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Neuroscience and the Human Mind

Lynne Rudder Baker

I want to raise three questions for discussion:

1. How are a philosopher’s concerns about the human mind related to a neuroscientist’s concerns?
2. Can neuroscience explain everything that we want to understand about the human mind?
3. Does neuroscience threaten our dignity or humanity (or anything else that we cherish about ourselves)?

Let’s take these questions one at a time.

1. How are a philosopher’s concerns about the human mind related to a neuroscientist’s concerns? Broadly speaking, I think, neuroscientists want to know how the brain operates. Some of their questions are purely internal to the brain: What is the chemical composition of a certain neurotransmitter? How do neurons communicate with each other? Other of their questions relate neural matters to cognitive capacities: What neural mechanisms explain learning or memory or vision, etc.? What chemical in the brain causes depression?

Recently, consciousness has come to the fore as a problem in neuroscience. A major question is how to specify consciousness in a way that it can be an explanandum for neuroscience. I don’t want to get into that thorny problem except to note that there is a distinction between consciousness as a property of an organism (being awake, alert, not in a coma, etc.) and consciousness as a property of a mental state (being aware of something—the smell of garlic, the sudden realization that you left your keys in the

office, etc.) [The problem of giving a neural account of what it is like to see red, etc., has been dubbed ‘the hard problem’ of consciousness.]

I take it that neuroscientists regard consciousness, as an unsolved neuroscientific problem, and that the solution will be to uncover all the neural mechanisms that have the property of being such that: when those mechanisms operate in a certain way, there is consciousness. And this knowledge would, as philosophers say, support counterfactuals: If these mechanisms were to operate in such-and-such way, there would be consciousness.

But this is not the philosopher’s question at all. The philosopher may have no doubts that there is a counterfactual-supporting correlation between the operation of certain neural mechanisms and conscious states. The philosopher’s question is how would that help us understand consciousness. As Colin McGinn asks: “How can technicolor phenomenology arise from soggy grey matter? What makes the bodily organ we call the brain so radically different from other bodily organs, say the kidneys—the body parts without a trace of consciousness? How could the aggregation of millions of individually insentient neurons generate subjective awareness? We know [McGinn goes on] that brains are the de facto causal basis of consciousness, but we have, it seems, no understanding whatever of how this can be so.”¹

For example, the most detailed physical description of neurotransmitters, etc., still leaves it a mystery why sniffing glue makes one feel giddy, or has or causes any feeling whatever. Suppose that you had a detailed physical story about the chemistry of glue, and what goes on in olfaction, and effects sniffing glue has on certain neurons, etc. Where in that neural story is the getting high? The complete neural story of what’s going on in your brain can be told without mentioning any feeling whatever. A detailed

¹ Colin McGinn, “Can We Solve the Mind-Body Problem?” Reprinted in Warner and Szubka: 99.

map of the brain from the time of sniffing the glue until the effect wore off would not by itself give any clue to the existence of giddiness. No story about neurotransmitters exciting synaptic action at certain neurons can tell us how such-and-such a brain state can be or produce a feeling of giddiness. This is the old Cartesian question all over again. The problem for Descartes was how things as unlike each other as brains and immaterial minds could have causal intercourse; the problem here is how something as unlike a feeling of giddiness (or a feeling of anything else) could be produced by or be a property of a brain state? [And this example is relatively simple: consider the complications of explaining a pang of jealousy in neural terms.]

Some philosophers would say that the neuroscientific questions are the only questions that meaningfully can be asked. Once there is discovery of neural mechanisms whose take the operation is connected to conscious states, these philosophers would say, “Problem solved. Case closed.” Call this point of view ‘scientism’ or ‘metaphysical naturalism.’ Scientism is a metaphysical view about science. It is the view that science is the exclusive arbiter of reality. Wilfrid Sellars put this view into an aphorism that echoes Protagoras: “[I]n the dimension of describing and explaining the world, science is the measure of all things, of what is that it is, and of what is not that it is not.”²

For those of us who are not scientific, there remain questions: How can something like *that* (neural phenomena) possibly bring about something like *this* (a feeling of dread, or your awareness that you are not alone in the house)? Moreover, many people have rich inner lives. By an ‘inner life,’ I mean not just Damasio’s sense of self, which he thinks attends all consciousness. An inner life includes our thinking things over. We brood over our failures; we examine our consciences; we set ourselves to do better. We consciously resolve to be less judgmental, or more patient, or more

² Wilfrid Sellars, “Empiricism and the Philosophy of Mind,” in his *Science, Perception and Reality* (London: Routledge and Kegan Pau., 1963): 173.

diligent. We can consider various possibilities and endorse them—long before there is any overt behavior. I don't see how we could understand this kind of subjectivity in terms of brain states at all. There just seems to be a mismatch between a neuroscientific concerns (about neural mechanisms) and certain kinds of philosophical concerns (about meaningful aspects of one's life).

2. Can neuroscience explain everything that we want to understand about the human mind? Although John Dowling has not suggested that understanding the brain is all there is to understanding mentality, I would like to suggest why I think that a complete understanding of the brain will need supplementing. I have no difficulties with the idea that all our thought and action are mediated by chemical and electrical happenings in the brain, but I am dubious that neuroscience will provide the whole story about mentality. This is not to cast doubt on neuroscience, but rather to say that much of mentality depends on more than just the brain. Much of our mental activity depends on our being embodied and ensconced in the kinds of environments (biological, physical, social, economic, political, religious, etc.) that we live in. To do a crossword puzzle, to get the point of a *New Yorker* cartoon, to figure out the best route for a car trip to Las Vegas, to decide to get a face-lift—these are mental activities, and the ability to do them depends on having concepts that can be acquired only by someone in certain kinds of environment with certain kinds of conventions.

