

You are not your brain

We have become too reductive in understanding ourselves, argues philosopher Alva Noe. Our thoughts and desires are shaped by more than neurons firing inside our heads.

BY GORDY SLACK

For a decade or so, brain studies have seemed on the brink of answering questions about the nature of consciousness, the self, thought and experience. But they never do, argues University of California at Berkeley philosopher Alva Noë, because these things are not found solely in the brain itself.

In his new book, "**Out of Our Heads: Why You Are Not Your Brain, and Other Lessons From the Biology of Consciousness**," Noë attacks the brave new world of neuroscience and its claims that brain mechanics can explain consciousness. Nobel Prize-winning molecular biologist Francis Crick wrote, "You, your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules." While Noë credits Crick for drawing popular and scientific attention to the question of consciousness, he thinks Crick's conclusions are dead wrong and dangerous.

Noe's conversational style is gentle, attentive and easygoing. But, in true philosopher fashion, he also picks his words deliberately, as if stepping off the path of right thinking would result in some tragic plummet into the abyss of illogic.

In San Francisco there's a brain gym where members exercise their brains with "neurobic" software. A sign outside the place reads: "You Are Your Brain!" It has become almost a mainstream notion now. But the subtitle of your book begins "Why you are not your brain." What's wrong with the "You are your brain" view?

It's one thing to say you wouldn't be you if not for your brain, that your brain is critical to what you are. But I could say that about your upbringing and your culture, too. It's another thing entirely to say that you are your brain.

I don't reject the idea that the brain is necessary for consciousness; but I do

reject the argument that it is sufficient. That's just a fancy, contemporary version of the old philosophical idea that our true selves are interior, cut off from the outside world, only accidentally situated in the world. The view I'm attacking claims that neural activity is enough to explain consciousness, that you could have consciousness in a petri dish. It supposes that consciousness happens inside the brain the way digestion occurs inside the GI tract. But consciousness is not like digestion; it doesn't happen inside of us. It is something we do, something we achieve. It's more like dance than it is like digestion.

Even if we had a perfect way of observing exactly what a brain was doing, we would never be able to understand how it made us have the kinds of experiences we do. The experiences just aren't happening inside our skulls. Trying to understand consciousness in neural terms alone is like trying to understand a car driving down the road only in terms of its engine. It's bad philosophy masquerading as science.

Maybe I'm naive but it seems kind of obvious that the brain is the mechanism that -- in the context of a person's life and environment -- gives rise to consciousness. That's not to say it is the same as consciousness, but that it is the mechanism from which consciousness emerges.

The brain is necessary for consciousness. Of course! Just as an engine is necessary in a car. But an engine doesn't "give rise" to driving; driving isn't something that happens inside the engine. The engine contributes to the car's ability to drive. Consciousness is more like driving than our philosophical tradition leads us to expect. To be conscious is to have a world. The fact is, you and I don't have what it takes to make a world on our own. We find the world, we don't make it in our brains.

The brain is essential for our lives, physiology, health and experience. But the idea that it is the whole story, or even the key to understanding the story, is not a scientific conclusion. It's a prejudice. Consciousness requires the joint operation of the brain, the body and the world.

In fact, neuroscience is probably not in the best position to answer questions of consciousness and mind and experience. When we look for who and what we are in the brain alone, we lose the phenomena that interest us most.

Imagine that we find the Holy Grail of neurobiology, the patterns of neural activation that correlate perfectly with different events in our mental lives. We would still never understand or make sense of why those correlations

exist. There is no intrinsic relationship between the experience and the neural substrates of the experience. We always need to look at what factors bring the two together. The environment, other people, our needs and desires -- all these things exist outside the brain and have to be seen as essential parts of our selves and consciousness. So we aren't just our brains, we're not locked inside our craniums; we extend beyond our skulls, beyond our skin, into the world we occupy.

Francis Crick did us a major service by taking seriously and publicizing the problem of consciousness. But in the journal *Nature* he wrote, "Scientists need no longer stand by listening to the tedious arguments of philosophers perpetually disagreeing with each other. The problem of consciousness is now a scientific problem."

