WHY GOD WON'T GO AWAY

Brain Science
and the Biology of Belief

ANDREW NEWBERG, M.D.
EUGENE D'AQUILI, M.D., Ph.D.
and VINCE RAUSE

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REALER THAN REAL

The Mind in Search of Absolutes

There is a theory which states that if ever anybody discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable. There is another theory which states that this has already happened.

—Douglas Adams
The Restaurant at the End of the Universe

The universe certainly is strange, but to the average rationally minded individual, nothing is stranger, no concept can be more bizarre and inexplicable, than the claims of the mystics that another plane of being exists that is literally more real than the reality of the material universe. The transcendent reality they describe, in fact, would absorb the material world, along with the subjective self that perceives it, into the spiritual All, or the mystical Nothing, depending upon your metaphysical point of view.

Common sense, which tells us that nothing can be more real than the ground we walk on, or the chair in which we sit, compels us to reject this mystical reality as nonsense. A fair examination of

mystical experience, however, shows that this is not so easy to do. As we've seen, mystics are not necessarily the victims of delusion, rather, their experiences are based in observable functions of the brain. The neurological roots of these experiences would render them as convincingly real as any other of the brain's perceptions. In this sense, the mystics are not talking nonsense; they are reporting genuine, neurobiological events.

This is the conclusion to which our research draws us; it forces us to ask a provocative question about the ultimate nature of human spirituality: Can all spirituality and any experience of the reality of God be reduced to a fleeting rush of electrochemical blips and flashes, racing along the neural pathways of the brain? Based upon our current understanding of the manner in which the brain turns neural input into the perceptions of human experience, the simplest answer is *yes*.

Are we saying, then, that God is just an idea, with no more absolute substance than a fantasy or a dream? Based upon our best understanding of how the mind interprets the perceptions of the brain, the simplest answer is *no*.

Our own brain science can neither prove nor disprove the existence of God, at least not with simple answers. The neurobiological aspects of spiritual experience support the *sense* of the realness of God. Yet we interpret and funnel that which our brain tells us is real through our subjective self-awareness. So, before we look further at the functions of the brain that links us to God, we need to discuss what the brain does to tell us that something is real—and why we believe it.

THE SCIENCE OF THE MYSTICS

We can most likely agree that there are two kinds of reality: the solid, objective external reality that we think of as "the world,"

and the inner, subjective sense of reality that we attribute to "the self." Based on everyday experience, we can't really dispute the realness of either one. Nor can we dispute the fact that one is essentially different from the other. If we agree that they are fundamentally different, however, and if they are the only two ways in which reality can exist, then logically only one of them can represent reality in its more fundamental form. In other words, either the objective external world or our subjective awareness of that world and the sense of self must be the real reality—the primary, ultimate reality. By definition, ultimate reality must be the source of everything that is real, so subjective and objective reality cannot both be true. One must be the source of the other.

Philosophers have struggled for centuries to understand the relationship between subjective and objective reality. And they are struggling still. Yet most of us are able to coexist comfortably in both. It is beyond the scope of this book, and far beyond the aims of this chapter, to chronicle the milestones in this epic intellectual quest, or to summarize their endless and often impenetrable arguments. Our goal here is to understand, as accurately and logically as possible, what the neurobiological "realness" of spiritual experience might imply. Since we hope to reach this understanding in a way that will satisfy the empirical demands of science, we'll begin by discussing the concept of reality that has provided the foundation for centuries of scientific thought.

WILL THE REAL REALITY, PLEASE . . .

In simplest terms, "scientific," or objective, reality is based on the belief that nothing is more real than the material world. In this view, external reality—the physical, material universe—is primary fundamental reality. Everything that is real, exists in, or has risen from, the material elements and forces of the universe. Even the

human brain, and the subjective mind it makes possible, are material in nature, having evolved, like all biological systems, from some primordial ooze.

Mystics, however, have different ideas about what is fundamentally real. They believe they have experienced a primary reality that runs deeper than material existence—a state of pure being that encompasses the lesser realities of the external world and the subjective self. Science rejects this claim, not only because it holds that nothing in existence is more real than the reality of matter, but also because it cannot accept that something other than science, especially something as subjective and unmeasureable as mystical experience, can yield useful truth about what is fundamentally real.

