

## Modern Neuroscience

*and the Notion of Freedom* | BY SIGVE K. TONSTAD

"Do we believe that there is such a thing as death?" Socrates asks his friend and student Simmias in *Phaedo*, Plato's last installment in his account of the trial and death of Socrates.

"To be sure," replies Simmias.

"And is this anything but the separation of soul and body?" Socrates continues. "And being dead is the attainment of this separation when the soul exists in herself, and is parted from the body and the body is parted from the soul—that is death?"

"Exactly, that and nothing else," Simmias replies.<sup>1</sup>

**S**immias is neither the most notorious nor the least wide awake among "the submissive yes-men given Socrates in the Platonic canon," but he deserves to rank quite high on the list.<sup>2</sup>

Engaging and entertaining as are the dialogues of Plato, the only philosopher who succeeds in making his philosophy into readable literature, we should not miss that the partner in the conversation makes it easy for Socrates. His students do not ask hard questions, and they often acquiesce to the answers of their master even though the teacher's arguments in favor of a position are less than compelling. This instance is no exception.

Is death anything "but the separation of soul and body?" we hear Socrates ask.

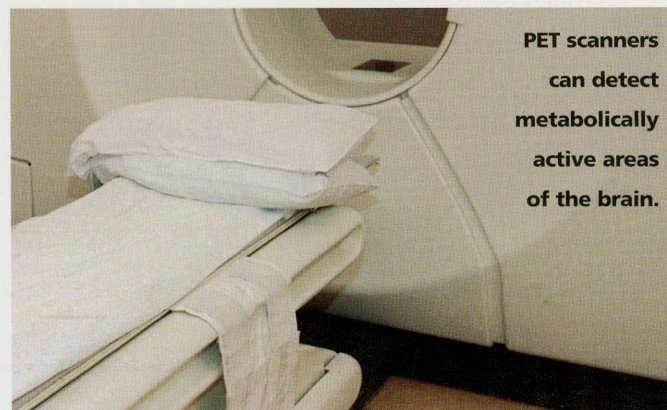
"Exactly," Simmias answers, "that and nothing else."

What else could death be—other than the separation of the soul from the body? What possibilities might be lurking in the reassuring circumscription, "that and nothing else"? Well, death could be the definitive curtain call. It could be that when the last viable neuron fires its last action potential, the last quivering salvo, the human self is at an end. Death could be a lot more—and a lot more serious—than what Socrates suggests and what Simmias supports.

I wish to begin here and to make this my first point because it is myopic to consider a monist, materialist, "physics-all-the-way-down" account of neuroscience the dominant view of the human person. A monist position of any kind has been relatively rare in the history of ideas; it remains a minority view even in our science-dominated era, and it is likely to remain a minority view for a long time to come.

Any perceived threat to personhood and the notion of free will must take into consideration that dualism remains the dominant paradigm not only by the momentum of tradition but also because a dualist view is seen to offer philosophical advantages and perhaps even to have significant explanatory power for contested scientific evidence.

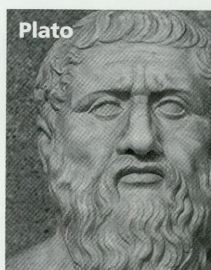
The alleged advantage in our time of the dualist position, it should be noted, relates to the issue of human freedom.<sup>3</sup> Beginning long before Socrates and Plato but articulated with great skill and persuasiveness by these founding fathers in the history of human thought, the notion that the soul is independent of the body has prevailed—from the Greek Plato (427–347 B.C.) to the Jewish Philo (20 B.C.–50 A.D.), from the Jewish Philo to the Christian Origen (185–254), and



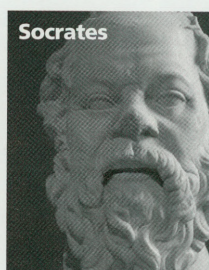
**PET scanners  
can detect  
metabolically  
active areas  
of the brain.**

