousness out of purely physical matter—that there is nothing else. It asserts that everything we have ever experienced—every beautiful sunset, every gorgeous symphony, every hug from our child, every experience of falling in love—is merely the electrochemical flickering of around a hundred billion neurons in a three-pound gelatinous mass, sitting in a warm dark bath inside of our head. This school of thought holds that our choices, too, are not made of our own free will; rather, they are merely electrical and chemical reactions throughout the complex anatomy of the brain. And, it says, we are no more than our physical bodies; when they die, we cease to exist.

The problem with that model, the materialist brain-creates-consciousness model, is that not even the world's top experts on the brain have even the remotest idea *how* the brain could create consciousness. It's the modern equivalent of scientists thinking, Well, it sure looks like the sun rises and sets around the earth, so the sun probably revolves around the earth. Mainstream neuroscience just hasn't been doing its homework.

A few years after my quest began, I was invited to confront my pre-coma scientific worldview in a public debate on the question "Is death final?" hosted by Intelligence Squared on National Public Radio in New York City on May 7, 2014. Intelligence Squared is a nonpartisan, nonprofit organization founded in 2006 to "restore civility, reasoned analysis, and constructive public discourse to today's often biased media landscape." I very much looked forward to discussing the more than 2,400-year-old mind-body debate.

Dr. Raymond Moody served as my partner on the "for" position, arguing that, from a perspective of critical thinking and logic, the available evidence suggests the afterlife is real. On the other side were Sean Carroll, a physicist from the California Institute of Technology in Pasadena, and Dr. Steven Novella, a neurologist from Yale, who took the opposing atheistic tack, that death of the physical body is the end of any consciousness or soul. Novella is founder and editor of *Science-Based Medicine,* with a mission to evaluate both traditional and alternative medical care from a scientific perspective. He prides himself on being a professional skeptic so I was hoping he would acknowledge the lack of scientific consensus around consciousness.

Any in-depth review on the current status of materialist neuroscience's

ability to explain the mechanism of consciousness arising from the physical brain will yield absolutely zero—there is no theoretical framework linking the brain and consciousness at all! Admittedly, there are vague propositions that might be useful for certain types of modeling. However, such proposals attempting to relate consciousness and the brain take no steps whatsoever toward addressing the hard problem of consciousness—that is, the explicit mechanisms by which any brain activity results in mental experience.

But Novella's bold opening statement immediately demonstrated his materialist-minded certainty that consciousness arises from the brain.

"How confident are we as a scientific conclusion, which is what we're here to talk about, that the mind is essentially the brain?" Novella began. "Well, we're very certain about that, and we're as confident of that as we are of anything in science. We have a mountain of neuroscience, countless experiments, that look for the neuroanatomical correlates of consciousness, of the brain functioning, of the mind. Everything that you think, feel, believe is something that's happening inside the brain, demonstrably.

"Every element of a near-death experience can be duplicated, can be replicated with drugs, with anoxia, with lack of blood flow, by turning off circuits in the brain. Every single component is a brain experience that we could now reproduce. And we're zeroing in on the exact circuits in the brain which reproduce them."

I doubt that many would question that the brain is somehow linked to mental experience. The problem in Novella's (and other materialists') analysis is the assertion that thoughts, feelings, and beliefs—even consciousness itself—are *caused* by physical brain activity alone.

Neuroscientists today have many fascinating tools and technologies with which to observe, document, and measure physical changes in the brain. There is so much observable data that it is easy to jump to the conclusion that a physical change *causes* the phenomenal experience, when in fact the opposite might actually be the case: the phenomenal experience might cause the enhanced physical activity seen in the brain. This is where they are blindsided by their underlying assumptions. In a lovely analogy (which I borrow from IONS's chief scientist, Dr. Dean Radin), just because sunflowers follow the sun does not mean that their turning causes the sun to move across the sky.

Dr. Wilder Penfield of Montreal is probably in a better position than

most to comment on the linkage between the physical brain and the phenomenology of experience. His professional career involved stimulating the neocortex, the outer surface of the brain, in awake (i.e., not generally anesthetized) patients as part of his surgical treatment of their epilepsy.