The organizing principle of science declares that everything that is real can be measured, and scientific methods are the only measurements that count. So whatever can't be measured, weighed, counted, scanned, or otherwise analytically understood by scientific methods cannot, with any confidence, be called real. Science alone can recognize reality; Sigmund Freud said as much when he wrote, "Science is not an illusion! An illusion it would be to suppose that what science cannot give we can get elsewhere."[1]

In other words, the reality of the mystics cannot be considered real because it cannot be verified scientifically. We authors, as scientists, might have readily embraced this same conclusion had we not been convinced, by our own research, that the claims of the mystics just might be true. Science and mysticism, of course, are strange bedfellows, so let's retrace the steps that led us to this iconoclastic conclusion.

Gene and I began, as all scientists do, with the fundamental assumption that all that is really real is material. We regarded the brain as a biological machine, composed of matter and created by evolution to perceive and interact with the physical world.

After years of research, however, our understanding of various key brain structures and the way information is channeled along

neural pathways led us to hypothesize that the brain possesses a neurological mechanism for self-transcendence. When taken to its extreme, this mechanism, we believed, would erase the mind's sense of self and undo any conscious awareness of an external world.

This hypothesis was later supported by our SPECT scan studies, which began to shed light on the neurological correlates of spiritual experience. In the narrowest scientific view, it would be possible to believe that we had reduced all spiritual transcendence—from the mildest case of religious uplift, to the profound states of union described by mystics—to a neurochemical commotion in the brain.

But our understanding of the brain would not allow us to rest with that conclusion. We knew, after all, that everything the mind experiences is tracked in the brain. A SPECT scan of an opera lover listening to Puccini, for example, would reduce "Nessun Dorma" to multicolored blotches, but that would not diminish the beauty of the aria. The music, and the enjoyment it provided, would still be very real. The memory of the music, too, and the emotional pull of the tragedy of *Turandot*, are real. Even if you were to "play" the music and drama again only in your mind, many of the same parts of the brain would be reactivated. Perhaps even your body would get the same goose bumps evoked by Puccini's heartbreaking lyrical melody, its crescendos and pianissimos. You would clearly be hearing the music, but only inside your head. Yet the existence of the music and its nonverbal power are still, neurologically, quite real.

All perceptions exist in the mind. The earth beneath your feet, the chair you're sitting in, the book you hold in your hands may all seem unquestionably solid and real, but they are known to you only as secondhand neurological perceptions, as blips and flashes racing along the neural pathways inside your skull. If you were to dismiss spiritual experience as "mere" neurological activities, you would also have to distrust all of your own brain's perceptions of

the material world. On the other hand, if we do trust our perceptions of the physical world, we have no rational reason to declare that spiritual experience is a fiction that is "only" in the mind.

At this point in our research, science had brought us as far as it could, and we were left with two mutually exclusive possibilities: either spiritual experience is nothing more than a neurological construct created by and contained within the brain, or the state of absolute union that the mystics describe does in fact exist and the mind has developed the capability to perceive it.

Science offers no clear way to resolve this question. But we knew that at least we had found a new framework for understanding the phenomenon of mystical experience, no matter what reality these brain states ultimately represent.

The transcendent state we call Absolute Unitary Being refers to states known by various names in different cultures—the Tao, Nirvana, the *Unio Mystica*, Brahman-atman—but which every persuasion describes in strikingly similar terms. It is a state of pure awareness, a clear and vivid consciousness of *no-thing*. Yet it is also a sudden, vivid consciousness of *everything* as an undifferentiated whole.

Although mystics report that this state of ultimate being cannot be understood through reason, or even rationally described, that hasn't stopped legions from trying. Most written accounts, while intriguing, are hopelessly perplexing and often contradictory. This does not mean that they are not true, however, or that they do not describe reality accurately.

Consider, for example, the words of the modern Zen master Huang Po, describing the ultimate state of being he calls One Mind:

> All the Buddhas and all sentient beings are nothing but One Mind, beside which nothing exists. This Mind, which is without beginning, is unborn and indestructible. It is not green or yellow, and has neither form nor appearance, it

> does not belong to the categories of things which exist or do not exist, nor can it be thought of in terms of new or old. It is neither long nor short, big nor small, for it transcends all limits, measures, names, traces, and comparisons. Only awake to the One Mind.[2]

It is difficult for the rational mind to accept these cryptic pronouncements as fact: The One Mind is uncreated; it is *not* nonexistent, but at the same time cannot be said to exist; it transcends all limits and comparisons; and, outside of this One Mind, nothing else is real.