PHOTO BY JEFF MILLER

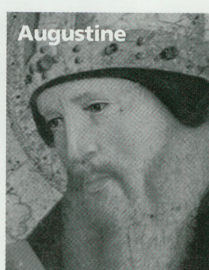




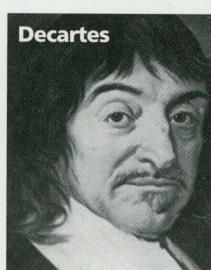
Plato



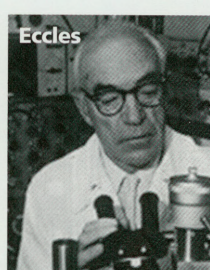
Socrates



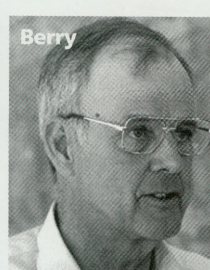
Augustine



Descartes



Eccles



Berry

from Origen and many others by way of Augustine (354–430) into the mental constitution of Christian thought.

When it seemed that the dualist outlook was receding, it received a new lease on life by Descartes (1596–1650). Dualism is held as a viable and preferred option today, re-energized by leading scientists in the twentieth century such as Sir Karl Popper (1902–1994) and Sir John Eccles (1903–97).<sup>4</sup> It came as no small surprise to me to discover that the author of one of the textbooks my class used in neuroscience in medical school at Loma Linda University, John C. Eccles, argues for a dualist solution. To Eccles, a dualist view squares with neuroscientific evidence, with a modern understanding of personhood, and with the notion of free will.<sup>5</sup>

A recent article by Derek De Ridder and others in the *New England Journal of Medicine*, demonstrating PET correlation of brain activity in a subject that was having an out-of-body experience as part of his medical treatment for intractable tinnitus, will not significantly alter the balance of power between a monist and a dualist anthropology even though the out-of-body experience in this case is shown to be an in-the-body reality.<sup>6</sup>

If our subject leads us to believe that a monist, materialist, and reductive view of the human person is becoming the dominant view or the view that should concern us the most, we may not be barking up the wrong tree, but we are barking up a relatively minor tree in the history of ideas.

### The Resilience of the Dualist Conceptual Framework

The legacy of dualism controls the conceptual and terminological framework even when we try to portray the indivisibility of the human person. The territory left to dualism may be shrinking, but even in circles with monist leanings a dualist conceptual residue persists. We continue to talk about soul *and* body, mind *and*

brain, mental *and* physical, inner *and* outer, higher *and* lower even though, in a monist outlook, this terminology accommodates a precarious duality where there is unity and indivisibility.

Gilbert Ryle's critique of the conceptual framework we use in order to describe the mind-brain relationship deserves to be read and re-read from time to time as a way to think through this issue, as does the less well-known work on this subject by a man dear to me, Carsten A. Johnsen.<sup>7</sup>

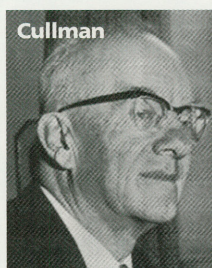
Roger Sperry decries dualism while he extols "mentalism," but he leaves the reader wondering what he means by mentalism.<sup>8</sup> Sperry claims that he is a monist, but John Eccles thinks that Sperry is a dualist. Wendell Berry, seeing a dualist outlook thriving as evidenced by our neglect of the body and the earth, marks this off as the enduring anthropological flash point of Western thought. "[The] separation of the soul from the body and from the world is not a disease of the fringe, no aberration, but a fracture that runs through the mentality of institutional religion like a geologic fault," writes Berry.<sup>9</sup>

Science may be encroaching on the territory of religion on this point, but it is far from certain that science will win the conceptual turf war. Indeed, taking Descartes and Kant as examples, it is more likely that religion will prevail and is prevailing, safely ensconced in the impregnable fortress of dualism. Taking one's eyes off what happens in the realm of religion in order to address the challenge posed by neuroscience, therefore, may be to take one's eyes off the ball that is in the real game and to pursue a distraction.