Penfield would use an electrode to stimulate the surface of the brain. One such case involved a 16-year-old girl (Case M.G., a violinist since age 5) who presented with seizures and underwent an operation to expose her right temporal lobe.[1] Stimulation of her superior temporal lobe produced a response: "I hear people coming in. I hear music now, a funny little piece." Stimulation was in the posterior aspect, in what is often acknowledged to be the primary acoustic cortex, that is, a main region of sound perception. She went on to explain that the music was a theme song of a children's program she had heard over the radio (an actual memory of a real event). A second stimulation to the same location produced a sensation unrelated to any memory: "People were coming in and out and I heard boom, boom, boom," followed by yet another stimulation: "It's a dream. There are a lot of people. I don't seem to see them, I hear them. I don't hear their talking, I just hear their feet."

Such was the detailed nature of perceptions and memories he encountered through specific electrical point stimulation over the surface of the brain. This stimulation analysis was most useful in defining the crucial functional anatomy of the brain (especially sensory and motor cortex), and was combined with electrocorticography to select damaged brain tissue for removal to eliminate seizures. His daily work for over three decades involved careful recording of experience, perceptions, and memories brought to conscious awareness in his patients through electrical mapping of the neocortex, all in the process of identifying and safely removing abnormal parts of the brain that caused their seizures.

Given my own experience as a specialist in such procedures (brain stimulation during resections in locally anesthetized but awake patients), I know the powers and the pitfalls of the techniques involved. In these fascinating scientific experiments, Penfield came to know more than most neurosurgeons about the relationship of electrode stimulation of small brain regions with the associated phenomenal patient experiences. He adopted the dualistic position (termed "interactionist dualism") that honored human beings as having both a physical brain and a distinctly separate mind and that the brain alone does not explain the mind.

In *Mystery of the Mind,* Penfield said: "I worked as a scientist trying to prove that the brain accounted for the mind and demonstrating as many brain-mechanisms as possible hoping to show how the brain did so. . . . In the end I conclude that there is no good evidence, in spite of new methods, such as the employment of stimulating electrodes, the study of conscious patients and the analysis of epileptic attacks that the brain alone can carry out the work that the mind does. I conclude that it is easier to rationalize man's being on the basis of two elements [mind and brain] than on the basis of one [brain produces mind]."[2]

Sadly, Penfield's observations at that time were marginalized, or misinterpreted, because they didn't fit the pervasive materialist model. And in spite of the gargantuan leaps in our understanding of the workings of the physical brain in recent decades, this notion of "brain creates mind" has not budged in the materialist mind-set. They don't seem to care that they can't find the mechanism—the central issue of the hard problem of consciousness. Novella seemed satisfied merely to declare that one day actual evidence would be found to support their assumptions (known as "promissory materialism").

"We don't have to know how the brain creates consciousness," Novella claimed. "That it creates consciousness, we absolutely know, just like we don't have to know how the earth generates gravity to know that it generates gravity. There's no question we have gravity even though we haven't untangled the deepest understanding of every possible thing. So yes, we don't know exactly how the brain creates consciousness, but the evidence can only lead to one interpretation, that it is consciousness. The consciousness is what the brain does, no question."

"No neuroscientist on earth can give the first sentence to explain a mechanism by which the physical brain gives rise to consciousness," I challenged Novella.

"Is that—is that true?" our seemingly shocked moderator asked Novella.

"It's not a black or white thing," Novella answered. "We have some knowledge. We don't have complete knowledge about it. It's like saying, 'Do we understand everything about genetics?' No. But we know that DNA is the molecule of inheritance. That's not questionable."

"But not one sentence. Give the first sentence of how you would trace from the physical brain that it gives rise to consciousness," I pressed on.

Novella was at a loss for words.

As a former believer of scientific materialism, I can certainly understand how one becomes addicted to the kind of simplistic thinking that links the brain and consciousness in the materialists' way. And I have come to see that *true* open-minded skepticism is one of the most powerful commodities in this enterprise. However, most of those in our culture who proudly claim to be skeptics are actually just the opposite—I call them pseudoskeptics. They have already made up their minds on the issue based on prejudices that often involve adherence to a particular belief system, such as scientific materialism. Their mind-set is the antithesis of what many hold to be the ideal of scientific thinking—approaching such deep questions with the most open mind possible, untainted by premature conclusions.

