



Narrow Perspectives on Consciousness

A Review of

Brain Imaging: What It Can (and Cannot) Tell Us About Consciousness

by Robert G. Shulman

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Reviewed by

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Robert G. Shulman, the author of *Brain Imaging: What It Can (and Cannot) Tell Us About Consciousness*, is one of the pioneers of neurobiophysical research who promoted functional magnetic resonance imaging (fMRI) as a dominant tool for the study of consciousness. A veteran investigator whose extensive research career also has spanned cognitive science, Shulman founded the Yale Magnetic Resonance Research Center and contributed to the revolution of imaging the living human brain.

Brain Imaging is an essential campaign for pragmatic behaviorism within cognitive neuroscience. The book addresses scientists and academics from cognitive science, neuroscience, and psychology. Shulman exposes pitfalls that readers may encounter if they dare deviate from inductive biophysical research methods. Correspondingly, he selects only a few forms of evidence in a move that recruits tried-and-true procedures above all else.

To carve out his argument Shulman enlists hard-line advocacy of biophysical reductionism alongside reflective narration of his career. Paying homage to his cumulative influence over the years, Shulman divulges pearls of wisdom useful for young scientists. His argument for biophysical reductionism, on the other hand, firmly rejects collaboration with the humanities and “soft” sciences, although Shulman pays lip service to these fields and exploits philosophical accounts to support his arguments and pragmatist views. He leverages the work of Bennett and Hacker, for example, that “the brain does not perform any of the mental functions postulated for it—it does not do memory or make decisions—but an active, healthy brain is necessary for the person to remember or to decide” (p. 55), into a renunciation of reverse inferences of brain function. For Shulman, philosophy is a poignant exception to the rule because he claims that scientists take a philosophical stance, whether they are aware of it or not.

At the heart of his book, Shulman avers that the epistemology of the biophysical sciences is a priori ideally suited for the science of consciousness. Although this assumption constitutes

an advantageous choice for prominently poising the biophysical sciences in the epicenter of consciousness research, critics claim that advocacy for inductive science emanates from deductive reasoning (Zeman, 2014). Shulman preemptively negotiates these limitations when he claims, "the crucial distinction is that the usefulness of the hypotheses and laws of physics has been tested and supported by centuries of scientific research" (p. 53).

This statement may seem unfair, however; the study of physics has been around for centuries, whereas exploratory correlations between cognition and brain states engender a field in its infancy. Shulman argues for fitting consciousness research to the causal model of biophysics rather than developing field-specific inter- and multidisciplinary models based on the questions and hypotheses of cognitive neuroscience. In this regard, however, he dismisses forms of subjective evidence that may be crucial to better understand consciousness (Lifshitz, Cusumano, & Raz, 2014).

Shulman dismisses the humanities and social sciences, an approach that may chagrin some readers. He does not concede, for example, that phenomenal and subjective evidence are compatible with biological and behavioral assays. He bolsters a conservative, "right-wing" stance (Varela, 1998) with outdated failures of cognitive science (Fodor, 1983), without proper consideration of "left-wing" researchers and without acknowledging examples of how consciousness research has evolved (Posner, 2012; Raz & Buhle, 2006). As such, his overarching tenor has raised concerns that he has "[thrown] the baby out with the bathwater" (Seth, 2014, p. 6).

Shulman, moreover, makes assertions that are regressive at times. For example, he advocates for a revised form of behaviorism without cautious consideration of the implications that this may have on knowledge acquisition. Overly constrained paradigms of consciousness, however, would likely obviate progress by limiting the diversity of evidence available. Perhaps Shulman has adopted these restraining opinions because nascent methods of cognitive science have yet to yield the results he desires.

A string of misgivings colors the book. Shulman recounts his experiences as a scientist who investigated the exciting promises of the day, for example, those of cognitive localization, only to discover that those promises stemmed from unjustified assumptions. As a result, his book sometimes borders on overretaliation by retreating to the safety of the familiar biophysical sciences from which his initial curiosity had launched. These sentiments are not uncommon among researchers who ardently engaged with questions of consciousness during the meteoric rise of neuroimaging. And yet, in recounting his career trajectory, Shulman exposes postmillennial researchers to the wisdom of experience. His stories and philosophical arguments highlight what happens when scientists allow research trends to override critical thinking.

In sum, although his remarkable career and personal reflections provide fodder for current and future scientists, Shulman writes with a cautionary tone that resonates throughout his interpretation of consciousness research. In an effort to negate untamed assumptions, he largely disregards complementary forms of phenomenal and subjective evidence; instead, Shulman advocates for a biophysical approach. This narrow take on consciousness renders his book a bit myopic but still worth reading. Shulman provides a well-articulated account of what biophysical and behaviorist paradigms may have in store for cognitive science. Although his appraisals of cognition are restrictive, Shulman illustrates the very issue he

raises: A science of consciousness is incongruent with researchers who are unconscious of their assumptions.

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