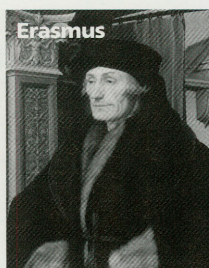
In the meantime, says Berry, perceiving dualism as a constant in religion, "this rift in the mentality of religion continues to characterize the modern mind, no matter how secular or worldly it becomes."<sup>10</sup>

Christianity converted to a dualist anthropology under the influence of Plato, Philo, and the Church Fathers, but this conversion could hardly have hap-

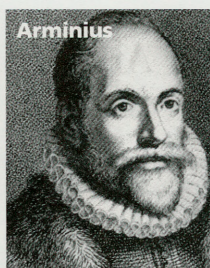




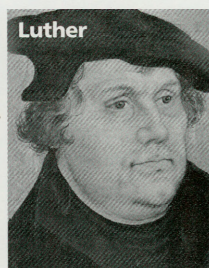
Cullman



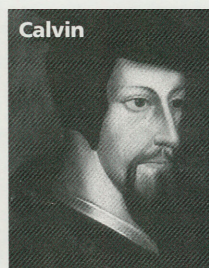
Erasmus



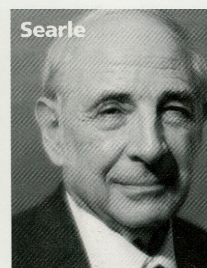
Arminius



Luther



Calvin



Searle

pened without the beguiling influence of Plato.

Is death “anything but the separation of soul and body?” Socrates asks.

“Exactly, that and nothing else,” says Simmias.<sup>11</sup> And the entire world, especially the Christian world, said, “Amen!”

In fact, when Oscar Cullmann in his Ingersoll Lecture at Harvard University in 1955 declared that the New Testament sees the human person as an indivisible unity, staking its hope on the resurrection of the body and not on the immortality of the soul, he was deluged with hate mail from Christians who accused him of undermining one of the verities of the Christian faith.<sup>12</sup>

Cullmann’s comparison between the death of Socrates and the death of Jesus, albeit flawed, remains a stroke of genius. If dualism seems to offer philosophical advantages for the notion of free will, as suggested by a great neuroscientist like Eccles and supported by a great philosopher of science like Popper, it is hard to see it as anything other than the advantage offered by an illusion.

Even if a monist view is seen as a view that opens the door to determinism, and even if models of neuroscience are perceived as threats to the notion of freedom, we should think twice before calling dualist anthropology to the rescue. In my view, and I wish I could be more subtle, dualism cannot be the cure because dualism, viewing it equally from the point of view of theology, philosophy, history, or even science, is better seen as the disease.

### Proclaiming Free Will with Modesty

As a third point, there are weighty reasons to identify with a theological tradition that runs through Pelagius (ca. 354–418), Erasmus (1466–1536), and Arminius (1560–1609) on the subject of human freedom—more than with Augustine (354–430), Martin Luther (1483–1546), and John Calvin (1509–64). Still, we should be careful not to have too much distance between us and the latter three.

Compared to Pelagius, Augustine is psychologically more profound, and he is pastorally the more realistic and nurturing of the two.<sup>13</sup> Compared to Erasmus, Luther’s raw polemic is not only far more in earnest than the analytical and detached polish of his opponent. Luther is also psychologically superior and existentially more compelling even where Erasmus wins on points in matters of logic.<sup>14</sup> For those who find the discrepancy between what is and what ought to be in one’s life a source of ongoing vexation, it is not a defeat to lend one’s ear to Augustine and Luther’s perception of the human predicament.

