

OPINION

Discussing Philosophy of Mind in Introductory Neuroscience Classes

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As a field, neuroscience concerns itself with gaining an understanding of how physical processes occurring in the nervous system are related to mental phenomena such as perception, motor control, and complex thoughts and behaviors. As teachers of neuroscience, we are charged with facilitating an understanding of these relationships in our students. Therefore, it seems that an in-depth discussion of philosophy of mind is a critical and foundational part of any introductory course in neuroscience. One cannot talk about how basic physiological processes like action potential generation and synaptic transmission are the “building blocks” of psychological phenomena without first attempting to define general constructs like “the mind” and “mental states”.

Yet, it has been my experience that broad and critical discussions of philosophy of mind are often omitted from both introductory neuroscience textbooks and the classes that use these resources. Some introductory neuroscience textbooks do not directly address issues related to philosophy of mind at all, and those that do often limit the discussion to a brief overview of key historical figures such as Aristotle, Hippocrates, Galen, Descartes, Broca, and Hebb. Indeed, even Kandel, Schwartz, and Jessell’s 1,400+ page Principles of Neural Science (2000) dedicates only a few pages to a direct discussion of philosophy of mind. When issues surrounding philosophy of mind are discussed in introductory texts, they are typically framed around the mind-body problem and the oppositional positions of reductive physicalism and Cartesian dualism. I assert that such a superficial treatment of philosophy of mind in introductory neuroscience classes not only prevents students from fully engaging with the true complexity of what we study, but also inappropriately privileges the stale and outdated physicalism-dualism dichotomy. I believe that such privileging is especially problematic, as the nature of the mind appears to be much more complex than what can be described using the traditional physicalist or dualist approaches.

I believe that frank and detailed discussions of the many issues surrounding philosophy of mind are critical for student development, particularly in light of how both the field of neuroscience and popular culture often treat this topic. Contemporary neuroscience research strongly asserts reductive physicalism to be true, while dualism is typically implied in works of popular culture (such as the popular TV series *Lost* and the blockbuster movie *Inception*). By allowing students to see the significant flaws in both of these positions, space can be created to discuss more complex and potentially more

plausible ways to think about the construct of the mind.

It is my belief that instructors of introductory neuroscience classes should dedicate a significant amount of class time (preferably early in the semester) to a discussion of philosophy of mind that (at minimum) focuses on the following four points:

Point #1: There currently exists no one single theoretical framework that can completely account for how mental phenomena arise from physical processes occurring in the nervous system.

Throughout history, numerous models of the origins of mental processes have been proposed. Unfortunately, no single model can, by itself, fully explain the relationship between physiological processes in the nervous system and specific individual mental states or experience (“qualia”). Although monist reductive physicalism and Cartesian dualism have been widely viewed as the two principle theoretical frameworks to discuss this mind-body problem, both approaches appear to be significantly flawed and are perhaps unable to function in any substantial explanatory capacity.

Point #2: At present, reductive physicalism is fundamentally unable to answer how basic biological, chemical, or physical processes create specific individual experience (“qualia”).

As a field, neuroscience has primarily ascribed to reductive physicalism for decades. Unfortunately, the use of the reductive physicalist framework has resulted in little progress towards our understanding of the generation of subjective personal experience. For example, neuroethologists have learned much about echolocation in bats, yet we do not have any sense whatsoever of “what it is like to be a bat” or to experience echolocation as a fundamental part of our own subjective sensory worlds (Nagel, 1974).

David Chalmers (1995) has referred to the question of how subjective experience is generated as the “hard problem” of human consciousness. What makes this problem so “hard,” Chalmers asserts, is that there exists a significant “explanatory gap” (see Levine, 1983) between physiological function in the nervous system and subjective experience. Chalmers (1995) contends that in order to explain individual experience, we need to not only understand HOW neural systems create such experience, but also WHY experienced awareness is uniquely generated in concert with particular neural processes (and not during all neurocomputational

activities). As neuroscientists, we do not yet appear to have the tools required to empirically access individual mental experience (as opposed to the neural correlates of such experience) in ways that will solve Chalmers' "hard problem."

Point #3: Promissory materialism is a provisional position, and the inclusion of it in an empirically-focused discussion of philosophy of mind is inappropriate.

When confronted with the thorny issue of Chalmers' "hard problem," many proponents of reductive physicalism retreat to a position that Karl Popper (Popper and Eccles, 1984) has termed "promissory materialism." As noted above, physicalism is currently constrained by the fact that the underlying neurobiological mechanisms of many complex behaviors and mental states have not yet been elucidated. Promissory materialism circumvents this problem by contending that such mechanisms indeed exist, but have not yet been uncovered and understood. This position, therefore, takes out a "promissory note" against future discoveries not yet realized in an attempt to understand phenomena that are very real and exist in the present.

