

Imagine There's No Heaven

Voices of Secular Humanism

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Chapter 11 / *Free Inquiry Interview*

The First Neurophilosopher: An Interview with Patricia Smith Churchland

Pat Churchland is professor of philosophy at the University of California, San Diego, and a humanist laureate of the Academy of Humanism. She is the author of numerous works on philosophy and neuroscience, including Neurophilosophy (1986, MIT Press) and The Computational Brain (1992, MIT Press, with Terrence J. Sejnowski). In this Free Inquiry interview, Dr. Churchland discusses modern notions of consciousness, neuroscience, and ethics. It was conducted by David Noelle, president of the San Diego Association of Secular Humanists.—Eds.

Free Inquiry: Pondering the nature of the mind has been a primary occupation of philosophers since the inception of their field. But your approach to the study of thought seems to take you far from the armchair introspections and coffeehouse discussions stereotypically associated with philosophy. In addition to your professorship in the Department of Philosophy, you are a faculty member of the Institute for Neural Computation, you participate in the Cognitive Science Interdisciplinary Program, and you spend much of your time with neuroscientists at the Salk Institute. What has led a philosopher into the laboratory?

Patricia Churchland: The questions that philosophers have been interested in for a long time are the questions that also interest me. I, too, want to understand the nature of consciousness, how it is we perceive, the role of learning and memory, the degree to which emotions play a role in rational decision-making, and so forth. What is new about our time in history is that data from neuroscience and experimental psychology are putting powerful new constraints on our hypotheses. In other words, we now have data that are relevant. My position is really very straightforward. If the data are relevant, then let's take them into account and learn what we can.

Assuming the Greeks to be the fountainhead of modern science and modern philosophy, we see that they were interested in a whole range of questions. They wanted to know the nature of light, what the moon is, what the sun is, why objects in space move, what humans are, and what consciousness is. These were all part of natural philosophy. Many of the questions—the sun, the moon, and what we now call chemical change—have become part of the natural sciences. Only really within this century has it been possible for questions about the nature of humans to become part of a specialized science, namely the science of the mind/brain. Just as earlier questions about astronomy or physics ceased to be “armchair questions,” so we are in a transition period where questions about the mind are ceasing to be such.

FI: Do you see yourself as asking the same questions as other philosophers of mind or philosophers of science? Has your interaction with practicing neuroscientists changed the philosophical questions that interest you?

Churchland: Like Hume or Kant I would very much like to understand the physical basis of consciousness—that is, how it is that out of three pounds of neural tissue there manages to be experiences of pain and colors and so forth. Because psychology and neuroscience have advanced, I have the luxury of considering other specific questions that bear upon the larger problem. For example, it is likely that the intralaminar nucleus of the thalamus plays a special role in consciousness. What really does it project to? Why is it that when it’s lesioned, the subject becomes unconscious? What is its special role in coordinating activity in the brain?

FI: When I think of consciousness, it’s hard for me to escape the notion of the homunculus—the “inner self” that receives my perceptions and directs my actions. How are modern notions of consciousness different from this naive view?

Churchland: First of all, we evidently do have a representation of ourselves as a kind of inner being. That’s a representation that brains make, and it probably serves an important role in our cognitive economy. Therefore, it’s no surprise that it’s hard to get around the feeling that there must be an anatomical correlate of the self. It does look like the activity subserving the representation of self is distributed over a variety of regions. Probably thalamic structures are critical, and probably some cortical structures are critical. Rodolfo Llinás and Joe Bogen have the hypothesis that the intralaminar nucleus of the thalamus plays a sort of coordinating role. That’s a very plausible hypothesis, and we’ll have to see where it goes in the next ten or fifteen years. If they are correct there is a kind of representational structure built up of neuronal activity that is not like a central homunculus and it’s not like the pineal gland, but which does seem to play a critical role in awareness.

FI: How does this relate to other findings of localization in the brain? There are known brain centers associated with types of visual processing, with motor responses, and with aspects of language use, to name a few. Do you see this as a kind of localized “seat of consciousness”?

