About a decade ago, a friend and former professor of mine in Biology said that “the really cool stuff is interdisciplinary,” and I make sure to stress this point to all of my students. Interdisciplinary work allows for new takes on classic problems, and bouncing ideas off of other disciplines can combat discipline-specific biases and subjectivity. The relationship between philosophy and science is indicative of this -- each ends up needing the other to be more honest about itself. Philosophy needs science to avoid spinning off fairy tales about how we think and behave and to remain grounded, while the sciences need philosophy to challenge basic assumptions and guide inductive reasoning.

Neuro-Philosophy and the Healthy Mind: Learning from the Unwell Brain follows this vein -- it offers insight into the everyday science governing how our brains work, using examples of dysfunction to suggest neural structures underlying everyday thought and experience. In the tradition of Oliver Sacks’ The Man Who Mistook His Wife for a Hat and V.S. Ramachandran’s Phantoms in the Brain, persistent vegetative states, minimally conscious states, depression, and schizophrenia offer insight into how we might explain complex philosophical constructs like “mind” and “identity.” It is generally accessible to a lay reader and raises some very interesting questions. Unfortunately, it is limited by the current state of research -- the questions it raises frequently end up having no currently available answers.

Good science drives further...
Inquiry and research articles frequently conclude by discussing future areas of potential exploration. The neuroscience underlying the philosophical discussion in Neuro-Philosophy and the Healthy Mind is fascinating -- it manages to explore biological bases of self and identity without being essentially reductive. We are not simply our brains, Northoff repeatedly stresses, but neither are we a detached “mind” as Descartes would have us believe. Rather, the recurring theme is the plasticity and activity of central brain structures as potential mechanisms for relating to the world. Our “mind” or “self” or “identity” depend on this relationship, and our day-to-day existence may be due, for instance, to variation in midline structures in the brain. These midline structures are not the only constitutive elements under consideration, however, and it is important to recognize that there isn’t any singular structure that gives rise to consciousness.

The neuroscience Northoff presents and reviews is compelling -- one typically associates executive function with forebrain structures, so the development of the essential roles of other regions in the brain (e.g., midline regions) as well as the role of dynamism in resting states and recursive processing offer interesting arguments. The book asks its reader to consider a number of different pathologies, opening with cases of profound neurological compromise from head trauma. Initially, he notes differences between levels of consciousness (e.g., persistent vegetative states, minimally conscious states, coma, etc.) and their neurological correlates, drawing parallels between the brain’s different levels of engagement with the environment and conscious experience, with greater levels of midline activation variation corresponding to greater levels of consciousness. Other structures are explored when we consider pathologies like depression and schizophrenia, which lead to discussions of the “time-brain” relationship and the “world-brain” relationship -- dysfunction in these dynamic interactions seem to provide plausible mechanisms for the symptoms typically observed in these psychopathologies.

There are some recurring concerns, however, when the argument moves into reductive territory. Northoff’s argument is not simple reductionism, as he explicitly stresses transcendent elements like interaction between the world and the brain as essential in generating a sense of “self.” But what is not clear is the extent to which the reductive elements presented (in terms of neural structural and functional differences between “unwell” and “well” brains) represent causative versus correlational relationships. Are these differences in neuroanatomy and functionality determinative of well/unwell states, or do they simply correlate to them, leaving open other explanatory mechanisms? This is one of the areas in which the paucity of information hinders the argument. Northoff’s reasoning is inductively compelling -- there is certainly reason to believe that these structural and functional differences are meaningful, and the evidence certainly seems to suggest the conclusions that he reaches, but there are still explanatory gaps. It is easy to be sympathetic to his position, but the need for additional information and experimentation gets frustrating, leaving elements of the argument speculative and incomplete (a point Northoff is quite willing to admit).

The neuroscience also has philosophical impact. As noted, the author is not a Cartesian dualist, but given the uncertainty raised by the lack of information (as well as the early discussions of differing levels of conscious states) and given his suggestion that concepts like “self” and “identity” are not localized to a specific brain structure, there is still room for philosophical positions like epiphenomenalism, in which any “mind-body” interaction is essentially one-way -- different states of the body (brain) determine different states of the “mind,” a position reconcilable with the myriad factors that seem to shape our day-to-day (and moment-to-moment) personalities. “Mind” may be a system-level property that cannot be localized to any one particular structure in the brain (just as there is no particular molecule that makes a bucket of water wet -- it is a property of the system’s overall energy state). This proposal, however, also falls victim to the current state of neuroscientific research -- it is entirely possible that future study and experimentation may undermine epiphenomenalism. We’ll simply have to wait and see.

Aside from these issues in theoretical philosophy, there are practical
impacts in fields like applied ethics. Issues like "identity," "self," and "personhood" weigh heavily in medical ethics in issues like abortion and euthanasia. Greater insight into how consciousness comes into being (and hence moral agency and status) can greatly shape the discussions we have on whether it is permissible or impermissible to terminate a pregnancy. Medicine and philosophy have accepted both cardiopulmonary and brain-based definitions of death, but controversial suggestions like expanding the definition to include cortical death or "death of the self" remain -- is it permissible for us to say that someone is dead when they no longer have meaningful interactions with their environment or when they no longer possess a self-identity (even if they are capable of interacting with the world around them)?

*Neuro-Philosophy and the Healthy Mind: Learning from the Unwell Brain* is an accessible text for the lay reader and would be quite useful informing courses in self and identity (both in philosophy and psychology). It is a welcome addition to the broader discussion of the normative implications of neuroscience.

© 2016 Matthew A. Butkus

Matthew A. Butkus, PhD, Associate Professor – Philosophy, McNeese State University, LA