To anyone who has not experienced such a unitary state mentally and physically, the meaning of these concepts may be difficult to grasp. Ironically, the state must be felt to be believed by both body and mind, even though both body and mind are transcended by it. But mystics insist that it is completely possible to understand—and attain—if we set aside our subjective disbelief. Absolute Unitary Being is described as a state without time, space, and physical sensations; with no discrete awareness of any material reality at all. Ironically, again, the attainment of absolute unitary being requires a mental journey into the deepest parts of the self, yet those who have reached this ultimate state agree that subjective self-awareness utterly vanishes once Absolute Unitary Being has been achieved. So, to get to this state we have to use the mind to get beyond the mind. The mind has to get out of its own way.

This obliteration of the self may be the most difficult concept for the rational mind to comprehend. We are so at home in the state of subjective awareness that we find it hard to fathom how a mind that does not contain a specific self can be much of a mind at all. It is possible, however, for awareness to exist without the subjective focus of a self. In fact, we all begin life with selfless minds.

All human babies are born with the neurological potential to form a self, but they do this through living and experiencing the

world as they grow older. The development of the self also requires the development of certain neural connections in the brain.

HOW THE MIND MAKES THE SELF

The process by which the self is derived is a mystery, but we believe it might arise through a process of reification—the ability to convert a concept into a concrete thing, or, more succinctly, to bestow upon something the quality of being real or true. In its neurological definition, the term refers to the power of the mind to grant meaning and substance to its own perceptions, thoughts, and beliefs, and to regard them as meaningful.

For example, it's the reifying power of the mind, granted primarily through the function that we call the abstractive operator, within the inferior parietal lobe, that allows you to look at a watermelon, a berry, a rock-hard coconut, or a soft fuzzy peach and recognize them all as "fruit." But reification not only allows you to recognize the essential sameness of things, it also enables you to perceive them as substantial and real. We previously described this brain function as the existential operator.

Making the world concrete—the process of reification—may play an important role in the neural development of the self. The young brain starts dealing with the world beyond its internal feelings and operations by making sounds and physical actions. At first, the brain puts out these behaviors, then it observes and analyzes and inputs them as new information. Eventually, the brain identifies, or *reifies*, these actions, thoughts, and feelings as the self.

For example, imagine a baby laughing in his crib. The moment the laughter is audible it becomes a part of the external world and is delivered to the baby's brain as new sensory input, which the brain recognizes as the result of its own neurological function. At the same time, the baby's brain perceives the presence of the mother,

who responds to the sound of laughter by clapping her hands in delight. The child's brain can find no correlation within itself for this behavior; in other words, it recognizes the mother's behavior as something other than itself.

By comparing these perceptions, the baby's brain begins to recognize two general categories of sensory input—the first is input resulting from his behavior, the second is input from behaviors he does not generate or control. We believe that the perception of these categories is the first step in the brain's inclination to draw a line between the inner reality of the self and the external reality of the world.

As his experience with the outside world continues, the child's brain is able to recognize more and more behaviors that seem to be his own. Eventually, those various independent functions—thoughts, emotions, intentions, actions, and memories—are all categorized as a single, distinct, meaningful construct. In other words, they become reified into the specific, familiar, enduring, and highly personal "self."

This process of how the brain makes the self is theoretical, of course, but highly probable. And it makes some important points: The self is not the same as the mind. The mind exists before the self and, in one way or another, it supplies the essential memories, emotions, and other component parts from which the self is assembled.

If these components could somehow be undone, the self would come unraveled. We believe that this is exactly what happens when the orientation association area, as well as other areas that might help to provide a sense of the self, becomes deafferented—deprived of new sensory input. These areas are also cut off from the memories, emotions, and patterns of behavior that the mind recognizes as the self. Deafferentation does not deprive the mind of awareness, it simply frees that awareness of the usual subjective sense of self, and from all sense of the spatial world in which that self could be.

The result of such a lack of input, almost certainly, would be a

state of pure awareness, an awareness stripped of ego, focused on nothing, oblivious to the passage of time and physical sensation. This awareness would be neurobiologically incapable of differentiating between subject and object, between the limited personal self and the external, material world. It would perceive and interpret reality as a formless unified whole, with no limits, no substance, no beginning, and no end.