Churchland: No, not at all. None of those functions that you mentioned are localized in centers

as traditionally conceived. Localization implies a task-dedicated, processing-insulated module whose operations are necessary and sufficient for getting a specific job done. It has become very clear in the last decade that that's not the right way to think about brain organization. It does look like there are regions of specialization. We don't know exactly how it is that specialization emerges, on what it depends, and what the limits of plasticity are. In any case, it's pretty clearly not the case that there are regions of localization—that there are modules in that sort of old-fashioned sense.

Rodolfo Llinás has suggested that the intralaminar activity provides a context or framework and that the specific sensory thalamo-cortical activity, from vision or from the somatosensory system for example, provides the content. This implies that you need a kind of dialogue between thalamic structures and other structures in order to have awareness. Conscious experience is pretty clearly a phenomenon that involves spatially distributed structures, some of which are especially critical.

FI: Consciousness somehow arises in the interaction of these processes?

Churchland: Probably. You need visual areas in order to have visual awareness, and you need auditory brain areas intact in order to have auditory awareness, and so on. For sensory perception the corresponding sensory cortices are extremely important. However, there is a kind of misplaced infatuation with cortex as the seat of the soul. Here is a reason for doubting that idea. You can lose huge chunks of cortical structure and have remaining kinds of awareness—somatosensory awareness or awareness of your thoughts. On the other hand, even tiny lesions to the intralaminar nucleus of the thalamus result in a vegetative state.

FI: What role do you think language plays in consciousness? Can one be conscious without language?

Churchland: Here's where Dan Dennett and I part company. Can you be aware of colors and shapes and sounds and pains and feelings in the absence of language? I can't see why not. We know that aphasic patients who have lost language capacity have sensory experiences as well as thoughts and reflections. We think that preverbal children do, as well. I very much doubt that, with the acquisition of language, sensory data suddenly become conscious. Also, by virtue of similarity in anatomical structure, lots of mammals have largely comparable sensory awareness. They're aware of smells, colors, shapes, pains, and tastes, and so on.

Some studies on humans show that through education and experience you can become aware of things that you weren't aware of before. This is really a matter of extending pattern recognition skills through language-mediated training. You, as a student of neuroscience, will look through a microscope at, say, a cell body of neurons, and you will see mitochondria. You will just look and see them. You won't have to say, "There is this blob of such and such a shape, so that must be mitochondria." You see the smudge as mitochondria. And, similarly, you hear certain things as bits of language. It's almost unavoidable. So, having experience and culture and having language means that you, of course, do pattern recognition of a very complicated kind.

Perhaps when Dan Dennett says you need language for consciousness, all he means is that you need language to do certain kinds of complex pattern recognition. I doubt even this version.

Animals in the wild, who, after all, can have a very tough life and have to be very smart to get around, perform kinds of complex pattern recognition that do not require language. So, my own feeling is that language is very important for lots that humans do, but I don't for a moment think, like Dan Dennett does, that consciousness comes into existence as a virtual machine as you acquire language. I see no evidence. I agree, of course, that there is no homunculus and there is no Cartesian theatre, but Hume taught us that in the eighteenth century.

FI: Has neuroscience taught us anything about our consciousness of our own thoughts and of ourselves?

Churchland: One of the virtues of Francis Crick's approach is the simple point that you want to start where you can make the most progress. That implies working on sensory awareness before working on abstract thought. The more difficult phenomena will just have to wait until we've uncovered the cards in these basic areas.