I hoped to have a richer exchange with the other speaker in the debate, Sean Carroll, who wrote *From Eternity to Here,* a deeply intellectual examination of the extreme challenges of understanding the nature of time in modern physics. He seemed a worthy opponent, given his impressive background in physics and a special interest in how quantum mechanics affects cosmology. I had come to see the crucial role that quantum physics played in understanding the mind-brain relationship, given that such experiments examine the very interface of the physical world (especially represented by the brain), and our knowledge of it (represented by the mind). Thus, I eagerly anticipated his deeper thoughts on the matter.

"I think it's important to point out, from my point of view, what drove the founding fathers of [quantum mechanics] into mysticism was the fact that getting at the very depths of trying to understand subatomic reality, they were led to believe that consciousness, *the observing mind,* actually played a role in the unfolding of what was being observed. And I think that that mystery, to my satisfaction, has not really been solved," I asserted.

I would have been supported by many in the global physics community in pointing out the very deep mystery of the measurement paradox in quantum physics. What greatly impressed the brilliant minds trying to make sense of it all in the first half of the 20th century (notably, the Hungarian American mathematician John von Neumann and theoretical physicist Eugene Wigner) was that the conscious *choice* of the observer was absolutely crucial in determining the measured outcome.

Any such subatomic observation thus depended on its perception by a sentient being. Even the insertion of a robot operating a random number generator failed to bypass the necessity of the mind of the observer in the interpretation of such results. There is no way to get behind the absolute requirement of the observing mind in interpreting the results of quantum experiments, leading some to the startling conclusion that *consciousness paints reality.*

Those founding fathers of quantum physics would be even more mystified today by ever more refined experiments. The physics community has only become more befuddled by recent experimental results suggesting that there is no objective external reality and that consciousness (the observer) is at the very core of all of emergent reality. The results are most insistent that we acknowledge that consciousness plays a significant role in the universe, but this has been a tough pill for the scientific community at large to swallow.

Carroll's answer to my question summarily dismissed the wonder of this finding: "The thing about Einstein, Bohr, de Broglie, etc., the founders of quantum mechanics, is that they're all dead, and they have been dead for many decades. And we know what's going on much better now than we did back then. They were inventing quantum mechanics, and occasionally they toyed with the idea that somehow consciousness had something to do with the fundamental laws of quantum mechanics. Now we know better."

Recent scientists have not "figured it all out," as Carroll claimed. In fact, recent studies are even more mystifying. Yet he, and like-minded thinkers, refuse even to consider that consciousness could be playing a significant role in our unfolding reality. He maintained that one can simply ignore the findings that led to such a deep sense of mystery those earlier brilliant physicists had in recognizing the key role of consciousness. In my view, however, that is shortsighted.

Admittedly, I had paid no attention to the scientific research on NDEs prior to my coma, but once I began reviewing it with a newly opened mind, I was stunned at the depth of its revelations. In fact, the evidence that we can access realms beyond the local here and now of the physical brain and its attached senses is quite strong. NDE reports by the tens of thousands—and similarly numerous reports of deathbed visions, after-death communications, shared-death experiences, and past-life memories

in children indicative of reincarnation—represent data that demand explanation if one has any interest in understanding the world as it is, and not just as they think it should be.

The oft-heard cry from the skeptical community concerning the bolder claims from those investigating paranormal or psi phenomena is "extraordinary claims demand extraordinary evidence." Supporting data are actually abundant once you bypass the simplistic outright denial of it, but not only did Carroll completely ignore existing evidence, he expected any "new" evidence to be unmistakable.

"So, what are we actually being asked to accept?" Carroll asked. "What should we expect the world to be like if death were not actually final? For one thing, I would expect that the existence of souls persisting in the afterlife should be perfectly obvious. It should be just as clear that heaven exists as it is clear that Canada exists. But, in fact, it seems that the souls persisting in the afterlife are kind of shy. They don't talk to us, except sometimes they do talk to us."

I was struck by his statement that "souls persisting in the afterlife should be perfectly obvious," as if every scientific observation is "perfectly obvious." I wondered if, as a physicist, he had heard of neutrinos because they are very subtle (more so than Canada, at least), with those originating in the sun passing through the earth by the quadrillion quadrillions every second, hardly even noticing the planet as they zip through it as if through empty space. The existence of neutrinos is not in doubt to most physicists, neutrinos being a very subtle form of matter, yet their existence is crucial to evolving models of subatomic physics. The fact that they are not as obvious as Canada does not mean they do not exist.

