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# Book Review

# Wittgenstein meets Neuroscience

by Axel Kohler

A review of *Philosophical Foundations of Neuroscience* by M. R. Bennett and P. M. S. Hacker, 2003, Oxford: Blackwell.

In their book "Philosophical Foundations of Neuroscience", the philosopher Peter Hacker (Oxford University) and the neuroscientist Max Bennett (University of Sydney) join forces to draw attention to some of the most entrenched conceptual confusions in neuroscience and consciousness research. Coming from a Wittgensteinian perspective in analytical philosophy, the two authors defend an anti-reductionist framework for neuroscience, trying to avoid both the inconsistencies of Cartesianism and the vacuity of modern neuroscientific reductionism. On the way, they discuss a whole panoply of data and theories from the cognitive neurosciences as well as the major conundrums in consciousness research. Although the book discusses an impressive range of material and provides detailed conceptual analyses for the major theoretical issues in neuroscience, many neuroscientists will find the arguments unconvincing; Bennett and Hacker render their conclusions immune against empirical results by their exclusively *a priori* style of reasoning.

The book is subdivided into four parts plus an appendix. In the first part, Bennett and Hacker give a historical introduction to one of the central philosophical issues in neuroscience: the mind-body problem. Drawing on different sources in history, from Aristotle and Galen via Descartes to Sherrington, Eccles, and Penfield, they outline the (neo-)Cartesian tradition that has been the underlying framework of neuroscientific research well into the twentieth century. Their criticism of the Cartesian tradition does not primarily revolve around its postulation of two separate substances, *res extensa* and *res cogitans*, but focuses on the conception of the mind as an entity that is somehow related to the brain, especially in the neo-Cartesian tradition of 19$^{th}$ and 20$^{th}$ century neuroscientists. According to Bennett and Hacker, the mind has to be conceived as a process and not as an object-like entity. They consider it at least vacuous if not illogical to predicate psychological attributes of the mind. In accordance with our language rules, there is only one proper subject of psychological attributes: the human being (or animal) as a whole.

In the same vein, Bennett and Hacker argue against modern neuroscientific reductionism.

This time, however, it's the brain and not the mind that is the illicit target of mental-state ascriptions. The brain doesn't perceive, it doesn't remember or think. According to the authors, this kind of brain-talk is meaningless in a non-pejorative sense: it just fails to meet the criteria of conceptual probity. Again, only organisms can be the bearer of mental states and not brains. By ascribing mental states to brains, neuroscientists commit what Bennett and Hacker call the 'mereological fallacy' (mereology is the logic of part/whole relations), i.e., they use predicates in reference to a part (the brain), although only the whole (the human being) can be the proper subject matter.

In the second part of the book, Bennett and Hacker apply their conceptual reflections to a range of theories in cognitive neuroscience. They show how the mereological fallacy besets thinking in such different domains as perception, binding, memory, imagery, emotion, and volition. In addition, they try to provide a conceptual toolkit for the proper description and analysis of psychological states and processes. Although this part is certainly worthwhile reading, the constant reiteration of the same underlying argument makes it somewhat tedious. Even the authors suggest that this section be used as a reference work for specific topics rather than as a continuous text. The major goal of this part is to emphasize the practical relevance of the mereological fallacy. It is not just sloppy talk or *façon de parler*, but actually has a negative effect on the interpretation and conceptualization of scientific research.

The third part, entitled "Consciousness and Contemporary Neuroscience", uses the insights from the preceding sections to elucidate the conceptual confusions that seem to be inherent in the scientific investigation of consciousness. With their detailed conceptual analysis of the different possible types of consciousness, Bennett and Hacker claim to dispose of such seemingly intractable problems as qualia, subjectivity, and self-consciousness. Their discussion of consciousness-related topics is intriguing and insightful, although the solutions they offer don't add much to the mereological-fallacy argument.

The last part of the book deals with the methodological ramifications of their analysis. Bennett and Hacker propound an anti-reductionism that is based on the *a priori* conceptual analysis of psychological predicates. They argue for a multilevel approach with conceptually independent but ontologically connected domains. They criticize eliminativism for its incoherent stance on the explanatory project of psychology and its outright denial of the mental realm.

Even though there is much to disagree with, especially for neuroscientists, I would still consider the book mandatory reading for anybody interested in neuroscience and consciousness research. The vast spectrum of material in philosophy and neuroscience that Bennett and Hacker consider is impressive and their discussion is thorough and illuminating. Unfortunately, their main argument, the mereological fallacy, dominates major parts of the book. It might have been more interesting to apply their ideas to fewer examples but with more consideration of empirical details.

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