Having said that, though, it's certainly very interesting that there are patients like Boswell, who has no hippocampus or autobiographical memory. He doesn't have a sense of himself as a person continuing through time. He has a forty-second time window that he lives in and moves in. Nevertheless, when you meet him, he's personable, charming, and attentive. He uses language, and he interacts well. He makes you feel comfortable. There's no doubt that Boswell has awareness. It shocks the pants off people who think autobiographical memory is necessary for awareness. It's also significant to consider patients who have lost much of their frontal structures. They will show inappropriate emotional inhibition and are unable to plan for the future appropriately. They are unable to delay gratification. But are they conscious? Yes. Not conscious of the importance of making a plan for the future, but certainly conscious of pains, itches, tickles, touches and smells. One point that Antonio Damasio has emphasized, which I think is correct, is that there are probably many aspects to consciousness. Losing some structure, like frontal structure, means that you lose certain consciousness capacities, such as being aware of the importance of the future, but you don't lose awareness of colors. In losing visual cortex you lose the capacity to be aware of colors.

I don't actually know of any lesion where people entirely lose the sense that they are themselves but are otherwise aware. There are lesions in which people are convinced that they're dead, but they still think "I am me." There is also a not uncommon phenomenon in patients with temporal lobe epilepsy, resulting from a car accident, for example, where they display an interesting confluence of traits that weren't seen before. They suddenly become hyper-religious and hyper-graphic. They're constantly writing poems, stories, and letters. They may also become hyper-sexual. Those three features have a tendency to go together. That doesn't mean that there's a physical center for those things, but it is rather remarkable that character traits can be altered in this fashion. Other lesion studies important for the self and self-representation are right parietal lesions, where people tend to neglect, say, the left hemispace and everything in it. I suspect that the representation that the brain builds of the idea that there is "me" is quite deep. Antonio Damasio thinks that self-representation depends on a more basic body representation. We're able to think of ourselves as a "me" because of the way that body representations come into the brain and are integrated. That's quite plausible, actually.

FI: Many people seem to feel threatened by this sort of scientific investigation of consciousness. Some seem to think that such knowledge belittles their self-value. Others see science as threatening their cherished beliefs in substance dualism—in a non-material, and perhaps immortal soul. How have you dealt with such opposition?

Churchland: Indeed, it's not silly to worry about others controlling our brains. A genuine worry that people have is that, if the workings of the brain are understood in great detail, then others will have access to their private thoughts and may be able to control them. It's extremely unlikely that that could ever happen, given the complexity of the brain, but people need to be reassured that it is unlikely. Given that complexity, the most we can realistically aim for is a grasp of the general principles of brain function not to be able to predict, moment by moment, what somebody else will do.

The further issue has to do with what all this implies for a non-physical soul I'm inclined to say that it certainly seems to me improbable. This view raises some very deep questions about how to live a life. Probably, as it is suggested in Ecclesiastes, for example, we need to make the very best of life, here. Many people do feel we should have something beyond us that is greater than us. Of course, there is something beyond us and that is greater than us and, in a way, that's the planet, or, if you like, the universe as a whole, toward which, I think, it's possible to have very rich feelings of belonging and care. Feelings that often get funneled into very specific metaphysical ideas can actually be funneled as easily into care for others in the human community, the biotic community, or for the planet itself. Rather than expecting that the wrongs will be made right in the hereafter, we need to care very much about we do right here.

That's usually my response to worries about the mind as brain-dependent. It's useful to remind people, too, that even something like the Bible is not univocal on the issue of an afterlife. Ecclesiastes is one example of a book where the message is much more like the message of secular humanism: do good works, make a decent life for yourself, think about what you're doing, and try to behave wisely.

This humanizing side of science needs emphasis. One only needs to think about say, the example of anaesthesia. When anaesthetics were first discovered, many people, and the Catholic church in particular, were deeply opposed to their use on the grounds that they were unnatural. These were tools of the devil! Pain was what God intended. Pain was part of life and had to be suffered. Now, we look back on that position with utter disbelief. How could having a leg amputated without anaesthetic be good for one's character? I think that similar humanizing results will emerge with greater understanding of what makes us what we are. But, as with any science, one also has to bear in mind that there can be misuses. As a rational caring community, we have to see to it that rules are in place, that decency and civility are honored, and that science is not turned to evil uses.