Applying such a double standard makes it next to impossible for such studies ever to demonstrate "significance." Examination of the statistical threshold used to separate a real finding from one due to chance alone clarifies this prejudice.

In a controversial 2011 report entitled "Feeling the Future,"[3] psychologist Daryl Bem of Cornell University presented compelling evidence of precognition—that is, that people demonstrate conscious cognitive awareness of impending stimuli seconds *before* the computer has randomly selected the stimulus to present (!). A follow-up meta-analysis,[4] rigorously constructed from ninety experiments in thirty-three different laboratories spread across fourteen countries, confirmed this experimental violation of

the most fundamental notions of materialist science and our commonsense ideas about cause and effect and the nature of time itself. Bem's work ignited a firestorm of fierce criticism among conventional materialist scientists.

The widely accepted standard *p* value (the probability that a given relationship could be due to chance alone) for most biomedical studies is placed at $p < 0.05$ (meaning that the statistical likelihood of the observations would be expected by chance to occur less than 5 percent of the time, or less than one time in 20). By comparison, Bem concluded that the probability that the observations in his meta-analysis could occur by chance alone to be 0.000000012 percent, an astronomically robust finding of significance, and yet it is not enough to persuade the hard-core "skeptic." They are basically setting the bar at a level impossible to meet.

I came away from the debate disappointed in Carroll's and Novella's refusal to apply the same scientific standard—the openness of mind, the pursuit of honest results—to the question of consciousness, rather than trying to fit evidence into a predetermined conclusion. Unlike them, many scientists and physicians are quite aware of the deep nature of this recent turn in the mind-body discussion, and are wide open to the novel possibilities for human potential. Unfortunately, some do remain stuck in the conventional paradigm.

Occasionally, one encounters what can best be described as an irrational fear of this grander view of consciousness among supporters of the materialist position. Such prejudicial commitment to worldviews hardly seems scientific, suggesting a deep cause for such a bias in otherwise well-meaning and intelligent people. I believe such posturing is an echo from four centuries ago, when the scientific revolution was born of the ravages of the Dark Ages, by intellectual giants such as Galileo Galilei, Sir Francis Bacon, Sir Isaac Newton, and Giordano Bruno. They were seeking the laws governing the natural world, yet if they strayed remotely into the territory of mind or consciousness, they were likely to be burned at the stake by the far more powerful church (as Bruno indeed was). Science began to replace mysticism, shamanism, and spirituality as a source of truth for many. In reality, pure science and spirituality together have always provided rich sources of truth, but the vague, impure shadows of science and religion (as a proxy for spirituality) have often been pitted against each other, to their mutual detriment.

The worldview postulating man to be separate from nature in this

dance of discovery was perpetuated by those studying the natural sciences. Naturalism proposes that everything arises from natural properties and causes, completely excluding or discounting supernatural or spiritual explanations. Even with the advent of quantum physics in the early 20th century, that sense of separation has become ingrained to the point where it is now inherent in the very structure of our thought. Our foundational assumptions are crucial to our understanding—but what a source of mischief! As the great German philosopher Arthur Schopenhauer said, "The discovery of truth is prevented more effectively, not by the false appearance of things present and which mislead into error, not directly by weakness of the reasoning powers, but by preconceived opinion, by prejudice."

As Western science has delved ever more deeply into investigating the workings of the brain through more refined tools and techniques, some scientists have become increasingly shocked by the seemingly bottomless depths around the phenomenon of consciousness itself. Those who took on the challenge have confessed, after various periods of struggle, that the evidence suggests *mind* is much more than can be explained by *brain*. These more advanced thinkers (including Roger Penrose, Henry Stapp, Brian Josephson, Amit Goswami, Bernard Carr, Dean Radin, and Menas Kafatos, among others) suggest that one cannot explain conscious experience as arising totally from the physical brain.