Let the debacle of New York governor Elliot Spitzer in 2008 serve as a case in point. “There but for the grace of God go I,” we say, wishing to identify with the person who goes there and yet also wishing to make it clear that that person is not I. The shorter version would be simply to say, There go I, and to mean it, recognizing that the notion of freedom operates in murky psychological territory, that the plight of other people is my plight, too, and that we have not lost our dignity by paying tribute to Augustine or Luther.

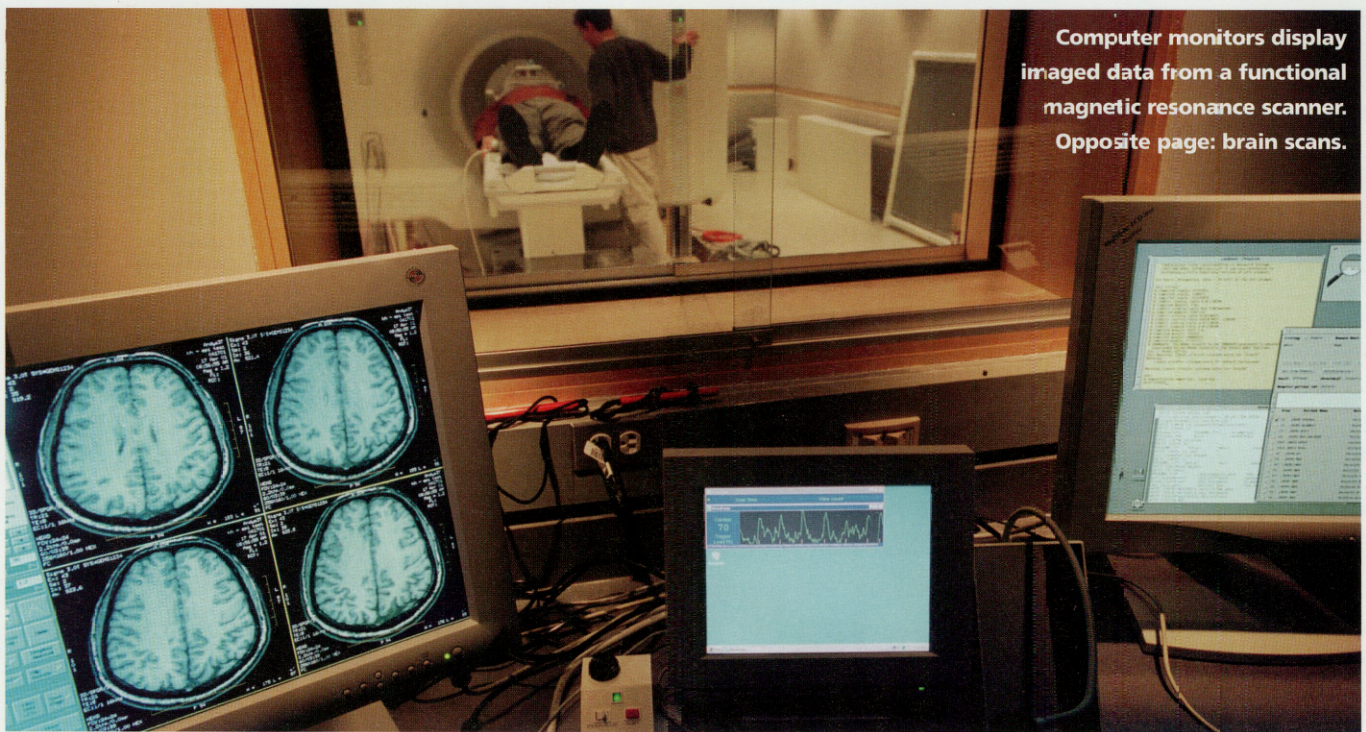
I said this openly to my wife when the Spitzer scandal broke, and she, at least, did not disagree.

### Personhood and Materiality

Finally, is it physics all the way down, as Daniel Giang asks? (page 41). Is the notion of free will an illusion now that neuroscience is demanding to be heard over the voices of philosophers and theologians? The notion of choice is at the very least a reality of human experience.