FI: Has neuroscientific research contributed to our understanding of ethics and ethical reasoning?

Churchland: One of the very important developments that has emerged from the Damasio's work in Iowa City does bear upon ethics and decision-making. In particular, lesion data strongly suggest that emotion and feelings are essential components of rational decision-making. Consequently, early education to engender the appropriate socialized feelings is extremely important. When the

circuitry is gummed up or is absent due to some sort of fetal abnormality or through an accident, then the ability to feel remorse is lost. We have to take very good care that those people don't run amok. The capacity to learn civility seems to be innate, and the relevant circuitry can be destroyed.

The other point is something that I owe to Paul Churchland. We teach complex pattern recognition to children as they grow up. We teach them to recognize certain paradigm situations as "unfair" and then they extrapolate from that. An important part of teaching pattern recognition is not just the purely cognitive aspects, but that the right emotions are felt.

Aristotle isn't sexy and glamorous. He doesn't have an outlandish theory of knowledge politics that Plato does. As a freshman one reads Plato and says, "Wow! This is so cool! This is really wild! I never thought about this before!" Then one reads Aristotle and thinks, "This guy sounds like my Dad. That can't be very interesting." But over the long haul you realize that the much deeper, much more insightful, much more sensible position is Aristotle's.

I think we need a rethinking—a sort of bringing up to date—of Aristotelian ideas about socialization, politics, ethics, and so forth. It's not glamorous, it's just very sensible. If you think of the neo-Nazis on one side and the "woo-woo" postmodernists on the other, it's very possible to see Aristotle as giving you a very sensible alternative. You can be a realist about some things and a relativist about others. You can be sensible about ethics without being doctrinaire. You can see the importance of knowledge in making ethical decisions and in development of ethical wisdom and ethical understanding, but without being an absolutist or Gospel-truther. There is a really interesting confluence between Aristotle and our modern understanding, from within psychology and neuroscience, of the way the brain actually works.

FI: At least part of the story of the Damasio's studies seems to be that ethical decision-making involves more than cold, unfeeling rational thought.

Churchland: Absolutely! One of the interesting results, actually, of modern neuroscience is that we can see that Kant was wrong when he claimed that the most moral character is the one who strips away all emotion, all feeling, and is purely rational. Those are the people who can't make good ethical decisions. Of course, it drives the philosophers up the wall when I say, "We now think that there is empirical reason to show that Kant was just flatly wrong. Hume was right, and Kant was wrong. There's a result." But I think it's true. There's much more to say about that story, and about how cognition and emotion need to interact, the role of early education, what this biasing really comes to in neurobiological terms, the role of logic and mathematics, and so on. But, pure reason unfettered by emotion? No.

FI: This naturalistic view of ethical reasoning seems to run counter to the popular religious views in which proper behavior is legislated by a divine authority.

Churchland: How lovely it would be if life were simple enough such that a set of rules could suffice as a moral-behavior algorithm. Alas, as Socrates made painfully clear, one of life's tough realities is that, however morality is based, it is not on any set of rules that can be reliably followed to always guarantee the correct choice. The Ten Commandments can give us a rough guide. The Koran or the ideas of Chief Seattle or Confucius all can give us rough guides. Problems inevitably

arise, however, because there is no rule for telling us when morality requires a departure from an edict, such as ‘Tell the truth’ or ‘Thou shall not kill,’ or what to do when edicts conflict. As with the development of any kind of understanding about the world, common sense seems fundamentally important in developing moral understanding. In the moral domain, common sense seems to be a blend of instinctual sympathy (Hume’s moral sentiment) and experience-dependent understanding (Aristotle’s practical wisdom). Our feelings are some guide, but they can lead us astray. Our reason is some guide, but it needs the balance of feeling and the breadth of experience. As we understand more about how brains work, we shall likely achieve new insights about human needs, choices, and springs of action. Such knowledge will not by itself solve ethical problems, but it may help as we struggle to develop a more adequate moral understanding.

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