The evidence that the brain is not the producer of consciousness emerges from clinically reported phenomena, including (1) terminal lucidity, in which elderly demented patients surprisingly demonstrate episodes of great reflection, interaction, and communication with those around them that completely defy the ability of such a badly damaged brain to muster such memories and insightful sharing;[5] (2) acquired savant syndromes, in which some form of brain damage, such as a stroke, head injury, or autism, unmasks some superhuman mental capacity, e.g., the ability to calculate pi to thousands of digits in one's head, or the ability to have perfect memory of every name and number in a phone book where the subject only glanced at any given page for seconds; (3) numerous recent experiments during extraordinary psychedelic drug experiences, assessing that the greatest mental experiences involved a significant *decrease* in regional brain activity found in especially crucial junctional

regions of massive interconnection between major brain areas (see Chapter 8).

Another crucial piece of evidence worthy of more extensive review is the assumption of materialist science that memories are stored in the brain. This idea is so ingrained in our culture that it seems to have become a popular "fact" for many. My coma experience proved especially difficult to understand given my prior notion that memory must somehow be stored in the physical brain. For example, with my brain so damaged, how did my memories of pre-coma knowledge and personal events return in the months after awakening in the ICU? Where did they come from? Was it simply that, as the physical brain recovered, memories stored there were refreshed? Given the severity and duration of my illness, such high-level recovery should have been impossible. Eventually, I came to realize through subtle evidence over the next few years that, in fact, my memories had come back even more complete than they had been before my coma.

One instance of this phenomenon concerns a man named Will who used to perform odd jobs in our home in the early 1960s, when I was approximately 10 years old. I reminisced about him with my father in the early 1990s, when the most sophisticated information I could retrieve about Will concerned a certain limp in his walk (after a mild stroke), but precious little else in the way of any specific memories.

Fast-forward two decades (to a time *after* my coma) to a conversation I shared with my mother concerning the same man. I recalled specific memories of driving with Dad in his 1957 Thunderbird to pick Will up at the Greystone Hotel, across Fourth Street from the Winston Theater, to bring him home to help with some tasks. I even remembered how Will had cut his right index finger while repairing part of our basement oil furnace, and that Dad then drove him over to his office at the Baptist Hospital to place five sutures in the laceration. *None* of those details had been part of my earlier reminiscences with Dad in the early '90s.

How could memories become *more* vivid and detailed after such a devastating brain malady? Here was another mystery to address. Conventional neuroscience teaches that memories are stored in some form in the neural networks of the physical brain. However, the neuroscientific community has been seeking such a site for the physical storage of memories

in the brain for more than a century, to no avail. Although scientific reports in recent years have made various claims about mechanisms of memory storage in the physical brain, the supposed mechanisms and structures vary considerably—there is nothing remotely approaching a consensus. Especially as to the actual *location* of memory storage, the brain has proven absolutely mute on offering any possible answers.

Recall a memory from your childhood, say, from 3 or 4 years of age. Most people can pretty readily summon a few back to age 2 or so, and some can actively reminisce scenes going back even closer to birth. Close your eyes and let that recollection return fully to repaint the experience for you. Think of any other people involved in the memory, and associated sights, sounds, and, especially, feelings. Strong emotions enhance our ability to commit certain experiences to long-term memory, and can aid in their recovery. Our sense of smell can also provide a strong stimulus for evoking certain memories—a specific perfume may bring back recall of one's grandmother, or a whiff of tobacco smoke might awaken thoughts of a grandfather. Let your mind wander to any other memories that might be lurking right at the edge of awareness from similar early years, and marvel at the mind's ability to revive such moments.

The materialist model attempts to encode such memories in the molecular details of synaptic connections of neurons with one another. Whatever atoms and molecules were involved in the initial encoding of a given memory more than half a century ago, they have since been replaced numerous times, yet the memory has been retained. Although one might argue that the original synaptic constituents have been replaced faithfully with similar atoms and molecules over time, the fact remains that the memory is recalled from different material than that in which it was (allegedly) originally stored.

Since the 1940s, neurosurgeons have realized that small regions of the medial temporal lobes (including the hippocampi) seem to be crucial in the general conversion of short-term to long-term memory, but that does not seem to be the actual locale of memory storage. Damage here has no impact on the retrieval of old memories, only on the formation of new ones. This evidence supports the notion of the brain as a receiver or filter for primordial consciousness, but not the producer of it nor the location of memory storage.

One rarely discussed mystery in the world of clinical neurosurgery

involves brain resections (removing a part of the brain tissue) and memory storage. If one assumes that memories are based in the neocortex, then one would expect to see some definable patterns of memory loss following major brain resections, yet that is not the case. This failure to locate physical storage of memory within the brain provides some of the strongest evidence against the materialist position that somehow the brain must be the source of memory, and of conscious awareness.