One great thinker on the subject, John Searle, says that even if we imagine a straight line from physics to neuroscience, the sense that we have a choice in a given situation will persist no matter what neuroscience says.<sup>15</sup> The entire edifice of civilization and our most basic notions of civilized behavior rest on





Computer monitors display imaged data from a functional magnetic resonance scanner. Opposite page: brain scans.

PHOTO BY JEFF MILLER

the conviction that human beings do have a choice and that it is right to call us to account for what we do. It will be a tall order to overturn this conviction and the institutions that sustain it.

More to the point, there is no straight line from physics to the brain, as even a monist like Gilbert Ryle points out.<sup>16</sup> Carl F. Craver urges that the complexity of the brain utterly defies an explanatory method that envisions a straight line from what happens on the level of simple physics to what happens in the neuron and what happens when millions of neurons talk to each other.<sup>17</sup>

Neither the understanding of the action potential nor the understanding of long-term potentiation of memory on the level of the synapse has turned out to have adequate descriptive or explanatory power. Reduction does not work as a model; it is forced to yield to a mosaic view as a model of the unity of neuroscience.

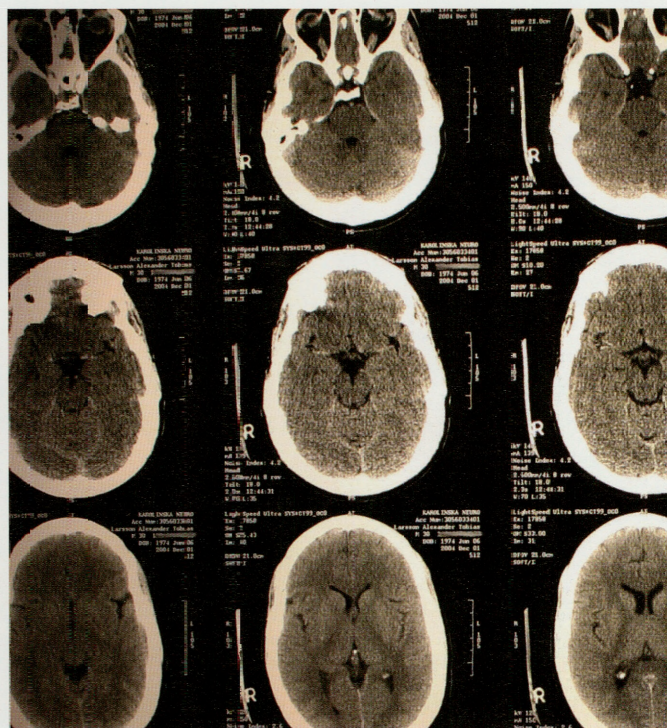
"Unfortunately," says Craver in his discussion of attempts to simplify the complexity, "the pleasure of understanding is often indistinguishable from the pleasure of misunderstanding."<sup>18</sup> What he means, I suppose, is that the pleasure of understanding that comes to the person who understands the level simple physics will subtly mutate into the pleasure of misunderstanding when he or she tries to apply this understanding to what happens on the level of the brain.

Even as we admit that the complexity of the brain vastly exceeds our ability to comprehend it, what do we see when we look at the brain? Hodgkin and Huxley described the action potential that in its simplest form triggers the release of neurotransmitters at the level of the synapse, but only 10–20 percent of action potentials lead to release events. John Eccles demonstrated a system precariously balanced between excitation and inhibition not only on the level of individual neurons but also on the level of modules linked in an infinitely complex circuitry.