I say, "Bravo!" Consciousness is a scientific problem! But Crick framed the problem in terms of an unquestioned set of philosophical dogmas; namely that the key to consciousness will be found in the brain, that that's literally where experience and thought take place. My book is not anti-science; it's a challenge to science to get serious. It's deluded to think we're free of philosophy.

Is your battle a turf war between philosophy and neuroscience?

Not at all. I think these are scientific questions. I want to help science take them over. But I think science is in philosophically troubled waters here and it's just not ready yet to go it alone.

You're arguing that all we'll learn about by studying the brain is the brain. We'll never learn from the brain what love is? Or what religion is? Or consciousness?

Right. And that the radically reductionist view is not only unfounded, but it's also ugly. And dangerous.

Dangerous, how?

There are practical dangers, like raising expectations too high for specific scientific programs. The motivation for proceeding along some line, or justification for funding it, may be based on the assumption that it will find the place where consciousness is happening.

Second, the question of consciousness is a problem for all of us -- not just for science. We all want to know how to understand humans and think about ourselves. And claiming that neuroscience is going to explain us to

ourselves is false advertising. It's important that we not believe it.

But the view that the self and consciousness can be explained in terms of the brain, that the real us is found inside our skulls, isn't just misleading and wrong, it's ugly. In that view, each of us is trapped in the caverns of his own skull and the world is just a sort of shared figment. Everything is made interior, private, rational and computational. That may not pose a practical danger, but it presents a kind of spiritual danger.

In that view, each of us is an island of intellect, alone. When you think of us as just interior neurological mechanisms, you see us as alienated from the world around us. The world shows up for us as bits of information that we decipher, like linguistic relics of an ancient culture that we have to interpret. Like when Mr. Spock says, "What is this strange kissing custom?" The danger is alienation, plain and simple. We're strangers in a strange land.

I find this a very sad and ugly picture of our circumstance. Now contrast that view with a sense of ourselves as engaged in the flow, responsive to the things going on around us, part of the world. It's a very different picture.

The late David Brower, conservationist and founder of Friends of the Earth, said that a California condor is only 5 percent feathers and blood and 95 percent its environment.

Exactly.

There's a kind of temporal lobe epilepsy that causes people to experience deeply religious feelings. Couldn't the relevance of that association tell us something about, say, the roots or essence of religious experience?

I'm pessimistic. A lot is context; things always happen in a setting. Imagine how you feel after a run. Out of breath, rapid heartbeat, sweaty? Now imagine you just woke up feeling like that. It would be terrifying. But after a run it makes sense and it feels good. Meaning is not intrinsic, it's relational. It's only in context that an intense feeling means one thing or the other. Again, we need to look outside neuroscience to understand what that significance is.

If someone had a seizure that caused a sensation like they imagine they might have if they were meeting God, that would be very confusing. But it would be a mistake to conclude from that that religious experience is only a brain state.

I'm not a religious person. And putting aside the fact I don't believe in God, I don't think the impulse of religion can be thought of as a kind of biological feature of us, or that there's something about our brains that makes us apt for that. I think of religions as communal and as literary traditions, both things existing outside the brain. I don't think of religious belief as something we can understand individualistically. When someone says they believe in God, you've got to understand the practices, customs, backgrounds and social realities that are part of that. None of it is going to reduce to anything individual inside of that person's brain.

People like **Sam Harris**, who worry about the irrationality of religious customs and practices, are right to be concerned. I agree that religion can be dangerous. But I don't think neuroscience is the way to understand it at all.

Why are so many smart people these days looking at the brain as the key to understanding consciousness? Is it just irrational exuberance about the new imaging techniques and other technological advances that give us peeks inside the functioning brain?

Yes, but there's something else, too. For a long time now, going back at least to Descartes and Galileo, we've liked to be told that things are not what they seem. When we go to a magic show, there's a feeling of delicious pleasure when the wool has been pulled over our eyes. Similarly, to be told that the love you feel is actually just a chemical reaction, or that your depression is just a malfunctioning of your brain, is surprising and in some paradoxical way satisfying. There's a modern pleasure in the unmasking of our everyday experience. We feel like we're seeing behind the curtain, seeing how the trick is done.

It validates our suspicion that the world is different than it looks?