In fact, over three productive decades, Dr. Wilder Penfield achieved major revelations that suggest memories are not actually stored in the brain at all (see Appendix A). Although Penfield's work initially led him to believe that he was hot on the trail of the locale of memory itself, he soon came to realize that the picture was not nearly so simple. Electrical stimulation over the temporal lobes elicited interesting and often reproducible reports from his patients, but not in any consistent way that demonstrated anything more than that the physical brain provided some interface that allowed for the retrieval of memories. He even reported situations in which a cortical region associated with a reproducible memory had been entirely removed, and yet the patients reported the same memories perfectly! The reigning materialist assumption that memories are stored in the brain was not borne out by his decades of intensive study.

The inability to identify any physical location of memory in the brain is one of the greatest clues that materialism is a failed worldview. The more we learn about the structure and biology of the brain, the clearer it becomes that the brain does *not* create consciousness, nor serve as the repository for memory. The brain doesn't produce consciousness any more than it produces sound waves when you hear music. In fact, the situation is just the opposite: We are conscious *in spite of* our brain.

Materialist science as a foundation for comprehending our reality is at a dead end. We are long overdue to rise above this facade, and this demands the robust incorporation of consciousness into our working model of the universe. A convergence of understanding about our approach to science, our universe, and ourselves is the only way forward. For those with the most open minds, this is where science finds itself now, in the early 21st century, as it finally comes closer to some understanding of the depths of the mind-body debate. This fascinating investigation into the fundamental nature of reality is directly relevant to us all.

CHAPTER 5

THE PRIMORDIAL MIND HYPOTHESIS

> The universe begins to look more like a great thought than a great machine. . . . We . . . ought rather to hail [Mind] as the creator and governor of this realm.
>
> —Sir James Jeans (1877–1946), British astrophysicist

As I progressed in my search for answers, my challenge was to explain two profound mysteries: How could progressive infection of my neocortex have allowed for such a wildly expansive and ultrareal conscious awareness like the one that occurred deep in my coma? And what is the fundamental nature of that indescribably comforting force of knowing, trust, and pure unconditional love—that basic intelligence and creativity (that many have identified as God or Supreme Deity)—at the source of it all? My coma journey suggested that consciousness originated from that core essence of the universe. How might I connect it all?

I began to review the many different models that explained the relationship between mind and brain. The entire scope of possible answers to the mind-body discussion can be envisioned as a linear spectrum

anchored by two opposite poles, with materialism at one end (brain creates mind) and metaphysical idealism (mind creates brain, and all physical matter) at the other. Between the two poles lie many options of "dualism" that accept some existence of mind that is not simply reducible or explained by the physical brain. Dualism allows for brain and mind to coexist in some parallel fashion (as Wilder Penfield and other researchers have surmised).

Along with its other limitations, materialism proposes that humans have no free will whatsoever, given the view that the illusion of consciousness simply follows the natural laws of physics and chemistry applied to the substance of the brain. But what about any free will that might be involved in our deciding whether or not we have free will? Is that process likewise simply the result of a chain of chemical reactions in the brain that predictably falls into "yes" for some minds and "no" for others? To fully accept the materialist explanation requires acknowledgment that humans have no free will. For me, this was the crowning blow that eliminated materialism from the list of possible positions vis-à-vis the mind-body question.

Such fundamental questions as mine demanded a broader search, but it was not obvious where to turn. Religions and mystical traditions certainly acknowledged the existence of a creative force in the universe and were consistent with my experience, but this alone was not enough; my scientific mind demanded further elucidation. And for this, I turned to quantum physics.

Quantum physics—that is, the behavior of molecules, atoms, and their constituents in the microscopic realm—is the most proven theory in the history of science. The success of the underlying math and physics supports roughly a third of the world's economy (in the form of microelectronics, notably cell phones, computers, televisions, and GPS systems). Yet in the roughly 115 years of its existence, the scientific community has made no real progress in interpreting what the experimental results in quantum physics actually imply about the nature of reality.

One reason for this difficulty has to do with the fact that quantum physics deals directly with the mind-body question at a most fundamental level. Quantum physics ultimately addresses the intersection of our minds (knowledge) with the matter being observed (the physical). When