What is this, however, but a marvelous structure enabling a Yes or a No, a decision to go ahead or a decision to desist, placing a red light and a green light before the inner eye of conscience, to put it in dualist terms? What is the brain if not a physical structure scintillating with options, an organ housing an orgy of thoughts and desires, at the core of which, in this acknowledged inferno of firing neurons and chemical weapons of mass opportunity and mass destruction, lies the possibility of making real decisions?<sup>19</sup>

If this view holds up, what is all the way down in the realm of neuroscience is a word that begins with "p," but the word is not *physics*. The other word that begins with "p," and the better word, is *personhood*. It is personhood all the way down, and it is personhood all the way back to the beginning.<sup>20</sup> Personhood in this





sense may not best be described as an emergent property of the human constitution, as has been suggested of late, either in the sense of a property hovering over the circuitry of the human brain or as a late phenomenon in the chain of evolution.<sup>21</sup>

Searle, who finds it easier to account for the subjective experience of freedom than to demonstrate that a human being is truly free, says "evolution has given us a form of voluntary action where we experience freedom, that is to say, the experience of the sense of alternative possibilities, is built into the very structure of conscious, voluntary, intentional human behaviour."<sup>22</sup>

This sense of freedom, I suppose, might qualify as an emergent property of human personality, but this is not what personhood means in the paradigm I am trying to sketch, and, as Searle admits, it does not make the case that we are truly free. Personhood on the human level mirrors instead the personhood of the Creator, who has configured personhood in and through the materiality of the human frame.

With recourse to Creation and to the personhood of the Creator, a monist view of the human person need not fear the prospect of determinism. We hear the echo of personhood in Genesis, catching only the last argument of the original discussion. The subject of discussion, we recognize, is human beings, and we sense that there are arguments for and against allow-

ing such beings to come into existence. Will it be Yes or No, to go ahead or to desist; will it be the red light or the green light?

Perhaps I read into this text suspense that is not there; perhaps my misreading is rather that I underestimate the suspense that is there. What will it be, the sense of suspense aside? It will be Yes; it will be the green light, as the text makes clear. "Let us make humankind in our image, according to our likeness" (Gen. 1:26).

In the light of this conception, perceiving that the choice made at the level of the decision-making Creator is to become manifest also on the human level, determinism is not a threat. Within the biblical framework it is personhood, not physics, all the way down. ■

## Notes and References

1. Plato, *Phaedo*, trans. Benjamin Jowett (New York: Prometheus, 1988), 76–77.
2. I. F. Stone, *The Trial of Socrates* (New York: Anchor, 1989), 71–72.
3. Compare Richard Swinburne, *Evolution of the Soul*, rev. ed. (Oxford: Clarendon Press, 1997); Karl R. Popper and John C. Eccles, *The Self and Its Brain: An Argument for Interactionism* (1933; reprint, London: Routledge, 1990).
4. John Eccles was awarded the Nobel Prize in Physiology and Medicine in 1963 for his discovery of the chemical means by which impulses are communicated or repressed by nerve cells.



5. John C. Eccles, *The Understanding of the Brain* (New York: McGraw-Hill, 1973).
6. Dirk De Ridder et al., "Visualizing Out-of-Body Experience in the Brain," *New England Journal of Medicine* 357 (2007):1829-33.
7. Gilbert Ryle, *The Concept of Mind* (1949; reprint, Chicago: University of Chicago Press, 2002; Carsten A. Johnsen, *Man—The Indivisible* (Oslo: Universitetsforlaget, 1971).
8. Roger Sperry, *Science and Moral Priority: Merging Mind, Brain, and Human Values* (New York: Columbia University Press, 1983), 77-103. Sperry was awarded the Nobel Prize in Physiology and Medicine in 1981 for his work on the functional specialization of the cerebral hemispheres.
9. Wendell Berry, *The Unsettling of America: Culture and Agriculture* (New York: Avon, 1977), 108.
10. Ibid., 108.
11. Plato, *Phaedo*, 76-77.
12. Oscar Cullmann, *Immortality of the Soul, or the Resurrection of the Dead?* (London: Epworth, 1958).
13. Compare Peter Brown, *Augustine of Hippo* (1967; reprint, London: Faber and Faber, 1990), 340-52.
14. Roland Bainton, *Erasmus of Rotterdam* (New York: Scribner's, 1969), 187-192; Martin Luther, *Bondage of the Will*, trans. J. I. Packer and O. R. Johnston (New York: Revell, 1957).
15. John Searle, *Minds, Brains, and Science* (Cambridge: Harvard University Press, 1984).
16. Ryle, *Concept of Mind*, 75-82.
17. Carl F. Craver, *Explaining the Brain: Mechanisms and the Mosaic*

*Unity of Neuroscience* (Oxford: Clarendon Press, 2007).