All the assembled constructs of the conscious mind—the emotions, memories, thoughts, and unformed intuitions by which we know our selves—would come undone, and dissolve into this underlying pure awareness, which would be our deepest, truest self, the universal self the mystics describe.

"The way in which you come to know you are you," says contemporary Buddhist minister Leslie Kuwamara, "is by a process of elimination." For Taoist sage Li Po, the evaporation of the illusory self provides the clarity we need if we are to recognize, without question, what is truly and, most simply, real:

> The birds have vanished into the sky,
> and now the last cloud drains away.
>
> We sit together, the mountain and me,
> until only the mountain remains.[3]

They are dealing with the same data but interpreting it differently because they have received the Logos

While our neurological model offers a plausible explanation of how we experience the mystical state of pure awareness, it proves nothing about the ultimate nature of Absolute Unitary Being. It does not explain whether absolute being is nothing more than a brain state or, as mystics claim, the essence of what is most fundamentally real. Yet our work has convinced us that the mystics, at the very least, are not delusional or psychotic: They are certain beyond a shadow of a doubt that their experiences are real.

Since no empirical method can objectively test that realness, we have to turn instead to the more subjective approach of the philosophers. After centuries of inquiry, philosophers have come to suggest that true reality possesses an unmistakable quality. The Stoics defined this quality as the *phantasia catalyptica*; certain modern German thinkers call it *Anweisenheit*, and phenomenologists describe it as intentionality.

All these phrases mean that what's real simply feels more real than what's not. This may seem an unsatisfyingly soft standard, but it is the best guidance that the greatest minds and experts have produced.[4] In most cases, it works quite well, and all other approaches to this problem are ultimately reduced to this assertion.

For example, dreams can feel remarkably real while the dream state persists, but when we wake, the insubstantial nature of the dream state becomes immediately clear. We consider waking reality a higher degree of reality than the reality of dreams, because it feels more convincingly real. We could say the same about the reality of daydreaming, or of various hallucinatory states. Each of these realities may seem quite real while it persists, but when it ends, and we consider it contrasted with ordinary, or "baseline" reality, we dismiss it as something less than real.

The realness of the material world, therefore, is made clear to us when we compare it with other states. Since most of us have never experienced a state more real than the one our mind portrays for us every day, we have no reason to suspect that any higher reality exists beyond our subjective awareness of the material world. More important, we have no experimental reason to believe that any higher reality is even possible.

Those who have experienced advanced states of mystical unity, however, claim that these states do feel like a higher reality. Passionately and consistently, with a preponderance of agreement that stretches across history and embraces all faiths, they insist that

when compared to our baseline sense of reality, Absolute Unitary Being is more vividly, more convincingly real.

The mystics' claims are supported by some of the greatest scientists of the century—rational thinkers who have peered deeper than most into the workings of the universe and the mind and have described states of transcendent spiritual awareness in words that mirror the accounts of the gurus, shamans, and saints in remarkably specific detail. Robert Oppenheimer, Neils Bohr, Carl Jung, and John Lilly are among the prominent scientific figures whose work has revealed to them a unity and purpose in the workings of the universe that transcend the material world.

Most impressive, perhaps, are the accounts of physicists Albert Einstein and Edwin Schrödinger, two great thinkers who have perhaps understood the nature of scientific reality most clearly. The theories for which these men are best known—Einstein's relativity and Schrödinger's quantum mechanics—provide our most basic understandings of how the universe functions; much of our understanding of physical reality is based upon them. Scientifically, Einstein and Schrödinger did not agree on the fundamental nature of existence—Einstein could never accept the pretzel logic of quantum theory—but their lifelong preoccupation with the gears and cogs and forces that gave birth to, and sustain the world, led each of them to a deeper understanding of the essence of things. On that profound level, they seem to find agreement.