Yes. Galileo said that the apple in your hand is colorless, odorless and flavorless. That color and so on are effects that the apple has on you, comparable to the sensation of the prick of a pin. The flavor of the apple, he said, is no more in the apple than the prickliness is in the pin. The taste and the prickliness are in you. Galileo thought we were radically deceived by the world around us. The contemporary neuroscientists simply extend this even further -- this idea that the world is a kind of grand illusion that the brain creates.

Sure, it's an important fact that the perception of colors depends on the

physics of light and the nature of the nervous system. If our physiology were different, our ability to detect colors would be different. But none of that speaks to the unreality of color, any more than saying that I can't see anything in my room if I turn the lights off speaks to the unreality of my desk. We've almost made a fetish of this desire to be told that things are not what they seem. We get a thrill from the paradox.

OK, if our brains aren't going to explain thought and consciousness, then how should we study these things?

Consciousness is an achievement of the whole animal in its environmental context. And to really understand it, you'd have to study it that way.

Suppose we ask ourselves: What makes certain patterns of neural activity visual? What I have proposed -- building on work with collaborators -- is that to answer that question, we need to look to the behavioral and environmental context. I think we can make progress toward explaining the character of experience, but only by looking at the way the neural activity arises in and indeed enables a certain kind of dynamic exchange with the world.

Seeing is a certain way of relating to the world around you; the brain plays a critical role in supporting that relation. It's not revealing something about the cells themselves -- or the way they are firing -- that does the explanatory work. Rather, it's understanding the way the cells participate in a larger interaction with the world that will shed light on what it is to see. This is a whole new way of approaching the problem. The "it's all in your brain" approach doesn't work. If we expand our idea of the machinery of mind to include the body and the world, whole new ways of thinking about and explaining consciousness come into view.

The study of consciousness should be a cross-disciplinary field: behavioral science, math, linguistics, robotics, artificial intelligence and philosophy -- these all make contributions. Brain studies, too. But you can't reduce the study of human life to the study of things happening inside a person's brain. You have to look at a person's active life in its context.

Evolutionary biology is one good example of the way to proceed. We don't look at an organism as a collection of cells or molecules or atoms. We look at it as a creature with interests and needs. We take an ecological approach that has the organism as an actor facing problems and struggling to survive and reproduce. We view all of that as the natural backdrop against which to carry on our investigations. I think it's that organism-centered approach, where you look at the animal in its environmental situation, that's the

appropriate way to approach and study consciousness and the human mind.

Now, neuroscience can look for meaningful correlations between what's going on in the brain and experience, or the ways brain functions contribute to our ability to have the kinds of experience we have. It makes sense to use brain-imaging techniques like fMRI that way. Studying the brain is part of the picture, but only a limited part. The important point is not to think we're somehow catching the mind in action by stop-motion photography; that's not what we're doing with fMRI at all.

What role do you think the brain does play in consciousness?

Instead of asking how the brain makes us conscious, we should ask, How does the brain support the kind of involvement with the world in which our consciousness consists? This is what the best neuroscientists do. The brain is not the author of our experience. If we want to understand the role of the brain, we should ask, How does the brain enable us to interact with and keep track of the world as we do? What makes a certain pattern of brain activity a conscious perceptual experience has nothing to do with the cells themselves, or with the way they are firing, but rather with the way the cells' activity is responsive to and helps us regulate our engagement with the world around us. There's a lot to learn about the way the brain does this and this work is important.

At the end of your book you say that we occupy "Home sweet home." What do you mean by that?

The dominant view in neuroscience today represents us as if we were strangers in an alien environment. It says that we go about gathering information, building up representations, performing calculations and making choices based on that data. But in reality, when we get up in the morning we put our feet on the floor and start to walk. We take the floor for granted and the world supports us, houses us, facilitates us and enables us to carry on whatever our tasks might be. That kind of fluency, that kind of flow, is, I think, a fundamental feature of our lives. Our fitting into the world is not an illusion created by our brains, it's a fundamental truth about our nature. That's what I mean by home sweet home.

Gordy Slack is the author of "The Battle Over the Meaning of Everything: Evolution, Intelligent Design, and a School Board in Dover, PA." He is currently writing a book about epilepsy. More: Gordy Slack