18. Ibid., 21.
19. A month or so after giving this presentation, Kevin Nick alerted me to a hot-off-the-press article in *Nature* that presented evidence for a "decision circuit" in the brain; compare Bijan Pesaran, Matthew J. Nelson, and Richard A. Andersen, "Free Choice Activates a Decision Circuit Between Frontal and Parietal Cortex," *Nature* 453 (2008):406-9.
20. Note that "personhood all the way down" is not to be understood in a Whiteheadian sense, as though there is an intimation of personhood in matter itself; compare Joseph A. Bracken, "Reconsidering Fundamental Issues: Emergent Monism and the Classical Doctrine of the Soul," *Zygon* 39 (2004):161-74.
21. Compare Warren S. Brown, Nancey Murphy, and H. Newton Maloney, eds., *Whatever Happened to the Soul? Scientific and Theological Portraits of Human Nature* (Minneapolis: Fortress Press, 1998). See also David A. Norman, "Beyond Reductionism and Dualism: Towards a Christian Solution to the Mind Body Problem," *Science and Christian Belief* 16 (2004):3-12; B. R. Rostle, "Working Memory as an Emergent Property of the Mind and Brain," *Neuroscience* 139 (2006):23-38.
22. Searle, *Minds, Brains, and Science*, 98.

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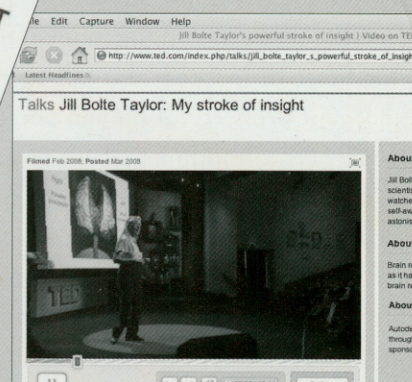
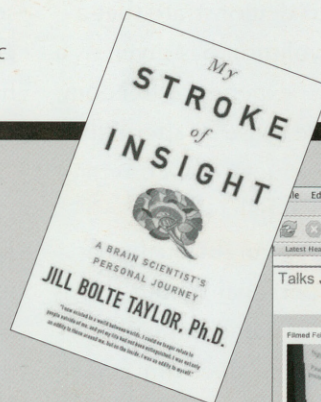
## A Neuroanatomist Finds Peace on the Right Side of the Brain

When Jill Bolte Taylor suffered a stroke in 1996, the first thought that flashed through her mind was, "This is so cool."

Only a brain research scientist would find a stroke to be "cool." But it provided Taylor with new insights about the brain. She literally watched herself lose the ability to walk, talk, read, write or recall any of her life. After surgery and a long recovery that stretched over eight years she slowly regained all those left-brain functions such as reading. But she also gained new appreciation for the right brain.

In the book that she wrote about her experience, critics have praised many things including "her fearless mapping of the physiology of compassion."

"I realized that the blessing I had received from this experience was the knowledge that deep internal peace is accessible to anyone at any time. . . ." she wrote, "My stroke of insight would be: Peace is only a thought away, and all we have to do to access it is silence the voice of our dominating left mind." ■



**Left: Jill Bolte Taylor's book, "My Stroke of Insight;" below left, with her mother, Gladys Gillman Taylor, Ph.D., and below right: the "Stroke of Insight" video on TED.**