Logically, this means that theories that invoke promissory materialism are provisional and are not rooted in the scientific method because they cannot be falsified. There is no denying that many proponents of reductive materialism exist in the ironic position of attempting to refute "belief" based positions such as dualism with other sets of "beliefs" (i.e., neuroscience will one day "figure it all out") that are no more grounded in empirical data than those that they rally against.

Point #4: Dualism is not a scientific construct because it is incongruent with the scientific method.

In response to the logical problems associated with reductive physicalism, a small (but growing) number of neuroscientists have chosen to champion the position of Cartesian dualism (see Schwartz and Begly, 2003; Beauregard and O'Leary, 2007; Gefstner, 2008). Dualists draw empirical support for their position from a number of behavioral and clinical studies, the results of which have been interpreted by some as being evidence for "minds changing brains" (reviewed in Schwartz and Begly, 2003; Beauregard and O'Leary, 2007). As compelling and intuitive as this argument might superficially seem, this notion is logically flawed because it presupposes that the non-physical mind exists without any empirical evidence to support this assertion. And this is the crux of the problem with dualism—if the non-corporeal mind exists (which for all we know, it may), evidence for its existence does not appear to be tangible or accessible using standard empirical methodologies. As such, arguments for Cartesian dualism are inherently faith based and are, therefore, incongruent with the scientific method. Instead of being trapped by Chalmers' "hard problem" (as those in the materialist camp are),

the dualists are logically pinned by their assumption of a non-corporeal mental "substance;" the existence of which cannot be empirically confirmed or denied. Because dualism is fundamentally a faith based argument, it cannot serve as a foundation upon which to construct a scientific understanding of qualia or the mind.

As pointed out by Searle (2000), contemporary neuroscience is still very much locked in the grip of Descartes. The continued recognition of the mind-body dichotomy as a purportedly viable theoretical construct has created a scenario where many investigators line up in rank to ardently defend either materialism or dualism, and little room is left for the reasonable consideration of alternate possibilities.

It is clear that neuroscience's focus on reductive physicalism in attempts to understand the nature of qualia and the mind has not been a success. Searle (2000) has perhaps best summed up this lack of progress by stating "In short, dualism makes the problem insoluble; materialism denies the existence of any phenomenon to study, and hence of any problem." This lack of increased understanding does not suggest to me that individual subjective experience is somehow magical or beyond the grasp of scientific understanding. Rather, the lack of forward momentum may indicate that the theoretical frameworks being utilized by many scholars are not appropriate to the question being asked, and the careful consideration of more complex alternate approaches may shed new light down what has become a dark dead-end alley.

I believe that John Searle is right, the field of neuroscience very much needs to break free from Descartes' grasp, and we should encourage students to think about the mind-body problem in new and creative ways. It is clear that focusing on the classic physicalism-dualism dichotomy has led to the stagnation of our collective understanding of qualia and the mind, and perpetuating this status quo does the students of neuroscience a considerable disservice. I strongly encourage other instructors to undertake a more extensive examination of these issues in their own courses and persuade the authors of the textbooks used by these classes to do the same. It is my hope that engaging with these issues will initiate an ongoing dialogue within the neuroscience teaching community in regards to how to approach issues related to philosophy of mind in the undergraduate classroom.

REFERENCES

- Beauregard M, O'Leary D (2007) *The spiritual brain: A neuroscientist's case for the existence of the soul*. New York, NY: HarperOne.
- Chalmers DJ (1995) Facing up to the problem of consciousness. *J Conscious Stud* 2:200-219.
- Gefstner A (2008) Creationists declare war over the brain. *New Scientist* 2679:46-47.
- Kandel E, Schwartz J, Jessell T (2000) *Principles of Neural Science*, 4th Edition. New York, NY: McGraw-Hill.
- Levine J (1983) *Materialism and qualia: The explanatory gap*.

- Pac Philos Q 64:354-361.
- Nagel T (1974) What is it like to be a bat? Philos Rev 83:435-450.
- Popper K, Eccles JC (1984) The self and its brain: An argument for interactionism. New York, NY: Routledge.
- Schwartz JM, Begly S (2003) The mind and the brain: Neuroplasticity and the power of mental force. New York, NY: HarperCollins.
- Searle JR (2000) Consciousness. Annu Rev Neurosci 23:557-578.

Received September 27, 2010; revised December 15, 2010; accepted January 28, 2011.

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