Here are some more examples about mental phenomena whose explanations go beyond what I would expect neuroscience to tell us. (1) It would seem that I could know *everything* that goes on in the brain, described in the language of neuroscience, when you give a speech in French without knowing a word of French—and without knowing that you were speaking French, and without understanding anything about what your speech was about. Speaking a language is a mental activity. You can know all about Broca's

area and Wernicke's area. But is there something in the brain that makes it the case that it's French rather than Italian that is being spoken?

(2) I'd expect neuroscience to make possible a pill that would make a person have bad dreams, but I would not expect neuroscience to make possible a pill that would make a person have bad dreams with a specific content—bad dreams, yes; a dream in which your roommate got run over by a bus, no.

(3) Science itself consists of mental activities. Devising hypotheses, testing hypotheses, assessing evidence, and so on, are all mental activities. Are these all explainable or even describable in neurophysiological terms? Even if you found neural correlates for, say, testing an hypothesis (implausible as that seems), would knowing what those neural correlates were help us understand the activity of testing hypotheses any better? Actually, I do not think that it is even possible that there be a neural correlate for testing hypotheses; the closest you could possibly get—and even this seems unlikely—would be to find neural correlates for thinking that you were testing an hypothesis; whether you actually were testing an hypothesis would depend on things outside your brain.) But that's my point: We are not brains in vats. We are embodied and we have complex relationships to environments.

(4) My final example is of a different sort and it comes from Dowling himself. The placebo effect seems to be a case of a neurological effect produced by a nonneurological cause. This is a really interesting phenomenon that bears a lot of thought. Dowling notes that the placebo effect results in pain relief.

“[I]f a subject believes a pill will relieve pain, it does so even if the pill is pure sugar. Ingestion of the placebo causes the release of endogenous opiate-like substances in the brain—brain chemistry is altered and profound effects can result.” (59)

This suggests that some neural effects have nonneural causes. What a belief is depends on its content, what is believed. If beliefs can change brain chemistry, then brain chemistry can be changed by what is believed. But what is believed—propositions, meanings, however you want to put it—cannot be understood in neurophysiological terms. So, if a belief that a pill will relieve pain can change brain chemistry, then brain chemistry is responsive to meanings, not just to chemicals. If neural effects can have nonneural causes, it is difficult to see how neuroscience could yield complete understanding even of the human brain (much less of the human mind).

Neuroscience, like any science, can explain only what is in its domain, and what is in its domain is describable in its proprietary vocabulary. Much of our mental activity—though “subserved” by neural activity—is at the personal level. Our brains are the organs with which we think; but we are thinkers. ‘Thinker’ is a personal-level term. We are persons, and are concerned about ourselves as persons. We want to have happy intimate relations, stay out of debt, have satisfying work to do, and so on. Much of our mental activity is concerned with achieving these goals; and these goals and our attempts to reach them, do not lend themselves to neuroscientific description. I think that this suggests a general problem for the philosophy of science: How can you explain a phenomenon in a language (e.g., the language of neurons and neurotransmitters and so on) in which the phenomenon to be explained cannot even be described?

I have no doubt that the brain is the physical substrate of the mind, and that a lesion here or there will disrupt your color perception or your sense of taste or your level of anxiety. But from this it does not follow that we or our mental activity may be reduced to our brains and their neural activities.

3. Does neuroscience threaten our dignity or humanity (or anything else that we cherish about ourselves)? This is a very difficult question, but I’ll give you my opinion.

The short answer is no and yes. The sciences do not threaten our dignity or humanity if we understand them from a nonscientistic point of view; but the sciences may well threaten our dignity and humanity if we understand them from the scientific view that has no place for knowledge outside of science.

The implications of any science for matters about our dignity and so on will depend not just on the results of the science, but also on the interpretation of the results. Whether or not neuroscience will threaten our dignity or humanity, then, will depend on how we interpret it. I think that we have something to fear from neuroscience and the other sciences only if we interpret them scientifically. It is very important to distinguish being anti-scientistic from being anti-scientific. To be anti-scientistic is not to reject any of the sciences, but to reject a particular (and powerful) interpretation of science. To say, with the advocates of scientism, that all truth is scientific truth is not to utter a scientific truth; it is a claim about science, not a claim made within any science.

Scientism is supported by an inductive argument from history. Crudely, here it is: Over the centuries, the sciences have brought more and more phenomena into their domains. There is no stopping place. So, they will not stop until they have brought all phenomena into their domains. Well, what should we say to this? Perhaps, in some way that we cannot envisage now, we will explain subjectivity and consciousness and our inner lives in some way that we will then count as scientific. Maybe, maybe not. My suspicion is not. But the prudent thing is to wait and see. It is somewhat less prudent to accept scientism. Scientism is like a closure principle—“and that’s all there is, Folks!” This inductive argument from history is awfully weak to support such a closure principle.

If we reject scientism, as I urge, then we can give neuroscience and the other sciences their due, without having to conclude that we are fully understandable in neurophysiological terms. Neuroscience explains well what is in its domain: the brain.

But we are whole persons, embodied and embedded in an environment. No explanation, scientific or otherwise, that stops short of this embodiment and embeddedness, I think, will be a complete account of our mental activity. It is as whole persons that we have dignity and humanity. So, I conclude—tentatively and hopefully—that what we value about ourselves will not be crushed by neuroscience.

University of Massachusetts at Amherst
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