For Einstein, this understanding expressed itself as a longing for something larger than himself, an experience he referred to a "cosmic religious feeling":

> It is very difficult to explain this feeling to anyone who is entirely without it, especially as there is no anthropomorphic conception of God corresponding to it. The individual feels the nothingness of human desires and aims and the

> sublimity and marvelous order which reveal themselves both in Nature and in the world of thought. He looks upon individual existence as a sort of prison and wants to experience the universe as a single significant whole.[5]

For Schrödinger, the wholeness Einstein longs for is satisfied in the apprehension of the oneness of all things:

> Inconceivable as it seems to ordinary reason, you—and all other conscious beings as such—are all in all. Hence, this life of yours you are living is not merely a piece of the entire existence, but is in a certain sense the whole.... Thus, you can throw yourself flat on the ground, stretched out upon Mother Earth with a certain conviction you are one with her and she with you. You are as firmly established, as invulnerable as she, indeed a thousand times firmer and more invulnerable.[6]

In the opinion of biologist Edwin Chargaff, all real scientists are driven by the mysterious intuition that something immense and unknowable dwells in the material world: "If [a scientist] has not experienced, at least a few times in his life, this cold shudder down his spine, this confrontation with an immense, invisible face whose breath moves him to tears, he is not a scientist."[7]

It seems that even the self-avowed agnostic Carl Sagan was not immune to the "mysterious intuition" Chargaff describes. In his novel *Contact*, his main character, scientist Ellie Arroway, describes a profound personal experience in terms every ancient mystic would recognize:

> I had an experience I can't prove. I can't even explain it, but everything I know as a human being, everything that I am tells me that it was real. I was part of something wonderful,

> something that changed me forever; a vision of the Universe that tells us undeniably how tiny, and insignificant, and how rare and precious we all are. A vision that tells us we belong to something that is greater than ourselves. That we are not, that none of us is, alone.[8]

Logic suggests that what is less real must be contained by what is more real, just as a dream is contained within the mind of a dreamer. So, if Absolute Unitary Being truly is more real than subjective or objective reality—more real, that is, than the external world and the subjective awareness of the self—then the self and the world must be contained within, and perhaps created by, the reality of Absolute Unitary Being.

Again, we cannot objectively prove the actual existence of Absolute Unitary Being, but our understanding of the brain and the way it judges for us what is real argues compellingly that the existence of an absolute higher reality or power is at least as rationally possible as is the existence of a purely material world.[9]

Although the notion of a reality more real than the one in which we live is difficult to accept without personal experience, when the mind drops its subjective preoccupation with the needs of the self and the material distractions of the world, it can perceive this greater reality. Mystical reality holds, and the neurology does not contradict it, that beneath the mind's perception of thoughts, memories, emotions, and objects, beneath the subjective awareness we think of as the self, there is a deeper self, a state of pure awareness that sees beyond the limits of subject and object, and rests in a universe where all things are one.

> Siddhartha listened. He was now listening intently, completely absorbed, quite empty, taking in everything. He felt that he had now completely learned the art of listening. He

had often heard all this before, all these numerous voices in the river, but today they sounded different. He could no longer distinguish the different voices—the merry voice from the weeping voice, the childish voice from the manly voice. They all belonged to each other: the lament of those who yearn, the laughter of the wise, the cry of indignation and the groan of the dying. They were all interwoven and interlocked, entwined in a thousand ways. And all the voices, all the goals, all the pleasures, all the good and evil, all of them together was the world. All of them together was the stream of events, the music of life. When Siddhartha listened attentively to this river, to the song of a thousand voices, when he did not listen to the sorrow or the laughter, when he did not bind his soul to any one particular voice and absorb it in his Self, but heard them all, the whole, the unity, then the great song of a thousand voices consisted of one word.[10]

The wisdom of the mystics, it seems, has predicted for centuries what neurology now shows to be true: In Absolute Unitary Being, self blends into other; mind and matter are one and the same.

9

WHY GOD WON'T GO AWAY

The Metaphor of God and the Mythology of Science

The one whom I bow to only knows to whom I bow
When I attempt the ineffable Name, murmuring Thou
And dream of Phaedian fancies and embrace in heart
Symbols (I know) which cannot be the thing thou art.
Thus always, taken at their word, all prayers blaspheme
Worshipping with frail images of folk-lore dream,
And all in their praying, self-deceived, address
The coinage of their own unquiet thoughts, unless
Thou in magnetic mercy to Thyself divert
Our arrows, aimed, unskillfully, beyond desert;
And all are idolators, crying unheard
To a deaf idol, if thou take them at thy word.
Take not, O Lord, our literal sense. Lord, in thy great,
Unspoken speech our limping metaphor translate.

—C. S. Lewis
"A Footnote to All Prayers"

The prominent Christian apologist C. S. Lewis was never noted for his mystical sensibilities—he was an Oxford don who